



Planning Commission

AGENDA

REGULAR MEETING OF THE PLANNING COMMISSION

Wednesday, September 7, 2022
7:00 PM

PUBLIC ADVISORY: THIS MEETING WILL BE CONDUCTED EXCLUSIVELY THROUGH VIDEOCONFERENCE AND TELECONFERENCE. Pursuant to Government Code Section 54953(e) and the state declared emergency, this meeting of the Planning Commission will be conducted exclusively through teleconference and Zoom videoconference. The COVID-19 state of emergency continues to directly impact the ability of the members to meet safely in person and presents imminent risks to the health of attendees. Therefore, no physical meeting location will be available.

To access the meeting remotely: Join from a PC, Mac, iPad, iPhone, or Android device: Please use this URL <https://us06web.zoom.us/j/83514287347>. If you do not wish for your name to appear on the screen, then use the drop down menu and click on "rename" to rename yourself to be anonymous. To request to speak, use the "raise hand" icon by rolling over the bottom of the screen.

To join by phone: Dial **1 669 900 6833** and enter Meeting ID: **835 1428 7347**. If you wish to comment during the public comment portion of the agenda, Press *9 and wait to be recognized by the Chair.

Please be mindful that the video conference and teleconference will be recorded. All rules of procedure and decorum that apply for in-person Planning Commission meetings apply for Planning Commission meetings conducted by teleconference or videoconference.

See "**MEETING PROCEDURES**" below.

All written materials identified on this agenda are available on the Planning Commission webpage:https://www.cityofberkeley.info/Clerk/Commissions/Commissions_Planning_Commission_Homepage.aspx

PRELIMINARY MATTERS

- 1. Roll Call:** **Wiblin, Brad**, appointed by Councilmember Kesarwani, District 1
Vincent, Jeff, appointed by Councilmember Taplin, District 2
Moore III, John E. "Chip", appointed by Councilmember Bartlett, District 3
Oatfield, Christina, appointed by Councilmember Harrison, District 4
Mikiten, Elisa, Chair, appointed by Councilmember Hahn, District 5
Kapla, Robb, appointed by Councilmember Wengraf, District 6
Twu, Alfred, appointed by Councilmember Robinson, District 7

Hauser, Savlan, Vice Chair, appointed by Councilmember Droste, District 8
Ghosh, Barnali, appointed by Mayor Arreguin

2. **Order of Agenda:** The Commission may rearrange the agenda or place items on the Consent Calendar.
3. **Public Comment:** Comments on subjects not included on the agenda. Speakers may comment on agenda items when the Commission hears those items. (See “*Public Testimony Guidelines*” below):
4. **Planning Staff Report including Future Agenda Items:** In addition to the items below, additional matters may be reported at the meeting.
5. **Chairperson’s Report:** Report by Planning Commission Chair.
6. **Committee Reports:** Reports by Commission committees or liaisons. In addition to the items below, additional matters may be reported at the meeting.
7. **Approval of Minutes:** Approval of Draft Minutes from the meeting on **July 6, 2022**.
8. **Other Planning-Related Events:**

AGENDA ITEMS: All agenda items are for discussion and possible action. Public Hearing items require hearing prior to Commission action.

- | | |
|---------------------------|--|
| 9. Action: | Public Hearing: Draft Environmental Impact Report Housing Element Update Project |
| Recommendation: | Conduct a public hearing, take public testimony on the Draft Environmental Impact Report (EIR) and provide comments to staff on the Draft EIR. |
| Written Materials: | Linked |
| Presentation: | N/A |

ADDITIONAL AGENDA ITEMS: In compliance with Brown Act regulations, no action may be taken on these items. However, discussion may occur at this meeting upon Commissioner request.

Information Items:

- *Upcoming:* September 20 – City Council Middle Housing and Southside Worksession

Communications:

- General

Late Communications: (Received after the packet deadline):

- Supplemental Packet One – received by noon two days before the meeting
- Supplemental Packet Two
- Supplemental Packet Three

ADJOURNMENT

****** MEETING PROCEDURES ******

Public Testimony Guidelines:

All persons are welcome to attend the virtual meeting and will be given an opportunity to address the Commission. Speakers are customarily allotted up to three minutes each. The Commission Chair may limit the number of speakers and the length of time allowed to each speaker to ensure adequate time for all items on the Agenda. Customarily, speakers are asked to address agenda items when the items are before the Commission rather than during the general public comment period. Speakers are encouraged to submit comments in writing. See “Procedures for Correspondence to the Commissioners” below.

Procedures for Correspondence to the Commissioners:

All persons are welcome to attend the virtual hearing and will be given an opportunity to address the Commission. Comments may be made verbally at the public hearing and/or in writing before the hearing. The Commission may limit the time granted to each speaker.

Written comments must be directed to the Planning Commission Clerk at the Land Use Planning Division (Attn: Planning Commission Clerk), 1947 Center Street, Second Floor, Berkeley CA 94704, or via e-mail to: zcovello@cityofberkeley.info. All materials will be made available via the Planning Commission agenda page online at this address: <https://www.cityofberkeley.info/PC/>.

Correspondence received by **12 noon, nine days** before this public meeting, will be included as a Communication in the agenda packet. Correspondence received after this deadline will be conveyed to the Commission and the public in the following manner:

- Correspondence received by **12 noon two days** before this public meeting, will be included in a Supplemental Packet, which will be posted to the online agenda as a Late Communication and emailed to Commissioners one day before the public meeting.
- Correspondence received after the above deadline and before the meeting will be included in a second and/or third Supplemental Packet, as needed, which will be posted to the online agenda as a Late Communication and emailed to the Commissioners by 5pm on the day of the public meeting.

Note: It will not be possible to submit written comments at the meeting.

Communications are Public Records: Communications to Berkeley boards, commissions, or committees are public records and will become part of the City’s electronic records, which are accessible through the City’s website. **Please note: e-mail addresses, names, addresses, and other contact information are not required, but if included in any communication to a City board, commission, or committee, will become part of the public record.** If you do not want your e-mail address or any other contact information to be made public, you may deliver communications via U.S. Postal Service, or in person, to the Secretary of the relevant board, commission, or committee. If you do not want your contact information included in the public record, please do not include that information in your communication. Please contact the Secretary to the relevant board, commission, or committee for further information.

Communication Access: To request a meeting agenda in large print, Braille, or on audiocassette, or to request a sign language interpreter for the meeting, call (510) 981-7410 (voice), or 981-6903 (TDD). Notice of at least five (5) business days will ensure availability.

Meeting Access: To request a disability-related accommodation(s) to participate in the meeting, including auxiliary aids or services, please contact the Disability Services Specialist, at 981-6418 (V) or 981-6347 (TDD), at least three (3) business days before the meeting date.

I hereby certify that the agenda for this regular meeting of the Planning Commission was posted at the display case located near the walkway in front of the Maudelle Shirek Building, 2134 Martin Luther King Jr. Way, as well as on the City's website, on **August 30, 2022**.

Grace Wu
Planning Commission Secretary



Planning Commission

1 **DRAFT MINUTES OF THE REGULAR PLANNING COMMISSION MEETING**
2 **July 7, 2022**

3 The meeting was called to order at 7:02 p.m.

4 **Location:** Virtual meeting via Zoom

5 **1. ROLL CALL:**

6 **Commissioners Present:** Barnali Ghosh, Savlan Hauser, Elisa Mikiten, Chip Moore,
7 Christina Oatfield, Alfred Twu, Jeff Vincent, and Brad Wiblin.

8
9 **Commissioners Absent:** Robb Kapla.

10
11 **Staff Present:** Secretary Alene Pearson, Clerk Zoe Covello, Steve Buckley, and Justin
12 Horner.

13 **2. ORDER OF AGENDA:** No changes.

14 **3. PUBLIC COMMENT PERIOD:** 0.

15 **4. PLANNING STAFF REPORT:**

- 16 • Public comment for the Housing Element Public Draft closes on July 14, 2022.
- 17 • There will not be a Planning Commission meeting in August.
- 18 • Staff plan to bring the draft EIR for the Housing Element to the September Planning
19 Commission meeting.

20 **Information Items:**

- 21 • **June 2**
 - 22 ○ City Council Public Hearing on the Ashby and North Berkeley BART Station
23 Areas
- 24 • **June 28**
 - 25 ○ City Council second reading of Ordinance No.7,815-N.S. to amend the
26 Berkeley Municipal Code to create the Residential-BART Mixed-Use District
27 Residential Zone District

28
29 **Communications:**

- 30 • General.

31 **Late Communications:** *See agenda for links.*

- 32 • Supplemental Packet One

33 **5. CHAIR REPORT:**

- 34 • Chair Mikiten attended the BART City Council meeting.

35 **6. COMMITTEE REPORT:** Reports by Commission committees or liaisons. In addition to the
36 items below, additional matters may be reported at the meeting.

- 37
38 • The Workplan Subcommittee met this month and the Planning Commission 2022-2023
39 Workplan is on the agenda this evening.

40 **7. APPROVAL OF MINUTES:**

41 Motion/Second/Carried (Twu/Moore) to approve the Planning Commission Meeting Minutes
42 from June 1, 2022.

43
44 Ayes: Ghosh, Hauser, Mikiten, Moore, Oatfield, Twu, Vincent, and Wiblin. Noes: None.
45 Abstain: None. Absent: Kapla. (8-0-0-1)

46
47 **8. OTHER PLANNING RELATED EVENTS:**

- 48 • None.

49 **AGENDA ITEMS**

50 **9. Public Hearing: Zoning Ordinance Amendments that Address Technical Edits and Corrections**
51 **to Berkeley Municipal Code (BMC) Title 23 – Package #3**

52 Associate Planner Justin Horner presented on technical edits and corrections to the new Zoning
53 Ordinance, the Commission held a public hearing, and Commissioners recommended that City Council
54 adopt the package as is.

55 Motion/Second/Carried (Wiblin/Moore) to close the public hearing at 7:23 p.m.

56
57 Ayes: Ghosh, Hauser, Mikiten, Moore, Oatfield, Twu, Vincent, and Wiblin. Noes: None.
58 Abstain: None. Absent: Kapla. (8-0-0-1)

59
60 Motion/Second/Carried (Twu/Hauser) to recommend that City Council accept the changes as
61 proposed by staff at 7:24 p.m.

62
63 Ayes: Ghosh, Hauser, Mikiten, Moore, Oatfield, Twu, Vincent, and Wiblin. Noes: None.
64 Abstain: None. Absent: Kapla. (8-0-0-1)

65
66 **Public Comments: 2**

67 **10. Discussion: Affordable Housing Overlay and Local Density Bonus Program**

68 Associate Planner Justin Horner presented on an affordable housing overlay and a local density
69 bonus program, both of which are referrals incentivizing affordable housing production, and
70 asked Commissioners to provide feedback for the development of policy options. The
71 Commissioners asked questions, took public comment, and provided feedback.

72 **Public Comments: 1**

73 **11. Action: Planning Commission 2022-2023 Workplan**

74 Chair Mikiten shared the Planning Commission 2022-2023 Workplan developed by the Workplan
75 Subcommittee of the Planning Commission. Public comment was taken.

76 **Public Comments: 4**

77 Motion/Second/Carried (Mikiten/Hauser) to pass the Workplan to City Council, without the Flex
78 Conversion to Mini Dorms referral, at 8:52 p.m.

79
80 Ayes: Ghosh, Hauser, Mikiten, Moore, Oatfield, Twu, Vincent, and Wiblin. Noes: None.
81 Abstain: None. Absent: Kapla. (8-0-0-1)

82

83 Motion/Second/Carried (Vincent/Moore) to adjourn the meeting at 8:53 p.m.

84
85 Ayes: Ghosh, Hauser, Mikiten, Moore, Oatfield, Twu, Vincent, and Wiblin. Noes: None.
86 Abstain: None. Absent: Kapla. (8-0-0-1)

87

88 **Members in the public in attendance: 7**

89 **Public Speakers: 7**

90 **Length of the meeting: 1 hour 51 minutes**



Planning and Development Department
Land Use Planning Division

DATE: September 7, 2022
TO: Members of the Planning Commission
FROM: Justin Horner, Associate Planner
SUBJECT: Housing Element Update - Draft EIR Review

RECOMMENDATION

Conduct a public hearing to receive public comment on the Draft Environmental Impact Report for the Housing Element Update.

SUMMARY

At this public hearing, staff is requesting that the Planning Commission:

1. Take public testimony on the Draft Environmental Impact Report (EIR) and provide comments to staff on the Draft EIR;
2. Close the public hearing with respect to receipt of oral comments. Written comments will be accepted until 5:00pm on **Monday, October 17, 2022**.

Project Description.

The proposed project would amend the City of Berkeley's General Plan by replacing the current Housing Element with the proposed project and amending the City's General Plan as needed for consistency, and include a wide range of Housing Element implementation measures including but not limited to zoning code and zoning map amendments. The proposed project establishes policies and programs to further the goal of meeting the existing and projected housing needs of the community and to advance fair housing opportunities throughout the City. In addition, the proposed project provides evidence of the City's ability to accommodate the Regional Housing Needs Allocation (RHNA) through the year 2031, as established by the Association of Bay Area Governments (ABAG).

In conjunction with the Housing Element Update, the City anticipates amendments to the General Plan including revising the Land Use Element to maintain consistency with the updated Housing Element. The Land Use Element revisions are to ensure consistency among all General Plan Elements upon implementation of the updated Housing Element.

The City has identified an inventory of sites and a set of implementation programs to meet its RHNA and to achieve other State mandates and local policy objectives. The EIR sites inventory (*Attachment 1, Map 1*) includes three categories of sites to meet the RHNA: Likely Sites, Pipeline Sites, and Opportunity Sites. Likely Sites include housing projects that received their land use entitlement since 2018 but did not receive their certificate of occupancy prior to June 30, 2022. For the EIR, Likely Sites is estimated to result in 4,685 units (not all entitled projects get built). Likely Sites also includes an estimated 800 ADUs to be developed during the 2023-2031 planning period based on recent trends. Pipeline Sites include projects that are under review, have submitted a pre-application, or actively engaging with the City in anticipation of submitting an application for review and include an estimated build-out of 2,425 units (not all proposals are approved or built at the originally-proposed number of units). Opportunity Sites are currently vacant and/or underutilized sites and are not associated with actual development proposals, but are identified as possible locations for residential development based upon criteria developed by the State. For the EIR, the Opportunity Sites include an estimated 8,053 units over some unknown future period of time. This total does not include all potential residential development sites within the City limits, and identified sites may or may not be developed at the estimated densities. The placement and design of buildings on specific sites cannot be determined until the City receives an application for a specific project.

Based on the foregoing, the City has determined that rezoning is not needed to meet the RHNA. However, recent development activity suggests current zoning alone does not deliver the number or affordability level of deed-restricted affordable housing units, nor does it result in the economic and geographic diversity that the HEU aims to achieve. Therefore, the Housing Element contains implementation programs and zoning policies to encourage additional housing, particularly affordable housing that supports a diversity of income levels and household types.

- Middle Housing (typically ranging from two to six units per lot in a variety of configurations) is proposed as a means of increasing housing development and providing more affordable options for all types of households throughout the City in R-1, R-1A, R-2, R-2A and MU-R zoning districts (*Attachment 1, Maps 2 and 3*). These areas already include a diversity of housing types and are anticipated to experience an increase in density based on the State's adoption of SB 9 and a proposed Housing Element program to facilitate increased development in higher resource areas where land is available for more infill development. The EIR assumes the development of 1,745 additional units distributed throughout these districts for the 2023-2031 period.
- Southside zoning modifications are proposed to increase housing capacity and production to better meet student housing demand in the Southside area (*Attachment 1, Maps 3 and 4*). This would occur through changes in the following zoning parameters: building heights, building footprints (including setbacks and lot coverage), parking, ground-floor residential use throughout the area. In addition, adjustments to the boundaries of the R-S, R-SMU and R-3 zoning districts are proposed to place more land in areas zoned for higher density. Given past development trends and the limited

number of opportunity sites in the Southside area, the EIR assumes an additional 1,000 units for the 2023-2031 period.

Environmental Review Process.

The City of Berkeley is the Lead Agency for the project and EIR, represented by the Planning and Development Department. The California Environmental Quality Act (CEQA) provides that a Lead Agency may proceed directly with EIR preparation, without preparing an Initial Study, if it is clear that an EIR will be required. Based on the scale of the project, the City therefore hired a consultant to prepare a Draft EIR that evaluates the impacts of adopting and implementing the proposed project.

In accordance with CEQA Guidelines, a Notice of Preparation (NOP) of a Draft EIR was circulated to potentially interested parties and agencies on January 14, 2022. The City received written responses to the NOP regarding the scope and content of the EIR. The City also held an EIR scoping meeting as part of the regularly scheduled Planning Commission meeting on February 9, 2022.

The Draft EIR was posted to the City's website on **Tuesday, August 30, 2022**, and a Notice of Availability (NOA) for the Draft EIR was published on **September 2, 2022**. The public comment period for the Draft EIR ends on **Monday, October 17, 2022**. A Final EIR will be prepared to respond to comments and provide any necessary clarifications to the Draft EIR. The Final EIR is made available for public review prior to the City taking any action on the project.

In early 2023, the City Council will consider comments from the Planning Commission and the public on these documents, and consider taking action to:

- Adopt the Housing Element Update including an implementation plan;
- Adopt amendments to the General Plan including revising the Land Use Element to maintain consistency with the Housing Element Update; and
- Certify the Final EIR.

Environmental Impact Report.

The Draft EIR analyzes the potential environmental effects of possible development guided by the programs and policies included in the Housing Element Update, and the specific proposed zoning amendments for lower density districts and the Southside area.

The following environmental topics are addressed in detail in the Draft EIR:

- 4.1 Aesthetics
- 4.2 Air Quality
- 4.3 Biological Resources
- 4.4 Cultural Resources
- 4.5 Energy
- 4.6 Geology and Soils
- 4.7 Greenhouse Gas Emissions
- 4.8 Hazards and Hazardous Materials
- 4.9 Hydrology and Water Quality
- 4.10 Land Use and Planning

- 4.11 Noise
- 4.12 Population and Housing
- 4.13 Public Services and Recreation
- 4.14 Transportation
- 4.15 Tribal Cultural Resources
- 4.16 Utilities and Service Systems
- 4.17 Wildfire

The Draft EIR identified one significant and unavoidable environmental impact related to cultural resources, one significant and unavoidable impact related to noise (temporary construction noise), and four significant and unavoidable impacts related to wildfire. All other environmental effects of the proposed project can be reduced to less than significant levels through implementation of standard condition(s) of approval, other State, regional or local requirements, and/or recommended mitigation measures.

The Draft EIR also briefly discusses why there would be no effects related to the following environmental topics: agricultural and forestry resources, and mineral resources.

The following is a summary of the Draft EIR.

A. Project Objectives

Section 15124 of the CEQA Guidelines requires an EIR to include a statement of the objectives sought by the proposed project. These Project Objectives assist in identifying a reasonable range of alternatives to evaluate in the EIR and frame the reasoning for any necessary findings or statements of overriding consideration.

The Project Objectives are to:

1. Adopt policies and programs that meet the City's RHNA with the required buffer, provide additional housing opportunities consistent with other City priorities, and ensure ongoing compliance with State Housing Element law and the No Net Loss provisions of State law.
2. Adopt policies and programs to encourage the development of affordable housing at a range of income levels consistent with RHNA, including at least 2,450 units for Very Low-Income households, at least 1,400 units for Low Income households, and at least 1,400 units for Moderate Income households.
3. Encourage the development of housing with access to transit, jobs, services, and community benefits in a manner that distributes affordable housing in high resource neighborhoods and affirmatively furthers fair housing.
4. Identify housing policies and programs that will conserve and rehabilitate existing units, provide services to increase housing opportunities for all residents of Berkeley, and increase the energy efficiency of current and future housing units.

B. Project Description

The proposed project for the purposes of review under the California Environmental Quality Act (CEQA) would result in the adoption and implementation of the Housing Element Update, including the rezoning of lower-density residential districts and zoning districts within the Southside area, as more fully described above.

C. Buildout Projections

For the purposes of environmental review, the Draft EIR includes development projections to provide a physical project that can be analyzed for its environmental effects, as described above.

The proposed project does not identify or define specific development projects, but rather consists of land use and policy changes that would guide future development. The buildout projection for the proposed project represents a reasonable maximum development envelope.

To ensure a conservative approach in analyzing environmental effects under CEQA, EIRs typically analyze what could be considered a maximum reasonable impact scenario in order to capture as many significant environmental impacts as could be reasonably expected as a result of the project. For the purposes of environmental review, the total reasonable maximum development that would result from the proposed project is approximately 19,100 dwelling units.

D. Potentially Significant Impacts Identified in the Draft EIR

All environmental impacts, relevant standard conditions of approval, and mitigation measures are summarized in the Executive Summary (Table ES-1) in the Draft EIR. Table ES-1 also identifies the level of significance of the impact after application of the standard condition of approval and/or mitigation measure(s). Other than the impacts discussed below, all of the environmental effects of the proposed project can be reduced to less than significant levels through implementation of standard condition(s) of approval, State, regional or other local regulations, and/or recommended mitigation measures.

The Draft EIR identifies the following significant and unavoidable environmental impacts:

- **Impact CUL-1 (Historic Resources).** Mitigation Measure CUL-1 states that during the planning period of the Housing Element, the City should conduct a citywide historic context statement and a cultural resource survey to identify historic resources, with priority given to sites in the EIR Site Inventory, to determine if there are designed built environment features which are over 40 years of age that could be altered or demolished. Mitigation Measure CUL-2 requires projects that are subject to discretionary review, and where a historical-age building or structure that has not been previously evaluated is present, to obtain an historical resources assessment to determine if the property qualifies for federal, state, or local historical resources designation. In combination with City of Berkeley regulations, Mitigation Measures CUL-1 and CUL-2 would reduce impacts to historical resources to the maximum extent feasible. However, even with implementation of this mitigation measure, existing and eligible historical resources could still be materially impaired by future development that would be carried out under the proposed Housing Element because specific actions

intended for the reduction of impacts to historical resources could be deemed infeasible. Additionally, any projects that are not subject to discretionary review and have not been previously evaluated could result in the demolition of potential historic resources. Therefore, impacts could be significant and unavoidable.

- **Cumulative Impact – CR (Cultural Resources).** Development pursuant to the Housing Element Update and UC Berkeley’s Long-Range Development Plan would have the potential to impact historical resources. Historic-period resources could be vulnerable to development activities that could result in damage to or demolition of cultural resources. As noted above in Impact CUL-1, the proposed project could result in significant and unavoidable impacts to historical resources. Adherence to Mitigation Measures CUL-1 and CUL-2 would reduce or avoid some but not all potential impacts to historical resources in Berkeley. Therefore, cumulative historical resources impacts could be significant, and the project’s contribution could be cumulatively considerable.
- **Impact NOI-1 (Construction Noise).** The City’s standard conditions of approval for large projects would reduce construction noise levels to the maximum extent feasible. These conditions would include the installation of temporary sound barriers, which are the most effective advanced measure to reduce noise from construction sites adjacent to sensitive receptors. No further measures are available to provide additional reductions in construction noise. However, construction noise levels could still exceed the City’s standards for stationary equipment in both multi-family residential and commercial zones. Furthermore, construction noise levels could exceed the City’s standards at multiple sites where the proposed amendments would facilitate development in the City. Therefore, this impact could be significant and unavoidable.
- **Cumulative Impact – Noise (Construction Noise):** Construction activities associated with future development would be required to comply with Section 13.40 of the BMC and would not occur during nighttime hours between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, and between the hours of 8:00 p.m. and 9:00 a.m. on weekends and holidays. It is anticipated that even with implementation of the standard conditions of approval, construction noise levels associated with some of the housing development during the planning period of the proposed Housing Element Update would not be reduced below the applicable noise limits for construction noise on a case-by-case basis. Furthermore, larger development projects could combine together, or combine with smaller development projects to cause excessive noise. Based on the locations of the potential housing sites displayed in Figure 2-4 of Section 2, *Project Description*, this could substantially increase noise levels at specific neighboring noise-sensitive receivers since many sites are located in proximity to each other. Therefore, concurrent construction of development projects accommodated under the proposed Housing Element Update could result in cumulatively considerable impacts. This impact would be cumulatively considerable and cumulative impacts could be significant and unavoidable.
- **Impact W-1 (Emergency Response & Evacuation):** Additional residents in the area associated with new residential development could further inhibit safe evacuation by putting more residents in the area that would require evacuation on narrow hillside roadways. Additional residents in the hills could also make wildfire risk more acute because more people will be trying to evacuate at the same time. Construction of

individual housing developments in the City's Very High Fire Hazard Severity Zones could interfere with adopted emergency response or evacuation plans as a result of temporary construction activities within rights-of-way. However, temporary construction barricades or other construction-related obstructions used for project development that could impede emergency access would be subject to the City's Standard Conditions of Approval, which include the preparation of a Transportation Construction Plan. Further, the City is undertaking emergency evacuation planning as part of citywide efforts described above. However, no other mitigation measures are feasible to address potential site-specific impacts, so impacts related to emergency response plan or emergency evacuation plan would be potentially significant.

- **Impact W-2 (Exposure to Wildfire):** Compliance with existing City regulations and the implementation of the City's requirement for a Fire Protection Plan to be prepared for development of housing projects in the Wildland-Urban Interface Fire Area would reduce the potential to exacerbate wildfire risk during construction and after projects are constructed. This would reduce the severity of potential impacts related to exposure to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. No additional mitigation measures beyond adherence to existing procedures are required or are feasible. Nonetheless, for some development projects, even with implementation of these wildfire prevention measures, impacts may result from the potential for unusual site-specific or road conditions, project characteristics, and the general ongoing fire risk in Berkeley Hills. Based on this, impacts could be significant and unavoidable.
- **Impact W-3 (Landslide):** BMC requirements of site-specific geotechnical investigations would reduce potential impacts related to landslides for individual future development projects. These would reduce potential impacts such as landslides due to runoff, post-fire slope instability, or drainage changes following a potential wildfire. However, based on the potential for unusual site-specific conditions or project characteristics, and the general ongoing fire risk in the Berkeley Hills, impacts of a housing development project may still occur. Therefore, impacts could be significant and unavoidable.
- **Impact W-4 (Infrastructure and Fire Risk):** Implementation of Mitigation Measure W-1 would reduce the potential for impacts under this threshold by placing power lines underground in areas subject to wildfire risk. However, it may not be feasible to impose this requirement on all projects. Additionally, potentially unusual site-specific conditions or aspects of the infrastructure project, including power line installation, may result in wildfire impacts from the installation or maintenance of infrastructure required by build out under the proposed project. This impact would therefore remain significant and unavoidable.

E. Alternatives

As required by Section 15126.6 of the CEQA Guidelines, an EIR must examine a range of reasonable alternatives to the proposed project that would feasibly obtain most of the CEQA Project Objectives, and avoid or substantially lessen the project's significant environmental impacts. The following alternatives are evaluated in the Draft EIR:

- **Alternative 1: No Project Alternative.** The No Project Alternative involves continued implementation of the existing 2015-2023 Housing Element as well as the City's existing

plans and policies that would accommodate development in accordance with the existing land use designations and development standards.

This alternative would partially meet Objective 1 by satisfying RHNA, but it would not provide the same buffer as the proposed HEU. Furthermore, the No Project Alternative would potentially not meet objectives 2, 3, and 4 to the same extent as with the policies and programs under the proposed HEU.

- **Alternative 2: No Rezoning in the Hillside Overlay District.** An implementation program of the proposed HEU is to increase density in the lower density zoning districts. The program would specifically allow increases in the total number of units allowed on a lot, increase the total achievable floor area on a lot, and encourage a mix of unit sizes and densities, while adjusting the level of discretion to allow approval of such projects with a Zoning Certificate. Under this alternative, this program would not apply to portions of the R-1 district within the Hillside overlay (R-1H) district.

Without the rezoning in the R-1H district, approximately 150 units in the hillside area would not be built compared to buildout under the proposed HEU. However, without the rezoning implementation program, SB 9 would apply. SB 9, signed into law in 2021 and codified as Government Code sections 65852.21, 66411.7, and 66452.6, requires agencies to ministerially approve up to two residential units on a parcel within a single-family residential zone if the development meets specific objective criteria. SB 9 also allows splitting one lot into two lots within a single-family residential zone and permitting up to two units on each parcel (four total dwelling units on what was formerly a single-unit lot) if the development complies with specific objective criteria. Based on SB 9 trends, it is anticipated that this alternative would not decrease overall development in the Hillside overlay district compared to buildout assumed under the proposed HEU. This alternative would meet the project objectives.

- **Alternative 3: No Middle Housing Rezoning.** An implementation program of the proposed HEU is a Middle Housing program to increase density in the R-1, R-1A, R-2, R-2A and MU-R districts. The program would include Zoning Ordinance amendments that would allow increases in the total number of units allowed on a lot, increase the total achievable floor area on a lot, and encourage a mix of unit sizes and densities, and adjustments to the level of discretion to approve such projects with a Zoning Certificate. For the purposes of the EIR, the Middle Housing program was projected to result in 1,745 units during the Housing Element planning period. Under this alternative, the Middle Housing program would not be included in the Housing Element Update.

Without Middle Housing rezoning as part of the proposed project, approximately 975 fewer units would be constructed compared to buildout under the proposed HEU, which reflect not rezoning the R-1A, R-2, R-2A and MU-R districts. As noted above in the description of Alternative 2, the number of additional units in the R-1 district remains the same whether as a result of rezoning or through utilization of SB9. Accordingly, the 770 units attributed to the R-1 district are included in the analysis of this Alternative. This alternative would meet all of the project objectives, but to a lesser degree than the proposed project, as it includes fewer units.

- **Environmentally Superior Alternative.** CEQA requires the identification of the environmentally superior alternative among the options studied, which is the alternative among those studied that has the fewest significant environmental impacts. Table 6-2 on of the Draft EIR indicates whether each alternative's environmental impact is greater, lesser, or similar to the proposed project.

The Draft EIR concludes that Alternative 3 is environmentally superior because it results in fewer units and less development, which would marginally reduce impacts over a broad area of the City.

Conclusion

The Planning Commission is being asked to take public testimony on the Draft EIR and provide comments to staff on the Draft EIR. Comments should focus on whether the Draft EIR is sufficient in discussing possible impacts to the physical environment, ways in which the potential adverse effects may be avoided or minimized through mitigation measures, and alternatives to the proposed project in light of the Draft EIR's purpose to provide useful and accurate information about such factors.

Copies of the Draft EIR may be obtained at the Planning Department, 1947 Center Street, 2nd Floor, Berkeley CA, 94704.

The Draft EIR is also posted on the project website: <https://berkeleyca.gov/construction-development/land-use-development/general-plan-and-area-plans/housing-element-update>.

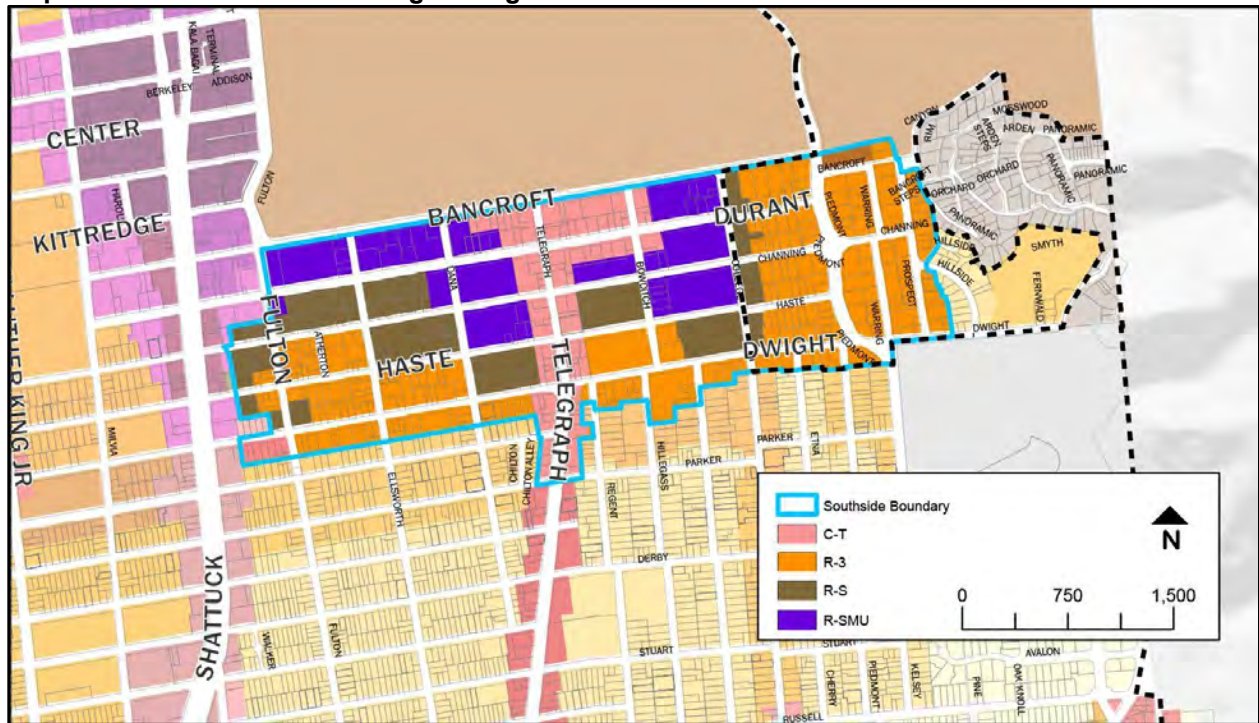
Copies may also be reviewed at:

- City of Berkeley at 1947 Center Street, 2nd Floor;
- Central (Downtown) Library, 2090 Kittredge Street;
- Tarea Hall Pittman South Branch Library, 1901 Russell Street;
- Claremont Branch Library, 2940 Benvenue Ave; and
- West Branch Library, 1125 University Avenue.

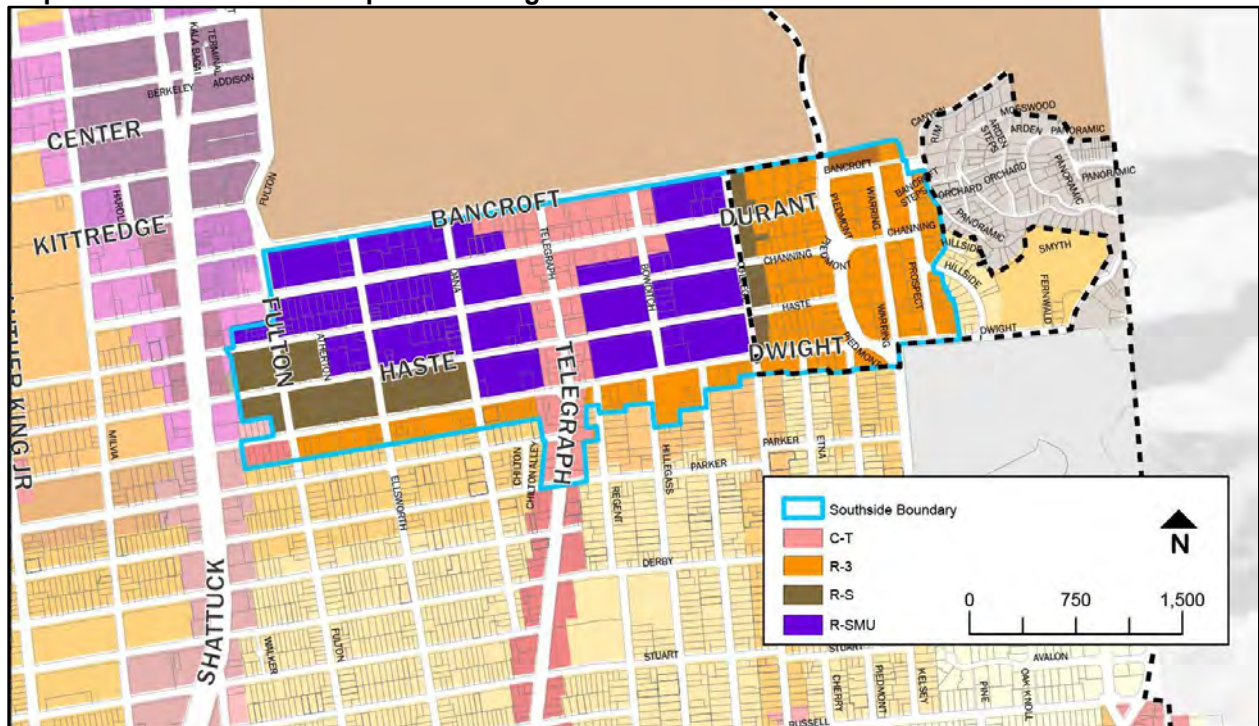
ATTACHMENTS

1. Area Maps
2. Public Hearing Notice
3. Housing Element 2023-2031 Draft EIR
4. Housing Element 2023-2031 Draft EIR Appendices

Map 4. Southside Area – Existing Zoning



Map 5. Southside Area – Proposed Zoning





PLANNING COMMISSION

NOTICE OF PUBLIC HEARING

SEPTEMBER 7, 2022

Draft Environmental Impact Report (DEIR) for the Housing Element Update Project

The Planning Commission of the City of Berkeley will hold a public hearing on the above matter pursuant to California Environmental Quality Act (CEQA) Guidelines Section 15087 and Berkeley Municipal Code Section 23.412.030, on **Wednesday, September 7, 2022, beginning at 7:00 PM.** **The hearing will be conducted remotely via teleconference / videoconference** - see the Agenda for details, which can be found online at: <https://berkeleyca.gov/your-government/boards-commissions/planning-commission>.

PUBLIC ADVISORY: Pursuant to Government Code Section 54953(e) and the state declared emergency, this meeting of the Planning Commission will be conducted exclusively through teleconference and Zoom videoconference. The COVID-19 state of emergency continues to directly impact the ability of the members to meet safely in person and presents imminent risks to the health of attendees. Therefore, no physical meeting location will be available.

PROJECT DESCRIPTION: As the Lead Agency overseeing the project's environmental review, the City of Berkeley is soliciting comments on Draft Environmental Impact Report (EIR) for the 2023-2031 Housing Element Update ("proposed project"). The Draft EIR addresses the potential physical environmental effects of the proposed project for the environmental topics outlined in the California Environmental Quality Act (CEQA).

The proposed project would amend the City of Berkeley's General Plan by replacing the current Housing Element with the proposed project and amending the City's General Plan as needed for consistency and Housing Element implementation. The proposed project establishes policies and programs to further the goal of meeting the existing and projected housing needs of all household income levels of the community. In addition, the proposed project provides evidence of the City's ability to accommodate the Regional Housing Needs Allocation (RHNA) through the year 2031, as established by the Association of Bay Area Governments (ABAG).

The City has identified an inventory of sites and a set of implementation programs to meet its RHNA and to further other local policy objectives. The EIR sites inventory (**Figure 1**) includes three categories of sites to meet the RHNA: Likely Sites, Pipeline Sites, and Opportunity Sites. Likely Sites include housing projects that received their land use entitlement since 2018 but did not receive their certificate of occupancy prior to June 30, 2022. For the EIR, Likely Sites is estimated at 4,685 units. Likely Sites also includes an estimated 800 ADUs to be developed during the 2023-2031 planning period based on recent trends. Pipeline Sites include projects that are under review, have submitted a pre-application, or actively engaging with the City in anticipation of submitting an application for

review and include an estimated 2,425 units. Opportunity Sites are currently vacant and/or underutilized sites and are not associated with actual development proposals, but are projected as locations for residential development based upon criteria developed by the State. For the EIR, the Opportunity Sites include an estimated 9,030 units. The sites inventory includes a total of 19,110 units. This total may not include all potential residential development sites within the City limits, and individual sites may or may not be developed at the allowable densities. The placement and design of buildings on specific sites cannot be determined until the City receives an application for a specific project.

The City has determined that rezoning is not needed to meet the RHNA. However, recent development activity suggests current zoning alone does not deliver the level of deed-restricted affordable housing and economic diversity that the HEU aims to achieve. Therefore, the Housing Element contains implementation programs and zoning policies to encourage additional housing, particularly affordable housing that supports a diversity of income levels and household types.

- R-1 and R-1A zoning districts (**Figure 2**) are anticipated to increase in density based on the State's adoption of SB 9 and a proposed Housing Element program to facilitate increased development in lower density residential districts. The EIR assumes 770 additional units distributed throughout the R-1 and R-1A districts for the 2023-2031 period.
- The Southside Zoning Modification Project proposes zoning map and height amendments to increase housing capacity and production to better meet student housing demand in the Southside Area (**Figure 3**) through changes in a targeted number of zoning parameters: building heights, building footprints (including setbacks and lot coverage), parking, ground-floor residential use, and adjustments to the existing zoning district boundaries. Given past development trends and the limited number of opportunity sites in the Southside, the EIR assumes an additional 1,000 units based on increased height and lot coverage zoning standards in the C-T, R-S and R-SMU districts for the 2023-2031 period.

Copies of the Draft EIR are available for review at: City of Berkeley Planning and Development Department at 1947 Center Street, 2nd Floor; the Central Library (2090 Kittredge St.); the Tarea Hall Pittman South Branch Library (1901 Russel Street); and the West Branch Library (1125 University Avenue). The EIR is also available on the City's website: <https://berkeleyca.gov/construction-development/land-use-development/general-plan-and-area-plans/housing-element-update>.

LOCATION: The project location includes neighborhoods throughout the City of Berkeley. Areas of the city not included in the proposed project include the Berkeley Waterfront, and the Manufacturing (M) and Mixed Manufacturing (MM) zoning districts.

PUBLIC COMMENT

All persons are welcome to attend the virtual hearing and will be given an opportunity to address the Commission. Comments may be made verbally at the public hearing and/or in writing before the hearing. The Commission may limit the time granted to each speaker.

Comments may be made verbally at the public hearing and in writing before the hearing. Written comments concerning this project should be directed to:

Planning Commission
Grace Wu, Secretary

Fax: (510) 981-7489
E-mail: gwu@cityofberkeley.info

Land Use Planning Division
1947 Center Street
Berkeley, CA 94704

Correspondence received by **12 noon, nine days** before this public hearing, will be included as a Communication in the agenda packet. Correspondence received after this deadline will be conveyed to the Commission and the public in the following manner:

- Correspondence received by **12 noon two days** before this public hearing, will be included in a Supplemental Packet, which will be posted to the online agenda as a Late Communication and emailed to Commissioners one day before the public hearing.
- Correspondence received by **5 pm one day** before this public hearing, will be included in a second Supplemental Packet, which will be posted to the online agenda as a Late Communication and emailed to the Commissioners by 5pm on the day of the public hearing.
- Correspondence received **after 5 pm one day** before this public hearing will be saved as part of the public record.

Note: It will not be possible to submit written comments at the meeting.

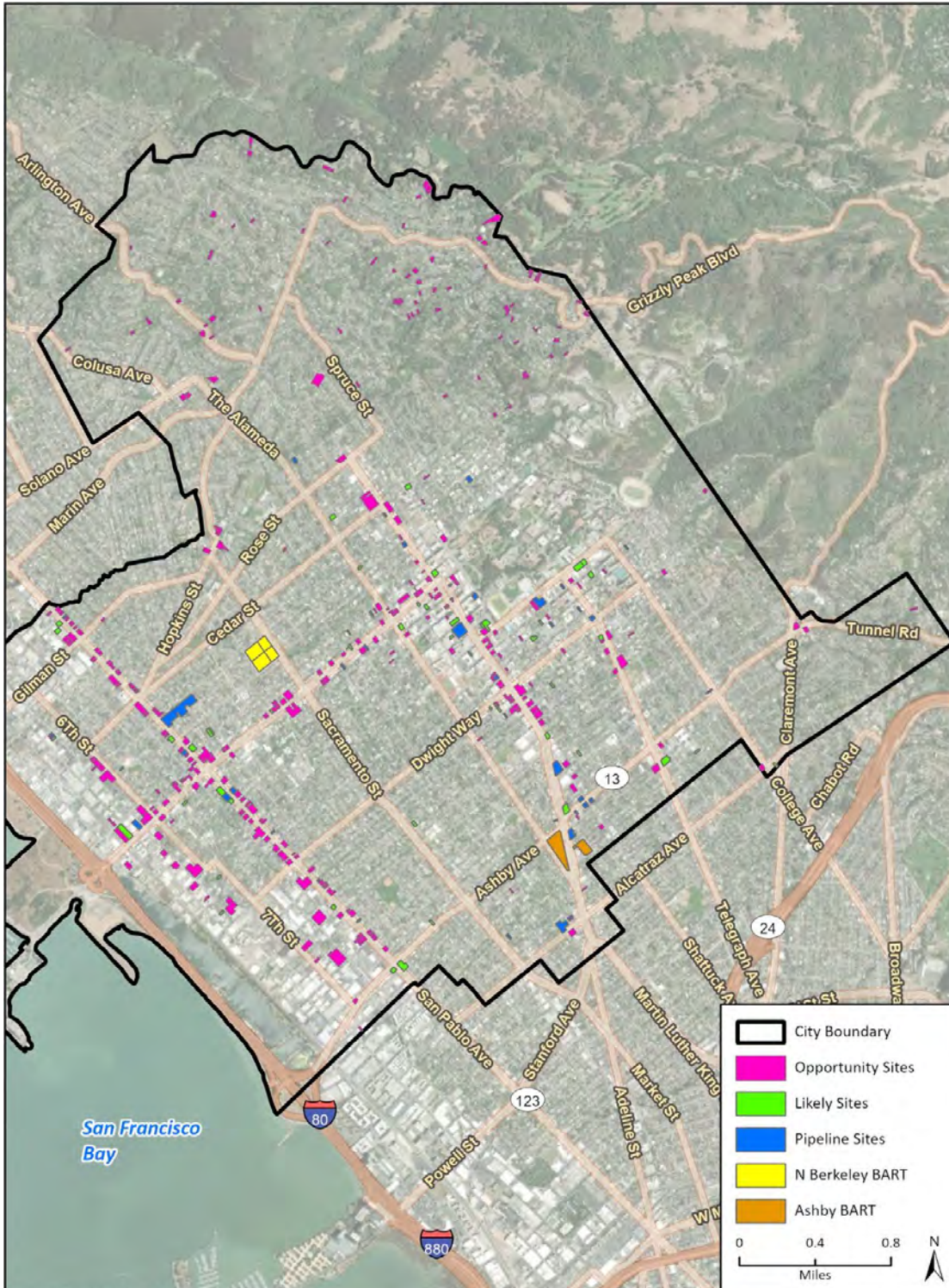
COMMUNICATION ACCESS

To request a meeting agenda in large print, Braille, or on audiocassette, or to request a sign language interpreter for the meeting, call (510) 981-7410 (voice), or 981-6903 (TDD). Notice of at least five (5) business days will ensure availability.

FURTHER INFORMATION

Questions should be directed to **Grace Wu**, at (510) 981-7489, or gwu@cityofberkeley.info. Past and future agendas are also available on the Internet at: <https://berkeleyca.gov/your-government/boards-commissions/planning-commission>.

Figure 1: EIR Sites Inventory Projection Locations



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Additional data provided by the City of Berkeley, 2022.

21-10047 Berkeley Housing Element
Sites Inventory - Overview

Figure 2: R-1 and R-1A Districts

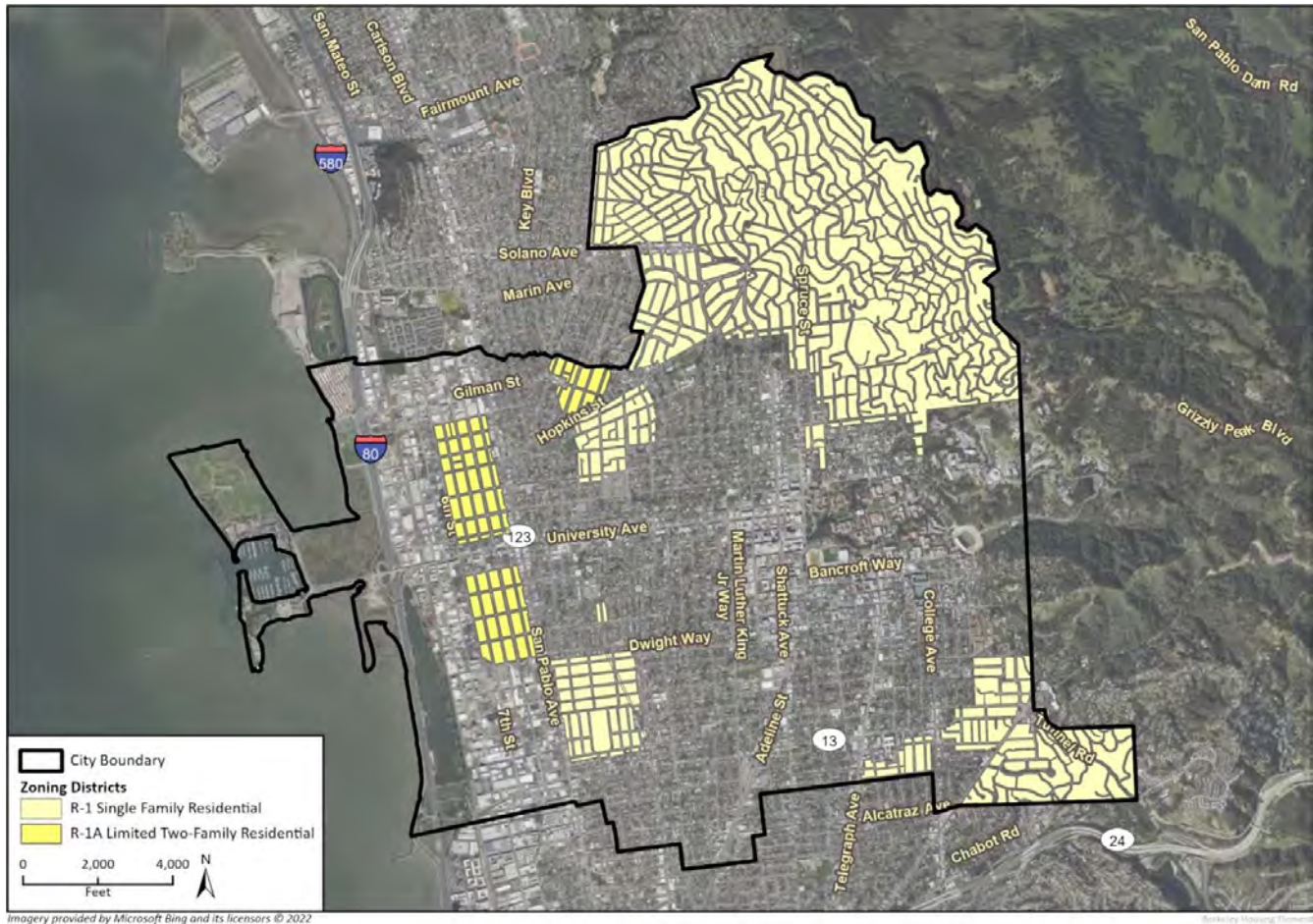
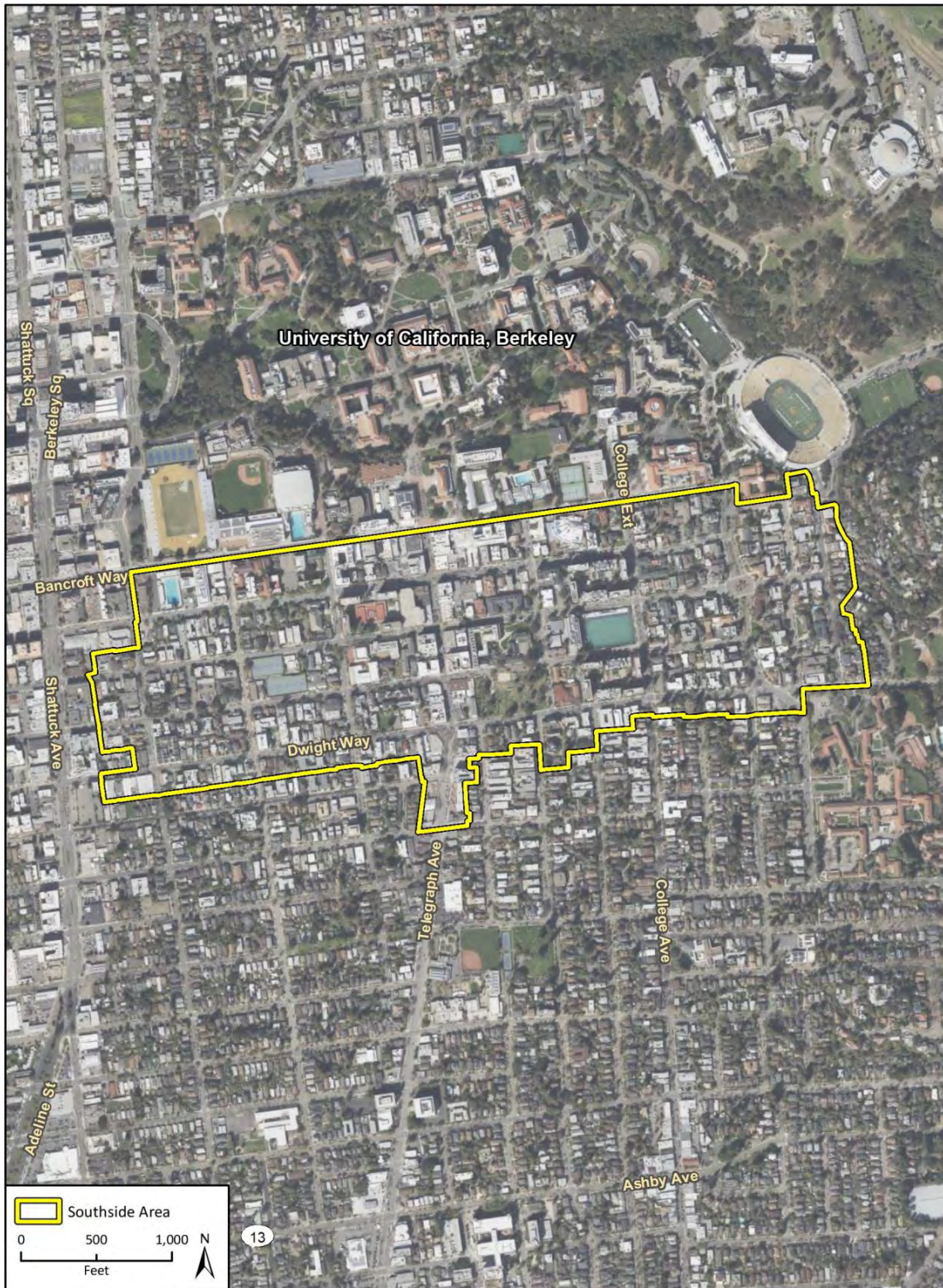


Figure 3: Southside Area



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Fig 2-5 Southside



City of Berkeley 2023-2031 Housing Element Update

Draft Environmental Impact Report

prepared by

City of Berkeley

Land Use Planning Division

1947 Center Street, 2nd Floor

Berkeley, California 94704

Contact: Grace Wu, Acting Principal Planner

prepared with the assistance of

Rincon Consultants, Inc.

449 15th Street, Suite 303

Oakland, California 94612

August 2022



RINCON CONSULTANTS, INC.

Environmental Scientists | Planners | Engineers

rinconconsultants.com

City of Berkeley 2023-2031 Housing Element Update

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Appendix B	Special Status Species Tables
Appendix C	Eligibility Status of Housing Inventory Sites
Appendix D	Energy Modeling Results
Appendix E	Greenhouse Gas Emissions Modeling Results
Appendix F	Noise Modeling Results and Vibration Calculations
Appendix G	Vehicle Miles Traveled Impact Assessment
Appendix H	AB 52 Correspondence

Executive Summary

This document is an Environmental Impact Report (EIR) analyzing the environmental effects of the City of Berkeley Housing Element Update (proposed project). This section summarizes the characteristics of the proposed project, alternatives to the proposed project, and the environmental impacts and mitigation measures identified for the proposed project.

Project Synopsis

Lead Agency/Project Proponent

City of Berkeley
1947 Center Street, 2nd Floor
Berkeley, California 94704
(510) 981-7400

Lead Agency Contact Person

Grace Wu, Acting Principal Planner
(510) 981-7400

Project Description

This EIR has been prepared to examine the potential environmental effects of the 2023-2031 Housing Element Update (HEU), herein referred to as the “proposed HEU” or “proposed project.” The following is a summary of the full project description, which can be found in Section 2, *Project Description*.

The proposed HEU would amend the City of Berkeley’s General Plan by replacing the current Housing Element with the proposed 2023-2031 Housing Element and amending the City’s General Plan as needed for consistency and HEU implementation.

The proposed HEU establishes policies and programs to further the goal of meeting the existing and projected housing needs of all household income levels of the community. In addition, the sites inventory provides evidence of the City’s ability to accommodate the Regional Housing Needs Allocation (RHNA) through the year 2031, as established by the Association of Bay Area Governments (ABAG). The City is required by the State Department of Housing and Community Development (HCD) to meet its RHNA and identify sufficient sites to accommodate 8,934 residential units to meet a fair share of the region’s anticipated population growth between 2023 to 2031. In addition, HCD recommends that cities identify a “buffer” of 15 to 30 percent above RHNA for lower- and moderate-income categories to account for No Net Loss (SB 166). Thus, the overall sites inventory must accommodate between approximately 10,274 and 11,614 units. The sites must be zoned to allow for residential uses and the zoning standards must allow for the unit capacities assumed in the sites inventory.

The City assessed capacity in three categories to meet the RHNA: likely sites, pipeline sites, and opportunity sites. The Likely Sites, Pipeline Sites and Opportunity Sites together constitute the EIR Sites Inventory. The specific number and location of units actually developed during the Housing Element period will differ from those included in the EIR Sites Inventory, but any difference would

City of Berkeley
City of Berkeley 2023-2031 Housing Element Update

result in fewer total units and a reduction of total physical sites for housing development. The sites inventory includes a total of 15,153 units, which also accounts for 800 accessory dwelling units (ADUs) based on recent development trends.

The City has determined based on the sites inventory that rezoning is not needed to meet the RHNA. However, recent development activity suggests current zoning alone does not deliver the level of deed-restricted affordable housing and economic and geographic diversity that the HEU aims to achieve. Therefore, the HEU contains implementation programs and zoning policies to encourage additional housing, particularly affordable housing that supports a diversity of income levels and household types. These include:

- **Middle Housing Rezoning.** R-1 R-1A, R-2, R-2A and MU-R districts are anticipated to increase in density based on the State's adoption of SB 9 and a proposed HEU program to facilitate increased development in lower density districts. The City would review and amend the Zoning Code and applicable objective development standards to encourage a mix of dwelling types and sizes, housing for middle- and moderate-income households, and increase the availability of affordable housing in a range of sizes to reduce displacement risk for residents living in overcrowded units or experiencing high housing cost burden. Using HCD's methodology, and to ensure that proposed zoning would not result in a reduction in allowable residential development, the EIR assumes 770 additional units distributed throughout the R-1 districts for the 2023-2031 period. Additionally, based on current development trends and anticipated zoning changes, 975 additional units are distributed throughout the R-1A, R-2, R-2A and MU-R districts, for a total of 1,745 middle housing units in the 2023-2031 period.
- **Southside Zoning Modification Project.** Southside Zoning Modification Project proposes amendments that could facilitate an additional 1,000 units compared to existing Southside Plan Area zoning. These proposed zoning modifications and a proposed HEU program for a local density bonus are intended to increase housing capacity and production to better meet student housing demand in the Southside through changes in a targeted number of zoning parameters: building heights, building footprints (including setbacks and lot coverage), parking, ground-floor residential use, and adjustments to the existing zoning district boundaries. Given past development trends and the limited number of opportunity sites in the Southside, this EIR assumes an additional 1,000 units in portions of the C-T, R-S and R-SMU districts within the Southside for the 2023-2031 period.

For the purposes of the HEU CEQA analysis, this EIR assesses a higher amount of development potential than the total HEU sites inventory capacity in order to fully analyze possible environmental impacts based on proposed HEU implementation programs, account for the possibility that proposed projects could utilize State Density Bonus, and to account for a scenario in which development occurs at a rate higher than it has historically. The buildout projection for this EIR consists of a projection based on the EIR Sites Inventory of 15,153 units, an additional 1,200 units at the Ashby and North Berkeley BART stations, as well as projections for implementation programs related to the R-1, R-1A, R-2, R-2A and MU-R zoning districts and the Southside Zoning Modification Project, totaling 2,745 units. Overall, this EIR assumes 19,098 units associated with the proposed HEU.

The specific number and location of units actually developed during the Housing Element period will differ from those included in the EIR Projected Buildout, but any difference would result in fewer total units and a reduction of total physical sites for housing development. However, future development proposals would be reviewed to determine whether their impacts fall within the scope

of this EIR, or if additional site-specific environmental review will be required. Subsequent environmental documents, when required, could tier from the HEU EIR and focus on any new significant impacts in accordance with *CEQA Guidelines* Sections 15152 and 15385.

Project Objectives

The project presents a comprehensive set of housing policies and programs for the years 2023-2031 and will encompass the entire City of Berkeley. The project will be based on the Association of Bay Area Governments' (ABAG) 6th Cycle RHNA and will:

1. Adopt policies and programs that meet the City's RHNA with the required buffer, provide additional housing opportunities consistent with other City priorities, remove governmental constraints to the maintenance, improvement and development of housing, and ensure ongoing compliance with State Housing Element law and the No Net Loss provisions of State law through the eight-year cycle.
2. Adopt policies and programs to encourage the development of affordable housing at a range of income levels consistent with RHNA, including at least 2,450 units for Very Low-Income households, at least 1,400 units for Low Income households, and at least 1,400 units for Moderate Income households.
3. Encourage the development of housing with access to transit, jobs, services, and community benefits in a manner that distributes affordable and special needs housing in high resource neighborhoods and affirmatively furthers fair housing.
4. Identify housing policies and programs that will conserve and rehabilitate existing units, provide services to increase housing opportunities for all residents of Berkeley, and increase the energy efficiency of both current and future housing units.

Alternatives

As required by the California Environmental Quality Act (CEQA), this EIR examines alternatives to the proposed project. Studied alternatives include the following three alternatives. Based on the alternatives analysis, Alternative 3 was determined to be the environmentally superior alternative.

- Alternative 1: No Project
- Alternative 2: No Rezoning in Hillside Overlay
- Alternative 3: No Middle Housing Rezoning

Alternative 1: No Project Alternative. The "No Project" Alternative 1 involves continued implementation of the existing 2015-2023 Housing Element. Alternative 1 also assumes that the City's existing plan and policies would continue to accommodate development in accordance with existing land use designations. This alternative would result in less impacts to aesthetics, air quality, biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, public services and recreation, tribal cultural resources, utilities and service systems, and wildfire due to the decrease in residential units developed. However, impacts relating to transportation would be greater than under the Project as this alternative would not prioritize development in Priority Development Areas or near transit corridors, and therefore would not decrease VMT since fewer residents would be in proximity to transit, jobs, and services. In addition, this alternative would not eliminate the unavoidably significant impacts related to historical

resources, construction noise, and wildfire. Furthermore, Alternative 1 would not fulfill Project Objective 1 because the continued implementation of the existing 2015-2023 Housing Element would result in the development of fewer residential units and therefore, would not accommodate employment, housing, and population growth projections forecasted through the planning horizon year of 2031 to the same extent as under the proposed HEU. In addition, Alternative 1 would not fulfill Project Objectives 2 and 3 because continued implementation of the existing 2015-2023 Housing Element would not address the need for additional affordable housing options throughout Berkeley in a manner that affirmatively furthers fair housing.

Alternative 2: the No Rezoning in the Hillside Overlay. An implementation program of the proposed HEU is to increase density in the R-1, R-1A, R-2, R-2A and MU-R districts. Under this alternative, this program would not apply to portions of the R-1 district within the Hillside Overlay (R-1H district). Alternative 2 would include the same development as the proposed HEU; therefore, impacts would be equal to that of the proposed HEU. Alternative 2 would continue to fulfill Project Objectives as it would be able to accommodate employment, housing, and population growth projections forecasted through the planning horizon year of 2031; increase affordable housing options throughout the city; and place housing in proximity to transit, jobs, services, and community benefits.

Alternative 3: No Middle Housing Rezoning. This alternative includes approximately 975 fewer units than the buildout included in the analysis of the proposed project. This alternative would result in less impacts to aesthetics, air quality, biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, public services and recreation, tribal cultural resources, utilities and service systems and wildfire due to the decrease in residential units developed. However, impacts relating to transportation would be greater than under the proposed HEU as this alternative would not prioritize development near in Transit Priority Areas or major transit corridors, and therefore would not decrease VMT since fewer residents would be in proximity to transit, jobs, and services. Also, as the alternative makes no changes to the proposed project within the City's Very High Fire Hazard Severity Zones (VHFHSZ), wildfire impacts would be the same as under the proposed project. In addition, this alternative would not eliminate the unavoidably significant impacts related to historical resources, construction noise, and wildfire. Nevertheless, as Alternative 3 slightly reduces the severity of impacts resulting from the proposed project, it is the environmentally superior alternative.

Refer to Section 6, *Alternatives*, for the complete alternatives analysis.

Areas of Known Controversy

The EIR scoping process identified several areas of known controversy for the proposed project including transportation and biological resources impacts. Responses to the Notice of Preparation of a Draft EIR and input received at the EIR scoping meeting held by the City are summarized in Section 1, *Introduction*.

Issues to be Resolved

There are no issues to be resolved that have been identified.

Issues Not Studied in Detail in the EIR

Due to the unique conditions of the City, there is no substantial evidence that significant impacts would occur related to agricultural and forestry resources and mineral resources. All other CEQA topics are discussed in the EIR.

Summary of Impacts and Mitigation Measures

Table ES-1 summarizes the environmental impacts of the proposed project, proposed mitigation measures, and residual impacts (the impact after application of mitigation, if required). Although distinct from mitigation measures, project design features (PDFs) are also listed because they will be included as conditions of approval by the City to avoid potential biological and geological impacts. Impacts are categorized as follows:

- **Significant and Unavoidable.** An impact that cannot be reduced to below the threshold level given reasonably available and feasible mitigation measures. Such an impact requires a Statement of Overriding Considerations to be issued if the project is approved per *CEQA Guidelines* Section 15093.
- **Less than Significant with Mitigation Incorporated.** An impact that can be reduced to below the threshold level given reasonably available and feasible mitigation measures. Such an impact requires findings under *CEQA Guidelines* Section 15091.
- **Less than Significant.** An impact that may be adverse, but does not exceed the threshold levels and does not require mitigation measures. However, mitigation measures that could further lessen the environmental effect may be suggested if readily available and easily achievable.
- **No Impact:** The proposed project would have no effect on environmental conditions or would reduce existing environmental problems or hazards.

Table ES-1 Summary of Environmental Impacts, Mitigation Measures, and Residual Impacts

Impact	Mitigation Measure (s)	Residual Impact
Aesthetics		
Impact AES-1. Implementation of the proposed HEU would alter the development pattern of the city such that scenic views of and from public viewpoints could be adversely affected. Potential future new development throughout the city could block views of a scenic vista from some public viewpoints. However, this would occur on individual sites and would be limited. This impact would be less than significant.	None required.	Less than Significant
Impact AES-2. There are no designated or eligible Scenic Highways in Berkeley or with substantial views of Berkeley. Implementation of the proposed HEU not damage scenic resources visible from a Scenic Highway. No impact would occur.	None required.	Less than Significant
Impact AES-3. Berkeley is urbanized and future development under the proposed HEU would not conflict with applicable zoning and other regulations governing scenic quality. This impact would be less than significant.	None required.	Less than Significant
Impact AES-4. Development facilitated by the proposed HEU would create new sources of light or glare that could adversely affect daytime or nighttime views in the area. However, Berkeley is already largely built out with sources of light and glare throughout the city and development would not substantially add to existing light and glare. With compliance with existing regulations, this impact would be less than significant.	None required.	Less than Significant
Air Quality		
Impact AQ-1. The proposed HEU would not conflict with the control measures within the 2017 Clean Air Plan, and VMT increase from the project would be less than the project's project population increase. Therefore, this impact would be less than significant.	None required.	Less than Significant
Impact AQ-2. Construction facilitated by the project would temporarily increase air pollutant emissions, which would affect local air quality. Adherence to Mitigation Measure AQ-1 and the City's Standard Conditions of Approval would reduce construction emissions. This impact would be less than significant with mitigation incorporated.	AQ-1 Construction Emissions Reduction Measures. As part of the City's development approval process, the City shall require applicants for future development projects within the project sites to comply with the current Bay Area Air Quality Management District's basic control measures for reducing construction emissions of PM10 (Table 8-2, Basic Construction Mitigation Measures Recommended for All Proposed Projects, of the May 2017 BAAQMD CEQA Guidelines), outlined below.	Less than Significant

Impact	Mitigation Measure (s)	Residual Impact
	<ol style="list-style-type: none"> 1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times a day. 2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered. 3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. 4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour. 5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. 6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California Airborne Toxics Control Measure Title 13, Section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points. 7. All construction equipment shall be maintained and properly tuned in accordance with manufacture’s specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper conditions prior to operation. 8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District’s number shall also be visible to ensure compliance with applicable regulations. 	
<p>Impact AQ-3. Construction activities for individual projects lasting longer than two months or located within 1,000 feet of sensitive receptors could expose sensitive receptors to substantial pollutant concentrations. Additionally, development facilitated by the project would site new sensitive land uses near Interstate 580/80 which may expose them to substantial pollutant concentrations. This impact would be less than significant with mitigation.</p>	<p>AQ-2 Construction Health Risk Assessment. For individual projects (excluding ADUs, single-family residences, and duplexes) where construction activities would occur within 1,000 feet of sensitive receptors, would last longer than two months, and would not utilize Tier 4 and/or alternative fuel construction equipment, the project applicant shall prepare a construction health risk assessment (HRA). The HRA shall determine potential risk and compare the risk to the following BAAQMD thresholds:</p>	<p>Less than Significant</p>

Impact	Mitigation Measure (s)	Residual Impact
	<ul style="list-style-type: none"> ▪ Non-compliance with Qualified Community Risk Reduction Plan; ▪ Increased cancer risk of > 10.0 in a million; ▪ Increased non-cancer risk of > 1.0 Hazard Index (Chronic or Acute); or ▪ Ambient PM_{2.5} increase of > 0.3 µg/m³ annual average <p>AQ-3 TAC Exposure Reduction Building Measures. The following design features shall be incorporated for residential development located within 1,000 feet of I-580/80 or on a lot that fronts on a section of roadway with 10,000 vehicles per day or more in order to reduce exposure of proposed residences to TACs from vehicles and stationary combustion engines (i.e., generators):</p> <ol style="list-style-type: none"> 1. If the proposed buildings would use operable windows or other sources of infiltration of ambient air, the development shall install a central HVAC system that includes high efficiency particulate filters (HEPA). These types of filters are capable of removing approximately 99.97 percent of the DPM emissions from air introduced into the HVAC system (U.S. EPA 2022). The system may also include a carbon filter to remove other chemical matter. Filtration systems must operate to maintain positive pressure within the building interior to prevent entrainment of outdoor air indoors. 2. If the development limits infiltration through non-operable windows, a suitable ventilation system shall include a ventilation system with filtration specifications equivalent to or better than the following: (1) American Society of Heating, Refrigerating and Air- Conditioning Engineers MERV-13 supply air filters, (2) greater than or equal to one air exchanges per hour of fresh outside filtered air, (3) greater than or equal to four air exchanges per hour recirculation, and (4) less than or equal to 0.25 air exchanges per hour in unfiltered infiltration. These types of filtration methods are capable of removing approximately 90 percent of the DPM emissions from air introduced into the HVAC system. 3. Windows and doors shall be fully weatherproofed with caulking and weather-stripping that is rated to last at least 20 years. Weatherproof should be maintained and replaced by the property owner, as necessary, to ensure functionality for the lifetime of the project. 	

Impact	Mitigation Measure (s)	Residual Impact
	4. Where appropriate, install passive (drop-in) electrostatic filtering systems, especially those with low air velocities (i.e., 1 mph). 5. Prepare an ongoing maintenance plan for the HVAC and filtration systems, consistent with manufacturers' recommendations. The applicant shall inform occupants regarding the proper use of any installed air filtration system.	
Impact AQ-4. Development facilitated by the project would not create objectionable odors that could affect a substantial number of people. This impact would be less than significant.	None required.	Less than Significant
Biological Resources		
Impact BIO-1. Development facilitated by the proposed HEU may result in direct or indirect impacts to special-status species or their associated habitats, and impacts to nesting birds. This impact would be less than significant.	None required.	Less than Significant
Impact BIO-2. Implementation of the proposed HEU may directly or indirectly impact riparian habitat, sensitive natural communities, or protected wetlands in the City of Berkeley. Implementation of federal, State, and local regulations and policies would ensure riparian habitat and wetlands are not significantly impacted. This impact would be less than significant.	None required.	Less than Significant
Impact BIO-3. Implementation of the proposed HEU may result in impacts to state or federally protected wetlands. This impact would be less than significant.	None required.	Less than Significant
Impact BIO-4. Implementation of the proposed HEU would not substantially impede the movement of native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors with compliance with existing and proposed regulations. This impact would be less than significant.	None required.	Less than Significant
Impact BIO-5. Implementation of the proposed HEU would not conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. This impact would be less than significant.	None required.	Less than Significant

Impact	Mitigation Measure (s)	Residual Impact
<p>Impact BIO-6. Implementation of the proposed HEU would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan. No impact would occur.</p>	<p>None required.</p>	<p>No Impact</p>
<p>Cultural Resources</p>		
<p>Impact CUL-1. Development accommodated by the proposed Housing Element Update could adversely affect known and previously unidentified historic-period resources. Impacts to historic-period resources would be significant and unavoidable with mitigation.</p>	<p>CUL-1 Historic Context Statement, Cultural Resources Survey and Designations. During the period of this Housing Element, the City should conduct a citywide historic context statement and a cultural resource survey to identify historic resources, with priority given to sites in the EIR Site Inventory, to determine if there are designed built environment features which are over 40 years of age proposed to be altered or demolished. Designation of historic or cultural resources should be conducted by the Landmarks Preservation Commission pursuant to 3.24.260 of the Berkeley Municipal Code.</p> <p>CUL-2 Historical Resources Discretionary Review. For projects that are subject to discretionary review that occur during the Housing Element period where a historical-age building or structure that has not been previously evaluated is present, a historical resources assessment shall be performed by an architectural historian or historian who meets the Secretary of the Interior Professional Qualification Standards (PQS) in architectural history or history. The qualified architectural historian or historian shall conduct an intensive-level survey in accordance with the California Office of Historic Preservation guidelines to determine if the property qualifies for federal, state, or local historical resources designation. All age eligible properties shall be evaluated within their historic context and documented in a technical memorandum with Department of Parks and Recreation Series 523 Forms.</p> <p>Should a property be found to be a qualifying historical resource, the project shall be subject to the City’s regulations for permit review, including by the Preservation Landmarks Commission pursuant to Chapter 3.24.260, and/or by the Zoning Adjustments Board pursuant to Chapter 23.326 of the City of Berkeley Municipal Code. Efforts shall be made to the extent feasible to ensure that impacts are mitigated. Application of mitigation shall generally be overseen by a qualified architectural historian or historic architect meeting the PQS, unless unnecessary in the circumstances (e.g., preservation in place). In conjunction with a development application that may affect the historical resource, the historical resources built environment</p>	<p>Significant and Unavoidable</p>

Impact	Mitigation Measure (s)	Residual Impact
	<p>assessment shall also identify and specify the treatment of character-defining features and construction activities.</p> <p>Efforts shall be made to the greatest extent feasible to ensure that the relocation, rehabilitation, or alteration of the resource is consistent with the Secretary of the Interior’s Standards for the Treatments of Historic Properties (Standards). In accordance with CEQA, a project that has been determined to conform with the Standards generally would not cause a significant adverse direct or indirect impact to historical resources (14 CCR § 15126.4(b)(1)). Application of the Standards shall be overseen by a qualified architectural historian or historic architect meeting the PQS. In conjunction with any development application that may affect the historical resource, a report identifying and specifying the treatment of character-defining features and construction activities shall be provided to the City for review and concurrence. As applicable, the report shall demonstrate how the project complies with the Standards and be submitted to the City for review and approval prior to the issuance of permits.</p> <p>If significant historical resources are identified on a development site and compliance with the Standards and or avoidance is not possible, appropriate site-specific mitigation measures shall be established and undertaken. These may include documentation of the resource in a manner consistent with the standards of the Historic American Building Survey (HABS). Documentation should include full descriptive and historical narrative, measured drawings, and medium format photographs, all in archivally stable format.</p>	
<p>Impact CUL-2. Development accommodated by the housing element update could adversely affect identified and previously unidentified archaeological Resources. Impacts would be less than significant with required adherence to the City’s Standard Conditions of Approval for archaeological resources.</p>	<p>None required.</p>	<p>Less than Significant</p>
<p>Impact CUL-3. Ground-disturbing activities associated with development under the housing element update could result in damage to or destruction of human burials. Impacts would be less than significant through adherence to state health and safety code section 7050.5 and public resources code section 5097.98.</p>	<p>None required.</p>	<p>Less than Significant</p>

Impact	Mitigation Measure (s)	Residual Impact
<p>Cumulative Impact: Development pursuant to the Housing Element Update and the LRDP would have the potential to impact historical resources. Historic-period resources could be vulnerable to development activities that could result in damage to or demolition of cultural resources. As noted above in CUL-2, the proposed project would result in significant and unavoidable impacts to historical resources. Adherence to Mitigation Measures CUL-1 and CUL-2 would reduce or avoid some but not all potential impacts to historical resources in Berkeley. Therefore, cumulative historical resources impacts would be significant, and the project’s contribution would be cumulatively considerable.</p>	<p>No feasible mitigation measures have been identified.</p>	<p>Cumulatively considerable impact.</p>
Energy		
<p>Impact E-1. Project construction and operation would require temporary and long-term consumption of energy resources. However, with adherence to State and local regulations, the project would not result in the wasteful, inefficient, or unnecessary consumption of energy resources. This impact would be less than significant.</p>	<p>None required.</p>	<p>Less than Significant</p>
<p>Impact E-2. The proposed HEU would be consistent with the State plans and General Plan policies related to energy efficiency and utilizing renewable energy. This impact would be less than significant.</p>	<p>None required.</p>	<p>Less than Significant</p>
Geology and Soils		
<p>Impact GEO-1. A portion of Berkeley is located within the Hayward Fault zone. Development facilitated by the proposed HEU is subject to seismically-induced ground shaking and other seismic hazards, including liquefaction and landslides, which could damage structures and result in loss of property and risk to human health and safety. However, implementation of State-mandated building standards and compliance with the Alquist-Priolo Act Earthquake Fault Act, the CBC, the Berkeley General Plan’s policies and actions, and the BMC would reduce impacts to a less than significant level.</p>	<p>None required.</p>	<p>Less than Significant</p>
<p>Impact GEO-2. With adherence to applicable laws and regulations, the proposed project would not result in substantial soil erosion or the loss of topsoil. Therefore, this impact would be less than significant.</p>	<p>None required.</p>	<p>Less than Significant</p>
<p>Impact GEO-3. Portions of Berkeley are located on expansive soils. However, with required implementation of standard engineering practices, impacts associated with unstable or expansive soils would be less than significant.</p>	<p>None required.</p>	<p>Less than Significant</p>

Impact	Mitigation Measure (s)	Residual Impact
<p>Impact GEO-4. The proposed project would not include septic tanks or alternative wastewater disposal systems. No impact would occur.</p>	<p>None required.</p>	<p>Less than Significant</p>
<p>Impact GEO-5. Development facilitated by the proposed HEU has the potential to impact paleontological resources. This impact would be less than significant with mitigation incorporated.</p>	<p>GEO-1 Protection of Paleontological Resources. If ground disturbance below the level of prior disturbance and into native soils is proposed to occur in areas mapped as Pleistocene alluvial fan and fluvial deposits (Qpaf), Orinda Formation (Tor), or Knoxville Formation (Kjk), then the City shall require the following to be implemented:</p> <p>Retention of Qualified Professional Paleontologist. Prior to initial ground disturbance, the project applicant shall retain a Qualified Professional Paleontologist, as defined by Society of Vertebrate Paleontology (SVP) (2010), to determine the project’s potential to significantly impact paleontological resources according to SVP (2010) standards.</p> <p>If underlying formations are found to have a high potential for paleontological resources, the Qualified Professional Paleontologist shall create a Paleontological Mitigation and Monitoring Program, which will be approved by the City and contain the following elements:</p> <p>If underlying formations are found to have a high potential for paleontological resources, the Qualified Paleontologist shall create a Paleontological Mitigation and Monitoring Program, which will be approved by the City and contain the following elements:</p> <p>Paleontological Worker Environmental Awareness Program (WEAP). Prior to the start of construction, the Qualified Professional Paleontologist or their designee shall conduct a paleontological Worker Environmental Awareness Program (WEAP) training for construction personnel regarding the appearance of fossils and procedures for notifying paleontological staff should fossils be discovered by construction staff.</p> <p>Paleontological Monitoring. Full-time paleontological monitoring shall be conducted during ground disturbing construction activities (i.e., grading, trenching, foundation work) in sediments assigned a high paleontological sensitivity. Paleontological monitoring shall be conducted by a qualified Paleontological Resources Monitor, as defined by the SVP (2010). The duration and timing of the monitoring will be determined by the Qualified Professional Paleontologist based on the observation of the geologic setting from initial ground disturbance, and subject to the review and approval by the City. If the Qualified Professional Paleontologist determines that full-time monitoring is no longer warranted, based on the specific geologic conditions once the full depth of excavations has been reached, they may</p>	<p>Less than Significant with Mitigation</p>

Impact	Mitigation Measure (s)	Residual Impact
	<p>recommend that monitoring be reduced to periodic spot-checking or ceased entirely. Monitoring shall be reinstated if any new ground disturbances are required, and reduction or suspension shall be reconsidered by the Qualified Professional Paleontologist at that time. In the event of a fossil discovery by the paleontological monitor or construction personnel, all work in the immediate vicinity of the find shall cease. A Qualified Professional Paleontologist shall evaluate the find before restarting construction activity in the area. If it is determined that the fossil(s) is (are) scientifically significant, the Qualified Professional Paleontologist shall complete the following conditions to mitigate impacts to significant fossil resources.</p> <p>Upon completion of ground disturbing activity (and curation of fossils if necessary) the Qualified Professional Paleontologist shall prepare a final report describing the results of the paleontological monitoring efforts associated with the project. The report shall include a summary of the field and laboratory methods, an overview of the project geology and paleontology, a list of taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, and recommendations. The report shall be submitted to the City. If the monitoring efforts produced fossils, then a copy of the report shall also be submitted to the designated museum repository.</p>	
Greenhouse Gas Emissions		
<p>Impact GHG-1. Future development under the proposed HEU would not directly or indirectly generate GHG emissions that would have a significant effect on the environment. GHG emissions from the project would not exceed BAAQMD 2031 interpolated thresholds. This impact would be less than significant.</p>	<p>None required.</p>	<p>Less than Significant</p>
<p>Impact GHG-2. The proposed HEU would not conflict with GHG reduction goals and policies in the 2017 Scoping Plan, Plan Bay Area 2050, the City’s General Plan, or the City’s CAP. This impact would be less than significant.</p>	<p>None required.</p>	<p>Less than Significant</p>

Impact	Mitigation Measure (s)	Residual Impact
Hazards and Hazardous Materials		
<p>Impact HAZ-1. Implementation of the proposed HEU would facilitate new residential development in Berkeley. Proposed new residential uses would not involve the routine transportation, use, or disposal of hazardous materials. However, construction of new residences could result in an increase in the overall routine, transport, use and disposal of hazardous materials in Berkeley for construction activities. Nonetheless, required compliance with applicable regulations related to hazardous materials and compliance with General Plan policies would minimize the risk of releases and exposure to these materials. Impacts would be less than significant.</p>	None required.	Less than Significant
<p>Impact HAZ-2. Implementation of the proposed HEU may result in hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school. However, compliance with existing regulatory requirements would minimize risks to schools and students, resulting in a less than significant impact.</p>	None required.	Less than Significant
<p>Impact HAZ-3. Implementation of the proposed HEU would accommodate development on or near hazardous materials sites. However, compliance with applicable regulations and the City's Standard Conditions of Approval requiring site characterization and cleanup would minimize hazards from development on contaminated sites. This impact would be less than significant.</p>	None required.	Less than Significant
<p>Impact HAZ-4. There are no airports within two miles of the Berkeley, and Berkeley is not within the influence area of an airport. No impact would occur.</p>	None required.	Less than Significant
<p>Impact HAZ-5. The proposed HEU would not result in physical changes that could interfere with or impair emergency response or evacuation. Therefore, the project would not result in interference with these types of adopted plans. This impact would be less than significant.</p>	None required.	Less than Significant.

Impact	Mitigation Measure (s)	Residual Impact
Hydrology and Water Quality		
<p>Impact HYD-1. Future development under the proposed HEU would involve ground-disturbing activities and the use of heavy machinery that could release materials, including sediments and fuels, which could adversely affect water quality. Operation of potential future development could also result in discharges to storm drains that could be contaminated and affect downstream waters. However, compliance with required permits and existing regulations, and implementation of Best Management Practices contained therein, would ensure that potential water quality impacts would be less than significant.</p>	None required.	Less than Significant
<p>Impact HYD-2. Future development facilitated under the proposed HEU would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table. Further, implementation of low impact development measures and on-site infiltration required under the C.3 provisions of the MRP, and compliance with the Berkeley Municipal Code would increase the potential for groundwater recharge. Impacts would be less than significant.</p>	None required.	Less than Significant
<p>Impact HYD-3. Development under the proposed HEU would not substantially alter the existing drainage pattern of future development sites, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site or substantially increase the rate or amount of surface runoff in a manner which would result in flooding or exceed the capacity of stormwater drainage systems. Impacts related to drainage patterns would be less than significant.</p>	None required.	Less than Significant
<p>Impact HYD-4. Development under the proposed HEU would place housing and other structures within FEMA-designated Flood Hazard Areas and tsunami zones. However, compliance with the General Plan, the BMC, and the California Health and Safety Code would reduce potential effects associated with flood events. This impact would be less than significant.</p>	None required.	Less than Significant

Impact	Mitigation Measure (s)	Residual Impact
Land Use and Planning		
Impact LU-1. The proposed HEU includes policies and programs to encourage housing development on underutilized and vacant sites and along established commercial corridors and neighborhoods. Development under the proposed HEU would not physically divide an established community. No impact would occur.	None required.	No Impact
Impact LU-2. The proposed HEU would be consistent with the goals and policies of Plan Bay Area 2050, the Berkeley General Plan, and the BMC. This impact would be less than significant.	None required.	Less than Significant
Noise		
Impact NOI-1. Construction associated with housing development accommodated under the proposed HEU would be required to comply with the allowed daytime construction hours as set forth in the Berkeley Municipal Code and therefore, would not occur during nighttime hours when people are more sensitive to noise. Larger developments could involve construction with lengthy durations, substantial soil movement, use of large, heavy-duty equipment, and/or pile driving near noise-sensitive land uses that would exceed the applicable FTA daytime noise limits. Implementation of City Standard Conditions of Approval for construction noise would reduce construction noise levels, but may not reduce them to below thresholds for every project. Therefore, impacts generated by temporary construction noise would be significant and unavoidable.	No feasible mitigation measures have been identified.	Significant and Unavoidable
Impact NOI-2. Housing development accommodated under the proposed HEU could include mechanical equipment (i.e., HVAC), delivery and trash trucks, and other noise-generating activities. However, such activities would be similar to the existing noise environment. In addition, on-site activities would be required to comply with applicable noise standards in the Berkeley Municipal Code. Furthermore, while housing development would generate vehicle trips in the city, the increase in mobile noise would not result in a perceptible (3-dBA or greater) noise increase. Permanent noise increases due to operation of new development under the proposed HEU would be less than significant.	None required.	Less than Significant

Impact	Mitigation Measure (s)	Residual Impact
<p>Impact NOI-3. Housing development accommodated under the proposed HEU would not involve operational activities that would result in substantial vibration levels (e.g., use of heavy equipment or machinery). Construction activities would be required to implement the City’s Standard Conditions of Approval that control vibration. This impact would be less than significant.</p>	<p>None required.</p>	<p>Less than significant.</p>
<p>Impact NOI-4. Housing developments accommodated under the proposed HEU would not be exposed to intermittent noise levels from overhead flight patterns from airports in the city as there are none located within the City. Furthermore, while the project would not emphasize building housing in the immediate vicinity of the airport, all residential development would, nonetheless, be required to incorporate noise insulation features per State and local standards to reduce interior noise levels to below 45 dBA. Therefore, the impact of airport or airstrip operations on new development would be less than significant.</p>	<p>None required.</p>	<p>Less than Significant</p>
<p>Cumulative Impact: Construction of future development projects in Berkeley would produce temporary noise impacts that would be localized to a project site and sensitive receivers within the immediate vicinity. Therefore, only sensitive receivers located in close proximity to each construction site would be potentially affected by each activity. Nonetheless, construction activities associated with individual housing development projects accommodated under the proposed Housing Element Update may overlap for some time with construction activities for other development projects. Based on the locations of the potential housing sites displayed in Figure 2-4 of Section 2, Project Description, this could substantially increase noise levels at specific neighboring noise-sensitive receivers since many sites are located in proximity to each other. Therefore, concurrent construction of development projects accommodated under the proposed Housing Element Update could result in cumulatively considerable impacts. This impact would be cumulatively considerable and cumulative impacts would be significant and unavoidable.</p>	<p>No feasible mitigation measures have been identified.</p>	<p>Cumulatively considerable impact.</p>

Impact	Mitigation Measure (s)	Residual Impact
Population and Housing		
<p>Impact POP-1. This EIR assumes full buildout of 19,098 residential units in Berkeley through 2031, which equates to a population increase of an estimated 47,443 residents compared to the existing population. However, growth resulting from the project is anticipated and would not constitute substantial unplanned population growth. This impact would be less than significant.</p>	None required.	Less than Significant
<p>Impact POP-2. Implementation of proposed project would not result in the displacement of substantial numbers of people or housing. The proposed project would facilitate the development of new housing in accordance with State and local housing requirements, while preserving existing residential neighborhoods. This impact would be less than significant.</p>	None required.	Less than Significant
Public Services and Recreation		
<p>Impact PS-1. Development facilitated by the proposed HEU would result in an increase of population and buildings within Berkeley. The projected population increase would increase demand for fire protection services and potentially create the need for a new or altered fire station. However, compliance with policies in the 2020 General Plan would reduce impacts related to fire service facilities to a less than significant level.</p>	None required.	Less than Significant
<p>Impact PS-2. Development facilitated by the proposed HEU would result in an increase in the City's population. The projected population increase would increase demand for police protection services and potentially create the need for new or altered police service facilities. However, compliance with policies in the 2020 General Plan would reduce impacts related to police facilities to a less than significant level.</p>	None required.	Less than Significant
<p>Impact PS-3. Development facilitated under the proposed HEU would result in an increase in population in Berkeley, resulting in the need for additional or expanded school facilities. However, Government Code 65995 (b) would require funding for the provision or expansion of new school facilities to offset impacts from new residential development. Therefore, this impact would be less than significant.</p>	None required.	Less than Significant

Impact	Mitigation Measure (s)	Residual Impact
<p>Impact PS-4. Development associated with the proposed HEU would increase the population of Berkeley and the use of existing parks and recreational facilities. However, additional recreational opportunities are available adjacent to the City and donation of parkland pursuant to the Quimby Act would be required prior to occupancy of individual projects. No plans for the expansion or construction of new parks or recreational facilities are anticipated. Therefore, this impact would be less than significant.</p>	<p>None required.</p>	<p>Less than Significant</p>
<p>Transportation</p>		
<p>Impact TRA-1. The proposed HEU would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. This impact would be less than significant.</p>	<p>None required.</p>	<p>Less than Significant</p>
<p>Impact TRA-2. The proposed HEU not conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b). This impact would be less than significant.</p>	<p>None required.</p>	<p>Less than Significant</p>
<p>Impact TRA-3. The proposed HEU would not substantially increase hazards because of a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). This impact would be less than significant.</p>	<p>None required.</p>	<p>Less than Significant</p>
<p>Impact TRA-4. The proposed HEU would not have the potential to result in inadequate emergency access. This impact would be less than significant.</p>	<p>None required.</p>	<p>Less than Significant</p>
<p>Tribal Cultural Resources</p>		
<p>Impact TCR-1. Development during the planning period of the proposed HEU could adversely impact tribal cultural resources due to ground disturbing activity during construction. This impact would be less than significant with mitigation incorporated.</p>	<p>TCR-1 Tribal Cultural Monitoring. For future projects that are determined through tribal consultation to potentially affect tribal cultural resources, in order to mitigate potential adverse impacts to Native American cultural objects and human remains discovered during construction, tribal cultural monitors will be retained to monitor work done in areas of Tribal concern, as determined through tribal consultation. If Native American cultural objects and/or human remains are discovered during construction, work shall be halted within 100 feet of the discovery until the objects have been inspected and evaluated by tribal cultural monitors and a qualified archaeologist meeting the Professional Qualifications Standards of the Secretary of the Interior (36 CFR Part 61). The archaeologist shall, in accordance with the appropriate Guidelines, identify and evaluate the</p>	<p>Less than Significant</p>

Impact	Mitigation Measure (s)	Residual Impact
<p>significance of the discovery and develop recommendations for treatment in consultation with the affected Tribe to ensure any impacts to the cultural resource are less than significant. The preferred mitigation is avoidance. If avoidance is not feasible, Project impacts shall be mitigated in consultation with the affected Tribe consistent with the CEQA Guidelines for Determining the Significance of and Impacts to Cultural Resource, Archaeological Historic and Tribal Cultural Resources. Such mitigation may include, but is not limited to, additional archaeological testing, archaeological monitoring and/or an archaeological data recovery program. A Native American monitor shall be retained to monitor the ground disturbance when it is suspected that a TCR might be encountered.</p>		
<p>Utilities and Service Systems</p>		
<p>Impact UTIL-1. Development under the proposed HEU would require utility service and connections for water supply, wastewater conveyance, and stormwater conveyance, as well as telecommunications, electricity, and natural gas. Existing utility systems for water, wastewater, stormwater, electric power, natural gas, and telecommunications facilities in Berkeley have sufficient capacity to serve the project. Relocation or construction of new or expanded facilities resulting in significant environmental impacts would not occur, and adequate wastewater capacity exists to serve the project’s projected demand in addition to the provider’s existing commitments. impacts would be less than significant.</p>	<p>None required.</p>	<p>Less than Significant</p>
<p>Impact UTIL-2. Development under the proposed HEU would result in an increase in water demand. However, this increase in demand can be served by the East Bay Municipal Utility District (EBMUD) with demand management measures required by EBMUD. This impact would be less than significant.</p>	<p>None required.</p>	<p>Less than Significant</p>
<p>Impact UTIL-3. Development facilitated by the project would not generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure. The project would not impair the attainment of solid waste reduction goals and would comply with federal, State, and local statutes and regulations related to solid waste. Impacts would be less than significant.</p>	<p>None required.</p>	<p>Less than Significant</p>

Impact	Mitigation Measure (s)	Residual Impact
Wildfire		
<p>Impact W-1. Development during the planning period of the proposed HEU would occur in hillside areas located near a State Responsibility Area and in a Very High Fire Hazard Severity Zone. The city employs multiple strategies to reduce the impairment the HEU would have on emergency response and evacuation. Nonetheless, this impact would be significant and unavoidable.</p>	<p>No feasible mitigation measures have been identified.</p>	<p>Significant and Unavoidable</p>
<p>Impact W-2. Implementation of the proposed HEU would encourage development in the hillside areas located near a State Responsibility Area and in a Very High Fire Hazard Severity Zone. New development would be required to comply with extensive regulations and fire safety provisions in the Berkeley Municipal Code, including the Fire Code. Based on the existing regulatory framework and project review process with Berkeley Fire Department, impacts would be generally avoided. However, it remains possible that even with existing regulations, construction or other human activities related to development in or near an SRA or in a VHFHSZ could exacerbate wildfire risk and expose existing and new residents to pollutant concentrations and uncontrolled spread of a wildfire. Additionally, by increasing the population of the WUI area, more people will be directly threatened when a wildland fire occurs. Therefore, this impact would be significant and unavoidable</p>	<p>No feasible mitigation measures have been identified.</p>	<p>Significant and Unavoidable</p>
<p>Impact W-3. Implementation of the proposed HEU would encourage development of housing on inventory sites and in the Hillside Overlay district located near a State Responsibility Area and in a Very High Fire Hazard Severity Zone. The proposed HEU could expose people and structures to risk due to the terrain and slope in the Berkeley hills. This could result in potential risks such as landslides. This impact would be significant and unavoidable.</p>	<p>No feasible mitigation measures have been identified.</p>	<p>Significant and Unavoidable</p>

Impact	Mitigation Measure (s)	Residual Impact
<p>Impact W-4. Implementation of the proposed HEU would encourage development of housing on inventory sites and in the R-, R-2, and R-2a districts located near a State Responsibility Area and in a Very High Fire Hazard Severity Zone. However, the area is already developed and served by existing infrastructure and it is not anticipated that installation of new infrastructure or a substantial increase in the maintenance of existing infrastructure would occur. Should additional maintenance or construction of such infrastructure occur, implementation of Mitigation Measure w-1 would reduce the risk of fire during construction. Overall, this impact would be significant and unavoidable.</p>	<p>W-1 Undergrounding of Power Drops in the VHFHSZs. The City shall require that new or upgraded power drops located in the very high fire hazard severity zone be installed underground. Prior to the issuance of a building permit, the applicant shall submit plans for undergrounding of power drops.</p>	<p>Significant and Unavoidable</p>
<p>Cumulative Impact: In and near Berkeley, the VHFHSZs are located largely along the WUI borders with the hilly northwestern areas. Within the geographic scope for this cumulative analysis wildfire-related impacts could be significant if development is in or near Berkeley's VHFHSZ. The proposed LRDP update would involve improvements and development in Campus Park, the Hill Campus West, the Hill Campus East, the Clark Kerr Campus, and the City Environs Properties, areas of which fall within the VHFHSZ. Development within this area could exacerbate wildfire risks. Like development under the proposed HEU, new development under the LRDP would be subject to statewide standards for fire safety in the California Fire Code. Nonetheless, because the proposed HEU could exacerbate wildfire risk in a VHFHSZ and development under the proposed LRDP update could also exacerbate such risks, a cumulative impact would occur and the proposed projects' contribution would be cumulative considerable.</p>	<p>No feasible mitigation measures have been identified.</p>	<p>Cumulatively considerable impact.</p>

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1 Introduction

This document is a Program Environmental Impact Report (EIR) that analyzes the City of Berkeley's proposed Housing Element Update (hereafter also referred to as the "proposed HEU" or "proposed project"). This section discusses: (1) the purpose of this Program EIR; (2) the type of environmental document prepared and future streamlining opportunities; (3) the legal basis for preparing an EIR; (4) the public review and participation process; (5) the scope and content of the Program EIR; (6) the issue areas found not to be significant; (7) the lead, responsible, and trustee agencies pursuant to the California Environmental Quality Act (CEQA); and (8) an overview of the environmental review process required under CEQA. The proposed project is described in detail in Section 2, *Project Description*.

1.1 Statement of Purpose

This Program EIR has been prepared in compliance with the CEQA Statutes and Guidelines (see *CEQA Guidelines* Section 15121[a]). In general, the purpose of an EIR is to:

1. Analyze the environmental effects of the adoption and implementation of the project;
2. Inform decision-makers, responsible and trustee agencies and members of the public as to the range of the environmental impacts of the project;
3. Recommend a set of measures to mitigate significant adverse impacts; and
4. Analyze a range of reasonable alternatives to the proposed project.

As the lead agency for preparing this Program EIR, the City of Berkeley will rely on the EIR analysis of environmental effects in its review and consideration of the proposed project prior to approval.

1.2 Environmental Impact Report Background

This document is a Program EIR. *CEQA Guidelines* Section 15168(a) states that:

A Program EIR is an EIR which may be prepared on a series of actions that can be characterized as one large project and are related either: (1) geographically; (2) as logical parts in a chain of contemplated actions; (3) in connection with issuance of rules, regulations, plans, or other general criteria, to govern the conduct of a continuing program; or (4) as individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways.

As a programmatic document, this EIR presents a citywide assessment of the impacts of the proposed project. Analysis of site-specific impacts of individual projects is not required in a Program EIR, unless components of the program are known in sufficient detail. No specific projects are currently defined to the level that would allow for such an analysis. Individual specific environmental analysis of each housing development project will be performed as necessary by the City prior to each project being considered for approval. This Program EIR serves as a first-tier CEQA environmental document supporting second-tier environmental documents, if required.

Project applicants implementing subsequent projects may undertake future environmental review depending on the results of the analysis in this Program EIR and requirements of the mitigation

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measures. If project applicants are required to prepare subsequent environmental documents, they may reference the appropriate information from this Program EIR regarding secondary effects, cumulative impacts, broad alternatives and other relevant factors. If the City finds that implementation of a later activity would have no new effects and that no new mitigation measures would be required, that activity would require no additional CEQA review and a consistency finding would be prepared. Where subsequent environmental review is required, such review would focus on significant effects specific to the project, or its site, that have not been considered in this Program EIR (*CEQA Guidelines* Section 15168).

CEQA Guidelines Section 15151 provides the following standards related to the adequacy of an EIR:

An Environmental Impact Report should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to decide which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among experts. The courts have looked not for perfection; but for adequacy, completeness, and a good faith effort at full disclosure.

CEQA Guidelines Section 15146 provides the following additional standards related to the adequacy of an EIR:

The degree of specificity required in an EIR will correspond to the degree of specificity involved in the underlying activity which is described in the EIR.

- (a) An EIR on a construction project will necessarily be more detailed in the specific effects of the project than will be an EIR on the adoption of a local general plan or comprehensive zoning ordinance because the effects of the construction can be predicted with greater accuracy.
- (b) An EIR on a project such as the adoption or amendment of a comprehensive zoning ordinance or a local general plan should focus on the secondary effects that can be expected to follow from the adoption, or amendment, but the EIR need not be as detailed as an EIR on the specific construction projects that might follow.

1.3 Purpose and Legal Authority

The proposed project requires the discretionary approval of the Berkeley City Council; therefore, the project is subject to the environmental review requirements of CEQA. In accordance with *CEQA Guidelines* Section 15121 (California Code of Regulations, Title 14), the purpose of this EIR is to serve as an informational document that:

“...will inform public agency decision makers and the public generally of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project.”

This Program EIR is to serve as an informational document for the public and City of Berkeley decision makers. The process will include public hearings conducted by the Planning Commission and City Council to consider certification of a Final Program EIR and approval of the proposed project.

1.4 Public Review and Participation Process

The City of Berkeley distributed a Notice of Preparation (NOP) of a Draft EIR for a 30-day agency and public review period commencing January 14, 2022 and closing February 14, 2022. In addition, the City held a virtual scoping meeting on February 9, 2022. The meeting, held at 7 p.m., provided information about the proposed project to members of public agencies, interested stakeholders and residents/community members and provided an opportunity for interested parties to submit verbal comments on the scope of the environmental issues to be addressed in the EIR. Due to the COVID-19 pandemic, the virtual meeting was held through an online meeting platform and a call-in number. No members of the public provided verbal comments at the scoping hearing, but several Planning Commissioners provided verbal comments.

The City received letters from seven agencies, individuals, and organizations in response to the NOP during the public review period. The NOP and scoping comment letters are presented in Appendix NOP of this Program EIR. Table 1-1 summarizes the content of the letters and where the issues raised are addressed in the Program EIR.

Table 1-1 NOP Comments and EIR Response

Commenter	Comment/Request	How and Where It Was Addressed
Comment Letters from Public Agencies		
East Bay Municipal Utility District (EBMUD)	<ul style="list-style-type: none"> ▪ Water service for new multi-unit structures shall be individually metered or sub-metered in compliance with Senate Bill 7. ▪ EBMUD will not install pipes or conduct service in contaminated soils. ▪ EBMUD’s Main Wastewater Treatment Plan and interceptor system have adequate capacity to accommodate the proposed wastewater flow in dry conditions. However, additional wastewater infrastructure may be required to accommodate proposed wastewater flow in wet conditions. ▪ Project sponsors are required to provide an estimate of expected water demand for potential recycled water uses for each project in the HEU to explore options and requirements related to recycled water use. ▪ Requests City include compliance with AB 325 “Model Water Efficient Landscape Ordinance” as condition of approval on individual projects within the HEU. 	Section 4.16, <i>Utilities and Service Systems</i> , includes an analysis of wastewater capacity and water efficiency requirements.
Native American Heritage Commission (NAHC)	<ul style="list-style-type: none"> ▪ Recommends consultation with all California Native American tribes traditionally and culturally affiliated with the project according to AB 52 and SB 18. 	Consultation required by AB 52 and SB 18 was carried out by the City of Berkeley. A summary of the process and an analysis of impacts to tribal cultural resources are discussed in Section 4.4, <i>Cultural Resources</i> , of this EIR.
Alameda County Transportation Commission (ACTC)	<ul style="list-style-type: none"> ▪ States if the project generates at least 100 p.m. peak hour trips over existing conditions, the Congestion Management Program (CMP) Land Use Analysis Program requires the City to conduct a transportation impact analysis of the project utilizing the Alameda Countywide Travel Demand Model for CMP Land Use Analysis. 	Transportation impact analyses are included in Section 4.14, <i>Transportation</i> .

Commenter	Comment/Request	How and Where It Was Addressed
	<ul style="list-style-type: none"> ▪ Identifies Metropolitan Transportation System facilities, service operators in area and requests all potential impacts to these facilities, operators, and users be addressed in the DEIR. ▪ Discusses mitigation measure requirements and suggestions, including multimodal tradeoffs, TDM measures, and consistency with transportation plans. 	
Comment Letters from Organizations		
East Bay for Everyone/East Bay YIMBY	<ul style="list-style-type: none"> ▪ Suggests goals and policies to be considered in the HEU and that the EIR explore the consequences of the recommended policies. 	The commenter’s opinions on the proposed HEU will be taken into consideration by City decision-makers but do not pertain to the EIR analysis. The purpose of the EIR is to consider the implication of HEU policies to meet RHNA goals as well as additional zoning changes to encourage housing in the City, and the environmental consequences of HEU implementation are analyzed throughout this EIR.
Summary of Verbal and Written Comments by Topic Area		
HEU components	<ul style="list-style-type: none"> ▪ Several commenters provided recommendations for goals, policies, or programs to be included in the HEU, or expressed support for additional housing in the City. 	The commenters’ opinions on the proposed HEU will be taken into consideration by City decision-makers but do not pertain to the EIR analysis.
Alternatives	<ul style="list-style-type: none"> ▪ The EIR should consider an alternative with a greater number of units. 	Alternatives are analyzed in Section 6, <i>Alternatives</i> .
Biological Resources	<ul style="list-style-type: none"> ▪ Concern about wildlife impacts ▪ Suggestion to use bird safe glass ▪ Suggestion to use landscaping that provides habitat and food for area wildlife. 	Section 4.3, <i>Biological Resources</i> , includes an analysis of impacts to biological resources including birds and wildlife.
Transportation	<ul style="list-style-type: none"> ▪ Concerns about a lack of parking in the City ▪ Concerns about traffic in the City ▪ Concerns about impacts of ride sharing and additional traffic impacts. ▪ Concerns about rider capacity for public transit including AC Transit and BART 	Section 4.14, <i>Transportation</i> , includes an analysis of transportation-related impact for those items required under CEQA. Parking and traffic impacts are not environmental issues pursuant to CEQA.

1.5 Scope and Content

As discussed in Section 1.4, a NOP was prepared and circulated (Appendix NOP), and responses received on the NOP were considered when setting the scope and content of the environmental information in this EIR. Sections 4.1 through 4.17 address the resource areas outlined in the bullet points below. Section 5, *Other CEQA Required Discussions*, covers topics including growth-inducing effects, irreversible environmental effects, and significant and unavoidable impacts. Environmental topic areas addressed in this EIR include:

1. Aesthetics
2. Air Quality
3. Biological Resources
4. Cultural Resources
5. Energy
6. Geology and Soils
7. Greenhouse Gas Emissions
8. Hazards and Hazardous Materials
9. Hydrology and Water Quality
10. Land Use and Planning
11. Noise
12. Population and Housing
13. Public Services and Recreation
14. Transportation
15. Tribal Cultural Resources
16. Utilities and Service Systems
17. Wildfire

In preparing the EIR, use was made of pertinent City policies and guidelines, certified EIRs and adopted CEQA documents, and other background documents. A full reference list can be found in Section 7, *References and Preparers*.

The alternatives section of the EIR (Section 6) was prepared in accordance with *CEQA Guidelines* Section 15126.6 and focuses on alternatives capable of eliminating or reducing significant adverse effects associated with the project while feasibly attaining most of the basic project objectives. In addition, the alternatives section identifies the “environmentally superior” alternative among the alternatives assessed. The alternatives evaluated include the CEQA-required “No Project” alternative and three alternative development scenarios for the project area.

The level of detail contained throughout this EIR is consistent with the requirements of CEQA and applicable court decisions. *CEQA Guidelines* Section 15151 (summarized above in Section 1.2) provides the standard of adequacy on which this document is based.

1.6 Issues Found to be Less than Significant

The following issue areas are determined to have less-than-significant impacts due to the unique conditions of the City of Berkeley and thus are not analyzed in detail beyond the discussion included below.

1.6.1 Agriculture and Forestry Resources

The City of Berkeley lacks agricultural lands or forest. Neither agriculture nor forestry lands are a General Plan designation, zoning classification or use in the City (City of Berkeley 2001). According to the California Department of Conservation’s (DOC) Farmland Mapping and Monitoring program, the City of Berkeley is classified as urban and built-up land (DOC 2016). Additionally, there is no Williamson Act contract land within the City (DOC 2017).

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The proposed HEU would not: lead to the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use; conflict with existing zoning for agricultural use, or a Williamson Act contract; conflict with existing zoning for or cause rezoning of forest land or timberland; result in loss of forest land or conversion of forest land to non-forest use; or otherwise convert Farmland to non-agricultural use or conversion of forest land to non-forest use. Therefore, there would be no impacts on agriculture and forestry resources.

1.6.2 Mineral Resources

The City of Berkeley does not have significant mineral resources or active mining sites within its boundaries. The proposed HEU applies to an urban area which is not compatible with, identified for, or used for mineral extraction. In addition, mineral resources are not addressed in the City's General Plan (City of Berkeley 2001).

Development under the proposed HEU would not result in the loss of availability of a known mineral resource that would be of value to the region and residents of the state or result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan or other land use plan. Therefore, there would be no impacts related to mineral resources.

1.7 Lead, Responsible, and Trustee Agencies

The *CEQA Guidelines* define lead, responsible and trustee agencies. The City of Berkeley is the lead agency for the project because it holds principal responsibility for approving the project.

A responsible agency refers to a public agency other than the lead agency that has discretionary approval over the project. The California Department of Housing and Community Development (HCD) reviews and determines whether the proposed HEU complies with State law but is not a responsible agency involved with CEQA. There are no responsible agencies for this project.

A trustee agency refers to a State agency having jurisdiction by law over natural resources affected by a project. There are no trustee agencies for the proposed HEU or Program EIR. Implementation of the proposed project would not directly cause development in areas where trustee agencies mentioned in *CEQA Guidelines* Section 15386 have jurisdiction. However, future development projects could be located lands under trustee agency jurisdiction, at which time subsequent environmental review would occur.

1.8 Environmental Review Process

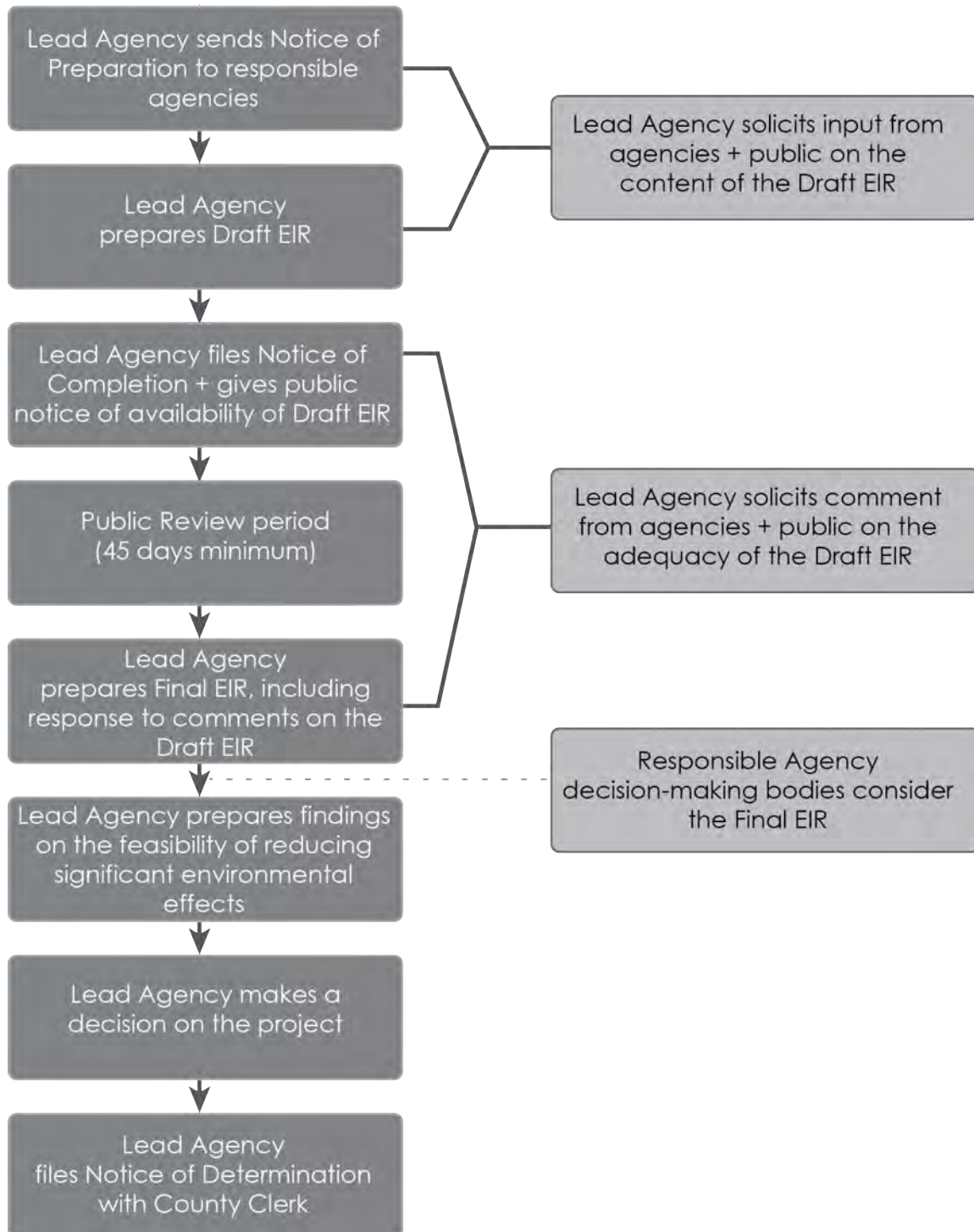
The environmental impact review process, as required under CEQA, is summarized below and illustrated in Figure 1-1. The steps are presented in sequential order.

1. **Notice of Preparation (NOP).** After deciding that an EIR is required, the lead agency (City of Berkeley) must send a NOP soliciting input on the EIR scope to the State Clearinghouse, other concerned agencies, and parties previously requesting notice in writing (*CEQA Guidelines* Section 15082; Public Resources Code Section 21092.2). The NOP must be posted in the County Clerk's office for 30 days.
2. **Draft EIR Prepared.** The Draft EIR must contain: a) table of contents or index; b) summary; c) project description; d) environmental setting; e) discussion of significant impacts (direct, indirect, cumulative, growth-inducing and unavoidable impacts); f) discussion of alternatives; g) mitigation measures; and h) discussion of irreversible changes.

3. **Notice of Completion (NOC).** The lead agency must send a NOC to the State Clearinghouse when it completes a Draft EIR and prepare a Public Notice of Availability of a Draft EIR. The lead agency must place the NOC in the County Clerk's office for 30 days (Public Resources Code Section 21092) and send a copy of the NOC to anyone requesting it (*CEQA Guidelines* Section 15087). Additionally, public notice of Draft EIR availability must be given through at least one of the following procedures: a) publication in a newspaper of general circulation; b) posting on and off the project site; and c) direct mailing to owners and occupants of contiguous properties. The lead agency must solicit input from other agencies and the public and respond in writing to all comments received (Public Resources Code Sections 21104 and 21253). The minimum public review period for a Draft EIR is 30 days. When a Draft EIR is sent to the State Clearinghouse for review, the public review period must be 45 days unless the State Clearinghouse approves a shorter period (Public Resources Code 21091).
4. **Final EIR.** A Final EIR must include: a) the Draft EIR; b) copies of comments received during public review; c) a list of persons and entities commenting; and d) responses to comments.
5. **Certification of Final EIR.** Prior to making a decision on a proposed project, the lead agency must certify that: a) the Final EIR has been completed in compliance with CEQA; b) the Final EIR was presented to the decision-making body of the lead agency; and c) the decision making body reviewed and considered the information in the Final EIR prior to approving the project (*CEQA Guidelines* Section 15090).
6. **Lead Agency Project Decision.** The lead agency may: a) disapprove the project because of its significant environmental effects; b) require changes to the project to reduce or avoid significant environmental effects; or c) approve the project despite its significant environmental effects, if the proper findings and statement of overriding considerations are adopted (*CEQA Guidelines* Sections 15042 and 15043).
7. **Findings/Statement of Overriding Considerations.** For each significant impact of the project identified in the EIR, the lead agency must find, based on substantial evidence, that: a) the project has been changed to avoid or substantially reduce the magnitude of the impact; b) changes to the project are within another agency's jurisdiction and such changes have or should be adopted; or c) specific economic, social, or other considerations make the mitigation measures or project alternatives infeasible (*CEQA Guidelines* Section 15091). If an agency approves a project with unavoidable significant environmental effects, it must prepare a written Statement of Overriding Considerations that sets forth the specific social, economic, or other reasons supporting the agency's decision.
8. **Mitigation Monitoring Reporting Program.** When the lead agency makes findings on significant effects identified in the EIR, it must adopt a reporting or monitoring program for mitigation measures that were adopted or made conditions of project approval to mitigate significant effects.
9. **Notice of Determination (NOD).** The lead agency must file a NOD after deciding to approve a project for which an EIR is prepared (*CEQA Guidelines* Section 15094). A local agency must file the NOD with the County Clerk. The NOD must be posted for 30 days and sent to anyone previously requesting notice. Posting of the NOD starts a 30-day statute of limitations on CEQA legal challenges (Public Resources Code Section 21167[c]).

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Figure 1-1 Environmental Review Process



2 Project Description

The proposed 2023-2031 Housing Element Update (HEU), herein referred to as the “proposed HEU” or “proposed project,” would amend the City of Berkeley’s General Plan by replacing the current Housing Element with the proposed 2023-2031 Housing Element and amending the City’s General Plan as needed for consistency and HEU implementation.

The proposed HEU establishes policies and programs to further the goal of meeting the existing and projected housing needs of all household income levels of the community. In addition, the sites inventory provides evidence of the City’s ability to accommodate the Regional Housing Needs Allocation (RHNA) through the year 2031, as established by the Association of Bay Area Governments (ABAG). Although no rezoning is needed to meet the RHNA, the City is considering focused rezoning as part of the implementation programs to achieve local objectives.

The Berkeley General Plan

- Element 1. Land Use
- Element 2. Transportation
- Element 3. Housing
- Element 4. Disaster Preparedness and Safety
- Element 5. Open Space and Recreation
- Element 6. Environmental Management
- Element 7. Economic Development and Employment
- Element 8. Urban Design and Preservation
- Element 9. Citizen Participation

This section describes the proposed project, including the project location, major project characteristics, project objectives, and discretionary actions needed for approval.

2.1 Lead Agency Name, Address, and Contact

City of Berkeley
1947 Center Street, 2nd Floor
Berkeley, California 94704
(510) 981-7400

Contact: Grace Wu, Acting Principal Planner, HousingElement@CityofBerkeley.info

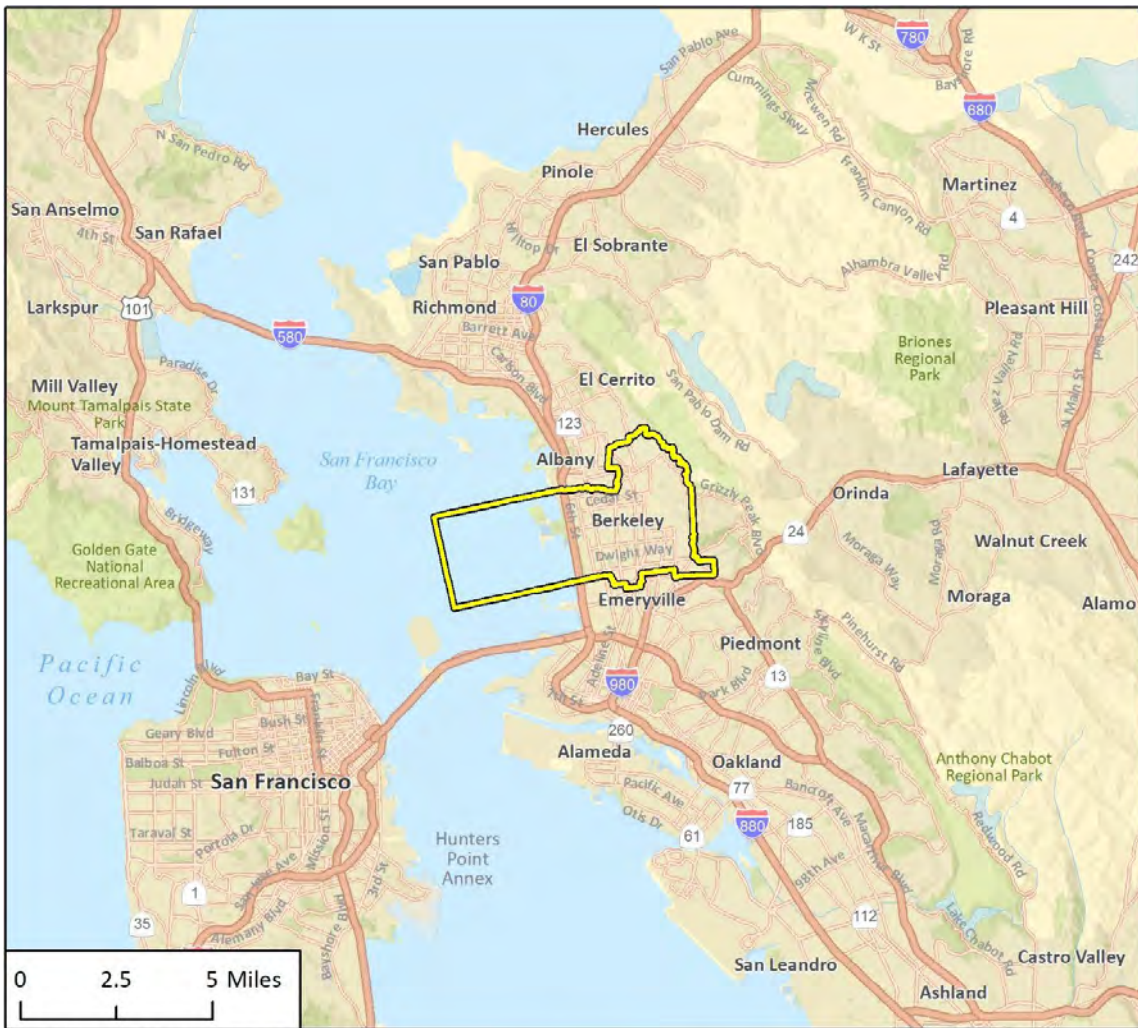
2.2 Project Location and Setting

The City of Berkeley is located in northern Alameda County in the East Bay portion of the San Francisco Bay Area region and is surrounded by urbanized areas to the north and south and primarily open space in the hillsides to the east. The regional location is shown in Figure 2-1. The City is bordered by the City of Albany and the unincorporated community of Kensington to the north, by Contra Costa County and the City of Oakland to the east, the cities of Oakland and Emeryville to the south, and San Francisco Bay to the west. Berkeley encompasses approximately 17.7 square miles, of which approximately 7.2 square miles is underwater in the San Francisco Bay. The city limits are shown on Figure 2-2.

The City is highly urbanized and developed with a mix of land uses, including single-family residential neighborhoods, mixed-use and multi-family residential areas, offices, retail, faith-based and cultural institutions, schools, hotels, parking, recreational uses, and public streets. Figure 2-3 shows a map of existing land uses in Berkeley.

City of Berkeley
City of Berkeley 2023-2031 Housing Element Update

Figure 2-1 Regional Location



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★ Project Location

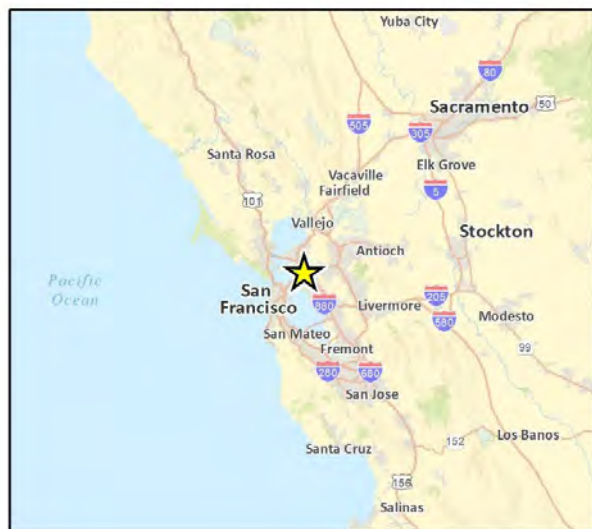
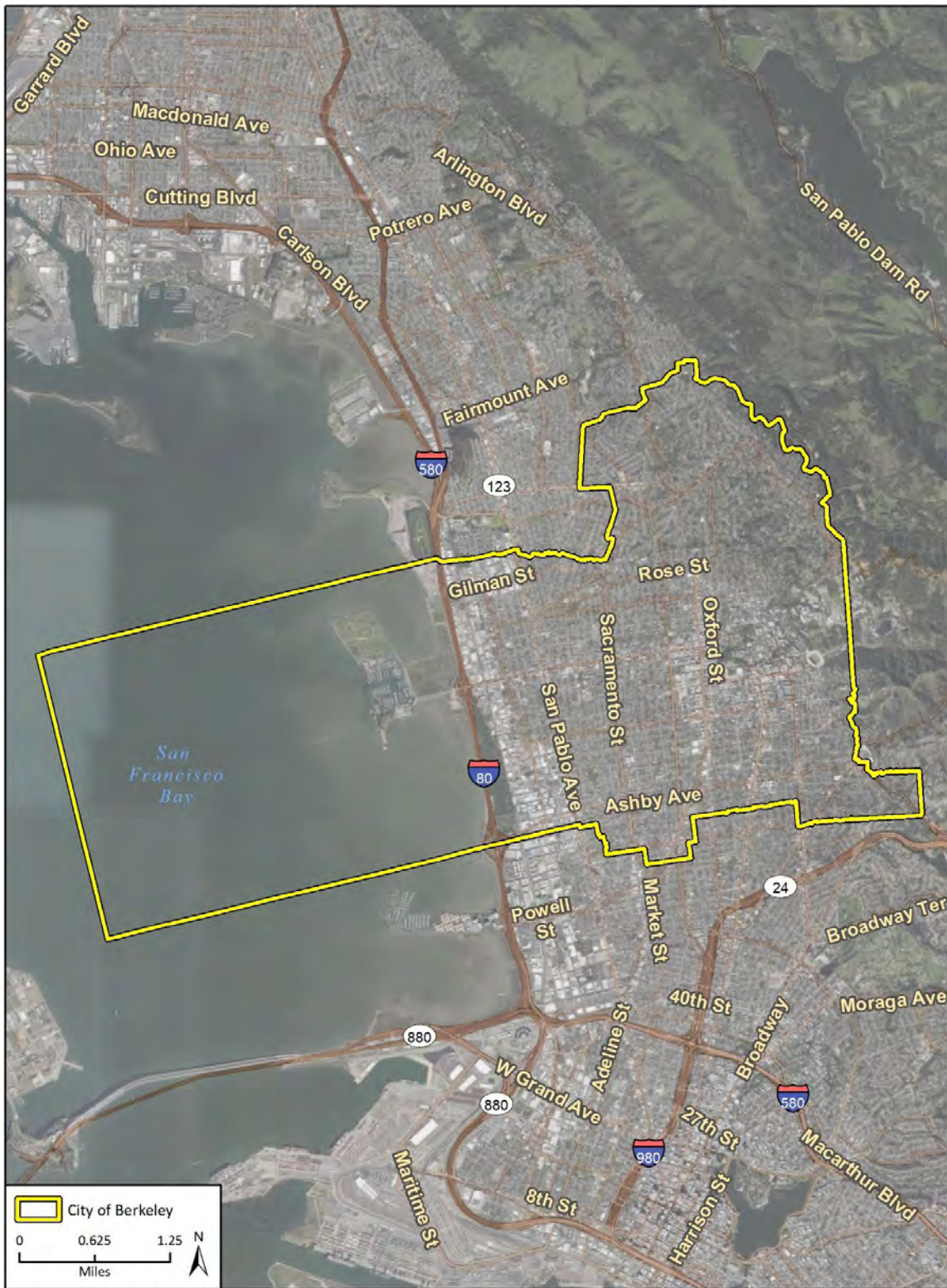
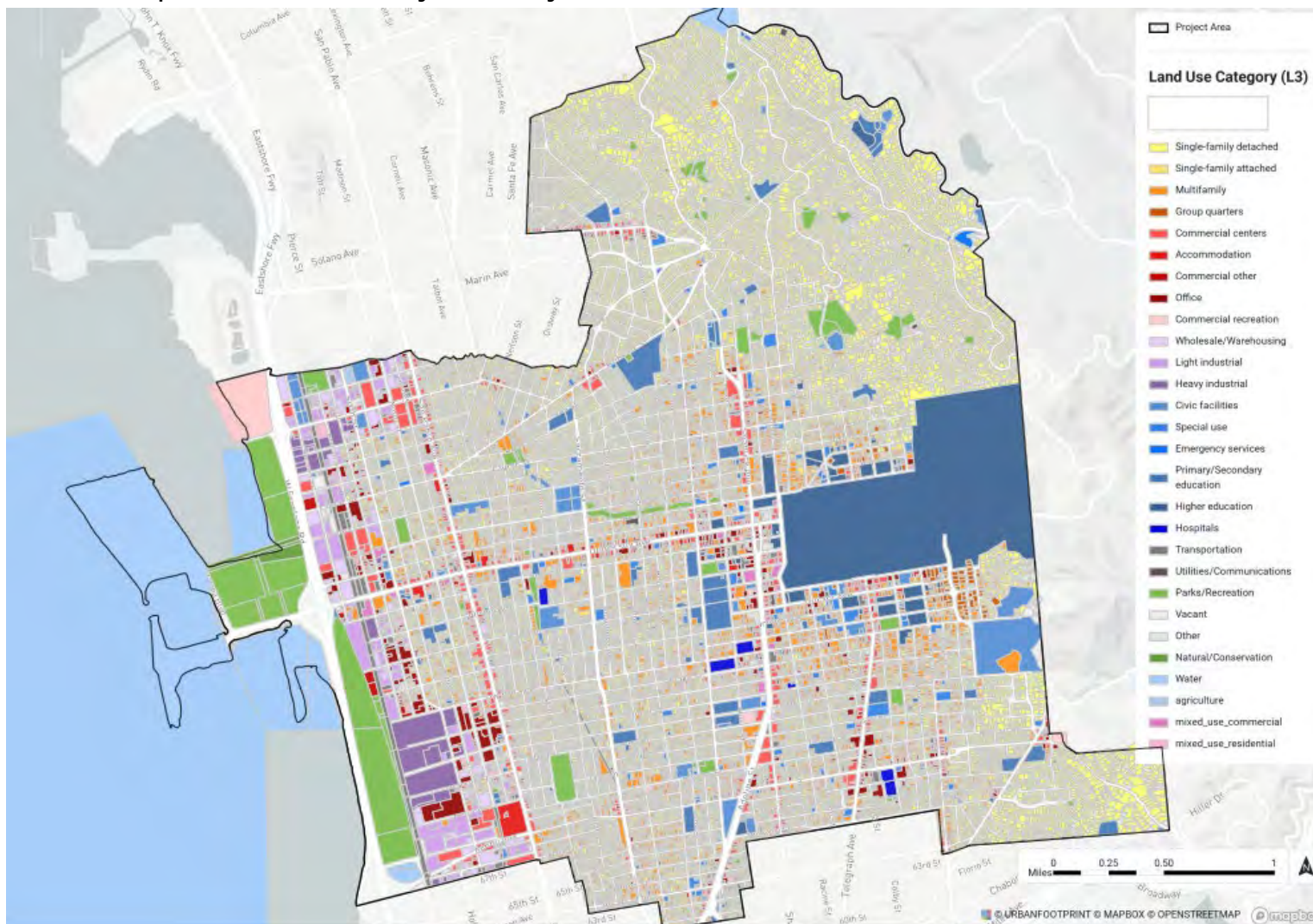


Figure 2-2 City of Berkeley Location



City of Berkeley
City of Berkeley 2023-2031 Housing Element Update

Figure 2-3 Map of Land Uses in the City of Berkeley



Commercial activity is primarily distributed between Downtown, West Berkeley, the neighborhood and avenue commercial districts of North Shattuck, Elmwood, Solano, Shattuck/Adeline, and Telegraph Avenue, and the commercial strips along San Pablo and University Avenues. Industrial areas are primarily located in West Berkeley along the railroad and San Pablo Avenue corridors. Institutional uses are primarily located around the University of California, Berkeley. Residential development and accompanying commercial services and public facilities are located throughout the city.

Currently the City has a population of approximately 124,563 and 52,921 housing units (California Department of Finance 2022).

2.3 Project Objectives

The project presents a comprehensive set of housing policies and programs for the years 2023-2031 and will encompass the entire City of Berkeley. The project will be based on the Association of Bay Area Governments' (ABAG) 6th Cycle RHNA and will:

1. Adopt policies and programs that meet the City's RHNA with the required buffer, provide additional housing opportunities consistent with other City priorities, remove governmental constraints to the maintenance, improvement and development of housing, and ensure ongoing compliance with State Housing Element law and the No Net Loss provisions of State law through the eight-year cycle.
2. Adopt policies and programs to encourage the development of affordable housing at a range of income levels consistent with RHNA, including at least 2,450 units for Very Low-Income households, at least 1,400 units for Low Income households, and at least 1,400 units for Moderate Income households.
3. Encourage the development of housing with access to transit, jobs, services, and community benefits in a manner that distributes affordable and special needs housing in high resource neighborhoods and affirmatively furthers fair housing.
4. Identify housing policies and programs that will conserve and rehabilitate existing units, provide services to increase housing opportunities for all residents of Berkeley, and increase the energy efficiency of both current and future housing units.

2.4 Project Characteristics

The project analyzed in this EIR involves an update to the Housing Element of the City's General Plan and would include adoption of General Plan amendments related to housing that would apply Citywide for the 2023-2031 planning period.

The City is required by the State Department of Housing and Community Development (HCD) to meet its RHNA and identify sufficient sites to accommodate 8,934 residential units to meet a fair share of the region's anticipated population growth between 2023 to 2031. In addition, HCD recommends that cities identify a "buffer" of 15 to 30 percent above RHNA for lower- and moderate-income categories to account for No Net Loss (SB 166). Thus, the overall sites inventory must accommodate between approximately 10,274 and 11,614 units. The sites must be zoned to allow for residential uses and the zoning standards must allow for the unit capacities assumed in the sites inventory.

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For the purposes of the HEU CEQA analysis, this EIR assesses a higher amount of development potential than the total HEU sites inventory capacity in order to fully analyze possible environmental impacts based on proposed HEU implementation programs, account for the possibility that proposed projects could utilize State Density Bonus, and to account for a scenario in which development occurs at a rate higher than it has historically. However, future development proposals would be reviewed to determine whether their impacts fall within the scope of this EIR, or if additional site-specific environmental review will be required. Subsequent environmental documents, when required, could tier from the HEU EIR and focus on any new significant impacts in accordance with *CEQA Guidelines* Sections 15152 and 15385.

2.4.1 Housing Element Update

The Housing Element is one of the State-mandated elements of the General Plan. The current Housing Element was adopted in 2015 and is in effect through 2023. The Housing Element identifies the City's housing conditions and needs, and establishes the policies and programs that comprise the City's housing strategy to accommodate projected housing needs, including the provision of adequate housing for low-income households and for special-needs populations (e.g., unhoused people, seniors, single-parent households, large families, and persons with disabilities).

The 2023-2031 Housing Element would bring the element into compliance with State legislation passed since adoption of the 2015-2023 Housing Element and with the current Association of Bay Area Governments' (ABAG's) Regional Housing Needs Allocation (RHNA). On December 16, 2021, the ABAG Executive Board adopted the 6th Cycle Final RHNA, which includes a "fair share" allocation for meeting regional housing needs for each community in the ABAG region.

The 2023-2031 Housing Element includes the following components, as required by State law

- Assessment of the City's population, household, and housing stock characteristics, existing and future housing needs by household types, and special needs populations.
- Analysis of resources and constraints related to housing production and preservation, including governmental regulations, infrastructure requirements and market conditions such as land, construction, and labor costs as well as restricted financing availability.
- Identification of the City's quantified objectives for the 6th cycle RHNA and inventory of sites determined to be suitable for housing.
- Creation or maintenance of opportunities for energy conservation in residential development. State housing element law requires cities to identify opportunities for energy conservation in residential development.
- Review of the 2013-2021 Housing Element to identify progress and evaluate the effectiveness of previous policies and programs.
- A Housing Plan to address the City's identified housing needs, including housing goals, policies, and programs to facilitate the 2023 Housing Element Update (6th Cycle).

2.4.2 Regional Housing Needs Allocation (RHNA)

ABAG has allocated the nine-county region's 441,176 housing unit growth needs among each city and county in its region through a process called the Regional Housing Needs Allocation (RHNA). As shown in Table 2-1, Berkeley's RHNA for the 2023-2031 planning period (6th RHNA cycle) is 8,934 units, which is distributed among four income categories. The RHNA represents the minimum

number of housing units that the City’s sites inventory must accommodate for in its Housing Element, through its General Plan and zoning.

Table 2-1 RHNA and Percentage of Income Distribution for Berkeley

Income Level	Percent of Area Median Income (AMI)	Units	Percent
Very Low	<50%	2,446	27.4%
Low	50-80%	1,408	15.8%
Moderate	80-120%	1,416	15.8%
Above Moderate	>120%	3,664	41.0%
Total	–	8,934	100%

Source: ABAG 2021a

For the prior RHNA cycle, the City was allocated a total of 2,959 units to be accommodated in its Housing Element inventory of adequate sites.

2.4.3 Meeting the RHNA

The City has identified an inventory of sites and a set of implementation programs to meet its RHNA and to further other local policy objectives.

EIR Sites Inventory

The City assessed capacity in three categories to meet the RHNA: likely sites, pipeline sites, and opportunity sites. The Likely Sites, Pipeline Sites and Opportunity Sites together constitute the EIR Sites Inventory. The specific number and location of units actually developed during the Housing Element period will differ from those included in the EIR Sites Inventory, but any difference would result in fewer total units and a reduction of total physical sites for housing development. Figure 2-4 includes the location of the parcels used in the EIR Sites Inventory.

The sites inventory includes a total of 15,153 units, which also accounts for 800 accessory dwelling units (ADUs) based on recent development trends.

Likely Sites

Likely Sites include housing projects that received their land use entitlement since 2018 but did not receive their certificate of occupancy prior to June 2022. For these projects, the affordability breakdown reflects actual project plans, including density bonus units. HCD also allows jurisdictions to include ADUs in the “likely sites” category based on recent development trends and assumed levels of affordability based on ABAG’s Affordability of ADUs report (ABAG 2021b).

The Likely Sites include an estimated 4,685 units, which includes, based on information from previous years and trends, an estimated 800 ADUs to be developed during the 2023-2031 planning period.

Pipeline Sites

Pipeline Sites include projects that are under review or actively engaging with the City in anticipation of submitting an application for review. Affordability levels reflect proposed project plans to the extent they are known.

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The North Berkeley and Ashby BART stations are included under “pipeline sites” based on current planning and rezoning efforts. The sites inventory estimates 1,200 units to be developed at the two BART sites during the 6th cycle, with 35 percent of the units targeted to Very Low- and Low-Income affordability levels.

The Pipeline Sites include an estimated 2,415 units.

Opportunity Sites

Opportunity Sites are currently vacant and/or underutilized sites and are not associated with actual development proposals. Site selection is conducted based on an analysis of site-specific constraints, including General Plan land use and zoning, access to utilities, location, development potential, and whether the site is identified in a previous Housing Element. To count toward the RHNA, sites must be in a land use category that meets a minimum residential density standard, have a minimum lot size, be either vacant or not developed to the maximum capacity allowed by zoning, and provide the potential for more residences.

Berkeley’s zoning districts, with the exception of the C-AC district, do not have maximum density standards expressed in dwelling units per acre as density is typically controlled through other development standards. As a result, unit assumptions for opportunity sites were calculated using the average of the *base* density¹ from recent entitlement projects within the district (or districts with similar zoning standards if there were no recent projects within the district to analyze).

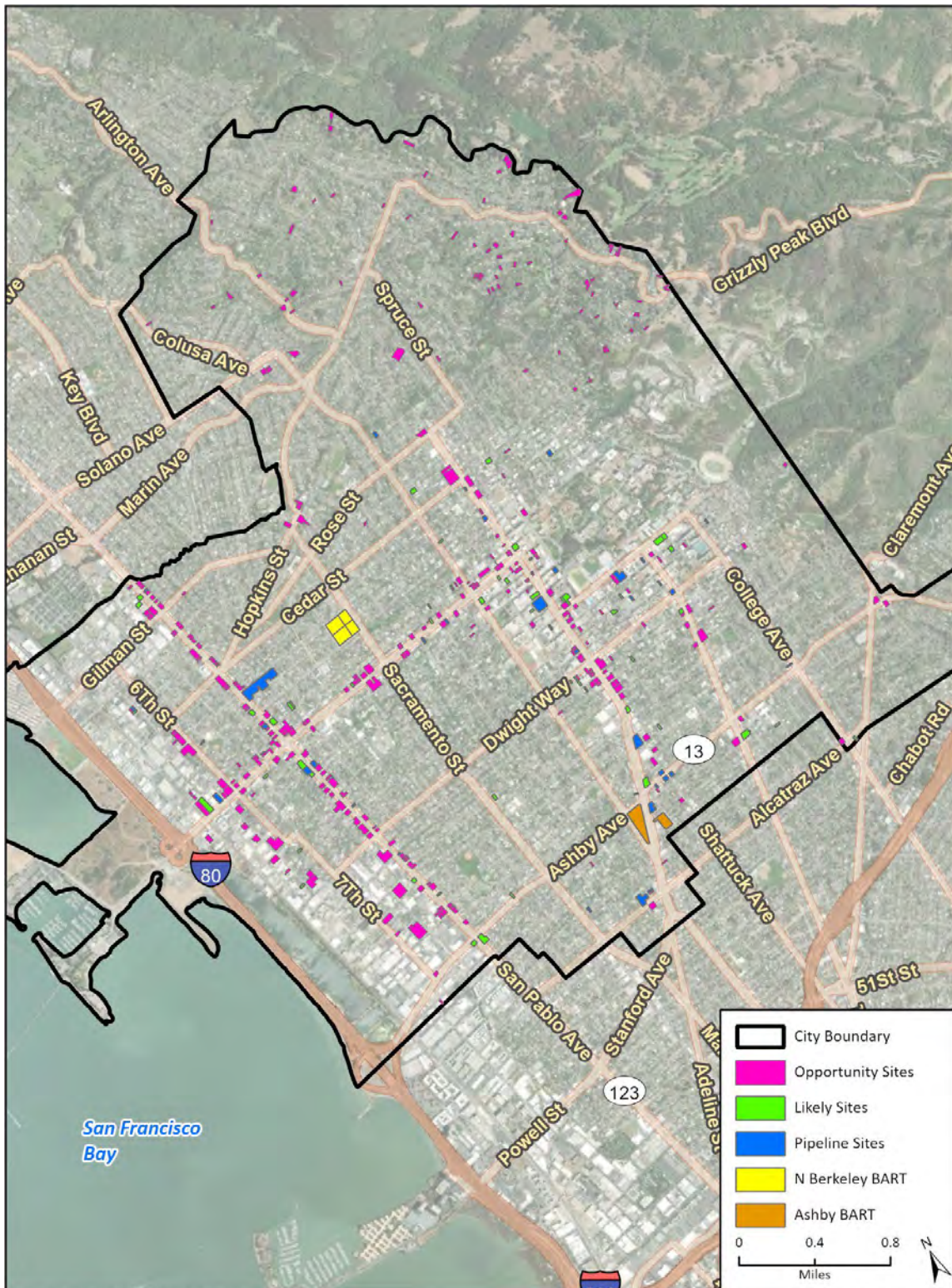
The Housing Element in and of itself does not develop housing – it is a plan. This housing plan must be supported by consistent zoning standards. The pace of development is difficult to predict, and it is unlikely that all of these units will be built, but the inventory demonstrates sufficient capacity to meet the 6th cycle RHNA including the buffer. In addition, the sites inventory does not include all potential residential development sites within the City limits and the sites may or may not be developed at the allowable densities. The placement and design of buildings on specific sites cannot be determined until the City receives an application for a specific project.

The sites identified in the HEU sites inventory analysis are generally located in areas near major transportation corridors and existing residential and commercial development. The sites identified in the HEU sites inventory do not make up all of the new housing capacity anticipated in the 6th cycle, as the HEU includes implementation programs, which are discussed below.

The Opportunity Sites include an estimated 8,053 units.

¹ A project’s “base” density is the density of a project before the application of any density added to a project pursuant to the State Density Bonus Law. Per HCD Housing Element Sites Inventory Guidebook, May 2020, the analysis of “appropriate zoning” should not include residential buildout projections resulting from the implementation of a jurisdiction’s inclusionary program or potential increase in density due to a density bonus.

Figure 2-4 EIR Sites Inventory Locations



Imagery provided by Microsoft Bing and its licensors © 2022.
 Additional data provided by USGS, 2021 and the City of Berkeley, 2022.

21-10647 Berkeley Housing Element
 Sites Inventory - Overview

Implementation Programs

The City has determined based on the sites inventory that rezoning is not needed to meet the RHNA. However, recent development activity suggests current zoning alone does not deliver the level of deed-restricted affordable housing and economic and geographic diversity that the HEU aims to achieve. Therefore, the HEU contains implementation programs and zoning policies to encourage additional housing, particularly affordable housing that supports a diversity of income levels and household types.

Middle Housing Rezoning

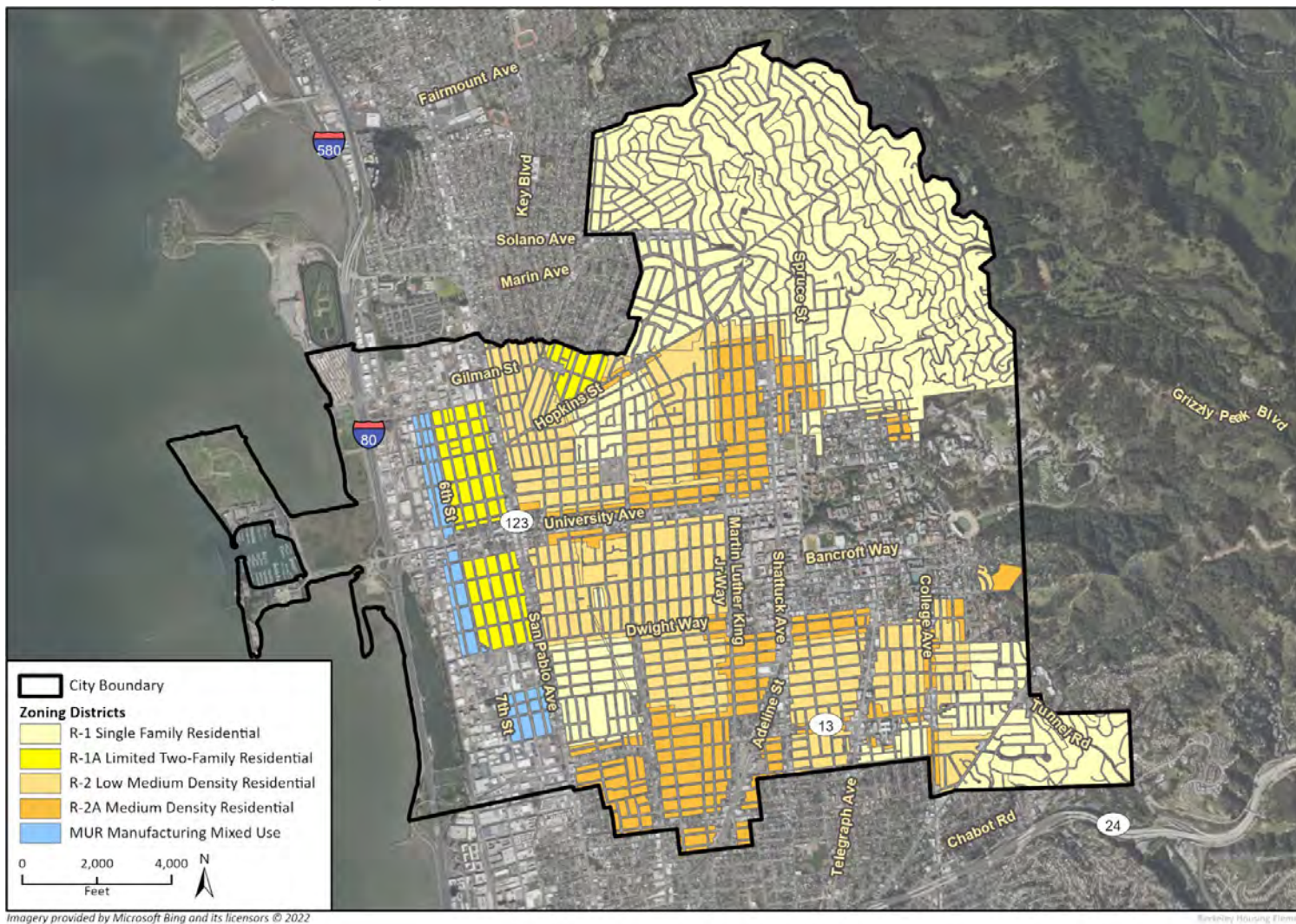
R-1 R-1A, R-2, R-2A and MU-R districts are anticipated to increase in density based on the State's adoption of SB 9 and a proposed HEU program to facilitate increased development in lower density districts. The City would review and amend the Zoning Code and applicable objective development standards to encourage a mix of dwelling types and sizes, to promote housing for middle- and moderate-income households and increase the availability of affordable housing in a range of sizes to reduce displacement risk for residents living in overcrowded units or experiencing high housing cost burden.

The Turner Center's SB 9 modeling indicates that the City of Berkeley could anticipate approximately 1,100 total new market-feasible units through SB 9 (Turner Center 2021). Using HCD's methodology, and to ensure that proposed zoning would not result in a reduction in allowable residential development, the EIR assumes 770 additional units distributed throughout the R-1 districts for the 2023-2031 period. Additionally, based on current development trends and anticipated zoning changes, 975 additional units are distributed throughout the R-1A, R-2, R-2A and MU-R districts, for a total of 1,745 middle housing units in the 2023-2031 period. Current locations of the R-1, R-1A, R-2, R-2A and MU-R districts are shown on Figure 2-5. For the purposes of this analysis, the R-1, R-1A, R-2, R-2A, and MU-R districts are referred to as the "middle housing rezoning districts."

Southside Zoning Modification Project

Southside Zoning Modification Project proposes amendments that could facilitate an additional 1,000 units compared to existing Southside Plan Area zoning. These proposed zoning modifications and a proposed HEU program for a local density bonus are intended to increase housing capacity and production to better meet student housing demand in the Southside through changes in a targeted number of zoning parameters: building heights, building footprints (including setbacks and lot coverage), parking, ground-floor residential use, and adjustments to the existing zoning district boundaries. Given past development trends and the limited number of opportunity sites in the Southside, this EIR assumes an additional 1,000 units in the portions of the C-T, R-S and R-SMU districts within the Southside Area for the 2023-2031 period. The location of the Southside Plan Area is shown on Figure 2-6.

Figure 2-5 Middle Housing Rezoning Districts



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Figure 2-6 Southside Area



2.4.4 EIR Projected Buildout

Table 2-2 summarizes the projected buildout utilized for the analysis in this EIR. It consists of a projection based on the EIR Sites Inventory of 15,153 units, an additional 1,200 units at the Ashby and North Berkeley BART stations, as well as projections for implementation programs related to the R-1, R-1A, R-2, R-2A and MU-R zoning districts and the Southside Zoning Modification Project, totaling 2,745 units. Overall, this EIR assumes 19,098 units associated with the proposed HEU. The specific number and location of units actually developed during the Housing Element period will differ from those included in the EIR Projected Buildout, but any difference would result in fewer total units and a reduction of total physical sites for housing development.

Table 2-2 EIR Projected Buildout

	Total New Units
EIR Sites Inventory	
Likely Sites ¹	4,685
Pipeline Sites ²	2,415
Opportunity Sites	8,053
Implementation Programs	
Middle Housing Rezoning ³	1,745
Southside Zoning Modification Project ⁴	1,000
Ashby and North Berkeley BART Stations⁵	1,200
Overall EIR Growth Assumption	19,098

Notes:

¹ Likely Sites includes an estimated 800 ADUs

² Pipeline Sites include 1,200 units at the Ashby and North Berkeley BART stations.

³ This EIR assumes 770 additional units distributed throughout the R-1 districts, and 975 units in the R-1A, R-2, R-2A and MU-R, to account for SB 9 and proposed HEU policies to facilitate increased development in lower density districts.

⁴ This EIR assumes an additional 1,000 units to accommodate increased height and lot coverage zoning standards in the C-T, R-S and R-SMU districts.

⁵ The EIR Sites Inventory assumes 1,200 units at the Ashby and North Berkeley BART stations as part of the pipeline sites. For the purposes of this EIR, we include a total of 2,400 units at both BART stations, as analyzed in the *Ashby and North Berkeley BART Stations Zoning Standards Project EIR*.

The EIR Projected Buildout does not include units included in the University of California, Berkeley Long Range Development Plan (LRDP). The LRDP Environmental Impact Report (EIR) includes the addition of approximately 11,073 student beds and 549 employee housing units within the City of Berkeley (University of California, Berkeley 2021). As stated in Section 3, *Environmental Setting*, development associated with the LRDP is analyzed in the cumulative impact analysis throughout the EIR.

State Density Bonus

Residential projects proposed in the 2023-2031 Housing Element cycle may be eligible to utilize provisions of the State Density Bonus (California Government Code Sections 65915 – 65918). The State Density Bonus encourages the development of affordable and senior housing, including up to a 50 percent increase in project densities for most projects, depending on the amount of affordable housing provided, and up to an 80 percent increase in density for certain projects which are 100 percent affordable. The State Density Bonus also includes a package of incentives intended to help

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make the development of affordable and senior housing economically feasible. These include waivers and concessions, such as reduced setback, increased height or modified open space and other requirements.

Whether an individual project will utilize the State Density Bonus, or which aspects of State Density Bonus law an individual project would utilize, is difficult to predict. However, based on recent trends, multi-family residential projects in higher density residential and commercial zoning districts are most likely to utilize the State Density Bonus. As explained above, this EIR assesses a development potential greater than the projected housing need (RHNA) of 8,934 units, including units that could be built using State Density Bonus.

Change in Housing Units from Existing Conditions

According to the California Department of Finance, as of May 2022 there were an estimated 52,921 housing units in Berkeley. As shown in Table 2-2, the HEU analyzes the development of up to 19,098 net additional units by 2031, representing an increase of approximately 36 percent in the number of housing units in the city. If all units were to be permitted, there would be a total of 72,031 housing units in Berkeley by 2031. The pace of development is difficult to predict, and it is unlikely that all of these units will be built, but the inventory demonstrates more than sufficient capacity to meet the 6th cycle RHNA.

2.4.5 Zoning Ordinance Amendments

The project would include amendments to the Berkeley Municipal Code (BMC). BMC Chapters that would likely be amended include:

- Chapter 23.108 Zoning Districts and Map, to reflect any amended or consolidated zoning districts;
- Chapter 23.202 Residential Districts, to reflect changes in allowable development capacity in the R-1, R-1A, R-2, R-2A zoning districts, and the R-S, R-SMU and R-3 zoning districts in the Southside Plan Area;
- Chapter 23.204 Commercial Districts, to reflect changes in allowable development capacity in the C-T district in the Southside Plan Area; and
- Chapter 23.206 Manufacturing Districts, to reflect changes in allowable development capacity in the MU-R district; and
- Chapter 23.304 General Development Standards, to reflect revised development capacity consistent with the changes in the zoning districts above.

2.4.6 Land Use Element Update

The Land Use Element is a guide for the City's future development. It designates the distribution and general location of land uses, such as residential, retail, industrial, open space, recreation, and public uses. The Land Use Element also addresses the permitted density and intensity of the various land use designations as reflected on the City's General Plan Land Use Map.

The Land Use Element would be amended to include new policies and modifications to land use classifications to maintain consistency with the policies and zoning amendments in the updated Housing Element.

2.5 Required Approvals

With recommendations from the Planning Commission, the City of Berkeley City Council would need to take the following discretionary actions in conjunction with the HEU:

- Certification of the EIR;
- Adoption of a resolution amending the General Plan to update the Housing Element;
- Adoption of an ordinance (two readings) amending the City's zoning ordinance and the City's zoning map, and
- Adoption of a resolution making corresponding changes to the Land Use Element and General Plan Land Use Map required to preserve internal consistency and to reflect the location and density of land uses permitted by the Housing Element and City's zoning ordinance.

The 2023-2031 Housing Element will be submitted to HCD for review and comment prior to review and recommendation by the Planning Commission, followed by action and adoption by the City Council.

2.6 California Native American Tribal Consultation

The Confederated Villages of Lisjan requested consultation pursuant to Public Resources Code Section 21080.3.1. As a result of the City's consultation with Confederated Villages of Lisjan, a mitigation measure related to Tribal Cultural Resources has been included in Section 4.15, *Tribal Cultural Resources*, of this EIR.

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3 Environmental Setting

This section provides a general overview of the environmental setting for the proposed project. More detailed descriptions of the environmental setting for each environmental issue area can be found in Section 4, *Environmental Impact Analysis*.

3.1 City of Berkeley Setting

The City of Berkeley is located in northern Alameda County in the East Bay of the San Francisco Bay Area. It is regionally accessible via Interstate 580/80, State Route 123 (SR 123), State Route 13 (SR 13) and State Route 24 (SR 24). Berkeley itself is approximately 17.2 square miles, approximately 7.2 square miles of which is underwater in the San Francisco Bay. Most of Berkeley sits on a rolling sedimentary plain that increases slightly in elevation from sea level to the bottom of Berkeley Hills. The elevation increases more sharply along the base of the Berkeley Hills up to the ridgeline/city limit, east of the Hayward Fault. The highest peak along the ridge line above Berkeley is Grizzly Peak, sitting at an elevation of 1,754 feet.

Berkeley is highly urbanized and developed with a mix of land uses, including single-family residential neighborhoods, mixed-use and multi-family residential areas, offices, retail, religious and cultural institutions, schools, hotels, parking, recreational uses, and public streets. Commercial activity is primarily distributed between Downtown, West Berkeley, the neighborhoods and commercial districts of North Shattuck, Elmwood, Solano, Shattuck/Adeline, and Telegraph Avenue, and the commercial strips along San Pablo and University Avenues. Industrial areas are primarily located in West Berkeley along the railroad and San Palo Avenue corridors. Institutional uses include the University of California and other educational institutions in its vicinity, as well as numerous arts and theater venues and several medical facilities. Residential development and accompanying commercial services and public facilities including parks, schools and libraries are located throughout Berkeley.

Currently Berkeley has an estimated population of 124,563 and 52,921 housing units (California Department of Finance 2022). Berkeley is surrounded by urbanized areas to the north and south, and primarily open space in the hillsides to the east, with the San Francisco Bay to the west.

The Mediterranean climate of the region and coastal influence produce moderate temperatures year-round, with rainfall concentrated in the winter months. Air quality in the Bay Area Air Quality Management District (BAAQMD) is in nonattainment for ozone, particulate matter equal to or less than 10 micrometers in diameter (PM₁₀), and particulate matter equal to or less than 2.5 micrometers in diameter (PM_{2.5}) (BAAQMD 2017).

3.2 EIR Projected Buildout Setting

As shown in Table 2-3 in Section 2, *Project Description*, the projected buildout utilized for the analysis in this EIR consists of an EIR Sites Inventory, the Ashby and North Berkeley BART stations, as well as projections for implementation programs related to the middle housing rezoning (in the R-1, R-1A, R-2, R-2A, and MU-R districts) and the Southside Zoning Modification Project. Overall, this EIR assumes 19,098 units associated with the proposed HEU. Parcels included in the EIR Sites Inventory are shown on Figure 2-4 in Section 2, *Project Description*. These sites are located throughout

City of Berkeley
City of Berkeley 2023-2031 Housing Element Update

Berkeley, but mostly along existing commercial corridors such as San Pablo Avenue, University Avenue, Sixth Street, Seventh Street, Telegraph Avenue, and Shattuck Avenue as well as on the North Berkeley and Ashby BART station sites. Sites are also dispersed throughout the hillside area. The EIR Sites Inventory include undeveloped, underdeveloped, and developed parcels. This EIR also analyzes impacts associated with implementation programs that would apply in the middle housing rezoning districts and the Southside area. The locations of the middle housing rezoning districts are shown on Figure 2-5 in Section 2 and the location of the Southside area is shown on Figure 2-6 in Section 2.

3.3 Cumulative Development

In addition to the specific impacts of individual projects, the California Environmental Quality Act (CEQA) requires Environmental Impact Reports (EIRs) to consider potential cumulative impacts of the proposed project. CEQA defines “cumulative impacts” as two or more individual impacts that, when considered together, are substantial or will compound other environmental impacts. Cumulative impacts are the combined changes in the environment that result from the incremental impact of development of the proposed project and other nearby projects. For example, noise impacts of two nearby projects may be less than significant when analyzed separately but could have a significant impact when analyzed together. Cumulative impact analysis provides a reasonable forecast of future environmental conditions and can more accurately gauge the effects of a series of projects.

CEQA Guidelines Section 15130 requires cumulative impact analysis in EIRs to consider either a list of planned and pending projects that may contribute to cumulative effects or a summary of projections contained in an adopted planning document such as a general plan.

Some analyses including air quality, energy, greenhouse gas emissions, transportation, and population and housing, rely on much larger geographic areas such as the Bay Area region. For issues that may have regional cumulative implications, the cumulative impact analysis for this EIR is based on Plan Bay Area 2040, the Bay Area’s most recent Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Based on the forecasts in Plan Bay Area 2040, in 2040 Berkeley is estimated to have a population of 140,900, 55,400 housing units, and 121,700 jobs. Currently, Berkeley has an estimated population of 124,563, 52,921 housing units, and 116,435 jobs (see Tables 4.12-1 and 4.12-2 in Section 4.12, *Population and Housing*). Development under the proposed rezoning in conjunction with development forecasted in Plan Bay Area 2040 is accounted for in the cumulative impacts analysis.

For analyses that may have more localized or neighborhood implications (biological resources, cultural resources, noise, public services, utilities, wildfire), the cumulative impact analysis includes development proposed under the University of California, Berkeley’s Long Range Development Plan (LRDP) and Housing Projects #1 and #2 as described in the Draft EIR dated March 8, 2021 (University of California, Berkeley 2021). The LRDP Update planning assumption for the campus population is 48,200 students and 19,000 faculty and staff in the 2036-37 academic year compared to 39,300 students and 15,400 faculty and staff in the 2018-19 academic year. The LRDP update also assumes 9,325,88 square feet of development on non-campus University properties throughout Berkeley (including Housing Projects #1 and #2) compared to 4,640,769 square feet of development in 2018-2019.

4 Environmental Impact Analysis

This section discusses the possible environmental effects of the proposed HEU for the specific issue areas that were identified through the scoping process as having the potential for significant effects. *CEQA Guidelines* Section 15382 provides the following guidance:

“Significant effect on the environment” means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant.

The assessment of each issue area begins with a discussion of the environmental setting related to the issue, which is followed by the impact analysis. In the impact analysis, the first subsection identifies the methodologies used and the significance thresholds, which are those criteria adopted by the City and other agencies, universally recognized, or developed specifically for this analysis to determine whether potential effects are significant. The next subsection describes each potential impact of the proposed HEU, mitigation measures for significant impacts, and the level of significance after mitigation. Each effect under consideration for an issue area is separately listed in bold text with the discussion of the effect and its significance. Each bolded impact statement also contains a statement of the significance determination for the environmental impact as follows one of the following determinations:

- **Significant and Unavoidable.** An impact that cannot be reduced to below the threshold level given reasonably available and feasible mitigation measures. Such an impact requires a Statement of Overriding Considerations to be issued if the project is approved per *CEQA Guidelines* Section 15093.
- **Less than Significant with Mitigation Incorporated.** An impact that can be reduced to below the threshold level given reasonably available and feasible mitigation measures. Such an impact requires findings under *CEQA Guidelines* Section 15091.
- **Less than Significant.** An impact that may be adverse but does not exceed the threshold levels and does not require mitigation measures. However, mitigation measures that could further lessen the environmental effect may be suggested if they are readily available and easily achievable.
- **No Impact.** The proposed project would have no effect on environmental conditions or would reduce existing environmental problems or hazards.

Following each environmental impact discussion is a list of mitigation measures (if required) and the residual effects or level of significance remaining after implementation of the measure(s). In cases where the mitigation measure for an impact could have a significant environmental impact in another issue area, this impact is discussed and evaluated as a secondary impact. The impact analysis concludes with a discussion of cumulative effects, which evaluates the impacts associated with the proposed project in conjunction with other planned and pending developments in the area listed in Section 3, *Environmental Setting*. The Executive Summary of this EIR summarizes all impacts and mitigation measures that apply to the proposed project.

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4.1 Aesthetics

This section evaluates the potential impacts related to aesthetics, including scenic vistas, scenic resources, visual character and quality, and light and glare associated with the implementation of the proposed Housing Element Update.

4.1.1 Setting

Scenic Vistas

The City of Berkeley General Plan lists significant views in the city as including views toward the Bay, the hills, and significant landmarks such as the Campanile on the University of California Berkeley campus, the Golden Gate Bridge, and Alcatraz Island. Scenic vistas within Berkeley are generally limited to the Berkeley Hills where some locations provide panoramic views southward towards downtown Oakland and westward toward the San Francisco Bay. Views of Marin County, San Francisco, and the Golden Gate Bridge are visible on the horizon to the west. There are a number of scenic viewpoints from places in the hills, especially along Grizzly Peak Boulevard and at public viewpoints on Grizzly Peak Boulevard. Other roadways in the hills may also provide scenic views, though views are generally intermittent and fleeting, and some east-west oriented streets within the flat area of Berkeley provide narrow views of the San Francisco Bay. Some east-west oriented streets within the flat area of Berkeley also provide scenic views towards the Berkeley Hills of the hillsides which are dominated by mature trees with glimpses of residential development through the trees.

Visual Character

Berkeley is a dense, urbanized area with the built environment set against the backdrop of the East Bay hills. Most of Berkeley sits on a flat plain (commonly known as the “flats”) that increases slightly in elevation from sea level near the Bay to the bottom of the Berkeley Hills. The elevation increases more sharply along the base of the Berkeley Hills. Development in the city began in the late nineteenth century. The visual character of Berkeley is characterized by a mix of land use types, including residential, commercial, institutional, office, warehouse/industrial, mixed-use, and parks and recreational spaces with mature trees throughout the city and historic buildings present in some locations. Berkeley includes a mix of building types and architectural styles.

Berkeley has a number of distinct neighborhoods. The most densely populated areas are the neighborhoods surrounding the University of California, Berkeley campus. These include the Downtown area west of campus, which is the City’s commercial core, and the Southside area south of campus, which includes student housing and the commercial corridor along Telegraph Avenue. Other neighborhoods include the Claremont District in the southeastern corner of Berkeley, the Elmwood District along College Avenue, South Berkeley, West Berkeley, North Berkeley, and the Berkeley Hills.

Light and Glare

Major sources of light in Berkeley include street lighting along major streets and highways and nighttime lighting of residences, commercial buildings, and industrial buildings. Typically, light from residences are screened by trees or other structures. More significant sources of light include

locations where nighttime events occur and large amounts of lighting is needed such as at sports fields, though this lighting is typically temporary and only when events occur.

4.1.2 Regulatory Setting

a. State Regulations

California Scenic Highway Program

The California Department of Transportation manages the State Scenic Highway Program. The program was created in 1963 with the goal of protecting the aesthetic significance of scenic highways throughout the state. According to the State Streets and Highways Code (Sections 260 through 263), a highway may be designated as scenic based on its scenic quality, how much of the natural landscape can be seen by travelers, and the extent to which development intrudes on the traveler's enjoyment of the view. The California Scenic Highway Program's Scenic Highway System List identifies scenic highways that are either eligible for designation or have already been designated as such within Alameda County, but none of these occur within Berkeley (California Department of Transportation [Caltrans] 2022). Eligible and officially designated state scenic highways in the vicinity of Berkeley include:

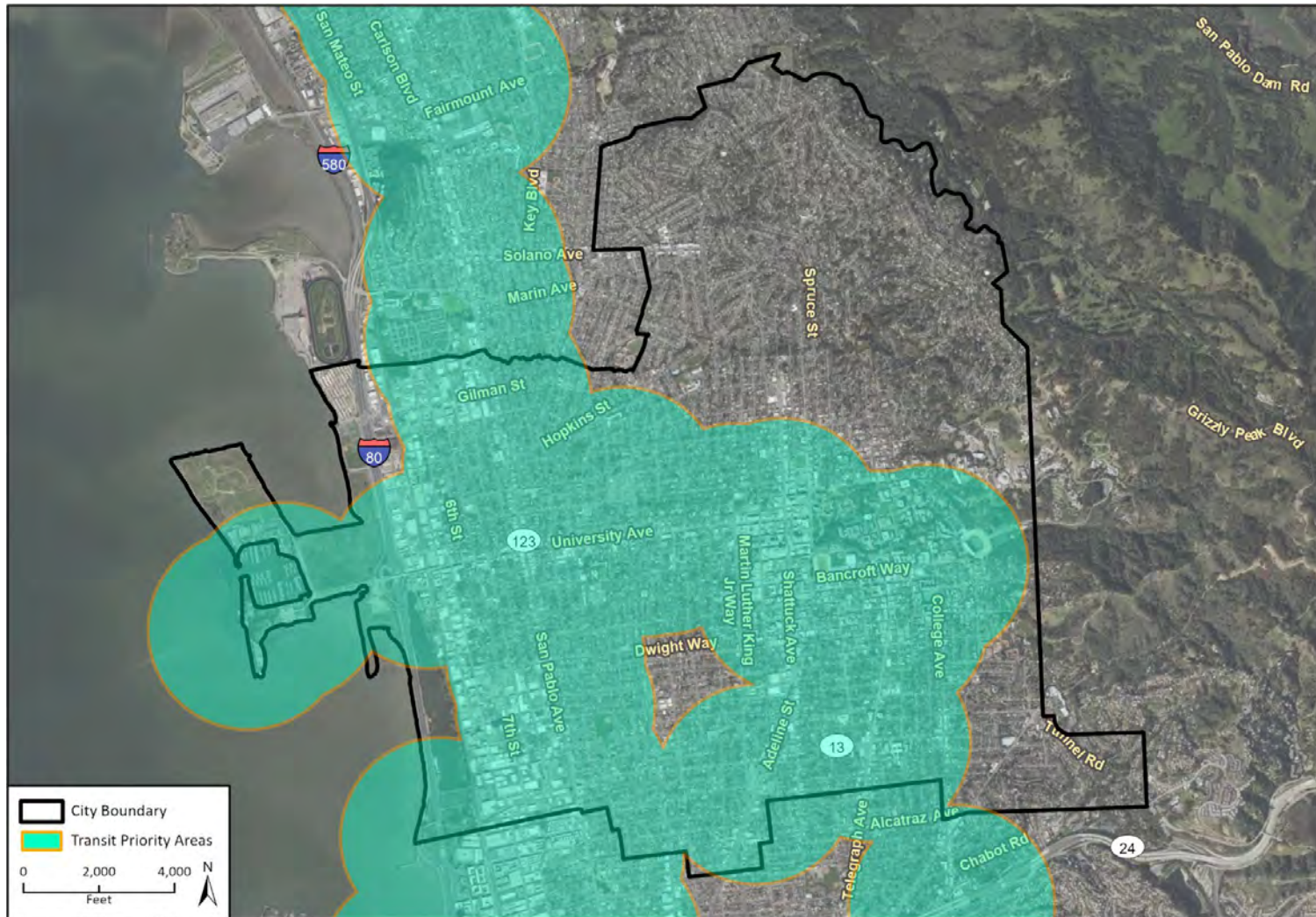
- **State Route (SR) 13 from SR 24 to I-580:** This route is eligible for listing and is located approximately 0.5 miles south of the closest point to the city limits.
- **I-80 from I-280 near First Street in San Francisco to SR 61 in Oakland.** This route is eligible for listing and is located approximately 1.5 miles south of the closest point to the city limits.
- **I-580 from San Leandro city limits to I-980 in Oakland.** This route is officially designated and is located approximately 1.6 miles south of the closest point to the city limits.
- **SR 24 from the eastern portal of the Caldecott Tunnel to I-680 near Walnut Creek.** This route is officially designated and is located approximately 1.5 miles east of the closest point to the city limits.

Senate Bill 743

Senate Bill 743 (California Public Resources Code Section 21099) passed in 2013, made changes to the CEQA for projects located in transit-oriented development areas. Among these changes are that a project's aesthetics impacts are no longer considered significant impacts on the environment if the project is a residential, mixed-use residential, or employment center project and if the project is located on an infill site within a transit priority area (TPA). Pursuant to Section 21099 of the California Public Resources Code, a "transit priority area" is defined in as an area within 0.5 mile of an existing or planned major transit stop. A "major transit stop" is defined in Section 21064.3 of the California Public Resources Code as a rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

Berkeley includes areas that are within a TPA including the downtown area, Southside area, and North Berkeley, and areas along major commercial corridors such as San Pablo Avenue, Shattuck Avenue, and Telegraph Avenue. Areas in Berkeley within a TPA are shown on Figure 4.1-1.

Figure 4.1-1 Transit Priority Areas in Berkeley



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Additional data provided by Metropolitan Transportation Commission, 2021.

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b. Local Regulations

City of Berkeley General Plan

The overall goal of the City's Urban Design and Preservation Element is to "Protect and enhance Berkeley's special built environment and cultural heritage by carefully conserving the numerous existing good buildings, areas, and other features and ensuring that new elements are so located and designed as to respect and strengthen the whole." Goals and policies related to scenic views and visual character include:

Policy UD-5: Architectural Features. Encourage, and where appropriate require, retention of ornaments and other architecturally interesting features in the course of seismic retrofit and other rehabilitation work.

Policy UD-16: Context. The design and scale of new or remodeled buildings should respect the built environment in the area, particularly where the character of the built environment is largely defined by an aggregation of historically and architecturally significant buildings.

Policy UD-17: Design Elements. In relating a new design to the surrounding area, the factors to consider should include height, massing, materials, color, and detailing or ornament.

Policy UD-18: Contrast and Cohesiveness. The overall urban experience should contain variety and stimulating contrasts achieved largely through contrast between different areas each of which is visually cohesive.

Policy UD-19: Visually Heterogeneous Areas. In areas that are now visually heterogeneous, a project should be responsive to the best design elements of the area or neighborhood.

Policy UD-20: Alterations. Alterations to a worthwhile building should be compatible with the building's original architectural character

Policy UD-22: Regulating New Construction and Alterations. Regulate new construction and alterations to ensure that they are individually well-designed and that they are so designed and located as to duly respect and where possible enhance the existing built environment.

Policy UD-23: Design Review. Ensure that the design review process ensures excellence in design and that new construction and alterations to existing buildings are compatible with the best elements of the character of the area.

Policy UD-24: Area Character. Regulate new construction and alterations to ensure that they are truly compatible with and, where feasible, reinforce the desirable design characteristics of the particular area they are in.

Policy UD-25: Facades and Exterior Features. Buildings should have significant exterior features and facades that stimulate the eye and invite interested perusal.

Policy UD-26: Pedestrian-Friendly Design. Architecture and site design should give special emphasis to enjoyment by, and convenience and safety for, pedestrians.

Policy UD-27: Relation to Sidewalk. Projects generally should be designed to orient the main entrance toward the public sidewalk, not a parking lot, and avoid confronting the sidewalk with a large windowless wall or tall solid fence.

Policy UD-28: Commercial Frontage. Commercial buildings on streets with public transit generally should have no appreciable setback from that street's sidewalk, except in the case of occasional plazas or sitting areas that enhance the area's pedestrian environment.

Policy UD-29: Signs. Signs should contribute aesthetically to, rather than detract from, the site they are on and the general streetscape.

Policy UD-31: Views. Construction should avoid blocking significant views, especially ones toward the Bay, the hills, and significant landmarks such as the Campanile, Golden Gate Bridge, and Alcatraz Island. Whenever possible, new buildings should enhance a vista or punctuate or clarify the urban pattern.

The Land Use Element of the General Plan also contains the following policies related to aesthetics.

Policy LU-3: Infill Development. Encourage infill development that is architecturally and environmentally sensitive, embodies principles of sustainable planning and construction, and is compatible with neighboring land uses and architectural design and scale.

Policy LU-4: Discretionary Review. Preserve and enhance the aesthetic, environmental, economic, and social character of Berkeley through careful land use and design review decisions.

City of Berkeley Municipal Code

Chapter 23 of the Berkeley Municipal Code (BMC) includes the City's Zoning Ordinance and regulates height, setbacks, and lot coverage for each of the City's zoning district. BMC Chapter 23 also contains several regulations pertaining to lighting and glare including:

- Section 23.304.100, Site Features in Residential Districts, requires that all exterior lighting shall be shielded and directed downward and away from lot lines to prevent excessive glare beyond the property on which the light is located. This section also states that lights on motion sensors may not be triggered by movement or activity located off the property on which the light is located.
- Section 23.322.110, Parking Lots in Residential Districts, states that Lighting fixtures must be oriented to direct the light away from adjacent lots.
- Section 23.304.130, Non-Residential Districts Abutting Residential Districts, requires that exterior lighting be shielded in a manner which avoids direct glare onto abutting lots in a Residential District.

4.1.3 Impact Analysis

a. Methodology and Significance Thresholds

The following thresholds of significance are based on *CEQA Guidelines* Appendix G. For purposes of this EIR, implementation of the proposed project may have a significant adverse impact if it would do any of the following:

1. Have a substantial adverse effect on a scenic vista;
2. Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;

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3. In non-urbanized areas, substantially degrade existing visual character or quality of public views of the site and its surroundings? If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality; or,
4. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

As described in the Section 4.1.2, Regulatory Setting, under Senate Bill 743 aesthetic impacts associated with residential projects in a TPA cannot be considered significant impacts on the environment. The proposed HEU provides a vision and planning framework to encourage the development of housing in accordance with State goals and to meet the RHNA. The proposed project identifies inventory sites where future housing development could occur and also assumes additional development at the North Berkeley and Ashby BART stations, in the R-1, R-1A, R-2, R-2A, and MU-R districts (middle housing rezoning districts), and in the Southside. Many of the inventory sites, the middle housing rezoning district sites, the BART station sites, and the Southside are within TPA as shown on Figure 4.1-1. These sites are either within 0.5 miles of a BART station or are served by multiple bus lines.

Because implementation of the proposed rezoning would facilitate residential development on infill sites within a TPA, aesthetics impacts of development of those locations within a TPA may not be considered significant impacts on the environment. Therefore, this analysis focuses on portions of Berkeley which are not within a TPA. This includes portions of North Berkeley and neighborhoods in the Berkeley Hills.

Pursuant to CEQA Statute Section 21099.d, “aesthetic impacts do not include impacts on historical or cultural resources.” This analysis is included in Section 4.4, *Cultural Resources*, of this EIR. In addition, Section 4.10, *Land Use and Planning*, includes a discussion of the proposed rezoning’s consistency with City plans and goals, including those applicable to design and aesthetics.

b. Project Impacts and Mitigation Measures

Threshold 1: Would the project have a substantial adverse effect on a scenic vista?
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Impact AES-1 IMPLEMENTATION OF THE PROPOSED HEU WOULD ALTER THE DEVELOPMENT PATTERN OF THE CITY SUCH THAT SCENIC VIEWS OF AND FROM PUBLIC VIEWPOINTS COULD BE ADVERSELY AFFECTED. POTENTIAL FUTURE NEW DEVELOPMENT THROUGHOUT THE CITY COULD BLOCK VIEWS OF A SCENIC VISTA FROM SOME PUBLIC VIEWPOINTS. HOWEVER, THIS WOULD OCCUR ON INDIVIDUAL SITES AND WOULD BE LIMITED. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

As stated above under Methodology and Significance Thresholds and shown on Figure 4.1-1, because most of the sites of future development are within a TPA and aesthetic impacts in those areas cannot be considered significant impacts, this analysis focuses on the impacts associated with development in areas within the city that are not in a TPA. The proposed HEU would involve increases in allowed height for building in the Southside; however, the entirety of the Southside area is within a TPA. Therefore, potential impacts associated with the height increase in the Southside would be less than significant.

In addition, for the purposes of this analysis, a scenic vista is a view from a public place (roadway, designated scenic viewing spot, etc.) that is expansive and considered important by a jurisdiction or a community. It can be obtained from an elevated position (such as from the top of a hillside) or it can be seen from a roadway with a longer-range view of the landscape. An adverse effect would

occur if a proposed project would alter, block, or otherwise damage a scenic vista upon implementation.

Scenic vistas in Berkeley are available from the Berkeley Hills towards the flat part of the city and towards the San Francisco Bay. Scenic views are also available from the western part of the city towards the hills. City of Berkeley General Plan Policy US-31 lists significant views in the city as including views toward the Bay, the hills, and significant landmarks such as the Campanile on the University of California Berkeley campus, the Golden Gate Bridge, and Alcatraz Island.

Berkeley includes views from public streets in the Berkeley Hills towards the San Francisco Bay across the urbanized landscape of Berkeley to the west. Most of the development that would be facilitated by the proposed HEU would occur in concentrations along already developed commercial corridors such as San Pablo Avenue, University Avenue, Shattuck Avenue, and Telegraph Avenue. These areas are urbanized with development of varying heights. Additional development along these corridors would not substantially alter or block views of the landscape and towards the Bay from public viewpoints in the hills, as building heights would be generally similar to existing and ongoing development on these corridors and the viewshed from the hills would remain available over such buildings. The proposed HEU would also involve development at scattered sites throughout the hills and in the R-1 district. However, development of these individual sites would also not substantially block public views from roadways in these areas as new buildings would be of a generally similar height as existing development and many of the views that would be affected are already fully or intermittently impeded by mature trees and buildings.

Views of the Bay to the west and of the hillsides to the east are also available from limited locations within the flat area of the city, especially along east-west streets. As stated previously, most of development under the HEU would be concentrated along commercial corridors. For the north-south oriented roadways, such as San Pablo Road, Shattuck Avenue, and Telegraph Avenue, views of the hills to the east and Bay to the west are already largely blocked by existing development, overhead transmission lines, and mature trees on private properties and beside roadways. For the east-west oriented roadways, such as University Avenue, the potential increase of development on either side of the roadway would not substantially block views that are currently available via the street corridors. Overall, in the limited areas where views are available from public roadways, these views are already blocked by existing urban development and an increase in that development would not directly block those views.

Overall, development associated with the proposed HEU would not substantially alter or block scenic vistas. This impact would be less than significant.

Mitigation Measures

This impact would be less than significant. No mitigation measures are required.

Threshold 2: Would the project substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Impact AES-2 THERE ARE NO DESIGNATED OR ELIGIBLE SCENIC HIGHWAYS IN BERKELEY OR WITH SUBSTANTIAL VIEWS OF BERKELEY. IMPLEMENTATION OF THE PROPOSED HEU NOT DAMAGE SCENIC RESOURCES VISIBLE FROM A SCENIC HIGHWAY. NO IMPACT WOULD OCCUR.

The closest designated State Scenic Highway to the city is I-580 in Oakland approximately 1.6 miles from the city limits. The closest eligible State Scenic Highway is SR 13 located approximately 0.5 miles from the city limits. No parts of the city are visible from these locations. Future development under the proposed HEU would not damage scenic resources in or within clear view of this State-designated Scenic Highway. This impact would be less than significant.

Mitigation Measures

This impact would be less than significant. No mitigation measures are required.

Threshold 3: Would the project, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Impact AES-3 BERKELEY IS URBANIZED AND FUTURE DEVELOPMENT UNDER THE PROPOSED HEU WOULD NOT CONFLICT WITH APPLICABLE ZONING AND OTHER REGULATIONS GOVERNING SCENIC QUALITY. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Berkeley can be categorized as an urban area as it is largely built out with a mix of residential neighborhoods, commercial areas and corridors, and industrial areas, and has a population of more than 100,000 residents (CEQA Statute Section 21071). The proposed HEU would provide a framework for introducing new housing at all levels of affordability that is within access to transit, jobs, services, and open spaces. The proposed project would meet the RHNA without rezoning for the inventory sites shown in Figure 2-4 in Section 2, *Project Description*. However, the proposed HEU would include zoning ordinance and zoning map amendments to increase the density of the middle housing rezoning districts to facilitate increased development in lower density residential districts. The project would also include zoning map and height amendments in the Southside Plan Area to change the following zoning parameters: building heights, building footprints (including setbacks and lot coverage), parking, ground-floor residential use, and adjustments to the existing zoning district boundaries. Overall, the proposed HEU would involve zoning changes, but future development under the program would not conflict with applicable zoning provisions regulating scenic quality such as height, lot coverage and setback requirements, as well as applicable design standards in effect at that time.

The proposed project would facilitate infill development on underutilized sites in order to increase density to accommodate a higher number of residents. Development facilitated by the project would be infill development and may enhance the visual quality of the affected sites in some cases by filling in vacant and underdeveloped visual areas with new development. Further, future development would be subject to design review as part of the project approval process. Individual future projects would be subject to the City's existing general development standards (BMC Chapter 23.304) to ensure that buildings are compatible with neighboring land uses and architectural design

and scale. Additionally, future development with two or more units would be required to comply with the City's proposed set of objective development standards which are anticipated to be adopted in Spring 2023. The objective standards will be tailored to streamline approval of housing projects under the HEU by providing a clear and consistent set of review rules and processes. Examples of standards that the City will define include building height, set back distances, and units allowed per acre. This would ensure that future development is compatible with the character and scale of Berkeley according to the City's standards (City of Berkeley 2022). There are no other applicable zoning regulations or other City regulations governing scenic quality.

Although the proposed HEU would increase building heights in the Southside, the Southside is within a TPA and therefore, as described above, aesthetic impacts would be less than significant.

Overall, for areas of the city not within a TPA, the proposed HEU would not conflict with regulations governing scenic quality. The impact would be less than significant.

Mitigation Measures

The impact would be less than significant. No mitigation measures are required.

Threshold: Would the project create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?

Impact AES-4 DEVELOPMENT FACILITATED BY THE PROPOSED HEU WOULD CREATE NEW SOURCES OF LIGHT OR GLARE THAT COULD ADVERSELY AFFECT DAYTIME OR NIGHTTIME VIEWS IN THE AREA. HOWEVER, BERKELEY IS ALREADY LARGELY BUILT OUT WITH SOURCES OF LIGHT AND GLARE THROUGHOUT THE CITY AND DEVELOPMENT WOULD NOT SUBSTANTIALLY ADD TO EXISTING LIGHT AND GLARE. WITH COMPLIANCE WITH EXISTING REGULATIONS, THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Berkeley is an urbanized city with commensurate level of light and glare. Development facilitated by the project would, in large part, occur as infill on already developed parcels or on vacant or underutilized sites within existing neighborhoods. New lighting could occur on buildings for safety and in pedestrian walkways, and light could be emitted from interior sources through windows on upper stories of tall buildings. The main source of glare would likely be from the sun shining on reflective or light-colored building materials and glazing.

Development facilitated by the proposed HEU would occur as redevelopment of existing built sites or infill development of unused parcels between existing built sites. When facilities such as parking lots are replaced with buildings, these replacements may reduce nighttime sources of light, because parking lots are often more brightly lit during the nighttime than most buildings. Development of underutilized or vacant parcels may result in new light sources, but they would likely be congruous with nearby light sources (e.g., lighting from residential windows). Furthermore, as the development facilitated by the project would be residential units, light from windows would be mostly filtered or obscured by window coverings. Light spillover from exterior residential lighting is typically blocked by adjacent structures or trees.

Further, Berkeley's Municipal Code has requirements to reduce the potential for new or substantial sources of light pollution in Berkeley. BMC Sections 23.304.100 and 23.304.130 require that exterior lighting be shielded to avoid light spillover onto adjacent residential properties.

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Overall, new residential development would be in existing residential neighborhoods or along commercial corridors where sources of light and glare already exist. Development under the proposed HEU would not create new sources of substantial light or glare that would adversely affect daytime or nighttime views in the area and the impact therefore is less than significant.

Mitigation Measures

This impact would be less than significant. No mitigation measures are required.

c. Cumulative Impacts

Development in Berkeley facilitated by the proposed HEU in conjunction with buildout under the University of California, Berkeley's LRDP could result in impacts to visual resources and aesthetic quality, although visual quality could improve with redevelopment of aging buildings and vacant sites. Implementation of the project would encourage increased housing development citywide, mainly in areas already developed with other uses. The Southside Plan area, the Ashby and North Berkeley BART stations, and most sites in the EIR Sites Inventory, would be within TPAs and therefore would not result in significant aesthetics impacts. Future projects in Berkeley that are not within TPAs may undergo analysis for impacts to aesthetics and visual resources. Potential impacts could be addressed by design guidelines, regulations, policies, and project-specific measures, thereby limiting impacts on existing visual resources and enhancing the visual quality of areas where development occurs. Consequently, development facilitated by the proposed HEU would not result in significant cumulative environmental impacts in conflict with requirements for preserving scenic vistas, scenic resources in State- or locally designated highways or drives, visual quality, and for limiting the effects of light and glare. Therefore, project implementation would not result in a cumulatively considerable contribution to impact on aesthetics.

4.2 Air Quality

This section analyzes the effects of the proposed HEU on air quality emissions and the associated impacts. This section analyzes both temporary air quality impacts relating to construction activity and possible long-term air quality impacts associated with buildout of the proposed project. The analysis herein is based partially on the vehicle miles traveled (VMT) data provided by Kittelson & Associates (2022).

4.2.1 Setting

a. Existing Air Quality Setting

Local Climate and Meteorology

Berkeley is located in the “Northern Alameda and Western Contra Costa Counties” climatological subregion of the San Francisco Bay Area Air Basin (SFBAAB), which is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). This subregion is bordered on the east by the Oakland-Berkeley Hills and on the west by the San Francisco Bay (Bay). Marine air traveling through the Golden Gate is a dominant weather factor, and the Oakland-Berkeley Hills cause the westerly flow of air to split off the north and south of Oakland, which causes diminishing wind speeds. Air temperatures are moderated by the subregion's proximity to marine air. During the summer months, average maximum temperatures are in the mid-70 degrees Fahrenheit (°F), and during the winter months, average maximum temperatures are in the mid- to high 50°F (BAAQMD 2017a).

Air quality in the SFBAAB is affected by the emission sources located in the region and by natural factors. Air pollutant emissions in the SFBAAB are generated primarily by stationary and mobile sources. Stationary sources can be divided into two major subcategories: point and area sources. Point sources occur at a specific location and are often identified by an exhaust vent or stack. Examples include boilers or combustion equipment that produce electricity or generate heat. Area sources are distributed widely and include those such as residential and commercial water heaters, painting operations, lawn mowers, agricultural fields, landfills, and some consumer products. Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. On-road sources may be operated legally on roadways and highways. Off-road sources include aircraft, ships, trains, and self-propelled construction equipment. Air pollutants can also be generated by the natural environment such as when high winds suspend fine dust particles.

Atmospheric conditions such as wind speed and direction, air temperature gradients, and local and regional topography influence air quality. Complex topographical features, the location of the Pacific high-pressure system, and varying circulation patterns associated with temperature gradients affect the speed and direction of local winds, which play a major role in the dispersion of pollutants. Strong winds can carry pollutants far from their source, but a lack of wind will allow pollutants to concentrate in an area. Air dispersion also affects pollutant concentrations. As altitude increases, air temperature normally decreases. However, inversions can occur when colder air becomes trapped below warmer air, restricting the air masses' ability to mix. Pollutants also become trapped, which promotes the production of secondary pollutants. Subsidence inversions, which can occur during the summer in the SFBAAB, result from high-pressure cells that cause the local air mass to sink, compress, and become warmer than the air closer to the earth. Pollutants accumulate as this stagnating air mass remains in place for one or more days (BAAQMD 2017a).

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The air pollution potential in Northern Alameda and Western Contra Costa Counties climatological subregion is lowest in areas closest to the Bay due to good ventilation and lower influxes of pollutants from upwind sources. Air pollution potential in Berkeley is marginally higher than that of communities directly east of the Golden Gate because of the lower frequency of strong winds. This subregion contains a variety of industrial air pollution sources, some of which are close to residential areas, as well as congested major freeways, which are a major source of motor vehicle emissions (BAAQMD 2017a).

Air Quality Pollutants of Primary Concern

The federal and State clean air acts mandate the control and reduction of certain air pollutants. Under these laws, USEPA and CARB have established ambient air quality standards for certain criteria pollutants. Ambient air pollutant concentrations are affected by the rates and distributions of corresponding air pollutant emissions, and by the climate and topographic influences discussed above. Proximity to major sources is the primary determinant of concentrations of non-reactive pollutants, such as CO and suspended particulate matter. Ambient CO levels usually follow the spatial and temporal distributions of vehicular traffic. A discussion of each primary criterion pollutant is provided below.

Ozone

Ozone is produced by a photochemical reaction (i.e., triggered by sunlight) between nitrogen oxides (NO_x) and reactive organic gases (ROG).¹ NO_x is formed during the combustion of fuels, while ROG is formed during combustion and evaporation of organic solvents. Because ozone requires sunlight to form, it mostly occurs in substantial concentrations between the months of April and October. Ozone is a pungent, colorless, toxic gas with direct health effects on humans including respiratory and eye irritation and possible changes in lung functions. Groups most sensitive to ozone include children, the elderly, people with respiratory disorders, and people who exercise strenuously outdoors.

Carbon Monoxide

CO is an odorless, colorless gas and causes health problems such as fatigue, headache, confusion, and dizziness. The incomplete combustion of petroleum fuels by on-road vehicles and at power plants is a major cause of CO, which is also produced during the winter from wood stoves and fireplaces. CO tends to dissipate rapidly into the atmosphere; consequently, violations of the State CO standards are associated generally with major roadway intersections during peak-hour traffic conditions.

Localized CO “hotspots” can occur at intersections with heavy peak-hour traffic. Specifically, hotspots can be created at intersections where traffic levels are sufficiently high that the local CO concentration exceeds the NAAQS of 35.0 ppm or the CAAQS of 20.0 ppm.

¹ CARB defines VOC and ROG similarly as, “any compound of carbon excluding CO, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate,” with the exception that VOC are compounds that participate in atmospheric photochemical reactions (CARB 2009). For the purposes of this analysis, ROG and VOC are considered comparable in terms of mass emissions and the term ROG is used in this report.[1] CARB defines VOC and ROG similarly as, “any compound of carbon excluding CO, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate,” with the exception that VOC are compounds that participate in atmospheric photochemical reactions (CARB 2009). For the purposes of this analysis, ROG and VOC are considered comparable in terms of mass emissions and the term ROG is used in this report.

Nitrogen Dioxide

NO₂ is a by-product of fuel combustion, with the primary source being motor vehicles and industrial boilers and furnaces. Nitric oxide is the principal form of nitrogen oxide produced by combustion, but nitric oxide reacts rapidly to form NO₂, creating the mixture of NO and NO₂ commonly called NO_x. Nitrogen dioxide is an acute irritant. A relationship between NO₂ and chronic pulmonary fibrosis may exist, and an increase in bronchitis may occur in young children at concentrations below 0.3 ppm. Nitrogen dioxide absorbs blue light and causes a reddish-brown cast to the atmosphere and reduced visibility. It can also contribute to the formation of PM₁₀ and acid rain.

Suspended Particulate Matter

PM₁₀ is particulate matter measuring no more than 10 microns in diameter; PM_{2.5} is fine particulate matter measuring no more than 2.5 microns in diameter. Suspended particulates are mostly dust particles, nitrates, and sulfates. Both PM₁₀ and PM_{2.5} are by-products of fuel combustion and wind erosion of soil and unpaved roads and are directly emitted into the atmosphere through these processes. Suspended particulates are also created in the atmosphere through chemical reactions. The characteristics, sources, and potential health effects associated with the small particulates (those between 2.5 and 10 microns in diameter) and fine particulates (those 2.5 microns and below) can be very different.

The small particulates generally come from windblown dust and dust kicked up by mobile sources. The fine particulates are generally associated with combustion processes, and form in the atmosphere as a secondary pollutant through chemical reactions. Fine particulate matter is more likely to penetrate deeply into the lungs and poses a health threat to all groups, but particularly to the elderly, children, and those with respiratory problems. More than half of the small and fine particulate matter inhaled into the lungs remains there. These materials can damage health by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of an absorbed toxic substance.

Lead

Lead is a metal found in the environment and in manufacturing products. Historically, the major sources of lead emissions have been mobile and industrial sources. In the early 1970s, the USEPA set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The USEPA completed the ban prohibiting the use of leaded gasoline in highway vehicles in December 1995. As a result of the USEPA's regulatory efforts to remove lead from gasoline, atmospheric lead concentrations have declined substantially over the past several decades. The most dramatic reductions in lead emissions occurred prior to 1990 due to the removal of lead from gasoline sold for most highway vehicles. Because of phasing out leaded gasoline, metal processing is now the primary source of lead emissions. The highest level of lead in the air is found generally near lead smelters. Other stationary sources include waste incinerators, utilities, and lead-acid battery manufacturers.

Toxic Air Contaminants

The California Health and Safety Code defines a toxic air contaminant (TAC) as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." Most of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being diesel particulate matter (DPM) from diesel-fueled engines. According to CARB, diesel engine emissions are believed to be

responsible for about 70 percent of California’s estimated known cancer risk attributable to TACs and they make up about 8 percent of outdoor PM_{2.5} (CARB 2021a).

Air Quality Standards

The federal and State governments have established ambient air quality standards for the protection of public health. The United States Environmental Protection Agency (USEPA) is the federal agency designated to administer air quality regulation, while the California Air Resources Board (CARB) is the State equivalent in the California Environmental Protection Agency (CalEPA). The BAAQMD provides local management of air quality in the City. CARB has established air quality standards and is responsible for the control of mobile emission sources, while the BAAQMD is responsible for enforcing standards and regulating stationary sources.

The USEPA has set primary National Ambient Air Quality Standards (NAAQS) for ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter with an aerodynamic diameter equal to or less than 10 microns (PM₁₀), fine particulate matter with an aerodynamic diameter equal to or less than 2.5 microns (PM_{2.5}), and lead. Primary standards are those levels of air quality deemed necessary, with an adequate margin of safety, to protect public health. In addition, California has established health-based ambient air quality standards (CAAQS) for these and other pollutants, some of which are more stringent than the federal standards. Table 4.2-1 lists the current federal and State standards for regulated pollutants.

As a local air quality management agency, the BAAQMD must monitor air pollutant levels to ensure that State and federal air quality standards are met and, if they are not met, to develop strategies to meet them. Depending on whether standards are met or exceeded, a local air basin is classified as in “attainment” or “non-attainment.” The SFBAAB is designated non-attainment for the federal standards for ozone and PM_{2.5} and in non-attainment for the State standard for ozone, PM_{2.5}, and PM₁₀.

Table 4.2-1 Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards		National Standards	
		Concentration	Attainment Status	Concentration	Attainment Status
Ozone	8 Hour	0.070 ppm	N	0.070 ppm	N
	1 Hour	0.09 ppm	N	-	-
Carbon Monoxide	8 Hour	9.0 ppm	A	9 ppm	A
	1 Hour	20 ppm	A	35 ppm	A
Nitrogen Dioxide	1 Hour	0.18 ppm	A	0.100 ppm	U
	Annual Arithmetic Mean	0.030 ppm	-	0.053 ppm	A
Sulfur Dioxide	24 Hour	0.04 ppm	A	0.14 ppm	A
	1 Hour	0.25 ppm	A	0.075 ppm	A
	Annual Arithmetic Mean	-	-	0.030 ppm	A
Particulate Matter (PM ₁₀)	Annual Arithmetic Mean	20 µg/m ³	N	-	-
	24 Hour	50 µg/m ³	N	150 µg/m ³	U
Particulate Matter - Fine (PM _{2.5})	Annual Arithmetic Mean	12 µg/m ³	N	12 µg/m ³	U/A
	24 Hour	-	-	35 µg/m ³	N
Sulfates	24 Hour	25 µg/m ³	A	-	-

Pollutant	Averaging Time	California Standards		National Standards	
		Concentration	Attainment Status	Concentration	Attainment Status
Lead	Calendar Quarter	-	-	1.5 µg/m ³	A
	Rolling 3 Month Average	-	-	0.15 µg/m ³	-
	30 Day Average	1.5 µg/m ³	-	-	A
Hydrogen Sulfide	1 Hour	0.03 ppm	U	-	-
Vinyl Chloride (chloroethene)	24 Hour	0.010 ppm	No information available	-	-
Visibility Reducing particles	8 Hour (10:00 to 18:00 PST)	-	U	-	-

A=Attainment N=Nonattainment U=Unclassified; mg/m³=milligrams per cubic meter ppm=parts per million µg/m³=micrograms per cubic meter

Source: BAAQMD 2017a, <http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status>

Current Air Quality

CARB and the U.S. EPA established ambient air quality standards for major pollutants, including ozone, CO, NO₂, SO₂, Pb, and PM₁₀ and PM_{2.5}. Standards have been set at levels intended to be protective of public health. California standards are more restrictive than federal standards for each of these pollutants except for lead and the eight-hour average for CO.

The closest air quality monitoring station to the City is the Berkeley-Aquatic Park station at 1 Bolivar Drive. The Berkeley-Aquatic Park station monitors ozone, CO, NO₂, and PM_{2.5}. The San Pablo-Rumrill Boulevard station was used for PM₁₀ measurements. Table 4.2-2 indicates the number of days that each of the air quality standards have been exceeded at the stations during the monitoring period from 2018 through 2020. PM_{2.5} exceeded federal thresholds 13 times in 2018 and 7 times in 2020. PM₁₀ exceeded state thresholds twice in 2018 and once in 2020, and also exceeded federal thresholds once in 2018. No other thresholds were exceeded in the years 2018 through 2020.

Table 4.2-2 Ambient Air Quality at Nearest Monitoring Stations

Pollutant	2018	2019	2020
Berkeley-Aquatic Park Station			
8-Hour Ozone (ppm), maximum	0.049	0.042	0.043
Number of days of state exceedances (>0.070 ppm)	0	0	0
Number of days of federal exceedances (>0.070 ppm)	0	0	0
1-hour Ozone (ppm), maximum	0.059	0.050	0.058
Number of days of state exceedances (>0.09 ppm)	0	0	0
Number of days of federal exceedances (>0.112 ppm)	0	0	0
Nitrogen dioxide (ppb), 1-hour maximum	72.6	49.8	46.9
Number of days of state exceedances (>180 ppb)	0	0	0
Number of days of federal exceedances (>100 ppb)	0	0	0
Particulate matter <2.5 microns, µg/m ³ , 24-hour maximum	165.5	28.8	158.2
Number of days above federal standard (>35 µg/m ³)	13	0	7

Pollutant	2018	2019	2020
San Pablo- Rumrill Boulevard Station			
Particulate matter <10 microns, $\mu\text{g}/\text{m}^3$, 24-hour maximum	201	34.7	112.7
Number of days of state exceedances ($>50 \mu\text{g}/\text{m}^3$)	2	0	1
Number of days of federal exceedances ($>150 \mu\text{g}/\text{m}^3$)	1	0	0

ppm = parts per million
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter
 Source: CARB 2021b

Sensitive Receptors

Ambient air quality standards have been established to represent the levels of air quality considered sufficient to protect public health and welfare, with a margin of safety. They are designed to protect that segment of the public most susceptible to the effects of air pollutants and subsequent respiratory distress, such as children under 14, the elderly over 65, persons engaged in strenuous work or exercise, and people with cardiovascular and chronic respiratory diseases. The following locations contain sensitive receptors within Berkeley:

- Residences throughout the city
- Childcare centers, preschools, and K-12 schools
- Hospitals such as the Alta Bates Summit Medical Center and Sutter East Bay Medical Foundation
- Senior centers such as the North Berkeley Senior Center and the Judge Henry Ramsey Jr. South Berkeley Senior Center (City of Berkeley 2022)

4.2.2 Regulatory Setting

a. Federal Regulations

Federal Clean Air Act

The USEPA is charged with implementing national air quality programs. USEPA’s air quality mandates are drawn primarily from the federal Clean Air Act (CAA), passed in 1963 by the U.S. Congress and amended several times. The 1970 federal CAA amendments strengthened previous legislation and laid the foundation for the regulatory scheme of the 1970s and 1980s. In 1977, Congress again added several provisions, including non-attainment requirements for areas not meeting NAAQS and the Prevention of Significant Deterioration program. The 1990 federal CAA amendments represent the latest in a series of federal efforts to regulate air quality in the United States.

National Ambient Air Quality Standards

The federal CAA requires USEPA to establish primary and secondary NAAQS for several criteria air pollutants. The air pollutants for which standards have been established are considered the most prevalent air pollutants known to be hazardous to human health. NAAQS have been established for ozone, CO, NO₂, SO₂, PM₁₀, PM_{2.5}, and Pb. Table 4.2-1 under *Air Quality Standards* lists the current federal standards for regulated pollutants.

b. State Regulations

California Clean Air Act

The California CAA, signed into law in 1988, requires all areas of the State to achieve and maintain the CAAQS by the earliest practical date. CARB is the State air pollution control agency and is a part of CalEPA. CARB is the agency responsible for coordination and oversight of State and local air pollution control programs in California, and for implementing the requirements of the California CAA. CARB oversees local district compliance with federal and California laws, approves local air quality plans, submits the State implementation plans to the USEPA, monitors air quality, determines and updates area designations and maps, and sets emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

California Ambient Air Quality Standards

The California CAA requires CARB to establish ambient air quality standards for California, known as CAAQS. Similar to the NAAQS, CAAQS have been established for criteria pollutants and standards are established for vinyl chloride, hydrogen sulfide, sulfates, and visibility-reducing particulates. In general, the CAAQS are more stringent than the NAAQS on criteria pollutants. Table 4.2-1 under *Air Quality Standards* lists the current State standards for regulated pollutants. The California CAA requires all local air districts to endeavor to achieve and maintain the CAAQS by the earliest practical date. The California CAA specifies that local air districts focus attention on reducing the emissions from transportation and area-wide emission sources and provides districts with the authority to regulate indirect sources.

CARB released a technical advisory on reducing air pollution near high-volume roadways to clarify the 500-foot recommendation from 2005 due to the increased focus on and benefits from infill development, which can often occur within 500 feet of a major roadway (CARB 2017). As described in the technical advisory, California has implemented various measures to improve air quality and reduce exposure to traffic emissions. These include the Diesel Risk Reduction Plan, which aims to reduce particulate matter emissions from diesel vehicles. The continued electrification of California's vehicle fleet would also reduce PM_{2.5} levels, and ongoing efforts to reduce emissions from cars and trucks and to move vehicles towards "zero emission" alternatives will continue to drive down traffic pollution (CARB 2017).

As shown in Table 4.2-2, the nearest monitoring stations to the housing inventory sites have shown the area to have relatively clean air. PM_{2.5} exceeded federal thresholds 13 times in 2018 and 7 times in 2020, while PM₁₀ exceeded state thresholds twice in 2018 and once in 2020, and also exceeded federal thresholds once in 2018.

c. Regional and Local Regulations

Bay Area Air Quality Management District

The BAAQMD is the agency primarily responsible for assuring national and State ambient air quality standards are attained and maintained in the SFBAAB. The BAAQMD is also responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, awarding grants to reduce motor vehicle emissions, and conducting public education campaigns, as well as many other

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activities. The BAAQMD has jurisdiction over much of the nine-county Bay Area, including the including the City of Berkeley.

The BAAQMD adopted the 2017 Clean Air Plan as an update to the 2010 Clean Air Plan. The 2017 Clean Air Plan provides a regional strategy to protect public health and protect the climate, which would apply to SFBAAB. To fulfill State ozone planning requirements, the 2017 control strategy includes all feasible measures to reduce emissions of ozone precursors—ROG and NO_x—and reduce transport of ozone and its precursors to neighboring air basins, such as stationary-source control measures to be implemented through the BAAQMD regulations; mobile-source control measures to be implemented through incentive programs and other activities; and transportation control measures to be implemented through transportation programs in cooperation with the Metropolitan Transportation Commission (MTC), local governments, transit agencies, and others. In addition, the 2017 Clean Air Plan builds upon and enhances the BAAQMD’s efforts to reduce emissions of fine particulate matter and toxic air contaminants. The 2017 Clean Air Plan also represents the Bay Area’s most recent triennial assessment of the region’s strategy to attain the state 1-hour ozone standard (BAAQMD 2017b).

City of Berkeley General Plan

The City of Berkeley General Plan Environmental Management and Transportation elements contain the following policies specific to air quality (City of Berkeley 2003):

Policy EM-18 Regional Air Quality Action. Continue working with the BAAQMD and other regional agencies to:

1. Improve air quality through pollution prevention methods.
2. Ensure enforcement of air emission standards.
3. Reduce local and regional traffic (the single largest source of air pollution in the city) and promote public transit.
4. Promote regional pollution prevention plans for business and industry.
5. Promote strategies to reduce particulate pollution from residential fireplaces and wood-burning stoves.
6. Locate parking appropriately and provide signage to reduce unnecessary “circling” and searching for parking.

Policy T-19 Air Quality Impacts. Continue to encourage innovative technologies and programs such as clean-fuel, electric, and low-emission cars that reduce the air quality impacts of the automobile.

Policy T-29 Infrastructure Improvements. Facilitate mobility and the flow of traffic on major and collector streets, reduce the air quality impacts of congestion, improve pedestrian and bicycle access, and speed public transportation throughout the city by making improvements to the existing physical infrastructure.

Berkeley Municipal Code

In 2019, the Berkeley City Council added Chapter 12.80 to the Berkeley Municipal Code (BMC) via Ordinance No. 7,672-N.S., which prohibits the installation of natural gas infrastructure in newly constructed buildings unless the applicant can establish that it is not physically feasible to construct the building without natural gas infrastructure or if its use serves the public interest.

Berkeley has adopted the California Energy Code in BMC Chapter 19.36. In addition, BMC Section 19.36.040, includes a “reach code” that exceeds the energy efficiency standards of the California Energy Code.

4.2.3 Impact Analysis

a. Thresholds of Significance

To determine whether a project would result in a significant impact to air quality, Appendix G of the *CEQA Guidelines* requires consideration of whether a project would:

1. Conflict with or obstruct implementation of the applicable air quality plan;
2. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or State ambient air quality standard;
3. Expose sensitive receptors to substantial pollutant concentrations; or
4. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

BAAQMD Significance Thresholds

The plan-level thresholds specified in the May 2017 BAAQMD *CEQA Air Quality Guidelines* were used to determine whether the proposed project impacts exceed the thresholds identified in *CEQA Guidelines* Appendix G.

Consistency with the Air Quality Plan

Under BAAQMD’s methodology, a determination of consistency with *CEQA Guidelines* thresholds should demonstrate that a project:

1. Supports the primary goals of the 2017 Clean Air Plan;
2. Includes applicable control measures from the 2017 Clean Air Plan; and
3. Does not disrupt or hinder implementation of any 2017 Clean Air Plan control measures.

Construction Emissions Thresholds

The BAAQMD’s May 2017 *CEQA Air Quality Guidelines* have no plan-level significance thresholds for construction air pollutants emissions. However, they do include project-level screening and emissions thresholds for temporary construction-related emissions of air pollutants. These thresholds represent the levels at which a project’s individual emissions of criteria air pollutants or precursors would result in a cumulatively considerable contribution to the SFBAAB’s existing air quality conditions and are discussed in detail below (BAAQMD 2017a). Construction emissions associated with plan implementation are discussed qualitatively to evaluate potential air quality impacts.

The BAAQMD developed screening criteria in the 2017 *CEQA Air Quality Guidelines* to provide lead agencies and project applicants with a conservative indication of whether a project could result in potentially significant air quality impacts. The screening criteria for residential land uses are shown in Table 4.2-3.

Table 4.2-3 BAAQMD Criteria Air Pollutant Screening Levels

Land Use Type	Operational Criteria Pollutant Screening Size (du)	Construction Criteria Pollutant Screening Size (du)
Single-family	325 (NO _x)	114 (ROG)
Apartment, low-rise	451 (ROG)	240 (ROG)
Apartment, mid-rise	494 (ROG)	240 (ROG)
Apartment, high-rise	510 (ROG)	249 (ROG)
Condo/townhouse, general	451 (ROG)	240 (ROG)
Condo/townhouse, high-rise	511 (ROG)	252 (ROG)
Mobile home park	450 (ROG)	114 (ROG)
Retirement community	487 (ROG)	114 (ROG)
Congregate care facility	657 (ROG)	240 (ROG)

du = dwelling unit; NO_x = oxides of nitrogen; ROG = reactive organic gases
 Source: BAAQMD 2017a

If a project meets the screening criteria, then the lead agency or applicant would not need to perform a detailed air quality assessment of their project’s air pollutant emissions. These screening levels are generally representative of new development on greenfield sites without any form of mitigation measures taken into consideration (BAAQMD 2017a).

In addition to the screening levels above, several additional factors are outlined in the 2017 *CEQA Air Quality Guidelines* that construction activities must satisfy for a project to meet the construction screening criteria:

- All basic construction measures from the 2017 *CEQA Guidelines* must be included in project design and implemented during construction
- Construction-related activities would *not* include any of the following:
 - Demolition
 - Simultaneous occurrence of more than two construction phases (e.g., paving and building construction would occur simultaneously)
 - Simultaneous construction of more than one land use type (e.g., project would develop residential and commercial uses on the same site) (not applicable to high density infill development)
 - Extensive material transport (e.g., greater than 10,000 cubic yards of soil import/export) requiring a considerable amount of haul truck activity

For projects that do not meet the screening criteria above, the BAAQMD construction significance thresholds for criteria air pollutants, shown in Table 4.2-4, are used to evaluate a project’s potential air quality impacts.

Table 4.2-4 BAAQMD Criteria Air Pollutant Significance Thresholds

Pollutant	Construction Thresholds Average Daily Emissions (lbs/day)	Operational Threshold Average Daily Emissions (lbs/day)	Operational Threshold Maximum Annual Emissions (tons/year)
ROG	54	54	10
NO _x	54	54	10
PM ₁₀	82 (exhaust)	82	15
PM _{2.5}	54 (exhaust)	54	10
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	Not Applicable

lbs = pounds; NO_x = oxides of nitrogen; ROG = reactive organic gases; PM_{2.5} = particulate matter with an aerodynamic diameter equal to or less than 2.5 microns
 Source: BAAQMD 2017a

For all projects in the SFBAAB, the BAAQMD 2017 *CEQA Air Quality Guidelines* recommends implementation of the Basic Construction Mitigation Measures listed in Table 8-2 of the Guidelines (BAAQMD 2017a). For projects that exceed the thresholds in Table 4.2-4, the BAAQMD 2017 *CEQA Air Quality Guidelines* recommends implementation of the Additional Construction Mitigation Measures listed in Table 8-3 of the Guidelines (BAAQMD 2017a).

Operation Emissions Thresholds

The BAAQMD's 2017 *CEQA Air Quality Guidelines* contain specific operational plan-level significance thresholds for criteria air pollutants. Plans must show the following over the planning period:

- Consistency with current air quality plan control measures, and
- Vehicle miles traveled (VMT) or vehicle trips increase is less than or equal to the plan's projected population increase.

If a plan can demonstrate consistency with both criteria, then impacts would be less than significant. The current air quality plan is the 2017 Clean Air Plan.

For project-level thresholds, the screening criteria for operational emissions are shown in Table 4.2-3. For projects that do not meet the screening criteria, the BAAQMD operational significance thresholds for criteria air pollutants, shown in Table 4.2-4, are used to evaluate a project's potential air quality impacts.

Carbon Monoxide Hotspots

BAAQMD provides a preliminary screening methodology to conservatively determine whether a proposed project would exceed CO thresholds. If the following criteria are met, the individual project would result in a less than significant impact related to local CO concentrations:

1. The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans;
2. Project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour; and

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3. Project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

Toxic Air Contaminants

For health risks associated with TAC and PM_{2.5} emissions, the BAAQMD May 2017 CEQA Air Quality Guidelines state a project would result in a significant impact if the any of the following thresholds are exceeded (BAAQMD 2017a):

- Non-compliance with Qualified Community Risk Reduction Plan;
- Increased cancer risk of > 10.0 in a million;
- Increased non-cancer risk of > 1.0 Hazard Index (Chronic or Acute); or
- Ambient PM_{2.5} increase of > 0.3 µg/m³ annual average

Lead

Projects would be required to comply with BAAQMD Regulation 11, Rule 1 (Lead), which is intended to control the emission of lead to the atmosphere.

Asbestos

Demolition of buildings would be subject to BAAQMD Regulation 11, Rule 2 (Asbestos Demolition, Renovation, and Manufacturing). BAAQMD Regulation 11, Rule 2 is intended to limit asbestos emissions from demolition and the associated disturbance of asbestos-containing waste material generated or handled during these activities. This rule requires notification of BAAQMD of any regulated demolition activity, and contains specific requirements for surveying, notification, removal, and disposal of material containing asbestos. Impacts related to asbestos emissions from projects that comply with Regulation 11, Rule 2 are considered to be less than significant since the regulation would ensure the proper and safe disposal of asbestos containing material.

Odors

The BAAQMD provides minimum distances for siting of new odor sources shown in Table 4.2-5. A significant impact would occur if the project would result in other emissions (such as odors) affecting substantial numbers of people or would site a new odor source as shown in Table 4.2-5 within the specified distances of existing receptors.

Table 4.2-5 BAAQMD Odor Source Thresholds

Odor Source	Minimum Distance for Less than Significant Odor Impacts (in miles)
Wastewater Treatment Plant	2
Wastewater Pumping Facilities	1
Sanitary Landfill	2
Transfer Station	1
Composting Facility	1
Petroleum Refinery	2
Asphalt Batch Plant	2
Chemical Manufacturing	2

Odor Source	Minimum Distance for Less than Significant Odor Impacts (in miles)
Fiberglass Manufacturing	1
Painting/Coating Operations	1
Rendering Plant	2
Source: BAAQMD 2017a	

b. Methodology

Construction Emissions

Construction-related emissions are temporary but may still result in adverse air quality impacts. Construction of development associated with the proposed project would generate temporary emissions from three primary sources: the operation of construction vehicles (e.g., scrapers, loaders, dump trucks, etc.); ground disturbance during site preparation and grading, which creates fugitive dust; and the application of asphalt, paint, or other oil-based substances.

At this time, there is not sufficient detail to allow project-level analysis and thus it would be speculative to analyze project-level impacts. Rather, consistent with the programmatic nature of the project and this program EIR, construction impacts for the proposed Housing Element Update are discussed qualitatively and emissions are not compared to the project-level thresholds.

Operation Emissions

Based on plan-level guidance from the BAAQMD 2017 *CEQA Air Quality Guidelines*, long-term operational emissions associated with implementation of the proposed project are discussed qualitatively by comparing the proposed project to the 2017 Clean Air Plan goals, policies, and control measures. In addition, comparing the rate of increase of plan VMT and population is recommended by BAAQMD for determining significance of criteria pollutants. If the proposed project does not meet either criterion then impacts would be potentially significant.

c. Project Impacts and Mitigation Measures

Threshold 1: Would the project conflict with or obstruct implementation of the applicable air quality plan?

Impact AQ-1 THE PROPOSED HEU WOULD NOT CONFLICT WITH THE CONTROL MEASURES WITHIN THE 2017 CLEAN AIR PLAN, AND VMT INCREASE FROM THE PROJECT WOULD BE LESS THAN THE PROJECT'S PROJECT POPULATION INCREASE. THEREFORE, THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Project Consistency with the Current Air Quality Plan

A project that would not support the goals within the 2017 Clean Air Plan would not be consistent with the 2017 Clean Air Plan. On an individual project basis, consistency with BAAQMD quantitative thresholds is interpreted as demonstrating support for the 2017 Clean Air Plan goals. Consistent with Policy H-15 and H-16 of the HEU, which encourages higher-density zoning and transit-oriented development, the project would encourage denser housing on housing inventory sites near transit corridors, BART stations, and Priority Development Areas such as the Southside Plan Area and the Downtown Plan Area at various levels of affordability. By allowing for the easier use of alternative modes of transportation through proximity to services, bus stops, the BART stations and bike routes,

development facilitated by the project would reduce the use of personal vehicles and subsequent mobile emissions than if housing inventory sites were placed farther from transit. In addition, development facilitated by the project would be required to comply with the latest Title 24 regulations, including requirements for residential indoor air quality. The analysis is based on compliance with 2019 Title 24 requirements although individual projects developed under the plan would be required to comply with the most current version of Title 24 at the time of project construction. These requirements currently mandate Minimum Efficiency Reporting Value 13 (or equivalent) filters for heating/cooling systems and ventilation systems in residences (Section 150.0[m]) or implementation of future standards that would be anticipated to be equal to or more stringent than current standards. Therefore, the project would improve air quality compared to development farther from transit and services through reducing VMT and would protect public health through stringent requirements for MERV-13 filters or equivalent indoor air quality measures, which would be consistent with the primary goals of the 2017 Clean Air Plan.

Table 4.2-6 Project Consistency with Applicable 2017 Plan Control Measures

Clean Air Plan Control Measures	Consistency
Transportation	
<p>TR9: Bicycle and Pedestrian Access and Facilities. Encourage planning for bicycle and pedestrian facilities in local plans, e.g., general and specific plans, fund bike lanes, routes, paths and bicycle parking facilities.</p>	<p>Consistent: As a housing plan, the HEU in itself does not include bicycle or pedestrian improvements. However, future development facilitated under the proposed project must comply with residential bicycle parking requirements pursuant to BMC Section 23.322.090. Additionally, most housing inventory sites are generally located near or along transportation corridors served by Class II and Class III bicycle lanes, which would encourage the usage of bicycles and reduce reliance on single-occupancy vehicles. The City also has over 2,660 short-term bicycle parking spaces as well as bike corrals, lockers, and a bike station adjacent to the Downtown Berkeley BART station which future residents could utilize (City of Berkeley 2017). The BMC also includes required minimum bicycle parking requirements for residential developments.</p>
Energy	
<p>EN2: Decrease Electricity Demand. Work with local governments to adopt additional energy-efficiency policies and programs. Support local government energy efficiency program via best practices, model ordinances, and technical support. Work with partners to develop messaging to decrease electricity demand during peak times.</p>	<p>Consistent: Future development facilitated under the proposed project would be required to comply with BMC Section 19.36.040, which is a “reach code” that exceeds the energy efficiency standards of the California Energy Code. Part 6 of Title 24 requires all new low-rise buildings to install photovoltaic (PV) panels that can generate an output greater or equal to the amount of electricity that is annually consumed. Furthermore, BMC Section 19.37.040 requires 20 percent of parking spaces to be electric vehicle charging spaces capable of supporting future electric vehicle chargers and 80 percent of parking spaces to include raceways to facilitate future electric vehicle supply equipment at all new multi-family developments; and for new one- and two-family dwelling units to accommodate a dedicated 208/240-volt branch circuit for a future EV charger. In addition, new construction would be required to be all electric per the requirements of BMC Section 12.80 (with limited exemptions and exceptions), which would reduce consumption of nonrenewable energy resources.</p>

Clean Air Plan Control Measures	Consistency
Buildings	
<p>BL1: Green Buildings. Collaborate with partners such as KyotoUSA to identify energy-related improvements and opportunities for on-site renewable energy systems in school districts; investigate funding strategies to implement upgrades. Identify barriers to effective local implementation of the CALGreen (Title 24) statewide building energy code; develop solutions to improve implementation/enforcement. Work with ABAG's BayREN program to make additional funding available for energy-related projects in the buildings sector. Engage with additional partners to target reducing emissions from specific types of buildings.</p>	<p>Consistent: Future development facilitated by the proposed HEU would be required to comply with the energy and sustainability standards of Title 24 (including the California Energy Code and CALGreen) and the City's associated amendments that are in effect at that time. For example, the current 2019 CALGreen standards and the City's associated amendments in BMC Chapter 19.37 require a minimum 65 percent diversion of construction/demolition waste, use of low-pollutant emitting exterior and interior finish materials, and dedicated circuitry for electric vehicle charging stations. All new low-rise residential buildings would also be required to install solar PV panels. The Title 24 standards are updated every three years and become increasingly more stringent over time. Additionally, new construction would be required to be all electric per the requirements of BMC Section 12.80 (with limited exemptions and exceptions), which would reduce consumption of nonrenewable energy resources. Policy H-13 of the HEU would also ensure energy efficiency in new buildings in order to reduce energy costs and GHGs.</p>
Water	
<p>WR2: Support Water Conservation. Develop a list of best practices that reduce water consumption and increase on-site water recycling in new and existing buildings; incorporate into local planning guidance.</p>	<p>Consistent: Future development requiring new or expanded water service would be required to comply with East Bay Municipal Utility District's Section 31 water efficiency regulations, which include best practice requirements that are more stringent than CALGreen and the state's Model Water Efficiency Landscape Ordinance to reduce indoor and outdoor water use.</p>

Source: BAAQMD 2017b

As shown in Table 4.2-6, the project would be consistent with the applicable measures as development facilitated by it would be required to comply with the latest Title 24 regulations and would increase density in urban areas, allowing for greater use of alternative modes of transportation. Development facilitated by the project does not contain elements that would disrupt or hinder implementation of a 2017 Clean Air Plan control measures. Therefore, the project would conform to this determination of consistency for the 2017 Clean Air Plan.

Project VMT and Population

According to the BAAQMD 2017 *CEQA Air Quality Guidelines*, the threshold for criteria air pollutants and precursors includes an assessment of the rate of increase of plan VMT versus population growth. As discussed above under Section 4.2.3(a), to result in a less than significant impact, the analysis must show that over the planning period, the proposed project's projected VMT increase would be less than or equal to its projected population increase. As shown in Table 4.2-7 under Impact 2, the proposed net percentage VMT increase associated with the proposed project (approximately 38 percent) would be less than the net percentage population increase (approximately 43 percent). Therefore, the project's VMT increase would not conflict with the BAAQMD's 2017 *CEQA Air Quality Guidelines* operational plan-level significance thresholds for criteria air pollutants and would be consistent with the 2017 Clean Air Plan. Accordingly, impacts would be less than significant.

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Mitigation Measures

This impact would be less than significant. No mitigation measures are required.

Threshold 2: Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Impact AQ-2 CONSTRUCTION FACILITATED BY THE PROJECT WOULD TEMPORARILY INCREASE AIR POLLUTANT EMISSIONS, WHICH WOULD AFFECT LOCAL AIR QUALITY. ADHERENCE TO MITIGATION MEASURE AQ-1 AND THE CITY'S STANDARD CONDITIONS OF APPROVAL WOULD REDUCE CONSTRUCTION EMISSIONS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

Construction

Buildout under the project may involve activities that result in air pollutant emissions. Construction activities such as demolition, grading, construction worker travel, delivery and hauling of construction supplies and debris, and fuel combustion by on-site construction equipment would generate pollutant emissions. These construction activities would temporarily create emissions of dust, fumes, equipment exhaust, and other air contaminants, particularly during site preparation and grading. The extent of daily emissions, particularly ROGs and NO_x emissions, generated by construction equipment, would depend on the quantity of equipment used and the hours of operation for each project. The extent of PM_{2.5} and PM₁₀ emissions would depend upon the following factors: 1) the amount of disturbed soils; 2) the length of disturbance time; 3) whether existing structures are demolished; 4) whether excavation is involved; and 5) whether transporting excavated materials offsite is necessary. Dust emissions can lead to both nuisance and health impacts. According to the 2017 BAAQMD *CEQA Air Quality Guidelines*, PM₁₀ is the greatest pollutant of concern during construction (BAAQMD 2017a).

As discussed above, BAAQMD's 2017 *CEQA Air Quality Guidelines* have no plan-level significance thresholds for construction air pollutant emissions that would apply to the project. However, the guidelines include project-level thresholds for construction emissions. If an individual project is subject to CEQA and has construction emissions that fall below the project-level thresholds, the project's impacts on regional air quality would be individually and cumulatively less than significant. The BAAQMD has also identified feasible fugitive dust control measures for construction activities. These Basic Construction Mitigation Measures are recommended for all projects (BAAQMD 2017a) and will be included as Mitigation Measure AQ-1 as described below under *Fugitive Dust Emissions*. In addition, the BAAQMD and CARB have regulations that address the handling of hazardous air pollutants such as lead and asbestos, which could be aurally dispersed during demolition activities. BAAQMD rules and regulations address both the handling and transport of these contaminants. Construction of development envisioned under the project would temporarily increase air pollutant emissions, possibly creating localized areas of unhealthy air pollution concentrations or air quality nuisances. Therefore, construction air quality impacts would be potentially significant. However, development projects in Berkeley are required to comply with Standard Conditions of Approval for use permits under the Zoning Ordinance. This includes the following:

Air Quality – Diesel Particulate Matter Controls During Construction. All off-road construction equipment used for projects with construction lasting more than 2 months shall comply with **one** of the following measures:

- A. The project applicant shall prepare a health risk assessment that demonstrates the project's on-site emissions of diesel particulate matter during construction will not exceed health risk screening criteria after a screening-level health risk assessment is conducted in accordance with current guidance from BAAQMD and OEHHA. The health risk assessment shall be submitted to the Public Works Department for review and approval prior to the issuance of building permits.
- B. All construction equipment shall be equipped with Tier 2 or higher engines and the most effective Verified Diesel Emission Control Strategies (VDECS) available for the engine type (Tier 4 engines automatically meet this requirement) as certified by the California Air Resources Board (CARB). The equipment shall be properly maintained and tuned in accordance with manufacturer specifications.

In addition, a Construction Emissions Minimization Plan (Emissions Plan) shall be prepared that includes the following:

- An equipment inventory summarizing the type of off-road equipment required for each phase of construction, including the equipment manufacturer, equipment identification number, engine model year, engine certification (tier rating), horsepower, and engine serial number. For all VDECS, the equipment inventory shall also include the technology type, serial number, make, model, manufacturer, CARB verification number level, and installation date.
- A Certification Statement that the Contractor agrees to comply fully with the Emissions Plan and acknowledges that a significant violation of the Emissions Plan shall constitute a material breach of contract. The Emissions Plan shall be submitted to the Public Works Department for review and approval prior to the issuance of building permits.

Additionally, future development facilitated by the proposed project would be required to comply with Berkeley General Plan Policy EM-18 as detailed in Section 4.2.1c in order to reduce construction emissions.

Future development would be required to implement the City of Berkeley standard conditions of approval and General Plan Policy EM-18. Nonetheless, individual projects may be inconsistent with BAAQMD guidance if the Basic Construction Mitigation Measures are not implemented. This impact is potentially significant and mitigation is required.

Fugitive Dust Emissions

Site preparation and grading during construction activities facilitated by development under the proposed project may cause wind-blown dust that could contribute particulate matter into the local atmosphere. The BAAQMD has not established a quantitative threshold for fugitive dust emissions but rather states that projects that incorporate best management practices (BMPs) for fugitive dust control during construction would have a less-than-significant impact related to fugitive dust emissions. As described above, future development facilitated by the project would be required to implement the City's standard condition of approval to reduce construction emissions. However, these projects would not specifically be required to comply with BAAQMD's BMPs. Therefore, impacts related to fugitive dust emissions would be potentially significant.

Mitigation Measures

The following mitigation measure is required.

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AQ-1 Construction Emissions Reduction Measures

As part of the City's development approval process, the City shall require applicants for future development projects within the project sites to comply with the current Bay Area Air Quality Management District's basic control measures for reducing construction emissions of PM₁₀ (Table 8-2, Basic Construction Mitigation Measures Recommended for All Proposed Projects, of the May 2017 BAAQMD CEQA Guidelines), outlined below.

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times a day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California Airborne Toxics Control Measure Title 13, Section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points.
7. All construction equipment shall be maintained and properly tuned in accordance with manufacture's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper conditions prior to operation.
8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's number shall also be visible to ensure compliance with applicable regulations.

Significance After Mitigation

Impacts would be less than significant with implementation of Mitigation Measure AQ-1 to require the BAAQMD Basic Construction Measures and required application of the City's air quality Standard Condition of Approval.

Threshold 2: Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Impact AQ-2 VMT FROM THE PROJECT WOULD INCREASE AT A LOWER RATE COMPARED TO POPULATION GROWTH FACILITATED BY THE PROJECT. THEREFORE, OPERATIONAL IMPACTS RELATED TO CRITERIA POLLUTANTS WOULD BE LESS THAN SIGNIFICANT.

Operation

According to the BAAQMD 2017 *CEQA Air Quality Guidelines*, the threshold for criteria air pollutants and precursors requires an assessment of the rate of increase of plan VMT and population. Table 4.2-7 summarizes the net increase in population versus VMT based on VMT modeling performed by Kittelson & Associates (Appendix H). Because the VMT associated with project buildout would increase by approximately 38 percent, it would not exceed the rate of increase from the forecast population of approximately 43 percent. VMT increases at a lower percentage because the proposed project would change land uses to concentrate growth and residences to jobs and services to reduce singular vehicle trips and encourage alternative models of travel. Therefore, impacts concerning criteria pollutants generated from operation of the project would be less than significant.

Table 4.2-7 Increase in Population Compared to VMT Under Project

Scenario	2020 Without Project	2031 With Project	Net Increase	Percent Change
Population	128,004	182,651	54,647	+43%
Vehicle Miles Traveled	1,436,244	1,983,715	547,471	+38%

Source: Data provided by Kittelson & Associates, Inc 2022 (Appendix H)

Mitigation Measure

This impact would be less than significant. No mitigation measures are required.

Threshold 3: Would the project expose sensitive receptors to substantial pollutant concentrations?

Impact AQ-3 CONSTRUCTION ACTIVITIES FOR INDIVIDUAL PROJECTS LASTING LONGER THAN TWO MONTHS OR LOCATED WITHIN 1,000 FEET OF SENSITIVE RECEPTORS COULD EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL POLLUTANT CONCENTRATIONS. ADDITIONALLY, DEVELOPMENT FACILITATED BY THE PROJECT WOULD SITE NEW SENSITIVE LAND USES NEAR INTERSTATE 580/80 WHICH MAY EXPOSE THEM TO SUBSTANTIAL POLLUTANT CONCENTRATIONS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

Carbon Monoxide Hotspots

A CO hotspot is a localized concentration of CO that is above a CO ambient air quality standard. The entire Basin is in conformance with state and federal CO standards, as indicated by the recent air quality monitoring. There are no current exceedances of CO standards within the air district and

have not had a CO exceedance in the Bay Area since before 1994.² For 2019 the Bay Area's reported maximum 1-hour and average daily concentrations of CO were 5.6 ppm and 1.7 ppm respectively (BAAQMD 2019).³ These are well below the respective 1-hour and 8-hour standards of 20 ppm and 9 ppm. Given the ambient concentrations, which includes mobile as well as stationary sources, a project in the Bay Area would need to emit concentrations three times the hourly maximum ambient emissions for all sources before project emissions would exceed the 1-hour standard. Additionally, the project would need to emit seven times the daily average for ambient concentrations to exceed the 8-hour standards. Typical development projects, even plan level growth, would not emit the levels of CO necessary to result in a localized hot spot. Therefore, impacts to CO hotspots would be less than significant.

Toxic Air Contaminants

Construction

Construction-related activities would result in short-term emissions of diesel particulate matter (DPM) exhaust emissions from off-road, heavy-duty diesel equipment for site preparation (e.g., excavation, grading, and clearing), building construction, and other miscellaneous activities. DPM was identified as a TAC by CARB in 1998. The potential cancer risk from the inhalation of DPM, as discussed below, outweighs the potential non-cancer⁴ health impacts (CARB 2021a).

Generation of DPM from construction typically occurs in a single area for a short period. Construction of development facilitated by the project would occur over approximately a decade but use of diesel-powered construction equipment in any one area would likely occur for no more than a few years for an individual project and would cease when construction is completed in that area. It is impossible to quantify risk without identified specific project details and locations.

The dose to which the receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure that person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the Maximally Exposed Individual. The risks estimated for a Maximally Exposed Individual are higher if a fixed exposure occurs over a longer period. According to the California Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the development (OEHHA 2015). BAAQMD use an exposure period of 30 years (BAAQMD 2016).

The maximum PM₁₀ and PM_{2.5} emissions would occur during demolition, site preparation and grading activities, which would only occur for a portion of the overall estimated timeframe of one to eight years for construction of housing units facilitated by the HEU. These activities would typically last for approximately two weeks to two years, depending on the extent of grading and excavation required (e.g., projects with subterranean parking structures or geological constraints require additional grading as compared to those without). PM₁₀ and PM_{2.5} emissions would decrease for the remaining construction period because construction activities such as building construction and architectural coating would require less intensive construction equipment. While the maximum

² BAAQMD only has records for annual air quality summaries dating back to 1994.

³ Data for 2019 was used as the data for 2020 and 2021 are not currently available.

⁴ Non-cancer risks include premature death, hospitalizations and emergency department visits for exacerbated chronic heart and lung disease, including asthma, increased respiratory symptoms, and decreased lung function (CARB 2021a).

DPM emissions associated with demolition, site preparation, and grading activities would only occur for a portion of the overall construction period, these activities represent the worst-case condition for the total construction period. This would represent between 0.1 to 7 percent of the total 30-year exposure period for health risk calculation.

Each project developed under the plan would be required to be consistent with the applicable 2017 Clean Air Plan, BAAQMD regulatory requirements and control strategies, and the CARB In-Use Off-Road Diesel Vehicle Regulation, which are intended to reduce emissions from construction equipment and activities. Additionally, future development facilitated by the project would be required to comply with Mitigation Measure AQ-1 requiring implementation of construction emission measures which would reduce construction-related TACs. According to the OEHHA, construction of individual projects lasting longer than two months or placed within 1,000 feet of sensitive receptors could potentially expose nearby sensitive receptors to substantial pollutant concentrations and therefore could result in potentially significant risk impacts (OEHHA 2015). These projects could exceed BAAQMD's thresholds of an increased cancer risk of greater than 10.0 in a million and an increased non-cancer risk of greater than 1.0 Hazard Index (Chronic or Acute). Therefore, construction impacts from TAC emissions would be potentially significant and mitigation is required.

Operation

In the Bay Area, there are several urban or industrialized communities where the exposure to TACs is relatively high in comparison to others. The western portion of the City is located in an impacted community according to BAAQMD *CEQA Guidelines* (Figure 5-1) due to its proximity to the freeway, rail, and industry. Sources of TACs include, but are not limited to, land uses such as freeways and high-volume roadways, truck distribution centers, ports, rail yards, refineries, chrome plating facilities, dry cleaners using perchloroethylene, and gasoline dispensing facilities (BAAQMD 2017a). Operation of development facilitated by the project would not involve these uses; therefore, it is not considered a source of TACs. In addition, residences do not typically include new stationary sources onsite, such as emergency diesel generators. However, if residences did include a new stationary source onsite, it would be subject to BAAQMD Regulation 2, Rule 2 (New Source Review) and require permitting. This process would ensure that the stationary source does not exceed applicable BAAQMD health risk thresholds. Additionally, BAAQMD employs the Community Air Risk Evaluation (CARE) Program, which applies strategies to reduce health impacts in impacted communities (BAAQMD 2014). CARE is currently activated in Berkeley since it is an impacted community. Therefore, Project-related TAC impacts during operation would be less than significant.

Asbestos

BAAQMD Regulation 11, Rule 2 is intended to limit asbestos emissions from demolition or renovation of structures and the associated disturbance of asbestos-containing waste material generated or handled during these activities (BAAQMD 2017a). The rule addresses the national emissions standards for asbestos along with some additional requirements. The rule requires the Lead Agency and its contractors to notify BAAQMD of any regulated renovation or demolition activity. This notification includes a description of structures and methods utilized to determine whether asbestos-containing materials are potentially present. All asbestos-containing material found on the site must be removed prior to demolition or renovation activity in accordance with BAAQMD Regulation 11, Rule 2, including specific requirements for surveying, notification, removal, and disposal of material containing asbestos. Therefore, individual projects that comply with Regulation 11, Rule 2 would ensure that asbestos-containing materials would be disposed of

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appropriately and safely. By complying with BAAQMD Regulation 11, Rule 2, thereby minimizing the release of airborne asbestos emissions, demolition activity would not result in a significant impact to air quality. Per the BAAQMD Guidelines, because BAAQMD Regulation 11, Rule 2 is in place, no further analysis about the demolition of asbestos-containing materials is needed in a CEQA document (BAAQMD 2017).

Project Siting

Development facilitated by the project would occur under the jurisdiction of BAAQMD. CARB screening methodology for project siting is used in this analysis. In 2005, CARB issued recommendations to avoid siting new residences within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day or close to known stationary TAC sources (CARB 2005). BAAQMD's average daily traffic (ADT) threshold is lower, at 10,000 vehicles per day (BAAQMD 2012).

Development facilitated by the project could place sensitive receptors living in housing within approximately 500 to 1,000 feet of Interstate 580 (I-580) and Interstate 80 (I-80). The only housing inventory sites within 500 feet of I-580 is the site located at 2031 Second Street. Two other sites at the locations 1834 Fourth Street and 1920 Fourth Street are located within 1,000 feet of the I-580. There is also the potential for development to occur within 500 feet of a roadway that has 10,000 vehicles per day or more such as University Avenue, Adeline Street, Telegraph Avenue, Claremont Avenue, and Gilman Street (Caltrans 2020). Development of these sites would create a potentially significant impact and implementation of Mitigation Measure AQ-3 would be required for future development.

Development facilitated by the project would be required to comply with the residential indoor air quality requirements in the Title 24 Building Energy Efficiency Standards, which currently require Minimum Efficiency Reporting Value 13 (or equivalent) filters for heating/cooling systems and ventilation systems in residences (Section 150.0[m]). These types of filters are capable of removing approximately 90 percent of the DPM emissions from air introduced into the HVAC system. Therefore, the project would not expose its future sensitive receptors to substantial pollutant concentrations and related impacts would be less-than-significant.

Mitigation Measures

The following mitigation measure is required.

AQ-2 Construction Health Risk Assessment

For individual projects (excluding ADUs, single-family residences, and duplexes) where construction activities would occur within 1,000 feet of sensitive receptors, would last longer than two months, and would not utilize Tier 4 and/or alternative fuel construction equipment, the project applicant shall prepare a construction health risk assessment (HRA). The HRA shall determine potential risk and compare the risk to the following BAAQMD thresholds:

- Non-compliance with Qualified Community Risk Reduction Plan;
- Increased cancer risk of > 10.0 in a million;
- Increased non-cancer risk of > 1.0 Hazard Index (Chronic or Acute); or
- Ambient PM_{2.5} increase of > 0.3 µg/m³ annual average

If risk exceeds the thresholds, measures such as requiring the use of Tier 4 and/or alternative fuel construction equipment shall be incorporated to reduce the risk to appropriate levels.

AQ-3 TAC Exposure Reduction Building Measures

The following design features shall be incorporated for residential development located within 1,000 feet of I-580/80 or on a lot that fronts on a section of roadway with 10,000 vehicles per day or more in order to reduce exposure of proposed residences to TACs from vehicles and stationary combustion engines (i.e., generators):

1. If the proposed buildings would use operable windows or other sources of infiltration of ambient air, the development shall install a central HVAC system that includes high efficiency particulate filters (HEPA). These types of filters are capable of removing approximately 99.97 percent of the DPM emissions from air introduced into the HVAC system (U.S. EPA 2022). The system may also include a carbon filter to remove other chemical matter. Filtration systems must operate to maintain positive pressure within the building interior to prevent entrainment of outdoor air indoors.
2. If the development limits infiltration through non-operable windows, a suitable ventilation system shall include a ventilation system with filtration specifications equivalent to or better than the following: (1) American Society of Heating, Refrigerating and Air- Conditioning Engineers MERV-13 supply air filters, (2) greater than or equal to one air exchanges per hour of fresh outside filtered air, (3) greater than or equal to four air exchanges per hour recirculation, and (4) less than or equal to 0.25 air exchanges per hour in unfiltered infiltration. These types of filtration methods are capable of removing approximately 90 percent of the DPM emissions from air introduced into the HVAC system.
3. Windows and doors shall be fully weatherproofed with caulking and weather-stripping that is rated to last at least 20 years. Weatherproof should be maintained and replaced by the property owner, as necessary, to ensure functionality for the lifetime of the project.
4. Where appropriate, install passive (drop-in) electrostatic filtering systems, especially those with low air velocities (*i.e.*, 1 mph).
5. Prepare an ongoing maintenance plan for the HVAC and filtration systems, consistent with manufacturers' recommendations.
6. The applicant shall inform occupants regarding the proper use of any installed air filtration system.

Significance After Mitigation

Implementation of Mitigation Measure AQ-2 would require preparation of a construction HRA for projects with construction activities with timelines greater than two months, located within 1,000 feet of sensitive receptors, and would not utilize Tier 4 and/or alternative fuel construction equipment in order to reduce potential risk exposure to nearby sensitive receptors to a less than significant level. Implementation of Mitigation Measure AQ-3 would require implementation of design features 1 to 6 in order to reduce exposure of proposed residences to TACs from vehicles and stationary combustion engines and to reduce impacts to a less than significant level.

Threshold 4: Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?
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Impact AQ-4 DEVELOPMENT FACILITATED BY THE PROJECT WOULD NOT CREATE OBJECTIONABLE ODORS THAT COULD AFFECT A SUBSTANTIAL NUMBER OF PEOPLE. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

During construction activities, heavy equipment and vehicles would emit odors associated with vehicle and engine exhaust both during normal use and when idling. However, these odors would be temporary and transitory and would cease upon completion. Therefore, development facilitated by the project would not generate objectionable odors affecting a substantial number of people.

Table 4.2-5 provides BAAQMD odor screening distances for land uses with the potential to generate substantial odor complaints. Those uses include wastewater treatment plants, landfills or transfer stations, refineries, composting facilities, confined animal facilities, food manufacturing, smelting plants, and chemical plants. As development facilitated by the project would be residential, none of the uses identified in the table would occur on the sites. Therefore, development facilitated by the project would not generate objectionable odors affecting a substantial number of people during operation. This impact would be less than significant.

Mitigation Measures

This impact would be less than significant. Mitigation measures are not required.

d. Cumulative Impacts

The cumulative context for air quality is regional. The SFBAAB is in non-attainment for federal standards of ozone and PM_{2.5} and in non-attainment for the State standard for ozone, PM_{2.5}, and PM₁₀. The SFBAAB is in attainment of all other federal and State standards. Development facilitated by the project would generate particulate matter and the ozone precursors (ROG and NO_x) in the area during construction and operation.

As described under Impact AQ-1, the project would be consistent with the 2017 Clean Air Plan control measures as development facilitated by the project would comply with the latest Title 24 regulations and would increase density in urban areas in proximity to transit, allowing for greater use of alternative modes of transportation. Additionally, the increase in VMT would not exceed the projected population increase per the BAAQMD *CEQA Air Quality Guidelines* for operational emissions from plans. Discussion of these impacts considers the cumulative nature of criteria pollutants in the region. Therefore, the project would not result in a cumulatively considerable contribution to a conflict with or obstruction of implementation of the applicable air quality plan.

As described under Impact AQ-2, project construction would temporarily increase air pollutant emissions, possibly creating localized areas of unhealthy air pollution levels or air quality nuisances. BAAQMD has identified feasible fugitive dust control measures for construction activities to minimize fugitive PM₁₀ and PM_{2.5}. Therefore, temporary construction impacts citywide would be mitigated with Mitigation Measures AQ-1. Discussion of these impacts considers the cumulative nature of criteria pollutants in the region; therefore, with mitigation the project would not result in a cumulatively considerable net increase of a criteria pollutant from construction emissions.

As identified under Impact AQ-3, development facilitated by the project would not have a significant impact from CO hotspots or TACs with implementation of Mitigation Measures AQ-2 and AQ-3. Discussion of these impacts considers the cumulative nature of the pollutants in the region, e.g., the

cancer risk and non-cancer risk thresholds have been set per existing cancer risks in the area, and exceeding those thresholds would be considered a cumulative impact. As development facilitated by the project would not exceed those thresholds, it would not expose sensitive receptors to a cumulatively considerable amount of substantial pollutant concentrations from CO hotspots or TACs.

As identified under Impact AQ-4, development facilitated by the project would not have a significant impact from odor emissions. The consideration of cumulative odor impacts is limited to cases when projects constructed simultaneously are within a few hundred yards of each other because of the short range of odor dispersion. It is unlikely that construction of housing inventory sites would occur within a few hundred yards of major off-site construction. Therefore, development facilitated by the project would not result in a cumulatively considerable odor impact.

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4.3 Biological Resources

This section analyzes the effects of the proposed HEU on biological resources and the associated impacts. The impact analysis presented herein is intended to assess the potential impact the proposed project may have on biological resources, and where impacts are significant, to propose appropriate mitigation relative to the existing goals of the General Plan and with reference to federal, state, and local laws, regulations, and management policies addressing biological resources.

4.3.1 Existing Conditions

The following sections present the methods and results for determining the existing conditions for the proposed project with regard to biological resources. Except where specified below, the study area included the City of Berkeley, the area subject to the proposed HEU.

a. Land Cover

Based on a desktop review, nine land cover types were mapped within City boundaries using the California Department of Fish and Wildlife (CDFW) California Wildlife Habitat Relationships habitat classification system (CDFW 2014). A description of each of the vegetation communities and land cover types adapted from *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer, Jr. 1988) is presented below. The land cover types are mapped on Figure 4.3-1. It should be noted that these vegetation communities and land cover types are broadly mapped, and site specific fine-scale variation in vegetation communities is likely to be present.

The majority of Berkeley is urbanized and the areas of the city that would be affected by the project generally do not include substantial areas of open space or undeveloped, unpaved land. Developed areas correspond with the “urban” land cover type described in the California Wildlife Habitat Relationships (California Department of Fish and Wildlife [CDFW], 2022c; Mayer and Laudenslayer, 1988). As such, vegetation is limited largely to ornamental landscaping and trees in commercial areas, residential neighborhoods, and along park strips and street medians. Plant species in urban areas are highly variable, and vegetation structure includes shade/street trees, lawns, and shrub cover.

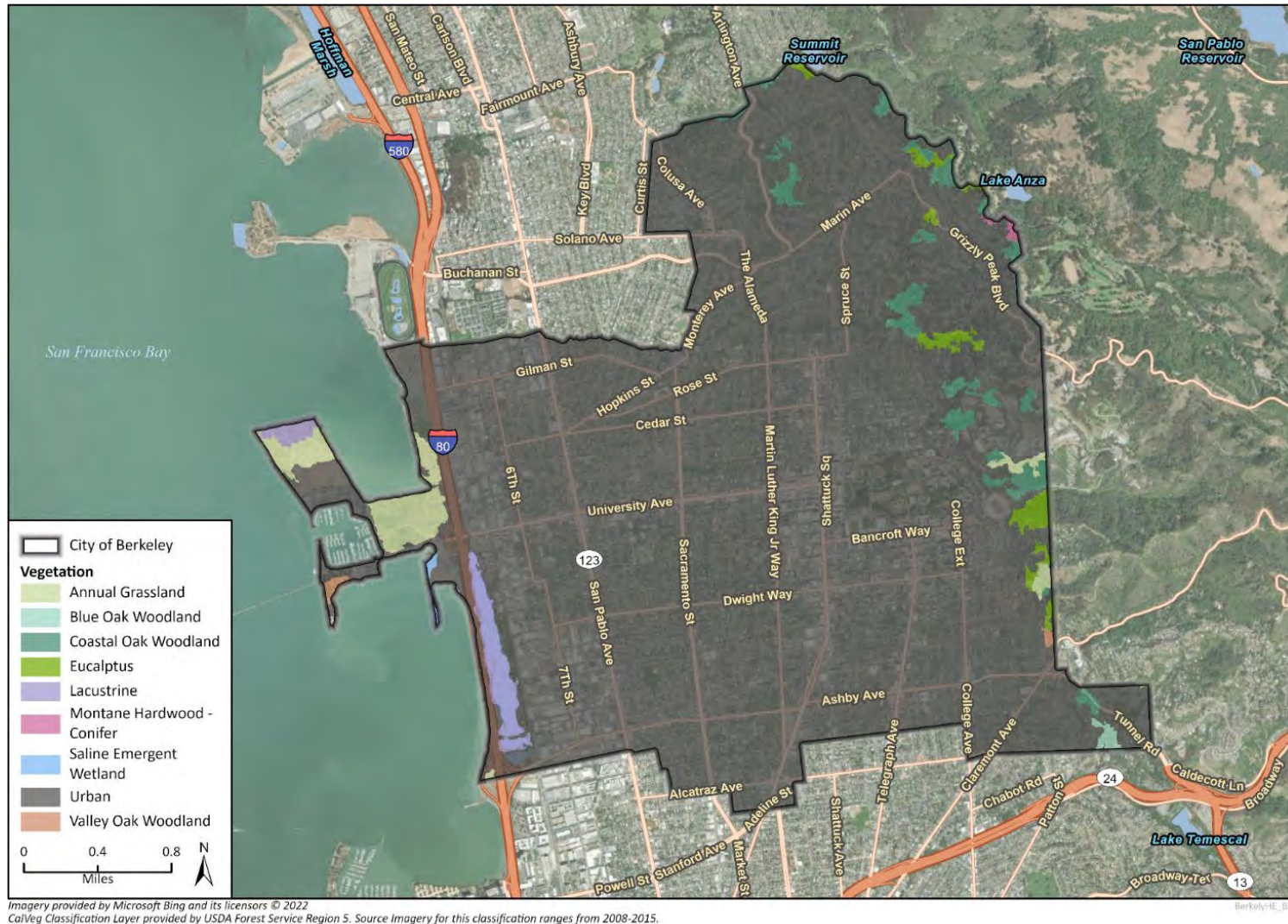
Ruderal vegetation occurs along roadsides and vacant lots. Ruderal vegetation is associated with urban areas where substantial ground disturbance activities occur. Ruderal areas are often found along roadsides, fence-lines, and in areas undergoing urban development. Ruderal plant communities are not described by Holland (1986), Sawyer et al. (2009), or Mayer and Laudenslayer (1988). They are typically dominated by herbaceous plants (i.e., forbs) such as mustards (*Brassica spp.*), wild radish (*Raphanus sativus*), and mallows (*Malva spp.*), and include many non-native annual grasses such as ripgut brome (*Bromus diandrus*), wild oats (*Avena spp.*), and foxtail barley (*Hordeum murinum*).

The western boundary of Berkeley includes the marine environment of the San Francisco Bay, and lacustrine and saline emergent wetlands along the coast. The foothills on the eastern boundary of Berkeley include annual and perennial grasslands and various woodlands.

The following sections describe the natural communities and land cover types in Berkeley. Generally, the proposed project would focus development in already-developed and disturbed urban areas.

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Figure 4.3-1 Landcover Types in Berkeley



Urban

This land cover type is completely anthropogenic and is composed of residential, commercial, and industrial developed areas. Plant species within urban areas are typically comprised of ornamental plants and non-native invasive plant species, with large, developed areas lacking vegetation. The vast majority of the inventory sites, middle housing rezoning districts, and the Southside area are located within the Urban land cover type. Some parts of the R-1 and R-2 districts and some inventory sites are in other vegetation areas as mapped on Figure 4.3-1.

Annual and Perennial Grasslands

Annual and perennial grassland habitats are herbaceous communities composed primarily of annual and perennial grass and forb species. These vegetation communities exist in high abundance throughout the City, where introduced annual grasses are the dominant plant species. These include wild oats (*Avena* sp.), soft chess brome (*Bromus hordeaceus*), ripgut brome (*B. diandrus*), red brome (*B. madritensis*), wild barley (*Hordeum murinum*), and foxtail fescue (*Festuca myuros*). Common forbs include broadleaf filaree (*Erodium botrys*), redstem filaree (*E. cicutarium*), turkey mullein (*Croton setiger*), true clovers (*Trifolium* spp.), bur clover (*Medicago polymorpha*), popcorn flowers (*Plagiobothrys* spp.), California poppy (*Eschscholzia californica*), and many others. Native perennial grasses, found in moist, lightly grazed, or relic prairie areas, are dominated by California oatgrass (*Danthonia californica*), Pacific hairgrass (*Deschampsia cespitosa holciformis*), and sweet vernal grass (*Anthoxanthum odoratum*).

Annual grassland communities and relic perennial grasslands within them occur in patches of various sizes throughout the State. Annual grassland habitat occurs mostly on flat plains to gently rolling foothills. Annual grasslands provide habitat for many wildlife species, including western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*), western rattlesnake (*Crotalus oreganus oreganus*), black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Otospermophilus beecheyi*), and Botta's pocket gopher (*Thomomys bottae*).

Blue Oak Woodland

Blue oak woodlands occur in the City and vary in species composition. They have an overstory of scattered trees, although the canopy can be nearly closed. The canopy is dominated by broad-leaved trees 5 to 15 m (16 to 50 ft) tall, commonly forming open savanna-like stands on dry ridges and gentle slopes. Blue oaks may reach 25 m (82 ft) in height. Shrubs are often present but rarely extensive, often occurring on rock outcrops. Typical understory is composed of an extension of Annual Grassland vegetation. Blue oak woodlands provide habitat for a variety of wildlife species, including western gray squirrel (*Sciurus griseus*), eastern gray squirrel (*Sciurus carolinensis*), California scrub jays (*Aphelocoma californica*).

Coastal Oak Woodland

Coastal oak woodlands occur in the City and vary in species composition. The overstory consists of deciduous and evergreen hardwoods, mostly oaks (*Quercus* spp.) (15 to 70 feet tall) sometimes mixed with scattered conifers. In mesic sites, the trees are dense and form a closed canopy. In drier sites, the trees are widely spaced, forming an open woodland or savannah. The understory is equally variable. In some instances, it is composed of shrubs from adjacent chaparral or coastal scrub which forms a dense, almost impenetrable understory. More commonly, shrubs are scattered under and between trees. The soils and parent material on which coastal oak woodlands occur are

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extremely variable (CDFW 2014). Coastal oak woodlands provide habitat for a variety of wildlife species, including California quail (*Callipepla californica*), turkey (*Meleagris gallopavo*), western gray squirrel (*Sciurus griseus*), eastern gray squirrel (*Sciurus carolinensis*), and Columbian black-tailed deer (*Odocoileus hemionus columbianus*).

Non-Native Vegetation

This land cover type is not a CHWR classification. Non-native vegetation occurs within the City and generally includes ruderal grasslands, landscaped areas, and stands of eucalyptus. These vegetation types are generally associated with landscaped areas and ornamental plantings and have been grouped together. The physical characteristics and species composition of non-native grasslands are variable. Common grass species include wild oats, soft chess brome, ripgut brome, and red brome. Some grasslands are utilized for livestock grazing and are differentiated from pasture vegetation types based on management and species composition. Landscaped areas include plantings of non-native ornamental and exotic species of trees, shrubs and ground covers and may include edible plants such as fruit trees. Eucalyptus stands are generally planted in rows for use as a wind break, and overtime, young trees may recruit into spaces between the planted trees. In most cases, eucalyptus forms a dense stand with a closed canopy. Blue gum eucalyptus (*Eucalyptus globulus*) and red gum eucalyptus (*E. camaldulensis*) are the most common eucalyptus species found in these stands.

Valley Oak Woodland

Remnant patches of this habitat are found in the Sacramento Valley from Redding south, in the San Joaquin Valley to the Sierra Nevada foothills, in the Tehachapi Mountains, and in valleys of the Coast Range from Lake County to western Los Angeles County. This habitat varies from savanna-like to forest-like stands with partially closed canopies, comprised mostly of winter-deciduous, broad-leaved species. Within the City this community occurs in open areas that are generally flat to rolling hills. Canopies of these woodlands are dominated almost exclusively by valley oaks (CDFW 2014). The shrub understory consists of poison oak, blue elderberry, toyon (*Heteromeles arbutifolia*), California coffeeberry, and California blackberry. Various species of wild oats, bromes (*Bromus* spp.), barleys (*Hordeum* spp.), ryegrasses (*Festuca* spp.), and needlegrasses (*Stipa* spp.) dominate the ground cover.

These woodlands provide food and cover for many species of wildlife, include European starling (*Sturnus vulgaris*), California quail, plain titmouse (*Baeolophus inornatus*), California scrub jay (*Aphelocoma californica*), rufous-sided towhee (*Pipilo erythrophthalmus*), Bewick's wren (*Thryomanes bewickii*), bushtit (*Psaltriparus minimus*), and acorn woodpecker (*Melanerpes formicivorus*).

Montane Hardwood Conifer

Montane Hardwood-Conifer habitat includes both conifers and hardwoods. The habitat often occurs in a mosaic-like pattern with small purestands of conifers interspersed with small stands of broad-leaved trees. This landcover consists of a broad spectrum of mixed, conifer and hardwood species. Typically, conifers up to 200 ft in height form the upper canopy and broad-leaved trees 30 to 100 ft in height comprise the lower canopy.

Relatively little understory occurs under the dense, canopy. However, considerable ground and shrub cover can occur in ecotones or following disturbance such as fire or logging.

Saline Emergent Wetland

Saline Emergent Wetlands are characterized as salt or brackish marshes consisting of perennial grasslike plants and forbs, along with algal mats. The component plants occur sometimes in zones but more often in patches or as a sequence of overlapping species along an elevational gradient. Vegetational coverage is complete or nearly so except where creeks and ponds are present or following disturbance Vegetational coverage is complete or nearly complete except where creeks and ponds are present.

Lacustrine

Lacustrine habitats are inland depressions or dammed riverine channels containing standing water. They may vary from small ponds less than one hectare to large areas covering several square kilometers. Depth can vary from a few centimeters to hundreds of meters. Typical lacustrine habitats include permanently flooded lakes and reservoirs (e.g., Lake Tahoe and Shasta Lake), intermittent lakes (e.g., playa lakes) and ponds (including vernal pools) so shallow that rooted plants can grow over the bottom. Most permanent lacustrine systems support fish life; intermittent types usually do not.

b. Wetlands and Waterways

A query of the USFWS's National Wetland Inventory (NWI) (US Fish and Wildlife Service [USFWS] 2022c) was conducted. Aerial imagery and the U.S. Geological Service's National Hydrology Dataset (2022) was also reviewed to determine if aquatic resources potentially falling under the regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), or CDFW (i.e., jurisdictional waters), such as federally and State protected wetlands, occur in the City.

Berkeley contains five principal creeks: Derby, Potter, Strawberry, Schoolhouse, and Codornices, all of which flow west from the Berkeley Hills into the San Francisco Bay. In addition, there are eight other creeks that are at least partially within the City limits (U.S. Fish and Wildlife Service [USFWS] 2022c). Due to urban development, once natural watercourses now flow through concrete ditches and culverts, in many cases flowing underground, and ultimately draining into the San Francisco Bay. Local parks may feature natural or man-made ponds and there are estuarine and marine wetlands along the San Francisco Bay. Figure 4.7-1 in Section 4.7, *Hydrology and Water Quality*, shows stormwater, drainage, and creeks in and in the vicinity of Berkeley.

c. Special-Status Species

For the purposes of this EIR, special-status species include:

- Species listed as threatened or endangered under the Federal Endangered Species Act (FESA); including proposed and candidate species
- Species listed as candidate, threatened, or endangered under the California Endangered Species Act (CESA)
- Species designated as Fully Protected by the California Fish and Game Code (CFG), and Species of Special Concern or Watch List by the California Department of Fish and Wildlife (CDFW)
- Plant species protected by the Native Plant Protection Act (NPPA) (State Rare)
- California Native Plant Society (CNPS) California Rare Plant Ranks (CRPR) 1A, 1B, 2A and 2B

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- Species designated as locally important by the Local Agency and/or otherwise protected through ordinance, local policy, or HCPs/NCCPs

Queries of the USFWS Information, Planning, and Conservation System (IPaC) (USFWS 2022a), California Natural Diversity Database (CNDDDB) (CDFW 2022a), and California Native Plant Society (CNPS) online *Inventories of Rare and Endangered Plants of California* (CNPS 2022) were conducted to obtain comprehensive information regarding special-status species and sensitive vegetation communities known or having potential to occur in the study area. Query of the CNPS inventory included the *Oakland West, Oakland East, Briones Valley, and Richmond* California USGS 7.5-minute topographic quadrangle and/or surrounding 12 quadrangles (*San Leandro, Hunters Point, San Francisco South, San Francisco North, San Quentin, Walnut Creek, Las Trampas Ridge, Hayward, Mare Island, Petaluma Point, Benicia and Vine Hill*). Query of the CNDDDB included the City of Berkeley plus a five-mile buffer. The results of these scientific database queries were compiled into Table B-1 and Table B-2 included in Appendix B. A query of the USFWS' Critical Habitat Portal (USFWS 2022b) was conducted to determine if any USFWS-designated critical habitat occurs in the proposed project area.

A total of 59 special-status plants were identified within the 16 quadrangles queried (CNPS 2022), and 51 special-status animals were identified within five miles of the City of Berkeley (CDFW 2022a). Appendix B presents lists of the special-status plant and animal species identified by the database queries. Many of these species have sensitivity ratings below the threshold for significant impacts from development in urban settings under CEQA, or there are no recent records of the species occurring within the City of Berkeley in the past ten years. Berkeley proper is urbanized and developed, it is lacking in suitable habitats for special-status plants, and with the exception of avian taxa, lacking in suitable habitat for special-status animals. However, the eastern and western borders of Berkeley feature marine and estuarine habitats and foothill woodlands and grasslands, respectively, where special-status species are more likely to occur. The vast majority of the inventory sites, the middle housing rezoning districts, and the Southside are not located in these habitat types.

d. Sensitive Vegetation Communities and Critical Habitat

No natural vegetation communities considered sensitive by the CDFW occur in the City of Berkeley; however, the following four sensitive natural communities occur within a 5-mile radius (CDFW 2022a):

- Northern Coastal Salt Marsh
- Northern Maritime Chaparral
- Serpentine Bunchgrass
- Valley Needlegrass grassland

No USFWS-designated critical habitat occurs in the City of Berkeley; however, critical habitat for the following five species occurs within a 5-mile radius of the City of Berkeley (USFWS 2022b):

- Alameda Whipsnake (*Masticophis lateralis*)
- California red-legged frog (*Rana draytonii*)
- Chinook Salmon (*Oncorhynchus tshawytscha*)
- Green sturgeon (*Acipenser medirostris*)
- Santa Cruz tarplant (*Holocarpha macradenia*)

e. Nesting Birds

Suitable substrates for avian species protected by the federal Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGC), including shrubs, trees, man-made structures, and the ground surface, occur throughout the proposed project area. Some species prefer vegetation, including ornamental vegetation, and some species can be found nesting in man-made structures, such as power poles or the eaves of buildings. Nesting birds may occur during the breeding season (generally February 1 through August 31; beginning January 1 for some raptor species).

f. Wildlife Movement Corridors

Wildlife movement corridors, or habitat linkages, are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve a local purpose, such as providing a linkage between foraging and denning areas, or they may be regional in nature. Some habitat linkages may serve as migration corridors, wherein animals periodically move away from an area and then subsequently return. Others may be important as dispersal corridors for young animals. A group of habitat linkages in an area can form a wildlife corridor network.

The habitats within the link do not necessarily need to be the same as the habitats that are being linked. Rather, the link merely needs to contain sufficient cover and forage to allow temporary inhabitation by ground-dwelling species. Typically, habitat linkages are contiguous strips of natural areas, though dense plantings of landscape vegetation can be used by certain disturbance-tolerant species. Depending upon the species using a corridor, specific physical resources (such as rock outcroppings, vernal pools, or oak trees) may need to be located within the habitat link at certain intervals to allow slower-moving species to traverse the link. For highly mobile or aerial species, habitat linkages may be discontinuous patches of suitable resources spaced sufficiently close together to permit travel along a route in a short period of time.

Wildlife movement corridors can be both large and small scale. One essential connectivity area is mapped by the Biogeographic Information and Observation System (BIOS) along the eastern border of the City of Berkeley (CDFW 2022b). The corridor connects several natural landscape blocks in the east San Francisco Bay Area. From the foothills southeast of San Pablo Bay it extends southeast, parallel with the San Francisco Bay, and connects with the Diablo Range east of Fremont. This essential connectivity area as a part of the bay area hills may serve as a movement corridor for the state provisionally protected Southern California/Central Coast ESU of mountain lion. CDFW characterizes the value of essential connectivity areas based on permeability to wildlife movements. As mapped in BIOS, the edges of the nearest connectivity area become increasingly less permeable as they extend toward Berkeley and developed areas of Alameda County.

4.3.2 Regulatory Setting

a. Federal Regulations

Federal Endangered Species Act

The Federal Endangered Species Act of 1973 (FESA) and subsequent amendments provide for the conservation of endangered and threatened species, and the ecosystems upon which they depend.

FESA is intended to prevent the unlawful “take” of listed fish, wildlife, and plant species. Section 9(a)(1)(B) specifically states take of species listed as threatened or endangered is unlawful. Take is

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defined as any action that would harass, harm, pursue, hunt, wound, shoot, kill, trap, capture, or collect any threatened or endangered species.

Section 10 of the FESA allows the United States Fish and Wildlife Service (USFWS) to issue incidental take permits if take of a listed species may occur during otherwise lawful activities. Section 10(a)(1)(B) requires a Habitat Conservation Plan for an incidental take permit on non-federal lands. Section 7 of the FESA requires federal agencies to aid in the conservation of listed species, and to ensure that the activities of federal agencies will not jeopardize the continued existence of listed species or adversely modify designated critical habitat. The USFWS and the National Oceanic and Atmospheric Administration (NOAA) are responsible for administration of the FESA and have regulatory authority over federally listed species.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) makes it unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, or kill migratory birds, and prohibits the removal of nests occupied by migratory birds. The USFWS has regulatory authority for the MBTA.

Clean Water Act

The USACE, under provisions of Section 404 of the Clean Water Act (CWA) and USACE implementing regulations, has jurisdiction over the placement of dredged or fill material into “waters of the United States.” Congress enacted the CWA “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” In practice, the boundaries of certain waters subject to USACE jurisdiction under Section 404 have not been fully defined. Previous regulations codified in 1986 defined “waters of the United States” as traditional navigable waters, interstate waters, all other waters that could affect interstate or foreign commerce, impoundments of waters of the United States, tributaries, the territorial seas, and adjacent wetlands.

On April 21, 2020, the USACE and U.S. Environmental Protection Agency (USEPA) published the Navigable Waters Protection Rule to define “Waters of the United States.” This rule, effective on June 22, 2020, defines four categories of jurisdictional waters, documents certain types of waters that are excluded from jurisdiction, and clarifies some regulatory terms. Under the Navigable Waters Protection Rule, “waters of the United States” include:

1. Territorial seas and traditional navigable waters;
2. Perennial and intermittent tributaries that contribute surface flow to those waters;
3. Certain Lakes and ponds, and impoundments of jurisdictional waters, and;
4. Wetlands adjacent to jurisdictional waters.

Tributaries are defined as “a river, stream, or similar naturally occurring surface water channel that contributes surface water flow to the territorial seas or traditional navigable waters in a typical year either directly or through one or more tributaries, jurisdictional lakes, ponds, and impoundments of jurisdictional waters, or adjacent wetlands.” The tributary category also includes a ditch that “either relocates a tributary, is constructed in a tributary, or is constructed in an adjacent wetland as long as the ditch is perennial or intermittent and contributes surface water flow to a traditional navigable water or territorial sea in a typical year.”

Adjacent wetlands are defined as wetlands that:

1. Abut, meaning to touch at least at one point or side of, a defined Water of the U.S.;
2. Are inundated by flooding from a defined Water of the U.S. in a typical year;
3. Are physically separated from a defined Water of the U.S. by a natural berm, bank, dune, or similar natural features or by artificial dike, barrier or similar artificial structures as long as direct hydrological surface connection to defined Waters of the U.S. are allowed; or,
4. Are impounded of Waters of the U.S. in a typical year through a culvert, flood or tide gate, pump or similar artificial structure.

The Navigable Waters Protection Rule states that the following areas not considered to be jurisdictional waters even where they otherwise meet the definitions described above:

1. Groundwater, including groundwater drained through subsurface drainage systems;
2. Ephemeral features that flow only in direct response to precipitation including ephemeral streams, swales, gullies, rills and pools;
3. Diffuse stormwater runoff and directional sheet flow over uplands;
4. Ditches that are not defined Waters of the U.S. and not constructed in adjacent wetlands subject to certain limitations;
5. Prior converted cropland;
6. Artificially irrigated areas that would revert to upland if artificial irrigation ceases;
7. Artificial lakes and ponds that are not jurisdictional impoundments and that are constructed or excavated in upland or non-jurisdictional waters;
8. Water-filled depressions constructed or excavated in upland or in non-jurisdictional waters for the purpose of obtaining fill, sand, or gravel;
9. Stormwater control features constructed or excavated in uplands or in non-jurisdictional water to convey, treat, infiltrate, or stormwater run-off;
10. Groundwater recharge, water reuse, and wastewater recycling structures constructed or excavated in upland or in non-jurisdictional waters; and,
11. Waste treatment systems.

USACE jurisdictional limits are typically identified by the Ordinary High Water Mark (OHWM) or the landward edge of adjacent wetlands (where present). The OHWM is the “line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding area” (33 CFR 328.3).

The USACE defines wetlands as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3). The USACE’s delineation procedures identify wetlands in the field based on indicators of three wetland parameters: hydrophytic vegetation, hydric soils, and wetland hydrology.

b. State Regulations

California Endangered Species Act

The CDFW is responsible for administration of CESA. For projects that may affect both a State and federal listed species, compliance with the FESA will satisfy the CESA, provided the CDFW determines that the federal incidental take authorization is consistent with the CESA.

Take is defined in CFGC Section 86 as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” The CESA allows for take incidental to otherwise lawful activities under CFGC Section 2081. Project proponents wishing to obtain incidental take permits are able to do so through a permitting process outlined in California Code of Regulations (CCR) Section 783. Additionally, some sensitive mammals and birds are protected by the state as Fully Protected Mammals or Fully Protected Birds, as described in the CFGC, Sections 4700 and 3511, respectively.

Projects that may result in a take of a California listed species require a take permit under the CESA. The federal and State acts lend protection to species considered rare enough by the scientific community and trustee agencies to warrant special consideration, particularly with regard to protection of isolated populations, nesting or den locations, communal roosts, and other essential habitat. Unlike the FESA, the CESA prohibits the take of not just listed endangered or threatened species, but also candidate species (species petitioned for listing).

The CESA defines an endangered species as:

...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.

A threatened species is defined as:

...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Any animal determined by the commission as rare on or before January 1, 1985 is a threatened species.

Candidate species are defined as:

...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the commission has published a notice of proposed regulation to add the species to either list.

Candidate species may be afforded temporary protection as though they were already listed as threatened or endangered at the discretion of the Fish and Game Commission. Unlike the FESA, CESA does not include listing provisions for invertebrate species. Article 3, Sections 2080 through 2085 of the CESA addresses the taking of threatened or endangered species by stating:

...no person shall import into this State, export out of this State, or take, possess, purchase, or sell within this State, any species, or any part or product thereof, that the commission

determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided.

California Fish and Game Code - Nesting Bird Protection

According to CFGC Section 3503 it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird [except English sparrows (*Passer domesticus*) and European starlings (*Sturnus vulgaris*)]. Sections 3503 and 3513 prohibit the taking of specific birds, their nests, eggs, or any portion thereof during the nesting season. Section 3503.5 specifically protects birds in the orders Falconiformes and Strigiformes (birds-of-prey). Section 3513 essentially overlaps with the federal MBTA, prohibiting the take or possession of any migratory nongame bird.

California Native Plant Protection Act

The California Native Plant Protection Act (NPPA) was enacted in 1977 and allows the California Fish and Wildlife Commission to designate plants as rare or endangered. Currently, 64 species, subspecies, and varieties of plants are protected as rare under the NPPA. The NPPA prohibits take of endangered or rare native plants but includes some exceptions for agricultural and nursery operations; emergencies; and after properly notifying CDFW for vegetation removal from canals, roads, and other sites, changes in land use, and in certain other situations. Effective in 2015, CDFW promulgated regulations (14 CCR 786.9) under the authority of the NPPA, establishing that the CESA permitting procedures (CFG Code Section 2081) would be applied to plants listed under the NPPA as "Rare." With this change, there is little practical difference between regulations and protocols for plants listed under CESA and those listed under the NPPA.

Clean Water Act Section 401, Porter-Cologne Water Quality Control Act

The State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs) have jurisdiction over "waters of the State," which are defined as any surface water or groundwater, including saline waters, within the boundaries of the state (California Water Code sec. 13050(e)). These agencies also have responsibilities for administering Section 401 of the CWA. In addition, where Federal jurisdiction is not asserted (for example, due to a lack of connectivity to a Relatively Permanent Waters [RPW] and Traditional Navigable Waters [TNW]), RWQCB assert jurisdiction over "waters of the State" pursuant to Section 13263 of the Porter-Cologne Water Quality Control Act, which are defined as any surface water or groundwater, including saline waters, within the boundaries of the State. In this event, the SWRCB may issue general Waste Discharge Requirements (WDRs) regarding discharges to "isolated" waters of the State if limiting criteria are not exceeded (Water Quality Order No. 2004-0004-DWQ, Statewide General Waste Discharge Requirements for Dredged or Fill Discharges to Waters Deemed by the USACE to be Outside of Federal Jurisdiction) or project-specific WDRs.

The SWRCB and RWQCBs have not established regulations for field determinations of waters of the state except for wetlands currently. In many cases the RWQCBs interpret the limits of waters of the State to be bounded by the OHWM unless isolated conditions or ephemeral waters are present. However, in the absence of statewide guidance each RWQCB may interpret jurisdictional boundaries within their region and the SWRCB has encouraged applicants to confirm jurisdictional limits with their RWQCB before submitting applications. As determined by the RWQCB, waters of the State may include riparian areas or other locations outside the OHWM, leading to a larger jurisdictional area over a given water body compared to the USACE.

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Procedures for defining wetland waters of the State pursuant to the SWRCB's *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* went into effect May 28, 2020. The SWRCB defines an area as wetland if, under normal circumstances:

- (i) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both;
the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and
the area's vegetation is dominated by hydrophytes or the area lacks vegetation.

The SWRCB's *Implementation Guidance for the Wetland Definition and Procedures for Discharges of Dredge and Fill Material to Waters of the State* (2020), states that waters of the U.S. and waters of the State should be delineated using the standard USACE delineation procedures, taking into consideration that the methods shall be modified only to allow for the fact that a lack of vegetation does not preclude an area from meeting the definition of a wetland.

California Fish and Game Code Section 1600 et seq.

Pursuant to CFGC Section 1600, CDFW has authority over all perennial, intermittent, and ephemeral rivers, streams, and lakes in the state, and requires any person, state or local governmental agency, or public utility to notify the CDFW before beginning any activity that would "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake" that supports fish or wildlife resources.

A stream is defined as a "body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation" (California Code of Regulations, Title 14 Section 1.72). A Lake or Streambed Alteration Agreement may be required for any proposed project that would result in an adverse impact to a river, stream, or lake. CDFW jurisdiction typically extends to the top of the bank and out to the outer edge of adjacent riparian vegetation if present. However, CDFW can take jurisdiction over a body of flowing water and the landform that conveys it, including water sources and adjoining landscape elements that are byproducts of and affected by interactions with flowing water without regard to size, duration, or the timing of flow (Brady and Vyverberg 2013).

CDFW Special Animals List

Special-status wildlife species are those species included on the CDFW "Special Animals" list (CDFW 2020). "Special Animal" is a general term that refers to all of the taxa the CNDDDB is interested in tracking, regardless of their legal or protection status. The CDFW considers the taxa on this list to be those of greatest conservation need. The species on this list generally fall into one or more of the following categories:

- Officially listed or proposed for listing under the CESA and/or FESA
- State or Federal candidate for possible listing
- Taxa that meet the criteria for listing, even if not currently included on any list, as described in *CEQA Guidelines* Section 15380

- Taxa considered by the Department to be a Species of Special Concern
- Taxa that are biologically rare, very restricted in distribution, declining throughout their range, or have a critical vulnerable stage in their life cycle that warrants monitoring
- Populations in California that may be on the periphery of a taxon's range but are threatened with extirpation in California

c. Local

City of Berkeley General Plan

The City of Berkeley's General Plan includes the Environmental Management Element which establishes policies for the management and conservation of Berkeley's natural resources. Several policies are intended to facilitate environmental protection and conservation by protecting, maintaining, and enhancing the urban forest (including street and park trees) and natural habitat areas. The policies and actions relevant for biological resources are shown below:

Policy EM-1: City of Berkeley Leadership. Maintain Berkeley's position as a leader in the adoption and implementation of environmental management programs.

Policy EM-3: Regional Coordination. Promote the City's environmental management and sustainability policies and programs and encourage other cities in the region to establish similar or better policies and programs.

Policy EM-5: "Green" Buildings. Promote and encourage compliance with "green" building standards.

Policy EM-23: Water Quality in Creeks and San Francisco Bay. Take action to improve water quality in creeks and San Francisco Bay.

Policy EM-24: Sewers and Storm Sewers. Protect and improve water quality by improving the citywide sewer system.

Policy EM-27: Creeks and Watershed Management. Whenever feasible, daylight creeks by removing culverts, underground pipes, and obstructions to fish and animal migrations.

Policy EM-28: Natural Habitat. Restore and protect valuable, significant, or unique natural habitat areas.

Policy EM-29: Street and Park Trees. Maintain, enhance, and preserve street and park trees to improve the environment and provide habitat.

Policy EM-30: Native Plants. Use native tree and plant species to enhance ecological richness.

City of Berkeley Municipal Code

The Berkeley Municipal Code (BMC) includes the following ordinances related to protection of biological resources:

- **BMC Chapter 6.52, Moratorium on the Removal of Coast Live Oak Trees:** This section of the BMC declares a moratorium on the removal of coast live oak trees, to prohibit any pruning of an oak that is excessive and injurious to the tree. Under this ordinance, the "removal of any single stem coast live oak tree of a circumference of 18 inches or more and any multi-stemmed coast live oak with an aggregate circumference of 26 inches or more at a distance of four feet up from the ground within the City of Berkeley" is prohibited. An exception may be made to this

ordinance if the City Manager finds that any tree is a potential danger to people or property due to its condition, and that the only reasonable mitigation would be tree removal.

- **BMC Chapter 17.08, Preservation and Restoration of Natural Watercourses:** This chapter of the BLC regulates: (1) building over or near culverted creeks; (2) building near open creeks; (3) the rehabilitation and restoration of natural waterways; and (4) the management of watersheds.
- **BMC Chapter 17.20, Discharge of Non-Stormwater Into the City’s Storm Drain System-Reduction of Stormwater Pollution:** This chapter of the BMC includes a provision to prohibit discharges from rising groundwaters, springs, and flows from riparian habitats and wetlands.

4.3.3 Impact Analysis

a. Methodology and Significance Thresholds

The proposed project does not identify specific development projects occurring at a specific location or time; and the design and scope-of-work for such projects is unknown. The proposed project involves a policy change; specifically, an update to the City’s Housing Element. Considering these circumstances, it is not possible to determine the specific impacts of future development projects that may occur as a result of the HEU. The following impact analysis serves to analyze the potential impacts of the HEU with the understanding that the existing policies and actions in the General Plan, and applicable federal, state, and local laws, regulations, and management policies would apply to future development proposals. Subsequent environmental documents, when required, could “tier” from the HEU EIR and focus its analysis on any new significant impacts per *CEQA Guidelines* Section 15152 and 15385.

The analysis is based on a biological baseline (i.e., existing conditions) derived from biological resource data collected from numerous sources, including relevant literature, aerial imagery and topographic maps, and data on special-status species and sensitive habitat information obtained from the CNDDDB (2022a), BIOS (CDFW 2022b), CNPS *online Inventory of Rare and Endangered Plants of California* (CNPS 2022), and USFWS IPaC (2022a). The USFWS Critical Habitat Portal (2022b), U.S. Geological Service National Hydrology Data Set (2022) and National Wetlands Inventory (USFWS 2022c) were also queried. The methods and results are presented in detail above.

The following thresholds are based on Appendix G of the *CEQA Guidelines*. Impacts would be significant if the proposed project would result in any of the following:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
3. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites;

5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.

b. Project Impacts and Mitigation Measures

Threshold 1: Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Impact BIO-1 DEVELOPMENT FACILITATED BY THE PROPOSED HEU MAY RESULT IN DIRECT OR INDIRECT IMPACTS TO SPECIAL-STATUS SPECIES OR THEIR ASSOCIATED HABITATS, AND IMPACTS TO NESTING BIRDS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

A total of 59 special-status plants were identified within the 16 quadrangles including and surrounding the City of Berkeley (CNPS 2022), and 48 special-status animals were identified within five miles of the City of Berkeley (CDFW 2022a) (Appendix B). The highly developed and urbanized core of Berkeley generally lacks suitable habitats to support special-status plants and special-status animals; however, the grassland and oak woodland habitats on the eastern boundary of the City along with the marine habitat on the western border of Berkeley may support special-status species such as western bumble bee and green sturgeon respectively. Many of the special status species within the region have sensitivity ratings below the threshold for significant impacts from development in urban settings under CEQA, or there are no records of the species occurring within the City of Berkeley in the past ten years. Depending on the location and timing of future development projects, the potential occurrence of some special status species cannot be ruled out.

The core of the City of Berkeley is developed and lacking in habitats for most special-status species. The HEU does not include proposed development sites on the western boundary of Berkeley, where marine, estuarine, and lacustrine habitats may provide habitats for special-status species and native fish and wildlife. While the majority of the opportunity sites approved under the HEU would focus development in urbanized core of the City, some areas zoned R-1 and R-2 occur on the eastern boundary. Individual development projects in these areas may result in direct and indirect impacts to native vegetation and habitats potentially supporting native wildlife and special-status species.

Where special-status species occur, direct impacts from future development projects may include direct mortality of special-status species struck by construction equipment or vehicles during construction; crushing of burrows or habitat features providing shelter for special-status species; habitat impacts including trimming and removal of native vegetation, and grading; noise, vibration, and other disturbances that alter foraging and mating behaviors; and increased predation due to human presence and food subsidies. Habitat impacts may be permanent or temporary. Indirect impacts may include introduction and spread of nonnative species, fire, and fugitive dust, which alter habitat values; noise, lighting, and human presence which may alter migratory corridors, mating and foraging behavior; and other “edge effects” at the urban-wildland interfaces.

However, future development proposals would be subject to the Berkeley General Plan and its goals regarding the protection of biological resources. Generally, Policy EM-1 and Policy EM-3 create a framework for environmental policy and encouraging agencies, businesses, and households to focus on environmental management and sustainability. Further, Policy EM-5 encourages construction

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projects to be sited, designed, constructed, and operated to minimize present and future impacts on the natural environment.

Future development projects would also be subject to state and federal laws, regulations, and management policies regarding biological resources (e.g., federal Endangered Species Act). Future development projects would be reviewed to determine whether their impacts fall within the scope of this EIR, or if additional site-specific environmental review will be required. Subsequent environmental documents, when required, could “tier” from the HEU EIR and focus analysis on the potential for new significant impacts per *CEQA Guidelines* Section 15152 and 15385.

Considering the policies and actions of the General Plan and required compliance with federal, State, and local laws, regulations, and management policies, impacts to special-status species would be less than significant.

Trees, shrubs, man-made structures, and the ground surface throughout Berkeley provide suitable nesting substrates for birds protected under the MBTA and CFGC. If construction of specific development projects implemented under the proposed project occurs during the breeding season, impacts to nesting birds may occur. Impacts may include direct impacts to active nests, including eggs or young, if nesting substrates are removed as part of the project. Indirect impacts may result if noise, vibration, and human presence cause adult birds to abandon the nests for prolonged periods of time, preventing them from incubating eggs, brooding chicks, and defending the nest from predators. However, development projects in Berkeley are required to comply with the following Standard Condition of Approval:

Avoid Disturbance of Nesting Birds. Initial site disturbance activities, including vegetation and concrete removal, shall be prohibited during the general avian nesting season (February 1 to August 30), if feasible. If nesting season avoidance is not feasible, the applicant shall retain a qualified biologist to conduct a preconstruction nesting bird survey to determine the presence/absence, location, and activity status of any active nests on or adjacent to the project site. The extent of the survey buffer area surrounding the site shall be established by the qualified biologist to ensure that direct and indirect effects to nesting birds are avoided. To avoid the destruction of active nests and to protect the reproductive success of birds protected by the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGC), nesting bird surveys shall be performed not more than 14 days prior to scheduled vegetation and concrete removal. In the event that active nests are discovered, a suitable buffer (typically a minimum buffer of 50 feet for passerines and a minimum buffer of 250 feet for raptors) shall be established around such active nests and no construction shall be allowed inside the buffer areas until a qualified biologist has determined that the nest is no longer active (e.g., the nestlings have fledged and are no longer reliant on the nest). No ground-disturbing activities shall occur within this buffer until the qualified biologist has confirmed that breeding/nesting is completed and the young have fledged the nest. Nesting bird surveys are not required for construction activities occurring between August 31 and January 31.

With compliance with City of Berkeley Standard Conditions of Approval, impacts to nesting birds would be less than significant.

Mitigation Measure

This impact would be less than significant. No mitigation measures are required.

Threshold 2: Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Impact BIO-2 IMPLEMENTATION OF THE PROPOSED HEU MAY DIRECTLY OR INDIRECTLY IMPACT RIPARIAN HABITAT, SENSITIVE NATURAL COMMUNITIES, OR PROTECTED WETLANDS IN THE CITY OF BERKELEY. IMPLEMENTATION OF FEDERAL, STATE, AND LOCAL REGULATIONS AND POLICIES WOULD ENSURE RIPARIAN HABITAT AND WETLANDS ARE NOT SIGNIFICANTLY IMPACTED. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The City of Berkeley is generally urbanized and developed. The dominant vegetation types include ornamental vegetation and ruderal areas. No natural vegetation communities considered sensitive by the CDFW occur in the City. Four sensitive natural community types occur within a five-mile radius of the City. Northern Coastal Salt Marsh is located within 1.5 miles to the north and south of the City of Berkeley; Northern Maritime Chaparral is located approximately three miles to the northeast of the City of Berkeley; serpentine bunchgrass is located approximately four miles to the southeast of the City of Berkeley; and valley needlegrass grassland is located approximately 1.5 miles north of the City of Berkeley. These sensitive natural vegetation communities would not be affected by development projects resulting from the proposed HEU due to their respective distances from future development that could occur under the proposed HEU.

Although some riparian areas may occur within or adjacent to the City of Berkeley, the specific development areas identified under the proposed HEU are in already developed urban areas. No impacts to riparian areas have been identified. If impacts to riparian areas are identified during the planning process for specific development projects associated with the proposed HEU, they would be subject to Berkeley's creek protection regulations (BMC Chapter 17.08) and permitting pursuant to CFGC Section 1600 *et seq.* Under BMC Chapter 17.08, obstructing or interfering with watercourses is prohibited and construction within 30 feet of a culverted creek must receive a permit from the City Engineer and comply with the provisions in the chapter to ensure the watercourse is protected. The elimination or degradation of significant in-stream or riparian corridor habitat is prohibited. With compliance with these regulations, this impact would be less than significant.

Mitigation Measures

This impact would be less than significant. No mitigation measures are required.

Threshold 3: Would the project have a substantial adverse effect on state or federally protected wetlands (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Impact BIO-3 IMPLEMENTATION OF THE PROPOSED HEU MAY RESULT IN IMPACTS TO STATE OR FEDERALLY PROTECTED WETLANDS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Many of the housing opportunity sites are located on infill sites that are already developed with structures and/or parking and are not proximate to wetlands or waterways. Because these areas are currently developed, they are unlikely to contain jurisdictional wetlands or other surface waters and associated riparian vegetation zones. However, some housing opportunity sites may be in undeveloped areas or are near wetlands and streams within the City of Berkeley. Additionally, the proposed HEU would increase density in some areas, which could require upgraded utilities or

stormwater drainage. The construction of these upgraded facilities may require work, including dredge or fill, within jurisdictional wetlands and streams and could require ground disturbance in riparian habitat associated with these wetlands and streams. For development that would occur in these areas, Berkeley's creek protection ordinance (BMC Chapter 17.08) and permitting pursuant to Section 404/401 of the CWA Section, Section 1600 *et seq.* of the CFGC, and the Porter-Cologne Water Quality Control Act would be required. Actual jurisdictional areas are determined by the State and federal authorities at the time that permits are requested, and the agencies are responsible for describing avoidance, minimization, and mitigation measures, if required. This impact would be less than significant.

Mitigation Measures

This impact would be less than significant. No mitigation measures are required.

Threshold 4: Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Impact BIO-4 IMPLEMENTATION OF THE PROPOSED HEU WOULD NOT SUBSTANTIALLY IMPEDE THE MOVEMENT OF NATIVE RESIDENT OR MIGRATORY FISH OR WILDLIFE SPECIES OR WITH ESTABLISHED NATIVE RESIDENT OR MIGRATORY WILDLIFE CORRIDORS WITH COMPLIANCE WITH EXISTING AND PROPOSED REGULATIONS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The City of Berkeley is adjacent to a designated essential connectivity area but the City of Berkeley is not within, and does not function as, a significant regional or local wildlife movement corridor. Codornices Creek along the northern border of the City of Berkeley is one of the last remaining unchannelized perennial streams within or adjacent to the City of Berkeley. It provides a natural run for the threatened salmonid fish species. Specific development projects implemented under the proposed HEU would generally be focused in already developed urban areas within the City of Berkeley. However, if projects have the potential to result in direct impacts to Codornices Creek, the activities may impact the movement of native fish. The proposed HEU and associated future development projects would have to adhere to Berkeley General Plan Policy EM-28 Natural Habitat and the provisions of the Creek Protection Ordinance--BMC Chapter 17.08. In addition, projects under the HEU would be subject to permitting pursuant to CFGC Section 1600 *et seq.* Required compliance with these regulations would ensure that the watercourse is not diverted or obstructed such that it would impair the movement of native fish. With compliance with existing regulations, this impact would be less than significant.

Vegetation throughout much of the urban environment of the City of Berkeley consists of primarily non-native landscaped trees and shrubs. Native bird species will use the landscaped vegetation in lower numbers due to the simplicity of the vegetation and the non-native vegetation supports fewer of the resources required by native bird species that native and natural vegetation would provide. While the HEU will primarily focus development on the urban core of Berkeley, in some areas, native vegetation may be replaced with development and ornamental vegetation. Due to required consistency with General Plan policies EM-28, EM-29, and EM-30, however, this impact would be less than significant.

Development projects under the HEU may include taller buildings in areas along commercial corridors and in the Southside. Overall, redevelopment and infill housing in Berkeley would not substantially affect migratory bird routes, as the area is already built out with existing structures of

varying heights and mature trees around structures. Nonetheless, there is a risk for new construction with glass windows or facades that birds would not perceive transparent glass as an obstruction and may collide with the glass. This occurs mainly when sky or vegetation is reflected in the glass or they perceive an unobstructed flight path through the glass. As a result, morbidity and mortality due to collision with the buildings is a potential impact. The City is currently developing regulations for bird safety requirements for new construction which are planned to be adopted around the time the proposed HEU is adopted. These regulations will include requiring bird safe glass for new construction or renovations. The most common methods to prevent bird strikes are glass and façade treatments are such as fritted and frosted glass, angled glass, ultra-violet glass, or film. Future development in the HEU planning cycle would be subject to the City's bird safety requirements at the time of construction. Therefore, this impact is less than significant.

Mitigation Measures

This impact would be less than significant without mitigation. No mitigation measures are required.

Threshold 5: Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?
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IMPACT BIO-5 IMPLEMENTATION OF THE PROPOSED HEU WOULD NOT CONFLICT WITH LOCAL POLICIES OR ORDINANCES PROTECTING BIOLOGICAL RESOURCES, SUCH AS A TREE PRESERVATION POLICY OR ORDINANCE. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Future development in Berkeley under the proposed HEU may involve the removal of mature trees during construction. General Plan Policy EM-29 requires the City to maintain and enhance street and park trees to improve the environment and provide habitat. On-going implementation of the policy through site-specific design review and use permits would reduce any potential impact to locally significant trees to a less than significant level.

Under the City of Berkeley's Tree Ordinance (BMC No. 6,509-N.S.) the removal of coast live oak trees is prohibited for any reason, unless such removal is deemed necessary for public safety by the City Manager. Any Coast Live Oak with a single stem circumference of 18 inches or more or any multi-stemmed oak with an aggregate circumference of 26 inches or more at a distance of four feet from the ground is protected under this ordinance.

Specific development projects implemented under the proposed HEU would be required to adhere to General Plan policies and to the Tree Ordinance. The proposed HEU does not include specific policies or programs that would conflict with or hinder implementation of the City's Tree Ordinance or other policies or ordinances for protecting biological resources. This impact would be less than significant.

Mitigation Measures

This impact would be less than significant. No mitigation measures are required.

Threshold 6: Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Impact BIO-5 IMPLEMENTATION OF THE PROPOSED HEU WOULD NOT CONFLICT WITH THE PROVISIONS OF AN ADOPTED HABITAT CONSERVATION PLAN, NATURAL COMMUNITY CONSERVATION PLAN, OR OTHER APPROVED LOCAL, REGIONAL, OR STATE HABITAT CONSERVATION PLAN. NO IMPACT WOULD OCCUR.

There are no habitat conservation plans or natural community conservation plans adopted in Berkeley. Therefore, the proposed HEU and future specific development project would not conflict with any such plans. No impact would occur.

Mitigation Measures

No impact would occur and no mitigation measures are required.

c. Cumulative Impacts

A project's environmental impacts are "cumulatively considerable" if the "incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (CEQA Guidelines Section 15065[a][3]). The geographic scope for cumulative biological resources impacts includes the City of Berkeley. This geographic scope is appropriate for biological resources because it encompasses the mosaic of representative land cover and habitat types (and associated biological resources) affected by the project, including primarily urban, residential, commercial, and industrial development with areas of natural habitats. Development that is considered part of the cumulative analysis includes buildout under the University of California, Berkeley's LRDP.

Cumulative development in Berkeley may contribute to the loss of foraging and breeding habitat for special-status species; contribute to the decline of special-status species, fragmentation of habitat and isolation of populations, and decrease movement opportunities. Full implementation of the proposed HEU in combination with cumulative development described in Section 3, *Environmental Setting*, would increase density and intensity of existing land uses. However, the City of Berkeley is highly urbanized and developed which limits the habitat value and potential for presence of sensitive biological resources. Potential impacts to biological resources associated with the proposed project would be less than significant with mitigation. Therefore, the proposed project's incremental contribution to cumulative impacts associated with biological resources would not be cumulatively considerable, and cumulative impacts would be less than significant.

4.4 Cultural Resources

This section assesses potential impacts on cultural resources related to implementation of the proposed HEU.

4.4.1 Regulatory Setting

This regulatory framework section identifies the federal, state, and local laws, statutes, guidelines, and regulations that govern the identification and treatment of cultural resources as well as the analysis of potential impacts to cultural resources. The lead agency must consider the provisions and requirements of this regulatory framework when rendering decisions on projects that have the potential to affect cultural resources.

a. Federal Regulations

National Register of Historic Places

The National Register of Historic Places (NRHP) was established by the National Historic Preservation Act of 1966 as “an authoritative guide to be used by federal, state, and local governments, private groups and citizens to identify the Nation’s cultural resources and to indicate what properties should be considered for protection from destruction or impairment” (Code of Federal Regulations [CFR] 36, 60.2). The NRHP is the nation’s official list of cultural resources worthy of preservation. The NRHP recognizes the quality of significance in American, state, and local history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects. Per 36 CFR Part 60.4, a property is eligible for listing in the NRHP if it meets one or more of the following criteria:

- Criterion A:** Are associated with events that have made a significant contribution to the broad patterns of our history
- Criterion B:** Are associated with the lives of persons significant in our past
- Criterion C:** Embody the distinctive characteristics of a type, period, or method of installation, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction
- Criterion D:** Have yielded, or may be likely to yield, information important in prehistory or history

In addition to meeting at least one of the above designation criteria, resources must also retain integrity. The National Park Service recognizes seven aspects or qualities that, considered together, define historic integrity. To retain integrity, a property must possess several, if not all, of these seven qualities, defined as follows:

- Location:** The place where the historic property was constructed or the place where the historic event occurred
- Design:** The combination of elements that create the form, plan, space, structure, and style of a property
- Setting:** The physical environment of a historic property

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- Materials:** Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property
- Workmanship:** The physical evidence of the crafts of a particular culture or people during any given period in history or prehistory
- Feeling:** A property's expression of the aesthetic or historic sense of a particular period of time
- Association:** The direct link between an important historic event or person and a historic property

Certain properties are generally considered ineligible for listing in the NRHP, including cemeteries, birthplaces, graves of historical figures, properties owned by religious institutions, relocated structures, or commemorative properties. Additionally, a property must be at least 50 years of age to be eligible for listing in the NRHP. The National Park Service states that 50 years is the general estimate of the time needed to develop the necessary historical perspective to evaluated significance (National Park Service 1997:41). Properties which are less than 50 years must be determined to have "exceptional importance" to be considered eligible for NRHP listing.

b. State Regulations

California Register of Historical Resources

The CRHR was established in 1992 and codified by PRC §§5024.1 and 4852. The CRHR is an authoritative listing and guide to be used by State and local agencies, private groups, and citizens in identifying the existing historical resources of the State and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change (Public Resources Code, 5024.1(a)). The criteria for eligibility for the CRHR are consistent with the NRHP criteria but have been modified for state use in order to include a range of historical resources that better reflect the history of California (Public Resources Code, 5024.1(b)). Unlike the NRHP however, the CRHR does not have a defined age threshold for eligibility; rather, a resource may be eligible for the CRHR if it can be demonstrated sufficient time has passed to understand its historical or architectural significance (California Office of Historic Preservation 2006). Further, resources may still be eligible for listing in the CRHR even if they do not retain sufficient integrity for NRHP eligibility (California Office of Historic Preservation 2006). Generally, the California Office of Historic Preservation recommends resources over 45 years of age be recorded and evaluated for historical resources eligibility (California Office of Historic Preservation 1995:2).

Properties are eligible for listing in the CRHR if they meet one of more of the following criteria:

- Criterion 1:** Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage
- Criterion 2:** Is associated with the lives of persons important to our past
- Criterion 3:** Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values
- Criterion 4:** Has yielded, or may be likely to yield, information important in prehistory or history

California Environmental Quality Act

California Public Resources Code (PRC) Section 21804.1 requires lead agencies determine if a project could have a significant impact on historical or unique archaeological resources. As defined in PRC Section 21084.1, a historical resource is a resource listed in, or determined eligible for listing in, the California Register of Historical Resources (CRHR); a resource included in a local register of historical resources or identified in a historical resources survey pursuant to PRC Section 5024.1(g); or any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant. PRC Section 21084.1 also states resources meeting the above criteria are presumed to be historically or cultural significant unless the preponderance of evidence demonstrates otherwise. Resources listed in the National Register of Historic Places (NRHP) are automatically listed in the CRHR and are, therefore, historical resources under CEQA. Historical resources may include eligible built environment resources and archaeological resources of the precontact or historic periods.

CEQA Guidelines Section 15064.5(c) provides further guidance on the consideration of archaeological resources. If an archaeological resource does not qualify as a historical resource, it may meet the definition of a “unique archaeological resource” as identified in PRC Section 21083.2. PRC Section 21083.2(g) defines a unique archaeological resource as an artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria: 1) it contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information; 2) has a special and particular quality such as being the oldest of its type or the best available example of its type; or 3) is directly associated with a scientifically recognized important prehistoric or historic event or person.

If an archaeological resource does not qualify as a historical or unique archaeological resource, the impacts of a project on those resources will be less than significant and need not be considered further (*CEQA Guidelines* Section 15064.5[c][4]). *CEQA Guidelines* Section 15064.5 also provides guidance for addressing the potential presence of human remains, including those discovered during the implementation of a project.

According to CEQA, an impact that results in a substantial adverse change in the significance of a historical resource is considered a significant impact on the environment. A substantial adverse change could result from physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resource would be materially impaired (*CEQA Guidelines* §15064.5 [b][1]). Material impairment is defined as demolition or alteration in an adverse manner [of] those characteristics of a historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the CRHR or a local register (*CEQA Guidelines* §15064.5[b][2][A]).

If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that resources cannot be left undisturbed, mitigation measures are required (PRC §21083.2[a], [b]).

CEQA Guidelines Section 15126.4 stipulates an EIR shall describe feasible measures to minimize significant adverse impacts. In addition to being fully enforceable, mitigation measures must be completed within a defined time period and be roughly proportional to the impacts of the project. Generally, a project which is found to comply with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and*

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Reconstructing Historic Buildings (the Standards) is considered to be mitigated below a level of significance (*CEQA Guidelines* Section 15126.4 [b][1]). For historical resources of an archaeological nature, lead agencies should also seek to avoid damaging effects where feasible. Preservation in place is the preferred manner to mitigate impacts to archaeological sites; however, data recovery through excavation may be the only option in certain instances (*CEQA Guidelines* Section 15126.4[b][3]).

Secretary of the Interior's Standards for the Treatment of Historic Properties

In accordance with the California Code of Regulations and *CEQA Guidelines*, a project that has been determined to conform with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (*Secretary's Standards*) is generally considered to be a project that will not cause a significant adverse impact to a historical resource (14 California Code of Regulations {CCR} Section 15126.4). If a project meets the *Secretary's Standards*, the project can qualify for a potential categorical exemption from CEQA (14 CCR Section 15331).

The goal of the *Secretary's Standards* is to outline treatment approaches that allow for the retention of and/or sensitive changes to the distinctive materials and features that lend a historical resource its significance. When changes are carried out according to the Secretary of the Interior's Standards, the historical resource retains its historic integrity and thereby continues to convey the reasons for its significance. The *Secretary's Standards* and associated Guidelines (36 CFR 67) are "neither technical nor prescriptive, but are intended to promote responsible preservation practices that help protect" cultural resources. The *Secretary of the Interior's Standards and Guidelines* offer general recommendations for preserving, maintaining, repairing, and replacing historical materials and features, as well as designing new additions or making alterations.

The *Secretary's Standards* also provide guidance on new construction adjacent to historic districts and properties, in order to ensure that there are no adverse impacts to integrity as a result of a change in setting. The ten *Secretary's Standards for Rehabilitation* are:

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.
2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.
7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

8. Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

In order to determine whether a project complies with the *Secretary's Standards*, the analysis must consider the "character-defining," or historically significant, features of the historical resource. Alterations and replacement of character-defining features over time can impair a historic property's integrity and result in a loss of historic status. Therefore, to ensure that a historic property remains eligible after implementation of projects, character-defining features should be identified and preserved.

According to Preservation Brief 17, *Architectural Character: Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving Their Character*, there is a three-step process to identifying character-defining features. Step 1 involves assessing the physical aspects of the building exterior as a whole, including its location and setting, shape and massing, orientation, roof and roof features, projections, and openings. Step 2 looks at the building more closely—at materials, trim, secondary features, and craftsmanship. Step 3 encompasses the interior, including individual spaces, relations or sequences of spaces (floor plan), surface finishes and materials, exposed structure, and interior features and details.

California Public Resources Code

Section 5097.5 of the California PRC states:

No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

As used here, "public lands" means lands owned by or under the jurisdiction of the state or any city, county, district, authority, or public corporation, or any agency thereof. Consequently, public agencies are required to comply with PRC § 5097.5 for their activities, including construction and maintenance, as well as for permit actions (e.g., encroachment permits) undertaken by others.

If a project can be demonstrated to cause damage to a unique archaeological resource, the lead agency may require reasonable efforts to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that resources cannot be left undisturbed, mitigation measures are required (PRC, Section 21083.2[a], [b], and [c]).

Codes Governing Human Remains

The disposition of human remains is governed by Section 7050.5 of the California Health and Safety Code and PRC Sections 5097.94 and 5097.98 and falls within the jurisdiction of the Native American Heritage Commission (NAHC). If human remains are discovered, the County Coroner must be notified within 48 hours and there should be no further disturbance to the site where the remains were found. If the remains are determined by the coroner to be Native American, the coroner is responsible for contacting the NAHC within 24 hours. The NAHC, pursuant to Section 5097.98, will immediately notify those persons it believes to be most likely descended from the deceased Native Americans so they can inspect the burial site and make recommendations for treatment or disposal.

c. Local Regulations

City of Berkeley General Plan (2001)

The Urban Design and Preservation Element of the City's General Plan, approved in 2001, contains the following goals and policies related to cultural resources and relevant to the current project:

Policy UD-1 Techniques. Use a wide variety of regulatory, incentive, and outreach techniques to suitably protect Berkeley's existing built environment and cultural heritage.

Policy UD-2 Regulation of Significant Properties. Increase the extent of regulatory protection that applies to structures, sites, and areas that are historically or culturally significant.

Policy UD-3 Regulation of Neighborhood Character. Use regulations to protect the character of neighborhoods and districts, and respect the particular conditions of each area.

Policy UD-5 Architectural Features. Encourage, and where appropriate require, retention of ornaments and other architecturally interesting features in the course of seismic retrofit and other rehabilitation work.

Policy UD-6 Adaptive Reuse. Encourage adaptive reuse of historically or architecturally interesting buildings in cases where the new use would be compatible with the structure itself and the surrounding area.

Policy UD-8 Public Works Projects. In public works projects, seek to preserve desirable historic elements such as ornamental sidewalk features, lampposts, and benches.

Policy UD-12 Range of Incentives. Seek to maintain and substantially expand the range and scale of incentives that the City and/or other entities make available in Berkeley for the preservation of historic and cultural resources.

Policy UD-16 Context. The design and scale of new or remodeled buildings should respect the built environment in the area, particularly where the character of the built environment is largely defined by the aggregation of historically and architecturally significant buildings.

Policy UD-17 Design Elements. In relating a new design to the surrounding area, the factors to consider should include height, massing, materials, color, and detailing or ornament.

Policy UD-20 Alterations. Alterations to a worthwhile building should be compatible with the buildings original architectural character.

Policy UD-21 Directing Development. Use City incentives and zoning provisions to direct new development toward locations where significant historic structures or structures contributing to the character of an area will not need to be removed.

Policy UD-24 Area Character. Regulate new construction and alterations to ensure that they are truly compatible with and, where feasible, reinforce the desirable design characteristics of the particular area they are in.

Policy UD-36 Information on Heritage. Promote, and encourage others to promote, understanding of Berkeley's built and cultural heritage, the benefits of conserving it, and how to sensitively do that.

Policy UD-38 Tourism. As an economic development strategy, promote the city's cultural and architectural heritage.

City of Berkeley Municipal Code

The City of Berkeley's Municipal Code (BMC) Chapter 3.24 *Landmarks Preservation Commission* provides for the identification, designation, and preservation of historic structures and structures with cultural value. In accordance with Chapter 3.24, the Landmarks Preservation Commission is given regulatory powers over the City's designated historic properties (including Landmarks, Structures of Merit, and Historic Districts). Pursuant to Section 3.24.210,

Upon receipt of any application for a permit to carry out any construction, alteration or demolition on a landmark site, in an historic district or on a structure of merit site, or on an initiated landmark site, in an initiated historic district or on an initiated structure of merit site, the Department of Planning and Community Development shall, unless the structure or feature concerned has been declared unsafe or dangerous pursuant to Section 3.24.280 of this chapter, promptly forward such permit application to the commission for review.

In accordance with Section 3.24.260, the Landmarks Preservation Commission may grant approval of permit applications for physical changes to Landmarks, Structures of Merit, and Historic Districts under the following circumstances. As described in Section 3.24.260(C), permit applications for construction, alteration, or repair of designated resources are subject to the following standards:

- a. For applications relating to landmark sites, the proposed work shall not adversely affect the exterior architectural features of the landmark and, where specified in the designation for a publicly owned landmark, its major interior architectural features; nor shall the proposed work adversely affect the special character or special historical, architectural or aesthetic interest or value of the landmark and its site, as viewed both in themselves and in their setting.
- b. For applications relating to property in historic districts, the proposed work shall not adversely affect the exterior architectural features of the subject property or the relationship and congruity between the subject structure or feature and its neighboring structures and surroundings, including facade, setback and height; nor shall the proposed work adversely affect the special character or special historical, architectural or aesthetic interest or value of the district. The proposed work shall also conform to such further standards as may be embodied in the designation of the historic district.
- c. For applications relating to structure of merit sites, the proposed work shall not adversely affect the architectural features if architectural merit is the basis for designation; nor shall the proposed work adversely affect the special cultural, educational or historical interest or value if that is the basis for designation.

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In addition, for permit applications for alteration or demolitions of designated landmarks, historic districts, and structures of merit, Section 3.24.260(C)(2) sets forth the provisions for Landmarks Preservation Commission review and consideration of extenuating circumstances, such as technical and economic feasibility.

Chapter 3.24 also defines the criteria for historic resource designation and procedures for the treatment of historic resources. Section 3.24.110, "Landmarks, historic districts, and structures of merit—Designation—Criteria for consideration," establishes the criteria when considering structures, sites, and areas for landmark or structure of merit designation. The criteria for designating a City landmark are as follows:

1. Architectural merit:
 - a. Property that is the first, last, only or most significant architectural property of its type in the region
 - b. Properties that are prototypes of or outstanding examples of periods, styles, architectural movements or construction, or examples of the more notable works of the best surviving work in a region of an architect, designer or master builder
 - c. Architectural examples worth preserving for the exceptional values they add as part of the neighborhood fabric
2. Cultural value: Structures, sites and areas associated with the movement or evolution of religious, cultural, governmental, social and economic developments of the City
3. Educational value: Structures worth preserving for their usefulness as an educational force
4. Historic value: Preservation and enhancement of structures, sites and areas that embody and express the history of Berkeley/Alameda County/California/United States
5. Historic property: Any property listed in the NRHP

The criteria for designating a structure of merit are as follows:

1. General criteria shall be architectural merit and/or cultural, educational, or historic interest or value. If upon assessment of a structure, the commission finds that the structure does not currently meet the criteria as set out for a landmark, but it is worthy of preservation as part of a neighborhood, a block or a street frontage, or as part of a group of buildings which includes landmarks, that structure may be designated a structure of merit.
2. Specific criteria include, but are not limited to one or more of the following:
 - a. The age of the structure is contemporary with (1) a designated landmark within its neighborhood, block, street frontage, or group of buildings, or (2) an historic period or event of significance to the City, or to the structure's neighborhood, block, street frontage, or group of buildings.
 - b. The structure is compatible in size, scale, style, materials or design with a designated landmark structure within its neighborhood, block, street frontage, or group of buildings.
 - c. The structure is a good example of architectural design.
 - d. The structure has historical significance to the City and/or to the structure's neighborhood, block, street frontage, or group of buildings. (Ord. 5686-NS § 1 (part), 1985; Ord. 4694-NS § 3.1, 1974)

Municipal Code General Provisions

Section 23.326.070.C of Berkeley's zoning code includes the following requirements for projects that would involve demolition of non-residential buildings (used for commercial, manufacturing, community institutional or other non-residential uses):

Any application for a Use Permit or AUP to demolish a non-residential building or structure which is 40 or more years old shall be forwarded to the Landmarks Preservation Commission (LPC) for review prior to consideration of the Use Permit or AUP.

The LPC may initiate a landmark or structure-of-merit designation or may choose solely to forward to the Board its comments on the application. The Board shall consider the recommendations of the LPC in considering its action on the application.

LPC input and comments on proposed demolitions subject to Section 23.326.070.C are advisory in nature to the Zoning Adjustments Board. Each LPC agenda lists the address and associated permit application number for all projects involving a request to demolish a building more than 40 years old for the LPC to review prior to any staff recommendation or action.

City of Berkeley Permit Application Requirements

While not part of the City's adopted Municipal Code, Berkeley's Zoning Project Application process includes a requirement for historic resources evaluation for certain projects involving properties over 40 years of age. Permit applications are required to include a set of State of California Department of Parks and Recreation (DPR) Series 523 forms, documenting a Historic Resource Evaluation, in the following project scenarios:

1. Demolition of a non-residential building, more than 40 years old, subject to referral to the Landmarks Preservation Commission in accordance with BMC Section 23.326.070.C;
2. Demolition/Substantial Change of any building more than 40 years old subject to environmental review pursuant to CEQA.

The Zoning Project Application Submittal Requirements include the following information on the evaluation:

Evaluation(s) to include references to development history documentation (including but not limited to photographs, building permits, Sanborn maps, and directory listings); completed by a qualified historian, architectural historian or historic architect. Provide supplemental information in accordance with the Landmarks Preservation Ordinance criteria (BMC Section 3.24.110).

The Environmental Review Officer may waive this requirement for residential addition and alteration proposals after determining that the project complies with preservation standards and environmental practices OR that qualified sources other than an HRE can provide the relevant information.

4.4.2 Cultural Resources Setting

Berkeley retains a wide variety of prehistoric and historic-era cultural resources that are of benefit to the community as a tangible record of the City's past and identity. This section provides an overview of the Berkeley's cultural resources setting from prehistoric/ethnographic times through the historic era and present day.

4.4.2.1 Prehistory

Data from the early work of N.C. Nelson in the San Francisco Bay, delta, and inland sites illuminated regional archaeological sequences and allowed the development of the Central California Taxonomic System (CCTS) (Nelson 1909; Moratto 1984). The CCTS outlines three main chronological periods (or 'horizons') for the Sacramento Delta and San Francisco Bay areas – Early, Middle, and Late,. summarized here following Hylkema's (2002) and Milliken *et al.*'s (2007) approaches.

Given the rise in sea levels in the Middle Holocene, the relatively recent formation of San Francisco Bay, and the presence of constant alluviation in low-lying parts of the Bay Area, most evidence of the earliest human habitation in the area is likely to be underwater or deeply buried. Therefore, most evidence for the Middle Holocene comes from inland sites, with the earliest dating from ca. 8000 BC at Los Vaqueros Reservoir in eastern Contra Costa County (Meyer and Rosenthal 1997), and the Metcalf Creek site (CA-SCI-178) in Morgan Hill (Hildebrandt 1983; Milliken *et al.* 2007:114; Jones *et al.* 2007:130).

The Early Period (4000-500 BC) in the San Francisco Bay Area shows the emergence of the "Windmill pattern" of material culture, characterized by an advancement in technological skills and devices, an emphasis on hunting and trading, and burial and ceremonial practices as evidenced by large stemmed and concave-base obsidian projectile points, rectangular *Olivella* beads, charmstones, extended burials facing toward the west, and the replacement of milling slabs with mortars and pestles. Semi-sedentary land use, shell mound development, and evidence of regional trade are typical in some areas of the Bay while a lack of high-density shell deposits suggests only a preferential use of terrestrial resources. This cultural pattern appears earlier in the San Joaquin and Sacramento valleys, suggesting an influx of traditions or people from those areas into the Bay Area at some point during the period. In the East Bay, mortars and pestles first appear after 4000 BC and are ubiquitous by 1500 BC (Milliken *et al.* 2007:115; Moratto 1984: 277).

The Lower Middle Period (or Berkeley Pattern, 500 BC to 430 AD) is marked by major cultural disruptions. Changes included a move away from *Olivella* beads for new bead types much lower frequency of projectile points, the introduction of flexed burials instead of extended burials, and the introduction of decorative objects that may represent religious or cosmological beliefs. The period also saw the increased use of marine resources as seen through a developed network of large shellmounds (Lightfoot 1997; Moratto 1984:283; Lightfoot and Luby 2002; Leventhal 1993).

The Late Period (1050-1550 AD) is characterized by significant social transformations, an increase in social complexity and trade relations, greater sedentism, the appearance of cremation of high-status individuals, and the unification of ceremonial systems around the Bay Area. Changes in material culture include the introduction of the bow and arrow (including arrow-sized projectile points), harpoons, tubular tobacco pipe, clamshell disc beads, and new forms of ornamentation (Milliken *et al.* 2007:117).

Shellmounds are prevalent within the Alameda County (Nelson 1909). Approximately four miles southwest of the Southside, the Emeryville shellmound was excavated in 1902, 1924, (Moratto 1984:227-230). Another important site, the West Berkeley shellmound (Ala-307), was excavated in 1902 and in the mid-1950s before its destruction, providing an extensive faunal inventory and information on species change as well as important temporal and comparative data that has helped construct a regional archaeological sequence (Wallace and Lathrop 1975; Follett 1975; Greengo 1975; Moratto 1984:260-261).

Ethnography and Ethnohistory

The Huchiun people lived in present-day Berkeley when Spanish soldiers and missionaries arrived in the Bay Area. Huchiun territory extended “along the East Bay shore from Temescal Creek...north to the lower San Pablo and Wildcat Creek drainages in the present area of Richmond” (Milliken 1995:243). The names of two Huchiun villages – Genau and Junchaque – are known from Mission records, but their exact location is unknown (Milliken 1995:243). Huchiun presence near Temescal Creek, is attested in its Mexican-era name, “Arroyo del Temescal o Los Juchiyunes.”

The Huchiun have been one of the groups of the Ohlone people who have lived along the east, west, and south shores of San Francisco Bay, and in the Santa Cruz Mountains, Salinas Valley, and Monterey Bay area. During this period, the Ohlone utilized a wide range of resources in a very favorable environment. Those populations living adjacent to the great bays of the region relied heavily on shellfish and aquatic animals for food. In the interior plant foods like acorns were gathered and stored in great quantity. Large game like deer, elk, and antelope were hunted. Game birds, waterfowl, fish, and shellfish were other major food sources that thrived in the nearby sloughs and marshes of San Francisco Bay (Milliken 1995:16-18; Levy 1978).

During this historical era, Ohlone society was organized in local tribes of 200-400 people living in semi-permanent villages made up of round, domed, or conical thatch homes with frames and a center hearth. Tribelets controlled fixed territories averaging 10 to 12 miles in diameter (Kroeber 1925:219; Milliken *et al.* 2007). Hereditary village leaders, who could be male or female, played an important role in conflict resolution, receiving guests, directing ceremonies, organizing food-gathering expeditions, and leading war parties but did not otherwise exercise direct authority (Levy 1978:487). Despite their autonomy, intermarriage between tribelets appears to have been frequent (Milliken 1995:22-24).

The Huchiun spoke the Chochenyo dialect of the Ohlone language, which was spoken along the eastern shore of San Francisco Bay prior to 1770. Ohlone/Costanoan is a branch of the Yok-Utian subfamily of the Penutian languages, which are spoken along the Pacific Coast from Central California to southeast Alaska. Penutian speakers seem to have entered central California from the northern Great Basin around 4000-4500 years ago and arrived in the San Francisco Bay Area about 1500 years ago, displacing speakers of Hokan languages (Golla 2007:74), which also relates to the spread of the Windmiller pattern (Moratto 1984:553; Levy 1978:486).

4.4.2.2 *Post Contact History*

History

Post-Contact history for the state of California is generally divided into three periods: the Spanish Period (1769–1822), Mexican Period (1822–1848), and American Period (1848–present). Although Spanish, Russian, and British explorers visited the area for brief periods between 1529 and 1769, the Spanish Period in California begins with the establishment in 1769 of a settlement at San Diego and the founding of Mission San Diego de Alcalá, the first of 21 missions constructed between 1769 and 1823. Independence from Spain in 1821 marks the beginning of the Mexican Period, and the signing of the Treaty of Guadalupe Hidalgo in 1848, ending the Mexican American War, signals the beginning of the American Period when California became a territory of the United States.

Spanish Period (1769 – 1822)

Spanish explorers made sailing expeditions along the coast of California between the mid-1500s and mid-1700s. Juan Rodriguez Cabrillo in 1542 led the first European expedition to observe what was known by the Spanish as Alta (upper) California. For more than 200 years, Cabrillo and other Spanish, Portuguese, British, and Russian explorers sailed the Alta California coast and made limited inland expeditions, but they did not establish permanent settlements (Bean 1968; Rolle 2003). The Spanish crown laid claim to Alta California based on the surveys conducted by Cabrillo and Vizcaíno (Bancroft 1885; Gumprecht 1999).

During this period, Berkeley appears to have been sparsely inhabited by this time with the main Huchiun villages located near Richmond. By the 18th century, Spain developed a three-pronged approach to secure its hold on the territory and counter other foreign explorers. The Spanish established military forts known as presidios, as well as missions and pueblos (towns) throughout Alta California. The 1769 overland expedition by Captain Gaspar de Portolá marks the beginning of California's Historic period, occurring just after the King of Spain installed the Franciscan Order to direct religious and colonization matters in assigned territories of the Americas. Portolá established the Presidio of San Diego as the first Spanish settlement in Alta California in 1769. Franciscan Father Junípero Serra also founded Mission San Diego de Alcalá that same year, the first of the 21 missions that would be established in Alta California by the Spanish and the Franciscan Order between 1769 and 1823.

Mission San Francisco was founded in 1776. Few Huchiun people moved to the mission during the initial years, but by 1794 had migrated *en masse* to the mission. Construction of missions and associated presidios was a major emphasis during the Spanish Period in California to convert the Native American population to Christianity and to integrate them into communal enterprise. In 1794 187 Huchiuns were baptized at Mission San Francisco. In the following years, native people suffered from disease, dietary deficiency, and conflict that resulted in a nearly 80 percent population decline by 1832.

Spain began issuing land grants in 1784, typically to retiring soldiers, although the grantees were only permitted to inhabit and work the land. The land titles technically remained property of the Spanish king (Livingston 1914).

Mexican Period (1822 – 1848)

Several factors limited colonial settlement within Alta California to a minimum, including the threat of foreign invasion, political discord, and unrest among the indigenous population. After more than a decade of intermittent rebellion and warfare, the Viceroyalty of New Spain (Mexico and California territory) won independence from Spain in 1821. Shortly thereafter New Spain was dissolved and the Mexican Empire was established. In 1822, the Mexican legislative body in California ended isolationist policies designed to protect the Spanish monopoly on trade, and decreed California ports open to foreign merchants (Dallas 1955).

Extensive land grants were established in the interior during the Mexican Period, in part to increase the population inland from the more settled coastal areas where the Spanish had first concentrated their colonization efforts. The secularization of the missions following Mexico's independence from Spain resulted in the subdivision of former mission lands and establishment of many additional ranchos, or large land areas used largely for raising cattle or livestock. Commonly, former soldiers and well-connected Mexican families were the recipients of these land grants, which now included the title to the land.

Berkeley was within Rancho San Antonio, which was granted to Luis Maria Peralta in 1820. Peralta had come to California in 1776 with the Anza expedition. The rancho stretched for more than 43,000 acres, including the area from present-day Albany in the north to San Leandro Creek in the south. In 1842, Luis Peralta divided the ranch among his sons, with José Domingo receiving what is today Berkeley and Albany and José Vicente receiving what is now Emeryville, North and West Oakland, and Piedmont.

During the supremacy of the ranchos (1834–1848), landowners largely focused on the cattle industry and devoted large tracts to grazing. Cattle hides became a primary southern California export, providing a commodity to trade for goods from the east and other areas in the United States and Mexico. The number of non-native inhabitants increased during this period because of the influx of explorers, trappers, and ranchers associated with the land grants. The rising California population contributed to the introduction and rise of diseases foreign to the Native American population, who had no associated immunities.

In 1849 the area rapidly developed as a result of the Gold Rush. The Peralta family was plagued by squatters who overran rancho land, sometimes violently. Domingo Peralta sought to have his property confirmed in United States courts, and was burdened by legal proceedings to prove his ownership and sold portions of his land to raise money for legal fees.

American Period (1848 – Present)

The United States went to war with Mexico in 1846. The war ended in 1848 with the Treaty of Guadalupe Hidalgo, ushering California into its American Period.

In the San Francisco Bay Area, gold discovered in and along the American River in 1849 ushered in the Gold Rush. Immigrants flowed to the area and by the end of 1849, San Francisco's population grew from about 500 to 25,000 residents. California officially became a state with the Compromise of 1850, which also designated Utah and New Mexico (with present-day Arizona) as US territories (Waugh 2003). With the influx of people seeking gold, cattle were no longer desired mainly for their hides but also as a source of meat and other goods. During the 1850s cattle boom, rancho vaqueros drove large herds from southern to northern California to feed that region's burgeoning mining and commercial boom.

Local History

By the early 1860s, two noteworthy events catalyzed new settlement and expansion in the Berkeley area - the installation of telegraph lines along Telegraph and Claremont Avenues and the establishment of the College of California in 1866 (present-day UC Berkeley).

During this period, residences and industries grew around the wharf area that was known as "Ocean View". In April 1878, the people of "Ocean View", the area surrounding university campus, and local farmers were granted incorporation as the Town of Berkeley. Following incorporation, economic growth expanded rapidly with the establishment of mills, industrial plants, and retail operations. Commercial corridors began to grow in areas adjacent to the university, and along San Pablo Avenue. In 1872, the City's first post office opened. The area surrounding the City remained largely agricultural.

The establishment of the Southern Pacific Railroad in 1877 provided the means for easier transport of goods. By 1878, Southern Pacific had established a line from Oakland through to North Berkeley by way of Shattuck Avenue, and a downtown commercial district soon followed. As a result, the agricultural areas began to be developed for residential and commercial uses for the growing city.

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By about 1888, an interurban electric trolley line as well as a ferry service to San Francisco helped connect the emerging town with nearby population and employment centers, further spurring population and construction expansion.

Into the twentieth century, Berkeley expanded steadily, through the meteoric growth of the UC Berkeley, the downtown commercial corridor, as well as industrial development along the city periphery. Residential expansion grew, as well, with neighborhoods into the Berkeley flats. The 1906 Earthquake hastened Berkeley's growth when thousands of displaced San Francisco residents became permanent Berkeley residents and a corresponding construction boom followed.

At the same time, enrollment at UC Berkeley more than tripled between 1900 and 1920, growing from 2,000 to over 7,000. In the 1910s, plans began for Berkeley's Civic Center. As expansion continued through the 1920s, the City adopted a comprehensive ordinance creating land-use zones throughout Berkeley, to manage the rapid construction that was transforming Berkeley. The economic collapse of the Great Depression signaled a shift in land use, as well, with one result being the adaptation of large-scale, single-family residences for multi-family use.

After the slowdown of the Great Depression, Berkeley experienced rapid expansion during and after World War II. The population grew from approximately 85,000 in 1940 to nearly 115,000 by 1950, with much of this increase due to defense-related industries, including shipyard operations, and military personnel stationed in and around Berkeley. The campus served as a training ground for Navy and Army officers as well as housing and barracks spaces.

Berkeley's growth was further reflected in surging enrollments at the University, which grew from 7,700 in 1944 to 21,000 in 1946. The University's growth contributed to Berkeley's emergence as important intellectual center. Much of Berkeley's postwar growth mirrors that of neighboring cities, with the postwar housing shortage (exacerbated by the population growth at UC Berkeley), the era of redevelopment, and suburban growth changing the dynamics and use patterns in the city's historic core.

In the postwar period, one of the eras that distinguished Berkeley, however, began in the 1960s and extended through the 1970s with the rise of the Civil Rights and Free Speech movements, the anti-war movement, and the flowering of a broad, influential counter-culture movement. With the leadership and participation of the younger generation, these movements came to define Berkeley's independent, progressive culture.

4.4.3 Known Historical Resources

To identify known historical resources within the housing inventory sites, the background research for this study included a review of the NRHP, CRHR, and the California Office of Historic Preservation Built Environment Resource Directory (BERD), and the City's listings of designated and previously evaluated resources. The review identified three housing inventory sites which are known as of the date of this report to contain properties which are listed in, or eligible for the NRHP, CRHR, or designated City of Berkeley Landmarks, and therefore are considered historical resources pursuant to *CEQA Guidelines* Section 15064.5(a).

One building, 2154 University Avenue (APN 57-2034-12), is a listed City of Berkeley Landmark. A review of the BERD included 11 properties that are listed in the housing inventory sites and have previously been surveyed for their potential historical significance. Of those properties surveyed, one property (2400 San Pablo Avenue) received a Status Code of 3S, or an individual property that appears eligible for the NRHP through survey evaluation and one property (2120 Shattuck Avenue) received a California Historical Resources Status Code of 2S2, or an individual property determined

to be eligible for listing in the NRHP by consensus through the Section 106 process and listed in the CRHR. In addition, background research for this study also identified four local historic districts; however, no housing inventory sites are located within a local historic district.

A review of parcel data for the properties comprising the housing inventory sites, including a total of 464 properties, found an additional 198 properties which have not been subject to previous historical resources evaluation, but which currently meet the 40-year age threshold generally triggering the need for evaluation in the City of Berkeley. An additional 10 properties will become 40 years of age during the 2022-2031 planning period of the Housing Element Update. Pending further analysis there is a potential for these previously unevaluated properties to qualify as historical resources pursuant to CEQA. For the purposes of this study, these properties are considered potential historical resources. See Appendix C for a full list of listed and age-eligible properties.

4.4.4 Impact Analysis

a. Methodology and Significance Thresholds

The methodologies and significance thresholds employed for the cultural resources impact analyses are described below and in the *Regulatory Setting*, above.

In accordance with Appendix G of the *CEQA Guidelines*, an impact to Cultural Resources is considered significant if it can be demonstrated that the project would:

1. Cause a substantial adverse change in the significance of a historical resource as defined in *CEQA Guidelines* Section 15064.5;
2. Cause a substantial adverse change in the significance of an archaeological resource pursuant to *CEQA Guidelines* Section 15064.5; or
3. Disturb any human remains, including those interred outside of dedicated cemeteries.

The significance of an archaeological deposit and subsequently the significance of an impact are determined by the criteria established in the *CEQA Guidelines*, as provided in the *Regulatory Setting*.

If an archaeological resource does not meet either the historical resource or the more specific “unique archaeological resource” definition, impacts do not need to be mitigated [13 PRC 15064.5 (e)]. Where the significance of a site is unknown, it is presumed to be significant for the purpose of the EIR investigation.

b. Project Impacts and Mitigation Measures

Threshold 1: Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

Impact CUL-1 DEVELOPMENT ACCOMMODATED BY THE PROPOSED HOUSING ELEMENT UPDATE COULD ADVERSELY AFFECT KNOWN AND PREVIOUSLY UNIDENTIFIED HISTORIC-PERIOD RESOURCES. IMPACTS TO HISTORIC-PERIOD RESOURCES WOULD BE SIGNIFICANT AND UNAVOIDABLE WITH MITIGATION.

Reasonably foreseeable development facilitated by the Housing Element Update would result in a significant impact on historical resources if such activities would cause a substantial adverse change in the significance of a historical resource, which, as defined above, would include the demolition or substantial alteration of a resource such that it would no longer be able to convey its significance. Historical resources include properties eligible for listing in the NRHP or CRHR or as a local landmark

or structure of merit. Pursuant to PRC Section 15064.5, “[s]ubstantial adverse change in the significance of an historical resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.” Material impairment is defined as demolition or alteration in an adverse manner [of] those characteristics of an historical resource that convey its historical significance and that justify its inclusion or eligibility for inclusion in the CRHR or account for its inclusion in a local register.

Reasonably foreseeable development facilitated by the project, including the proposed expansion of zoning capacity for additional units in the Southside Plan Area and the middle housing rezoning districts, could impact historical resources through demolition and construction activities associated with HEU implementation. The City of Berkeley has adopted regulations that would apply to future development facilitated by the project. As described in Section 4.4.1, Regulatory Setting, the City’s Landmarks Preservation Commission ordinance provides procedures for the local designation of historical resources. The ordinance also includes a provision for a permit review which allows Landmarks Preservation Commission to review and approve any construction, alteration, or demolition of a designated landmark, buildings in designated historic districts, and structures of merit.

Additionally, the City has provisions in place for projects that would involve the demolition of non-residential buildings over 40 years old that require use permits or administrative use permits to be forwarded to Landmarks Preservation Commission for review. The City’s zoning project application also has submittal requirements for zoning projects that include the proposed demolition or substantial change to any building more than 40 years old subject to environmental review requiring a historical resource evaluation. In most cases, mitigation of impacts to historical resources would be carried out through the existing procedures of the permit review process. These regulations are intended to reduce impacts to historical resources by ensuring that proposed changes to buildings do not negatively impact the resource through encouraging the preservation and maintenance of historical materials and ensuring work performed is consistent with the resource’s historical character.

The City’s regulations would mitigate impacts to historical resources to a substantial extent. However, mitigation is necessary to identify potential historical resources which have not yet been subject to evaluation or would not be subject to the City’s permit review or zoning application requirements. For development projects involving properties 40 years of age or older, that have not been previously listed or recommended eligible for listing in the NRHP, CRHR, or a City of Berkeley Designated Landmark or Structure of Merit, Mitigation Measure CUL-1 would ensure that an evaluation is completed to determine if a property would qualify as a historical resource. If a historical resource evaluation finds a property eligible for listing in the NRHP, CRHR, or as a City of Berkeley Landmark, it would be subject to procedures regulating permit review. Although these procedures may mitigate impacts to the maximum extent feasible, they may allow, in some cases, for the demolition of a resource or other alterations that materially impair the features that convey its historical significance.

Mitigation Measures

The following mitigation measures are required.

CUL-1 Historic Context Statement, Cultural Resources Survey and Designations

During the period of this Housing Element, the City should conduct a citywide historic context statement and a cultural resource survey to identify historic resources, with priority given to sites in the EIR Site Inventory, to determine if there are designed built environment features which are over 40 years of age proposed to be altered or demolished. Designation of historic or cultural resources should be conducted by the Landmarks Preservation Commission pursuant to 3.24.260 of the Berkeley Municipal Code.

CUL-2 Historical Resources Discretionary Review

For projects that are subject to discretionary review that occur during the Housing Element period where a historical-age building or structure that has not been previously evaluated is present, a historical resources assessment shall be performed by an architectural historian or historian who meets the Secretary of the Interior Professional Qualification Standards (PQS) in architectural history or history. The qualified architectural historian or historian shall conduct an intensive-level survey in accordance with the California Office of Historic Preservation guidelines to determine if the property qualifies for federal, state, or local historical resources designation. All age eligible properties shall be evaluated within their historic context and documented in a technical memorandum with Department of Parks and Recreation Series 523 Forms.

Should a property be found to be a qualifying historical resource, the project shall be subject to the City's regulations for permit review, including by the Preservation Landmarks Commission pursuant to Chapter 3.24.260, and/or by the Zoning Adjustments Board pursuant to Chapter 23.326 of the City of Berkeley Municipal Code. Efforts shall be made to the extent feasible to ensure that impacts are mitigated. Application of mitigation shall generally be overseen by a qualified architectural historian or historic architect meeting the PQS, unless unnecessary in the circumstances (e.g., preservation in place). In conjunction with a development application that may affect the historical resource, the historical resources built environment assessment shall also identify and specify the treatment of character-defining features and construction activities.

Efforts shall be made to the greatest extent feasible to ensure that the relocation, rehabilitation, or alteration of the resource is consistent with the Secretary of the Interior's Standards for the Treatments of Historic Properties (Standards). In accordance with CEQA, a project that has been determined to conform with the Standards generally would not cause a significant adverse direct or indirect impact to historical resources (14 CCR § 15126.4(b)(1)). Application of the Standards shall be overseen by a qualified architectural historian or historic architect meeting the PQS. In conjunction with any development application that may affect the historical resource, a report identifying and specifying the treatment of character-defining features and construction activities shall be provided to the City for review and concurrence. As applicable, the report shall demonstrate how the project complies with the Standards and be submitted to the City for review and approval prior to the issuance of permits.

If significant historical resources are identified on a development site and compliance with the Standards and or avoidance is not possible, appropriate site-specific mitigation measures shall be established and undertaken. These may include documentation of the resource in a manner consistent with the standards of the Historic American Building Survey (HABS). Documentation should include full descriptive and historical narrative, measured drawings, and medium format photographs, all in archivally stable format.

Significance After Mitigation

Mitigation Measure CUL-1 would ensure that a historical resource evaluation is conducted for properties subject to discretionary review to determine if a property contains a historical resource eligible for listing in the NRHP, CRHR, or as a City of Berkeley Landmark or Structure of Merit. In combination with City of Berkeley regulations, Mitigation Measures CUL-1 and CUL-2 would reduce impacts to historical resources to the maximum extent feasible. However, even with implementation of this mitigation measure, existing and eligible historical resources could still be materially impaired by future development that would be carried out under the proposed Housing Element because specific actions intended for the reduction of impacts to historical resources could be deemed infeasible. Additionally, projects that are not subject to discretionary review and have not been previously evaluated could result in the demolition of potential historic resources. Therefore, impacts would be significant and unavoidable.

Threshold 2: Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?
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Impact CUL-2 DEVELOPMENT ACCOMMODATED BY THE HOUSING ELEMENT UPDATE COULD ADVERSELY AFFECT IDENTIFIED AND PREVIOUSLY UNIDENTIFIED ARCHAEOLOGICAL RESOURCES. IMPACTS WOULD BE LESS THAN SIGNIFICANT WITH REQUIRED ADHERENCE TO THE CITY'S STANDARD CONDITIONS OF APPROVAL FOR ARCHAEOLOGICAL RESOURCES.

Although the City does not maintain an inventory of archaeological sites and the California Historical Resources Information System was not consulted for this analysis, it is understood that archaeological sites are present in Berkeley and the surrounding areas. According to the City's General Plan EIR, a high potential for Native American cultural resources exists within the City limits. Therefore, the potential to encounter unidentified resources in the City and on residential inventory sites noted in the Housing Element Update properties is considered high. Undeveloped properties in the Housing Element Update inventory have a higher probability of containing previously unidentified archaeological resources given the probable lack of previous ground-disturbing activities on those properties. However, ground-disturbance into native soils on any Housing Element Update property could contain previously unknown prehistoric or historic-period resources. Therefore, individual development projects under the proposed project that would involve ground disturbance activities would have the potential to damage or destroy archaeological resources, especially if they occur below the existing road base or in less disturbed sediments. Consequently, impacts would be potentially significant and mitigation would be required for projects involving ground disturbance activities that may include, but are not limited to, pavement removal, potholing, grubbing, tree removal, and grading. However, the City of Berkeley implements the following Standard Condition of Approval for projects in Berkeley:

Archaeological Resources (Ongoing throughout demolition, grading, and/or construction).

Pursuant to *CEQA Guidelines* Section 15064.5(f), "provisions for historical or unique archaeological resources accidentally discovered during construction" should be instituted.

Therefore:

- A. In the event that any prehistoric or historic subsurface cultural resources are discovered during ground disturbing activities, all work within 50 feet of the resources shall be halted and the project applicant and/or lead agency shall consult with a qualified archaeologist, historian or paleontologist to assess the significance of the find.

- B. If any find is determined to be significant, representatives of the project proponent and/or lead agency and the qualified professional would meet to determine the appropriate avoidance measures or other appropriate measure, with the ultimate determination to be made by the City of Berkeley. All significant cultural materials recovered shall be subject to scientific analysis, professional museum curation, and/or a report prepared by the qualified professional according to current professional standards.
- C. In considering any suggested measure proposed by the qualified professional, the project applicant shall determine whether avoidance is necessary or feasible in light of factors such as the uniqueness of the find, project design, costs, and other considerations.
- D. If avoidance is unnecessary or infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while mitigation measures for cultural resources is carried out.
- E. If significant materials are recovered, the qualified professional shall prepare a report on the findings for submittal to the Northwest Information Center.

Adherence to this Standard Condition of Approval would ensure that development carried out under the Housing Element would have a less than significant impact from potential adverse changes in the significance of archeological resources.

Mitigation Measures

No mitigation measures are required with required adherence to existing regulations such as California Public Resources Code Section 5097.5 and City of Berkeley Standard Conditions of Approval.

Threshold 3: Would the project disturb any human remains, including those interred outside of formal cemeteries?

Impact CUL-3 GROUND-DISTURBING ACTIVITIES ASSOCIATED WITH DEVELOPMENT UNDER THE HOUSING ELEMENT UPDATE COULD RESULT IN DAMAGE TO OR DESTRUCTION OF HUMAN BURIALS. IMPACTS WOULD BE LESS THAN SIGNIFICANT THROUGH ADHERENCE TO STATE HEALTH AND SAFETY CODE SECTION 7050.5 AND PUBLIC RESOURCES CODE SECTION 5097.98.

Human burials outside of formal cemeteries can occur in prehistoric archaeological contexts. While no known burial sites have been identified in the city, excavations during construction activities could have the potential to disturb these resources, which could include Native American burial sites. Although it is unlikely that human remains are present, all Housing Element Update properties have at least the possibility of containing previously unidentified human remains.

Human burials, in addition to being potential archaeological resources, have specific provisions for treatment in PRC Section 5097. The California Health and Safety Code (Section 7050.5, 7051, and 7054) has specific provisions for the protection of human burial remains. Existing regulations address the illegality of interfering with human burial remains, and protect them from disturbance, vandalism, or destruction. They also include established procedures to be implemented if Native American skeletal remains are discovered. PRC Section 5097.98 also addresses the disposition of Native American burials, protects such remains, and established the NAHC to resolve any related disputes. In addition, the City requires the following Standard Condition of Approval for projects in Berkeley:

Human Remains (Ongoing throughout demolition, grading, and/or construction). In the event that human skeletal remains are uncovered during ground-disturbing activities, all work shall immediately halt and the Alameda County Coroner shall be contacted to evaluate the remains, and following the procedures and protocols pursuant to Section 15064.5 (e)(1) of the CEQA Guidelines. If the County Coroner determines that the remains are Native American, the City shall contact the California Native American Heritage Commission (NAHC), pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, and all excavation and site preparation activities shall cease within a 50-foot radius of the find until appropriate arrangements are made. If the agencies determine that avoidance is not feasible, then an alternative plan shall be prepared with specific steps and timeframe required to resume construction activities. Monitoring, data recovery, determination of significance and avoidance measures (if applicable) shall be completed expeditiously.

Further, all development projects are subject to State of California Health and Safety Code Section 7050.5 which states that, if human remains are unearthed, no further disturbance can occur until the county coroner has made the necessary findings as to the origin and disposition of the remains pursuant to the PRC Section 5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the Native American Heritage Commission which will determine and notify a most likely descendant (MLD). The MLD shall complete the inspection of the site and make recommendations to the landowner within 48 hours of being granted access. With adherence to City's standard condition of approval and existing regulations, impacts to human remains would be less than significant.

Mitigation Measures

No mitigation measures are required with required adherence to existing State Health and Safety Code Section 7050.5, Public Resources Code Section 5097.98 and City of Berkeley Standard Conditions of Approval.

c. Cumulative Impacts

A project's environmental impacts are "cumulatively considerable" if the "incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (*CEQA Guidelines* Section 15065[a][3]).

Development pursuant to the Housing Element Update and the LRDP would have the potential to impact historical resources. Historic-period resources could be vulnerable to development activities that could result in damage to or demolition of cultural resources. As noted above in Impact CUL-1, the proposed project would result in significant and unavoidable impacts to historical resources. Adherence to Mitigation Measures CUL-1 and CUL-2 would reduce or avoid some but not all potential impacts to historical resources in Berkeley. Therefore, cumulative historical resources impacts would be significant, and the project's contribution would be cumulatively considerable.

In addition, there is a potential for unknown and previously undisturbed archaeological resources and human remains to be encountered during cumulative development. Generally, impacts to cultural resources are site specific and would not result in overall cumulative impacts. Future development projects would be reviewed by the City pursuant to CEQA to identify potential impacts to cultural resources on a project-by-project basis. While there is the potential for significant cumulative impacts to cultural resources in the City of Berkeley, it is anticipated that potential

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impacts associated with individual development projects would be addressed on a case-by-case basis and would be subject to the Standard Conditions of Approval outlined above, City policies, and local and state regulations regarding the protection of such resources. With compliance with the existing policies and regulations, future development would be required to avoid or mitigate the loss of these resources. Therefore, significant cumulative archaeological resources and human remains impacts would not occur.

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4.5 Energy

This section evaluates impacts to energy, including the potential wasteful, inefficient, or unnecessary consumption of energy, associated with the implementation of the proposed HEU.

4.5.1 Setting

Energy relates directly to environmental quality because energy use can adversely affect air quality and other natural resources. Fossil fuels are burned to create electricity to power homes and vehicles, which creates heat. Transportation energy use relates to the fuel efficiency of cars and trucks, and the availability and use of public transportation, the choice of different travel modes (auto, carpool, and public transit), and the miles traveled by these modes. Construction and routine operation and maintenance of infrastructure also consume energy, as do residential land uses, typically in the form of natural gas and electricity.

Energy Supply

Natural gas-fired generation has dominated electricity production in California for many years. However, in 2019, the two largest sources of energy produced in California were crude oil at approximately 920.1 trillion British thermal units (Btu), and renewable energy sources at approximately 1,139.6 trillion Btu, while natural gas production was 220.8 trillion Btu and nuclear electric power was 168.8 trillion Btu. (Energy Information Administration [EIA] 2021a). Berkeley contains no oil/gas fields. The nearest one is located in Orinda, approximately 2 miles east of Berkeley, but it has no active wells (California Department of Conservation, Division of Oil, Gas & Geothermal Resources 2021).

Energy Consumption and Sources

Total energy consumption in the United States in 2020 was approximately 104.53 quadrillion Btu (EIA 2021b). In 2020, petroleum provided approximately 35 percent of that energy, with other sources of energy coming from natural gas (approximately 34 percent), coal (approximately 10 percent), total renewable sources (approximately 12 percent), and nuclear power (approximately 9 percent). On a per capita basis in 2019, California was ranked the second lowest state in terms of total energy consumption (197.8 million Btu [MMBtu] per person), or about 35 percent less than the U.S. average per capita consumption of 305.4 MMBtu per person (EIA 2019a).

Alameda County as a whole consumed approximately 10,531,297 MWh of energy in 2021. Roughly 718,050 MWh of electricity was produced from renewable sources (Find Energy 2022).

Electricity

Most of the electricity generated in California is from natural gas-fired power plants, which provided approximately 48 percent of total electricity generated in 2020. In 2020, California used 272,575 gigawatt hours (GWh) of electricity and produced 70 percent (190,913 GWh) of the electricity it used and imported the rest from outside the state (California Energy Commission [CEC] 2020). Alameda County consumed approximately 10,247 GWh of electricity in 2020 from residential and non-residential uses (CEC 2022a).

Table 4.5-1 illustrates the County's 2020 electricity consumption in comparison to statewide consumption and displays the County's equivalent per capita energy consumption from its

electricity demand. With a population of 1,663,114 in 2020 (California Department of Finance [DOF] 2021), Alameda County’s 2020 per capita electricity consumption was approximately 6,161 kWh, or approximately 21 million Btu.

Table 4.5-1 2020 Annual Electricity Consumption

Energy Type	Alameda County (GWh)	California (GWh)	Proportion of Statewide Consumption	County per Capita Consumption (kWh)	County per Capita Consumption (MMBtu)
Electricity	10,247	272,575	3.8%	6,161	21

Source: CEC 2022a, DOF 2021

East Bay Community Energy (EBCE) supplies electricity to Berkeley using transmission infrastructure operated and maintained by Pacific Gas and Electric (PG&E). EBCE is a community-governed, local power supplier that provides cleaner electricity to Alameda County residents and businesses. As of 2021, EBCE’s base plan (Bright Choice) consisted of 40 percent eligible renewable energy resources (EBCE 2021). EBCE offers 100 percent renewable energy services to member cities, and both residential and commercial customers in Berkeley will be placed in the Renewable 100 Plan starting March 2022 and October 2022, respectively (EBCE 2021). However, customers have the option to opt out of the Renewable 100 program and enroll in the Bright Choice Program which would be supplied by 40 percent renewable energy or receive electricity from PG&E. PG&E is one of the nation’s largest electric and gas utility companies, and it maintains 106,681 circuit miles of electric distribution lines and 18,466 circuit miles of interconnected transmission lines (PG&E 2021). According to PG&E’s 2018 Integrated Resource Plan, PG&E anticipates meeting a 2030 energy load demand of between 36,922 gigawatt-hours and 37,370 gigawatt-hours (PG&E 2018). In conjunction with the utility companies, the California Public Utilities Commission (CPUC) is involved in energy conservation programs.

CPUC and CEC are constantly assessing population growth, electricity demand, and reliability. The CEC is tasked with conducting assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand and prices (CEC 2022b). The CEC uses these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state’s economy, and protect public health and safety (Public Resources Code Section 25301[a]).

Natural Gas

California relies on out-of-state natural gas imports for nearly 90 percent of its natural gas supply (CEC 2022c). Alameda County as a whole consumed approximately 366 million therms of natural gas in 2020 in both residential and non-residential uses (CEC 2022d). Table 4.5-2 illustrates the County’s 2020 natural gas consumption in comparison to statewide consumption and displays the County’s equivalent per capita energy consumption from its natural gas demand. With a population of 1,663,114 in 2020 (DOF 2021), Alameda County’s 2020 per capita natural gas consumption was approximately 220 therms, or approximately 20 million Btu.

Table 4.5-2 2020 Annual Natural Gas Consumption

Energy Type	Alameda County (Millions of U.S. therms)	California (Millions of U.S. therms)	Proportion of Statewide Consumption	County per Capita Consumption (U.S. therms)	County per Capita Consumption (MMBtu)
Natural Gas	366	12,332	3.0%	220	20

Source: CEC 2022d, DOF 2021

The City is located within PG&E’s natural gas service area, which spans central and northern California (PG&E 2022a). In 2020, PG&E customers consumed a total of 4.5 billion therms of natural gas. Residential users accounted for approximately 42 percent of PG&E’s natural gas consumption. Industrial and commercial users accounted for another 35 percent and 19 percent, respectively. The remainder was used for mining, construction, agricultural, and water pump accounts (CEC 2022e). In 2020, Alameda County users accounted for approximately 8 percent of PG&E’s total natural gas consumption across the entire service area. PG&E’s service area is equipped with approximately 6,700 miles of gas transmission pipelines as 42,000 miles of gas distribution pipelines (PG&E 2022b).

The 2020 California Gas Report presents a comprehensive outlook for natural gas requirements and supplies for California through the year 2035. California natural gas demand, statewide and utility-driven, is expected to decrease at a rate of 1 percent per year from 2020 to 2035. The forecast decline is due to a combination of moderate growth in the natural gas vehicle market and across-the-board declines in all other market segments: residential, commercial, electric generation, and industrial markets (CGEU 2020). Residential gas demand is expected to decrease at an annual average rate of 1.7 percent. Demand in the commercial and industrial markets are expected to decrease at an annual rate of 1.5 percent and 0.2 percent, respectively. Stricter codes and standards coupled with more aggressive energy efficiency programs discussed in Section 4.5.2, are making a significant impact on the forecasted load for the residential, commercial, and industrial markets (CGEU 2020).

For the purposes of load-following as well as backstopping intermittent renewable resource generation, gas-fired generation will continue to be the primary technology to meet the ever-growing demand for electric power. However, overall gas demand for electric generation is expected to decline at 1.7 percent per year for the next 15 years due to more efficient power plants, statewide efforts to minimize greenhouse gas (GHG) emissions through aggressive programs pursuing demand-side reductions, and the acquisition of preferred power generation resources that produce little or no carbon emissions (CGEU 2020). Additional information on PG&E’s gas supplies and capacity can be viewed in the 2020 California Gas Report (PG&E 2015).

Petroleum

Energy consumed by the transportation sector accounts for roughly 39.5 percent of California’s energy demand, amounting to approximately 3,073.3 trillion Btu in 2019 (EIA 2019a). Petroleum-based fuels are used for approximately 98.4 percent of the state’s transportation activity (EIA 2019a). Most gasoline and diesel fuel sold in California for motor vehicles is refined in California to meet state-specific formulations required by the California Air Resources Board (CARB). California’s transportation sector, including on-road and rail transportation, consumed approximately 662 million barrels of petroleum fuels in 2019 (EIA 2021b).

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As shown in Table 4.5-3, approximately 493 million gallons of fuel were consumed in Alameda County in 2020, of which approximately 442 million gallons were gasoline and approximately 51 million gallons were diesel fuel (CEC 2021c). Based on a 2020 population of 1,663,114 (DOF 2021), the County’s annual per capita fuel consumption in 2020 consisted of 266 gallons of gasoline and 31 gallons of diesel fuel per person.

According to the CEC, 1 gallon of gasoline is equivalent to approximately 109,786 Btu, while 1 gallon of diesel is equivalent to approximately 127,460 Btu (Schremp 2017). Based on this formula, and as shown in Table 4.5-3, each person in Alameda County consumed approximately 29 MMBtu of gasoline and 4 MMBtu of diesel in 2020.

Table 4.5-3 2020 Annual Gasoline and Diesel Consumption

Fuel Type	Alameda County (million gallons)	California (million gallons)	Proportion of Statewide Consumption	County per Capita Consumption (gallons)	County per Capita Consumption (MMBtu)
Gasoline	442	12,572	3.5%	266	29
Diesel	51	1,744	2.9%	31	4
Total	493	14,316	–	298	33

Source: CEC 2020

Alternative Fuels

A variety of alternative fuels are used to reduce petroleum-based fuel demand. The use of these fuels is encouraged through various statewide regulations and plans (e.g., Low Carbon Fuel Standard and Health and Safety Code Section 38566 [Senate Bill (SB) 32]). Conventional gasoline and diesel may be replaced, depending on the capability of the vehicle, with many alternative fuels including the following:

Hydrogen is being explored for use in combustion engines and fuel cell electric vehicles. The interest in hydrogen as an alternative transportation fuel stems from its clean-burning qualities, its potential for domestic production, and the fuel cell vehicle’s potential for high efficiency (two to three times more efficient than gasoline vehicles). Currently, 49 open hydrogen refueling stations are in California, with 12 currently in construction. One station is located in the City of Berkeley at 1250 University Avenue, which opened in January 2021 (California Fuel Cell Partnership 2021).

Biodiesel is a renewable alternative fuel that can be manufactured from vegetable oils, animal fats, or recycled restaurant greases. Biodiesel is biodegradable and cleaner-burning than petroleum-based diesel fuel. Biodiesel can run in any diesel engine generally without alterations. There are 18 biodiesel-only refueling stations in California, one of which is located in Berkeley at 1441 Ashby Ave (U.S. Department of Energy 2022).

Electricity can be used to power electric and plug-in hybrid electric vehicles directly from the power grid. The electricity grid usually provides electricity used to power vehicles, which store it in the vehicle’s batteries. Fuel cells are being explored to use electricity generated on board the vehicle to power electric motors. Electrical charging stations are available throughout Berkeley and Alameda County. Berkeley currently has approximately 80 electrical charging stations spread around the city and there are multiple publicly-available EV charging ports at many stations (PlugShare 2022).

Energy and Fuel Efficiency

Though the demand for gasoline and diesel fuel is rising because of population growth and limited mass transit, the increase in demand can be offset partially by efficiency improvements. Land use policies that encourage infill and growth near transit centers (e.g., following SB 375, the Sustainable Communities and Climate Protection Act of 2008), improvements to fuel efficiency, and gradual replacement of the vehicle fleet with new, more fuel-efficient and alternative-fuel as well as electric cars will all reduce fuel use.

4.5.2 Regulatory Setting

Programs and policies at the state and national levels have emerged to bolster the previous trend towards energy efficiency, as discussed below.

a. Federal Regulations

Energy Independence and Security Act of 2007

The Energy Independence and Security Act is designed to improve vehicle fuel economy and help reduce U.S. dependence on oil. It expands the production of renewable fuels, reducing dependence on oil, and confronting global climate change. Specifically, it does the following:

1. Increases the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard that requires fuel producers to use at least 36 billion gallons of biofuel in 2022, which represents a nearly five-fold increase over current levels
2. Reduces U.S. demand for oil by setting a national fuel economy standard of 35 miles per gallon by 2020 – an increase in fuel economy standards of 40 percent over those in 2007

Safer Affordable Fuel-Efficient Vehicles Rule

The Safer Affordable Fuel-Efficient Vehicles Rule, issued March 31, 2020, sets fuel economy and carbon dioxide standards that increase 1.5 percent in stringency each year from model years 2021 through 2026. These standards apply to both passenger cars and light trucks and are a reduction in stringency from the 2012 standards which would have required increases of about 5.0 percent per year. This rule is anticipated to result in a 40.4 mile per gallon industry average for 2026.

Energy Policy and Conservation Act

Enacted in 1975, the Energy Policy and Conservation Act established fuel economy standards for new light-duty vehicles sold in the United States. The law placed responsibility on the National Highway Traffic and Safety Administration for establishing and regularly updating vehicle standards. The United States Environmental Protection Agency (U.S. EPA) is responsible for administering the Corporate Average Fuel Economy program, which determines vehicle manufacturers' compliance with existing fuel economy standards. In 2012, the U.S. EPA and National Highway Traffic and Safety Administration established final passenger car and light-duty truck Corporate Average Fuel Economy standards for model years 2017 to 2021, which require a combined average fleet-wide fuel economy of 40.3 to 41.0 miles per gallon in model year 2021 (United States Department of Transportation 2014).

Energy Star Program

Energy Star is a voluntary labeling program introduced by U.S. EPA to identify and promote energy-efficient products to reduce GHG emissions. The program applies to major household appliances, lighting, computers, and building components such as windows, doors, roofs, and heating and cooling systems. Under this program, appliances that meet specifications for maximum energy use established under the program are certified to display the Energy Star label. In 1996, the U.S. EPA joined with the Energy Department to expand the program, which now also includes certifying commercial and industrial buildings as well as homes (U.S. EPA 2021).

Construction Equipment Fuel Efficiency Standard

The U.S. EPA sets emission standards for construction equipment. The current iteration of emissions standards for construction equipment are the Tier 4 efficiency requirements contained in 40 Code of Federal Regulations Parts 1039, 1065, and 1068. Emissions requirements for new off-road Tier 4 vehicles were completely phased in by the end of 2015.

b. State Regulations

Warren-Alquist Act

The 1975 Warren-Alquist Act established the California Energy Resources Conservation and Development Commission, now known as the CEC. The Act established a State policy to reduce wasteful, uneconomical, and unnecessary uses of energy by employing a range of measures. The CPUC regulates privately owned utilities in the energy, rail, telecommunications, and water fields.

Assembly Bill 2076: Reducing Dependence on Petroleum

Pursuant to Assembly Bill (AB) 2076 (Chapter 936, Statutes of 2000; codified as Public Resources Code Sections 25720-25721), the CEC and CARB prepared and adopted in 2003 a joint agency report, Reducing California's Petroleum Dependence. Included in this report are recommendations to increase the use of alternative fuels to 20 percent of on-road transportation fuel use by 2020 and 30 percent by 2030; significantly increase the efficiency of motor vehicles; and reduce per capita vehicle miles traveled (VMT). One of the performance-based goals of AB 2076 is to reduce petroleum demand to 15 percent below 2003 demand. Furthermore, in response to the CEC's 2003 and 2005 Integrated Energy Policy reports, the Governor directed the CEC to take the lead in developing a long-term plan to increase alternative fuel use.

Integrated Energy Policy Report

SB 1389 (Chapter 568, Statutes of 2002) requires the CEC to conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and price to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety.

California Renewables Portfolio Standard Program

In 2018, the California Renewables Portfolio Standard (SB 100) was signed into law, which increased the renewable portfolio standard (RPS) to 60 percent by 2030 (i.e., that 60 percent of electricity retail sales must be served by renewable sources by 2030) and requires all the state's electricity to come from carbon-free resources by 2045.

Senate Bill 350: Clean Energy and Pollution Reduction Act of 2015

The Clean Energy and Pollution Reduction Act of 2015 (SB 350) requires the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources to be increased to 50 percent by December 31, 2030. The Act also requires doubled energy efficiency savings in electricity and natural gas for retail customers through increased efficiency and conservation by December 31, 2030.

Assembly Bill 1493: Reduction of Greenhouse Gas Emissions

AB 1493 (Chapter 200, Statutes of 2002), known as the “Pavley bill,” amended Health and Safety Code sections 42823 and 43018.5 and requires CARB to develop and adopt regulations that achieve maximum feasible and cost-effective reduction of greenhouse gas (GHG) emissions from passenger vehicles, light-duty trucks, and other vehicles used for noncommercial personal transportation in California.

Implementation of new regulations prescribed by AB 1493 required the State of California to apply for a waiver under the federal Clean Air Act. Although the U.S. Environmental Protection Agency (USEPA) initially denied the waiver in 2008, USEPA approved a waiver in June 2009, and in September 2009, CARB approved amendments to its initially adopted regulations to apply the Pavley standards that reduce GHG emissions to new passenger vehicles in model years 2009 through 2016. According to CARB, implementation of the Pavley regulations is expected to reduce fuel consumption while also reducing GHG emissions (CARB 2020).

Energy Action Plan

In the October 2005 *Energy Action Plan (EAP) II*, the CEC and CPUC updated their energy policy vision by adding some important dimensions to the policy areas included in the original EAP, such as the emerging importance of climate change, transportation-related energy issues and research and development activities. The CEC adopted an update to the EAP II in February 2008 that supplements the earlier EAPs and examines the State’s ongoing actions in the context of global climate change.

Assembly Bill 1007: State Alternative Fuels Plan

AB 1007 (Chapter 371, Statutes of 2005) required the CEC to prepare a state plan to increase the use of alternative fuels in California. The CEC prepared the State Alternative Fuels Plan (SAF Plan) in partnership with CARB and in consultation with other State, federal, and local agencies. The SAF Plan presents strategies and actions California must take to increase the use of alternative, nonpetroleum fuels in a manner that minimizes costs to California and maximizes the economic benefits of in-state production. The SAF Plan assessed various alternative fuels and developed fuel portfolios to meet California’s goals to reduce petroleum consumption, increase alternative fuel use, reduce GHG emissions, and increase in-state production of biofuels without causing a significant degradation of public health and environmental quality.

Bioenergy Action Plan, Executive Order S-06-06

Executive Order (EO) S-06-06, April 25, 2006, establishes targets for the use and production of biofuels and biopower, and directs State agencies to work together to advance biomass programs in California while providing environmental protection and mitigation. The EO establishes the following target to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20 percent of its biofuels in California

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by 2010, 40 percent by 2020, and 75 percent by 2050. EO S-06-06 also calls for the State to meet a target for use of biomass electricity. The 2011 Bioenergy Action Plan identifies those barriers and recommends actions to address them so that the State can meet its clean energy, waste reduction, and climate protection goals. The 2012 Bioenergy Action Plan updates the 2011 Plan and provides a more detailed action plan to achieve the following goals:

1. Increase environmentally and economically sustainable energy production from organic waste
2. Encourage development of diverse bioenergy technologies that increase local electricity generation, combined heat and power facilities, renewable natural gas, and renewable liquid fuels for transportation and fuel cell applications
3. Create jobs and stimulate economic development, especially in rural regions of the State
4. Reduce fire danger, improve air and water quality, and reduce waste

Title 24, California Code of Regulations (CCR)

CCR, Title 24, Part 6, is California's Energy Efficiency Standards for Residential and Non-Residential Buildings. The CEC established Title 24 in 1978 in response to a legislative mandate to create uniform building codes to reduce California's energy consumption and provide energy efficiency standards for residential and nonresidential buildings. The standards are updated on an approximately three-year cycle to allow consideration and possible incorporation of new efficient technologies and methods. In 2019, the CEC updated Title 24 standards with more stringent requirements effective January 1, 2020. All buildings for which an application for a building permit is submitted on or after January 1, 2020 must follow the 2019 standards. The next update is expected in 2022 and will become effective January 1, 2023. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The building efficiency standards are enforced through the local plan check and building permit process. Local government agencies may adopt and enforce additional energy standards for new buildings as reasonably necessary due to local climatologic, geologic, or topographic conditions, provided that these standards exceed those provided in Title 24.

Part 6 (Building Energy Efficiency Standards)

Part 6 of Title 24 contains the 2016 Building Energy Efficiency Standards for new residential and CCR Title 24, Part 6 is the Building Energy Efficiency Standards or California Energy Code. This code, originally enacted in 1978, establishes energy-efficiency standards for residential and non-residential buildings in order to reduce California's energy demand. New construction and major renovations must demonstrate their compliance with the current Energy Code through submittal and approval of a Title 24 Compliance Report to the local building permit review authority and the California Energy Commission (CEC). The most current standards are the 2019 Title 24 standards (CEC 2018a). The 2019 Standards focus on four key areas: 1) smart residential photovoltaic systems; 2) updated thermal envelope standards (preventing heat transfer from the interior to exterior and vice versa); 3) residential and nonresidential ventilation requirements; 4) and nonresidential lighting requirements (CEC 2018a).

The City of Berkeley has adopted amendments to the 2019 California Energy Code in BMC Chapter 19.36, which require more stringent energy measures including:

- Extending the solar PV requirement to multifamily residential and nonresidential buildings
- Increasing EV charging readiness and installation in new buildings

- Providing two pathways to demonstrate compliance with the 2019 California Energy Code. New all-electric buildings must simply demonstrate compliance with the California Energy Code. However, new mixed-fuel buildings (i.e., electricity and natural gas used within the building) must exceed the energy efficiency requirements of the California Energy Code by 10 percent for non-residential buildings, high-rise residential buildings, and hotels/motels or by 10 Total Energy Design Rating points for single-family or low-rise residential buildings, or meet a set of prescriptive requirements with equivalent efficiency savings.
- Requiring electric-ready infrastructure for natural gas appliances in new mixed-fuel buildings to support future electrification

California Green Building Standards Code (2019), CCR Title 24, Part 11

California's green building code, referred to as CALGreen, was developed to provide a consistent approach to green building within the State. CALGreen lays out the minimum requirements for newly constructed residential and nonresidential buildings to reduce GHG emissions through improved efficiency and process improvements. The requirements pertain to energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. It also includes voluntary tiers to further encourage building practices that improve public health, safety, and general welfare by promoting a more sustainable design

c. Regional and Local Regulations

Plan Bay Area 2050

Plan Bay Area 2050 is a state-mandated, integrated long-range transportation, land-use, and housing plan, known as a Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), that would support a growing economy, provide more housing and transportation choices and reduce transportation-related pollution in the nine-county San Francisco Bay Area (Metropolitan Transportation Commission/Association of Bay Area Governments [MTC/ABAG] 2021). Plan Bay Area 2050 builds on earlier efforts to develop an efficient transportation network and grow in a financially and environmentally responsible way. Plan Bay Area 2050 focuses on advancing equity and improving resiliency in the Bay Area by creating strategies in the following four elements: Housing, Economy, Transportation, and Environment. The Plan discusses how the future is uncertain due to anticipated employment growth, lack of housing options, and outside forces, such as climate change and economic turbulence. These uncertainties will impact growth in the Bay Area and exacerbate issues for those who are historically and systemically marginalized and underserved and excluded. Thus, Plan Bay Area 2050 has created strategies and considered investments that will serve those systemically underserved communities and provide equitable opportunities. The Plan presents a total of 35 strategies to outline how the \$1.4 trillion dollar investment would be utilized. The strategies include, but are not limited to, the following: providing affordable housing, allowing higher-density in proximity to transit-corridors, optimizing the existing roadway network, creating complete streets, providing subsidies for public transit, reducing climate emissions, and expanding open space areas. Bringing these strategies to fruition will require participation by agencies, policymakers, and the public. An implementation plan is also included as part of the Plan to assess the requirements needed to carry out the strategies, identify the roles of pertinent entities, create an appropriate method to implement the strategies, and create a timeline for implementation.

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City of Berkeley General Plan

The City's General Plan Transportation; Environmental Management; Housing; and Urban Design Elements contain the following policies related to energy efficiency and renewable energy (City of Berkeley 2003):

Policy T-19: Air Quality Impacts. Continue to encourage innovative technologies and programs such as clean-fuel, electric, and low-emission cars that reduce the air quality impacts of the automobile.

Policy EM-5: "Green" Buildings. Promote and encourage compliance with "green" building standards.

Policy EM-8: Building Reuse and Construction Waste. Encourage rehabilitation and reuse of buildings whenever appropriate and feasible in order to reduce waste, conserve resources and energy, and reduce construction costs.

Policy EM-35: Energy Efficient Design. Promote high-efficiency design and technologies that provide cost-effective methods to conserve energy and use renewable energy sources.

Policy EM-41: Fossil Fuel. Encourage and support efforts to reduce use of fossil fuel and other finite, nonrenewable resources.

Policy H-30: Energy Efficiency and Waste Reduction. Implement provisions of Berkeley's Climate Action Plan to improve building comfort and safety, reduce energy costs, provide quality housing, and reduce GHG emissions.

Policy UD-33: Sustainable Design. Promote environmentally sensitive and sustainable design in new buildings

City of Berkeley Climate Action Plan

The City of Berkeley adopted a Climate Action Plan (CAP) in 2009 with the goal of reducing communitywide GHG emissions by 80 percent below 2000 levels by 2050. The core recommendation strategies and actions of the CAP center around the following topics (City of Berkeley 2009):

1. Sustainable Transportation and Land Use
2. Building Energy Use
3. Waste Reduction and Recycling
4. Community Outreach and Empowerment
5. Preparing for Climate Change Impacts

The CAP contains several recommended goals specifically related to energy efficiency and renewable energy, such as encouraging the use of low-carbon vehicles and fuels, promoting green building, reducing the costs of energy upgrades for existing residential properties, and increasing residential and commercial renewable energy use (City of Berkeley 2009).

Since publication of the CAP, the City has adopted several climate commitments in addition to those contained in the CAP:

- 100 percent renewable electricity by 2035
- Net-Zero Carbon Emissions by 2045, in alignment with Gov. Brown's Executive Order B-55-18
- Declared a Climate Emergency and resolved to become a Fossil Fuel Free City

Berkeley Resilience Strategy

In 2016, the City released its Resilience Strategy to advance the City's resilience, or the ability of the individuals, institutions, businesses, and systems within the community to survive, adapt, and grow no matter what chronic stress or acute shock it experiences. Berkeley's interconnected resilience challenges include earthquakes, wildfires, climate change impacts such as drought and flooding, and racial inequity. The City's Resilience Strategy emphasizes building community resilience by facilitation stronger connections between neighbors; between public, private, nonprofit, and academic institutions; between departments within the City government; and between Bay Area local and regional governments. The six goals of the Resilience Strategy are (City of Berkeley 2016):

1. Build a Connected and Prepared Community
2. Accelerate Access to Reliable and Clean Energy
3. Adapt to the Changing Climate
4. Advance Racial Equity
5. Excel at Working Together within City Government to Better Serve the Community
6. Build Regional Resilience

Prohibition of Natural Gas Infrastructure in New Buildings

In 2019, the Berkeley City Council adopted Ordinance No. 7,672-N.S., which added Chapter 12.80 to the BMC prohibiting the installation of natural gas infrastructure in newly constructed buildings. In limited circumstances, the Ordinance allows the entitling body to grant an exception or a public interest exemption

Electric Mobility Roadmap

In July 2020, the City adopted its first Electric Mobility Roadmap, which outlines the City's plan to implement its vision of a fossil fuel-free transportation system that integrates with and supports the City's ongoing efforts to increase walking, biking, and public transportation use in Berkeley and ensures equitable and affordable access to the benefits of clean transportation. The Electric Mobility Roadmap includes strategies to increase electric vehicle charging stations in new and existing development, provide public electric vehicle charging on City properties, advance electric bus rapid transit routes, electrify shared transportation fleets and private fleets, and increase the share of electric vehicle charging powered by 100 percent renewable energy (City of Berkeley 2020).

4.5.3 Impact Analysis

a. Methodology and Significance Thresholds

Significance Thresholds

In accordance with Appendix G of the *CEQA Guidelines*, a significant energy impact would occur if new development facilitated by the proposed project would:

1. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or
2. Conflict with or obstruct a State or local plan for renewable energy or energy efficiency.

Methodology

Public Resources Code Section 21100(b)(3) states that an EIR shall include “mitigation measures proposed to minimize significant effects on the environment, including, but not limited to, measures to reduce the wasteful, inefficient, and unnecessary consumption of energy.” The physical environmental impacts associated with the use of energy, including the generation of electricity and burning of fuels, are discussed in Section 4.2, *Air Quality*, and Section 4.7, *Greenhouse Gas Emissions*. Energy consumption is analyzed herein in terms of construction and operational energy.

Construction energy demand for future development under the proposed HEU is evaluated qualitatively because project-specific information regarding construction is unavailable for individual projects proposed under the HEU. Construction energy demand accounts for anticipated energy consumption during construction of development facilitated by the proposed HEU, such as fuel consumed by construction equipment and construction workers’ vehicles traveling to and from the construction site. These construction activities would temporarily create a higher demand for energy supplies. The extent of energy use generated by construction equipment would depend on the quantity of equipment used and the hours of operation for each project.

The California Emissions Estimator Model (CalEEMod) version 2020.4.0 was used to approximate the operational natural gas and electricity consumption from development facilitated by the proposed HEU. This analysis then determined whether energy consumed during operation for full buildout of the project would be wasteful, inefficient, or unnecessary. Operational energy demand accounts for the anticipated energy consumption from development facilitated by the project, such as fuel consumed by cars, trucks, and public transit; natural gas consumed for on-site power generation and heating building spaces; and electricity consumed for building power needs, including, but not limited to, lighting, water conveyance, and air conditioning. The estimate of total daily VMT associated with the proposed HEU is based on VMT data provided in Section 4.16, *Transportation*.

b. Project Impacts and Mitigation Measures

Threshold: Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?
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Impact E-1 PROJECT CONSTRUCTION AND OPERATION WOULD REQUIRE TEMPORARY AND LONG-TERM CONSUMPTION OF ENERGY RESOURCES. HOWEVER, WITH ADHERENCE TO STATE AND LOCAL REGULATIONS, THE PROJECT WOULD NOT RESULT IN THE WASTEFUL, INEFFICIENT, OR UNNECESSARY CONSUMPTION OF ENERGY RESOURCES. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Construction

Construction and demolition activities associated with future development under the proposed HEU would require energy resources primarily in the form of fuel consumption to operate heavy equipment, light-duty vehicles, machinery, and generators. Temporary power may also be provided for construction trailers and electric construction equipment. Construction resulting from development facilitated by the proposed HEU would also use building materials that would require energy use during the manufacturing and/or procurement of that material. However, as noted in the California Natural Resources Agency’s Final Statement of Reasons, “a full ‘lifecycle’ analysis that would account for energy used in building materials and consumer products will generally not be required” (California Natural Resources Agency 2018). Therefore, this analysis does not provide a

full lifecycle assessment of energy impacts for project construction, but considers impacts only of construction itself. It is reasonable to assume that manufacturers of building materials such as concrete, steel, lumber, or other building materials would employ energy conservation practices in the interest of minimizing the cost of doing business. It also is reasonable to assume that traditional building materials, such as drywall and standard-shaped structural elements, would have been manufactured regardless of the proposed project and, if not used for implementation, would be used in a different project. Therefore, the consumption of energy required for the manufacturing of building and construction material is not considered wasteful, inefficient, or unnecessary in relation to the proposed project.

Energy use during demolition and construction would be temporary in nature, and construction equipment used would be typical of construction projects in the region. In addition, the contractors that would typically be employed for development facilitated by the proposed HEU would be expected to comply with applicable CARB regulations that restrict the idling of heavy-duty diesel motor vehicles and govern the accelerated retrofitting, repowering, or replacement of heavy-duty diesel on- and off-road equipment. Construction contractors would be required to comply with the provisions of 13 California Code of Regulations Sections 2449 and 2485, which prohibit diesel-fueled commercial motor vehicles and off-road diesel vehicles from idling for more than five minutes, which would minimize unnecessary fuel consumption. Construction equipment would be subject to the USEPA Construction Equipment Fuel Efficiency which would minimize inefficient fuel consumption. These construction equipment standards (i.e., Tier 4 efficiency requirements) are contained in 40 Code of Federal Regulations Parts 1039, 1065, and 1068. Electrical power would be consumed during demolition and construction activities, and the demand, to the extent required, would be supplied from existing electrical infrastructure in the region.

Overall, demolition and construction activities would not have a substantial adverse impact on available electricity supplies or infrastructure. Demolition and construction activities would be expected to use fuel-efficient equipment consistent with State and federal regulations and comply with State measures to reduce the inefficient, wasteful, or unnecessary consumption of energy. In addition, pursuant to applicable regulatory requirements such as 2019 or later CALGreen and BMC Chapter 19.37, the project would comply with construction waste management practices to divert a minimum of 65 percent of construction and demolition debris and to recycle and salvage 100 percent of excavated soil and land-clearing debris, concrete, and of asphalt during construction and demolition activities. These practices would result in efficient use of energy necessary to implement the proposed project.

With required adherence to regional and local regulations as well as the BMC, demolition and construction activities associated with future development under the proposed HEU would not result in potentially significant environmental effects due to the wasteful, inefficient, or unnecessary consumption of energy, and impacts would be less than significant.

Operation

Energy consumption during project operation would consist of transportation fuels for vehicle trips by future residents, employees, and visitors and electricity and natural gas usage for exterior and interior lighting, appliances, and space and water heating. Minimal natural gas would be consumed under the proposed amendments because BMC Chapter 12.80 prohibits the use of natural gas infrastructure in all new construction with limited exemptions and exceptions. To provide a conservative estimate of project impacts, it was assumed that 10 percent of new development would include natural gas connections/appliances. To account for the increased electricity usage

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that would occur in all-electric units, it was assumed that 90 percent of the natural gas demand estimated for the project in the GHG modeling would instead be supplied by electricity. Gasoline and diesel consumption would be associated with vehicle trips generated by residents. The project aims to provide housing sites along transit corridors, near BART, as well as Priority Development Areas, limiting the increase in travel required by new residents. This would limit the number and length of typical residential vehicle trips, and thus lower energy use.

As shown in Table 4.5-4, vehicle trips related to the project would require approximately 10.5 million gallons of gasoline (approximately 1.2 MMBtu) and 1.6 million gallons of diesel fuel (approximately 207,000 MMBtu) annually. This equates to an annual per capita transportation energy use of 29 MMBtu, or an average daily per capita transportation energy use of 0.08 MMBtu for the project.¹ This is lower than the County’s 2020 annual per capita transportation energy use of 33 MMBtu, or average daily per capita transportation energy use of 0.09 MMBtu (see Table 4.5-3). Gasoline and diesel fuel demands would be met by existing gas stations in the vicinity of the housing inventory sites. Vehicles driven by future residents of development facilitated by the project would be subject to increasingly stringent State fuel efficiency standards, thereby minimizing the potential for the inefficient consumption of vehicle fuels. Furthermore, the project would facilitate development along transit corridors, near BART stations, and in Priority Development Areas, which would place residents in proximity to public transit and encourage walking and bicycling. Moreover, BMC Chapter 19.37 would require at least 20 percent of parking spaces at new multi-family residential developments to be capable of supporting electric vehicle chargers and raceway at the remaining 80 percent of parking spaces to facilitate future electric vehicle supply equipment, which would support the use of electric vehicles by future residents. Policy H-13 of the HEU would ensure implementation of Berkeley’s CAP in order to reduce energy costs and GHG emissions, which would also aid the City in reaching its CAP goals of 100 percent renewable electricity by 2035, net-zero carbon emissions by 2045, and resolution to become a Fossil Fuel Free City. As a result, vehicle fuel consumption resulting from the project would not be wasteful, inefficient, or unnecessary.

Table 4.5-4 Project Operational Energy Usage

Source	Energy Consumption	Energy Consumption (in MMBtu)
Vehicle Trips		
Gasoline	10,541,101 gallons	1,157,267
Diesel	1,627,311 gallons	207,417
Built Environment		
Electricity	124,792,810 kWh	425,793
Natural Gas Usage	18,419,903 kBtu	18,420

Note: MMBtu = millions of British thermal units; kWh = kilowatt-hours; kBtu = thousands of British thermal units.
 See Appendix E for CalEEMod default values for fleet mix and average distance of travel and Appendix D for energy calculation sheets.

As shown in Table 4.5-4, in addition to transportation energy use, development facilitated by the project would require permanent grid connections for electricity and natural gas. Development facilitated by the project would consume approximately 124.8 million kWh, or 430,000 MMBtu per year of electricity, and approximately 18.4 million kBtu, or 18,420 MMBtu per year of natural gas. Electricity would be provided by EBCE, and future residential customers would be placed in their Renewable 100 Plan which utilizes 100 percent renewable and carbon free energy. Customers that

¹ Calculation: Annual fuel consumption (1,364,684 MMBtu) divided by 365 days and divided by the total new residents (47,443 residents).

choose to opt out of the Renewable 100 Plan and be placed in the Bright Choice Plan which utilizes 40 percent renewable energy or a PG&E electricity product. Future development facilitated by the project would be required to comply with all standards set in the latest iteration of the California Building Standards Code (California Code of Regulations, Title 24) and any locally adopted amendments, which would minimize the wasteful, inefficient, or unnecessary consumption of energy resources by the built environment during operation. California's CALGreen standards (California Code of Regulations, Title 24, Part 11) and BMC Chapters 12.80 19.36, and 19.36 require implementation of energy-efficient light fixtures and building materials into the design of new construction projects, limit the use of natural gas infrastructure in new development, and provide for electric-ready infrastructure for natural gas appliances in new buildings. Furthermore, the 2019 Building Energy Efficiency Standards (California Code of Regulations, Title 24, Part 6) requires newly constructed buildings to meet energy performance standards set by the CEC such as installing PV systems on all low-rise residential structures up to three stories equal to the expected electricity usage, and BMC Chapter 19.36 requires that new buildings exceed CEC energy standards. These standards for new buildings are designed for energy efficient performance, using clean electricity, so that the buildings do not result in wasteful, inefficient, or unnecessary consumption of energy. In addition, per CALGreen, all plumbing fixtures used in the proposed buildings would be high-efficiency fixtures, which would minimize the potential for inefficient or wasteful consumption of energy related to water and wastewater.

Therefore, development facilitated by the project would not result in a wasteful, inefficient, or unnecessary consumption of energy, and would not result in potentially significant environmental effects due to the wasteful, inefficient, or unnecessary consumption of energy. This impact would be less than significant.

Mitigation Measures

This impact would be less than significant. No mitigation measures would be required.

Threshold: Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?
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Impact E-2 THE PROPOSED HEU WOULD BE CONSISTENT WITH THE STATE PLANS AND GENERAL PLAN POLICIES RELATED TO ENERGY EFFICIENCY AND UTILIZING RENEWABLE ENERGY. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

As discussed in Section 4.5.2, several State plans as well as the City's adopted General Plan include energy conservation and energy efficiency strategies intended to enable the State and the City to achieve GHG reduction and energy conservation goals. A full discussion of the proposed project's consistency with GHG reduction plans is included in Section 4.7, *Greenhouse Gas Emissions*. As shown in Table 4.5-5, the project would be consistent with applicable State renewable energy and energy efficiency plans.

Table 4.5-5 Consistency with State Renewable Energy and Energy Efficiency Plans

Renewable Energy or Energy Efficiency Plan	Proposed Project Consistency
<p>Assembly Bill 2076: Reducing Dependence on Petroleum. Pursuant to AB 2076, the CEC and CARB prepared and adopted a joint-agency report, <i>Reducing California's Petroleum Dependence</i>, in 2003. Included in this report are recommendations to increase the use of alternative fuels to 20 percent of on-road transportation fuel use by 2020 and 30 percent by 2030, significantly increase the efficiency of motor vehicles, and reduce per capita VMT. One of the performance-based goals of AB 2076 is to reduce petroleum demand to 15 percent below 2003 demand.</p>	<p>Consistent. The proposed project would encourage housing development near transit corridors, BART stations, and in Priority Development Areas such as the Southside Plan Area, University Avenue Plan Area, South Shattuck Plan Area, and Berkeley's Downtown Area, supporting Policy H-16 of the HEU for transit-oriented new construction and reducing usage of single-occupancy vehicles. All housing units constructed under the proposed project would be subject to the requirements of the most recent iteration of CALGreen and locally adopted amendments, which include provisions for electric vehicle charging infrastructure, reducing dependence on gasoline powered vehicles.</p>
<p>2019 Integrated Energy Policy Report. The 2019 report highlights the implementation of California's innovative policies and the role they have played in establishing a clean energy economy, as well as provides more detail on several key energy policies, including decarbonizing buildings, increasing energy efficiency savings, and integrating more renewable energy into the electricity system.</p>	<p>Consistent. Electricity provided for development facilitated by the proposed HEU would be supplied by EBCE, which sources power from renewable sources under the Renewable 100 program. Customers have the option to opt out of the Renewable 100 program and enroll in the Bright Choice Program which would be supplied by 40 percent renewable energy. In addition, new construction would be required to be all electric per the requirements of BMC Section 12.80 (with limited exemptions and exceptions), which would reduce consumption of nonrenewable energy resources. Additional, Policy H-13 of the proposed HEU aims to reduce energy use and costs.</p>
<p>California Renewable Portfolio Standard. California's RPS obligates investor-owned utilities, energy service providers, and community choice aggregators to procure 33 percent total retail sales of electricity from renewable energy sources by 2020, 60 percent by 2030, and 100 percent by 2045.</p>	<p>Consistent. EBCE supplies electricity to Berkeley residents and businesses. As of 2021, EBCE's base plan (Bright Choice) consisted of 40 percent eligible renewable energy resources (EBCE 2021). EBCE offers 100 percent renewable energy services to member cities, and both residential and commercial customers in Berkeley would be placed in the Renewable 100 Plan starting March 2022 and October 2022, respectively (EBCE 2021).</p>
<p>Energy Action Plan. In the October 2005, the CEC and CPUC updated their energy policy vision by adding some important dimensions to the policy areas included in the original EAP, such as the emerging importance of climate change, transportation-related energy issues, and research and development activities. The CEC adopted an update to the EAP II in February 2008 that supplements the earlier EAPs and examines the State's ongoing actions in the context of global climate change. The nine major action areas in the EAP include energy efficiency, demand response, renewable energy, electricity adequacy/reliability/infrastructure, electricity market structure, natural gas supply/demand/infrastructure, transportation fuels supply/demand/infrastructure, research/development/demonstration, and climate change.</p>	<p>Consistent. Future development facilitated by the proposed project would be required to be constructed in accordance with the latest iteration of CALGreen, the California Energy Code, and any locally adopted amendments, which include requirements for the use of energy-efficient design and technologies as well as provisions for incorporating renewable energy resources into building design. Additionally, Policy H-13 of the HEU would ensure energy efficiency and waste reduction in all development facilitated under the project. Electricity would be provided by EBCE, which source all their power from renewable sources under the Renewable 100 program. Customers have the option to opt out of the Renewable 100 program and enroll in the Bright Choice Program which would be supplied by 40 percent renewable energy or a PG&E electricity product. Given these features, the project would facilitate implementation of the nine major action areas in the EAP.</p>

Renewable Energy or Energy Efficiency Plan	Proposed Project Consistency
<p>AB 1007: State Alternative Fuels Plans. The State Alternative Fuels Plan assessed various alternative fuels and developed fuel portfolios to meet California’s goals to reduce petroleum consumption, increase alternative fuels use, reduce GHG emissions, and increase in-State production of biofuels without causing a significant degradation of public health and environmental quality.</p> <p>Bioenergy Action Plan, EO S-06-06. The EO establishes the following targets to increase the production and use of bioenergy, including ethanol and biodiesel fuels made from renewable resources: produce a minimum of 20 percent of its biofuels in California by 2010, 40 percent by 2020, and 75 percent by 2050.</p>	<p>Consistent. The project would not interfere with or obstruct the production of biofuels in California. Vehicles used by future residents would be fueled by gasoline and diesel fuels blended with ethanol and biodiesel fuels as required by CARB regulations. Additionally, pursuant to BMC Chapter 19.37, 20 percent of parking spaces for new multi-family residential developments would be required to be capable of supporting electric vehicle chargers and the remaining 80 percent of parking spaces would be required to have raceways to facilitate future electric vehicle supply equipment.</p>
<p>Title 24, CCR – Part 6 (Building Energy Efficiency Standards) and Part 11 (CALGreen). The 2019 Building Energy Efficiency Standards move toward cutting energy use in new homes by more than 50 percent and will require installation of solar photovoltaic systems for single-family homes and multi-family buildings of three stories and less.</p> <p>The CALGreen Standards establish green building criteria for residential and nonresidential projects. The 2019 Standards include the following: increasing the number of parking spaces that must be prewired for electric vehicle chargers in residential development; requiring all residential development to adhere to the Model Water Efficient Landscape Ordinance; and requiring more appropriate sizing of HVAC ducts.</p>	<p>Consistent. Development facilitated by the project would be required to comply with the City Code, Article IV, Division 1, which mandates the implementation of Title 24.</p>

Furthermore, as described under Section 4.5.2c the City’s General Plan and CAP contains goals and policies related to energy efficiency and renewable energy. As discussed under Impact GHG-2 (Table 4.7-4) in Section 4.7, *Greenhouse Gas Emissions*, the proposed project would be consistent with recommended goals, policies, and actions in the City’s CAP related to energy efficiency and renewable energy. Table 4.5-6 summarizes the project’s consistency with the applicable General Plan policies. As shown therein, the proposed project would be consistent with applicable General Plan policies and therefore would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. This impact would be less than significant.

Table 4.5-6 Project Consistency with Applicable General Plan Policies

Policies	Project Consistency
Transportation Element	
<p>Policy T-19 Air Quality Impacts. Continue to encourage innovative technologies and programs such as clean-fuel, electric, and low-emission cars that reduce the air quality impacts of the automobile.</p>	<p>Consistent: All housing units constructed under the proposed project would be subject to the requirements of the most recent iteration of CALGreen and locally adopted amendments, which include provisions for electric vehicle charging infrastructure. For example, in 2022 BMC Section 19.37.040 requires 20 percent of parking spaces to be electric vehicle charging spaces capable of supporting future electric vehicle chargers and 80 percent of parking spaces to include raceways to facilitate future electric vehicle supply equipment at all new multi-family developments; and for new one- and two-family dwelling units to accommodate a dedicated 208/240-volt branch circuit for a future EV charger.</p>

Policies	Project Consistency
Environmental Management Element	
<p>Policy EM-5 “Green” Buildings. Promote and encourage compliance with “green” building standards.</p>	<p>Consistent: Future development facilitated by the proposed project would be required to be constructed in accordance with the latest iteration of CALGreen, the California Energy Code, and any locally adopted amendments, which include green building practices. In addition, new construction would be required to be all electric per the requirements of BMC Section 12.80 (with limited exemptions and exceptions), which would reduce consumption of nonrenewable energy resources. Policy H-13 of the HEU would also ensure energy efficiency in new buildings in order to reduce energy costs and GHGs.</p>
<p>Policy EM-35 Energy Efficient Design. Promote high-efficiency design and technologies that provide cost-effective methods to conserve energy and use renewable energy sources.</p>	<p>Consistent: Future development facilitated by the proposed project would be required to be constructed in accordance with the latest iteration of CALGreen, the California Energy Code, and any locally adopted amendments, which include requirements for the use of energy-efficient design and technologies as well as provisions for incorporating renewable energy resources into building design. Additionally, Policy H-13 of the HEU would ensure energy efficiency and waste reduction in all development facilitated under the project.</p>
<p>Policy EM-41 Fossil Fuel. Encourage and support efforts to reduce use of fossil fuel and other finite, nonrenewable resources.</p>	<p>Consistent: New construction facilitated under the project would be required to be all electric per the requirements of BMC Section 12.80 (with limited exemptions and exceptions), which would reduce consumption of nonrenewable energy resources. In addition, most housing inventory sites would be placed near transportation corridors in proximity to alternative transportation modes such as BART and buses, thereby supporting efforts to reduce the use of fossil fuels by motor vehicles. In addition, implementation of the City’s Electric Mobility Roadmap (2020) and the electric vehicle charging infrastructure requirements of BMC Chapters 19.36 and 19.37 would facilitate future residents’ use of electric vehicles powered by renewable energy resources, which would further reduce consumption of fossil fuels.</p>
Urban Design Element	
<p>Policy UD-33 Sustainable Design. Promote environmentally sensitive and sustainable design in new buildings.</p>	<p>Consistent: Future development projects facilitated by the proposed project would be required to be constructed in accordance with the latest iteration of CALGreen and the California Energy Code, which include environmentally sensitive and sustainable design practices. In addition, new construction would be required to be all electric per the requirements of BMC Section 12.80 (with limited exemptions and exceptions), which would reduce consumption of nonrenewable energy resources.</p>

Source: City of Berkeley 2003

Mitigation Measures

This impact would be less than significant. No mitigation measures would be required.

c. Cumulative Impacts

The geographic scope for cumulative land use and planning impacts includes the geographic area of the City of Berkeley. Development that is considered part of the cumulative analysis includes development proposed under the University of California, Berkeley’s Long Range Development Plan (LRDP) and Housing Projects #1 and #2 as described in the Draft EIR dated March 8, 2021 (University of California, Berkeley 2021).

Cumulative development would increase demand for energy resources, but those resources would not be consumed in a wasteful, inefficient, or unnecessary manner. New iterations of the California Building Energy Efficiency Standards and CALGreen would require increasingly more efficient

appliances and building materials that reduce energy consumption in new development. In addition, vehicle fuel efficiency is anticipated to continue improving through implementation of the existing Pavley Bill regulations under AB 1493.

As described under Impact E-1, development facilitated by the project would be constructed in accordance with the California Building Energy Efficiency Standards and CALGreen. Additionally, development facilitated under the project in infill locations is presumed to lower VMT due to proximity to transit corridors, BART stations, and Priority Development Areas. Therefore, the project's contribution to a significant cumulative energy impact is not cumulatively considerable.

Development facilitated by the project would not result in a wasteful, inefficient, or unnecessary consumption of energy, and operation of the new residential structures would not result in potentially significant environmental effects due to the wasteful, inefficient, or unnecessary consumption of energy. Therefore, the project would not make a cumulatively considerable contribution to a significant cumulative impact.

The geographic scopes for the cumulative impact analysis of consistency with renewable energy and energy efficiency plans are the State of California and the City of Berkeley. Projects throughout the State of California are required to adhere to applicable renewable energy and energy efficiency laws, programs, and policies such as California's RPS, AB 2076, and Title 24 standards. All other pending and future projects in the county would be required to adhere to General Plan policies and the BMC to mitigate energy impacts where feasible. In addition, all pending and future projects would be reviewed for consistency with the City General Plan and CAP. Therefore, the cumulative impact would be less than significant. As discussed under Impact E-2, development facilitated by the project would be consistent with the energy-related goals, policies, and actions of the Statewide plans and the City's General Plan; therefore, the project would not make a cumulatively considerable contribution to a significant cumulative impact with respect to consistency with renewable energy and energy efficiency plans.

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4.6 Geology and Soils

This section assesses potential impacts related to geologic and soil hazards associated with implementation of the proposed HEU.

4.6.1 Setting

a. Topography and Geology

Berkeley is located on the East Bay Plain (the Plain), a flat area that extends 50 miles from Richmond in the north to San Jose in the south. The Plain is about three miles wide in the Berkeley area. At its eastern edge, the plain transitions into hills, rising to approximately 1,683 feet at Barberry Peak, the highest point in Berkeley's Claremont Hills neighborhood. On its western edge, the Plain slopes down to San Francisco Bay, the largest estuary on the California coast (City of Berkeley 2001c; Elevation.maplogs.com 2018).

The Plain is part of the larger Coast Ranges geomorphic province, one of the eleven geomorphic provinces of California (California Geological Survey 2002). The Coast Ranges extend along the majority of California's coast from the California-Oregon border to Point Arguello in Santa Barbara County in the south and consist of northwest-trending mountain ranges and valleys. The Coast Ranges are composed of Mesozoic and Cenozoic sedimentary, igneous, and metamorphic strata. The eastern side is characterized by strike-ridges and valleys in the Upper Mesozoic strata. The Coast Ranges province runs parallel to and overlaps the San Andreas Fault in some areas, although not in Berkeley (California Geological Survey 2002).

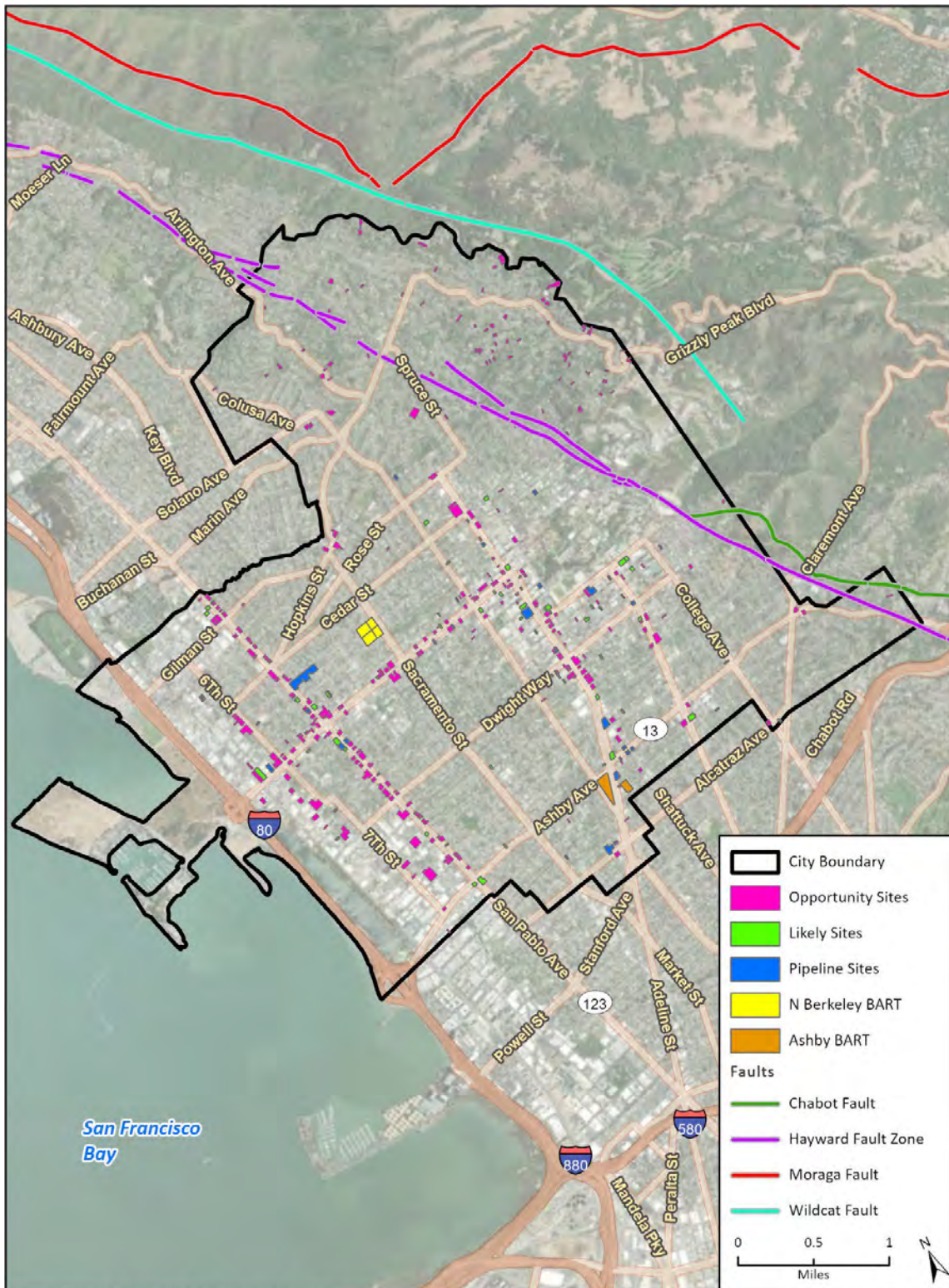
Berkeley's rich alluvial soils and temperate climate support a wide variety of plants and animals. Wetlands in the western part of Berkeley provide habitat for the salt marsh harvest mouse and other special status species. Strawberry Creek and Codornices Creek remain two of the few waterways in the urbanized East Bay that retain their natural character along most of their respective courses (City of Berkeley 2001c).

Berkeley is located in the United States Geological Survey's (USGS) *Briones Valley, Richmond, Oakland East, and Oakland West* 7.5-minute topographic quadrangles. The area is typified by low topographic relief, with gentle slopes to the west in the direction of San Francisco Bay. By contrast, the Berkeley Hills that lie directly east of Berkeley have more pronounced topographic relief, with elevations that exceed 1,000 feet above mean sea level (City of Berkeley 2001b). Geologic maps indicate that the Plain is underlain primarily by Quaternary alluvial deposits, and the eastern parts of Berkeley, in the Berkeley Hills, are underlain by Mesozoic and Cenozoic igneous and sedimentary rocks (Graymer 2000).

Additionally, Berkeley is located near the San Andreas and Hayward fault zones, one of the most seismically active regions in the United States. The San Andreas Fault is located approximately 15 miles west of Berkeley. There is one Alquist-Priolo Earthquake Fault Zone within Berkeley for the Hayward Fault, as shown in Figure 4.6-1. The Hayward Fault trace passes through parts of the northeast Berkeley hills, the UC Berkeley campus and northeast to Tunnel Road (City of Berkeley 2001). Faults within Berkeley are discussed in greater detail below under part (c).

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Figure 4.6-1 Fault Lines in the Vicinity of Berkeley



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 Additional data provided by USGS, 2021 and the City of Berkeley, 2022.

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 Sites Inventory Overview

b. Soils

As mapped by the U.S. Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS), Berkeley features 12 soil types (USDA 2017). Figure 4.6-1 presents soil characteristics related to water holding capacity, permeability, shrink-swell potential, rate of surface runoff, and erosion hazard. Figure 4.6-2 shows soils in Berkeley.

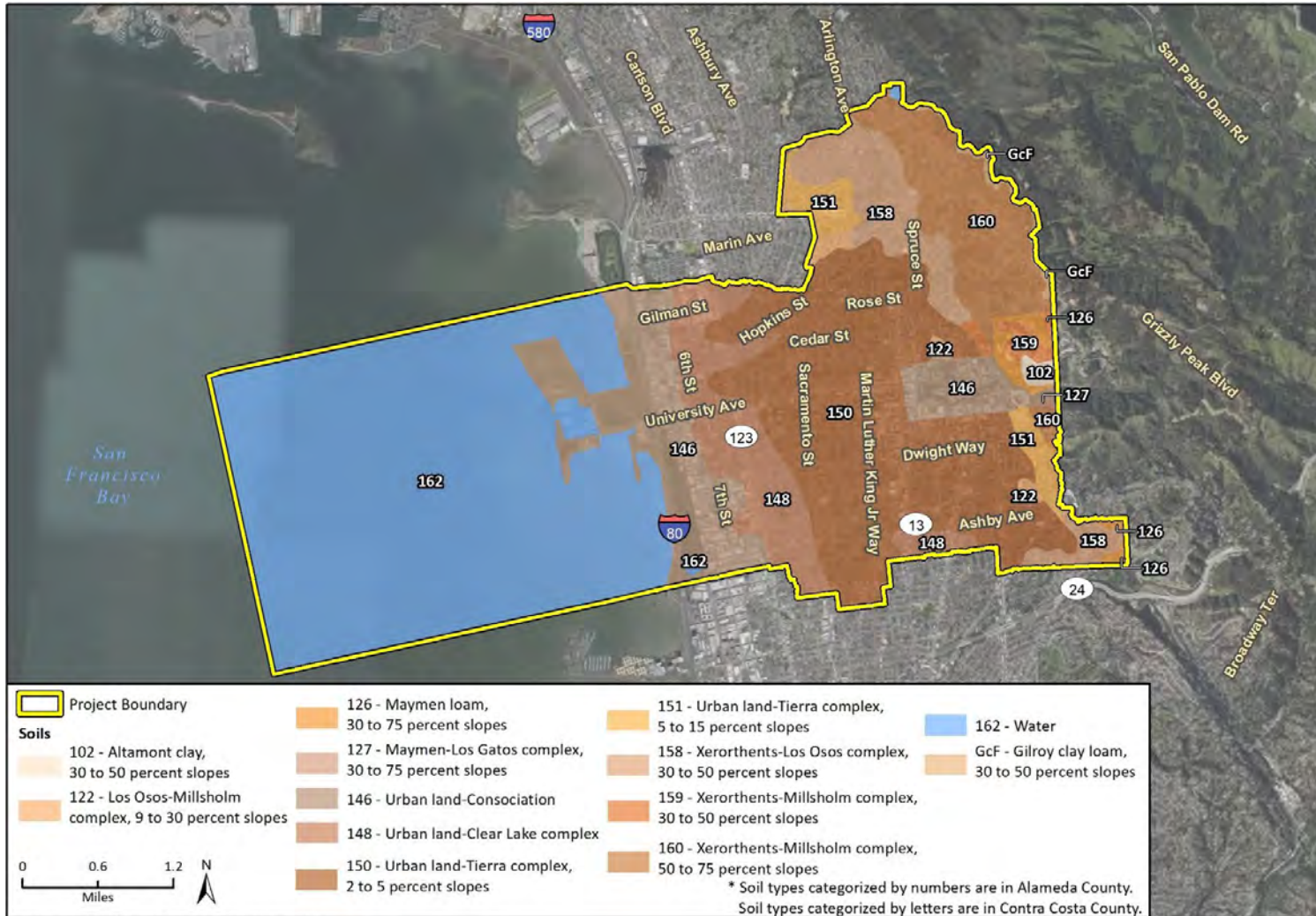
Table 4.6-1 Berkeley Soil Parameters

Map Unit #	Name	Water Holding Capacity (in.)	Permeability (in/hr)	Shrink-Swell Potential	Rate of Surface Runoff	Erosion Hazard
102	Altamont Clay, 30 to 50 percent slopes	3.5-7	Slow	High	Medium to High	Moderate/High
122	Los Osos-Millsholm Complex, 9 to 30 percent slopes	3.5-6.5	Slow	Moderate/High	High	High
126	Maymen Loam, 30 to 75 percent slopes	1-3	Moderate	Low	High	High/Very high
127	Maymen-Los Gatos complex, 30 to 75 percent slopes	1-3	Moderate	Low/Moderate	Very High	High/Very high
146	Urban land-Consociation	n/a	Slow	n/a	High	None
148	Urban Land-Clear Lake Complex	7.0-9.5	Moderately low to Moderately high	High	Medium	None
150	Urban land-Tierra Complex, 2 to 5 percent slopes	1.8	Very low/Moderately low	High	High	Slight
151	Urban land Tierra Complex, 5 to 15 percent slopes	6-8	Slow	High	Medium	Moderate
158	Xerorthents-Los Osos Complex, 30 to 50 percent slopes	3.5-6.5	Slow	Moderate/High	High	High
159	Xerorthents-Millsholm Complex, 30 to 50 percent slopes	1.5-3.5	Moderate	Low	High	High
160	Xerorthents-Millsholm Complex, 50 to 75 percent slopes	9.5-11	Moderate	Low	Slow	None
GcF	Gilroy Clay Loam, 30 to 50 percent slopes	3-6	Moderately slow	Moderate	Very high	High

Sources: USDA 2017, USDA 1977

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Figure 4.6-2 Berkeley Soils Map



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 Additional data provided by USDA, 2022.

Fig 2 Soils

c. Geologic Hazards

Similar to much of California, Berkeley is located in a seismically active region. The seismic hazards relevant to Berkeley are described below.

Faulting and Seismically Induced Ground Shaking

The USGS defines active faults as those that have had surface displacement within the Holocene period (about the last 11,000 years). Surface displacement can be recognized by the existence of cliffs in alluvium, terraces, offset stream courses, fault troughs and saddles, the alignment of depressions, sag ponds, and the existence of steep mountain fronts. Potentially active faults are those that have had surface displacement during the last 1.6 million years. Inactive faults have not had surface displacement within that period. Several faults are located near or within Berkeley (Figure 4.4-1). The major faults and fault zones are described in the paragraphs below.

San Andreas Fault

The San Andreas Fault, the most likely source of a major earthquake in California, is located approximately 15 miles west of Berkeley. The San Andreas Fault is the primary surface boundary between the Pacific and the North American plates. There have been numerous historic earthquakes along the San Andreas Fault, and it generally poses the greatest earthquake risk to California. In general, the San Andreas Fault is likely capable of producing a Maximum Credible Earthquake of 8.0.

Hayward Fault

The Hayward Fault, one of ten major faults that make up the San Andreas Fault Zone, runs directly beneath Berkeley and links with the Rodgers Creek Fault to the north. Although the last major earthquake generated by the Hayward Fault was in 1868, pressure is slowly building again and will begin to overcome the friction and other forces that cause the fault zone to stick. According to a study of earthquake probabilities by the USGS, the fault system that includes the Hayward and Rodgers Creek faults has a 31 percent probability of generating an earthquake with a magnitude greater than or equal to 6.7 on the Mercalli Richter Scale in the next 20 years (City of Berkeley 2014). The Hayward Fault would likely cause extensive damage in Berkeley due to its proximity to urban communities and infrastructure. The Hayward Fault and surrounding area is a designated Alquist-Priolo Zone (Figure 4.6-1).

Other active faults near Berkeley include the Calaveras Fault, the Rodgers Creek fault, the Chabot Fault, the Moraga Fault, the Wildcat Fault, and unnamed secondary faults adjacent to these. There are few or no studies pertaining to these additional secondary faults, and it is unknown whether they may or may not experience secondary ground rupture during a large earthquake.

In addition to the primary hazard of surface rupture, earthquakes often result in secondary hazards that can cause widespread damage. The most likely secondary earthquake hazards within Berkeley are ground shaking, liquefaction, and settlement (City of Berkeley 2001).

Surface Rupture

Faults generally produce damage in two ways: ground shaking and surface rupture. Surface rupture is limited to very near the fault. As discussed above, the Hayward Fault runs directly beneath Berkeley. Since the fault zone is within Berkeley, there is potential for surface rupture (Figure 4.6-1).

Ground Shaking

Seismically induced ground shaking covers a wide area and is greatly influenced by the distance of the site to the seismic source, soil conditions, and depth to groundwater. The USGS and Associated Bay Area Governments (ABAG) have worked together to map the likely intensity of ground-shaking throughout the Bay Area under various earthquake scenarios. The most intense ground-shaking scenario mapped in Berkeley assumes a 6.9 magnitude earthquake on the Hayward Fault system. The predicted ground-shaking from such an earthquake would be “very violent” or “violent” throughout Berkeley (ABAG 2016).

Hazards associated with seismically induced ground shaking include liquefaction, seismically induced settlement, and earthquake-triggered landslides. Movement along any of the faults shown in Figure 4.6-1 could potentially generate substantial ground shaking in Berkeley leading to these secondary hazards, as discussed below.

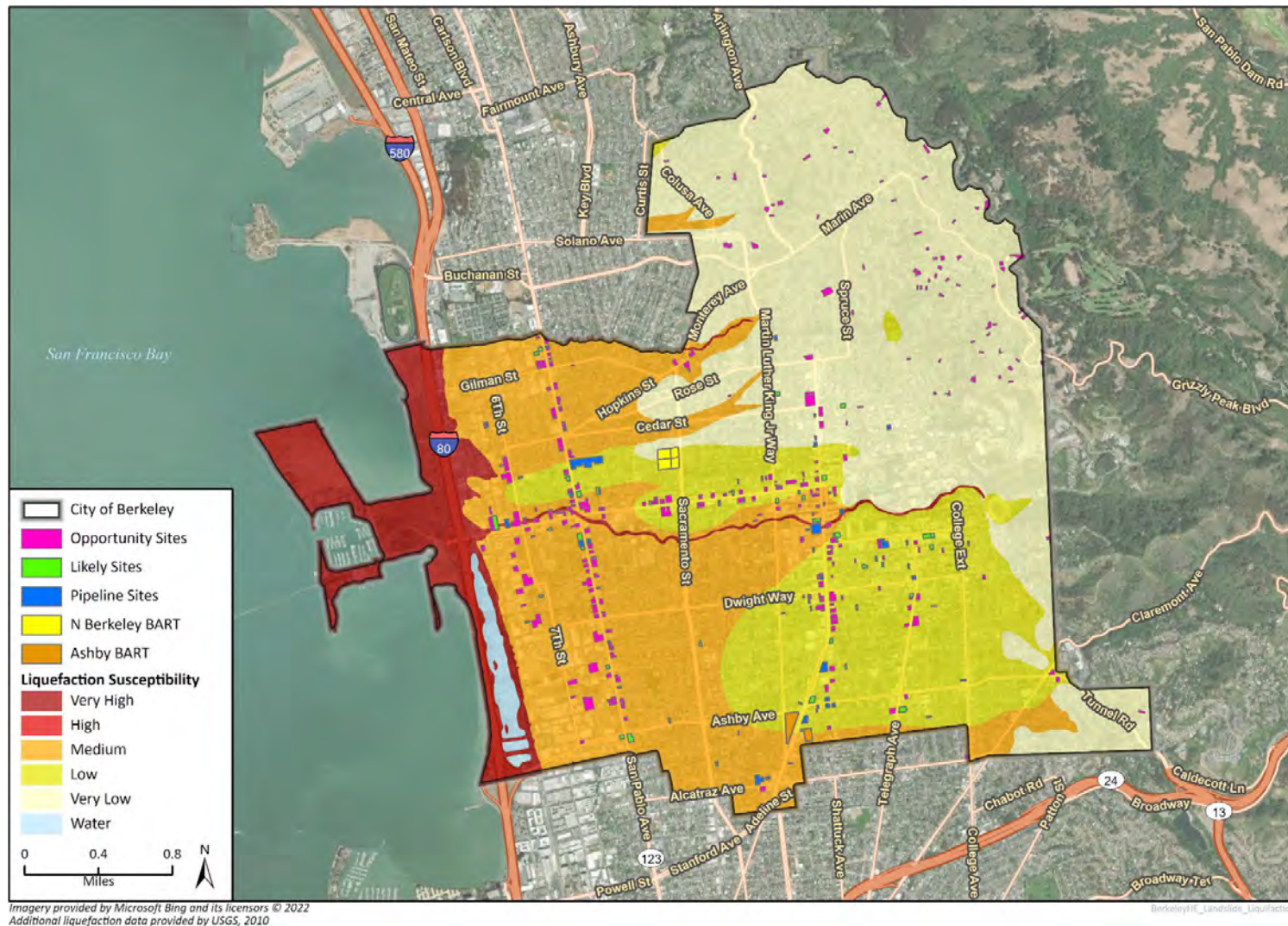
Liquefaction and Seismically-Induced Settlement

Liquefaction is defined as the sudden loss of soil strength due to a rapid increase in soil pore water pressure resulting from seismic ground shaking. Liquefaction potential is dependent on such factors as soil type, depth to ground water, degree of seismic shaking, and the relative density of the soil. When liquefaction of the soil occurs, buildings and other objects on the ground surface may tilt or sink, and lightweight buried structures (such as pipelines) may float toward the ground surface. Liquefied soil may be unable to support its own weight or that of structures, which could result in loss of foundation bearing or differential settlement. Liquefaction may also result in cracks in the ground surface followed by the emergence of a sand-water mixture.

Seismically induced settlement occurs in loose to medium dense unconsolidated soil above groundwater. These soils compress (settle) when subjected to seismic shaking. The settlement can be exacerbated by increased loading, such as from the construction of buildings. Settlement can also result solely from human activities including improperly placed artificial fill, and structures built on soils or bedrock materials with differential settlement rates.

Earthquake hazard maps produced by ABAG indicate that a large Hayward Fault quake would trigger violent shaking throughout Berkeley and a high risk of liquefaction across Berkeley (City of Berkeley 2001b). Berkeley is in an area identified by the California Geologic Survey, California Department of Conservation (2006), as having low to medium susceptibility and therefore is in a Zone of Required Investigation for liquefaction potential. The identified seismic hazard zone is due to the area having historical occurrence of liquefaction, or where local geological geotechnical and ground-water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c). However, seismic hazard zones identified by the California Geologic Survey may include developed land where delineated hazards have already been mitigated to city or county standards. As Figure 4.6-3 shows, Berkeley has areas identified as having very low, low, medium, and high, and very high susceptibility to liquefaction.

Figure 4.6-3 Berkeley Liquefaction Susceptibility



Landslides

Landslides result when the driving forces that act on a slope (i.e., the weight of the slope material, and the weight of objects placed on it) are greater than the slope's natural resisting forces (i.e., the shear strength of the slope material). Slope instability may result from natural processes, such as the erosion of the toe of a slope by a stream, or by ground shaking caused by an earthquake. Slopes can also be modified artificially by grading, or by the addition of water or structures to a slope. Development that occurs on a slope can substantially increase the frequency and extent of potential slope stability hazards.

Areas susceptible to landslides are typically characterized by steep, unstable slopes in weak soil/bedrock units that have a record of previous slope failure. There are numerous factors that affect the stability of the slope, including: slope height and steepness, type of materials, material strength, structural geologic relationships, ground water level, and level of seismic shaking.

According to the City's General Plan Disaster Preparedness and Safety Element (2001b), landslide risk is low throughout the majority of Berkeley. However, localized areas of instability exist throughout the Berkeley Hills at the northeastern end of Berkeley. Figure 4.6-4 shows identified landslide hazard zones in Berkeley. While most of the city is generally flat, its eastern portion is located in the hills and is located at the western edge of the Earthquake Induced Landslide Zone.

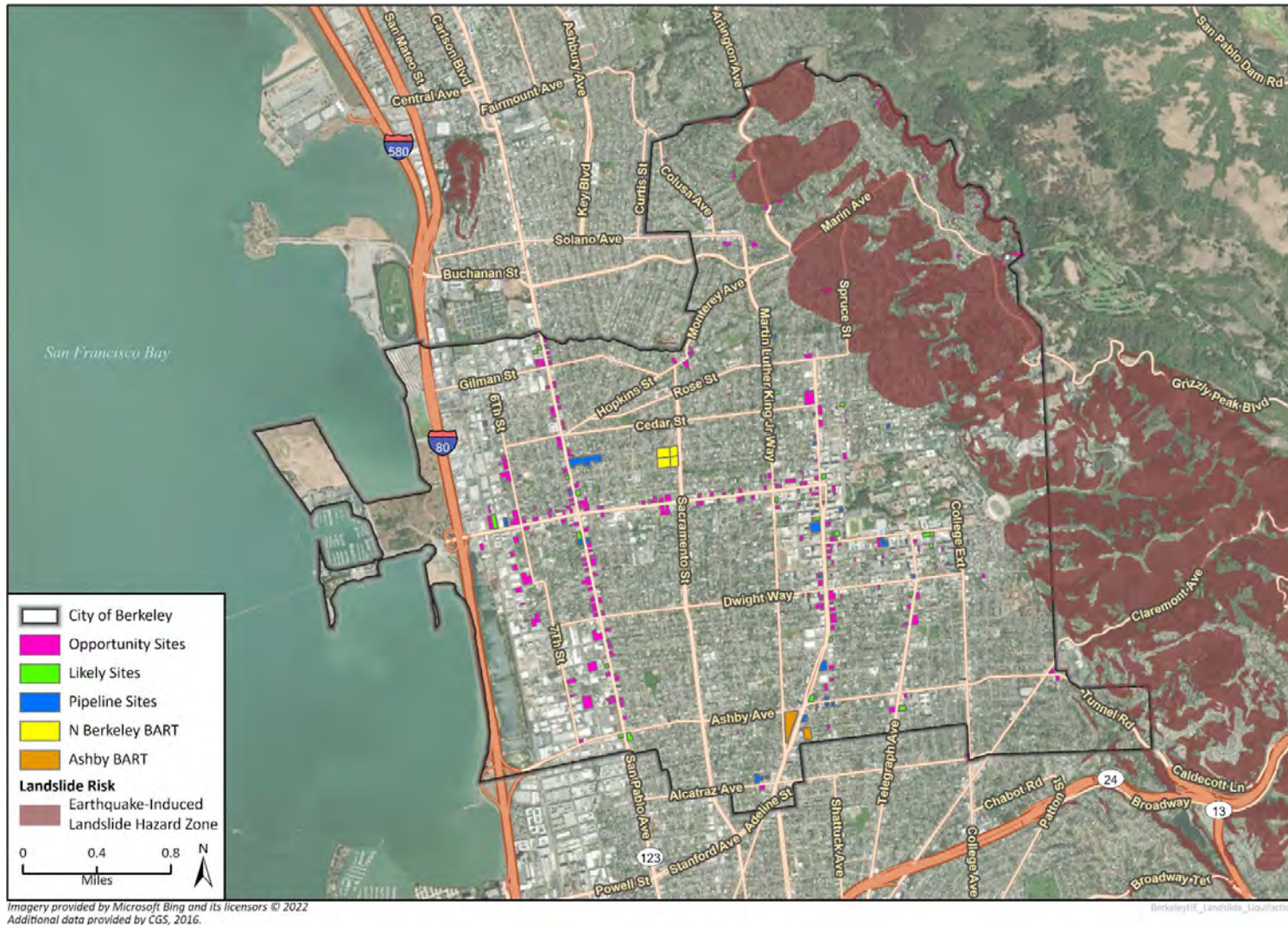
Expansive Soils

Expansive soils can change dramatically in volume depending on moisture content. When wet, these soils can expand; conversely, when dry, they can contract or shrink. Sources of moisture that can trigger this shrink-swell phenomenon include seasonal rainfall, landscape irrigation, utility leakage, and/or perched groundwater. Expansive soil can develop wide cracks in the dry season, and changes in soil volume have the potential to damage concrete slabs, foundations, and pavement. Special building/structure design or soil treatment are often needed in areas with expansive soils. Expansive soils are typically very fine-grained with a high to very high percentage of clay. The clay minerals present typically include montmorillonite, smectite, and/or bentonite. Within the City, soils with high shrink-swell potential such as Altamont Clay, Urban Land-Clear Lake Complex, and Urban Land Tierra-Complex 2 to 5 percent slopes and 5 to 15 percent slopes as listed in Table 4.6-1 and illustrated on Figure 4.6-1 have a high potential for expansiveness.

Erosion

Erosion is the wearing away of the soil mantle by running water, wind or geologic forces. It is a naturally occurring phenomenon and ordinarily is not hazardous. However, excessive erosion can contribute to landslides, siltation of streams, undermining of foundations, and ultimately the loss of structures. Removal of vegetation tends to heighten erosion hazards.

Figure 4.6-4 Berkeley Landslide Susceptibility



d. Paleontological Resources

Paleontological resources, or fossils, are the evidence of once-living organisms preserved in the rock record. They include both the fossilized remains of ancient plants and animals and the traces thereof (e.g., trackways, imprints, burrows, etc.). Paleontological resources are not found in “soil” but are contained within the geologic deposits or bedrock that underlies the soil layer. Typically, fossils are greater than 5,000 years old (i.e., older than middle Holocene in age) and are typically preserved in sedimentary rocks. Although rare, fossils can also be preserved in volcanic rocks and low-grade metamorphic rocks under certain conditions (Society of Vertebrate Paleontology [SVP] 2010). Fossils occur in a non-continuous and often unpredictable distribution within some sedimentary units, and the potential for fossils to occur within sedimentary units depends on several factors. It is possible to evaluate the potential for geologic units to contain scientifically important paleontological resources, and therefore evaluate the potential for impacts to those resources and provide mitigation for paleontological resources if they are discovered during construction of a development project.

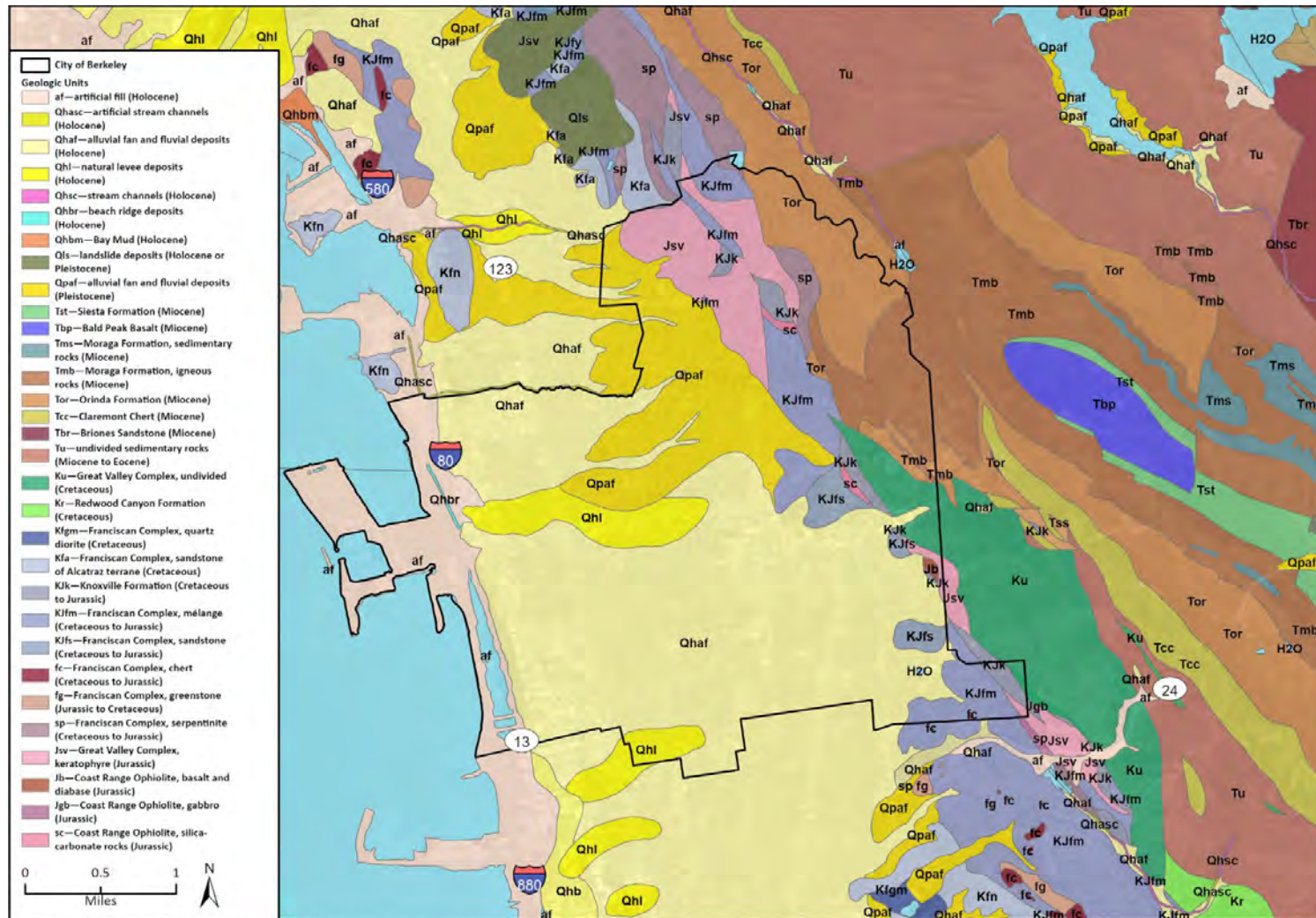
The geology of the region around Berkeley was mapped at a scale of 1:50,000 by Graymer (2000), who identified 18 distinct geologic units underlying Berkeley. The geologic units underlying Berkeley are shown in Figure 4.6-5.

Paleontological Sensitivity

Paleontological sensitivity refers to the potential for a geologic unit to produce scientifically significant fossils. Direct impacts to paleontological resources occur when earthwork activities, such as grading or trenching, cut into the geologic deposits within which fossils are buried and physically destroy the fossils. Since fossils are the remains of prehistoric animal and plant life, they are considered to be nonrenewable. Such impacts have the potential to be significant and, under the *CEQA Guidelines*, may require mitigation. Sensitivity is determined by rock type, history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit. Paleontological sensitivity is derived from the known fossil data collected from the entire geologic unit, not just from a specific survey.

The discovery of a vertebrate fossil locality is generally of greater significance than that of an invertebrate fossil locality based on the rarity of vertebrate fossils compared to invertebrate fossils, especially microvertebrate assemblages. However, the recognition of new vertebrate or invertebrate fossil locations could provide important information on the geographical range of the taxa, their radiometric age, evolutionary characteristics, depositional environment, and other important scientific research questions. Vertebrate fossils are almost always significant because they occur more rarely than invertebrates or plants, but in some instances, invertebrate fossils can be scientifically important and considered a sensitive environmental resource. Geological units having the potential to contain vertebrate fossils are generally considered to be of high sensitivity, whereas units with a record of only invertebrate assemblages typically have lower sensitivity but can have high paleontological sensitivity.

Figure 4.6-5 Regional Geologic Map



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 Grayner "Geologic Map and Map Database of the Oakland Metropolitan Area, Alameda, Contra Costa, and San Francisco Counties, California," 2000.

21-10647-000 & Assoc., Wally Hong E-Print

The Society of Vertebrate Paleontology (SVP) outlines in its Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (2010) guidelines for categorizing paleontological sensitivity of geologic units within a project area. The paleontological sensitivity of Berkeley has been evaluated according to the following SVP (2010) categories:

- **High Potential (Sensitivity).** Rock units from which significant vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered are considered to have a high potential for containing significant non-renewable fossiliferous resources. These units include but are not limited to, sedimentary formations and some volcanic formations which contain significant nonrenewable paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. Sensitivity comprises both (a) the potential for yielding abundant or significant vertebrate fossils or for yielding a few significant fossils, large or small, vertebrate, invertebrate, or botanical and (b) the importance of recovered evidence for new and significant taxonomic, phylogenetic, ecologic, or stratigraphic data. Areas which contain potentially datable organic remains older than recent, including deposits associated with nests or middens, and areas that may contain new vertebrate deposits, traces, or trackways are also classified as significant. Full-time monitoring is typically recommended during any project-related ground disturbance in geologic units with high sensitivity.
- **Low Potential (Sensitivity).** Sedimentary rock units that are potentially fossiliferous but have not yielded fossils in the past or contain common and/or widespread invertebrate fossils of well documented and understood taphonomic (processes affecting an organism following death, burial, and removal from the ground), phylogenetic species (evolutionary relationships among organisms), and habitat ecology. Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow determination that some areas or units have low potentials for yielding significant fossils prior to the start of construction. Generally, these units will be poorly represented by specimens in institutional collections and will not require protection or salvage operations.
- **Undetermined Potential (Sensitivity).** Specific areas underlain by sedimentary rock units for which little information is available are considered to have undetermined fossiliferous potentials. Field surveys by a qualified vertebrate paleontologist to specifically determine the potentials of the rock units are required before programs of impact mitigation for such areas may be developed.
- **No Potential.** Rock units of metamorphic or igneous origin are commonly classified as having no potential for containing significant paleontological resources.

Paleontological Sensitivity of Geologic Units in Berkeley

Rincon assessed the paleontological sensitivity of the geologic units underlying Berkeley by reviewing published geologic maps, online fossil databases, and primary literature. The distribution, characteristics, and paleontological sensitivity, of each geologic unit is discussed below.

Artificial fill (af)

Artificial fill is found in large areas of western Berkeley bordering San Francisco Bay (Figure 4.6-5). Artificial fill represents human-deposited materials used to shape the landscape (Graymer 2000). Therefore, these sediments are removed from their original context, thus making any fossils

contained within them scientifically useless. Therefore, artificial fill has **no paleontological sensitivity**.

Artificial stream channels (Qhasc)

Artificial stream channel deposits underlie portions of Cerita and Codornices Creeks in Berkeley (Figure 4.6-5). These deposits represent stream channels which have been straightened, realigned, or confined by artificial dikes or levees (Graymer 2000). These areas are undergoing active deposition, and thus, the sediments are too young to preserve scientifically significant paleontological resources (SVP 2010). Therefore, artificial stream channels have **low paleontological sensitivity**.

Holocene-aged basin deposits (Qhb), natural levee deposits (Qhl), alluvial fan and fluvial deposits (Qhaf), and beach ridge deposits (Qhbr)

Holocene-aged basin deposits are found in small parts of southwestern Berkeley near San Francisco Bay (Figure 4.6-5) and consist of silty clay or clay that were deposited in flat-floored basins at the edge of alluvial fans (Graymer 2000). Holocene-aged natural levee deposits are found throughout western and central Berkeley and consist of loose, moderately to well-sorted, sandy, or clayey silt that becomes more clayey moving upward. Natural levee deposits formed on the edges of stream channels, some of which are now abandoned (Graymer 2000). Holocene alluvial fan and fluvial deposits cover most of central and western Berkeley and consist of brown or tan, gravelly sand or sandy gravel that becomes finer grained moving upward. Holocene beach ridge deposits consist of well-sorted beach sand. All four sediment types are Holocene in age, and thus, are likely too young to preserve paleontological resources (SVP 2010). Therefore, Holocene-aged basin deposits, natural levee deposits, alluvial fan and fluvial deposits, and beach ridge deposits, have **low paleontological sensitivity**.

Pleistocene-aged alluvial fan and fluvial deposits (Qpaf)

Pleistocene-aged alluvial fan and fluvial deposits (Qpaf) are found in central Berkeley (Figure 4.6-5) and consist of brown, dense, sand or gravel that grades upward to sandy clay. Pleistocene alluvial sediments have produced scientifically significant fossils throughout California, including Alameda County, yielding taxa such as mammoths (*Mammuthus*), ground sloths (*Paramylodon*, *Megalonyx*), bison (*Bison*), cats (*Panthera*, *Smilodon*), and bears (*Arctodus*) (Jefferson 2010; Paleobiology Database [PBDB] 2022; Stirton 1939; University of California Museum of Paleontology [UCMP] 2022). Therefore, Pleistocene-aged alluvial fan and fluvial deposits have **high paleontological sensitivity**.

Moraga Formation, igneous rocks (Tmb)

Igneous rocks of the Moraga Formation underlie small parts of eastern Berkeley (Figure 4.6-5). These rocks consist of basaltic and andesitic flows dated to the late Miocene (Graymer 2000). Basaltic and andesitic rocks form from the cooling of lava at Earth's surface, so they cannot preserve paleontological resources. Therefore, the Moraga Formation has **no paleontological sensitivity**.

Orinda Formation (Tor)

The Orinda Formation underlies parts of eastern Berkeley (Figure 4.6-5). The Orinda Formation consists of bedded or massive, pebble to boulder conglomerate, sandstone, siltstone, and mudstone (Graymer 2000). The Orinda Formation has produced significant fossil localities throughout Contra

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Costa County, yielding taxa such as cats (*Barburolfelis*), horses (*Hipparion*, *Pliohippus*), elephants (*Gomphotherium*), hares (Leporidae), tortoises (Testudines), and invertebrates (PBDB 2022; Poust 2017; Stirton 1939; UCMP 2022). Given this fossil-producing history, the Orinda Formation has **high paleontological sensitivity**.

Undivided rocks of the Great Valley Complex (Ku)

Undivided rocks of the Great Valley Complex are found in eastern Berkeley (Figure 4.6-5) and consist of brown-weathering, massively or distinctly bedded, sandstone, siltstone, or mudstone, that are late Cretaceous in age (Graymer 2000). Late Cretaceous rocks of the Great Valley Complex (some of which are assigned to named units such as the Moreno and Panoche formations) have produced fossils throughout California, including dinosaurs (Hadrosauridae), mosasaurs, sharks, ray-finned fish, bivalves, gastropods, and cephalopods (PBDB 2022; UCMP 2022). However, these rocks cannot be confidently assigned to these or any other named geologic unit of the Great Valley Complex. Therefore, undivided rocks of the Great Valley Complex have **undetermined paleontological sensitivity**.

Knoxville Formation (KJk)

The Knoxville Formation is found in small parts of eastern Berkeley (Figure 4.6-5). The Knoxville Formation consists of dark greenish-gray silt of clay shale with thin sandstone interbeds and is early Cretaceous to late Jurassic in age (Graymer 2000). Many fossil localities are known from the Knoxville Formation, including Alameda County, yielding ammonites, bivalves, gastropods, and crinoids (PBDB 2022; UCMP 2022; Woodring and Bramlette 1950). Given this fossil-producing history, the Knoxville Formation has **high paleontological sensitivity**.

Franciscan Complex: sandstone of Alcatraz terrane (Kfa), undivided sandstone (KJfs), chert (fc), and mélangé (KJfm)

The Franciscan Complex is a group of sedimentary, igneous, and metamorphic rocks that are Cretaceous to Jurassic in age and found throughout the Coast Ranges. Sedimentary rocks of the Franciscan Complex underlie parts of eastern and northern Berkeley (Figure 4.6-5). Sandstone of the Alcatraz terrane consists of dark greenish-gray, weathering to yellowish brown, massively bedded, coarse-grained sandstone with biotite grains and shale chips and is Cretaceous in age (Graymer 2000). Undivided sandstone of the Franciscan Complex consists of dark gray, medium- to coarse-grained sandstone that is slightly metamorphosed in parts. Chert of the Franciscan Complex is white, grayish-green, yellowish-orange, or brown, brittle radiolarian chert that may contain shale interbeds. Franciscan Complex mélangé consists of sheared blocks of the igneous, sedimentary, and metamorphic rocks, that comprise the entire Franciscan Complex (Graymer 2000). These blocks can range from millimeter- to kilometer-scale. Invertebrate fossils (mollusks and echinoderms) are known from the sedimentary rocks of the Franciscan Complex (PBDB 2022; UCMP 2022). Marine reptiles (Ichthyosauria, Plesiosauria) have been found at two localities in the Franciscan Complex south Alameda County (Camp 1942), which given these rocks' extensive distribution, is quite rare. Due to the rarity of scientifically significant fossils in the sedimentary rocks of the Franciscan Complex, sandstone of the Alcatraz terrane, undivided sandstone, chert, and mélangé of the Franciscan Complex have **low paleontological sensitivity**.

Great Valley Complex, keratophyre (Jsv)

Great Valley Complex keratophyre underlies much of eastern Berkeley (Figure 4.6-5). Great Valley Complex keratophyre consists of metamorphosed igneous rocks that are late Jurassic in age (Graymer 2000). Due to the intense heat and pressure required for their formation, metamorphic rocks cannot preserve paleontological resources. Therefore, keratophyre of the Great Valley Complex has **no paleontological sensitivity**.

Coast Range Ophiolite: serpentinite (sp), basalt and diabase (Jb), and silica-carbonate rock (sc)

Serpentinite, basalt and diabase, and silica-carbonate rock, of the Coast Range Ophiolite underlie parts of eastern Berkeley (Figure 4.6-5). These rocks are part of the Coast Range Ophiolite, a package of igneous and metamorphic rocks that accreted onto the North American continent in the Jurassic (Graymer 2000). Serpentinite consists of metamorphosed ultramafic igneous rocks, and silica-carbonate rock is a further-modified version of serpentinite. Due to the intense heat and pressure required for their formation, metamorphic rocks cannot preserve paleontological resources. Basalt and diabase are igneous rocks that form from the cooling of molten rock at or below Earth's surface, which also cannot preserve fossils. Therefore, serpentinite and basalt and diabase of the Coast Range Ophiolite have **no paleontological sensitivity**.

4.6.2 Regulatory Setting

a. Federal Regulations

Clean Water Act

Congress enacted the Clean Water Act (CWA), formerly the Federal Water Pollution Control Act of 1972, with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and non-point source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). NPDES permitting authority is administered by the California State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCB). Berkeley is in a watershed administered by the Bay Area RWQCB. Individual projects within Berkeley that disturb more than one acre would be required to obtain NPDES coverage under the California General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit). The Construction General Permit requires the development and implementation of a storm water pollution prevention plan describing best management practices (BMP) the discharger would use to prevent and retain stormwater runoff and to prevent soil erosion.

b. State Regulations

California Building Code

The California Building Code (CBC), Title 24, Part 2 provides building codes and standards for the design and construction of structures in California. It requires, among other things, seismically resistant construction and foundation and soil investigations prior to construction. The CBC also establishes grading requirements that apply to excavation and fill activities and requires the

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implementation of erosion control measures. The City is responsible for enforcing the 2016 CBC, or most current CBC version, within Berkeley.

The referenced codes and standards include requirements for evaluations of geologic conditions at future project sites and design and construction standards to address geologic hazards.

Geotechnical investigations are performed to identify the geologic conditions at a site and to evaluate whether a proposed project is feasible given the existing geological conditions. The Geotechnical report must be completed by a California licensed professional and must provide recommendations for foundation and structural design to address any geologic hazards. Such reports are required under the following conditions:

- New structures designed under the California Building Code in accordance with CBC 1803.5.11 and CBC 1803.5.12.
- New structures designed under the California Residential Code and located in a seismic hazard zone in accordance with CRC R401.4. This requirement does not apply to new accessory structures including utility sheds, garages and accessory dwelling units.
- New structures within a delineated earthquake fault zone:
 - A single-family wood-frame or steel-frame dwelling exceeding two stories or when any dwelling is part of a development of four or more dwellings. Public Resources Code Chapter 7.5
 - Multi-family and commercial of any kind.
 - Alterations or additions to any structure within a seismic hazard zone which exceed either 50 percent of the value of the structure or 50 percent of the existing floor area of the structure. Public Resources Code Chapter 7.8
- In accordance with CBC 1803.5.2 and CRC R401.4.1 where design values exceed the presumptive values or the classification, strength or compressibility of the soil is in doubt.
- Where deep foundations will be used, a geotechnical investigation shall be conducted in accordance with CBC 1803.5.5.
- For new structures assigned to Seismic Design Category C, D, E or F, a geotechnical investigation shall be conducted in accordance with CBC 1803.5.11

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 was passed into law following the destructive February 9, 1971 M6.6 San Fernando earthquake. The Act provides a mechanism for reducing losses from surface fault rupture on a statewide basis. The intent of the Act is to ensure public safety by prohibiting the siting of most structures for human occupancy across traces of active faults that constitute a potential hazard to structures from surface faulting or fault creep. This Act groups faults into categories of active, potentially active, and inactive. Historic and Holocene age faults are considered active, Late Quaternary and Quaternary age faults are considered potentially active, and pre-Quaternary age faults are considered inactive.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act addresses geo-seismic hazards, other than surface faulting, and applies to public buildings and most private buildings intended for human occupancy. The Seismic Hazards Mapping Act identifies and maps seismic hazard zones to assist cities and counties in preparing the safety elements of their general plans and encourages land use management policies and regulations that reduce seismic hazards. The Act mandated the preparation of maps delineating

“Liquefaction and Earthquake-Induced Landslide Zones of Required Investigation.” Berkeley contains land designated as liquefaction risk areas according to the California Geologic Survey (2003).

California Environmental Quality Act – Paleontological Resources

Paleontological resources are protected under CEQA, which states in part a project will “normally” have a significant effect on the environment if it, among other things, will disrupt or adversely affect a paleontological site except as part of a scientific study. Specifically, in Section VII(f) of Appendix G of the *CEQA Guidelines*, the Environmental Checklist Form, the question is posed thus: “Will the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.” To determine the uniqueness of a given paleontological resource, it must first be identified or recovered (i.e., salvaged). Therefore, CEQA mandates mitigation of adverse impacts, to the extent practicable, to paleontological resources.

CEQA does not define “a unique paleontological resource or site.” However, the Society of Vertebrate Paleontology (SVP) has defined a “significant paleontological resource” in the context of environmental review as follows:

Fossils and fossiliferous deposits, here defined as consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are typically to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years) (SVP 2010).

The loss of paleontological resources meeting the criteria outlined above (i.e., a significant paleontological resource) would be a significant impact under CEQA, and the CEQA lead agency is responsible for ensuring that impacts to paleontological resources are mitigated, where practicable, in compliance with CEQA and other applicable statutes.

California Public Resources Code

Section 5097.5 of the Public Resources Code states:

No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

Here “public lands” means those owned by, or under the jurisdiction of, the state or any city, county, district, authority, or public corporation, or any agency thereof. Consequently, public agencies are required to comply with Public Resources Code Section 5097.5 for their own activities, including construction and maintenance, and for permit actions (e.g., encroachment permits) undertaken by others.

c. Local Regulations

City of Berkeley General Plan

The following goal, policies, and actions in the Safety Element of the City's General Plan relate to geology and soils:

Policy S-13: Hazards Identification. Identify, avoid and minimize natural and human-caused hazards in the development of property and the regulation of land use.

Action S-13A. Maintain and make publicly available up-to-date hazards maps identifying areas subject to heightened risk from potential seismic hazards (including fault rupture, ground failure, ground shaking, and liquefaction), and fire, flood, landslide, and other hazards, such as toxic contamination and radioactive release.

Action S-13B. Improve the understanding of identified hazards and mitigation needs via area-specific studies such as microzonation studies.

Policy S-14: Land Use Regulation. Require appropriate mitigation in new development, in redevelopment/reuse, or in other applications.

Action S-14B. Require soil investigation and/or geotechnical reports in conjunction with development/redevelopment on sites within designated hazard zones such as areas with high potential for soil erosion, landslide, fault rupture, liquefaction and other soil-related constraints.

Action S-14 C. Place structural design conditions on new development to ensure that recommendations of the geotechnical/soils investigations are implemented.

Action S-14 D. Encourage owners to evaluate their buildings' vulnerability to earthquake hazards, fire, landslides, and floods and to take appropriate action to minimize risk.

Action S-14E. Develop criteria for disaster-resistant land use regulations to ensure that new construction reduces rather than increases risk of all kinds.

Policy S-15: Construction Standards. Maintain construction standards that minimize risks to human lives and property from environmental and human-caused hazards for new and existing buildings.

Action S-15A. Periodically update and adopt the California Building Standards Code with local amendments to incorporate the latest knowledge and design standards to protect people and property against known fire, flood, landslide, and seismic risks in both structural and non-structural buildings and site components.

Action S-15B. Ensure proper design and construction of hazard-resistant structures through careful plan review/approval and thorough and consistent construction inspection.

Policy S-17: Residential Seismic Retrofitting Incentive Program. Maintain existing program such as the Residential Seismic Retrofitting Incentive Program to facilitate retrofit of potentially hazardous structures.

Action S-17A. Expand public awareness of the program and take other actions to publicize and improve the effectiveness of the program.

Policy S-19: Risk Analysis. Understand and track changes in seismic risk utilizing the best available information and tools.

Action S-19A. Make maximum use of new available information to update maps to depict seismic hazards.

Action S-19B. Encourage building owners (including public sector agencies and local jurisdictions) to install instruments to record earthquake shaking in conjunction with the State's Strong Motion Instrumentation Program.

City of Berkeley Municipal Code

Chapter 21, Section 40, Grading, erosion and sediment control requirements of the Berkeley Municipal Code (BMC) requires projects to comply with all grading, erosion and sediment control regulations on file in the Public Works Department.

4.6.3 Impact Analysis

a. Methodology and Significance Thresholds

In accordance with Appendix G of the *CEQA Guidelines*, the proposed HEU would result in a significant impact if it would:

1. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
 - I. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault
 - II. Strong seismic ground shaking
 - III. Seismic-related ground failure, including liquefaction
 - IV. Landslides;
2. Result in substantial soil erosion or the loss of topsoil;
3. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
4. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property;
5. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater; or
6. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

b. Project Impacts and Mitigation Measures

Threshold 1: Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides?

Threshold 3: Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Impact GEO-1 A PORTION OF BERKELEY IS LOCATED WITHIN THE HAYWARD FAULT ZONE. DEVELOPMENT FACILITATED BY THE PROPOSED HEU IS SUBJECT TO SEISMICALLY-INDUCED GROUND SHAKING AND OTHER SEISMIC HAZARDS, INCLUDING LIQUEFACTION AND LANDSLIDES, WHICH COULD DAMAGE STRUCTURES AND RESULT IN LOSS OF PROPERTY AND RISK TO HUMAN HEALTH AND SAFETY. HOWEVER, IMPLEMENTATION OF STATE-MANDATED BUILDING STANDARDS AND COMPLIANCE WITH THE ALQUIST-PRIOLO ACT EARTHQUAKE FAULT ACT, THE CBC, THE BERKELEY GENERAL PLAN'S POLICIES AND ACTIONS, AND THE BMC WOULD REDUCE IMPACTS TO A LESS THAN SIGNIFICANT LEVEL.

Ground Rupture and Seismic Ground Shaking

The proposed HEU involves zoning modifications in the R-1, R-2, and R-2A districts, which are in the area near the Hayward fault. The area is currently developed and populated. Full build-out under the proposed HEU would increase the population of Berkeley, structural development, and infrastructure that would be exposed to these hazards. However, several applicable laws, regulations, and policies would reduce hazards related to rupture. Under the Alquist-Priolo Earthquake Fault Zone Act, construction of development facilitated under the project would be restricted within 50 feet of an identified fault. Although the 50 feet restriction would not completely remove development from potential damage from a major seismic event, it would minimize potential for future development to receive the most direct damage potentially associated with the major seismic event (surface rupture).

Also as previously mentioned, this fault system has been assessed to have a 31 percent probability of generating an earthquake with a magnitude greater than or equal to 6.7 on the Mercalli Richter Scale in the next 20 years (City of Berkeley 2014). A seismic event with magnitude 6.7 or greater would have potential to damage structures and result in loss of property and risk to human health and safety. However, several applicable laws, regulations, and policies would reduce hazards related to ground shaking. New development that would occur within Berkeley would be required to conform to the CBC (as amended at the time of permit approval) as required by law. The City of Berkeley has adopted the CBC by reference pursuant to Title 19, Chapter 28 of the BMC. As described in the *Regulatory Setting* section above, the City of Berkeley Building Codes includes requirements for foundation and structural design to resist seismic hazards. In addition, the Building Codes outlines specific instances of when geotechnical investigations are required based on soil conditions and proposed construction methods, including for projects within Earthquake Fault Zones or Seismic Hazard Zones. New projects would be reviewed by the Building and Safety Division during the normal plan review process to confirm that the necessary geotechnical investigations are completed and that the structural design of the project is consistent with design measures recommended in the Geological report prior to issuance of required building permits. The City would therefore ensure that development would be designed and constructed consistent with

the current City of Berkeley Building Codes and with the findings and recommendations of the site-specific geotechnical reports to effectively minimize or avoid potential hazards associated with redevelopment and/or new building construction. Further, the proposed HEU would promote infill development, which may involve replacing older buildings subject to seismic damage with newer structures built to current seismic standards that could better withstand the adverse effects of strong ground shaking. Proper engineering, including compliance with the City of Berkeley Building Codes, would minimize the risk to life and property associated with potential seismic activity in the area. Impacts related to fault rupture and seismic shaking would be less than significant.

Liquefaction

As mentioned, liquefaction occurs when saturated or partially saturated and unconsolidated soils lose strength in response to a stress, typically on earthquake. This phenomenon can result in damage to infrastructure and foundations. Similarly, seismically-induced settlement, or the potential for the ground surface to lower/settle, is an existing geologic hazard that typically occurs where loose- to medium-density unconsolidated soils are located above groundwater; settlement can also be induced or exacerbated by the improper placement of artificial fill, or the placement of structures on soils or bedrock with differential settlement rates. The majority of the inventory sites, R-1, R-1A, R-2, R-2A, and MU-R districts, and Southside area, are in areas identified as having “Low” to “Moderate” liquefaction potential. The western-most portion of Berkeley does contain a small area with “High” liquefaction potential; however, no proposed inventory sites and the R-1, R-1A, R-2, and R-2A districts and Southside do not overlay the “High” liquefaction zones. A small portion of the MU-R district is within a “High” liquefaction zone. Full build-out of the proposed project would increase population, structural development, and infrastructure that would be exposed to these hazards. However, as described above, proper engineering and required compliance with CBC and other City requirements would minimize the risk to life or property associated with liquefaction hazards. This impact would be less than significant.

Landslides

Landslide risk throughout the majority of Berkeley is low; however, localized areas of instability exist throughout the Berkely Hills in the eastern portion of Berkeley as shown on Figure 4.6-4. Therefore, the increase in development potential allowed by the proposed HEU in these areas could result in impacts related to landslides. As described above, the Public Resources Code (PRC) Section 2690-2699.6, *Seismic Hazards Mapping Act* and CBC requirements as adopted in the BMC would require site-specific geotechnical investigations for individual development projects within the landslide-susceptible portions of Berkeley to identify the degree of potential hazards, design parameters for the project based on the hazard, and describe appropriate design measures to address hazards. Future development in Berkeley would be required to adhere to recommended design measures to ensure hazards related are adequately mitigated. Moreover, the proposed HEU could facilitate projects that would replace older buildings subject to seismic damage with newer structures built to current seismic standards that could better withstand the adverse effects associated with unstable soils and liquefaction. Compliance with the City of Berkeley Building Codes, PRC Section 2690-2699.6, and the City’s Municipal Code would ensure that potential impacts associated with landslides would be less than significant.

Unstable Soils

Seismic hazards in Berkeley also include the potential for unstable soils to result in damage to existing or proposed infrastructure, and/or to introduce potential hazards to human health and

safety. Unstable soils may include any materials not capable of supporting a selected land use. The City requires site-specific geotechnical evaluations for individual development on steep slopes and unstable soils in accordance with the CBC. Compliance with CBC and other standards discussed in this section and under Impact GEO-2 would minimize potential adverse effects.

In addition, projects that require discretionary approval would be reviewed for their compliance with General Plan policies, including *Policy S-13A: Hazards Identification and Policy S-14B: Land Use Regulation* of the City's General Plan Disaster Preparedness and Safety Element. Future development in Berkeley in areas with identified hazards would be required to appropriately address and be designed to withstand associated hazards to the maximum extent feasible. In general, the proposed project could facilitate projects that would replace older buildings subject to seismic damage with newer structures built to current seismic standards that could better withstand the adverse effects associated with unstable soils.

Summary

Future development under the proposed HEU would be subject to the policies and actions of the Berkeley General Plan (listed in the Regulatory Setting) which would minimize the risks to lives and property due to seismic and geologic hazards. Compliance with the Alquist-Priolo Act Earthquake Fault Act, the CBC, PRC Section 2690-2699.6, General Plan policies, and the City's Municipal Code would ensure that potential impacts associated with strong seismic groundshaking, unstable soils, and potential liquefaction and landslides would be less than significant.

Mitigation Measures

Impacts would be less than significant. No mitigation measures are required.

Threshold 2: Would the project result in substantial soil erosion or the loss of topsoil?
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Impact GEO-2 WITH ADHERENCE TO APPLICABLE LAWS AND REGULATIONS, THE PROPOSED PROJECT WOULD NOT RESULT IN SUBSTANTIAL SOIL EROSION OR THE LOSS OF TOPSOIL. THEREFORE, THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Soil types in Berkeley are shown in Figure 4.6-2. Table 4.6-1 lists soil characteristics related to water holding capacity, permeability, shrink-swell potential, rate of surface runoff, and erosion hazard. Berkeley soils are characterized by having "moderate" or a "high" potential for erosion-related hazards. Development facilitated by the proposed HEU would involve construction activities such as stockpiling, grading, excavation, paving, and other earth-disturbing activities that could result in erosion and loss of topsoil, particularly if soils are exposed to wind or stormwater during construction.

New development in Berkeley would be required to comply with the SWRCB's General Permit for Discharges of Stormwater Associated with Construction Activity (Construction General Permit Order 2009-0009-DWQ). Additionally, construction activities that disturb one or more acres of land surface are subject to the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2012-0006-DWQ) adopted by the SWRCB. Compliance with the NPDES permit requires each qualifying development project to file a Notice of Intent with the SWRCB. Permit conditions require the development of a stormwater pollution prevention plan, which must describe the site, the facility, erosion and sediment controls, runoff water quality monitoring, means of waste disposal, implementation of approved local plans, control of construction sediment and erosion control measures, maintenance responsibilities, and non-

stormwater management controls. Inspection of construction sites before and after storms is also required to identify stormwater discharge from the construction activity and to identify and implement erosion controls, where necessary. Compliance with the Construction General Permit is reinforced through the City's Municipal Code in Chapter 21, Section 40, which requires applicants to comply with grading, erosion and sedimentation control plan regulations on file with the Public Works Department. Further, BMC Section 21.40.270 requires subdivision projects to comply with grading, erosion and sediment control regulations on file with the Public Works Department.

Required compliance with aforementioned policies, NPDES permit, and other regulations would ensure that impacts associated with substantial soil erosion or loss of topsoil would be less than significant.

Mitigation Measures

This impact would be less than significant. No mitigation measures are required.

Threshold 4: Would the project be located on expansive soil, as defined in Table 1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Impact GEO-3 PORTIONS OF BERKELEY ARE LOCATED ON EXPANSIVE SOILS. HOWEVER, WITH REQUIRED IMPLEMENTATION OF STANDARD ENGINEERING PRACTICES, IMPACTS ASSOCIATED WITH UNSTABLE OR EXPANSIVE SOILS WOULD BE LESS THAN SIGNIFICANT.

Figure 4.6-2 shows the soil types in Berkeley which include 12 different soil types. As indicated in Table 4.6-1, many of the soil types within Berkeley have "moderate" to "high" potential for shrink-swell behavior, or expansiveness. The presence of expansive soils throughout Berkeley would make it necessary to conduct geologic investigations for all future development projects and ensure that soils for foundation support are sound. Building on unsuitable soils would have the potential to create future subsidence or collapse issues that could result in the settlement of proposed project infrastructure, and/or the disruption of utility lines and other services.

Compliance with existing State and local laws and regulations, such as the CBC and General Plan Action S-14B, would ensure that the impacts from development associated with implementation of the proposed project on expansive soil are minimized by requiring the submittal and review of detailed soils and/or geologic reports prior to construction. Such evaluations must contain recommendations for ground preparation and earthwork specific to the site, which then become an integral part of the construction design. The CBC includes requirements to address soil-related hazards. Typical measures to treat hazardous soil conditions involve removal of soil or fill materials, proper fill selection, and compaction. In cases where soil remediation is not feasible, the CBC requires structural reinforcement of foundations to resist the forces of expansive soils. Additionally, Berkeley Building Codes and other City requirements require site-specific investigations for projects where there are soil-related hazards and implementation of design recommendations in the investigations. Compliance with Berkeley Building Codes and other City requirements would ensure that potential impacts associated with expansive soils would be minimized or avoided.

With adherence to CBC requirements and General Plan Action S-14B, potential impacts associated with expansive soils that could occur with implementation of future development under the proposed project would be minimized or avoided because specified studies and design considerations would be employed as relevant and feasible at the individual project level. Impacts associated with expansive soils would be less than significant.

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Mitigation Measures

This impact would be less than significant. No mitigation measures are required.

Threshold 5: Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

Impact GEO-4 THE PROPOSED PROJECT WOULD NOT INCLUDE SEPTIC TANKS OR ALTERNATIVE WASTEWATER DISPOSAL SYSTEMS. NO IMPACT WOULD OCCUR.

Future development under the proposed HEU site would be served by the East Bay Municipal Utilities District, which is responsible for wastewater collection, treatment, and disposal of wastewater from all residential and commercial sources within its sewer service area. The proposed Project would not include septic tanks or alternative wastewater disposal systems; therefore, there is no potential for adverse effects due to soil incompatibility. No impact would occur.

Mitigation Measures

This impact would be less than significant. No mitigation measures are required.

Threshold 6: Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Impact GEO-5 DEVELOPMENT FACILITATED BY THE PROPOSED HEU HAS THE POTENTIAL TO IMPACT PALEONTOLOGICAL RESOURCES. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

Rincon assessed the paleontological sensitivity of each of the 18 geologic units underlying Berkeley (Figure 4.6-5) and assigned a paleontological sensitivity to each unit (Table 4.6-2). The geologic units assigned a high sensitivity are shown on Figure 4.6-6; these include Pleistocene alluvial fan and fluvial deposits, Orinda Formation and Knoxville Formation. Ground disturbance in previously undisturbed portions of geologic units with high paleontological sensitivity may result in significant impacts to paleontological resources. However, potentially significant impacts to paleontological resources can only be determined once a specific project has been proposed because the effects are highly dependent on both the individual project site conditions and the characteristics of the proposed ground-disturbing activity. Ground disturbing activities associated with construction facilitated by this project, particularly in areas that have not previously been developed with urban uses, have the potential to damage or destroy paleontological resources that may be present on or below the ground surface in areas of high paleontological sensitivity. Consequently, damage to or destruction of fossils could occur due to development under the proposed HEU. This impact is potentially significant.

Table 4.6-2 Paleontological Sensitivity of Geologic Units in Berkeley

Geologic Unit	Age	Paleontological Sensitivity (SVP 2010)
Artificial fill (af)	Holocene	None
Artificial stream channels (Qhasc)	Holocene	Low
Holocene basin deposits (Qhb)	Holocene	Low
Holocene natural levee deposits (Qhl)	Holocene	Low
Holocene alluvial fan and fluvial deposits (Qhaf)	Holocene	Low
Holocene beach ridge deposits (Qhbr)	Holocene	Low
Pleistocene alluvial fan and fluvial deposits (Qpaf)	Pleistocene	High
Moraga Formation, igneous rocks (Tmb)	Miocene	None
Orinda Formation (Tor)	Miocene	High
Undivided rocks of Great Valley Complex (Ku)	Cretaceous	Undetermined
Knoxville Formation (Kjk)	Cretaceous to Jurassic	High
Franciscan Complex, sandstone of Alcatraz terrane (Kfa)	Cretaceous	Low
Franciscan Complex, undivided sandstone (Kfs)	Cretaceous to Jurassic	Low
Franciscan Complex, chert (fc)	Cretaceous to Jurassic	Low
Franciscan Complex, mélangé (KJfm)	Cretaceous to Jurassic	Low
Coast Range Ophiolite, serpentinite (sp)	Jurassic	None
Coast Range Ophiolite, basalt and diabase (Jb)	Jurassic	None
Coast Range Ophiolite, silica-carbonate rock (sc)	Jurassic	None

Mitigation Measures

The following mitigation measure is required.

GEO-1 Protection of Paleontological Resources

If ground disturbance below the level of prior disturbance and into native soils is proposed to occur in areas mapped as Pleistocene alluvial fan and fluvial deposits (Qpaf), Orinda Formation (Tor), or Knoxville Formation (Kjk), then the City shall require the following to be implemented:

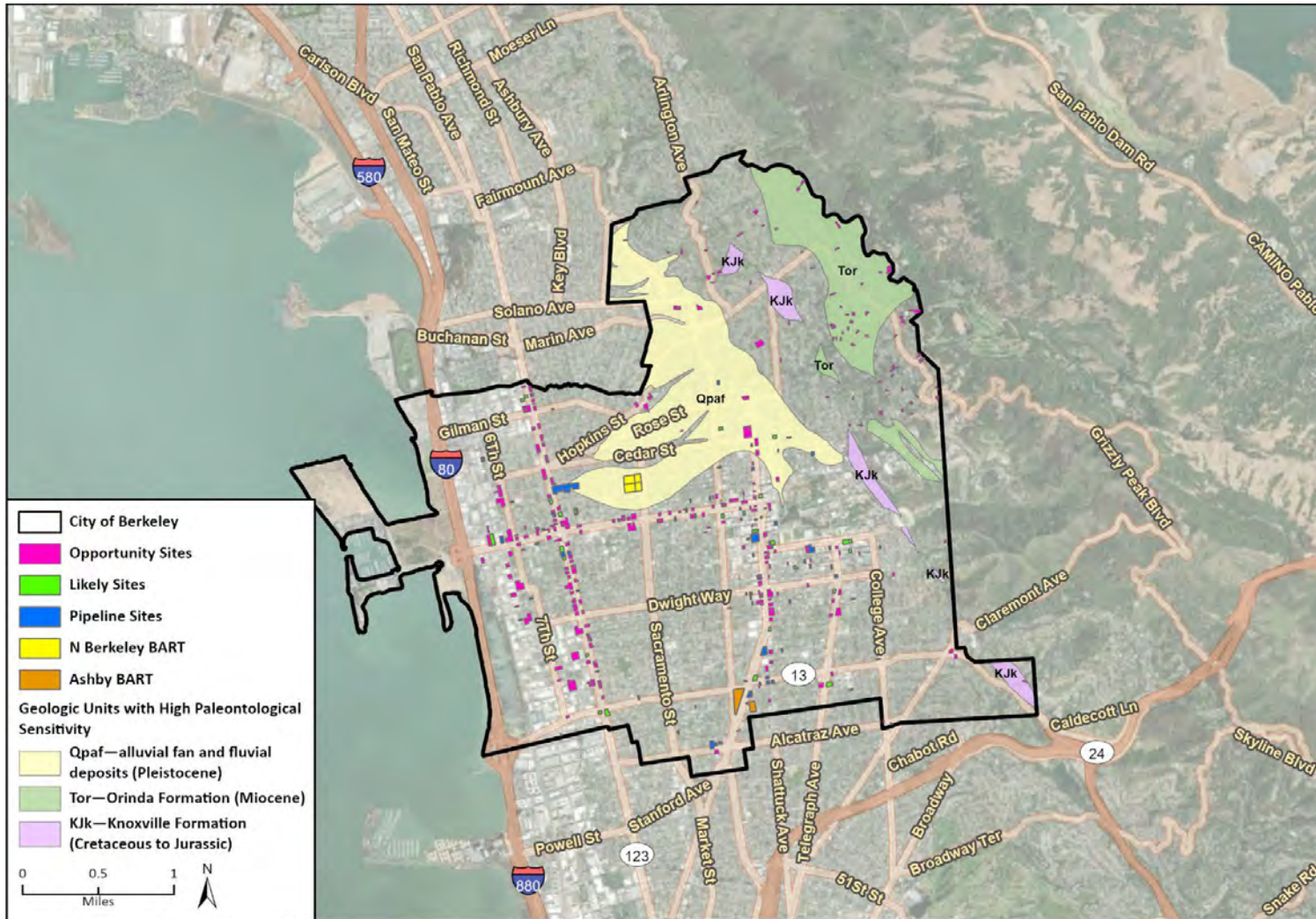
Retention of Qualified Professional Paleontologist. Prior to initial ground disturbance, the project applicant shall retain a Qualified Professional Paleontologist, as defined by Society of Vertebrate Paleontology (SVP) (2010), to determine the project’s potential to significantly impact paleontological resources according to SVP (2010) standards.

If underlying formations are found to have a high potential for paleontological resources, the Qualified Professional Paleontologist shall create a Paleontological Mitigation and Monitoring Program, which will be approved by the City and contain the following elements:

Paleontological Worker Environmental Awareness Program (WEAP). Prior to the start of construction, the Qualified Professional Paleontologist or their designee shall conduct a paleontological Worker Environmental Awareness Program (WEAP) training for construction personnel regarding the appearance of fossils and procedures for notifying paleontological staff should fossils be discovered by construction staff.

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Figure 4.6-6 Geologic Units with High Paleontological Sensitivity



Imagery provided by Microsoft Bing and its licensors © 2022
 Grayner "Geologic Map and Map Database of the Oakland Metropolitan Area, Alameda, Contra Costa, and San Francisco Counties, California," 2000.

21-10847 Rms & Assoc, Ricky Hung Elmsl

Paleontological Monitoring. Full-time paleontological monitoring shall be conducted during ground disturbing construction activities (i.e., grading, trenching, foundation work) in sediments assigned a high paleontological sensitivity. Paleontological monitoring shall be conducted by a qualified Paleontological Resources Monitor, as defined by the SVP (2010). The duration and timing of the monitoring will be determined by the Qualified Professional Paleontologist based on the observation of the geologic setting from initial ground disturbance, and subject to the review and approval by the City. If the Qualified Professional Paleontologist determines that full-time monitoring is no longer warranted, based on the specific geologic conditions once the full depth of excavations has been reached, they may recommend that monitoring be reduced to periodic spot-checking or ceased entirely. Monitoring shall be reinstated if any new ground disturbances are required, and reduction or suspension shall be reconsidered by the Qualified Professional Paleontologist at that time. In the event of a fossil discovery by the paleontological monitor or construction personnel, all work in the immediate vicinity of the find shall cease. A Qualified Professional Paleontologist shall evaluate the find before restarting construction activity in the area. If it is determined that the fossil(s) is (are) scientifically significant, the Qualified Professional Paleontologist shall complete the following conditions to mitigate impacts to significant fossil resources.

Upon completion of ground disturbing activity (and curation of fossils if necessary) the Qualified Professional Paleontologist shall prepare a final report describing the results of the paleontological monitoring efforts associated with the project. The report shall include a summary of the field and laboratory methods, an overview of the project geology and paleontology, a list of taxa recovered (if any), an analysis of fossils recovered (if any) and their scientific significance, and recommendations. The report shall be submitted to the City. If the monitoring efforts produced fossils, then a copy of the report shall also be submitted to the designated museum repository.

Significance After Mitigation

Implementation of Mitigation Measure GEO-1 would ensure procedures are in place to avoid destruction of paleontological resources. Therefore, impacts would be less than significant with mitigation.

c. Cumulative Impacts

All development in Berkeley is subject to geological hazards related to seismic activity, including strong ground shaking. Cumulative development in Berkeley as described in Section 3, *Environmental Setting*, would gradually increase population and therefore gradually increase the number of people exposed to potential geological hazards, including effects associated with seismic events such as ground rupture and strong shaking. However, conformance with the current CBC and City's General Plan policies and the other laws and regulations, would ensure that project-specific impacts associated with geology and soils would be less than significant; thereby reducing the potential cumulative impact associated with any single development project to less than significant. Development under the proposed HEU could also result in soil erosion or the loss of topsoil which could result in cumulative impacts when combined with other development in Berkeley and the region that might also cause erosion. However, compliance with existing regulations would reduce potential erosion impacts associated with new development. Potential impacts associated with geology and soils would not be cumulatively considerable, and cumulative impacts related to geologic hazards would be less than significant.

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Cumulative development in Berkeley would disturb areas that may contain paleontological resources. It is anticipated that potential impacts associated with individual development projects would be addressed on a case-by-case basis and would be subject to local and state regulations regarding the protection of such resources. With compliance with existing policies and regulations, future development in Berkeley would be required to avoid or mitigate the loss of these resources. The proposed HEU's impacts can be reduced to below a level of significance implementation of Mitigation Measure GEO-1 described above. Therefore, significant cumulative paleontological resource impacts would not occur.

4.7 Greenhouse Gas Emissions

This section analyzes impacts to greenhouse gas (GHG) emissions, including the potential for development under the proposed HEU to generate greenhouse gas (GHG) emissions in excess of standards or for the proposed HEU to conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

4.7.1 Setting

a. Climate Change and Greenhouse Gases

Climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period. The term "climate change" is often used interchangeably with the term "global warming," but climate change is preferred because it conveys that other changes are happening in addition to rising temperatures. The baseline against which these changes are measured originates in historical records that identify temperature changes that occurred in the past, such as during previous ice ages. The global climate is changing continuously, as evidenced in the geologic record which indicates repeated episodes of substantial warming and cooling. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed acceleration in the rate of warming over the past 150 years.

The United Nations Intergovernmental Panel on Climate Change (IPCC) expressed that the rise and continued growth of atmospheric CO₂ concentrations is unequivocally due to human activities in the IPCC's Sixth Assessment Report (2021). It is estimated that between the period of 1850 through 2019, that a total of 2,390 gigatonnes of anthropogenic CO₂ was emitted (IPCC 2021). It is likely that anthropogenic activities have increased the global surface temperature by approximately 1.07 degrees Celsius between the years 2010 through 2019 (IPCC 2021). Furthermore, since the late 1700s, estimated concentrations of CO₂, methane, and nitrous oxide in the atmosphere have increased by over 43 percent, 156 percent, and 17 percent, respectively, primarily due to human activity (U.S. EPA 2021a). Emissions resulting from human activities are thereby contributing to an average increase in Earth's temperature.

Gases that absorb and re-emit infrared radiation in the atmosphere are called GHGs. The gases widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO₂), methane (CH₄), nitrous oxides (N₂O), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere, and natural processes, such as oceanic evaporation, largely determine its atmospheric concentrations.

GHGs are emitted by natural processes and human activities. Of these gases, CO₂ and CH₄ are emitted in the greatest quantities from human activities. Emissions of CO₂ are usually by-products of fossil fuel combustion, and CH₄ results from off-gassing associated with agricultural practices and landfills. Human-made GHGs, many of which have greater heat-absorption potential than CO₂, include fluorinated gases and SF₆ (U.S. EPA 2021a).

Different types of GHGs have varying global warming potentials (GWP). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO₂) is used to relate the amount of heat absorbed to the amount of the gas emitted, referred to as “carbon dioxide equivalent” (CO₂e), which is the amount of GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of one. By contrast, methane has a GWP of 30, meaning its global warming effect is 30 times greater than CO₂ on a molecule per molecule basis (IPCC 2021).¹

The accumulation of GHGs in the atmosphere regulates the earth’s temperature. Without the natural heat-trapping effect of GHGs, the earth’s surface would be about 33 degrees Celsius (°C) cooler (World Meteorological Organization 2022). GHG emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation, are believed to have elevated the concentration of these gases in the atmosphere beyond the level of concentrations that occur naturally.

b. Global Emissions Inventory

In 2015, worldwide anthropogenic total 47,000 million MT of CO₂e, which is a 43 percent increase from 1990 GHG levels (U.S. EPA 2021b). Specifically, 34,522 million metric tons (MMT) of CO₂e of CO₂, 8,241 MMT of CO₂e of CH₄, 2,997 MMT of CO₂e of N₂O, and 1,001 MMT of CO₂e of fluorinated gases were emitted in 2015. The largest source of GHG emissions were energy production and use (includes fuels used by vehicles and buildings), which accounted for 75 percent of the global GHG emissions. Agriculture uses and industrial processes contributed 12 percent and six percent, respectively. Waste sources contributed for three percent and two percent was due to international transportation sources. These sources account for approximately 98 percent because there was a net sink² of two percent from land-use change and forestry. (U.S. EPA 2021b).

United States Emissions Inventory

Total U.S. GHG emissions were 6,558 MMT of CO₂e in 2019. Emissions decreased by 1.7 percent from 2018 to 2019; since 1990, total U.S. emissions have increased by an average annual rate of 0.06 percent for a total increase of 1.8 percent between 1990 and 2019. The decrease from 2018 to 2019 reflects the combined influences of several long-term trends, including population changes, economic growth, energy market shifts, technological changes such as improvements in energy efficiency, and decrease carbon intensity of energy fuel choices. In 2019, the industrial and transportation end-use sectors accounted for 30 percent and 29 percent, respectively, of nationwide GHG emissions while the commercial and residential end-use sectors accounted for 16 percent and 15 percent of nationwide GHG emissions, respectively, with electricity emissions distributed among the various sectors (U.S. EPA 2021c).

California Emissions Inventory

Based on the CARB California Greenhouse Gas Inventory for 2000-2019, California produced 418.2 MMT of CO₂e in 2019, which is 7.2 MMT of CO₂e lower than 2018 levels. The major source of GHG emissions in California is the transportation sector, which comprises 40 percent of the state’s total GHG emissions. The industrial sector is the second largest source, comprising 21 percent of the

¹ The Intergovernmental Panel on Climate Change’s (2021) *Sixth Assessment Report* determined that methane has a GWP of 30. However, the 2017 Climate Change Scoping Plan published by the California Air Resources Board uses a GWP of 25 for methane, consistent with the Intergovernmental Panel on Climate Change’s (2007) *Fourth Assessment Report*. Therefore, this analysis utilizes a GWPs from the Fourth Assessment Report.

² Net sink refers to the taking in of more carbon than can be emitted.

state's GHG emissions while electric power accounts for approximately 14 percent (CARB 2021). The magnitude of California's total GHG emissions is due in part to its large size and large population compared to other states. However, a factor that reduces California's per capita fuel use and GHG emissions as compared to other states is its relatively mild climate. In 2016, the State of California achieved its 2020 GHG emission reduction target of reducing emissions to 1990 levels as emissions fell below 431 MMT of CO₂e (CARB 2021). The annual 2030 statewide target emissions level is 260 MMT of CO₂e (CARB 2017).

Local Emissions Inventory

Based on the Climate Action Plan Report presented by staff to the Berkeley City Council on February 8, 2022, Berkeley's GHG emissions totaled approximately 540,000 metric tons in 2019, approximately 26 percent below 2000 levels. The major source of GHGs in Berkeley is associated with transportation, contributing approximately 60 percent. Residential natural gas and commercial natural gas is the second largest source, contributing approximately 32 percent to the City's GHG emissions. The remaining 8 percent is made up by other sources such as commercial and residential electricity, landfill waste, municipal buildings, and water consumption and wastewater (City of Berkeley 2022).

c. Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through potential impacts related to future air temperatures and precipitation patterns. Each of the past three decades has been warmer than all the previous decades in the instrumental record, 2013 through 2021 all rank among the ten-warmest years on record. It also marked the 45th consecutive year (since 1977) with global temperatures rising above the 20th century average (NOAA 2022). Furthermore, several independently analyzed data records of global and regional Land-Surface Air Temperature (LSAT) obtained from station observations jointly indicate that LSAT and sea surface temperatures have increased.

According to *California's Fourth Climate Change Assessment*, statewide temperatures from 1986 to 2016 were approximately 0.6 to 1.1°C higher than those recorded from 1901 to 1960. Potential impacts of climate change in California may include reduced water supply from snowpack, sea level rise, more extreme heat days per year, more large forest fires, and more drought years (State of California 2018). In addition to statewide projections, *California's Fourth Climate Change Assessment* includes regional reports that summarize climate impacts and adaptation solutions for nine regions of the state and regionally specific climate change case studies (State of California 2018). However, while there is growing scientific consensus about the possible effects of climate change at a global and statewide level, current scientific modeling tools are unable to predict what local impacts may occur with a similar degree of accuracy. A summary follows of some of the potential effects that could be experienced in California as a result of climate change.

Air Quality and Wildfires

Scientists project that the annual average maximum daily temperatures in California could rise by 2.4 to 3.2°C (36.32°F to 37.76°F) in the next 50 years and by 3.1 to 4.9°C (37.58°F to 40.82°F) in the next century (State of California 2018). Higher temperatures are conducive to air pollution formation, and rising temperatures could therefore result in worsened air quality in California. As a result, climate change may increase the concentration of ground-level ozone, but the magnitude of the effect, and therefore its indirect effects, are uncertain. In addition, as temperatures have

increased in recent years, the area burned by wildfires throughout the state has increased, and wildfires have occurred at higher elevations in the Sierra Nevada Mountains (State of California 2018). If higher temperatures continue to be accompanied by an increase in the incidence and extent of large wildfires, air quality could worsen. Severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state. However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains could tend to temporarily clear the air of particulate pollution, which would effectively reduce the number of large wildfires and thereby ameliorate the pollution associated with them (California Natural Resources Agency 2009).

Water Supply

Analysis of paleoclimatic data (such as tree-ring reconstructions of stream flow and precipitation) indicates a history of naturally and widely varying hydrologic conditions in California and the west, including a pattern of recurring and extended droughts. Uncertainty remains with respect to the overall impact of climate change on future precipitation trends and water supplies in California. Year-to-year variability in statewide precipitation levels has increased since 1980, meaning that wet and dry precipitation extremes have become more common (California Department of Water Resources 2018). This uncertainty regarding future precipitation trends complicates the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood. The average early spring snowpack in the western U.S., including the Sierra Nevada Mountains, decreased by about 10 percent during the last century. During the same period, sea level rose over 0.15 meter along the central and southern California coasts (State of California 2018). The Sierra snowpack provides the majority of California's water supply as snow that accumulates during wet winters is released slowly during the dry months of spring and summer. A warmer climate is predicted to reduce the fraction of precipitation that falls as snow and the amount of snowfall at lower elevations, thereby reducing the total snowpack (State of California 2018). Projections indicate that average spring snowpack in the Sierra Nevada and other mountain catchments in central and northern California will decline by approximately 66 percent from its historical average by 2050 (State of California 2018).

Hydrology and Sea Level Rise

Climate change could affect the intensity and frequency of storms and flooding (State of California 2018). Furthermore, climate change could induce substantial sea level rise in the coming century. Rising sea level increases the likelihood of and risk from flooding. The rate of increase of global mean sea levels between 1993 to 2020, observed by satellites, is approximately 3.3 millimeters per year, double the twentieth century trend of 1.6 millimeters per year (World Meteorological Organization 2013; National Aeronautics and Space Administration 2020). Global mean sea levels in 2013 were about 0.23 meter higher than those of 1880 (National Aeronautics and Space Administration 2020). Sea levels are rising faster now than in the previous two millennia, and the rise will probably accelerate, even with robust GHG emission control measures. The most recent IPCC report predicts a mean sea level rise ranging between 0.25 to 0 1.01 meters by 2100 with the sea level ranges dependent on a low, intermediate, or high GHG emissions scenario (IPCC 2021). A rise in sea levels could erode 31 to 67 percent of southern California beaches and cause flooding of approximately 370 miles of coastal highways during 100-year storm events. This would also jeopardize California's water supply due to saltwater intrusion and induce groundwater flooding and/or exposure of buried infrastructure (State of California 2018). Furthermore, increased storm

intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

Agriculture

California has an over \$50 billion annual agricultural industry that produces over a third of the country's vegetables and two-thirds of the country's fruits and nuts (California Department of Food and Agriculture 2020). Higher CO₂ levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, certain regions of agricultural production could experience water shortages of up to 16 percent, which would increase water demand as hotter conditions lead to the loss of soil moisture. In addition, crop yield could be threatened by water-induced stress and extreme heat waves, and plants may be susceptible to new and changing pest and disease outbreaks (State of California 2018). Temperature increases could also change the time of year certain crops, such as wine grapes, bloom or ripen, and thereby affect their quality (California Climate Change Center 2006).

Ecosystems

Climate change and the potential resultant changes in weather patterns could have ecological effects on the global and local scales. Soil moisture is likely to decline in many regions as a result of higher temperatures, and intense rainstorms are likely to become more frequent. Rising temperatures could have four major impacts on plants and animals: timing of ecological events; geographic distribution and range of species; species composition and the incidence of nonnative species within communities; and ecosystem processes, such as carbon cycling and storage (Parmesan 2006; State of California 2018).

4.7.2 Regulatory Setting

a. Federal Regulations

Federal GHG Emissions Regulation

The U.S. Supreme Court determined in *Massachusetts et al. v. Environmental Protection Agency et al.* ([2007] 549 U.S. 05-1120) that the USEPA has the authority to regulate motor vehicle GHG emissions under the federal Clean Air Act. The USEPA issued a Final Rule for mandatory reporting of GHG emissions in October 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufacturers of heavy-duty and off-road vehicles and vehicle engines and requires annual reporting of emissions. In 2012, the USEPA issued a Final Rule that established the GHG permitting thresholds that determine when Clean Air Act permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities.

In *Utility Air Regulatory Group v. Environmental Protection Agency* (134 Supreme Court 2427 [2014]), the U.S. Supreme Court held the USEPA may not treat GHGs as an air pollutant for purposes of determining whether a source can be considered a major source required to obtain a Prevention of Significant Deterioration or Title V permit. The Court also held that Prevention of Significant Deterioration permits otherwise required based on emissions of other pollutants may continue to require limitations on GHG emissions based on the application of Best Available Control Technology.

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In the most recent *West Virginia v. Environmental Protection Agency* (20-1530 [2022]), the U.S. Supreme Court held that the USEPA may not regulate emissions from coal- and gas-fired power plants using generation shifting³ that was implemented as part of the 2015 Clean Power Plan. The Court held that the USEPA is not permitted, under the Clean Air Act, to implement regulations for power plants that were allowed under the Clean Power Plan. However, the Court upheld EPA's authority to continue regulating greenhouse gas emissions from the power sector (Supreme Court 2021).

Safer Affordable Fuel-Efficient Vehicle Rule

In April 2020, EPA and NHTSA issued the Safer Affordable Fuel Efficient (SAFE) Vehicles Rule, which required automakers to improve fuel efficiency 1.5 percent annually from model years 2021 through 2026. The SAFE rule also opened State emission programs, and withdrew the waiver for California's Advanced Clean Cars Program, Zero Emission Vehicle Program (ZEV), and Low-Emission Vehicle Program (LEV). In response, California and other states sued in federal court to challenge the final action on preemption of state vehicle standards. In April 2021, the Biden administration, USEPA, and Department of Transportation began the process of dropping limitations on California's waiver. In December 2021, NHTSA issued a repealing of the SAFE Vehicle Rule Part One. In March 2022, USEPA did the same, thereby reinstating California's waiver and the ability of other states to adopt the California standards (Center for Climate and Energy Solutions [C2ES] 2022).

b. State Regulations

California's Advanced Clean Cars program (Assembly Bill 1493)

Assembly Bill (AB) 1493 (2002), California's Advanced Clean Cars program (referred to as "Pavley"), requires CARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." On June 30, 2009, the U.S. EPA granted the waiver of Clean Air Act preemption to California for its GHG emission standards for motor vehicles, beginning with the 2009 model year, which allows California to implement more stringent vehicle emission standards than those promulgated by the U.S. EPA. Pavley I regulates model years from 2009 to 2016 and Pavley II, now referred to as "LEV (Low Emission Vehicle) III GHG," regulates model years from 2017 to 2025. The Advanced Clean Cars program coordinates the goals of the LEV, Zero Emissions Vehicles (ZEV), and Clean Fuels Outlet programs and would provide major reductions in GHG emissions. By 2025, the rules will be fully implemented, and new automobiles will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions from their model year 2016 levels (CARB 2011).

California Global Warming Solutions Act of 2006

California's major initiative for reducing GHG emissions is outlined in AB 32, the "California Global Warming Solutions Act of 2006," which was signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 and requires CARB to prepare a Scoping Plan that outlines the main State strategies for reducing GHGs to meet the 2020 deadline. AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions. Based on this guidance, CARB approved a 1990 statewide GHG level and 2020 limit of 427 MMT CO₂e. The Scoping Plan was approved by CARB on December 11, 2008 and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste,

³ Switching electricity generation from fossil fuels to clean sources.

among other measures. Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) have been adopted since approval of the Scoping Plan.

Senate Bill (SB) 32, signed into law on September 8, 2016, extends AB 32 by requiring the State to further reduce GHGs to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). On December 14, 2017, CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, as well as implementation of recently adopted policies and policies, such as SB 350 and SB 1383 (see below). The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2013 Scoping Plan Update, the 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends that local governments adopt policies and locally appropriate quantitative thresholds consistent with statewide per capita goals of 6 MT CO₂e by 2030 and 2 MT CO₂e by 2050 (CARB 2017). As stated in the 2017 Scoping Plan, these goals may be appropriate for plan-level analyses (city, county, subregional, or regional level), but not for specific individual projects because they include all emissions sectors in the State (CARB 2017).

The Draft 2022 Scoping Plan Update has been prepared to assess the progress towards the 2030 target as well as to outline a plan to achieve carbon neutrality no later than 2045. The 2022 Scoping Plan Update focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and others, and is designed to meet the State's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities (CARB 2022).

Executive Order S-3-05

Executive Order (EO) S-3-05, signed by Governor Arnold Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra Nevada snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the EO established total GHG emission targets for the state. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

Renewables Portfolio Standard Program (Senate Bill 100)

Adopted on September 10, 2018, SB 100 supports the reduction of GHG emissions from the electricity sector by accelerating the State's Renewables Portfolio Standard Program, which was last updated by SB 350 in 2015. SB 100 requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.

Senate Bill 375

SB 375, signed in August 2008, enhances the State's ability to reach AB 32 goals by directing CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles by 2020 and 2035. SB 375 directs each of the State's 18 major Metropolitan Planning Organizations to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the Regional Transportation Plan. On March 22, 2018, CARB adopted updated regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. ABAG was

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assigned targets of a 10 percent reduction in GHGs from transportation sources by 2020 and a 19 percent reduction in GHGs from transportation sources by 2035. In the ABAG region, SB 375 also provides the option for the coordinated development of subregional plans by the subregional councils of governments and the county transportation commissions to meet SB 375 requirements.

PRC Division 30 Part 3 Chapter 13.1 and Health and Safety Code Sections 39730.5-8 (Senate Bill 1383)

Adopted in September 2016, SB 1383 requires the CARB to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants. The bill requires the strategy to achieve the following reduction targets by 2030:

1. Methane – 40 percent below 2013 levels
2. Hydrofluorocarbons – 40 percent below 2013 levels
3. Anthropogenic black carbon – 50 percent below 2013 levels

The bill also requires the California Department of Resources Recycling and Recovery (CalRecycle), in consultation with CARB, to adopt regulations that achieve specified targets for reducing organic waste in landfills.

Executive Order B-55-18

On September 10, 2018, Governor Brown issued Executive Order B-55-18, which established a new statewide goal of achieving carbon neutrality by 2045 and maintaining net negative emissions thereafter. This goal is in addition to the existing statewide GHG reduction targets established by SB 375, SB 32, SB 1383, and SB 100.

Executive Order N-79-20

On September 23, 2020, Governor Newsom issued Executive Order (EO) N-79-20, which established the following new statewide goals:

- All new passenger cars and trucks sold in-state to be zero-emission by 2035;
- All medium- and heavy-duty vehicles in the state to be zero-emission by 2045 for all operations where feasible and by 2035 for drayage trucks; and
- All off-road vehicles and equipment to be zero-emission by 2035 where feasible.

EO N-79-20 directs CARB, the Governor's Office of Business and Economic Development, the CEC, the California Department of Transportation, and other state agencies to take steps toward drafting regulations and strategies and leveraging agency resources toward achieving these goals.

California Integrated Waste Management Act (Assembly Bill 341)

The California Integrated Waste Management Act of 1989, as modified by AB 341, requires each jurisdiction's source reduction and recycling element to include an implementation schedule that shows: diversion of 25 percent of all solid waste by January 1, 1995, through source reduction, recycling, and composting activities; diversion of 50 percent of all solid waste on and after January 1, 2000; and diversion of 75 percent of all solid waste by 2020, and annually thereafter. CalRecycle is required to develop strategies to implement AB 341, including source reduction.

California Building Standards Code

The California Code of Regulations, Title 24, is referred to as the California Building Code. It consists of a compilation of several distinct standards and codes related to building construction including plumbing, electrical, interior acoustics, energy efficiency, handicap accessibility, and so on. The California Building Code's energy efficiency and green building standards are outlined below.

Part 6 – Building Energy Efficiency Standards

CCR Title 24, Part 6 is the Building Energy Efficiency Standards or California Energy Code. This code, originally enacted in 1978, establishes energy-efficiency standards for residential and non-residential buildings in order to reduce California's energy demand. New construction and major renovations must demonstrate their compliance with the current Energy Code through submittal and approval of a Title 24 Compliance Report to the local building permit review authority and the California Energy Commission (CEC). The 2019 Title 24 standards are the applicable building energy efficiency standards for the project because they became effective on January 1, 2020 (CEC 2018).

2022 Building Energy Standards will become effective at the beginning of 2023 and improve upon the 2019 standards. It will include several amendments including revisions to residential energy efficiency standards for solar photovoltaic systems, establish requirements that mixed fuel buildings are electric ready, enhancements of requirements for duct sealing and ventilation, among others (CEC 2021).

Part 11 – California Green Building Standards

The California Green Building Standards Code, referred to as CALGreen, was added to Title 24 as Part 11 first in 2009 as a voluntary code, which then became mandatory effective January 1, 2011 (as part of the 2010 California Building Code). The 2016 CALGreen institutes mandatory minimum environmental performance standards for all ground-up new construction of non-residential and residential structures. It also includes voluntary tiers (I and II) with stricter environmental performance standards for these same categories of residential and non-residential buildings. Local jurisdictions must enforce the minimum mandatory Green Building Standards and may adopt additional amendments for stricter requirements.

The mandatory standards require the following practices:

1. 20 percent reduction in indoor water use relative to specified baseline levels
2. 50 percent construction/demolition waste diverted from landfills
3. Inspections of energy systems to ensure optimal working efficiency
4. Use of low pollutant emitting exterior and interior finish materials such as paints, carpets, vinyl flooring, and particleboards
5. Implementation of dedicated circuitry to facilitate installation of electric vehicle (EV) charging stations in newly constructed attached garages for single-family and duplex dwellings
6. Installation of EV charging stations at least three percent of the parking spaces for all new multi-family developments with 17 or more units

The voluntary standards require the following:

1. Tier I—15 percent improvement in energy requirements, stricter water conservation requirements for specific fixtures, 65 percent reduction in construction waste, 10 percent

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recycled content, 20 percent permeable paving, 20 percent cement reduction, cool/solar reflective roof

2. Tier II—30 percent improvement in energy requirements, stricter water conservation requirements for specific fixtures, 75 percent reduction in construction waste, 15 percent recycled content, 30 percent permeable paving, and 30 percent cement reduction, cool/solar reflective roof

Similar to the compliance reporting procedure for demonstrating Building Energy Efficiency Standards compliance in new buildings and major renovations, compliance with the CALGreen water-reduction requirements must be demonstrated through completion of water use reporting forms for new low-rise residential and non-residential buildings. Buildings must demonstrate a 20 percent reduction in indoor water use by either showing a 20 percent reduction in the overall baseline water use as identified in CALGreen or a reduced per-plumbing-fixture water use rate.

c. Regional and Local Regulations

Bay Area Air Quality Management District

In 2013, the BAAQMD adopted resolution no. 2013-11, “Resolution Adopting a Greenhouse Gas Reduction Goal and Commitment to Develop a Regional Climate Protection Strategy” that builds on state and regional climate protection efforts by (BAAQMD 2013):

1. Setting a goal for the Bay Area region to reduce GHG emissions by 2050 to 80 percent below 1990 levels
2. Developing a Regional Climate Protection Strategy to make progress towards the 2050 goal, using BAAQMD’s Clean Air Plan to initiate the process
3. Developing a 10-point work program to guide the BAAQMD’s climate protection activities in the near-term

The BAAQMD is currently developing the Regional Climate Protection Strategy and has outlined the 10-point work program, which includes policy approaches, assistance to local governments, and technical programs that will help the region make progress toward the 2050 GHG emissions goal.

The BAAQMD is responsible for enforcing standards and regulating stationary sources in its jurisdiction, including the San Francisco Bay Area Air Basins and the City of Piedmont. The BAAQMD regulates GHG emissions through specific rules and regulations, as well as project and plan level emissions thresholds for GHGs to ensure that new land use development in the San Francisco Bay Area Air Basin contributes to its fair share of emissions reductions (BAAQMD 2017).

Plan Bay Area 2050

Plan Bay Area 2050 is a state-mandated, integrated long-range transportation, land-use, and housing plan that would support a growing economy, provide more housing and transportation choices and reduce transportation-related pollution in the nine-county San Francisco Bay Area (MTC/ABAG 2021). The SCS builds on earlier efforts to develop an efficient transportation network and grow in a financially and environmentally responsible way. Plan Bay Area 2050 focuses on advancing equity and improving resiliency in the Bay Area by creating strategies in the following four elements: Housing, Economy, Transportation, and Environment. The Plan discusses how the future is uncertain due to anticipated employment growth, lack of housing options, and outside forces, such as climate change and economic turbulence. These uncertainties will impact growth in

the Bay Area and exacerbate issues for those who are historically and systemically marginalized and underserved and excluded. Thus, Plan Bay Area 2050 has created strategies and considered investments that will serve those systemically underserved communities and provide equitable opportunities. The Plan presents a total of 35 strategies to outline how the \$1.4 trillion dollar investment would be utilized. The strategies include, but are not limited to, the following: providing affordable housing, allowing higher-density in proximity to transit-corridors, optimizing the existing roadway network, creating complete streets, providing subsidies for public transit, reducing climate emissions, and expanding open space area. Bringing these strategies to fruition will require participation by agencies, policymakers, and the public. An implementation plan is also included as part of the Plan to assess the requirements needed to carry out the strategies, identify the roles of pertinent entities, create an appropriate method to implement the strategies, and create a timeline for implementation (ABAG/MTC 2021).

City of Berkeley General Plan

The City of Berkeley's General Plan, adopted in April 2001, includes the following applicable policies and actions as part of the Environmental Management Element and Transportation Element that support the goal of reducing GHG emissions (City of Berkeley 2001):

Policy EM-5: "Green" Buildings Promote and encourage compliance with "green" building standards

Policy EM-7: Reduced Wastes Continue to reduce solid and hazardous wastes.

Policy EM-8: Building Reuse and Construction Waste Encourage rehabilitation and reuse of buildings whenever appropriate and feasible in order to reduce waste, conserve resources and energy, and reduce construction costs.

Policy EM-18: Regional Air Quality Action Continue working with the Bay Area Air Quality Management District and other regional agencies to:

1. Improve air quality through pollution prevention methods.
2. Ensure enforcement of air emission standards.
3. Reduce local and regional traffic (the single largest source of air pollution in the city) and promote public transit.
4. Promote regional air pollution prevention plans for business and industry.
5. Promote strategies to reduce particulate pollution from residential fireplaces and wood-burning stoves.
6. Locate parking appropriately and provide adequate signage to reduce unnecessary "circling" and searching for parking.

Policy EM-19: 15 percent Emission Reduction Global Warming Plan Make efforts to reduce local emissions by 15% by the year 2010.

Policy EM-35: Energy-Efficient Design Promote high-efficiency design and technologies that provide cost-effective methods to conserve energy and use renewable energy sources.

Policy EM-41: Fossil Fuel Encourage and support efforts to reduce use of fossil fuel and other finite, nonrenewable resources.

Policy UD-33 Sustainable Design. Promote environmentally sensitive and sustainable design in new buildings.

Policy T-10: Trip Reduction To reduce automobile traffic and congestion and increase transit use and alternative modes in Berkeley, support, and when appropriate require, programs to encourage Berkeley citizens and commuters to reduce automobile trips, such as:

1. Participation in a citywide Eco-Pass Program (also see Transportation Policy T-3).
2. Participation in the Commuter Check Program.
3. Carpooling and provision of carpool parking and other necessary facilities.
4. Telecommuting programs.
5. "Free bicycle" programs and electric bicycle programs.
6. "Car-sharing" programs.
7. Use of pedal-cab, bicycle delivery services, and other delivery services.
8. Programs to encourage neighborhood-level initiatives to reduce traffic by encouraging residents to combine trips, carpool, telecommute, reduce the number of cars owned, shop locally, and use alternative modes.
9. Programs to reward Berkeley citizens and neighborhoods that can document reduced car use.
10. Limitations on the supply of long-term commuter parking and elimination of subsidies for commuter parking.
11. No-fare shopper shuttles connecting all shopping districts throughout the city.

Policy T-43: Bicycle Network Develop a safe, convenient, and continuous network of bikeways that serves the needs of all types of bicyclists, and provide bicycle-parking facilities to promote cycling.

City of Berkeley Climate Action Plan

The City of Berkeley adopted a Climate Action Plan (CAP) in 2009 with the goal of reducing communitywide GHG emissions by 80 percent below 2000 levels by 2050. The core recommendation strategies and actions of the CAP center around the following topics (City of Berkeley 2009):

1. Sustainable Transportation and Land Use
2. Building Energy Use
3. Waste Reduction and Recycling
4. Community Outreach and Empowerment
5. Preparing for Climate Change Impacts

While the CAP is not considered a "qualified greenhouse gas reduction plan" for the purposes of streamlining GHG emissions analysis under CEQA, it is actively used by the City for guiding GHG emission reduction efforts. Since publication of the CAP, the City has outlined several additional climate commitments:

- 100 percent renewable electricity by 2035
- Net-Zero Carbon Emissions by 2045, in alignment with Governor Brown's Executive Order B-55-18
- Declared a Climate Emergency and resolved to become a Fossil Fuel Free City

Berkeley Resilience Strategy

In 2016, the City released its Resilience Strategy to advance the City's resilience, or the ability of the individuals, institutions, businesses, and systems within the community to survive, adapt, and grow no matter what chronic stress or acute shock it experiences. Berkeley's interconnected resilience challenges include earthquakes, wildfires, climate change impacts such as drought and flooding, and racial inequity. The City's Resilience Strategy emphasizes building community resilience by facilitating stronger connections between neighbors; between public, private, nonprofit, and academic institutions; between departments within the City government; and between Bay Area local and regional governments. The six goals of the Resilience Strategy are (City of Berkeley 2016):

1. Build a Connected and Prepared Community
2. Accelerate Access to Reliable and Clean Energy
3. Adapt to the Changing Climate
4. Advance Racial Equity
5. Excel at Working Together within City Government to Better Serve the Community
6. Build Regional Resilience

Prohibition of Natural Gas Infrastructure in New Buildings

In 2019, the Berkeley City Council added Chapter 12.80 to the BMC via Ordinance No. 7,672-N.S., which prohibits the installation of natural gas infrastructure in newly constructed buildings. In limited circumstances, the Ordinance allows the entitling body to grant an exception or a public interest exemption.

Electric Mobility Roadmap

In July 2020, the City adopted its first Electric Mobility Roadmap, which outlines the City's plan to implement its vision of a fossil fuel-free transportation system that integrates with and supports the City's ongoing efforts to increase walking, biking, and public transportation use in Berkeley and ensures equitable and affordable access to the benefits of clean transportation. The Electric Mobility Roadmap includes strategies to increase electric vehicle charging stations in new and existing development, provide public electric vehicle charging on City properties, advance electric bus rapid transit routes, electrify shared transportation fleets and private fleets, and increase the share of electric vehicle charging powered by 100 percent renewable energy (City of Berkeley 2020).

4.7.3 Impact Analysis

a. Thresholds of Significance

To determine whether a project would result in a significant impact related to GHG emissions, Appendix G of the *CEQA Guidelines* requires consideration of whether a project would:

1. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
2. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

Individual projects do not generate enough GHG emissions to create significant project-specific environment effects. However, the environmental effects of a project's GHG emissions can

contribute incrementally to cumulative environmental effects that are significant, contributing to climate change, even if an individual project's environmental effects are limited (*CEQA Guidelines* Section 15064[h][1]). The issue of a project's environmental effects and contribution towards climate change typically involves an analysis of whether a project's contribution towards climate change is cumulatively considerable. Cumulatively considerable means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (*CEQA Guidelines* Section 15064[h][1]).

CEQA Guidelines Section 15064.4 recommends that lead agencies quantify GHG emissions of projects and consider several other factors that may be used in the determination of significance of GHG emissions from a project, including the extent to which the project may increase or reduce GHG emissions; whether a project exceeds an applicable significance threshold; and the extent to which the project complies with regulations or requirements adopted to implement a plan for the reduction or mitigation of GHG emissions. *CEQA Guidelines* Section 15064.4 does not establish a threshold of significance. Lead agencies have the discretion to establish significance thresholds for their respective jurisdictions, and in establishing those thresholds, a lead agency may appropriately look to thresholds developed by other public agencies, or suggested by other experts, as long as any threshold chosen is supported by substantial evidence (see *CEQA Guidelines* Section 15064.7[c]).

In the BAAQMD 2017 *CEQA Air Quality Guidelines*, the BAAQMD outlines an approach to determine the significance of projects. The BAAQMD recommends that lead agencies determine appropriate GHG emissions thresholds of significance based on substantial evidence in the record. The BAAQMD has not established a quantitative significance threshold for evaluating construction-related emissions. Although the BAAQMD adopted new GHG thresholds on April 20, 2022, the Air District Board of Directors stated in the Board resolution that projects and plans with an issued Notice of Preparation (NOP) prior to the adoption of thresholds may continue to use the GHG thresholds included in the 2017 *CEQA Air Quality Guidelines*, with the caveat that the significance thresholds must be based on scientific and factual data and supported by substantial evidence. Since the NOP for this EIR was prepared and distributed prior to the adoption of the updated thresholds, the following significance thresholds established in the BAAQMD 2017 *CEQA Air Quality Guidelines* for operational GHG emissions from land use development projects within the San Francisco Bay Area Air Basin are used in determining the significance of project-level or plan-level impacts (BAAQMD 2017):

1. Project-level
 - a. Compliance with a qualified GHG reduction strategy
 - b. Annual emissions less than 1,100 MT of CO₂e per year
 - c. Annual emissions less than 4.6 MT of CO₂e per service population (residents and employees) per year
2. Plan-level
 - a. Compliance with a qualified GHG reduction strategy
 - b. Annual emissions less than 6.6 MT of CO₂e per service population (residents and employees) per year

However, the BAAQMD's thresholds of significance were established based on achieving the 2020 GHG emission reduction targets set forth in the AB 32 Scoping Plan, and not the 2030 reduction targets of the SB 32 Scoping Plan or the 2045 carbon neutrality goal targets of EO B-55-18. Therefore, with a project buildout year of 2031, this analysis develops an efficiency threshold for

2031 in order to determine the significance of the project's GHG emissions. In the recently signed EO B-55-18, which identifies a new goal of carbon neutrality by 2045 and supersedes the goal established by EO S-3-05, CARB has been tasked with including a pathway toward the EO B-55-18 carbon neutrality goal in the next Scoping Plan update which is currently being drafted. While State and regional regulations of energy and transportation systems, along with the State's Cap and Trade program, are designed to achieve most of the reductions needed to meet long-term targets, local governments can do their fair share toward meeting the State's targets by siting and approving projects that accommodate planned population growth that are GHG-efficient. The Association of Environmental Professionals (AEP) Climate Change Committee recommends that CEQA GHG analyses evaluate project emissions in light of the trajectory climate change legislation and assess their "substantial progress" toward achieving long-term reduction targets identified in available plans, legislation, or EOs. Consistent with AEP Climate Change Committee recommendations, GHG impacts that would occur after codified targets are analyzed in terms of whether the project would impede "substantial progress" toward meeting the reduction goal identified in EO B-55-18 (AEP 2016). Avoiding interference with, and making substantial progress toward, these long-term State targets is important as these targets have been set at levels that achieve California's fair share of international emissions reduction targets that will stabilize global climate change effects and avoid the adverse environmental consequences.

To establish a more appropriate threshold of significance, BAAQMD's plan-level efficiency threshold of 6.6 MT CO₂e per service population per year was first reduced to the SB 32's codified 2030 target of 40 percent below 1990 emissions, which would result in a threshold of 4.0 MT CO₂e per service population per year. The 4.0 MT CO₂e per service population per year threshold was then reduced by 0.27 MT CO₂e per year to reach 2045's goal of 0 MT CO₂e population per year. Therefore, in the year 2031, this would equate to a 3.7 MT CO₂e per service population per year threshold, which is applied to the project.

b. Methodology

GHG emissions for development facilitated by the project (operation) were calculated using CalEEMod Version 2020.4.0. The model calculates emissions of the following GHGs: CO₂, N₂O, and CH₄, which are combined using each GHGs' GWP and reported as CO₂e. The calculation methodology and input data used in CalEEMod can be found in the CalEEMod User's Guide Appendices A, D, and E (CAPCOA 2021). GHG emissions include water and solid waste sources and area, energy, and mobile sources. The input data and subsequent operation GHG emission estimates for development facilitated by the project are discussed below and in Section 4.2, *Air Quality*. Land use types used in the modelling reflect land use types described in Table 4.12-3 (HEU Population Estimates) of Section 4.12, *Population and Housing*. CalEEMod output files are included in Appendix E.

Construction Emissions

The BAAQMD has not established a quantitative significance threshold for evaluating construction-related emissions. Since construction information is site specific and varies from project to project, construction emissions cannot be qualitatively analyzed over the 8-year timeline of the HEU and therefore are not modelled or included in this EIR.

Operational Emissions

Energy Sources

Emissions from energy use include electricity and natural gas use. The electricity consumption values in CalEEMod include the CEC-sponsored California Commercial End Use Survey and Residential Appliance Saturation Survey studies. CalEEMod currently incorporates California's 2019 Title 24 building energy efficiency standards.

Electricity emissions are calculated by multiplying the energy use times the carbon intensity of the utility district per kWh. East Bay Community Energy (EBCE) would serve development facilitated by the project. Because EBCE would be residents default electricity provider, the company's specific energy intensity factors (i.e., the amount of CO₂, CH₄, and N₂O per kWh) were used in the calculations of GHG emissions. Per SB 100, the statewide Renewable Portfolio Standard (RPS) program requires electricity providers to increase procurement from eligible renewable energy sources to 60 percent by 2030, which EBCE is already in compliance with. EBCE has introduced a Renewable 100 option in 2022 which consists of 100 percent eligible renewable energy resources (EBCE 2022a). However, since customers have the option to opt out of the Renewable 100 program and enroll in the Bright Choice Program which would be supplied by 40 percent renewable energy, energy intensity factors were set to reflect 40 percent renewable energy for a conservative analysis. Although customers also have the option to select PG&E as their electricity provider, this analysis assumes EBCE as the main provider since the Berkeley City Council voted to set the default electricity option for residents to EBCE's Renewable 100 (EBCE 2022b). In accordance with Section 150.1(c)(14) of the 2019 Building Energy Efficiency Standards, development facilitated by the project would be required to install PV systems on all low-rise residential structures up to three stories equal to the expected electricity usage. As a conservative analysis, CalEEMod assumes that only single-family uses would include PV systems, even though solar PV systems will be required on most new residential structures.

Pursuant to Chapter 12.80 of the BMC, which prohibits the installation of natural gas infrastructure in newly constructed buildings unless granted an exception or public interest exception, it was assumed that 10 percent of new development would include natural gas connections/appliances for a conservative estimate of the project's impacts. To account for the increased electricity usage that would occur in all-electric units, it was assumed that 90 percent of the natural gas demand estimated for the project in the GHG modeling would instead be supplied by electricity.

Area Sources

Emissions associated with area sources, including space and water heating, consumer products, landscape maintenance, and architectural coating were calculated in CalEEMod and use standard emission rates from CARB, USEPA, and emission factor values provided by the local air district (CAPCOA Software 2021).

Waste Sources

GHG emissions from waste generation were also calculated in CalEEMod and are based on the IPCC's methods for quantifying GHG emissions from solid waste using the degradable organic content of waste (CAPCOA Software 2021). Waste disposal rates by land use and overall composition of municipal solid waste in California was primarily based on data provided by CalRecycle.

Water and Wastewater Sources

GHG emissions from water and wastewater usage calculated in CalEEMod were based on the electricity intensity from the CEC’s 2006 Refining Estimates of Water-Related Energy Use in California using the average values for northern and southern California. A 20 percent reduction in indoor potable water use was incorporated in the model in accordance with CALGreen standards.

Mobile Sources

Mobile source emissions are generated by the increase in vehicle trips to and from the housing inventory sites associated with operation of onsite development. Vehicle trips were calculated using default CalEEMod trip generation rates. Mobile emissions also assumed 2031 fleet mixes and emission factors, as this is the year in which the project’s development is analyzed against GHG reduction goals.

c. Project Impacts and Mitigation Measures

Threshold 1: Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

Impact GHG-1 FUTURE DEVELOPMENT UNDER THE PROPOSED HEU WOULD NOT DIRECTLY OR INDIRECTLY GENERATE GHG EMISSIONS THAT WOULD HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT. GHG EMISSIONS FROM THE PROJECT WOULD NOT EXCEED BAAQMD 2031 INTERPOLATED THRESHOLDS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Table 4.7-1 shows the operational GHG emissions associated with development facilitated by the proposed HEU. As shown therein, annual emissions from full buildout of the project’s envisioned increase of 19,098 dwelling units over existing conditions would be 81,985 MT of CO₂e per year. With a project increase in population of 47,773 over existing conditions, this would result in an increase of 1.7 MT of CO₂e per service population per year. The relatively low annual emissions from the project are mostly due to Berkeley’s natural gas ban and the electrification of buildings, coupled with EBCE’s sourcing of renewable energy under the Bright Choice and Renewable 100 programs, which would decrease GHG emissions from energy sources. The project’s 1.7 MT of CO₂e per service population per year would not exceed the BAAQMD’s interpolated 2031 target of 3.7 MT CO₂e per service population at the plan-level. Therefore, impacts would be less than significant.

Table 4.7-1 Operational GHG Emissions

Emission Source	Annual Emissions (MT of CO ₂ e)
Operational	
Area	237
Energy	8,506
Mobile	67,670
Waste	4,463
Water	1,109
Operational Total	81,985
Project Population Increase	47,443
MT of CO₂e per Service Population	1.7

Emission Source	Annual Emissions (MT of CO ₂ e)
BAAQMD Interpolated Plan-level 2031 Target	3.7
Exceed BAAQMD Targets?	No

Source: Appendix E

Mitigation Measures

This impact would be less than significant. No mitigation measures would be required.

Threshold: Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Impact GHG-2 THE PROPOSED HEU WOULD NOT CONFLICT WITH GHG REDUCTION GOALS AND POLICIES IN THE 2017 SCOPING PLAN, PLAN BAY AREA 2050, THE CITY'S GENERAL PLAN, OR THE CITY'S CAP. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The proposed HEU was evaluated for consistency with applicable State and local plans that were developed with the intent of reducing GHG emissions. Each applicable plan is discussed separately below.

2017 Scoping Plan

Development facilitated by the proposed HEU would be consistent with these goals through project design, which includes complying with the latest Title 24 Green Building Code and Building Efficiency Energy Standards. Development facilitated by the project would be required to install PV systems on all low-rise residential structures up to three stories equal to the expected electricity usage system per the 2019 Building Energy Efficiency Standards and energy efficient design and construction per CALGreen. Policy H-16 of the HEU aims to encourage residential development in proximity to transit, jobs and services. As discussed in Impact AQ-1 of Section 4.2, *Air Quality*, the net percentage VMT increase associated with the proposed project (approximately 23 percent) would be less than the net percentage population increase (approximately 41 percent). Therefore, on a per population basis, it would have the effect of reducing vehicle trips and therefore GHG emissions associated with fossil fuel use. Further, most of the housing inventory sites are located near transit corridors, BART stations, and in Priority Development Areas such as the Southside Plan Area, which would reduce reliance on personal vehicles. This supports 2017 Scoping Plan goals for the encouragement of alternative transportation use and VMT reduction. Therefore, the project would be consistent with the 2017 Scoping Plan.

Plan Bay Area 2050

The strategies from Plan Bay Area 2050 related to GHG emissions and applicable to the project are shown in Table 4.7-2. As shown in Table 4.7-2, the project would be consistent with the key goals and strategies of Plan Bay Area 2050.

Table 4.7-2 Project Consistency with Plan Bay Area 2050

Measure	Project Consistency
<p>T8. Build a Complete Streets network. Enhance streets to promote walking, biking and other micro-mobility through sidewalk improvements, car-free slow streets, and 10,000 miles of bike lanes or multi-use paths.</p>	<p>Consistent. As shown in Figure 2-4 of the Project Description (Housing Element Update Sites Inventory Locations), most of the housing inventory sites are generally located along or near transportation corridors served by Class II and Class III bicycle lanes, which would encourage the usage of bicycles and reduce reliance of single-occupancy vehicles. Additionally, the City has over 2,660 short-term bicycle parking spaces as well as bike corrals, lockers, and a bike station adjacent to the Downtown Berkeley BART station which future residents could utilize (City of Berkeley 2017). Since the project would facilitate development mostly near transit corridors, BART stations, and Priority Development Areas such as the Southside Plan Area, University Avenue Plan Area, Adeline Corridor Plan Area, and Berkeley’s Downtown Area, it would place residents within walking distance to services (commercial, retail, restaurants) and transit, which would promote walking as one of the main forms of mobility.</p>
<p>EN4. Maintain urban growth boundaries. Using urban growth boundaries and other existing environmental protections, focus new development within the existing urban footprint or areas otherwise suitable for growth, as established by local jurisdictions.</p>	<p>Consistent. The project would facilitate development of housing on vacant and/or underutilized sites within Berkeley’s urban footprint and mostly near transit corridors, BART stations, and Priority Development Areas such as the Southside Plan Area, University Avenue Plan Area, South Shattuck Plan Area, and Berkeley’s Downtown Area. By placing residents close to jobs and alternative methods of transportation, the project would reduce GHG emissions and other criteria pollutants associated with vehicle use to help communities stay healthy and safe.</p>
<p>EN8. Expand clean vehicle initiatives. Expand investments in clean vehicles, including more fuel-efficient vehicles and electric vehicle subsidies and chargers.</p>	<p>Consistent. Future development facilitated by the project would be required to comply with EV requirements pursuant to BMC Section 19.37.040, which currently requires 20 percent of parking spaces to be electric vehicle charging spaces capable of supporting future electric vehicle chargers and 80 percent of parking spaces to include raceways to facilitate future electric vehicle supply equipment at all new multi-family developments; and for new one- and two-family dwelling units to accommodate a dedicated 208/240-volt branch circuit for a future EV charger.</p>

Source: ABAG 2021

City of Berkeley General Plan

The Environmental Management Element and Urban Design and Preservation Element of the Berkeley General Plan contains policies and actions aimed at reducing GHG emissions. As shown in Table 4.7-3, the proposed project would be consistent with these policies and actions.

Table 4.7-3 City of Berkeley General Plan Consistency for GHG Emissions

General Plan Policy or Action	Consistency
Environmental Management Element	
<p>Policy EM-5 Green Buildings. Promote and encourage compliance with “green” building standards.</p> <p><i>Actions:</i></p> <ul style="list-style-type: none"> A. Encourage, and where appropriate require, new construction and major remodel projects to be sited, designed, constructed, and operated to enhance the well-being of their occupants, and to minimize present and future impacts on the community and the natural environment B. Encourage landscaping for water and energy efficiency. C. Encourage buildings to incorporate renewable energy and energy- and water-efficient technologies. D. Encourage use of recycled-content construction materials. E. Encourage efforts to improve indoor air quality and to provide a comfortable and healthy environment. F. Encourage reduction of construction and demolition waste. G. Encourage construction of durable buildings. H. Establish a green design assistance and green building certification program. 	<p>Consistent: Future development facilitated by the proposed project would be required to be constructed in accordance with the latest iteration of CALGreen, the California Energy Code, and any locally adopted amendments, which include green building practices. In addition, new construction would be required to be all electric per the requirements of BMC Section 12.80 (with limited exemptions and exceptions), which would reduce consumption of nonrenewable energy resources. HEU Policy H-13 would also ensure energy efficiency in new buildings in order to reduce energy costs and GHGs.</p>
<p>Policy EM-8 Building Reuse and Construction Waste. Encourage rehabilitation and reuse of buildings whenever appropriate and feasible in order to reduce waste, conserve resources and energy, and reduce construction costs.</p> <p><i>Actions:</i></p> <ul style="list-style-type: none"> A. Encourage the reuse of demolition materials and recycling of construction scraps. 	<p>Consistent: Future development facilitated by the proposed HEU would be required to divert at least 65 percent of construction and demolition debris pursuant to the requirements of CALGreen. In addition, projects would also be subject to BMC Chapter 19.37, which requires diversion of 65 percent diversion of construction/demolition waste, and recycling and salvage of 100 percent of excavated soil and land-clearing debris, 100 percent of concrete, and 100 percent of asphalt during construction and demolition activities.</p>
<p>Policy EM-35 Energy-Efficient Design. Promote high-efficiency design and technologies that provide cost-effective methods to conserve energy and use renewable energy sources.</p>	<p>Consistent: Future development facilitated by the proposed project would be required to be constructed in accordance with the latest iteration of CALGreen, the California Energy Code, and any locally adopted amendments, which include requirements for the use of energy-efficient design and technologies as well as provisions for incorporating renewable energy resources into building design. New construction would be required to be all electric pursuant to the requirements of BMC Section 12.80 (with limited exemptions and exceptions), which would reduce consumption of nonrenewable energy resources. Additionally, HEU Policy H-13 would ensure energy efficiency and waste reduction in all development facilitated under the project.</p>

General Plan Policy or Action	Consistency
<p>Policy EM-41 Fossil Fuel. Encourage and support efforts to reduce use of fossil fuel and other finite, nonrenewable resources.</p>	<p>Consistent: New construction facilitated under the project would be required to be all electric pursuant to the requirements of BMC Section 12.80 (with limited exemptions and exceptions), which would reduce consumption of nonrenewable energy resources. In addition, most housing inventory sites would be located near transportation corridors in proximity to alternative transportation modes such as BART and buses, thereby supporting efforts to reduce the use of fossil fuels by motor vehicles. In addition, implementation of the City’s Electric Mobility Roadmap (2020) and the electric vehicle charging infrastructure requirements of BMC Chapters 19.36 and 19.37 would facilitate future residents’ use of electric vehicles powered by renewable energy resources, which would further reduce consumption of fossil fuels.</p>
Urban Design and Preservation Element	
<p>Policy UD-33 Sustainable Design. Promote environmentally sensitive and sustainable design in new buildings.</p> <p><i>Actions:</i></p> <ul style="list-style-type: none"> A. Promote compliance with green building standards for solar accessibility and orientation, energy efficiency, etc. B. Encourage use of recycled building materials. C. Establish guidelines that will help to integrate environmentally sensitive and sustainable designs into the built environment. 	<p>Consistent: Future development under the proposed HEU would be required to be constructed in accordance with the latest iteration of CALGreen and the California Energy Code, which include environmentally sensitive and sustainable design practices. In addition, new construction would be required to be all electric pursuant to the requirements of BMC Section 12.80 (with limited exemptions and exceptions), which would reduce consumption of nonrenewable energy resources.</p>
<p>Source: City of Berkeley General Plan</p>	

City of Berkeley Climate Action Plan

The City’s CAP contains 30 goals to reduce communitywide and municipal GHG emissions in order to achieve the City’s target of reducing emissions by 80 percent below 2000 levels by 2050. The measures included in the CAP cover the main sectors of GHG emissions including transportation and land use, building energy usage, and waste reduction and recycling. The measures applicable to the project are summarized in Table 4.7-4. As shown therein, the project would be consistent with applicable GHG reduction measures in the City’s CAP.

Table 4.7-4 Project Consistency with Applicable Climate Action Plan Measures

Recommended Goals	Project Consistency
Sustainable Transportation and Land Use	
<p>Goal 1: Increase density along transit corridors.</p>	<p>Consistent: The project would facilitate increased housing density within housing inventory sites along the City’s major transit corridors such as Shattuck Avenue, Cedar Street, and San Pablo Avenue. The project also envisions dense residential development at BART stations and in Priority Development Areas such as the Southside Plan Area, University Avenue Plan Area, South Shattuck Plan Area, and Berkeley’s Downtown Area.</p>

Recommended Goals	Project Consistency
<p>Goal 2: Increase and enhance urban green and open space, including local food production, to improve the health and quality of life for residents, protect biodiversity, conserve natural resources, and foster walking and cycling.</p>	<p>Consistent: The project would facilitate development in the existing urban footprint of Berkeley, targeting vacant and/or underutilized sites and the Southside Plan Area. By facilitating housing near transit corridors and Priority Development Areas, the project would also encourage reduced reliance on single-occupancy vehicles and promote walking and bicycling to services and transit. Therefore, the project would not adversely impact existing urban green and open space and would foster walking and bicycling.</p>
<p>Goal 8: Encourage the use of low-carbon vehicles and fuels.</p>	<p>Consistent: Development facilitated under the proposed project would be subject to the requirements of the most recent iteration of CALGreen and the City’s associated amendments, which includes provisions for electric vehicle charging infrastructure. For example, as of 2020, BMC Chapter 19.37 requires 20 percent of parking spaces for new multi-family residential developments to be capable of supporting electric vehicle chargers and the remaining 80 percent of parking spaces to have raceways to facilitate future electric vehicle supply equipment.</p>
Building Energy Use	
<p>Goal 1: Make green building business- as-usual in the new construction & remodel market.</p>	<p>Consistent: Future development facilitated by the proposed project would be required to be constructed in accordance with the latest iteration of CALGreen, the California Energy Code, and any locally adopted amendments, which include green building practices. In addition, new construction would be required to be all electric pursuant to the requirements of BMC Section 12.80 (with limited exemptions and exceptions), which would reduce consumption of nonrenewable energy resources. HEU Policy H-13 would also ensure energy efficiency in new buildings in order to reduce energy costs and GHGs.</p>
<p>Goal 4: Increase residential and commercial renewable energy use.</p>	<p>Consistent: Future development facilitated by the proposed project would be automatically enrolled in EBCE’s Renewable 100 service, which provides 100 percent of electricity from eligible renewable energy sources. However, customers have the option to opt out of the Renewable 100 program and enroll in the Bright Choice Program, which would be supplied by 40 percent renewable energy.</p>
Waste Reduction and Recycling	
<p>Goal 1: Increase residential recycling, composting, and source reduction.</p>	<p>Consistent: In accordance with the Alameda County Waste Management Authority Mandatory Recycling Ordinance 2012-01, new multi-family housing projects with five or more units facilitated by the proposed project would be required to provide recycling service for tenants. Furthermore, residents in new multi-family housing developments would be required to separate plant debris from garbage in compliance with the Alameda County Waste Management Authority Plant Debris Landfill Ban Ordinance 2008-01. Future tenants and residents would also have the opportunity to dispose of food waste through the City’s residential plant debris and food waste collection service, which would ensure compliance with SB 1383.</p>
<p>Goal 3: Increase recycling of construction & demolition (C&D) debris.</p>	<p>Consistent: Future development facilitated by the proposed HEU would be required to divert at least 65 percent of construction and demolition debris pursuant to the requirements of CALGreen. In addition, projects would also be subject to BMC Chapter 19.37, which requires diversion of 65 percent diversion of construction/demolition waste, and recycling and salvage of 100 percent of excavated soil and land-clearing debris, 100 percent of concrete, and 100 percent of asphalt during construction and demolition activities.</p>

Source: City of Berkeley 2009

Summary

As described above, the proposed HEU would be consistent with 2017 Scoping Plan, Plan Bay Area 2050, City of Berkeley General Plan, and the City's CAP. Therefore, the proposed HEU would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

Mitigation Measures

This impact would be less than significant. No mitigation measures would be required.

d. Cumulative Impacts

The impact of GHG emissions generated by development facilitated by the proposed HEU is inherently cumulative. GHG emissions from one project cannot, on their own, result in changes in climatic conditions; therefore, the emissions from any project must be considered in the context of their contribution to cumulative global emissions, which is the basis for determining a significant cumulative impact. This is determined through the project's consistency with applicable GHG emission thresholds and applicable plans, policies, or regulations adopted for the purpose of reducing the emissions of GHGs. As discussed under Impact GHG-1, GHG emissions from development facilitated by the project would not exceed the BAAQMD interpolated 2031 plan-level threshold. In addition, development facilitated by the project would be consistent with the 2017 Scoping Plan, Plan Bay Area 2050, City General Plan, and the City CAP. Therefore, the project would not result in a significant cumulative impact related to GHG emissions.

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4.8 Hazards and Hazardous Materials

This section evaluates the potential impacts associated with exposure to hazards and hazardous materials from implementation of the proposed HEU. This analysis consists of a summary of the existing conditions in Berkeley, the hazard and hazardous materials regulatory framework, and a discussion of the potential hazardous impacts from development on inventory sites and throughout Berkeley. Potential hazards associated with wildland fires are discussed in Section 4.17, *Wildfire*.

4.8.1 Setting

a. Definition of Hazardous Materials and Hazardous Waste

The term “hazardous material” has different definitions for different regulatory programs. For the purpose of this EIR, the term “hazardous materials” refers to both hazardous materials and hazardous waste. The California Health and Safety Code Section 25501(n)(1) defines a hazardous material as any material that “because of its quantity, concentrations, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment.” Hazardous materials include but are not limited to hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or environment.

A material is hazardous if it exhibits one or more of the following characteristics: toxicity, ignitability, corrosivity, and reactivity. These types of hazardous materials are defined below:

- **Toxic Substances.** Toxic substances may cause short-term or long-lasting health effects, ranging from temporary effects to permanent disability, or even death. For example, such substances can cause disorientation, acute allergic reactions, asphyxiation, skin irritation, or other adverse health effects if human exposure exceeds certain levels (the level depends on the substances involved and is chemical-specific). Carcinogens, substances that can cause cancer, are a special class of toxic substances. Examples of toxic substances include benzene (a component of gasoline and suspected carcinogen) and methylene chloride (a common laboratory solvent and a suspected carcinogen).
- **Ignitable Substances.** Ignitable substances are hazardous because of their ability to burn. Gasoline, hexane, and natural gas are examples of ignitable substances.
- **Corrosive Materials.** Corrosive materials can cause severe burns. Corrosives include strong acids and bases such as sodium hydroxide (lye) or sulfuric acid (battery acid).
- **Reactive Materials.** Reactive materials may cause explosions or generate toxic gases. Explosives, pure sodium or potassium metals (which react violently with water), and cyanides are examples of reactive materials.

Soil and groundwater can become contaminated by hazardous material releases in a variety of ways, including permitted or illicit use and accidental or intentional disposal or spillage. Before the 1980s, most land disposal of chemicals was unregulated, resulting in numerous industrial properties and public landfills becoming dumping grounds for unwanted chemicals. The largest and most contaminated of these sites became Superfund sites, so named for their eligibility to receive cleanup money from a federal fund established under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The National Priorities List (NPL) is the list of national

priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. The NPL is intended primarily to guide the United States Environmental Protection Agency (USEPA) in determining which sites warrant further investigation. Sites are added to the NPL following a hazard ranking system.

Numerous smaller properties have been designated as contaminated sites. Often these are gas station sites where leaking underground storage tanks (USTs) were upgraded under a federal requirement in the late 1980s. Another category of sites that may have some overlap with the types already mentioned is “brownfields” – previously used, often abandoned, sites that due to actual or suspected contamination are undeveloped or underused. Both the USEPA and California Department of Toxic Substances Control (DTSC) maintain lists of known brownfields sites. These sites are often difficult to inventory due to their owners’ reluctance to publicly label their property as potentially contaminated.

b. Existing Hazardous Materials Sites

The locations where hazardous materials are used, stored, treated and/or disposed of comes to the attention of regulatory agencies through various means, including licensing and permitting, enforcement actions, and anonymous tips. To the extent possible, the locations of these businesses and operations are recorded in database lists maintained by various State, Federal, and local regulatory agencies. In addition, Federal, State, and local agencies enforce regulations applicable to hazardous waste generators and users. The Alameda County Department of Environmental Health Hazardous Materials Division. This Division created the Hazardous Materials Business Plan (HMBP) Program which is designed to prevent or minimize harm to public health and the environment from a release or threatened release of a hazardous material.

Permitted uses of hazardous materials include those facilities that use hazardous materials or handle hazardous wastes in accordance with current hazardous materials and hazardous waste regulations. The use and handling of hazardous materials from these sites is considered low risk, although there can be instances of unintentional chemical releases. In such cases, the site would be tracked in the environmental databases as an environmental case. Permitted sites without documented releases are, nevertheless, potential sources of hazardous materials in the soil and/or groundwater due to accidental spills, incidental leakage, or spillage that may have gone undetected. Some facilities are permitted for more than one hazardous material use and, therefore, could appear in more than one database.

The potential to encounter hazardous materials in soil and groundwater in Berkeley is generally based on a search of Federal, State, and local regulatory databases that identify permitted hazardous materials uses, environmental cases, and spill sites. The DTSC EnviroStor database contains information on properties in California where hazardous substances have been released or where the potential for a release exists. The California State Water Resources Control Board (SWRCB) GeoTracker database contains information on properties in California for sites that require cleanup, such as leaking underground storage tank (LUST) sites, which may impact, or have potential impacts, to water quality, with emphasis on groundwater.

According to databases of hazardous material sites maintained by the DTSC (EnviroStor) and the SWRCB (GeoTracker), Berkeley has the following types of hazardous sites that are still active or need further investigation: voluntary cleanup, corrective action, and tiered permit (DTSC 2022; SWRCB 2021). These sites are dispersed throughout Berkeley.

Existing sites that may potentially contain hazardous land uses in Berkeley include large and small-quantity generators of hazardous waste, such as dry cleaners, gas stations and other industrial uses. According to DTSC and SWRCB, there are 361 open sites containing or potentially containing hazardous materials contamination located within Berkeley, there are 60 open sites, including three sites in need of evaluation, forty-three cleanup program sites, and five active voluntary cleanup sites. Figure 4.8-1 shows the hazardous material sites within Berkeley.

Use, Transport, and Abatement of Hazardous Materials

The use of hazardous materials is typically associated with industrial land uses. Activities such as manufacturing, plating, cleaning, refining, and finishing, frequently involve chemicals that are considered hazardous when accidentally released into the environment.

To a lesser extent, hazardous materials may also be used by various commercial enterprises, as well as residential uses. In particular, dry cleaners use cleaning agents considered to be hazardous materials. Hardware stores typically stock paints and solvents, as well as fertilizers, herbicides, and pesticides. Swimming pool supply stores stock acids, algacides, and caustic agents. Most commercial businesses occasionally use commonly available cleaning supplies that, when used in accordance with manufacturers' recommendations, are considered safe by the State of California, but when not handled properly can be considered hazardous. Private residences also use and store commonly available cleaning materials, paints, solvents, swimming pool and spa chemicals, as well as fertilizers, herbicides, and pesticides.

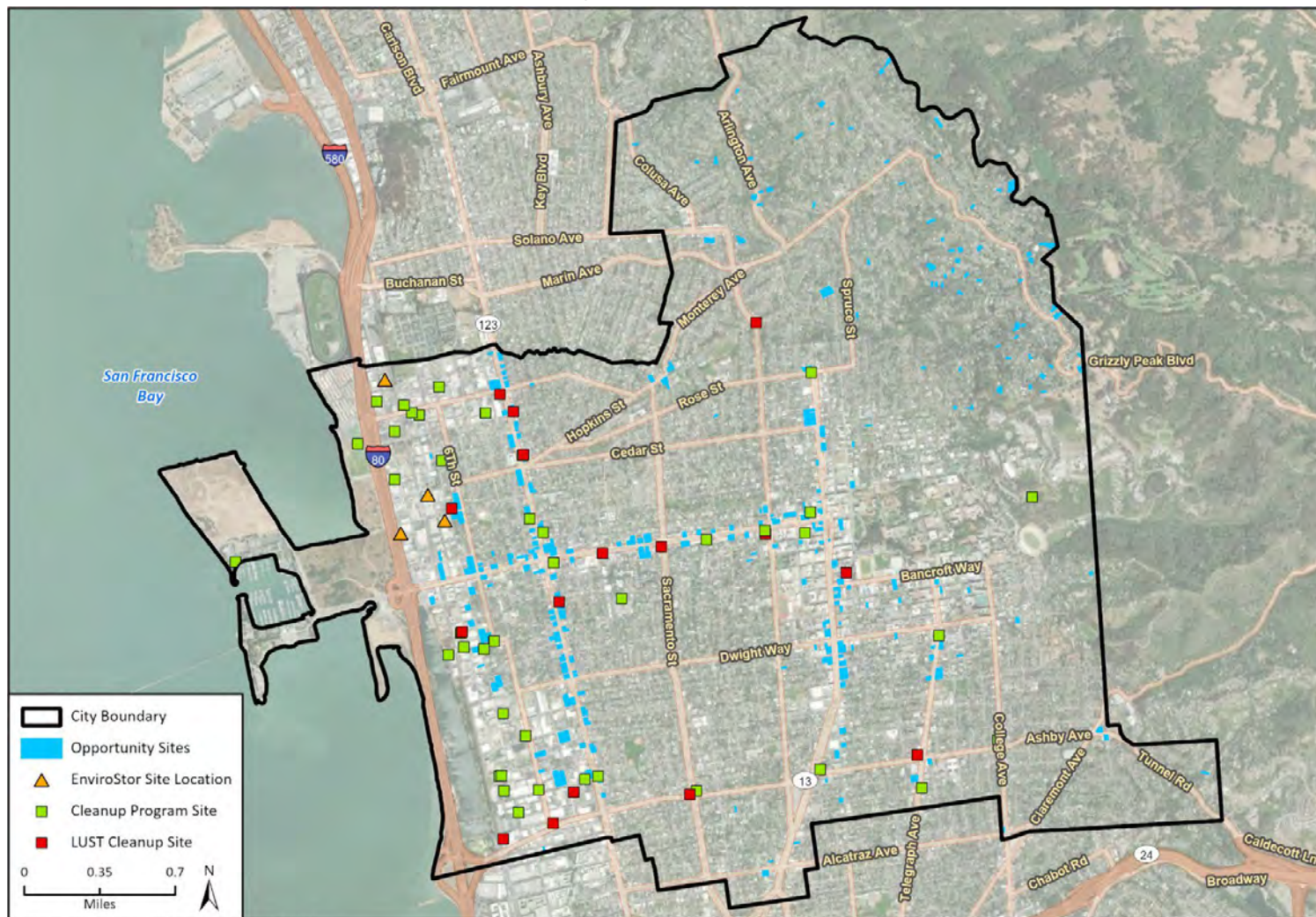
If improperly handled, hazardous materials can result in public health hazards through human contact with contaminated soils or groundwater, or through airborne releases in vapors, fumes, or dust. There is also the potential for accidental or unauthorized releases of hazardous materials that would pose a public health concern. The use, transport, and disposal of hazardous materials and wastes are required to occur in accordance with Federal, State, and local regulations. In accordance with such regulations, the transport of hazardous materials and wastes can only occur with transporters who have received training and appropriate licensing. Additionally, hazardous waste transporters are required to complete and carry a hazardous waste manifest, which includes forms, reports, and procedures designed to seamlessly track hazardous waste.

c. Asbestos Containing Materials

Asbestos is a naturally occurring fibrous material that was widely used in structures built between 1945 and 1978 for its fireproofing and insulating properties. Asbestos-containing materials (ACM) were banned by USEPA between the early 1970s and 1991 under the authority of the federal Clean Air Act (CAA) and the Toxic Substances Control Act (TSCA) due to their harmful health effects. Exposure to asbestos increases risk of developing lung disease, such as lung cancer, mesothelioma, or asbestosis (USEPA 2021a). Common ACMs include vinyl flooring and associated mastic, wallboard and associate joint compound, plaster, stucco, acoustic ceiling spray, ceiling tiles, heating system components, and roofing materials. Pre-1973 commercial and industrial structures are affected by asbestos regulations if damage occurs, or if remodeling, renovation, or demolition activities disturb ACMs.

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Figure 4.8-1 Known Hazardous Material Sites in Berkeley



Imagery provided by Microsoft Bing and its licensors © 2022.
Additional data provided by the City of Berkeley, 2022; GeoTracker, 2022; EnviroStor, 2021

21-10647 Berkeley Housing Element
Fig 8 Hazardous Material Sites

d. Lead and Lead-Based Paint

Lead is a naturally occurring metallic element. Because of its toxic properties, lead is regulated as a hazardous material. Excessive exposure to lead can result in the accumulation of lead in the blood, soft tissues, and bones. Children are particularly susceptible to potential lead-related health problems because it is easily absorbed into developing systems and organs. Lead can affect almost every organ and system in the body. In children, lead can cause behavior and learning problems, lower IQ and hyperactivity, hearing problems, and anemia. In adults, lead can cause cardiovascular effects, decreased kidney function, and reproductive problems. In addition, lead can result in serious effects to the developing fetus and infant for pregnant women (USEPA 2021b). Among its numerous uses and sources, lead can be found in paint, water pipes, solder in plumbing systems, and in soils surrounding buildings and structures that are painted with lead-based paint (LBP). LBP was primarily used during the same time period as ACMs. Pre-1978 commercial and industrial structures are affected by LBP regulations if the paint is in a deteriorated condition or if remodeling, renovation, or demolition activities disturb LBP surfaces.

e. Schools

School locations require consideration because children are particularly sensitive to hazardous materials exposure. Additional protective regulations apply to projects that could use or disturb potentially hazardous products near or at schools. The California Public Resources Code requires projects that would be located within a quarter mile of a school and might reasonably be expected to emit or handle hazardous materials to consult with the school district regarding potential hazards. There are 21 schools located within Berkeley. As shown in Figure 4.8-2, 122 sites that were identified as Housing Opportunity Sites in the Housing Element are within a 0.25 mile radius of existing schools and childcare facilities.

4.8.2 Regulatory Setting

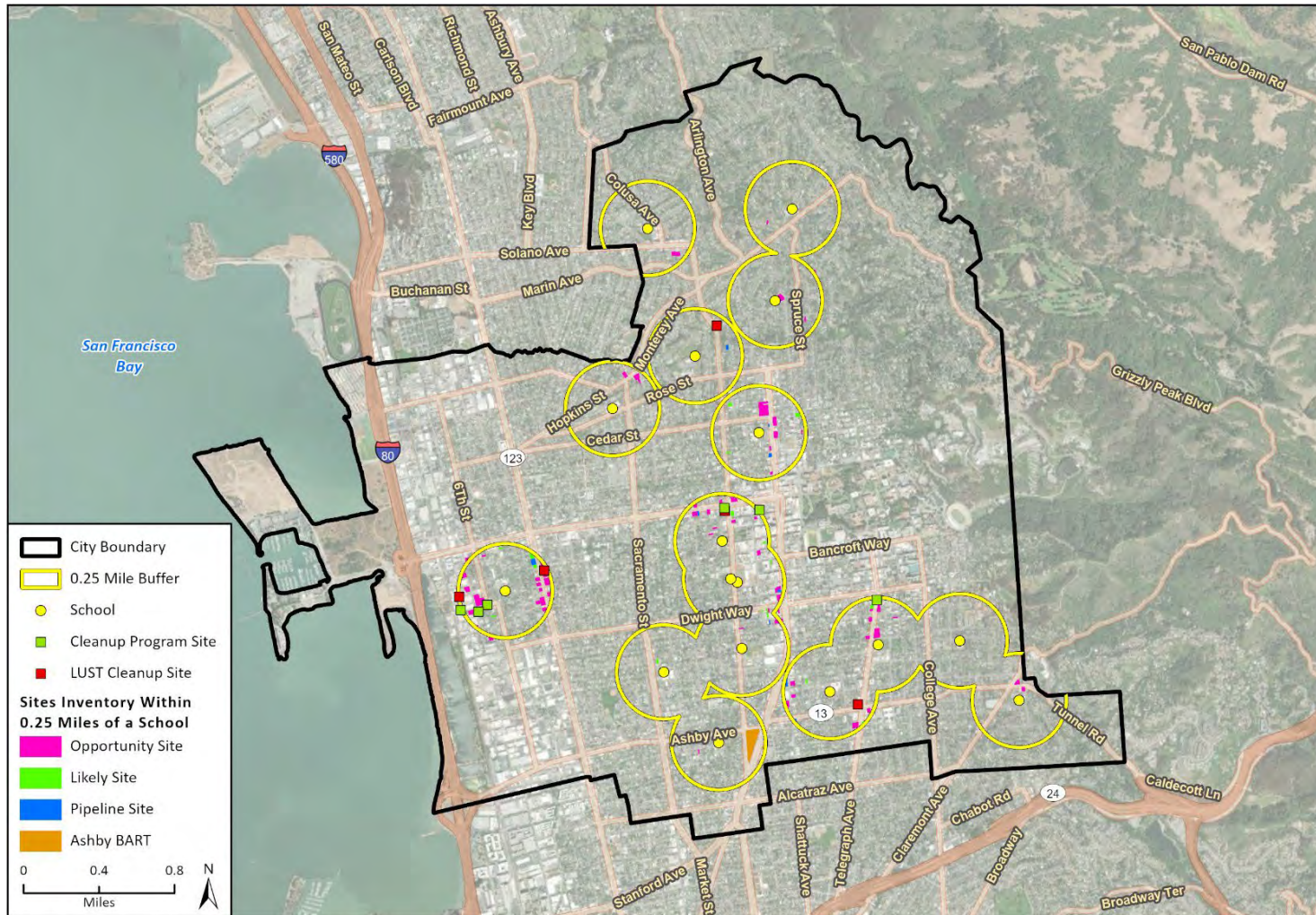
Hazardous materials and waste can pose a potential hazard to human health and the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Federal, State, and local programs that regulate the use, storage, and transportation of hazardous materials and hazardous waste are in place to prevent unwanted consequences. These regulatory programs are designed to reduce the risk that hazardous substances may pose to people and businesses under normal daily circumstances and as a result emergencies and disasters.

a. Federal Regulations

Primary Federal agencies with responsibility for hazardous materials management include the USEPA, U.S. Department of Labor's Occupational Safety and Health Administration (OSHA), and the U.S. Department of Transportation (USDOT). The major laws enforced by these agencies are described below.

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Figure 4.8-2 Hazardous Material Sites within 0.25 mile of a School



Imagery provided by Microsoft Bing and its licensors © 2022.
 Additional data provided by the City of Berkeley, 2022; GeoTracker, 2022; California School Campus Database (CSCD), 2021

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 Fig X Hazardous Material Sites within 0.25 Mile of a School

Toxic Substances Control Act (1976) and the Resource Conservation and Recovery Act of 1976 (RCRA)

These acts established a program administered by the USEPA for the regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Act, which affirmed and extended the “cradle to grave” system of regulating hazardous wastes. Among other things, the use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by the Hazardous and Solid Waste Act.

Lead-Based Paint Elimination Final Rule 24 Code of Federal Regulations

Governed by the U.S. Housing and Urban Development, regulations for LBP are contained in the Lead-Based Paint Elimination Final Rule 24 Code of Federal Regulations (CFR) 33, which requires sellers and lessors to disclose known LBP and LBP hazards to prospective purchasers and lessees. Additionally, all LBP abatement activities must follow California and federal occupational safety and health administrations (California Occupational Safety and Health Administration [Cal/OSHA] and federal Occupational Safety and Health Administration [OSHA], respectively and with the State of California Department of Health Services requirements. Only LBP trained and certified abatement personnel can perform abatement activities. All lead LBP removed from structures must be hauled and disposed of by a transportation company licensed to transport this type of material at a landfill or receiving facility licensed to accept the waste.

U.S. Environmental Protection Agency

The USEPA is the agency primarily responsible for enforcement and implementation of Federal laws and regulations pertaining to hazardous materials. Applicable Federal regulations pertaining to hazardous materials are contained in the CFR Titles 29, 40, and 49. Hazardous materials, as defined in the CFR, are listed in 49 CFR 172.101. The management of hazardous materials is governed by the following laws:

1. Resource Conservation and Recovery Act of 1976) (42 USC 6901 et seq.)
2. Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (also called the Superfund Act) (42 USC 9601 et seq.)
3. Federal Insecticide, Fungicide, and Rodenticide Act (7 USC 136 et. Seq.)
4. Superfund Amendments and Reauthorization Act of 1986 (Public Law 99 499)

These laws and associated regulations include specific requirements for facilities that generate, use, store, treat, and/or dispose of hazardous materials. USEPA provides oversight and supervision for Federal Superfund investigation/remediation projects, evaluates remediation technologies, and develops hazardous materials disposal restrictions and treatment standards.

U.S. Department of Transportation Regulations

USDOT prescribes strict regulations for the safe transportation of hazardous materials, including requirements for hazardous waste containers and licensed haulers that transport hazardous waste on public roads. The Secretary of the USDOT receives the authority to regulate the transportation of hazardous materials from the Hazardous Materials Transportation Act (HMTA), as amended and codified in in 49 U.S. Code (U.S.C.) Section 5101 et seq. The Secretary is authorized to issue regulations to implement the requirements of 49 U.S.C. The Pipeline and Hazardous Materials

Safety Administration (PHMSA), formerly the Research and Special Provisions Administration, was delegated the responsibility to write the hazardous materials regulations, which are contained in Title 49 of the CFR Parts 100-180. Title 49 of the CFR, which contains the regulations set forth by the HMTA, specifies requirements and regulations with respect to the transport of hazardous materials. It requires that every employee who transports hazardous materials receive training to recognize and identify hazardous materials and become familiar with hazardous materials requirements. Under the HMTA, the Secretary "may authorize any officer, employee, or agent to enter upon, inspect, and examine, at reasonable times and in a reasonable manner, the records and properties of persons to the extent such records and properties relate to: (1) the manufacture, fabrication, marking, maintenance, reconditioning, repair, testing, or distribution of packages or containers for use by any 'person' in the transportation of hazardous materials in commerce; or (2) the transportation or shipment by any 'person' of hazardous materials in commerce.

Occupational Safety and Health Act of 1970

The U.S. Department of Labor's OSHA was created to assure safe and healthful working conditions by setting and enforcing standards and by providing training, outreach, education, and assistance. OSHA provides standards for general industry and construction industry on hazardous waste operations and emergency response. The Occupational Safety and Health Act, which is implemented by OSHA, contains provisions with respect to hazardous materials handling. Federal Occupational Safety and Health Act requirements, as set forth in Title 29 of the CFR Section 1910, et. seq., are designed to promote worker safety, worker training, and a worker's right-to-know. OSHA has delegated the authority to administer OSHA regulations to the State of California.

Title 49 of the CFR, which contains the regulations set forth by the Hazardous Materials Transportation Act of 1975, specifies additional requirements and regulations with respect to the transport of hazardous materials. Title 49 of the CFR requires that every employee who transports hazardous materials receive training to recognize and identify hazardous materials and become familiar with hazardous materials requirements. Drivers are also required to be trained in function and commodity-specific requirements.

Other Hazardous Materials Regulations

In addition to the USDOT regulations for the safe transportation of hazardous materials, there are other applicable federal laws that also address hazardous materials:

- Community Environmental Response Facilitation Act of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Atomic Energy Act
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

b. State Regulations

Department of Toxic Substances Control

As a department of the California Environmental Protection Agency, the DTSC is the primary agency in California that regulates hazardous waste, cleans up existing contamination, and looks for ways to

reduce the hazardous waste produced in California. DTSC regulates hazardous waste in California primarily under the authority of RCRA and the California Health and Safety Code.

The DTSC also administers the California Hazardous Waste Control Law (HWCL) to regulate hazardous wastes. While the HWCL is generally more stringent than RCRA, until the USEPA approves the California program, both state and federal laws apply in California. The HWCL lists 791 chemicals and approximately 300 common materials that may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills.

Government Code Section 65962.5 requires the DTSC, the State Department of Health Services, the State Water Resources Control Board, and CalRecycle to compile and annually update lists of hazardous waste sites and land designated as hazardous waste sites throughout the state. The Secretary for Environmental Protection consolidates the information submitted by these agencies and distributes it to each city and county where sites on the lists are located. Before the lead agency accepts an application for any development project as complete, the applicant must consult these lists to determine if the site at issue is included.

If any soil is excavated from a site containing hazardous materials, it would be considered a hazardous waste if it exceeded specific criteria in Title 22 of the California Code of Regulations. Remediation of hazardous wastes found at a site may be required if excavation of these materials is performed, or if certain other soil disturbing activities would occur. Even if soil or groundwater at a contaminated site does not have the characteristics required to be defined as hazardous waste, remediation of the site may be required by regulatory agencies subject to jurisdictional authority. Cleanup requirements are determined on a case-by-case basis by the agency taking jurisdiction.

California Occupational Safety and Health Act – California Labor Code, Section 6300 et seq.

The California Occupational Safety and Health Act of 1973 addresses California employee working conditions, enables the enforcement of workplace standards, and provides for advancements in the field of occupational health and safety. The Act also created CalOSHA, the primary agency responsible for worker safety in the handling and use of chemicals in the workplace. CalOSHA's standards are generally more stringent than federal regulations. Under the former, the employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure. The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings. At sites known or suspected to be contaminated by hazardous materials, workers must have training in hazardous materials operations and a Site Health and Safety Plan must be prepared, which establishes policies and procedures to protect workers and the public from exposure to potential hazards at the contaminated site.

California Code of Regulations, Title 22, Hazardous Waste Management

At the State level, under Title 22, Division 4.5 of the CCR, DTSC regulates hazardous waste in California primarily under the authority of the Federal RCRA and the California Health and Safety Code (HSC). The Hazardous Waste Control Law (HWCL), under CCR 22, Chapter 30, establishes regulations that are similar to RCRA but more stringent in their application and empowers the DTSC to administer the State's hazardous waste program and implement the federal program in

California. The DTSC is responsible for permitting, inspecting, ensuring compliance, and imposing corrective action programs to ensure that entities that generate, store, transport, treat, or dispose of potentially hazardous materials and waste comply with federal and State laws. The DTSC defines hazardous waste as waste with a chemical composition or other properties that make it capable of causing illness, death, or some other harm to humans and other life forms when mismanaged or released into the environment. The DTSC shares responsibility for enforcement and implementation of hazardous waste control laws with the SWRCB and, at the local level, the LARWQCB, and city and county governments.

California Code of Regulations Title 23, Chapter 15 Discharges of Hazardous Waste to Land Section 2511(b)

CCR 23, Chapter 15 Discharges of Hazardous Waste to Land Section 2511(b) pertains to water quality aspects of waste discharge to land. The regulation establishes waste and site classifications as well as waste management requirements for waste treatment, storage, or disposal in landfills, surface impoundments, waste piles, and land treatment facilities. Requirements are minimum standards for proper management of each waste category, which allows regional water boards to impose more stringent requirements to accommodate regional and site-specific conditions. In addition, the requirements of CCR 23, Chapter 15 applies to cleanup and abatement actions for unregulated hazardous waste discharges to land (e.g., spills).

California Accidental Release Prevention (Cal ARP) Program

The purpose of the Cal ARP program is to prevent accidental releases of substances that can cause serious harm to the public and the environment, to minimize the damage if releases do occur, and to satisfy community right-to-know laws. The Cal ARP requires any business that handles more than threshold quantities of an extremely hazardous substance per California regulations to develop a Risk Management Plan (RMP). The RMP is implemented by the business to prevent or mitigate releases of regulated substances that could have off-site consequences through hazard identification, planning, source reduction, maintenance, training, and engineering controls. The RMP contains the following elements:

- Safety Information
- A Hazard Review
- Operating Procedures
- Training Requirements
- Compliance Audits
- Incident Investigation Procedures

The RMP must also consider the proximity to sensitive populations located in schools, residential areas, general acute care hospitals, long-term health care facilities, and child day care facilities. The RMP must also consider external events such as seismic activity. The CUPAs determine the level of detail in the RMPs, review the RMPs, conduct facility inspections, and provide public access to most of the information. There are three program levels identified by Cal ARP and they are dependent on the type of business, potential impact, and accident history, among other factors.

If an accidental release occurs the owner/operator of a facility shall ensure that response actions have been coordinated with local emergency planning and response agencies.

California Fire and Building Code

The 2019 Fire and Building Code establishes the minimum requirements consistent with nationally recognized good practices to safeguard the public health, safety, and general welfare for the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures and premises, and to provide safety and assistance to firefighters and emergency responders during emergency operations. The provisions of this code apply to the construction, alteration, movement enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure or any appurtenances connected or attached to such building structures throughout the State of California.

c. Local Regulations

City of Berkeley General Plan

The Berkeley General Plan Disaster Preparedness and Safety Element and Environmental Management Element includes goals and policies to reduce the risk of death, injuries, and property damage in the city. Relevant goals and policies are listed below:

Policy S-1 Response Planning. Ensure that the City's emergency response plans are current and incorporate the latest information on hazards, vulnerability, and resources.

Policy S-10 Mitigation of Potentially Hazardous Buildings. Pursue all feasible methods, programs, and financing to mitigate potentially hazardous buildings.

Policy S-12 Utility and Transportation Systems. Improve the disaster-resistance of utility and transportation systems to increase public safety and to minimize damage and service disruption following a disaster.

Policy S-13 Hazards Identification. Identify, avoid, and minimize natural and human-caused hazards in the development of property and the regulation of land use.

Policy S-14 Land Use Regulation. Require appropriate mitigation in new development, in redevelopment/reuse, or in other applications.

Policy S-15 Construction Standards. Maintain construction standards that minimize risks to human lives and property from environmental and human-caused hazards for both new and existing buildings.

Policy S-21 Fire Preventative Design Standards. Develop and enforce construction and design standards that ensure new structures incorporate appropriate fire prevention features and meet current fire safety standards.

Policy S-22 Fire Fighting Infrastructure. Reduce fire hazard risks in existing developed areas.

Policy S-23 Property Maintenance. Reduce fire hazard risks in existing developed areas by ensuring that private property is maintained to minimize vulnerability to fire hazards.

Policy S-24 Mutual Aid. Continue to fulfill legal obligations and support mutual aid efforts to coordinate fire suppression in Alameda and Contra Costa Counties, Oakland, the East Bay Regional Park District, and the State of California to prevent and suppress major wildland and urban fire destruction.

Policy EM-8 Building Reuse and Construction Waste: Encourage rehabilitation and reuse of buildings whenever appropriate and feasible in order to reduce waste, conserve resources and energy, and reduce construction costs.

Policy EM-10 Materials Recovery and Remanufacturing: Support and encourage serial materials recovery and remanufacturing industries.

Policy EM-11 Biodegradable Materials and Green Chemistry: Support efforts to phase out the use of long-lived synthetic compounds, such as pesticides and vehicle anti-freeze, and certain naturally occurring substances which do not biodegrade. Encourage efforts to change manufacturing processes to use biodegradable materials, recycle manufactured products, reuse byproducts, and use “green” products.

Policy EM-12 Education: Work with other State and local agencies to educate business owners and residents regarding safe use, recycling, and disposal of toxic materials; reducing hazardous household wastes; and substitutes for these substances.

Policy EM-13 Hazardous Materials Disclosure: Continue to require the disclosure of hazardous materials usage and encourage businesses using such materials to prepare and implement a plan to reduce the use of hazardous materials and the generation of hazardous wastes.

Policy EM-14 Hazardous Material Regulation: Control and regulate the use, storage and transportation of toxic, explosive, and other hazardous and extremely hazardous material to prevent unauthorized and accidental discharges.

Policy EM-15 Environmental Investigation: When reviewing applications for new development in areas historically used for industrial uses, require environmental investigation as necessary to ensure that soils, groundwater, and buildings affected by hazardous material releases from prior land uses would not have the potential to affect the environment or the health and safety of future property owners, users, or construction workers.

Policy EM-16 Risk Reduction: Work with owners of vulnerable structures with significant quantities of hazardous material to mitigate potential risks.

Policy EM-17 Warning Systems: Establish a way to warn residents of a release of toxic material or other health hazard, such as sirens and/or radio broadcasts.

Berkeley Local Hazard Mitigation Plan

Berkeley is exposed to several natural and human-caused hazards that vary in their intensity and impacts on the city. The LHMP addresses earthquake, wildland-urban interface, fire, flood, landslide, tsunami, and also hazardous materials releases, climate change, extreme heat events, and terrorism. Hazardous materials release is described as a cascading impact of a natural hazard.

The City of Berkeley’s 2019 LHMP serves three main functions:

- The 2019 LHMP documents the City’s current understanding of the hazards present in Berkeley, along with their vulnerabilities to each hazard – the ways that the hazard could impact buildings, infrastructure, community, and environment.
- The LHMP presents Berkeley City government’s Mitigation Strategy for the coming five years. The Mitigation Strategy reflects a wide variety of both funded and unfunded actions, each of which could reduce the Berkeley’s hazard vulnerabilities.

- By fulfilling requirements of the Disaster Mitigation Act of 2000, the 2019 LHMP ensures that Berkeley will remain eligible to apply for mitigation grants before disasters, and to receive federal mitigation funding and additional State recovery funding after disasters.

City of Berkeley Municipal Code

Title 15 of the Berkeley Municipal Code (BMC) includes the Berkeley Hazardous Materials Code. The intent of this title to provide regulations and standards for certain operations, enterprises or activities which, if not regulated, may adversely affect the public health and safety.

Berkeley's Toxics Management Division (TMD) is a Certified Unified Program Agency and implements Chapter 6.11 of Div. 20 of Cal Health & State code and Title 15 of the BMC. The TMD has created Berkeley's Hazardous Materials Business Plan which is meant to satisfy federal and state Community laws. It provides detailed information for use by emergency responders. The Hazardous Materials Business Plan also assists residents in complying with the State requirements and provides emergency responders adequate information about the type, quantity of, storage location – and management practices regarding – hazardous materials that are stored at different facilities within Berkeley. A Hazardous Material Business Plan must be filed if the following occurs:

- At any time during the year hazardous materials or hazardous wastes are handled, stored or generated and are equal to or greater than
 - 55 gallons for liquids
 - 500 pounds for solids
 - 200 cubic feet (at normal temperature and pressure) for compressed gases
- A facility handles any amount of perchlorate material, pursuant to California Health & Safety Code (CHSC) Section 25504.1.
- A facility has any quantity of radioactive materials pursuant to Berkeley Municipal Code Title 15. Report the information on the Hazardous Materials Inventory.
- A facility has any quantity of etiologic agents, pursuant to Berkeley Municipal Code Title 15. You must report the agent name, quantity and storage location to the TMD
- A facility exceeds reportable thresholds for Extremely Hazardous Substances (EHSs), as defined in 40 CFR, Part 355, Appendix A
- A facility stores or handles manufactured nanoscale materials, pursuant to Berkeley Municipal Code Title 15. The City's TMD must be contacted to determine if documentation is required.

4.8.3 Impact Analysis

a. Methodology and Thresholds of Significance

The following thresholds are based on *CEQA Guidelines* Appendix G. For purposes of this EIR, impacts related to hazards and hazardous materials are considered significant if implementation of the proposed project would:

1. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
2. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

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3. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
4. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment;
5. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area;
6. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
7. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

As described at the beginning of this section, an analysis of the risk of exposure to wildland fires resulting from implementation of the proposed HEU is contained in Section 4.17, *Wildfire*. Therefore, threshold 7 is addressed in Section 4.17, *Wildfire*.

b. Project Impacts or Mitigation Measures

Threshold 1: Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?
Threshold 2: Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Impact HAZ-1 IMPLEMENTATION OF THE PROPOSED HEU WOULD FACILITATE NEW RESIDENTIAL DEVELOPMENT IN BERKELEY. PROPOSED NEW RESIDENTIAL USES WOULD NOT INVOLVE THE ROUTINE TRANSPORTATION, USE, OR DISPOSAL OF HAZARDOUS MATERIALS. HOWEVER, CONSTRUCTION OF NEW RESIDENCES COULD RESULT IN AN INCREASE IN THE OVERALL ROUTINE, TRANSPORT, USE AND DISPOSAL OF HAZARDOUS MATERIALS IN BERKELEY FOR CONSTRUCTION ACTIVITIES. NONETHELESS, REQUIRED COMPLIANCE WITH APPLICABLE REGULATIONS RELATED TO HAZARDOUS MATERIALS AND COMPLIANCE WITH GENERAL PLAN POLICIES WOULD MINIMIZE THE RISK OF RELEASES AND EXPOSURE TO THESE MATERIALS. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Although no specific development projects are proposed as part of the HEU, development facilitated by the proposed HEU could accommodate construction of an estimated 19,098 new residential units in Berkeley.

Construction Activities

The following discussion addresses the use of hazardous materials during construction activities; the potential for release of existing contaminated materials during construction; and the potential for release of lead-based paint or asbestos-containing materials (ACM) during demolition or construction.

Use of Hazardous Materials During Construction

Construction associated with future development in Berkeley may include the temporary transport, storage, and use of potentially hazardous materials including fuels, lubricating fluids, cleaners, or

solvents. If spilled, these substances could pose a risk to the environment and to human health. However, the transport, storage, use, or disposal of hazardous materials is subject to various federal, state, and local regulations designed to reduce risks associated with hazardous materials, including potential risks associated with upset or accident conditions. Hazardous materials would be required to be transported under U.S. Department of Transportation (DOT) regulations (U.S. DOT Hazardous Materials Transport Act, 49 Code of Federal Regulations), which stipulate the types of containers, labeling, and other restrictions to be used in the movement of such material on interstate highways. DTSC regulates hazardous waste, cleans up existing contamination, and looks for ways to control and reduce the hazardous waste produced in California. It does this primarily under the authority of RCRA and in accordance with the California Hazardous Waste Control Law (California H&SC Division 20, Chapter 6.5) and the Hazardous Waste Control Regulations (Title 22, California Code of Regulations, Divisions 4 and 4.5). DTSC also oversees permitting, inspection, compliance, and corrective action programs to ensure that hazardous waste managers follow federal and State requirements and other laws that affect hazardous waste specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning. Compliance with existing regulations would reduce the risk of potential release of hazardous materials during construction.

Release of Contaminated Materials During Construction

Portions of Berkeley are located in Environmental Management Areas (EMA) as identified by the City's TMD that identifies areas known or suspected to have groundwater contamination (City of Berkeley 2010). Potential health and environmental concerns related to contaminated groundwater and soil may occur during excavation and dewatering for new construction. In addition, grading or excavation on sites with existing contamination may also result in the transport and disposal of hazardous materials if they are unearthed and removed from the site. However, future development under the project would be subject to regulatory programs such as those overseen by the RWQCB and the DTSC. These agencies require applicants for development of potentially contaminated properties to perform investigation and cleanup if the properties are contaminated with hazardous substances. In addition, development in the EMA requires project review by the TMD prior to issuance of permits. Finally, all projects requiring discretionary review (including all new construction of dwelling units), would be subject to the following City of Berkeley Standard Condition of Approval:

Toxics. The applicant shall contact the Toxics Management Division (TMD) to determine which of the following documents are required and timing for their submittal:

A. Environmental Site Assessments

1. Phase I & Phase II Environmental Site Assessments (latest ASTM 1527-13). A recent Phase I ESA (less than 6 months old*) shall be submitted to TMD for developments for:
 - All new commercial, industrial and mixed-use developments and all large improvement projects.
 - All new residential buildings with 5 or more dwelling units located in the Environmental Management Area (or EMA).
 - EMA is available online at:
http://www.cityofberkeley.info/uploadedFiles/IT/Level_3_-_General/ema.pdf

2. Phase II ESA is required to evaluate Recognized Environmental Conditions (REC) identified in the Phase I or other RECs identified by TMD staff. The TMD may require a third party toxicologist to review human or ecological health risks that may be identified. The applicant may apply to the appropriate state, regional or county cleanup agency to evaluate the risks.
3. If the Phase I is over 6 months old, it will require a new site reconnaissance and interviews. If the facility was subject to regulation under Title 15 of the Berkeley Municipal Code since the last Phase I was conducted, a new records review must be performed.

B. Soil and Groundwater Management Plan

1. A Soil and Groundwater Management Plan (SGMP) shall be submitted to TMD for all non-residential projects, and residential or mixed-use projects with five or more dwelling units, that: (1) are in the Environmental Management Area (EMA) and (2) propose any excavations deeper than 5 feet below grade. The SGMP shall be site specific and identify procedures for soil and groundwater management including identification of pollutants and disposal methods. The SGMP will identify permits required and comply with all applicable local, state and regional requirements.
2. The SGMP shall require notification to TMD of any hazardous materials found in soils and groundwater during development. The SGMP will provide guidance on managing odors during excavation. The SGMP will provide the name and phone number of the individual responsible for implementing the SGMP and post the name and phone number for the person responding to community questions and complaints.
3. TMD may impose additional conditions as deemed necessary. All requirements of the approved SGMP shall be deemed conditions of approval of this Use Permit.

C. Building Materials Survey

1. Prior to approving any permit for partial or complete demolition and renovation activities involving the removal of 20 square or lineal feet of interior or exterior walls, a building materials survey shall be conducted by a qualified professional. The survey shall include, but not be limited to, identification of any lead-based paint, asbestos, polychlorinated biphenyl (PBC) containing equipment, hydraulic fluids in elevators or lifts, refrigeration systems, treated wood and mercury containing devices (including fluorescent light bulbs and mercury switches). The Survey shall include plans on hazardous waste or hazardous materials removal, reuse or disposal procedures to be implemented that fully comply with state hazardous waste generator requirements (22 California Code of Regulations 66260 et seq). The Survey becomes a condition of any building or demolition permit for the project. Documentation evidencing disposal of hazardous waste in compliance with the survey shall be submitted to TMD within 30 days of the completion of the demolition. If asbestos is identified, Bay Area Air Quality Management District Regulation 11-2-401.3 a notification must be made and the J number must be made available to the City of Berkeley Permit Service Center.

D. Hazardous Materials Business Plan

1. A Hazardous Materials Business Plan (HMBP) in compliance with BMC Section 15.12.040 shall be submitted electronically at <http://cers.calepa.ca.gov/> within 30 days if on-site hazardous materials exceed BMC 15.20.040. HMBP requirement can be found at <http://ci.berkeley.ca.us/hmr/>

The removal, transport, storage, use, or disposal of hazardous materials would be subject to federal, state, and local regulations pertaining to the transport, use, storage, and disposal of hazardous materials, including those outlined in the Standard condition of approval above. Compliance with these requirements would assure that risks associated with hazardous materials would be minimized. Impacts would be less than significant.

Asbestos and Lead

Berkeley contains numerous residential and commercial buildings that, due to their age, may contain asbestos and/or lead-based paint. Structures built before the 1970s typically contained asbestos containing materials (ACM). Demolition or redevelopment of these structures could result in health hazard impacts to workers if not remediated prior to construction activities. However, future projects in Berkeley would be subject to the City of Berkeley Standard Conditions of Approval above, which includes a Building Materials Survey prior to approval of permits for complete or partial demolition. The condition of approval requires that a building materials survey be conducted by a qualified professional. The survey must include plans on hazardous waste or hazardous materials removal, reuse or disposal procedures to be implemented that fully comply with state hazardous waste generator requirements. Future projects in the Berkeley would also be required to adhere to BAAQMD Regulation 11, Rule 2, which governs the proper handling and disposal of ACM for demolition, renovation, and manufacturing activities in the Bay Area, and California Occupational Safety and Health Administration (CalOSHA) regulations regarding lead-based materials. The California Code of Regulations, §1532.1, requires testing, monitoring, containment, and disposal of lead-based materials, such that exposure levels do not exceed CalOSHA standards. With adherence to Standard Conditions of Approval, BAAQMD, and CalOSHA policies regarding ACM and lead-based paint, impacts at the program level would be less than significant.

Operation

Residential uses do not typically use hazardous materials other than small amounts for cleaning and landscaping. These materials would not be different from household chemicals and solvents already in wide use throughout the Berkeley. Residents and workers are anticipated to use limited quantities of products routinely for periodic cleaning, repair, and maintenance or for landscape maintenance/pest control that could contain hazardous materials. Those using such products would be required to comply with all applicable regulations regarding the disposal of household waste. Therefore, operation of new residential uses pose little risk of exposing the public to hazardous materials.

The proposed project is anticipated and intended to expand housing capacity; the proposed HUE would not facilitate the establishment of new industrial, warehouse, auto-service, or manufacturing uses. Therefore, the proposed project would not introduce new manufacturing, warehouse, or industrial uses that would sell, use, store, transport, or release substantial quantities of hazardous materials

Hazardous Materials Transportation

New housing units would be located in areas near major transportation corridors and existing residential and commercial development. Hazardous materials may be transported into and throughout Berkeley on US-13, I-580, University Avenue, Cedar Street, Shattuck Avenue, Telegraph Avenue, Sixth Street, San Pablo Avenue, and collector and local streets. Accidents on these roadways could result in the release of hazardous materials. Development facilitated by the

proposed HEU would increase residential density near major arterial streets. Industrial and commercial uses on these arterials may require the routine transport of hazardous materials for their business operations. Therefore, development facilitated by the proposed HEU would increase the number of residents near transportation corridors where hazardous materials may be routinely transported. The expected development of housing in Berkeley would increase the number of people in Berkeley that could be exposed to a potential accidental release of hazardous materials.

However, the U.S. Department of Transportation's Office of Hazardous Materials Safety regulates the transportation of hazardous materials, as described in Title 49 of the CFR, and implemented by Title 13 of the CCR. The U.S. Documentation of compliance with hazardous materials regulations codified in Titles 8, 22, and 26 of the CCR, and their enabling legislation set forth in Chapter 6.95 of the California Health and Safety Code, is required for all hazardous waste transport. In addition, individual contractors and property owners are required to comply with all applicable federal, State, and local laws and regulations pertaining to the transport, use, disposal, handling, and storage of hazardous waste, including but not limited to, Title 49 of the CFR. Adherence to applicable regulations and laws would reduce the potential hazards associated with the transport of hazardous materials, including accidental release of hazardous materials during transport.

In addition to mandatory adherence to laws and regulations, Policy EM-14 Hazardous Material Regulation of the 2003 General Plan controls and regulates the use, storage, and transportation of toxic, explosive, and other hazardous and extremely hazardous material to prevent unauthorized and accidental discharges. Following these laws and regulations reduces the risk of accidental release of hazardous materials in transport. Impacts to hazardous materials transport would be less than significant.

Hazardous Materials Use, Storage, and Disposal

The proposed HEU would facilitate residential development within areas of Berkeley where hazardous materials could be stored or used, such as near mixed-use or industrial areas. Facilitating housing in areas near existing commercial and industrial development would add additional residents where hazardous materials are used or transported or where there has been past use of hazardous materials. This would mean that the potential of residents being exposed to hazardous materials may increase due to the following:

- Potential soil/groundwater contamination due to past practices
- The proximity of new residential development to ongoing activity involving the use of hazardous materials.

The introduction of residential components in these areas could potentially increase exposure to hazardous materials. Although the overall quantity of hazardous materials used and requiring disposal in Berkeley could incrementally increase as a result of implementation of the proposed HEU, all new development that uses hazardous materials would be required to comply with the regulations, standards, and guidelines established by the USEPA, the State of California, and City of Berkeley related to storage, use, and disposal of hazardous materials.

As described above in the *Regulatory Setting* discussion, CAL ARP, the Hazardous Materials Business Plan created by Berkeley's TMD and the LHMP established by Alameda County and the City of Berkeley aim to minimize community exposure to hazardous and potentially hazardous materials by avoiding toxic cleaning and building materials and products in civic facilities and services; providing information, opportunities, and incentives to the community for proper disposal of toxic materials; encouraging non-toxic materials and products in homes and businesses as an alternative to

products containing potentially hazardous materials; and providing procedures to follow in the event of a spill. Compliance with these policies would further prepare the City, reduce the risk of spills, and protect the public in the event of an accidental spill or exposure.

In addition to mandatory adherence to laws and regulations, compliance with the Disaster Preparedness and Safety Element and the Environmental Management Element policies from the General Plan, including Policy S-15 (Construction Standards), Policy EM-12 (Education), Policy EM-13 (Hazardous Materials Disclosure), and Policy EM-15 (Environmental Investigation), would reduce the potential for accidental exposure and hazards associated with the use and disposal of hazardous materials. The HEU includes policies and programs to mitigate environmental constraints and comply with the Disaster Preparedness and Safety Element. These policies and programs include the following:

- HEU Policy -10 Lead-Poisoning Prevention
- HEU Policy-12 Home Modification for Accessibility and Safety
- HEU Policy-15 Seismic Safety and Preparedness Programs
- HEU Policy-18 Building Emissions Saving Ordinance (BESO)

The City has also included in their HEU annual property inspections, more restrictive local building code amendments, vegetation management and defensible space, improvement of access and evacuation routes, and infrastructure improvements.

Summary

Compliance with existing applicable regulations and programs would minimize risks from routine transport, use, and disposal of hazardous materials, including potential hazards from the accidental release of hazardous materials. Oversight by the appropriate federal, State, and local agencies and compliance by new development with applicable regulations related to the handling and storage of hazardous materials would minimize the risk of the public's potential exposure to these materials. Therefore, impacts from a hazard to the public or the environment through routine transport, use or disposal of hazardous materials, or from accidental release or exposure to these materials would be less than significant.

Mitigation Measures

Impacts would be less than significant. Therefore, mitigation is not required.

Threshold 3: Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

Impact HAZ-2 IMPLEMENTATION OF THE PROPOSED HEU MAY RESULT IN HAZARDOUS EMISSIONS OR HANDLING OF HAZARDOUS OR ACUTELY HAZARDOUS MATERIALS, SUBSTANCES, OR WASTE WITHIN 0.25 MILE OF AN EXISTING OR PROPOSED SCHOOL. HOWEVER, COMPLIANCE WITH EXISTING REGULATORY REQUIREMENTS WOULD MINIMIZE RISKS TO SCHOOLS AND STUDENTS, RESULTING IN A LESS THAN SIGNIFICANT IMPACT.

The proposed project would facilitate residential and mixed-use development in Berkeley. There are 122 inventory sites within a 0.25-mile radius of Berkeley's existing schools and childcare facilities, as shown in Figure 4.8-2. Additional sites in the Southside and in the middle housing rezoning districts may be located within 0.25 mile of a school.

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As described above under Impact HAZ-1, the proposed HEU would not involve new industrial or manufacturing uses. Hazardous materials and waste generated from reasonably foreseeable development accommodated under the proposed HEU would not pose a health risk to nearby schools or childcare facilities as a majority of these developments would be residential, which is a use that does not typically handle or emit hazardous materials or substances. They may involve use and storage of some materials considered hazardous, though primarily these would be limited to solvents, paints, chemicals used for cleaning and building maintenance, and landscaping supplies. These materials would not be different from household chemicals and solvents already in general and wide use throughout the Berkeley. Uses in the Berkeley that sell, use, store, generate, or release hazardous materials must adhere to applicable federal, State, and local safety standards, ordinances, and regulations.

Additionally, if future housing projects under the HEU include mixed-use commercial, businesses developed as part of these developments that handle or have on-site storage of hazardous materials would be required to comply with the provisions of the California Fire Code and the HHMD CUPA requirements set forth in the California Health and Safety Code, Division 20, Chapter 6.95, Articles 1 and 2. As described in the *Regulatory Setting* above, all businesses that handle more than a specified amount of hazardous materials are required to submit a hazardous materials business plan to a regulating agency, in this case, the HHMD. Therefore, reasonably foreseeable development accommodated under the proposed HEU would not result in use of new hazardous material use within a quarter mile radius of existing schools and childcare facilities in Berkeley, and impacts would be less than significant.

As mentioned above under Impact HAZ-1, construction associated with future development under the HEU may include the temporary transport, storage, and use of potentially hazardous materials including fuels, lubricating fluids, cleaners, or solvents. Specifically, demolition of existing buildings and grading and excavation activities associated with new construction within Berkeley may result in emissions and transport of hazardous materials within one-quarter mile of existing schools. However, adherence to applicable requirements, including DOT and DTSC regulations and the City's Standard Conditions of Approval regarding emission and transport of hazardous materials would ensure impacts at the program level would be less than significant.

Following the policies laid out by the Hazardous Materials Business Plan and the LHMP laid out by Berkeley and Alameda County would minimize risks associated with the accidental release of hazardous materials during operation of the residential and commercial spaces. Additionally, compliance with all other appropriate federal, State, and local agencies, such as CCR and CalOSHA, would minimize the risk of the public's potential exposure to these materials. Therefore, impacts to the public or environment through the accidental release or exposure to hazardous materials as a result of project implementation would be less than significant.

Mitigation Measures

Impacts would be less than significant. Therefore, mitigation is not required.

<p>Threshold 4: Would the project be located on a site that is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?</p>
--

Impact HAZ-3 IMPLEMENTATION OF THE PROPOSED HEU WOULD ACCOMMODATE DEVELOPMENT ON OR NEAR HAZARDOUS MATERIALS SITES. HOWEVER, COMPLIANCE WITH APPLICABLE REGULATIONS AND THE CITY'S STANDARD CONDITIONS OF APPROVAL REQUIRING SITE CHARACTERIZATION AND CLEANUP WOULD MINIMIZE HAZARDS FROM DEVELOPMENT ON CONTAMINATED SITES. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

As noted in the Setting above, there are 361 documented open sites containing or potentially containing hazardous materials contamination in underlying soil and/or groundwater in Berkeley. Further, contamination may be present on other sites not yet documented or listed on a regulatory database such as sites that are currently or have formerly used by gas stations, dry cleaners, and industrial uses. Development facilitated by the proposed HEU may involve ground disturbance on sites where soil, soil vapor, or groundwater contamination is present such that hazardous materials are released. This could expose construction workforce and or nearby occupants to hazardous materials. In particular, inventory sites in the western portion of the City may be exposed to hazardous materials from Cleanup Program sites off San Pablo Avenue and west of Sixth street as well as along University Avenue, among other locations.

Development near these locations would be preceded by investigation, remediation, and cleanup under the supervision of the City's TMD, Regional Water Quality Control Board or DTSC before construction activities could begin. Therefore, the sites would be remediated in accordance with State and regional standards for residential and mixed uses.

It is also possible that underground storage tanks (USTs) in use prior to permitting and record keeping requirements may be present in Berkeley. If an unidentified UST were uncovered or disturbed during construction activities, it would be removed under permit; if such removal would potentially undermine the structural stability of existing structures, foundations, or impact existing utilities, the tank might be closed in place without removal. Tank removal activities could pose both health and safety risks, such as the exposure of workers, tank handling personnel, and the public to tank contents or vapors. Potential risks, if any, posed by USTs would be minimized by managing the tank according to existing standards contained in Division 20, Chapters 6.7 and 6.75 (Underground Storage Tank Program) of the California Health and Safety Code as enforced and monitored by the HHMD. Therefore, potential impacts associated with USTs would be less than significant upon required compliance with applicable regulations.

The extent to which groundwater may be affected by an underground tank, if at all, depends on the type of contaminant, the amount released, the duration of the release, and depth to groundwater. If groundwater contamination is identified, characterization of the vertical and lateral extent of the contamination and remediation activities would be required by RWQCB prior to the commencement of any new construction activities that would disturb the subsurface. If groundwater contamination is identified, characterization of the vertical and lateral extent of the contamination and remediation activities would be required by the by the RWQCB prior to the commencement of any new construction activities that would disturb the subsurface. If contamination exceeds regulatory action levels, the developer would be required to undertake remediation procedures prior to grading and development under the supervision of the RWQCB, depending upon the nature of any identified contamination.

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As discussed under Impact HAZ-1, future development would be subject to the City's Standard Conditions of Approval and the City's TMD would evaluate projects to determine if Phase I/Phase II Environmental Site Assessments are required to characterize potential contamination and develop a soil and groundwater management plan to address hazards during construction and operation. Compliance with existing State and local regulations as well as the City's Standard Conditions of Approval listed under Impact HAZ-1 would reduce impacts to a less than significant level.

Mitigation Measures

Impacts would be less than significant. Therefore, mitigation is not required.

Threshold 5: For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

Impact HAZ-4 THERE ARE NO AIRPORTS WITHIN TWO MILES OF THE BERKELEY, AND BERKELEY IS NOT WITHIN THE INFLUENCE AREA OF AN AIRPORT. NO IMPACT WOULD OCCUR.

There are no public or private airports within Berkeley. The nearest airport is the Oakland International Airport which is located 14 miles south of the City limits. The proposed HEU would have no impact related to a safety hazard or excessive noise hazards within airport land use plan areas or in proximity to airports.

Mitigation Measures

Impacts would be less than significant. Therefore, mitigation is not required.

Threshold 6: Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Impact HAZ-5 THE PROPOSED HEU WOULD NOT RESULT IN PHYSICAL CHANGES THAT COULD INTERFERE WITH OR IMPAIR EMERGENCY RESPONSE OR EVACUATION. THEREFORE, THE PROJECT WOULD NOT RESULT IN INTERFERENCE WITH THESE TYPES OF ADOPTED PLANS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Figure 14 of the Berkeley General Plan identifies existing emergency access and evacuation routes in the City. Many of the proposed inventory sites are located along access and evacuation routes including Sacramento Street, Ashby Avenue, University Avenue, and San Pablo Avenue. General Plan Policy T-28 identifies actions for emergency access. These include not installing diverters or speed humps on streets identified as Emergency Access and Evacuation Routes. While traffic increases associated with the proposed rezoning may affect streets within the city, Sacramento Street, Adeline Street, Ashby Avenue, and Shattuck Avenue would still serve as evacuation routes in case of emergency.

As discussed in Section 4.13, *Public Services and Recreation*, future development in the City would be required to conform to the latest fire code requirements, including provisions for emergency access. With adherence to existing General Plan policies and other regulations, implementation of the proposed HEU would not impair or interfere with an emergency response or evacuation plan. This impact would be less than significant.

Mitigation Measures

Impacts would be less than significant. Therefore, mitigation is not required.

c. Cumulative Impacts

As stated in Section 3, *Environmental Setting*, cumulative development would consist of development under the proposed HEU well as additional projects proposed within the City of Berkeley associated with the University of California's LRDP. Cumulative development could contribute to an increase in hazards related to the use of, and exposure to, hazardous materials. As discussed in the impact analysis, development carried out under the HEU may increase the potential for community risk from hazards and hazardous materials. However, all individual developments carried out under the HEU would be subject to General Plan policies and existing laws and regulations which would reduce impacts to a less than significant level. Since all projects carried out under the proposed HEU would be subject to these policies and regulations, cumulative impacts would be less than significant. Furthermore, the Plan would not combine with any other projects to substantially increase hazards and hazardous materials impacts, especially since other projects would also be subject to local, state, and federal regulations relating to hazards and hazardous materials. Overall, with implementation of the policies and actions included in the General Plan and compliance with existing laws and regulations, the Plan would not make a substantial contribution to cumulative hazards and hazardous materials impacts, and these cumulative impacts would be less than significant.

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4.9 Hydrology and Water Quality

This section evaluates the potential environmental effects related to hydrology and water quality associated with implementation of the proposed Housing Element Update.

4.9.1 Setting

a. Hydrology

Regional Watershed

The California Department of Water Resources divides surface watersheds in California into 10 hydrologic regions. Berkeley lies in San Francisco Bay Hydrologic Region (Bay Region), which contains 33 alluvial groundwater basins, covers approximately 4,500 square miles, and includes all of San Francisco County and portions of Marin, Sonoma, Napa, Solano, San Mateo, Santa Clara, Contra Costa, and Alameda counties. The Bay Region comprises numerous watersheds that drain directly into San Francisco Bay, downstream of the Sacramento-San Joaquin River Delta and coastal creek watersheds in Marin and San Mateo counties that drain directly to the Pacific Ocean. Within the San Francisco Bay Hydrologic Region, the Berkeley is in the Bay Bridges Hydrologic Unit, Berkeley Hydrologic Area, undefined Hydrologic Sub-Area, undefined CDFW Super Planning Watershed, and Point Richmond CDFW Planning Watershed.

Local Watershed

Berkeley is located on the eastern shoreline of the San Francisco Bay and extends east to the ridgelines of the East Bay Hills. There are 10 watersheds (not including the Marina) entirely or partially within City limits. The Potter Watershed is the largest watershed in the city, encompassing approximately one-third of the land area from the southern boundary of the Strawberry Creek Watershed in the north to roughly the Berkeley city limit in the south, and from Claremont Canyon in the east to the San Francisco Bay shore in the west. The watersheds in Berkeley eventually drain into the San Francisco Bay, with the exception of the Wildcat watershed which drains to the north on the eastern side of the ridgelines of the Berkeley Hills (City of Berkeley 2011).

Groundwater

Berkeley lies within the East Bay Plain Subbasin for which the East Bay Municipal Utility District (EBMUD) serves as the Groundwater Sustainability Agency (GSA). Water supply in Berkeley is also provided by EBMUD. The majority of the water delivered by EBMUD originates from the Mokelumne River watershed, and the remaining water originates as runoff from the protected watershed lands and reservoirs in the East Bay Hills. Supplemental groundwater projects would allow EBMUD to be flexible in response to changing external conditions, such as single-year or multiple-year droughts.

Surface Water

Berkeley contains five principal creeks: Derby, Potter, Strawberry, Schoolhouse, and Codornices, all of which flow west from the Berkeley Hills into San Francisco Bay. In addition, there are eight other creeks that are at least partially within the city limits (City of Berkeley 2001). Figure 4.9-1 contains a map showing surface water in Berkeley.

b. Water Quality

The San Francisco Bay region's immediate watershed is highly urbanized, resulting in contaminant loads from point and nonpoint sources. Stormwater runoff pollutants vary with land use, topography, and the amount of impervious surface, as well as the amount and frequency of rainfall and irrigation practices. Typically, runoff in developed areas contains oil, grease, litter, and metals accumulated in streets, driveways, parking lots, and rooftop. It also contains pollutants applied to landscaped areas. All stormwater runoff generated in Berkeley eventually discharges into San Francisco Bay. The runoff is conveyed by storm drains, open channel creeks, and culverted creeks to the Bay. The San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) is the primary agency charged with protecting and enhancing surface and ground water quality in the region (City of Berkeley 2011).

The SFBRWQCB monitors surface water quality through implementation of the Basin Plan and designates beneficial uses for surface water bodies and groundwater. Since nearly all of the waterways within the Potter Watershed are underground, the San Francisco Bay RWQCB has not designated beneficial uses for any of the waterways in the watershed (SFBRWQCB 2017).

c. Flood Hazards

FEMA Flood Hazard Zones

The Federal Emergency Management Agency (FEMA) establishes base flood elevations (BFE) for 100-year and 500-year flood zones and establishes Special Flood Hazard Areas (SFHA). SFHAs are those areas within 100-year flood zones or areas that will be inundated by a flood event having a one percent chance of being equaled or exceeded in any given year. The 500-year flood zone is defined as the area that could be inundated by the flood which has a 0.2 percent probability of occurring in any given year, or once in 500 years, and is not considered an SFHA. Development in flood zones is regulated through the Berkeley Municipal Code Chapter 17.12 Flood Development. Portions of Berkeley are located within the 100-year and 500-year flood hazard zones as mapped by FEMA and are defined by FEMA as flood prone. Figure 4.9-2 shows FEMA flood zones within Berkeley.

Most flooding in Berkeley is caused by (1) heavy rainfall and subsequent runoff volumes that cannot be adequately conveyed by the existing storm drainage system and surface water; or (2) flooding along the waterfront when flows out of the storm drainage system are limited by the backwater effects of the high tide. Areas subject to flooding are primarily found on the western side of Berkeley in the tidal basin areas south of Third Street between Codornices Creek and Gilman Street and between University Avenue and Ashby Avenue (Aquatic Park). Strawberry Creek poses a flood hazard for downtown Berkeley, immediately west of Oxford Street, and to portions of the central UC campus. The North Fork of Strawberry Creek in particular is subject to flash flood conditions in periods of intense rainfall (City of Berkeley 2001).

Figure 4.9-1 Surface Water in Berkeley

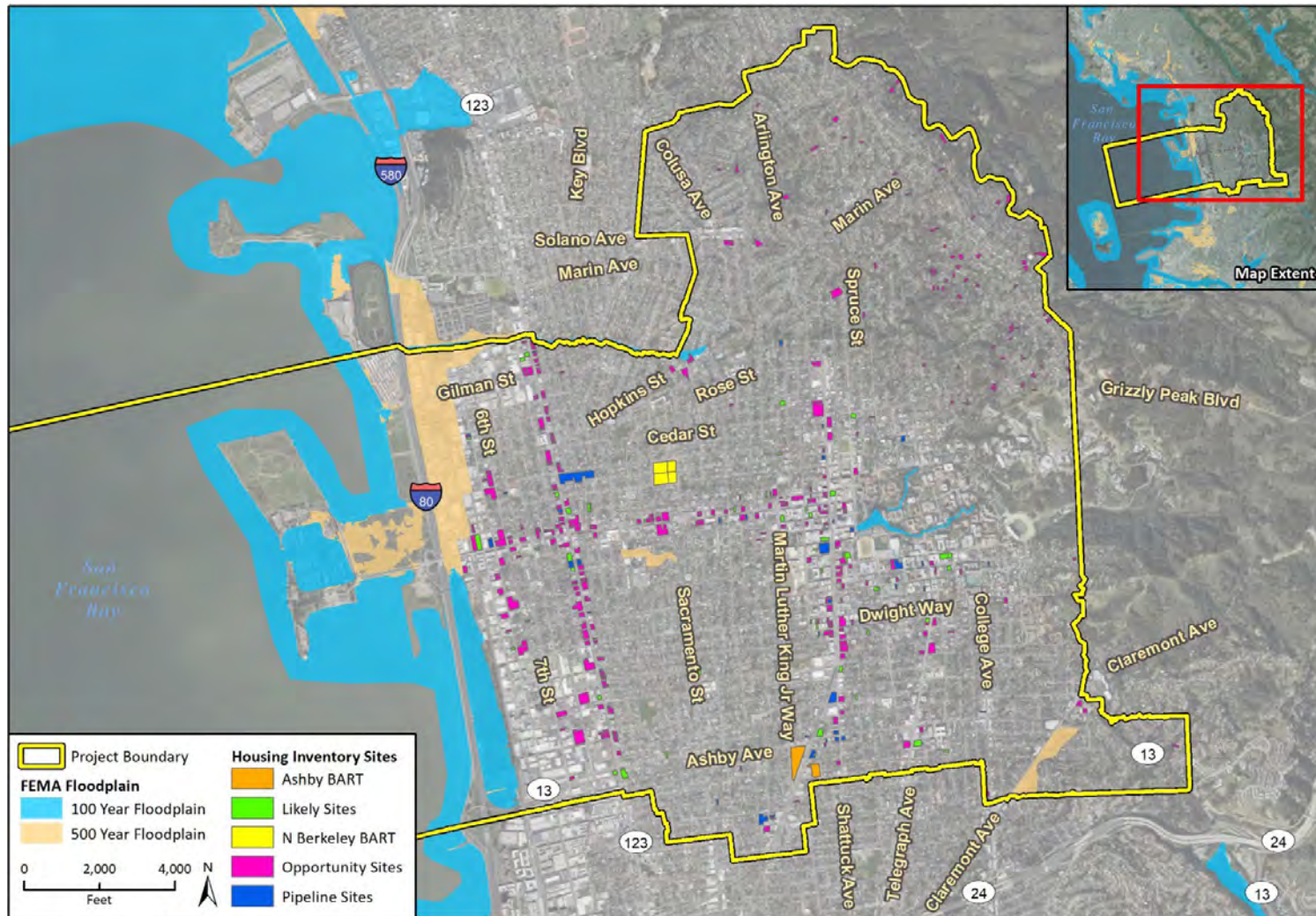


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 Additional data provided by USGS, 2022.

SurfaceWaters_Pro

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Figure 4.9-2 FEMA Flood Zones within Berkeley



Dams and Levees

Failure of the Summit Reservoir and the Berryman Reservoir, located east of Berkeley, could impact inundation downhill of the reservoirs. Summit reservoir is located in the City of El Cerrito and would impact areas between Grizzly Peak Boulevard and The Alameda. The Berryman Reservoir, adjacent to Codornices Park, could potentially inundate a large portion of Berkeley, including neighborhoods between Hopkins and Cedar Streets and in North and West Berkeley, especially at Aquatic Park, and areas east of the I-80 freeway (City of Berkeley 2001).

Tsunami and Seiches

A tsunami is a series of waves generated by an impulsive disturbance in the ocean or in a small, connected body of water. Tsunamis are produced when movement occurs on faults in the ocean floor, usually during very large earthquakes. Sudden vertical movement of the ocean floor by fault movement displaces the overlying water column, creating a wave that travels outward from the earthquake source. An earthquake anywhere in the Pacific Ocean can cause tsunamis around the entire Pacific basin.

Seiches are waves generated in an enclosed body of water, such as San Francisco Bay, from seismic activity. Seiches are related to tsunamis for enclosed bays, inlets, and lakes. These tsunami-like waves can be generated by earthquakes, subsidence or uplift of large blocks of land, submarine and onshore landslides, sediment failures and volcanic eruptions. The strong currents associated with these events may be more damaging than inundation by waves. The largest seiche wave ever measured in San Francisco Bay, following the 1906 earthquake, was four inches high. In a low-likelihood storm scenario (1 in a 100-year flood event) which has a 26 percent chance of occurring at least once in 30 years, approximately 1,900 properties in Berkeley would be estimated to be affected by severe flooding (Risk Factor 2022).

4.9.2 Regulatory Setting

a. Federal Regulations

Federal Clean Water Act

In 1972, Congress passed the Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA), with the goal of “restor[ing] and maintain[ing] the chemical, physical, and biological integrity of the Nation’s waters” (33 U.S.C. § 1251(a)). The CWA directs states to establish water quality standards for all “waters of the United States” and to review and update such standards on a triennial basis. Section 319 mandates specific actions for the control of pollution from non-point sources. The EPA has delegated responsibility for implementation of portions of the CWA, including water quality control planning and control programs, such as the National Pollutant Discharge Elimination System (NPDES) Program, to the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs).

Section 303(c)(2)(b) of the CWA requires states to adopt water quality standards for all surface waters of the United States based on the water body’s designated beneficial use. Water quality standards are typically numeric, although narrative criteria based upon biomonitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards. Applicable water quality standards are contained in the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan).

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Section 303(d) of the CWA bridges the technology-based and water quality-based approaches for managing water quality. Section 303(d) requires that states make a list of waters that are not attaining standards after the technology-based limits are put into place. For waters on this list (and where the USEPA administrator deems they are appropriate), states are to develop total maximum daily loads (TMDL). TMDLs are established at the level necessary to implement the applicable water quality standards. A TMDL must account for all sources of the pollutants that caused the water to be listed.

Section 404 of the CWA prohibits the discharge of any pollutants into “waters of the United States,” except as allowed by permit. 33 Code of Federal Resources § 328.3(a)(3). Section 404 of the CWA authorizes the U.S. Army Corps of Engineers to issue permits for and regulate the discharge of dredged or fill materials into wetlands or other waters of the United States. Under the CWA and its implementing regulations, “waters of the United States” are broadly defined to consist of rivers, creeks, streams, and lakes extending to their headwaters, including adjacent wetlands.

National Pollutant Discharge Elimination System (NPDES)

In California, the National Pollutant Discharge Elimination System (NPDES) program is administered by the SWRCB through the nine RWQCBs. Berkeley lies within the jurisdiction of SFBRWQCB (Region 2) and is subject to the waste discharge requirements of the Municipal Regional Stormwater Permit (MRP) (Order No. R2-2015-0049) and NPDES Permit No. CAS612008, which was issued on November 19, 2015 and went into effect on January 1, 2016. The MRP has expired and the SFBRWQCB is in the process of re-issuing the MRP. It is anticipated the new MRP will include new and more restrictive requirements which could expand the definition of regulated projects and add new requirements. Under Provision C.3 of the MRP, Berkeley is required to use its planning authority to include appropriate source control, site design, and stormwater treatment measures in new development and redevelopment projects to address stormwater runoff pollutant discharges and address increases in runoff flows from new development and redevelopment projects. These requirements are generally reached through the implementation of Low Impact Development (LID) techniques and other controls (City of Berkeley 2011).

The MRP requires appropriate LID and Stormwater Treatment technologies in new development and redevelopment projects, to mimic the natural hydrology of the lands prior to disturbance. The objective of LID and post-construction BMPs for stormwater is to reduce runoff and mimic a site’s predevelopment hydrology by minimizing disturbed areas and impervious cover and then infiltrating, storing, detaining, evapotranspiring, and/or biotreating stormwater runoff close to its source. LID employs principles such as preserving and recreating natural landscape features and minimizing imperviousness to create functional and appealing site drainage that treats stormwater as a resource, rather than a waste product. Practices used to adhere to these LID principles include measures such as rain barrels and cisterns, green roofs, permeable pavement, preserving undeveloped open space, and biotreatment through rain gardens, bioretention units, bioswales, and planter/tree boxes.

b. State Regulations

State Water Resources Control Board General Construction Permit

The SWRCB is responsible for developing statewide water quality policy and exercise the powers delegated to the state by the federal government under the Clean Water Act. Construction activities that disturb one or more acres of land that could impact hydrologic resources must comply with the

requirements of the SWRCB Construction General Permit (Order 2012-0006-DWQ). Under the terms of the permit, applicants must file Permit Registration Documents (PRD) with the SWRCB prior to the start of construction. The PRDs include a Notice of Intent, risk assessment, site map, Stormwater Pollution Prevention Plan (SWPPP), annual fee, and a signed certification statement. The PRDs are submitted electronically to the SWRCB via the Storm Water Multiple Application and Report Tracking System website.

Applicants must also demonstrate conformance with applicable BMPs and prepare a Storm Water Pollution Prevention Plan (SWPPP) with a site map that shows the construction site perimeter, existing and proposed buildings, lots, roadways, stormwater collection, and discharge points, general topography before and after construction, and drainage patterns across the city. The SWPPP must list BMPs that would be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby water resources. Additionally, the SWPPP must contain a visual monitoring program, a chemical monitoring program for nonvisible pollutants if there is a failure of the BMPs, and a sediment-monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. Some sites also require implementation of a Rain Event Action Plan. The updated Construction General Permit (2012-0006-DWQ) went into effect on July 17, 2012 and requires applicants to comply with post-construction runoff reduction requirements (SWRCB 2017a).

Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Control Act establishes the SWRCB and each RWQCB as the principal agencies for coordinating and controlling water quality in California. Specifically, the Porter-Cologne Act authorizes the SWRCB to adopt, review, and revise policies for all waters of the state (including both surface and groundwater) and directs the RWQCBs to develop regional basin plans.

The SFBRWQCB has the authority to implement water quality protection standards through the issuance of permits for discharges to waters in its jurisdiction. Water quality objectives for receiving waters within Berkeley are specified in the Water Quality Control Plan for the Basin Plan, prepared by the SFBRWQCB in compliance with the federal CWA and the Porter Cologne Act. The principal elements of the Basin Plan are a statement of beneficial water uses protected under the plan; water quality objectives necessary to protect the designated beneficial water uses; and strategies and time schedules for achieving the water quality objectives. Together, narrative and numerical objectives define the level of water quality that shall be maintained in the region. The water quality objectives are achieved primarily through the establishment and enforcement of waste discharge requirements (WDR).

The RWQCBs have primary responsibility for issuing WDRs. The RWQCBs may issue individual WDRs to cover individual discharges or general WDRs to cover a category of discharges. WDRs may include effluent limitations or other requirements that are designed to implement applicable water quality control plans, including designated beneficial uses and the water quality objectives established to protect those uses and prevent the creation of nuisance conditions. Violations of WDRs may be addressed by issuing Cleanup and Abatement Orders or Cease and Desist Orders, assessing administrative civil liability, or seeking imposition of judicial civil liability or judicial injunctive relief.

State Updated Model Water Efficient Landscape Ordinance (Assembly Bill 1881)

The updated Model Water Efficient Landscape Ordinance required cities and counties to adopt landscape water conservation ordinances by January 31, 2010 or to adopt a different ordinance that is at least as effective in conserving water as the updated Model Water Efficient Landscape Ordinance (WELO). The City of Berkeley adopted the Bay-Friendly Landscape Ordinance in accordance with this requirement. The ordinance incorporates landscape protocols developed by the Alameda County Waste Management Authority and all parameters in the WELO. The ordinance became effective as of February 1, 2010. In May of 2015, the governor issued Executive Order B-29-15 requiring the state to revise the model WELO to increase water efficiency standards for new and retrofitted landscapes through more efficient irrigation systems, greywater usage, onsite stormwater capture, and by limiting the portion of landscapes that can be covered in turf. The last update to the City's Water Efficient Landscape Ordinance occurred on December 1, 2015.

c. Local Regulations

San Francisco Bay Regional Water Quality Control Board

Regional authority for planning, permitting, and enforcement is delegated to the nine RWQCBs. The regional boards are required to formulate and adopt water quality control plans for all areas in the region and establish water quality objectives in the plans. Berkeley is within the jurisdiction of SFBRWQCB (Region 2).

The SFBRWQCB addresses region-wide water quality issues through the Basin Plan, updated most recently in March 2017. This Basin Plan designates beneficial uses of the state waters in Region 2, describes the water quality that must be maintained to support such uses, and provides programs, projects, and other actions necessary to achieve the standards established in the Basin Plan (SFBRWQCB 2017). The Water Quality Control Policy for the Enclosed Bays and Estuaries of California, as adopted by the SWRCB in 1995, also provides water quality principles and guidelines to prevent water quality degradation and protect the beneficial uses of waters of enclosed bays and estuaries.

Alameda County Clean Water Program

The City of Berkeley, along with 13 other incorporated cities in Alameda County, has joined with the ACFCO, the Zone 7 Water Agency, and Alameda County in the Clean Water Program (CWP) initiative. Members of the program are regulated waste dischargers under the 2015 NPDES Permit issued by the SFBRWQCB and are responsible for municipal storm drain systems that they own or operate. As part of the permitting process, dischargers must submit a Stormwater Management Plan that describes a framework for management of stormwater discharges during the term of the permit (City of Berkeley 2011).

The City of Berkeley, as a co-permittee under the NPDES permit, is subject to the Provision C.3 requirements for new development and redevelopment projects, including post-construction stormwater management requirements. Provision C.3 requirements are separate from, and in addition to, requirements for erosion and sediment control and for pollution prevention measures during construction. All new development or redevelopment projects that create or replace 10,000 square feet of impervious surfaces or 5,000 square feet or more of impervious surface for special land use categories (i.e., uncovered parking lots, restaurants, auto service facilities, and gasoline

stations) are considered to be “regulated projects” and are required to implement site design measures, source control measures, and stormwater treatment measures to reduce stormwater pollution during operation of the project. The permit specifies methods to calculate the required size of treatment devices. All projects that create and/or replace 2,500 square feet or more but less than 10,000 square feet of impervious surface are required to meet site design requirements in Provision C.3.i of the MRP.

Regulated projects subject to stormwater treatment measures would require the implementation of LID features, such as harvesting and reuse, bioretention areas, pervious paving, green roofs, flow-through planters, tree well filters, and media filters. Systems must be designed to treat stormwater runoff volume equal to the 85th percentile 24-hour storm event, 80 percent of the annual runoff from the site, a flow design of runoff from a rain event equal to 0.2 inches/hour intensity, or an equivalent method (City of Berkeley 2011).

The City of Berkeley is shown as a solid gray area on CWP’s Hydromodification Management Susceptibility Map (Alameda County 2022). According to the CWP, solid gray designates the land area between the hills and the tidal zone. The hydromodification standard and all associated requirements apply to projects in solid gray area unless a project proponent demonstrates that all project runoff will flow through fully hardened channels. Short segments of engineered earthen channels (length less than 10 times the maximum width of trapezoidal cross-section) can be considered resistant to erosion if located downstream of a concrete channel of similar or greater length and comparable cross-section dimensions. Plans to restore a hardened channel may affect the hydromodification standard applicability in this area. Only a small portion of the city, along Codornices Creek and in the Berkeley Hills, is subject to hydromodification measures, as determined by the CWP’s Hydromodification Management Susceptibility Map. This would require projects in the hydromodification area that create and/or replace one acre or more of impervious surface to match post-development stormwater flow rates and volumes to pre-development conditions.

City of Berkeley General Plan: A Guide for Public Decision-Making (2001)

Applicable General Plan policies and actions related to hydrology and water quality are included in the Environmental Management Element and the Disaster Preparedness and Safety Element. Environmental Management Element Goal EM-4 promotes water conservation, improving water quality and restoring creeks. The Disaster Preparedness and Safety Element identifies areas of potential hazards in the city and includes goals and policies to improve safety with respect to natural disasters and environmental hazards such as flooding.

Environmental Management Element Policies and Actions

Policy EM-5: “Green” Buildings. Promote and encourage compliance with “green” building standards.

Policy EM-23: Water Quality in Creeks and San Francisco Bay. Take action to improve water quality in creeks and San Francisco Bay.

Action EM-23D. Restore a healthy freshwater supply to creeks and the Bay by eliminating conditions that pollute rainwater, and by reducing impervious surfaces and encouraging use of swales, cisterns, and other devices that increase infiltration of water and replenishment of underground water supplies that nourish creeks.

Policy EM-24: Sewers and Storm Sewers. Protect and improve water quality by improving the citywide sewer system.

Action EM-24E. Ensure that new development pays its fair share of improvements to the storm sewerage system necessary to accommodate increased flows from the development.

Policy EM-25: Groundwater. Protect local groundwater by promoting enforcement of state water quality laws that ensure non-degradation and beneficial use of groundwater.

Policy EM-26: Water Conservation. Promote water conservation through City programs and requirements.

Policy EM-27: Creeks and Watershed Management. Whenever feasible, daylight creeks by removing culverts, underground pipes, and obstructions to fish and animal migrations.

Action EM-27D. Restrict development on or adjacent to existing open creeks. When creeks are culverted, restrict construction over creeks and encourage design solutions that respect or emphasize the existence of the creek under the site.

Action EM-27G. Regulate new development within 30 feet of an exposed streambed as required by the Creeks Ordinance and minimize impacts on water quality and ensure proper handling of stormwater runoff by requiring a careful review of any public or private development or improvement project proposed in water sensitive areas.

Action EM-27 H. Consider amending the Creek Ordinance to restrict parking and driveways on top of culverts and within 30 feet of creeks.

Disaster Preparedness and Safety Element Policies and Actions

Policy S-26: Flood Hazards Mitigation. Reduce existing flood hazards in Berkeley.

Action S-26A. Conduct periodic evaluation of reservoir safety and undertake actions necessary to mitigate the potential for dam failure.

Action S-26B. Continue to rehabilitate the City storm drain system to reduce local flooding caused by inadequate storm drainage.

Action S-26C. Continue and significantly strengthen programs promoting storm drain maintenance by public and private sectors.

Action S-26D. Continue to work with the East Bay Municipal Utility District to complete the planned seismic improvements to the Berryman Reservoir.

Policy S-27: New Development. Use development review to ensure that new development does not contribute to an increase in flood potential.

Action S-27A. Regulate development in the Waterfront flood-prone areas consistent with the Berkeley Waterfront Specific Plan.

Action S-27B. Ensure that new development conforms to requirements and guidelines of the National Flood Insurance Program (NFIP).

Action S-27C. Require new development to provide for appropriate levels of on-site detention and/ or retention of storm water.

Action S-27D. Regulate development within 30 feet of an exposed streambed as required by the Preservation and Restoration of Natural Watercourses (Creeks) Ordinance.

Policy S-28: Flood Insurance. Reduce the cost of flood insurance to property owners in the City.

Action S-28A. Identify, prioritize, and implement activities necessary to qualify for a high Community Rating System (CRS) evaluation under the National Flood Insurance Program (NFIP).

Action S-28B. Update and revise flood maps for the city.

Action S-28C. Incorporate FEMA guidelines and suggested activities into City plans and procedures for managing flood hazards.

Berkeley Municipal Code

Four chapters of the City of Berkeley Municipal Code (BMC) contain directives pertaining to hydrology and water quality issues:

- **Preservation and Restoration of Natural Watercourses – Chapter 17.08.** The purpose of this chapter is to regulate: (1) building over or near culverted creeks; (2) building near open creeks; (3) the rehabilitation and restoration of natural waterways; and (4) the management of watersheds.
- **Stormwater Management and Discharge Control – Chapter 17.20.** This chapter provides the stormwater requirements for projects conducted within the City of Berkeley and is consistent with the requirements of the San Francisco RWQCB and the MRP permit. The purpose of this chapter is to ensure the health, safety, and general welfare of the City of Berkeley’s citizens by eliminating non-stormwater discharges to the City’s storm drain system and by reducing the contamination of stormwater by pollutants to the maximum extent practicable.
- **Standards of Construction in Special Flood Hazard Zones – Chapter 17.12.** The ordinance also ensures that property owners construct new and substantially improved buildings in the 100-year floodplain in accordance with the National Flood Insurance Program’s goals to protect life and property. Section 500 of this chapter addresses standards of construction in special flood hazard areas. Section 530 addresses coastal high hazard areas vulnerable to future sea level rise.
- **Grading, erosion and sediment control requirements – Section 21.40.270.** This requires projects to comply with all grading, erosion and sediment control regulations on file in the Public Works Department.

4.9.3 Impact Analysis

a. Methodology and Significance Thresholds

Assessment of impacts is based on review of site information and conditions and City information regarding hydrology and water quality issues. In accordance with Appendix G of the *CEQA Guidelines*, a project would result in a significant impact if it would:

1. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality;
2. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;

3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would
 - a. Result in substantial erosion or siltation on- or off-site
 - b. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site
 - c. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff
 - d. Impede or redirect flood flows;
4. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation; or
5. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

b. Project Impacts and Mitigation Measures

Threshold 1: Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Impact HYD-1 FUTURE DEVELOPMENT UNDER THE PROPOSED HEU WOULD INVOLVE GROUND-DISTURBING ACTIVITIES AND THE USE OF HEAVY MACHINERY THAT COULD RELEASE MATERIALS, INCLUDING SEDIMENTS AND FUELS, WHICH COULD ADVERSELY AFFECT WATER QUALITY. OPERATION OF POTENTIAL FUTURE DEVELOPMENT COULD ALSO RESULT IN DISCHARGES TO STORM DRAINS THAT COULD BE CONTAMINATED AND AFFECT DOWNSTREAM WATERS. HOWEVER, COMPLIANCE WITH REQUIRED PERMITS AND EXISTING REGULATIONS, AND IMPLEMENTATION OF BEST MANAGEMENT PRACTICES CONTAINED THEREIN, WOULD ENSURE THAT POTENTIAL WATER QUALITY IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Construction Impacts

Construction activities associated with development of inventory sites, in the middle housing rezoning districts and in the Southside under the proposed HEU would have the potential to cause soil erosion from exposed soil, and accidental release of hazardous materials used for equipment such as vehicle fuels and lubricant, or temporary siltation from storm water runoff. Soil disturbance would occur during excavation for proposed building foundations, demolition of existing buildings, and grading for improvements to public spaces and landscaped areas or development projects. However, future development facilitated by the proposed project would be required to comply with State and local water quality regulations designed to control erosion and protect water quality during construction. This includes compliance with the requirements of the SWRCB Construction General Permit, which requires preparation and implementation of a SWPPP for projects that disturb one acre or more of land. The SWPPP must include erosion and sediment control BMPs that would meet or exceed measures required by the Construction General Permit, as well as those that control hydrocarbons, trash, debris, and other potential construction-related pollutants. Construction BMPs would include scheduling inlet protection, silt fencing, fiber rolls, stabilized construction entrances, stockpile management, solid waste management, and concrete waste management. Post-construction stormwater performance standards are also required to specifically address water quality and channel protection events. Implementation of these BMPs would prevent

or minimize environmental impacts and ensure that discharges during the construction phase of new development facilitated by the proposed Project would not cause or contribute to the degradation of water quality in receiving waters.

Should dewatering be necessary during construction, it may result in the discharge of potentially contaminated groundwater to surface water and may degrade the water quality of surrounding watercourses and waterbodies. However, future development projects would be subject to the San Francisco Bay Regional Water Quality Control Board Order No. R2-2012-0060, General Waste Discharge Requirements for Discharge or Reuse of Extracted Brackish Groundwater, Reverse Osmosis Concentrate Resulting from Treated Brackish Groundwater, and Extracted Groundwater from Structural Dewatering Requiring Treatment (Groundwater General Permit). The Groundwater General Permit requires dischargers to obtain an Authorization to Discharge, treat effluent to meet water quality-based effluent limitations, and comply with the Monitoring and Reporting Program. Pumped groundwater must be tested and if determined to be contaminated, the water must be collected and either treated or disposed of according to waste discharge requirements of Order No. R2-2012-0060. Future applicants are required to comply with all requirements of the Groundwater General Permit.

In addition, BMC Chapter 21.40 requires project applicants to comply with grading, erosion, and sediment control regulations on file in the Public Works Department and BMC Chapter 17.20 requires BMPs to be implemented to minimize non-stormwater discharges from the site during construction (City of Berkeley 2016). Compliance with local and State regulatory requirements and implementation of construction BMPs would minimize discharges during the construction phase of future development under the Housing Element Update and would not result in the degradation of water quality in receiving waters. Therefore, construction-related water quality impacts would be less than significant.

Operational Impacts

Berkeley is highly urbanized and the majority of the inventory sites and sites in the middle housing rezoning district and the Southside are almost entirely covered with impervious surfaces except for landscaped areas. Development under the Housing Element Update would involve infill and redevelopment of existing sites. Future development would be required to be implemented in compliance with existing programs and permits, including the BMC and the Municipal Regional Stormwater NPDES Permit (No. CAS612008). Development design would include BMPs to avoid adverse effects associated with stormwater runoff quality. Specifically, future development facilitated by the proposed project would be required to implement LID Measures and on-site infiltration, as required under the C.3 provisions of the Municipal Regional Stormwater Permit (MRP). Implementation of LID measures would reduce water pollution from stormwater runoff as compared to existing conditions. For example, on-site infiltration would improve the water quality of stormwater prior to infiltration or discharge from the site.

Water Quality

Implementation of development facilitated by the proposed project would result in a significant impact if activities would conflict with applicable water quality permits or waste discharge requirements. Future development facilitated by the project would be subject to multiple permits and approvals associated with the protection of water quality, as discussed below.

The City of Berkeley is responsible for enforcing the requirements of the Municipal Regional Stormwater Permit (MRP). Compliance with the MRP must include operational and maintenance

control measures, or BMPs and construction-related BMPs. Provisions specified in the MRP that affect construction projects generally include but are not limited to Provision C.3 (New Development and Redevelopment), Provision C.6 (Construction Site Control), and Provision C.15 (Exempted and Conditionally Exempted Discharges), as described below. Future projects would be required to comply with all provisions of the MRP, including:

- **Provision C.3** requires LID techniques be utilized to employ appropriate source control, site design, and stormwater treatment measures in new development and redevelopment projects; to address stormwater runoff pollutant discharges; and to prevent increases in runoff flows from new development and redevelopment projects by mimicking a site's predevelopment hydrology. This is to be accomplished by employing principles such as minimizing disturbed areas and imperviousness, and preserving and recreating natural landscape features, in order to "create functional and appealing site drainage that treats stormwater as a resource, rather than a waste product" (SFBRWQCB 2015). These LID practices, as well as other provisions and BMPs specified in the MRP, may require long-term operational inspections and maintenance activities to ensure the effective avoidance of significant adverse impacts associated with water quality degradation.
- **Provision C.6** requires implementation of a construction site inspection and control program at all construction sites and an Enforcement Response Plan to prevent construction-related discharges of pollutants into storm drains. Inspections shall confirm implementation of appropriate and effective erosion and other BMPs by construction site operators/developers, and reporting shall be used to confirm and demonstrate the effectiveness of its inspections and enforcement activities to prevent polluted construction site discharges into storm drains.
- **Provision C.10** recognizes trash as a significant pollutant in urban runoff and aims to reduce trash loads from municipal separate storm sewer systems. (Refer to Section 4.16, *Utilities and Service Systems* regarding solid waste generation impacts of the project.) The City currently implements a suite of zero-waste programs, including a requirement that all residential properties of five or more units provide recycling and organics collection for their tenants' food scraps, food soiled papers, and any plant debris generated at the property.
- **Provision C.15** exempts specified unpolluted non-stormwater discharges and to conditionally exempt non-stormwater discharges that are potential sources of pollutants. In order for non-stormwater discharges to be conditionally exempted, those permitted under the MRP must identify appropriate BMPs, monitor the non-stormwater discharges where necessary, and ensure implementation of effective control measures to eliminate adverse impacts to waters of the state consistent with the discharge prohibitions of the MRP.

Provision C.3 of the MRP addresses post-construction stormwater requirements for new development and redevelopment projects that add and/or replace 10,000 square feet or more of impervious area or special land use categories that create and/or replace 5,000 square feet of impervious surfaces, such as auto service facilities, retail gas stations, restaurants, and uncovered parking lots. These "regulated" projects are required to meet certain criteria: 1) incorporate site design, source control, and stormwater treatment measures into the project design; 2) minimize the discharge of pollutants in stormwater runoff and non-stormwater discharge; and 3) minimize increases in runoff flows as compared to pre-development conditions. Additionally, projects in Berkeley that drain to a natural water body must also construct and maintain hydromodification measures to ensure that estimated post-project runoff peaks and durations do not exceed estimated pre-project peaks and duration. LID methods are the primary mechanisms for implementing such controls.

Compliance with the MRP and BMC would increase infiltration of stormwater, decrease stormwater runoff, and would reduce the risk of water contamination from operation of new developments to the maximum extent practicable, and the project would reduce water pollution from stormwater runoff as compared to existing conditions. Therefore, the proposed project would not violate water quality standards or waste discharge requirements, would not significantly contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff, and would not substantially degrade water quality. Impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant without mitigation. No mitigation measures are required.

Threshold 2: Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?
Threshold 5: Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Impact HYD-2 FUTURE DEVELOPMENT FACILITATED UNDER THE PROPOSED HEU WOULD NOT SUBSTANTIALLY DEplete GROUNDWATER SUPPLIES OR INTERFERE SUBSTANTIALLY WITH GROUNDWATER RECHARGE SUCH THAT THERE WOULD BE A NET DEFICIT IN AQUIFER VOLUME OR A LOWERING OF THE LOCAL GROUNDWATER TABLE. FURTHER, IMPLEMENTATION OF LOW IMPACT DEVELOPMENT MEASURES AND ON-SITE INFILTRATION REQUIRED UNDER THE C.3 PROVISIONS OF THE MRP, AND COMPLIANCE WITH THE BERKELEY MUNICIPAL CODE WOULD INCREASE THE POTENTIAL FOR GROUNDWATER RECHARGE. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Future development under the Housing Element Update would not use or deplete groundwater resources. Water supply for Berkeley is provided by EBMUD. The groundwater aquifer beneath Berkeley is not currently used for water storage or drinking water supply. Therefore, future development under the proposed project would not include installation of new groundwater wells or use of groundwater from existing wells.

If construction activities for future development under the proposed project encounter groundwater, dewatering may be required. However, dewatering would only occur to the extent that it was necessary for construction, and a resulting lowering of the groundwater table would be temporary and localized. Potential depressions created by underground structures would also be localized. Groundwater levels would recover upon cessation of dewatering activities.

Berkeley is urbanized and the majority of the inventory sites, sites in the middle housing rezoning districts and Southside are developed with impervious surfaces and existing buildings, so development associated with the proposed project would not result in an increase in the amount of impervious surfaces in the area, and therefore would not interfere with groundwater recharge. Additionally, development facilitated by the project would be required to comply with Provision C.3 of the MRP, which promotes infiltration. Implementation of LID measures would increase absorption of stormwater runoff and the potential for groundwater recharge.

Berkeley is under the jurisdiction of the SFBRWQCB, which is responsible for preparing the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan). The Basin Plan designates beneficial uses of water in the region and establishes narrative and numerical water quality

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objectives. The Basin Plan serves as the basis for the SFBRWQCB's regulatory programs and incorporates an implementation plan for achieving water quality objectives. With adherence to the State and local water quality standards discussed above, the project would not have an adverse effect on water quality and would not interfere with the objectives and goals in the Basin Plan.

Therefore, development under the Housing Element Update would not result in a net deficit in aquifer volume or a lowering of the groundwater table and would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant without mitigation. No mitigation measures are required.

Threshold 3a: Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site?

Threshold 3b: Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Threshold 3c: Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Threshold 3d: Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would impede or redirect flood flows?

Impact HYD-3 DEVELOPMENT UNDER THE PROPOSED HEU WOULD NOT SUBSTANTIALLY ALTER THE EXISTING DRAINAGE PATTERN OF FUTURE DEVELOPMENT SITES, INCLUDING THROUGH THE ALTERATION OF THE COURSE OF A STREAM OR RIVER, IN A MANNER WHICH WOULD RESULT IN SUBSTANTIAL EROSION OR SILTATION ON- OR OFF-SITE OR SUBSTANTIALLY INCREASE THE RATE OR AMOUNT OF SURFACE RUNOFF IN A MANNER WHICH WOULD RESULT IN FLOODING OR EXCEED THE CAPACITY OF STORMWATER DRAINAGE SYSTEMS. IMPACTS RELATED TO DRAINAGE PATTERNS WOULD BE LESS THAN SIGNIFICANT.

Construction

Construction activities would involve stockpiling, grading, excavation, paving, and other earth-disturbing activities, which may result in the alteration of existing drainage patterns. As described under Impact HYD-1 above, compliance with the NPDES Construction General Permit, NPDES MS4 General Permit, and the Berkeley Municipal Code would reduce the risk of short-term erosion and

increased runoff resulting from drainage alterations during construction. Therefore, impacts would be less than significant.

Operation

No surface water bodies would be directly affected by development under the Housing Element Update; the Housing Element Update would not involve the alteration of a course of a stream or river. Development could potentially alter the exiting drainage patterns at the future development sites (including inventory sites, sites in the middle housing rezoning districts, and Southside) through the introduction of new impervious surfaces and infrastructure. However, the future development sites and vicinities are urbanized. Of the 364 housing inventory sites, most are currently developed and approximately 105 sites are currently vacant. However, the vacant sites are relatively small (all are under 0.4 acres except for one site which is 0.98 acres) and therefore the introduction of impervious surfaces on these sites would not substantially affect the drainage patterns of the area or stormwater runoff volumes due to the relatively minor change in impervious surface area in the larger context.

New impervious surfaces could locally increase the rate and/or amount of surface runoff, redirect runoff to different discharge locations, or concentrate runoff from sheet flow to channelized flow. Surface water runoff rate and amount is determined by multiple factors, including the amount and intensity of precipitation and amount of precipitation that infiltrates to the groundwater. Infiltration is also determined by several factors, including soil type, antecedent soil moisture, rainfall intensity, the amount of impervious surfaces in a watershed, and topography. The rate of surface runoff is largely determined by topography. Runoff that does not infiltrate would be captured in the city's storm drain system and ultimately conveyed to the San Francisco Bay, as under current conditions.

Although site-specific drainage pattern alterations could occur with development facilitated by the proposed project, such alterations would not result in substantial adverse effects. The inventory sites are mostly covered with impervious surfaces, and development under the proposed project would not introduce new impervious areas to the extent that the rate or amount of surface runoff would substantially increase. Development that could be facilitated by the proposed project would not introduce substantial new surface water discharges and would not result in flooding on- or off-site. Overall drainage patterns, including direction of flow and conveyance to stormwater infrastructure, would not be modified by the project, and the runoff volume and rate from the project would be reduced compared to existing conditions.

Further, as discussed under Impact HYD-1 above, MRP-regulated projects must treat 80 percent or more of the volume of annual runoff for volume-based treatment measures or 0.2-inch per hour for flow-based treatment measures. Projects that create or replace 2,500 square feet or more, but less than 10,000 square feet, of impervious surface must implement site design measures to reduce stormwater runoff.

All regulated projects in Berkeley are also required to prepare a Stormwater Management Plan (SWMP) that includes the post-construction Best Management Practices (BMPs) that control pollutant levels pursuant to BMC Chapter 17.20 and the Alameda County Clean Water Program. All SWMPs would be reviewed by the City of Berkeley prior to the issuance of building permits and the most appropriate BMPs would be identified.

Compliance with the General Plan goals and policies and the BMC would increase infiltration of stormwater and reduce stormwater runoff from operation of new developments to the extent practicable. Therefore, development that could be facilitated by the proposed project would not

substantially alter the existing drainage pattern of the site or area or alter the course of any stream or river, would not result in erosion or siltation, and would not substantially increase the rate of surface runoff in a manner which would result in flooding on- or off-site or exceed capacity of a stormwater system. Impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant without mitigation. No mitigation measures are required.

Threshold 4: In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation?

Impact HYD-4 DEVELOPMENT UNDER THE PROPOSED HEU WOULD PLACE HOUSING AND OTHER STRUCTURES WITHIN FEMA-DESIGNATED FLOOD HAZARD AREAS AND TSUNAMI ZONES. HOWEVER, COMPLIANCE WITH THE GENERAL PLAN, THE BMC, AND THE CALIFORNIA HEALTH AND SAFETY CODE WOULD REDUCE POTENTIAL EFFECTS ASSOCIATED WITH FLOOD EVENTS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Berkeley does not contain large surface water bodies that would result in seiches (including Aquatic Park). As shown on Figure 4.9-2, there are a few FEMA-designated 100-year Flood Hazard Areas throughout the project area, particularly in the western portion of the city. The western-most portion of the project area contains housing opportunity sites; only one housing opportunity site and three R-1 Single Family Residential sites are within a FEMA-designated 100-year Flood Hazard Area. As mentioned above, Chapter 17.12 of the BMC contains standards for construction in flood zones, including using appropriate building materials and techniques and ensures that flood-resistant design occurs per the most restrictive provisions available. In all areas of special flood hazard zones, BMC Section 17.12.090 requires standards for anchoring, construction materials and methods such as using flood-resistant materials, and elevation and floodproofing. BMC Section 17.12.100 contains standards for utilities in special flood hazard zones, which requires new water supply and sanitary sewage systems to be designed to minimize or eliminate infiltration of floodwaters into systems and discharge of systems to floodwater. On-site waste disposal systems should also be located to avoid impairment to them, or contamination from them during a flood event. In addition, the Berkeley General Plan also includes goals and policies addressing flood-related hazards including Policy S-26 (Flood Hazards Mitigation), Policy S-27 (New Development), and Policy S-28 (Flood Insurance).

Development under the Housing Element Update would be required to be consistent with the General Plan goals and policies listed above. New development that would occur under the proposed project would therefore be designed to withstand flooding hazards, including FEMA-designated Flood Hazard Areas. Therefore, although development under the proposed project would place housing and other structures within FEMA-designated Flood Hazard Areas, potential flood impacts would be less than significant.

The western-most portion of the project area contains housing opportunity sites in tsunami zones (California Department of Conservation 2021). However, as mentioned above, future development under the proposed Housing Element Update would be required to adhere to standards in BMC Chapter 17.12, which specifies requirements for construction and utilities in special flood hazard zones, floodways, and coastal high hazard areas, as well as goals and policies in the General Plan as outlined above under Section 4.9.2c, which are intended to minimize impacts attributed to flooding in established flood hazard zones. Additionally, the development facilitated by the proposed project would be required to adhere to existing federal, State, and local laws and regulations that address

the management and control of pollutants, including regulations addressing the proper disposal, transportation, storage, and handling of potentially hazardous materials, including the California Health and Safety Code, Division 7 of the California Water Code, and Chapter 15.12 of the BMC. Adherence to goals and policies in the General Plan, the BMC, and the California Health and Safety Code would reduce the risk of the release of pollutants. Impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant without mitigation. No mitigation measures are required.

c. Cumulative Impacts

A project's environmental impacts are "cumulatively considerable" if the "incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (*CEQA Guidelines* Section 15065(a)(3)). The geographic scope for cumulative hydrology and water quality impacts is the extent of the watersheds located in Berkeley, as described above under "Local Watersheds." This geographic scope is appropriate for hydrology and water quality because water quality impacts are localized in the watershed where the impact occurs.

Development under the Housing Element Update in combination with cumulative development discussed in Section 3, *Environmental Setting*, including development under the University's LRDP in Berkeley, could increase stormwater runoff such that water quality impacts could occur. However, overall, implementation of the proposed project and projects planned under the University's LRDP would not substantially increase the total area of impervious surface in the project area; would not result in substantial groundwater use or affect groundwater recharge, and would not modify the course of an existing stream or river. Required conformance with State and local policies and regulations would reduce hydrology and water quality impacts associated with future cumulative development. New development and redevelopment within the City would be subject to City, State, and federal policies and ordinances, design, guidelines, the Zoning Code, and other applicable regulatory requirements that reduce impacts related to water quality on a project-by-project basis.

The water quality regulations implemented by the SFBRWQCB take a basin-wide approach and consider water quality impairment in a regional context. For example, the NPDES Construction Permit ties receiving water limitations and basin plan objectives to terms and conditions of the permit, and the MRP encompasses all of the surrounding municipalities to manage stormwater systems and be collectively protective of water quality.

As discussed under Impact HYD-4, portions of Berkeley are located within a 100-year flood hazard area. Cumulative development also subject to inundation may have localized impacts. However, projects would be analyzed and mitigated on a case-by-case basis and would be designed to avoid or mitigate potential impacts related to flooding in compliance with the jurisdiction's Municipal Code. Cumulative impacts related to flooding, seiche, and tsunami would therefore be less than significant. The proposed Housing Element Update would not impede or redirect flood flows or risk release of pollutants due to inundation. Impacts from implementation of the Housing Element Update related to flood flows and inundation would be less than significant. Because flooding is localized and site-specific, the Housing Element Update would not have a cumulatively considerable contribution to a significant cumulative impact related to flood hazard or inundation risks.

Policies and regulatory requirements described above would avoid significant impacts to water quality and reduce stormwater runoff with future development. Therefore, cumulative

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development in combination with development under the proposed Housing Element Update would not result in a significant cumulative impact with respect to hydrology and water quality. Cumulative impacts would be less than significant and the project's contribution to cumulative impacts would not be cumulatively considerable.

4.10 Land Use and Planning

This section analyzes the consistency of the proposed HEU with applicable land use plans, policies, and regulations, and identifies environmental effects that would arise from such inconsistencies.

4.10.1 Setting

a. Land Uses

The general distribution of land uses within Berkeley is shown in Table 4.10-1. Residential uses and streets occupy almost three-quarters of the overall land area of Berkeley. Institutional uses, such as the University of California, schools, churches, public facilities, and hospitals occupy approximately nine percent of the total land area. Commercial uses make up approximately seven percent of the City's land area, open space six percent, and manufacturing four percent. Approximately two percent of the City's land is vacant, and most of the vacant land is located in an area purchased by the East Bay Regional Park District for the Eastshore State Park (City of Berkeley 2001).

Table 4.10-1 Approximate Land Use Summary

Land Use	Percentage of Total Land Use (%)
Residential	48
Streets	24
Institutional	9
Commercial	7
Open Space	6
Manufacturing	4
Vacant	2
Total	100

Source: City of Berkeley 2001

City of Berkeley General Plan Land Use Classifications

General Plan land use classifications describe a range of land uses and intensities that reflect different General Plan policies related to the type, location, and intensity of development. Since the General Plan land use classifications describe land uses and development intensities in a relatively large area, they are not intended to be used as standards to determine the maximum allowable density on a specific parcel. Allowable densities and uses in each zoning district are established in the City's Zoning Ordinance. The intent of General Plan land use classifications is to reflect the range of existing zoning districts. Zoning Ordinance regulations for a specific area might allow for a smaller range of uses than allowed by the land use classifications. The Zoning Ordinance is further discussed below under *Local Regulations*.

- **Low Density Residential (1-10 du/ac):** These areas are generally characterized by single-family homes. The Low Density Residential land use classification applies to use of land for residential, community services, schools, home occupations, recreational uses, and open space and institutional facilities. Population density will generally not exceed 22 persons per acre.

- **Low Medium Density Residential (10-20 du/ac):** These areas are generally characterized by single-family homes and small multi-family structures with two or three units. The Low Medium Density Residential land use classification applies to the same land uses allowed under Low Density Residential. Population density will generally range from 22 to 44 persons per acre.
- **Medium Density Residential (20-40 du/ac):** These areas are generally characterized by a mix of single-family homes and small to medium sized multi-family structures. The Medium Density Residential land use classification applies to the same land uses allowed under Low Density Residential. Population density will generally range from 44 to 88 persons per acre.
- **High Density Residential (40-100 du/ac):** These areas are generally characterized by large, multi-family structures conveniently located near transit, the Downtown, the University campus, or BART. The High Density Residential land use classification applies to use of land for residential, community service, schools, institutional, recreational uses, open space, and in some cases where allowed by zoning, ground-floor commercial and office uses. Population density will generally range from 88 to 220 persons per acre.
- **Neighborhood Commercial (FAR <1 to 3):** These areas are generally characterized by pedestrian-oriented, neighborhood-serving commercial development, and multi-family residential structures, and are usually located on two-lane streets with on-street parking and transit. The Neighborhood Commercial land use classification applies to use of land for local-serving commercial, residential, office, community service, and institutional uses. Population density will generally range from 44 to 88 persons per acre.
- **Avenue Commercial (FAR <1 to 4):** These areas are generally characterized by pedestrian-oriented commercial development and multi-family residential structures, and are usually located on wide, multi-lane avenues served by transit or BART. The Avenue Commercial land use classification applies to use of land for local-serving and regional-serving commercial, residential, office, community service, and institutional uses. Population density will generally range from 44 to 88 persons per acre.
- **Downtown (FAR <1 to 6):** This area is identified as the Downtown in the Downtown Plan and is characterized by high density commercial, office, arts, culture, and entertainment and residential development. The Downtown classification is intended to encourage, promote, and enhance development that will increase the residential population in the Downtown, provide new high density, transit-oriented housing opportunities, and support a vital city center. The Downtown land use classification applies to use of land for medium- and high-density housing, regional- and local-serving arts, entertainment, retail, office, cultural, open space, civic uses, and institutional uses and facilities. It is General Plan policy to increase the residential population in Downtown. Population density will generally range from 88 to 220 persons per acre.
- **Institutional (FAR <1 to 4):** These areas are designated towards institutional, government, educational, recreational, open space, natural habitat, woodlands, and public service uses and facilities, such as the University of California, BART, Berkeley Unified School District, and East Bay Municipal Utility District facilities.
- **Manufacturing (FAR <1 to 2):** These areas are intended to maintain and preserve areas of Berkeley for manufacturing and industrial uses necessary for a multi-faceted economy and job growth. Appropriate uses for these areas are identified in the West Berkeley Plan.
- **Mixed Use Residential (FAR <1 to 1.5):** These areas are intended to maintain and preserve areas of the City for lighter manufacturing and industrial uses and allow for additional uses, including residential, where determined appropriate by zoning, and only if the use will not weaken Berkeley's manufacturing and industrial economy. Appropriate uses for these areas are

identified in the West Berkeley Plan. Population density will generally range from 22 to 44 persons per acre, where housing is allowed.

- **Waterfront/Marina (FAR 0 to 0.5):** These areas are intended to maintain and preserve areas of Berkeley adjacent to the Bay for open space, recreational uses, waterfront-related commercial and visitor services, boating, and water transit facilities. Appropriate uses for these areas are identified in the Waterfront Plan.
- **Open Space and Recreation:** These areas are intended for parks, open space, pathways, recreational facilities, natural habitat, and woodlands. The Open Space and Recreation land use classification applies to use of land for parks, recreational facilities, schoolyards, community services, and facilities necessary for the maintenance of the areas.
- **Old Santa Fe Right-of-Way:** The approximate location of the Santa Fe Right-of-Way (ROW) is shown in the General Plan Land Use Diagram and is shown for informational purposes only and not intended to serve as a land use classification. Some areas of the ROW are occupied by park uses, some by residential uses, and some vacant.
- **Southside Study Area:** The approximate location of the Southside Plan Study Area is shown in the General Plan Land Use Diagram and is shown for informational purposes only and not intended to serve as a land use classification. The Southside Plan was adopted on September 27, 2011 and serves as a guide for future development in the Southside area (City of Berkeley 2011).
- **University Avenue and West Berkeley Nodes:** Both the West Berkeley Plan and the University Avenue Strategic Plan established specific "nodes" along University Avenue and San Pablo Avenue in which specific regulatory policies and programs would be applied as an overlay to accomplish area plan goals for revitalization in these specific locations.

4.10.2 Regulatory Setting

a. State Regulations

Housing Accountability Act

The Housing Accountability Act (HAA) was passed in 1982 in recognition that “the lack of housing, including emergency shelters, is a critical problem”, and “among the consequences of those actions are discrimination against low-income and minority households, lack of housing to support employment growth, imbalance in jobs and housing, reduced mobility, urban sprawl, excessive commuting, and air quality deterioration.” The HAA removes barriers to infill housing development projects by expediting housing approvals, and prevents local agencies from disapproving housing development projects for very low, low-, or moderate-income households where appropriate. On September 29, 2017, Governor Brown signed SB 167, AB 1515, and AB 678 to amend the HAA in order to further limit a local agency’s ability to disapprove or reduce the density of residential projects.

Senate Bill 330, Housing Crisis Act of 2019

Senate Bill 330 (SB 330) took effect in 2019 and declared a statewide housing emergency to be in effect until January 1, 2025. SB 330 prohibits cities and counties from the following actions:

- Establishing rules that would change the land use designation or zoning of parcels to a less intensive use or reducing the intensity of the land that was allowed under the specific or general plan as is in effect on January 1, 2018;

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- Imposing or enforcing a moratorium on housing development within all or a selection of the local agency's jurisdictions;
- Imposing or enforcing new design standards established on or after January 1, 2020, that are not objective design standards;
- Establishing or implementing limits on permit numbers issued by the local agency unless the limit was approved before January 1, 2005, in a "predominantly agricultural county."

Planning and Zoning Law

State law requires each city and county in California to adopt a general plan for the physical development of the land within its planning area (Government Code Sections 65300-65404). The general plan must contain land use, housing, circulation, open space, conservation, noise, and safety elements, as well as any other elements that the city or county may wish to adopt. The circulation element of a local general plan must be correlated with the land use element.

Zoning authority originates from city and county police power and from the State's Planning and Zoning Law, which sets minimum requirements for local zoning ordinances. The city or county zoning code is the set of detailed requirements that implement the general plan policies at the level of the individual parcel. The zoning code presents standards for different uses and identifies which uses are allowed in the various zoning districts of the jurisdiction. Since 1971, State law has required the city or county zoning code to be consistent with the jurisdiction's general plan. The consistency requirement does not apply to charter cities other than Los Angeles unless the charter city adopts a consistency rule.

Sustainable Communities and Climate Protection Act (SB 375)

The Sustainable Communities and Climate Protection Act (SB 375) supports the State's climate goals by helping reduce greenhouse gas emissions through coordinated transportation, housing, and land use planning. Under the Act, the California Air Resources Board (CARB) set targets for 2020 and 2035 for each of the 18 metropolitan planning organization regions in 2010 and updated them in 2018. Each of the regions must prepare a Sustainable Communities Strategy (SCS), as an integral part of its regional transportation plan, that contains land use, housing, and transportation strategies that, if implemented, would allow the region to meet CARB's targets. The Act establishes some incentives to encourage implementation of the development patterns and strategies included in an SCS. Developers can get relief from certain environmental review requirements under the California Environmental Quality Act (CEQA) if their new residential and mixed-use projects are consistent with a region's SCS that meets the targets (see Public Resources Code Sections 21155, 21155.1, 21155.2, 21159.28).

b. Regional Regulations

Association of Bay Area Governments (ABAG)/Metropolitan Transportation Commission (MTC) Plan Bay Area 2050

The Association of Bay Area Governments and the Metropolitan Transportation Commission (ABAG/MTC) Plan Bay Area 2050, adopted in October 2021, integrated transportation and land-use plan for the nine-county San Francisco Bay Area, including Alameda County. Plan Bay Area 2050 meets all state and federal requirements for a Regional Transportation Plan and Sustainable Communities Strategy, also referred to as the RTP/SCS. The Plan describes where and how the

region can accommodate the slightly fewer than 1.4 million new households and 1.4 million new jobs projected in the Bay Area by 2050 and details the regional transportation investment strategy over this period. The Plan identifies 35 strategies focus on improving housing, the economy, transportation, and the environment across the Bay Area over a 30-year period. The plan has identified four geographic areas to guide where future growth in housing and jobs would be focused over the next 30 years: Priority Development Areas (PDA), Priority Production Areas (PPA), Transit-Rich Areas (TRA), and High-Resource Areas (HRA). ABAG and MTC developed land use and transportation scenarios in Plan Bay Area 2050 that distributes the total amount of anticipated growth across the region and measure how well each scenario measures against the Plan goals. Based upon performance, the preferred scenario provides a regional pattern of household and employment growth and a corresponding transportation investment strategy (ABAG/MTC 2021).

c. Local Regulations

City of Berkeley General Plan

Adopted in 2001, the Berkeley General Plan is a long-range statement of policies for the development and preservation of Berkeley.¹ The General Plan identifies seven major goals: 1) Preserve Berkeley's unique character and quality of life; 2) Ensure that Berkeley has an adequate supply of decent housing, living wage jobs, and businesses providing basic goods and services; 3) Protect local and regional environmental quality; 4) Maximize and improve citizen participation in municipal decision-making; 5) Create a sustainable Berkeley; 6) Make Berkeley a disaster-resistant community, that can survive, recover from, and thrive after a disaster; and 7) Maintain Berkeley's infrastructure, including streets, sidewalks, buildings, and facilities; storm drains and sanitary sewers; and open space, parks, pathways, and recreation facilities.

The General Plan's goals are implemented through decisions and actions consistent with the objectives policies and actions of each of the nine Elements: Land Use, Transportation, Housing, Disaster Preparedness & Safety, Open Space & Recreation, Environmental Management, Economic Development and Employment, Urban Design & Preservation and Citizen Participation. The General Plan explicitly recognizes that given its broad scope, "inherent tensions exist between Plan objectives and policies that must be balanced against one another through the decision-making process on particular development and land use decisions."²

The Land Use Element of the City's General Plan includes goals, policies and actions that support context-sensitive infill development, historic preservation, transit-oriented development, mobility and access that prioritizes alternative modes of transportation, "complete neighborhoods" that are well-served by a balance of commercial, community-serving/institutional and residential uses, and zoning changes to incentivize affordable housing.

City of Berkeley Zoning Ordinance

The General Plan, area plans, and other citywide plans are implemented through Chapter 23 of the Berkeley Municipal Code (BMC), also known as the Zoning Ordinance, and other City ordinances. The City's Zoning Ordinance and associated Zoning Maps set forth specific zoning districts and codify

¹ The City of Berkeley Housing Element of the General Plan was last updated in April 2015. Unlike other General Plan elements, Berkeley's Housing Element is updated every 8 years, according to requirements of the California Housing and Community Development Department.

² City of Berkeley General Plan (2001), p.I-2.

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development standards that apply to each district. The City of Berkeley is divided the zoning districts listed in Table 4.10-2.

Table 4.10-2 Berkeley Zoning Districts

Name of District	District Symbol
Residential Districts	
Single-Family Residential	R-1
Limited Two-family Residential	R-1A
Environmental Safety Residential	ES-R
Restricted Two-family Residential	R-2
Restricted Multiple-family Residential	R-2A
Multiple-family Residential	R-3
Multi-family Residential	R-4
High Density Residential	R-5
Residential Southside	R-S
Residential Southside Mixed Use	R-SMU
Residential BART Mixed-Use	R-BMU
Commercial Districts	
Corridor Commercial	C-C
University Avenue Commercial	C-U
Neighborhood Commercial	C-N
Elmwood Commercial	C-E
North Shattuck Commercial	C-NS
South Area Commercial	C-SA
Telegraph Avenue Commercial	C-T
Solano Avenue Commercial	C-SO
Downtown Mixed-Use	C-DMU
West Berkeley Commercial	C-W
Adeline Corridor Commercial	C-AC
Manufacturing District	
Manufacturing	M
Mixed Manufacturing	MM
Mixed Use-Light Industrial	MU-LI
Mixed Use-Residential	MU-R
Special Districts	
Specific Plan	SP
Unclassified	U
Overlay Zones (Two or More Districts)	
Hillside	H
Civic Center	C

Name of District	District Symbol
Overlay Zones (One District)	
Dealership	D
Downtown Arts	DA
Notes: The General Plan land use classifications do not encompass all the current zoning districts since the zoning districts were updated in July 2022 while the General Plan was adopted in 2001.	
Source: BMC Section 23.108.020	

Table 4.10-3 shows the Zoning Districts and their corresponding General Plan land use classifications.

Table 4.10-3 Zoning District and Corresponding General Plan Land Use Classification

General Plan Land Use Classification	Zoning District
Low Density Residential	R-1, ES-R
Low Medium Density Residential	R-1A, R-2
Medium Density Residential	R-2A, R-3
High Density Residential	R-4, R-5, R-BMU
Neighborhood Commercial	C-N, C-E, C-NS, C-SO, C-SA
Avenue Commercial	C-SA, C-1, C-T, C-W, C-AC
Downtown	C-2, C-1, C-DMU
Manufacturing	M, MM, MU-LI
Mixed-Use Residential	MU-R
Southside Area	R-S, R-SMU
Notes: The General Plan land use classifications do not encompass all the current zoning districts since the zoning districts were updated in July 2022 while the General Plan was adopted in 2001.	
Source: City of Berkeley 2001, BMC	

City of Berkeley 2015-2023 Housing Element

The City of Berkeley Housing Element serves as the City's framework for housing goals, policies, and detailed programs for meeting existing and future housing needs and for increasing affordable housing opportunities. The current 2015-2023 Housing Element addresses the planning period of January 31, 2015 to January 31, 2023 as required by the State Housing Element Law. The Housing Element guides decisions to facilitate the development, rehabilitation, and availability of housing in Berkeley. Details and policies from the Housing Element are discussed in Section 4.12, *Population and Housing*.

City of Berkeley Climate Action Plan (2009)

Adopted in 2009, the Berkeley Climate Action Plan (CAP) outlines a vision for a more sustainable Berkeley and addresses policies and actions for transportation, energy, waste, community engagement and climate adaptation. Chapter 3, Sustainable Transportation and Land Use, of the CAP presents a vision that “cycling, walking, public transit, and other sustainable modes of transportation become mainstream.” This chapter has a goal to “Increase density along transit corridors” and a policy to “encourage the development of housing (including affordable housing) retail services, and employment centers in areas of Berkeley best served by transit.” Other CAP

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goals and policies relevant to the project are discussed in more detail in Section 4.7, *Greenhouse Gas Emissions*.

City of Berkeley Resiliency Strategy

The City's Resiliency Strategy, released in 2016, identifies goals and actions to improve the ability of the community to survive, adapt, and thrive through acute shock or chronic challenges including earthquakes, wildfires, and climate change. The six goals include:

1. Build a Connected and Prepared Community
2. Accelerate Access to Reliable and Clean Energy
3. Adapt to the Changing Climate
4. Advance Racial Equity
5. Excel and Working Together within the City Government to Better Serve the Community
6. Build Regional Resilience

Area Plans

The City of Berkeley has adopted multiple area plans in order to provide guidance for development in each specific area and set forth policies relating to land use, housing, transportation, economic development, community character, and public safety. Area plans include the South Berkeley Area Plan (adopted in 1990), the Downtown Plan (adopted in 1990), the West Berkeley Plan (adopted in 1993), the University Avenue Strategic Plan (adopted in 1996), the South Shattuck Strategic Plan (adopted in 1997), the Southside Plan (adopted in 2011), and the Adeline Corridor Specific Plan (adopted in 2020).

4.10.3 Impact Analysis

a. Methodology and Significance Thresholds

The analysis in this section focuses on environmental impacts from the implementation of the project, as well as consistency with any applicable land use plans, policies, or regulations. The following thresholds of significance are based on Appendix G of the *CEQA Guidelines*. For purposes of this Program EIR, implementation of the project may have a significant adverse impact if it would do any of the following:

1. Physically divide an established community; or
2. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

The consistency analysis describes existing regional and local plans and policies and is intended to fulfill the requirements of *CEQA Guidelines* Section 15125(d). The emphasis of the analysis is on the project's inconsistency and potential conflicts between the project and existing applicable land use plans adopted for the purpose of avoiding or mitigating an environmental effect, and whether inconsistencies, if any, would result in significant environmental effects. The project is considered consistent with the provisions of the identified regional and local plans if it meets the general intent of the applicable plans and does not conflict with directly applicable policies. A given project need not be in perfect conformity with each and every policy nor does state law require precise conformity of a proposed project with every policy or land use designation. Courts have also

acknowledged that general and specific plans attempt to balance a range of competing interests, and that it is nearly, if not absolutely, impossible for a project to be in perfect conformity with each and every policy set forth in the applicable plan. Additionally, in reaching such consistency conclusions, the City may also consider the consequences of denial of a project, which can also result in other policy inconsistencies. For example, Government Code Section 65589.5 explains that the potential consequences of limiting the approval of housing are reduced mobility, urban sprawl, excessive commuting, and air quality deterioration.

For an impact to be considered significant, an inconsistency would also have to result in a significant adverse change in the environment not already addressed in the other resource chapters of this EIR. The analysis below provides a discussion of the most relevant policies from the various planning documents. However, the City's consistency conclusions are based upon the planning documents as a whole.

b. Project Impacts and Mitigation Measures

Threshold 1: Would the project physically divide an established community?

Impact LU-1 THE PROPOSED HEU INCLUDES POLICIES AND PROGRAMS TO ENCOURAGE HOUSING DEVELOPMENT ON UNDERUTILIZED AND VACANT SITES AND ALONG ESTABLISHED COMMERCIAL CORRIDORS AND NEIGHBORHOODS. DEVELOPMENT UNDER THE PROPOSED HEU WOULD NOT PHYSICALLY DIVIDE AN ESTABLISHED COMMUNITY. NO IMPACT WOULD OCCUR.

The proposed project involves policies and programs that would increase the potential number of dwelling units in the City and intensify development in existing urban areas, but would not result in the construction of barriers, such as new roads or other linear development or infrastructure, that would divide the existing communities or neighborhoods. Short-term construction impacts would be mostly contained within the individual development sites themselves.

No new transportation infrastructure would be built under the proposed HEU. Therefore, existing roadways would not be permanently blocked, and temporary construction would not limit access to a community or restrict movement within a community.

The proposed HEU would not divide a community; rather it is designed to meet the City's RHNA and includes implementation programs that would promote the development of existing vacant, underdeveloped or underutilized properties, thereby locating people closer to existing employment, goods and services within an established community. Furthermore, the proposed project includes Housing Programs with requirements for Affirmatively Furthering Fair Housing (AFFH) that puts a great emphasis on anti-displacement and tenant protection. Specifically, Program 1.5 enforces replacement housing when developing on nonvacant sites with existing residential units pursuant to AB 1397. Additionally, the proposed HEU does not include any new infrastructure, or alteration of existing infrastructure or thoroughfares, that may create physical divisions or boundaries where none currently exist. Therefore, no impact related to dividing an established community would occur.

Mitigation Measure

No impact would occur and no mitigation measures would be required.

Threshold 2: Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Impact LU-2 THE PROPOSED HEU WOULD BE CONSISTENT WITH THE GOALS AND POLICIES OF PLAN BAY AREA 2050, THE BERKELEY GENERAL PLAN, AND THE BMC. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The proposed HEU would provide a framework for introducing new housing at all levels of affordability that is within access to transit, jobs, services, and open spaces. Through its identification of sites for future development and implementation of housing programs, the project would encourage development of up to 19,098 new residential units, which would address the City’s fair share housing needs as quantified in the RHNA.

The proposed HEU would also include zoning ordinance and zoning map amendments to change levels of discretion, increase permitted densities, and adjust lot coverage, height and setback standards in the R-1, R-1A, R-2, R-2A, and MU-R districts and in the Southside Plan Area.

The following analysis discusses the project’s consistency with relevant and applicable plans and regulations, including Plan Bay Area 2050 and the City of Berkeley General Plan. Consistency with Plan Bay Area is presented in Table 4.10-4, and consistency with the General Plan is presented in Table 4.10-5. The project is determined to be either “consistent” or “inconsistent” with the identified goals and policies.

Plan Bay Area 2050

As shown in Table 4.10-4, the project would be consistent with the key goals and strategies of Plan Bay Area 2050. Therefore, the project would not conflict with Plan Bay Area 2050 and impacts would be less than significant.

Table 4.10-4 Project Consistency with Plan Bay Area 2050

Measure	Proposed HEU Project Consistency
Housing. Spur Housing Production for Residents of all Income Levels	
<p>H1. Further strengthen renter protections beyond state law. Building upon recent tenant protection laws, limit annual rent increases to the rate of inflation, while exempting units less than 10 years old.</p>	<p>Consistent. The HEU analyzes housing needs for present and future residents. The City’s Regional Housing Needs Assessment (RHNA) allocation is 8,934 units, which are distributed across over four income levels. The units would be distributed as is over the four income levels: 2,446 very low units, 1,408 low units, 1,416 moderate units, and 3,664 above moderate units. The allocation described would be protected and not altered. Furthermore, Policies H-3, H-5 and H-9 of the proposed Housing Element Update serves to ensure rent stabilization, ensure below market rate rental housing remains affordable, and preserve existing rental housing.</p>
<p>H2. Preserve existing affordable housing. Acquire homes currently affordable to low and middle-income residents for preservation as permanently deed-restricted affordable housing.</p>	<p>Consistent. As described above, the Housing Element Update is required to provide 2,446 very low-income units, 1,408 low-income units, 1,416 moderate-income units. The affordable housing would be preserved for these income levels. HEU Goal D Special Needs Housing and Homelessness Prevention and policies under this goal would ensure housing affordability in Berkeley especially for people at the lowest income levels.</p>
<p>H4. Build adequate affordable housing to ensure homes for all. Construct enough deed-restricted affordable homes to fill the existing gap in housing for the unhoused community and to meet the needs of low-income households.</p>	

Measure	Proposed HEU Project Consistency
<p>H3. Allow a greater mix of housing densities and types in Growth Geographies. Allow a variety of housing types at a range of densities to be built in Priority Development Areas, select Transit-Rich Areas and Select High-Resource Areas.</p>	<p>Consistent. As shown in Figure 2-4 of the Project Description (Housing Element Update Sites Inventory Locations), most of the housing inventory sites are generally located in areas near major transportation corridors such as Shattuck Avenue, Cedar Street, and San Pablo Avenue, and near existing residential and commercial development. Additionally, the project would encourage development in the Southside and in other areas throughout the City which are in transit-accessible Priority Development Areas (PDAs). HEU Policy H-17 also aims to promote transit-oriented new construction and encourage construction of new high-density housing on major transit corridors in proximity to transit stations.</p>
<p>H5. Integrate affordable housing into all major housing projects. Require a baseline of 10-20% of new market-rate housing developments of five units or more to be affordable to low-income households.</p>	<p>Consistent. Pursuant with the Ordinance Number 936, <i>Inclusionary Housing</i>, and Chapter 23C.12 of the BMC, the City requires that all new rental housing with five or more units must provide 20 percent of the units as below market rate units or pay the Affordable Housing Mitigation Fee or provide some below market rate units and pay a prorated fee. Of the 20 percent below market rate units, half must be provided to low-income households, and half must be provided to very-low income households (City of Berkeley 2022). Additionally, HEU Goal A Affordable Housing aims to ensure Berkeley residents have access to quality housing at a range of housing options and prices.</p>
<p>EN4. Maintain urban growth boundaries. Using urban growth boundaries and other existing environmental protections, focus new development within the existing urban footprint or areas otherwise suitable for growth, as established by local jurisdictions.</p>	<p>Consistent. The project would facilitate development of housing on vacant and/or underutilized sites mostly in urbanized areas of the City which would reduce pressure to develop open space areas. By placing residents close to jobs and alternative methods of transportation, the project would reduce greenhouse gas emissions and other criteria pollutants associated with vehicle use to help communities stay healthy and safe.</p>

Source: ABAG 2021

City of Berkeley General Plan

As shown in Table 4.10-5, the project would be consistent with the goals, policies, and actions within the General Plan. As noted under Government Code Section 65589.5(a), the Legislature has concluded that “the lack of housing, including emergency shelters, is a critical problem that threatens the economic, environmental, and social quality of life in California.” More specifically, the Legislature’s stated intent is “to assure that counties and cities recognize their responsibilities in contributing to the attainment of the state housing goal...to assure that counties and cities will prepare and implement housing elements which...will move toward attainment of the state housing goal” (Government Code Section 65581). The project would help meet the City’s RHNA allocation, as well as efficiently utilize vacant, underutilized, and underdeveloped lots within the City to increase the supply of housing. The project would encourage development of housing, which is supportive of the City’s goal and policies.

Table 4.10-5 Project Consistency with Relevant General Plan Goals and Policies

General Plan Policy	Proposed HEU Project Consistency
Land Use Element	
Maintain and Preserve the Character of Berkeley	
<p>Policy LU-3 Infill Development. Encourage infill development that is architecturally and environmentally sensitive, embodies principles of sustainable planning and construction, and is compatible with neighboring land uses and architectural design and scale.</p>	<p>Consistent. The proposed project would facilitate infill development on underutilized sites in order to increase density to accommodate a higher number of residents. Individual future projects would be subject to the City’s existing general development standards (BMC Chapter 23.304) to ensure that buildings are compatible with neighboring land uses and architectural design and scale. Additionally, future development with two or more units would be required to comply with the City’s proposed set of objective development standards which are anticipated to be adopted in Spring 2023. The objective development standards are tailored to streamline approval of housing projects under the HEU by providing a clear and consistent set of review rules and processes. Examples of standards that the City will define include building height, set back distances, and units allowed per acre. This would ensure that future development is compatible with the character and scale of Berkeley according to the City’s standards (City of Berkeley 2022).</p>
<p>Policy LU-7 Neighborhood Quality of Life. Preserve and protect the quality of life in Berkeley’s residential areas through careful land use decisions.</p>	
Policy LU-4 Discretionary Review. Preserve and enhance the aesthetic, environmental, economic, and social character of Berkeley through careful land use and design review decisions.	
Maintain and Enhance Berkeley’s Residential Areas	
<p>Policy LU-9 Non-Residential Traffic. Minimize or eliminate traffic impacts on residential areas from institutional and commercial uses through careful land use decisions.</p>	<p>Consistent. The proposed project would mostly facilitate development within or adjacent to transportation corridors in proximity to BART stations and bus stations. As discussed in Section 4.14, <i>Transportation</i>, the proposed project would not result in unavoidably significant transportation impacts. HEU Policy H-16 would encourage transit-oriented development and would reduce vehicle miles traveled (VMT).</p>
<p>Policy LU-11 Pedestrian- and Bicycle-Friendly Neighborhoods. Ensure that neighborhoods are pedestrian- and bicycle-friendly with well-maintained streets, street trees, sidewalks, and pathways.</p>	<p>Consistent. Future development would be required to comply with residential bicycle parking standards pursuant to BMC Section 23.322.090. Implementation of the HEU would not interfere or conflict with the City’s pedestrian or bicycle network.</p>
Maintain and Enhance Berkeley’s Commercial Areas and the Downtown	
<p>Policy LU-23 Transit-Oriented Development. Encourage and maintain zoning that allows greater commercial and residential density and reduced residential parking requirements in areas with above-average transit service such as Downtown Berkeley.</p>	<p>Consistent. Policy H-16 of the Housing Element Update would encourage construction of new high-density housing on major transit corridors and in proximity to transit stations. Development at the North Berkeley and Ashby BART stations in particular would be transit-oriented development which would allow residents to easily access the BART and reduce the need for/usage of single-occupancy vehicles. Pursuant to Chapter 23.334 of the BMC, developments that provide more affordable housing than required and/or a robust Transportation Demand Management Plan would be able to reduce their parking supply.</p>

General Plan Policy

Proposed HEU Project Consistency

Policy LU-27 Avenue Commercial Areas. Maintain and improve Avenue Commercial areas, such as University, San Pablo, Telegraph, and South Shattuck, as pedestrian-friendly, visually attractive areas of pedestrian scale and ensure that Avenue areas fully serve neighborhood needs as well as a broader spectrum of needs.

Consistent. The proposed project would facilitate most development near Avenue Commercial areas such as Shattuck Avenue, San Pablo Avenue, and University Avenue. Future development with two or more units would be required to comply with the City's proposed set of objective development standards, which are anticipated to be adopted in Spring 2023. The objective development standards are tailored to streamline approval of housing projects under the HEU by providing a clear and consistent set of review rules and processes. Examples of standards that the City will define include building height, set back distances, and units allowed per acre. This would ensure that future development is compatible with the character and scale of Berkeley according to the City's standards (City of Berkeley 2022).

Policy LU-32 Ashby BART Station. Encourage affordable housing or mixed-use development including housing on the air rights above the Ashby BART station and parking lot west of Adeline Street.

Consistent. The sites inventory for the proposed project currently assumes that 1,200 units from the Ashby and North Berkeley BART Station TOD project would be permitted under the Housing Element Update term from 2023-2031.

Transportation Element

Automobile Use Reduction

Policy T-10 Trip Reduction. To reduce automobile traffic and congestion and increase transit use and alternative modes in Berkeley, support, and when appropriate require, programs to encourage Berkeley citizens and commuters to reduce automobile trips, such as:

1. Participation in a citywide Eco-Pass Program (also see Transportation Policy T-3).
2. Participation in the Commuter Check Program.
3. Carpooling and provision of carpool parking and other necessary facilities.
4. Telecommuting programs.
5. "Free bicycle" programs and electric bicycle programs.
6. "Car-sharing" programs.
7. Use of pedal-cab, bicycle delivery services, and other delivery services.
8. Programs to encourage neighborhood-level initiatives to reduce traffic by encouraging residents to combine trips, carpool, telecommute, reduce the number of cars owned, shop locally, and use alternative modes.
9. Programs to reward Berkeley citizens and neighborhoods that can document reduced car use.
10. Limitations on the supply of long-term commuter parking and elimination of subsidies for commuter parking.
11. No-fare shopper shuttles connecting all shopping districts throughout the city.

Consistent. As shown in Figure 2-4 of the Project Description (Housing Element Update Sites Inventory Locations), most of the housing inventory sites are generally located in areas near major transportation corridors such as Shattuck Avenue, Cedar Street, and San Pablo Avenue, and near existing residential and commercial development. Additionally, the project would encourage development in the Southside and in other areas of the City which are in transit-accessible PDAs. HEU Policy H-16 also aims to promote transit-oriented new construction and encourage construction of new high-density housing on major transit corridors in proximity to transit stations. As discussed in Section 4.14, *Transportation*, the proposed HEU is estimated to reduce the vehicle miles traveled (VMT) per service population by an estimated seven percent compared to 2040 buildout conditions without the project.

General Plan Policy	Proposed HEU Project Consistency
Urban Design & Preservation	
Protection of Existing Resources	
<p>Policy UD-3 Regulation of Neighborhood Character. Use regulations to protect the character of neighborhoods and districts, and respect the particular conditions of each area.</p>	<p>Consistent. Individual future projects would be subject to the City’s existing general development standards (BMC Chapter 23.304) to ensure that buildings are compatible with neighboring land uses and architectural design and scale. Additionally, future development with two or more units would be required to comply with the City’s proposed set of objective development standards, which are anticipated to be adopted in Spring 2023. The objective standards are tailored to streamline approval of housing projects under the HEU by providing a clear and consistent set of review rules and processes. Examples of standards that the City will define include building height, set back distances, and units allowed per acre. This would ensure that future development is compatible with the character and scale of Berkeley according to the City’s standards (City of Berkeley 2022).</p>
New Construction and Alterations	
<p>Policy UD-24 Area Character. Regulate new construction and alterations to ensure that they are truly compatible with and, where feasible, reinforce the desirable design characteristics of the particular area they are in.</p>	<p>Consistent. Individual future projects would be subject to the City’s existing general development standards (BMC Chapter 23.304) to ensure that buildings are compatible with neighboring land uses and architectural design and scale. Additionally, future development with two or more units would be required to comply with the City’s proposed set of objective development standards which are anticipated to be adopted in Spring 2023. The objective standards are tailored to streamline approval of housing projects under the HEU by providing a clear and consistent set of review rules and processes. Examples of standards that the City will define include building height, set back distances, and units allowed per acre. This would ensure that future development is compatible with the character and scale of Berkeley according to the City’s standards (City of Berkeley 2022).</p>
<p>Policy UD-33 Sustainable Design. Promote environmentally sensitive and sustainable design in new buildings.</p>	<p>Consistent. As discussed in Section 4.5, <i>Energy</i>, and Section 4.7, <i>Greenhouse Gas Emissions</i>, future development projects would be required to be constructed in accordance with the latest iteration of CALGreen and the California Energy Code, which include requirements for environmentally sensitive and sustainable design practices. In addition, new construction would be required to be all-electric per the requirements of BMC Section 12.80 (with limited exemptions and exceptions), which would reduce consumption of nonrenewable energy resources.</p>

BMC Consistency

As current zoning would not be able to deliver the level of deed-restricted affordable housing and economic and geographic diversity that the project aims to achieve, the Housing Element Update would contain implementation programs and zoning policies in order to encourage additional housing, especially affordable housing that would support a diversity of income levels and household types. Additionally, under the Housing Element Update, R-1, R-1A, R-2, R-2A, and MU-R districts are anticipated to increase in density in order to facilitate increased development in lower density districts. The City is also pursuing the following zoning modifications under the proposed Southside zoning modifications in order to increase housing capacity and production in the

Southside: building heights, building footprints (including setbacks and lot coverage), parking, ground-floor residential use, and adjustments to the existing zoning district boundaries. This would result in increased height and lot coverage zoning standards in Southside Plan Area. All future development under the project would be required to comply with zoning requirements for residential uses as described in Title 24, *Zoning*, of the BMC.

Upon adoption of the proposed Housing Element Update and the associated zoning and General Plan amendments, the project would comply with the land use requirements set forth by ABAG's Plan Bay Area 2050, the Berkeley General Plan, and the BMC, and therefore, would not result in adverse physical land use impacts.

Mitigation Measures

This impact would be less than significant. No mitigation measures would be required.

c. Cumulative Impacts

A project's environmental impacts are "cumulatively considerable" if the "incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (*CEQA Guidelines* Section 15065[a][3]). The geographic scope for cumulative land use and planning impacts includes the geographic area of the City of Berkeley. Development that is considered part of the cumulative analysis includes buildout of the City's General Plan as well as development proposed under the University of California, Berkeley's Long Range Development Plan (LRDP) and Housing Projects #1 and #2 as described in the Draft EIR dated March 8, 2021 (University of California, Berkeley 2021).

Development under the proposed project would not physically divide an established community, would not result in the introduction of new land uses that would conflict with existing land uses, and would be generally consistent with the City's General Plan goals and policies intended to encourage transit-oriented and sustainable development while protecting the character of the neighborhood. Land use and policy consistency impacts associated with buildout of the City's General Plan would be addressed on a case-by-case basis to determine consistency with applicable plans and policies, except for development under the University of California, Berkeley's (LRDP) which would be subject to their own review process. Development under the LRDP would not be cumulatively significant since land use impacts are site specific. Since other planned projects would be required to be consistent with the General Plan, they would implement the City's vision for Berkeley. These projects would generally reduce motor vehicle trips, trip lengths, and associated environmental impacts by being constructed near transit, jobs, services, and open spaces. Because the project's impacts related to land use compatibility and consistency with local plans and goals would be less than significant, the project's contribution to cumulative land use impacts would be less than significant.

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4.11 Noise

This section evaluates noise and groundborne vibration impacts resulting from the construction and operation of new housing development accommodated by the proposed Housing Element Update. Topics addressed consist of short-term construction and long-term operational noise and vibration, including the exposure of noise-sensitive receivers to substantial or incompatible noise levels. Noise modeling results and the vibration calculations associated with the analysis herein are included in Appendix G.

4.11.1 Setting

a. Fundamentals of Noise

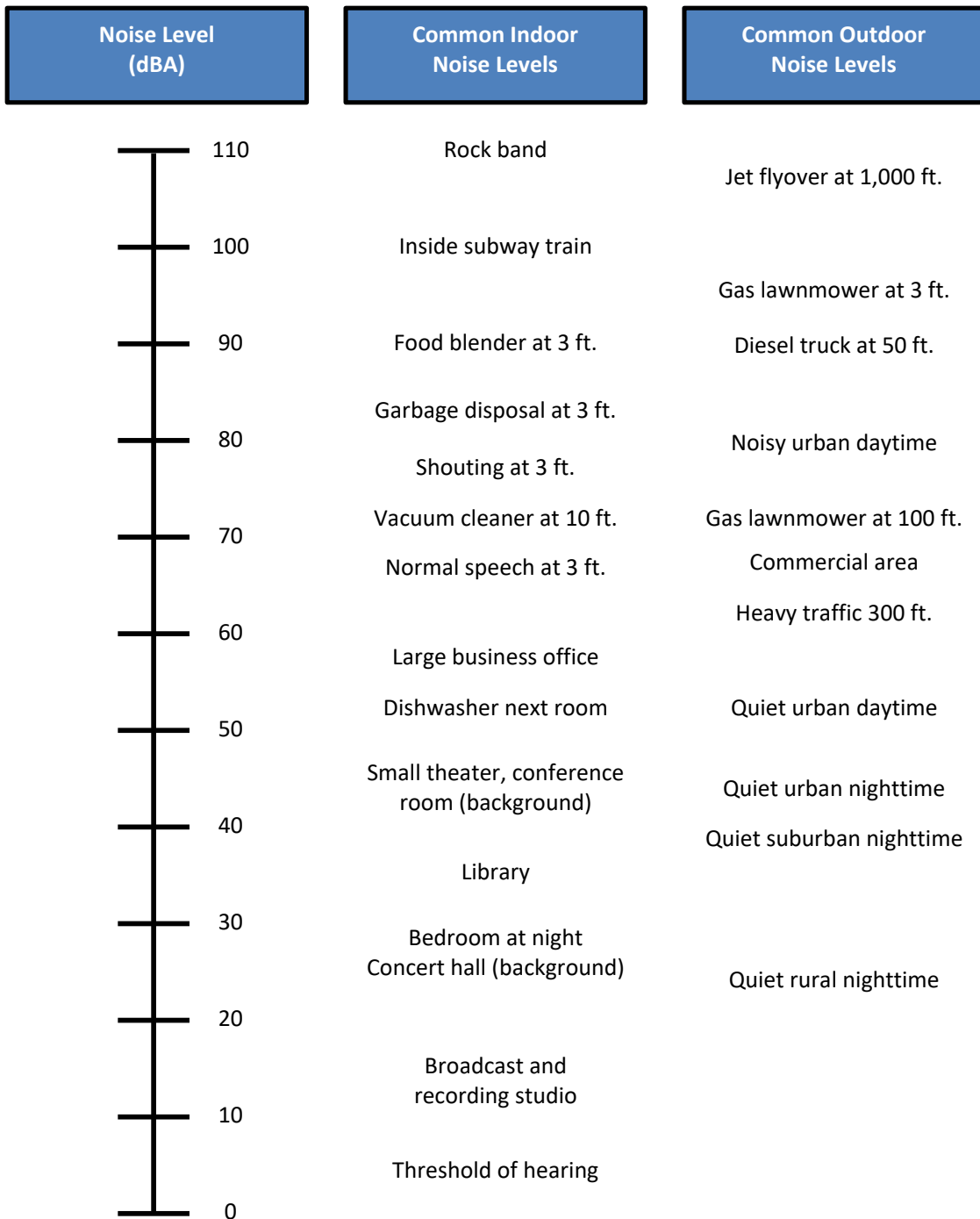
Sound is a vibratory disturbance created by a moving or vibrating source, which is capable of being detected by the hearing organs (e.g., the human ear). Noise is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment (California Department of Transportation [Caltrans] 2013).

Noise levels are commonly measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels so that they are consistent with the human hearing response, which is most sensitive to frequencies around 4,000 Hertz (Hz) and less sensitive to frequencies around and below 100 Hz (Kinsler, et. al. 1999). Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used to measure earthquake magnitudes. A doubling of the energy of a noise source, such as a doubling of traffic volume, would increase the noise level by 3 dB; similarly, dividing the energy in half would result in a decrease of 3 dB (Crocker 2007). Common outdoor and indoor noise sources and their typical corresponding A-weighted noise levels are shown in Figure 4.11-1.

Human perception of noise has no simple correlation with sound energy. The perception of sound is not linear in terms of dBA or in terms of sound energy. Two sources do not “sound twice as loud” as one source. It is widely accepted that the average healthy ear can barely perceive an increase (or decrease) of up to 3 dBA in noise levels (i.e., twice [or half] the sound energy); that a change of 5 dBA is readily perceptible (8 times the sound energy); and that an increase (or decrease) of 10 dBA sounds twice (or half) as loud (10.5 times the sound energy) (Crocker 2007).

City of Berkeley
 City of Berkeley 2023-2031 Housing Element Update

Figure 4.11-1 Examples of Typical Noise Levels



Source: Caltrans 2013

Sound changes in both level and frequency spectrum as it travels from the source to the receiver. The most obvious change is the decrease in sound level as the distance from the source increases. The manner by which noise declines with distance depends on factors such as the type of sources (e.g., point or line), the path the sound will travel, site conditions, and obstructions. Noise levels from a point source (e.g., construction, industrial machinery, ventilation units) typically attenuate, or drop off, at a rate of 6 dBA per doubling of distance. Noise from a line source (e.g., roadway, pipeline, railroad) typically attenuates at about 3 dBA per doubling of distance (Caltrans 2013). The propagation of noise is also affected by the intervening ground, known as ground absorption. A hard site, such as a parking lot or smooth body of water, receives no additional ground attenuation and the changes in noise levels with distance (drop-off rate) result simply from the geometric spreading of the source. An additional ground attenuation value of 1.5 dBA per doubling of distance applies to a soft site (e.g., soft dirt, grass, or scattered bushes and trees) (Caltrans 2013).

Noise levels may also be reduced by intervening structures. The amount of attenuation provided by this “shielding” depends on the size of the object and the frequencies of the noise levels. Natural terrain features, such as hills and dense woods, and man-made features, such as buildings and walls, can alter noise levels. Generally, any large structure blocking the line of sight will provide at least a 5 dBA reduction in source noise levels at the receiver (Federal Highway Administration [FHWA] 2011). Structures can substantially reduce occupants’ exposure to noise as well. The FHWA’s guidelines indicate that modern building construction generally provides an exterior-to-interior noise level reduction of 20 to 35 dBA with closed windows.

Descriptors

The impact of noise is not a function of loudness alone. The time of day when noise occurs, its frequency, and the duration of the noise are also important. In addition, most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors have been developed.

One of the most frequently used noise metrics that considers both duration and intensity is the equivalent noise level (L_{eq}). The L_{eq} is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time. Typically, L_{eq} is equivalent to a one-hour period, even when measured for shorter durations as the noise level of a 10- to 30-minute period would be the same as the hour if the noise source is relatively steady. L_{max} is the highest Root Mean Squared (RMS) sound pressure level within the sampling period, and L_{min} is the lowest RMS sound pressure level within the measuring period (Crocker 2007). Normal conversational levels at three feet are in the 60- to 65-dBA L_{eq} range and ambient noise levels greater than 65 dBA L_{eq} can interrupt conversations (Federal Transit Administration [FTA] 2018).

Noise that occurs at night tends to be more disturbing than that which occurs during the day. Community noise is usually measured using Day-Night Average Level (L_{dn} or DNL), which is a 24-hour average noise level with a +10 dBA penalty for noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours, or Community Noise Equivalent Level (CNEL), which is the 24-hour average noise level with a +5 dBA penalty for noise occurring from 7:00 p.m. to 10:00 p.m. and a +10 dBA penalty for noise occurring from 10:00 p.m. to 7:00 a.m. (Caltrans 2013). Noise levels described by DNL and CNEL usually differ by about 0.5 dBA. Quiet suburban areas typically have a CNEL in the range of 40 to 50 dBA, while areas near arterial streets are typically in the 50 to 70+ CNEL range.

Propagation

Sound from a small, localized source (approximating a “point” source) radiates uniformly outward as it travels away from the source in a spherical pattern, known as geometric spreading. The sound level decreases or drops off at a rate of approximately 6 dBA for each doubling of distance.

Traffic noise is not a single, stationary point source of sound. Rather, the movement of vehicles makes the source of the sound appear to emanate from a line (line source) rather than a point. The drop-off rate for a line source is approximately 3 dBA for each doubling of distance.

b. Fundamentals of Vibration

Groundborne vibration of concern in environmental analysis consists of the oscillatory waves that move from a source through the ground to adjacent structures. The number of cycles per second of oscillation makes up the vibration frequency, described in terms of hertz (Hz). The frequency of a vibrating object describes how rapidly it oscillates. The normal frequency range of most groundborne vibration that can be felt by the human body starts from a low frequency of less than 1 Hz and goes to a high of about 200 Hz (Crocker 2007).

While people have varying sensitivities to vibrations at different frequencies, in general they are most sensitive to low-frequency vibration. Vibration in buildings, such as from nearby construction activities, may cause windows, items on shelves, and pictures on walls to rattle. Vibration of building components can also take the form of an audible low-frequency rumbling noise, referred to as groundborne noise. Groundborne noise is usually only a problem when the originating vibration spectrum is dominated by frequencies in the upper end of the range (60 to 200 Hz), or when foundations or utilities, such as sewer and water pipes, physically connect the structure and the vibration source (FTA 2018). Although groundborne vibration is sometimes noticeable in outdoor environments, it is almost never annoying to people who are outdoors. The primary concern from vibration is that it can be intrusive and annoying to building occupants and vibration-sensitive land uses.

Descriptors

Vibration amplitudes are usually expressed in peak particle velocity (PPV) or RMS vibration velocity. The PPV and RMS velocity are normally described in inches per second (in./sec.). PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is often used in monitoring of vibration because it is related to the stresses that are experienced by buildings (Caltrans 2020).

Response to Vibration

Vibration associated with construction has the potential to be an annoyance to nearby land uses. Caltrans has developed limits for the assessment of vibrations from transportation and construction sources. The Caltrans vibration limits are reflective of standard practice for analyzing vibration impacts. As shown in Table 4.11-1 and Table 4.11-2, the Caltrans *Transportation and Construction Vibration Guidance Manual* (2020) identifies guideline impact criteria for damage to buildings and additional impact criteria for annoyance to humans from transient and continuous/frequent sources.

Table 4.11-1 Building Vibration Damage Potential

Structure and Condition	Maximum PPV (in./sec.)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient mountains	0.12	0.08
Fragile buildings	0.20	0.10
Historic and similar old buildings	0.50	0.25
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial/commercial buildings	2.00	0.50

Notes: Transient sources create a single isolated vibration event, such as blasting or drop balls (i.e., a loose steel ball that is dropped onto structures or rock to reduce them to a manageable size). Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

PPV = peak particle velocity; in./sec. = inches per second

Source: Caltrans 2020

Table 4.11-2 Vibration Annoyance Potential

Human Response	Maximum PPV (in./sec.)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.90	0.10
Severe	2.00	0.40

Notes: Transient sources create a single isolated vibration event, such as blasting or drop balls (i.e., a loose steel ball that is dropped onto structures or rock to reduce them to a manageable size). Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

PPV = peak particle velocity; in./sec. = inches per second

Source: Caltrans 2020

Propagation

Vibration energy spreads out as it travels through the ground, causing the vibration level to diminish with distance away from the source. High-frequency vibrations diminish much more rapidly than low frequencies, so low frequencies tend to dominate the spectrum at large distances from the source. Variability in the soil strata can also cause diffractions or channeling effects that affect the propagation of vibration over long distances (Caltrans 2020). When a building is exposed to vibration, a ground-to-foundation coupling loss (the loss that occurs when energy is transferred from one medium to another) will usually reduce the overall vibration level. However, under rare circumstances, the ground-to-foundation coupling may amplify the vibration level due to structural resonances of the floors and walls.

c. Sensitive Receivers

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with those uses. According to the Berkeley General Plan Environmental Management Element, noise-sensitive uses include but are not limited to residences, child-care centers, hospitals, and nursing homes (City of Berkeley 2001).

Vibration-sensitive receivers, which are similar to noise-sensitive receivers, include residences and institutional uses, such as hospitals, schools, and churches. However, vibration-sensitive receivers also include buildings where vibrations may interfere with vibration-sensitive equipment that is affected by vibration levels that may be well below those associated with human annoyance (e.g., recording studios or medical facilities with sensitive equipment). Other features that may have particular sensitivity to groundborne vibration include historic sites and structures. According to the Land Use Element of the City’s General Plan, 48 percent of the City is comprised of residential land uses (City of Berkeley 2002). Other sensitive receivers consist of recreational uses (e.g., parks and sensitive wildlife habitat) and institutional uses (e.g., schools, child-care centers, and hospitals). In addition, refer to Section 4.4, *Cultural Resources*, for a discussion of historic properties in the City that may be particularly sensitive to increases in groundborne vibration levels.

d. Existing Conditions

Noise Sources

According to the Berkeley General Plan Environmental Management Element, the most prevalent noise sources in Berkeley are from cars, trucks, buses, trains, industrial plant equipment noise, and activities associated with neighborhoods and schools such as lawn mowing and leaf blowing and children playing. Noise sources related to heavy manufacturing, located mainly in industrialized areas located in West Berkeley, were once a more dominant contributor to the noise environment. However, the West Berkeley Plan, adopted in 1993, has developed more stringent environmental review and regulation, including the mitigation of noise through both industrial and residential measures (City of Berkeley 2002).

As shown in Figure 4.11-1, noisy urban areas or commercial areas (e.g., commercial districts with major arterial roadways and transit routes) can commonly reach noise levels between 60 dBA L_{eq} and 80 dBA L_{eq} during the daytime, whereas a common outdoor noise level associated with a quiet urban area (e.g., residential neighborhood with local or collector streets) is 50 dBA L_{eq} during the daytime. These noise levels typically decrease during nighttime hours as traffic activity slows, such that quiet urban areas commonly experience nighttime noise levels of 40 dBA L_{eq} .

A review of sound measurements collected for recent CEQA documents in Berkeley provides a sample of the varied ambient sound conditions in Berkeley and is displayed in Table 4.11-3. Measured noise levels ranged from 53.3 to 74.7 dBA L_{eq} . These measured ambient noise levels in Berkeley are consistent with the values presented in Figure 4.11-1.

Table 4.11-3 Noise Measurements

Noise Measurement Location	Time Period	Date	dBA L_{eq} Range
North Berkeley ¹	10:14 AM – 12:21 PM	February 26, 2021	53.3 – 65.4
Blake Street ²	7:02 AM – 8:00 AM	September 10, 2020	54.4 – 61.4
South Berkeley ³	12:19 PM – 3:15 PM	September 15, 2020	57.1 – 65.9
Adeline Corridor Specific Plan ⁴	7:45 AM – 8:45 AM	November 6, 2018	67.6 – 74.7

¹ See Chapter 4.8, Table 4.8-2 of Ashby and North Berkeley BART Stations Transit-Oriented Development Zoning Project Draft EIR

² See Section 12, Table 23 of 2015 Blake Street Residential Project Draft IS

³ See Chapter 4.6, Table 4.6-2 of Southside Zoning Ordinance Amendments Project Draft EIR

⁴ See Chapter 4.9, Table 4.9-1 of Adeline Corridor Specific Plan Draft EIR

Vibration Sources

Sources of vibration in the city, similar to that of the noise environment, are also primarily motor vehicles along roadways. Like mobile-source noises, vibration by vehicular movement generally affects numerous receivers along lengths of roadways and depends on pavement and type and weight of the vehicle. Vibration may also be generated by construction equipment (e.g., earth-moving equipment and pile driving); however, these sources are temporary and vary on a project-by-project basis. More permanent, but intermittent, vibration may also be generated by railroad and airport operations, which would affect communities adjacent to these facilities. In addition, commercial or industrial activities may generate vibration from the use of heavy equipment (e.g., businesses that recycle construction debris).

4.11.2 Regulatory Setting

a. Federal Regulations

Occupational Safety and Health Act of 1970

Under the Occupational Safety and Health Act of 1970, the Occupational Safety and Health Administration (OSHA) has adopted regulations designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise level exposure as a function of the amount of time during which the worker is exposed. The regulations further specify a hearing conservation program that involves monitoring noise to which workers are exposed, ensuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.

b. State Regulations

California Building Code, Title 24, Part 2, Section 1206.4

According to the 2019 California Building Code (CBC), Title 24, Part 2, Section 1206.4 (Allowable Interior Noise Levels) of the California Code of Regulations, interior noise levels attributable to exterior sources shall not exceed 45 CNEL in any habitable room. A habitable room is typically a residential room used for living, sleeping, eating, or cooking. Bathrooms, closets, hallways, utility spaces, and similar areas are not considered habitable rooms for this regulation.

California Department of Transportation

As discussed in the *Environmental Setting* of this section, Caltrans has developed limits for the assessment of vibration from transportation and construction sources, which are reflective of standard practice for analyzing vibration impacts. Table 4.11-1 presents the impact criteria for structural damage to buildings and Table 4.11-2 presents the criteria for annoyance to humans. The State noise and vibration guidelines are to be used as guidance with respect to planning for noise, not standards and/or regulations to which the City of Berkeley must adhere.

c. Local Regulations

Berkeley General Plan Environmental Management Element

The Berkeley General Plan Environmental Management Element is intended to identify sources of potential environmental hazards including noise and provide goals, objectives, and policies that ensure that noise from various sources, including transportation and stationary sources, does not create an unacceptable noise environment. Furthermore, the following actions and policies from the General Plan Environmental Management Element are relative to the proposed Housing Element Update (City of Berkeley 2002):

Action EM-43: Noise Reduction. Reduce significant noise levels and minimize new sources of noise.

- A. Increase enforcement of the Noise Ordinance to reduce noise impacts.
- B. Consider improvements to the Noise Ordinance to improve the City's ability to reduce noise impacts.
- C. Promote increased public awareness concerning the negative effects of excessive noise on humans.

Policy EM-44: Noise Prevention and Elimination. Protect public health and welfare by eliminating existing noise problems where feasible and by preventing significant future degradation of the acoustic environment.

- A. Incorporate noise considerations into land use planning decisions.
- B. Ensure the effective enforcement of City, State, and Federal noise levels by appropriate City departments.
- C. Coordinate with the California Occupational Safety and Health Administration (Cal-OSHA) to provide information on and enforcement of occupational noise requirements within the City of Berkeley.
- D. Support Federal and State legislation to lower allowable noise level on all motor vehicles.

Policy EM-45: Traffic Noise. Work with local and regional agencies to reduce local and regional traffic, which is the single largest source of unacceptable noise in the city.

- A. Encourage neighborhood traffic calming strategies that cause motorists to slow down and decrease noise levels in all residential areas. (Also see Transportation Policy T-20.)
- B. Through the taxi permit process, restrict taxis and shuttles from honking in neighborhoods.
- C. Minimize potential transportation noise through proper design of street circulation, coordination of routing, and other traffic control measures.
- D. Promote and encourage new vehicle technologies to reduce transportation noise levels.
- E. Construct a noise barrier for Aquatic Park. (Also see Open Space and Recreation Policy OS-8.)
- F. Enforce muffler laws.
- G. Work with AC Transit to reduce bus noise. (Also see Transportation Policy T-2.)
- H. Establish noise emission limits on City public works projects and vehicles, such as refuse collection trucks, and work with other large institutions in the city, such as BUSD, to reduce vehicle noise emissions.

Policy EM-46: Noise Mitigation. Require operational limitations and all feasible noise buffering for new uses that generate significant noise impacts near residential, institutional, or recreational uses.

- A. Promote use of noise insulation materials in new construction and major rehabilitation.
- B. Mitigate significant noise impacts on parks and public open space, whenever feasible. (Also see Open Space and Recreation Policy OS-12.)

Action EM-47: Land Use Compatibility. Ensure that noise-sensitive uses, including, but not limited to, residences, child-care centers, hospitals and nursing homes, are protected from detrimental noise levels.

- A. Noise sensitive development proposals should be reviewed with respect to the Land Use Compatibility Guidelines below.

City of Berkeley Municipal Code

The City’s noise standards, found in Chapter 13, Section 40 (Community Noise) of the City of Berkeley Municipal Code (BMC), set forth hours of operation for certain activities and standards for determining when noise is deemed to be a disturbance.

As shown in Table 4.11-4, the City has adopted land use compatibility standards for use in assessing the compatibility of various land use types that are exposed to noise levels. According to the City’s standards shown in Table 4.11-4, ambient noise up to 60 dBA L_{dn} is normally acceptable for low density residences whereas ambient noise up to 65 dBA L_{dn} is normally acceptable for medium density residences. These standards also establish maximum interior noise levels for new residential development, requiring that sufficient insulation be provided to reduce interior ambient noise levels to 45 dBA L_{dn} (City of Berkeley 2022).

Table 4.11-4 Recommended Maximum Noise Levels

Land Use Category	Time Period	Exterior Normally Acceptable ³ (dBA L _{dn})	Exterior Normally Unacceptable (dBA L _{dn})	Interior Acceptable (dBA L _{dn})
Low Density Residential ¹	10:00 p.m. – 7:00 a.m.	55	Above 55	40
	7:00 a.m. – 10:00 p.m.	45	Above 45	45
Medium Density Residential ²	10:00 p.m. – 7:00 a.m.	60	Above 60	40
	7:00 a.m. – 10:00 p.m.	55	Above 55	45
Commercial	10:00 p.m. – 7:00 a.m.	65	Above 65	40
	7:00 a.m. – 10:00 p.m.	60	Above 60	45
Industry	10:00 p.m. – 7:00 a.m.	70	Above 70	40
	7:00 a.m. – 10:00 p.m.			45

¹ Low density consists of the following zoning districts: R-1, R-2, R-1A, R-2A, and ESR.

² Medium density includes R-3 and above.

³ Levels not to be exceeded more than 30 minutes any hour

Source: City of Berkeley 2022

Furthermore, Section 13.40.030 of the City Code declares that loud, unnecessary, and unusual noise is a nuisance and is unlawful. The criteria for determining whether a nuisance exists includes the ambient noise level, the sound level of the objectionable noise, the intensity of the noise, whether

the noise is continuous or intermittent, the duration and tonal content of the noise, the proximity of the noise to sleeping facilities, the zoning of the area, and the nature of the source. The Code specifically prohibits construction noise between 7:00 p.m. to 7:00 a.m. on weekdays and 8:00 p.m. to 9:00 a.m. on weekends and legal holidays.

There may be instances, especially in existing older buildings, where compliance with noise standards set forth in the BMC may not be economically or technically feasible, and therefore, the Environmental Health Director may grant administrative exceptions to those standards on a case-by-case basis after balancing the number of decibels and the amount of time the offending noise exceeds the allowed limit, the number of persons affected, and the cost of reducing the decibels or amount of time to come into compliance with this chapter. Such determination may be appealed to the City Manager within 30 days of the decision.

4.11.3 Impact Analysis

a. Thresholds of Significance

In accordance with Appendix G of the *CEQA Guidelines*, the proposed Housing Element Update’s noise and vibration impacts would be significant if it would:

1. Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
2. Generate excessive groundborne vibration or groundborne noise levels; or
3. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.

The following discussion identifies specific thresholds used to analyze the general CEQA thresholds listed above.

Construction Noise Thresholds

As described under Section 4.11.2, *Regulatory Framework*, Section 13.40.030 of the BMC restricts construction hours to not occur during nighttime hours between 7:00 p.m. and 7:00 a.m. Monday through Friday, or between 8:00 p.m. and 9:00 a.m. on weekends. The City does not establish construction noise level limits during these periods. In the absence of applicable local noise level limits, this analysis references guidance from the Federal Transit Administration’s (FTA) *Transit Noise and Vibration Impact Assessment Manual* to establish a quantified threshold against which to assess the impact of construction noise (FTA 2018); FTA recommends that reasonable noise criteria may include those shown in Table 4.11-5. Construction noise would be significant if it exceeded this noise criteria.

Table 4.11-5 Construction Noise Criteria

Land Use	Daytime Leq (8-hour)	Nighttime Leq (8-hour)
Residential	80	70
Commercial	85	85
Industrial	90	90

Source: FTA 2018

Operational Noise Thresholds

The City has adopted noise standards in the BMC that regulate on-site operational noise sources. The proposed Housing Element Update would result in a significant impact if the accommodated 19,553 housing units generate noise from on-site sources in excess of BMC standards included in Chapter 13, (as described under Section 4.11.2, *Regulatory Framework*), which collectively regulate noise from operations that are typical to residential uses (e.g., sound-amplifying devices, HVAC equipment, lawn maintenance equipment, hand tools, wheeled equipment, outdoor activities).

Off-site operational noise (i.e., roadway noise) would result in a significant impact if housing development accommodated under the proposed Housing Element Update would cause the ambient noise level measured at the property line of affected uses to increase by 3 dBA, which would be a barely perceptible increase in traffic noise.

Land Use Compatibility Thresholds

According to the City's land use compatibility standards shown in Table 4.11-4, ambient noise up to 60 dBA L_{dn} is normally acceptable for low density residences whereas ambient noise up to 65 dBA L_{dn} is normally acceptable for medium density residences. In addition, ambient noise up to 70 dBA L_{dn} is potentially acceptable to residences. These standards also establish maximum interior noise levels for new residential development, requiring that enough insulation be provided to reduce interior ambient noise levels to 45 dBA L_{dn} (City of Berkeley 2022).

Groundborne Vibration Thresholds

The City has not adopted a significance threshold to assess vibration impacts during construction and operation. Therefore, the Caltrans *Transportation and Construction Vibration Guidance Manual* (2020) is used to evaluate potential construction vibration impacts related to both potential building damage and human annoyance. Construction vibration impacts from housing development would be significant if vibration levels exceed the Caltrans criteria shown in Table 4.11-1 and Table 4.11-2. For example, impacts would be significant if vibration levels exceed 0.5 in./sec. PPV for residential structures and 2.0 in./sec. PPV for commercial structures, which is the limit where minor cosmetic (i.e., non-structural) damage may occur to these buildings. Construction vibration impacts would also be significant if vibration levels exceed 0.12 in./sec. PPV for extremely fragile historic buildings, as shown in Table 4.11-1. In addition, construction vibration impacts would cause significant human annoyance at nearby receivers if vibration levels exceed 0.25 in./sec. PPV, which is the limit where vibration becomes distinctly perceptible.

b. Methodology

As discussed in Section 2, *Project Description*, the proposed Housing Element Update is a plan to accommodate forecasted growth and existing and future need for housing. The following discussion describes the methodology, including models, used to evaluate the significance of potential noise and vibration impacts related to the forecasted construction and operation of 19,097 housing units accommodated by the proposed Housing Element Update, particularly for construction noise, on-site and off-site operational noise, and construction vibration.

Construction Noise

The primary source of temporary noise associated with the proposed Housing Element Update would be construction activities associated with accommodated housing development. Construction

equipment can be considered to operate in two modes: stationary and mobile. Stationary equipment operates in a single location for one or more days at a time, with either fixed-power operation (e.g., pumps, generators, and compressors) or variable-power operation (e.g., pile drivers, rock drills, and pavement breakers). Mobile equipment moves around a construction site with power applied in cyclic fashion, such as bulldozers, graders, and loaders (FTA 2018). Each phase of construction has its own noise characteristics due to specific equipment mixes; some will have higher continuous noise levels than others and some may have high-impact intermittent noise levels (FTA 2018). Therefore, construction noise levels may fluctuate depending on the type of equipment being used, construction phase, or equipment location. In typical construction projects on vacant sites, grading activities typically generate the highest noise levels because grading involves the largest equipment and covers the greatest area. Foundation excavation and construction is often the second loudest phase, followed by paving and building construction.

Variation in power imposes additional complexity in characterizing the noise source level from construction equipment. Power variation is accounted for by describing the noise at a reference distance from the equipment operating at full power and adjusting it based on the duty cycle, or percent of operational time, of the activity to determine the L_{eq} of the operation (FTA 2018).

For assessment purposes, noise levels for common construction equipment provided in the FTA *Transit Noise and Vibration Impact Assessment* (2018) guidance document were used to analyze potential noise levels associated with future development under the proposed Housing Element Update. The FTA provides typical noise levels at 50 feet from various types of equipment. Construction noise was also estimated using the FHWA's Roadway Construction Noise Model (RCNM) (2006). RCNM predicts construction noise levels for a variety of construction operations based on empirical data and the application of acoustical propagation formulas. Using RCNM, construction noise levels were estimated at a distance of 50 feet from future development. Model results are included in Appendix F.

On-site Operational Noise

The primary on-site noise sources associated with operation of housing developments, including in mixed use developments, and those discussed in this analysis, would include noise from stationary heating, ventilation, and air conditioning (HVAC) equipment, on-site vehicle movement (e.g., delivery and trash hauling), and outdoor activities. Analysis of outdoor activity considers the existing noise environment and refers to regulations included in the City's noise ordinance (i.e., Chapter 13) and the General Plan Environmental Management Element.

Specific planning data for HVAC systems are not available at this stage of analysis; however, for a reasonable assessment, specification for a typical to larger-sized residential condenser was used to determine project HVAC noise. The unit used for this analysis is a Carrier 38HDR060 split system condenser. The manufacturer's noise data lists the unit as having a sound power level of 72 dBA (Carrier 2011).

Off-site Operational Noise

Housing development accommodated under the proposed Housing Element Update would generate motor vehicle trips, thereby increasing off-site traffic on area roadways. Traffic noise impacts are analyzed based on data from the *Vehicle Miles Traveled (VMT) Impact Assessment Memorandum* prepared by Kittelson & Associates in June 2022, which is included as Appendix G. The overall increase in traffic noise was estimated using VMT data from the Transportation Assessment for existing conditions (Year 2020 future without project conditions (i.e., Year 2031 without the

proposed Housing Element Update), and future with project conditions (i.e., Year 2031 with the proposed Housing Element Update). Residential development under the proposed Housing Element Update would generate vehicle trips, thereby increasing traffic on area roadways.

Groundborne Vibration

Operation of housing development accommodated by the proposed Housing Element Update would not include substantial vibration sources (e.g., use of heavy equipment). Rather, construction activities would have the greatest potential to generate groundborne vibration affecting sensitive receivers and/or structures adjacent to a construction site, especially during grading and when a site is located near a historic site or structure. As discussed in Section 4.4, *Cultural Resources*, there are several historic districts in Berkeley. Three housing inventory sites are known as of the date of this report to contain properties which are listed in, or eligible for the NRHP, CRHR, or designated City of Berkeley Landmarks, and therefore are considered historical resources pursuant to *CEQA Guidelines* Section 15064.5(a).

A quantitative assessment of potential vibration impacts from construction activities was conducted using equations developed by Caltrans (Caltrans 2020). Table 4.11-6 shows typical vibration levels for various pieces of construction equipment used in the construction vibration assessment.

Table 4.11-6 Typical Vibration Levels for Construction Equipment

Equipment	PPV (in./sec.) at 25 Feet
Pile Driver (Impact)	0.644
Pile Driver (Sonic)	0.170
Vibratory Roller	0.210
Hoe Ram	0.089
Large Bulldozer	0.089
Caisson Drilling	0.089
Loaded Truck	0.076
Jackhammer	0.035
Small Bulldozer	0.003

Sources: FTA 2018; Caltrans 2020

Because groundborne vibration could cause physical damage to structures and is measured in an instantaneous period, vibration impacts are typically modeled based on the distance from the location of vibration-intensive construction activities, which is conservatively assumed to be edge of a project site, to the edge of the nearest off-site structures. For assessment purposes, vibration levels for the construction equipment shown in Table 4.11-6 were modeled at various incremental distances between 25 feet and 100 feet to analyze potential vibration levels associated with future development under the proposed Housing Element Update. Vibration calculations are included in Appendix G to this EIR.

c. Project Impacts and Mitigation Measures

Threshold 1: Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Impact NOI-1 CONSTRUCTION ASSOCIATED WITH HOUSING DEVELOPMENT ACCOMMODATED UNDER THE PROPOSED HEU WOULD BE REQUIRED TO COMPLY WITH THE ALLOWED DAYTIME CONSTRUCTION HOURS AS SET FORTH IN THE BERKELEY MUNICIPAL CODE AND THEREFORE, WOULD NOT OCCUR DURING NIGHTTIME HOURS WHEN PEOPLE ARE MORE SENSITIVE TO NOISE. LARGER DEVELOPMENTS COULD INVOLVE CONSTRUCTION WITH LENGTHY DURATIONS, SUBSTANTIAL SOIL MOVEMENT, USE OF LARGE, HEAVY-DUTY EQUIPMENT, AND/OR PILE DRIVING NEAR NOISE-SENSITIVE LAND USES THAT WOULD EXCEED THE APPLICABLE FTA DAYTIME NOISE LIMITS. IMPLEMENTATION OF CITY STANDARD CONDITIONS OF APPROVAL FOR CONSTRUCTION NOISE WOULD REDUCE CONSTRUCTION NOISE LEVELS, BUT MAY NOT REDUCE THEM TO BELOW THRESHOLDS FOR EVERY PROJECT. THEREFORE, IMPACTS GENERATED BY TEMPORARY CONSTRUCTION NOISE WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Future construction activity would require the use of a variety of noise-generating equipment that would result in temporary increases in ambient noise levels on an intermittent basis. Noise levels would fluctuate depending on the construction phase, equipment type and duration of use, distance between the noise source and receiver, and presence or absence of noise attenuation barriers. Typical noise levels at 50 feet from various types of equipment that may be used during construction are listed in Table 4.11-7. The loudest noise levels are typically generated by impact equipment (e.g., pile drivers) and heavy-duty equipment (e.g., cranes, scrapers, and graders). Construction noise would occur intermittently throughout construction, and in some instances, multiple pieces of equipment may operate simultaneously, generating overall noise levels that are incrementally higher than what is shown in Table 4.11-7.

Table 4.11-7 Construction Equipment Noise Levels

Equipment	Typical Noise Level (dBA) at 50 Feet from Source
Air Compressor	80
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Derrick	88
Crane, Mobile	83
Dozer	85
Generator	82
Grader	85
Jackhammer	88
Loader	80
Paver	85

Equipment	Typical Noise Level (dBA) at 50 Feet from Source
Pile-driver (Impact)	101
Pile-driver (Sonic)	95
Pneumatic Tool	85
Pump	77
Roller	85
Saw	76
Scarifier	83
Scraper	85
Shovel	82
Truck	84

Sources: FTA 2018

Sensitive receivers are located throughout Berkeley and could be exposed to noise associated with construction activities from reasonably foreseeable development under the proposed Housing Element Update. As discussed in Section 4.11.1, Environmental Setting, sensitive receivers in the City mainly consist of residences but also include child-care centers, hospitals, nursing homes, churches, and schools. Based on the location of sites shown on Figure 2-4 in Section 2, Project Description, this analysis assumes that construction activities for most projects under the Housing Element Update would occur within 50 feet of sensitive receivers. As shown in Table 4.11-7, sensitive receivers would be exposed to noise levels ranging from 76 to 88 dBA at 50 feet from typical construction equipment and could reach as high as 101 dBA through the use of pile drivers. However, a typical construction day includes the operation of multiple pieces of equipment at once with noise levels averaged over the construction day. For assessment purposes, a construction noise level at 50 feet from the source was estimated using RCNM and was based on an excavator, dozer, and jackhammer operating simultaneously. In addition, a separate scenario was also analyzed with these pieces of equipment and an impact pile driver. These pieces of equipment generate some of the highest noise levels during demolition and grading phases of construction. As shown in Table 4.11-8, the combined noise level (dBA Leq) from these pieces of equipment is estimated at 84 dBA Leq at 50 feet without a pile driver, and 95 dBA Leq at 50 feet with a pile driver.

Table 4.11-8 Typical Construction Noise Level at 50 Feet

Equipment	dBA Leq at 50 Feet
Excavator, Dozer, Jackhammer <i>without</i> Impact Pile Driver	84
Excavator, Dozer, Jackhammer <i>with</i> Impact Pile Driver	95

See Appendix G for RCNM results.

Construction noise levels would vary depending on the type of equipment, the duration of use, the distance to receivers, and the potential for pile driving. Engine noise reduction technology, including silencers, continues to improve, but heavy construction equipment still generates noise exceeding ambient levels that could cause intermittent annoyance to nearby receivers. Noise associated with construction of most development under the proposed Housing Element Update would be typical of residential construction in urban areas but could exceed the eight-hour 80 dBA Leq daytime significance threshold at residences.

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As previously discussed in *Methodology* of this section, housing development accommodated under the proposed Housing Element Update that could result in significant construction noise would tend to include relatively lengthy construction durations (i.e., longer than 18 months), two or more subterranean levels, use of multiple pieces of heavier equipment (i.e., cranes, excavators, dozers), simultaneous use of multiple pieces of equipment, and generally noisier activities, such as the potential for pile driving. While these larger projects are not considered typical, they could potentially result in significant noise impacts, particularly upon adjacent residential zones or other nearby sensitive receivers, and would temporarily increase ambient noise levels above FTA noise limits.

To minimize the effect of construction noise on sensitive receptors, the City would impose its Standard Conditions of Approval. The following Standard Condition of Approval would apply to projects involving construction in residential zoning districts:

Construction Hours. Construction activity shall be limited to between the hours of 8:00 AM and 6:00 PM on Monday through Friday, and between 9:00 AM and Noon on Saturday. No construction-related activity shall occur on Sunday or any Federal Holiday.

For projects involving construction in non-residential districts, the following Standard Condition of Approval would apply:

Construction Hours. Construction activity shall be limited to between the hours of 7:00 AM and 6:00 PM on Monday through Friday, and between 9:00 AM and 4:00 PM on Saturday. No construction-related activity shall occur on Sunday or any Federal Holiday.

These conditions would restrict construction activity to daytime hours on Monday through Saturday, avoiding adverse effects on sensitive receptors during normal sleeping hours and reducing exposure to construction noise on weekends.

Additionally, the City would impose the following Standard Condition of Approval:

Construction Noise Reduction Program. The applicant shall develop a site specific noise reduction program prepared by a qualified acoustical consultant to reduce construction noise impacts to the maximum extent feasible, subject to review and approval of the Zoning Officer. The noise reduction program shall include the time limits for construction listed above, as measures needed to ensure that construction complies with BMC Section 13.40.070. The noise reduction program should include, but shall not be limited to, the following available controls to reduce construction noise levels as low as practical:

- A. Construction equipment should be well maintained and used judiciously to be as quiet as practical.
- B. Equip all internal combustion engine-driven equipment with mufflers, which are in good condition and appropriate for the equipment.
- C. Utilize “quiet” models of air compressors and other stationary noise sources where technology exists. Select hydraulically or electrically powered equipment and avoid pneumatically powered equipment where feasible.
- D. Locate stationary noise-generating equipment as far as possible from sensitive receptors when adjoining construction sites. Construct temporary noise barriers or partial enclosures to acoustically shield such equipment where feasible.
- E. Prohibit unnecessary idling of internal combustion engines.

- F. If impact pile driving is required, pre-drill foundation pile holes to minimize the number of impacts required to seat the pile.
- G. Construct solid plywood fences around construction sites adjacent to operational business, residences or other noise-sensitive land uses where the noise control plan analysis determines that a barrier would be effective at reducing noise.
- H. Erect temporary noise control blanket barriers, if necessary, along building facades facing construction sites. This mitigation would only be necessary if conflicts occurred which were irresolvable by proper scheduling. Noise control blanket barriers can be rented and quickly erected.
- I. Route construction related traffic along major roadways and away from sensitive receptors where feasible.

Construction Noise Management – Public Notice Required. At least two weeks prior to initiating any construction activities at the site, the applicant shall provide notice to businesses and residents within **500 feet** of the project site. This notice shall at a minimum provide the following: (1) project description, (2) description of construction activities, (3) daily construction schedule (i.e., time of day) and expected duration (number of months), (4) the name and phone number of the Project Liaison for the project that is responsible for responding to any local complaints, (5) commitment to notify neighbors at least four days in advance of authorized extended work hours and the reason for extended hours, and (6) that construction work is about to commence. The liaison would determine the cause of all construction-related complaints (e.g., starting too early, bad muffler, worker parking, etc.) and institute reasonable measures to correct the problem. A copy of such notice and methodology for distributing the notice shall be provided in advance to the City for review and approval.

Noise Reduction Plan. Applicants are required to develop a site-specific noise reduction program prepared by a qualified acoustical consultant to reduce construction noise impacts to the maximum extent feasible. The noise reduction program would include several elements that would reduce the exposure of sensitive receptors to construction noise, such as the following:

- Equipping all internal combustion engine-driven equipment with mufflers in good condition
- Pre-drilling foundation pile holes to minimize the use of pile drivers
- Installing solid plywood fences around construction sites adjacent to sensitive receptors
- Erecting temporary noise control blanket barriers along building façades facing construction sites.

The type of construction equipment, proximity of sensitive receivers to the site, and the overall duration of construction are key factors in determining whether construction-related noise would be significant at the project-level as opposed to determining construction noise impacts at the programmatic level. Based on typical construction equipment noise levels, the anticipated duration of construction activities, and type of equipment used for larger housing developments, the proposed Housing Element Update could result in potentially significant construction noise impacts on a project-specific basis at nearby sensitive receivers and the Standard Conditions of Approval above would not reduce noise levels to 80 dBA. Therefore, this impact is potentially significant.

Mitigation Measures

The standard conditions discussed above are equivalent to feasible mitigation measures for each project proposed under the Housing Element Update. Additional mitigation measures beyond the standard conditions are not feasible.

Significance After Mitigation

As discussed above, the City's Standard Conditions of Approval for large projects would reduce construction noise levels to the maximum extent feasible. These conditions would include the installation of temporary sound barriers, which are the most effective advanced measure to reduce noise from construction sites adjacent to sensitive receptors. No further measures are available to provide additional reductions in construction noise. However, construction noise levels could still exceed the City's standards for stationary equipment in both multi-family residential and commercial zones. Furthermore, construction noise levels could exceed the City's standards at multiple sites where the proposed amendments would facilitate development in Berkeley. Therefore, this impact would be significant and unavoidable.

Threshold 1: Would the project result in generation of a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Impact NOI-2 HOUSING DEVELOPMENT ACCOMMODATED UNDER THE PROPOSED HEU COULD INCLUDE MECHANICAL EQUIPMENT (I.E., HVAC), DELIVERY AND TRASH TRUCKS, AND OTHER NOISE-GENERATING ACTIVITIES. HOWEVER, SUCH ACTIVITIES WOULD BE SIMILAR TO THE EXISTING NOISE ENVIRONMENT. IN ADDITION, ON-SITE ACTIVITIES WOULD BE REQUIRED TO COMPLY WITH APPLICABLE NOISE STANDARDS IN THE BERKELEY MUNICIPAL CODE. FURTHERMORE, WHILE HOUSING DEVELOPMENT WOULD GENERATE VEHICLE TRIPS IN THE CITY, THE INCREASE IN MOBILE NOISE WOULD NOT RESULT IN A PERCEPTIBLE (3-DBA OR GREATER) NOISE INCREASE. PERMANENT NOISE INCREASES DUE TO OPERATION OF NEW DEVELOPMENT UNDER THE PROPOSED HEU WOULD BE LESS THAN SIGNIFICANT.

Housing development accommodated under the proposed Housing Element Update would include residential development at increased intensity and density throughout the City that would generate on-site operational noise from stationary sources and off-site operational noise from vehicle trips. Typical noise sources associated with residential uses include stationary HVAC equipment, on-site vehicle movement (e.g., delivery and trash hauling), outdoor activities, and off-site traffic.

On-site Operational Noise

HVAC EQUIPMENT

Based on manufacturer's specifications, a Carrier 38HDR060 split-system with a sound power level of 72 dBA would generate a noise level of approximately 57 dBA at a distance of seven feet. As shown in Figure 4.11-1, an area with ambient noise levels in the vicinity of 60 dBA L_{dn} exists around the neighborhood north and south of University Avenue. Elsewhere in Berkeley, ambient noise levels are generally below 70 dBA L_{dn} and in most cases below 65 dBA L_{dn} . Therefore, in the case where the actual ambient conditions are not known, noise from HVAC equipment could exceed the city's presumed ambient noise conditions when compared to a reference noise level 57 dBA at a distance of seven feet from the HVAC equipment source. However, noise levels from HVAC

equipment associated with housing development would be comparable to noise levels of HVAC equipment associated with the existing urban environment. Furthermore, the design and placement of new HVAC equipment would be required to comply with Section 13.40.070 of the BMC, which states that stationary machines and other devices located on the exterior of structures which generate sounds perceptible outside the perimeters of the lot on which the machine or other device is located must be installed with such sound transmission control measures to adequately minimize or eliminate the transmission of the sound to a level not to exceed 60 dBA on weekdays and 50 dBA on weekends for single family residential beyond property perimeters. Stationary equipment shall not exceed 65 dBA on weekdays and 55 dBA on weekends for multi-family residential areas¹. Furthermore, any motor, machinery, pump, such as swimming pool equipment, etc., shall be sufficiently enclosed or muffled and maintained so as not to create a Noise Disturbance in accordance with Section 13.40.050 or 13.40.060. Therefore, operation of HVAC equipment would have a less than significant noise impact.

VEHICLE ACTIVITY (DELIVERY AND TRASH HAULING)

Future residential development may increase the number of delivery and trash hauling trucks traveling through the City to individual development sites. Increased delivery and trash hauling trucks could intermittently expose various sensitive receivers to increased truck noise. Section 23130 of the California Motor Vehicle Code establishes maximum sound levels of 86 dBA L_{eq} at 50 feet for trucks operating at speeds less than 35 miles per hour. While individual delivery truck and/or loading or trash pick-up operations would likely be audible at properties adjacent to individual development, such operations are already a common occurrence in the urban environment. In addition, solid waste pick-up operations are typically scheduled during daytime hours when people tend to be less sensitive to noise. Furthermore, these noise events from trucks are typically transient and intermittent, and do not occur for a sustained period of time. Therefore, the project would not result in a substantial permanent increase in ambient noise levels from trash and delivery trucks due their prevalence in the city, resulting in a less than significant impact.

OUTDOOR ACTIVITY AREAS

Housing developments would generate noise from conversations, music, television, or other outdoor sound-generating equipment (e.g., leaf blowers), particularly in the event future residents maintain open windows or such activities take place on balconies. However, these noise-generating activities would be similar to those of the existing urban environment. Moreover, Section 13.40.070 of the BMC prohibits operating or permitting the operation of any mechanically powered saw, sander, drill, grinder, lawn or garden tool, or similar tool before 7:00 a.m. on a weekday (or before 9:00 a.m. on a weekend or holiday) or after 7:00 p.m. on a weekday (or after 8:00 p.m. on a weekend or holiday) such that the sound therefrom across a residential or commercial real property line violates Section 13.40.050 or 13.40.060. Furthermore, Section 19.29 of the BMC includes the 2019 California Residential Code, as adopted in Title 24 Part 2.5 of the California Code of Regulations. Required compliance with code enforcement would reduce operational noise impacts related to conversations and sound-generating equipment to a less than significant level.

¹ Maximum sound levels for repetitively scheduled and relatively long term operation (period of 10 days or more) of stationary equipment.

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Off-site Operational Noise

The overall increase in traffic noise from the project was estimated using vehicle trip (VT) data from the Transportation Assessment prepared by Kittelson & Associates for existing conditions (i.e., Year 2020 without the proposed Housing Element Update) and future with Project conditions (i.e., Year 2031 with the proposed Housing Element Update). These daily VT scenarios are shown in Table 4.11 9.

Table 4.11 9 Daily Vehicle Trip Summary

	Total Daily Vehicle Trips
Baseline Conditions Without proposed Housing Element Update (2020)	3,213,590
Future with proposed Housing Element Update (2031)	3,391,463
Change in Vehicle Trips	+177,873
Percent Change in Vehicle Trips (%)	5.5%
Source: Kittelson & Associates 2022	

As shown in Table 4.11 9, daily VT would increase by approximately 6 percent over existing 2020 conditions by the year 2031 under the proposed Housing Element Update. A 6 percent increase in traffic on a roadway would equate to an increase of 0.2 dBA. The project would not double the existing mobile noise source and would not increase noise levels by even the most conservative threshold of 3 dBA, which is considered a barely perceptible noise increase. Although a 6 percent or more increase in traffic may occur at the local level in areas where substantial new housing is proposed, a doubling of traffic is still not anticipated to occur based on the citywide increase of 6 percent. Therefore, off-site traffic noise impacts would less than significant.

Mitigation Measures

This impact would be less than significant. No mitigation measures are required.

Threshold 2: Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Impact NOI-3 HOUSING DEVELOPMENT ACCOMMODATED UNDER THE PROPOSED HEU WOULD NOT INVOLVE OPERATIONAL ACTIVITIES THAT WOULD RESULT IN SUBSTANTIAL VIBRATION LEVELS (E.G., USE OF HEAVY EQUIPMENT OR MACHINERY). CONSTRUCTION ACTIVITIES WOULD BE REQUIRED TO IMPLEMENT THE CITY’S STANDARD CONDITIONS OF APPROVAL THAT CONTROL VIBRATION. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

It is not anticipated that operation of residential housing development would involve activities that would result in substantial vibration levels, such as use of heavy equipment or machinery. Operational groundborne vibration in the vicinity of development associated with the proposed Housing Element Update would be primarily generated by vehicular travel on the local roadways. According to the FTA *Transit Noise and Vibration Impact Assessment* (2018) guidance document, rubber tires and suspension systems dampen vibration levels from trucks to a level that is rarely perceptible. Therefore, traffic vibration levels associated with the expected additional trips from the proposed Housing Element Update would not be perceptible by sensitive receivers. Impacts related to operational groundborne vibration would be less than significant. The remainder of this analysis focuses on impacts relate to construction activities associated with future housing development.

Construction activities associated with housing development accommodated by the proposed Housing Element Update would result in varying degrees of groundborne vibration depending on the equipment and methods employed. Construction equipment causes vibration that spreads through the ground and diminishes in strength with distance. Buildings with foundations in the soil in the vicinity of a construction site respond to these vibrations with varying results ranging from no perceptible effects at the lowest levels, low rumbling sounds and perceptible vibrations at moderate levels, and slight damage at the highest levels. Construction vibration is a localized event and is typically only perceptible to a receiver that is in close proximity to the vibration source.

Construction for housing development would require heavy equipment, particularly development with certain geologic conditions that may require pile driving. Pile driving would be required if the project engineer determined that it was necessary and pile driving alternatives were not feasible. Pile driving more often occurs for buildings with subterranean parking garages or tall buildings (e.g., six or more stories). Such heavy equipment could potentially operate within 25 feet of nearby buildings when accounting for equipment setbacks. As shown in Table 4.11-10, general construction equipment such as a vibratory roller would generate vibration levels up to 0.21 in./sec. PPV at 25 feet, while more intensive equipment such as pile driving could generate a vibration level of approximately 0.64 in./sec. PPV at 25 feet. Vibration levels shown in bolded and underlined text exceed one or more of the Caltrans criteria shown in Table 4.11-1 and Table 4.11-2.

Table 4.11-10 Construction Equipment Noise Levels

Equipment	PPV (in./sec.)				
	25 Feet	50 Feet	75 Feet	100 Feet	125 Feet
Pile Driver (Impact)	<u>0.644</u>^{1,2,3,4}	<u>0.300</u>^{1,4}	<u>0.192</u>¹	<u>0.140</u>¹	<u>0.110</u>¹
Pile Driver (Sonic)	<u>0.170</u>¹	0.079	0.051	0.037	0.029
Vibratory Roller	<u>0.210</u>¹	0.098	0.063	0.046	0.036
Hoe Ram	0.089	0.042	0.027	0.019	0.015
Large Bulldozer	0.089	0.042	0.027	0.019	0.015
Caisson Drilling	0.089	0.042	0.027	0.019	0.015
Loaded Truck	0.076	0.036	0.023	0.017	0.013
Jackhammer	0.035	0.016	0.011	0.008	0.006
Small Bulldozer	0.003	0.001	<0.001	<0.001	<0.001

Notes: Vibration levels shown in bolded and underlined text exceed one or more of the Caltrans criteria shown in Table 4.11-1 and Table 4.11-2. Superscripts specify the threshold exceeded by each piece of equipment.

¹ Exceeds the 0.1 in./sec. Caltrans damage threshold for historic sites (and other critical locations).

² Exceeds the 0.5 in./sec. Caltrans damage threshold for historic and other/similar old buildings.

³ Exceeds the 0.5 in./sec. Caltrans damage threshold for older residential structures.

⁴ Exceeds the 0.25 in./sec. Caltrans human annoyance threshold.

Sources: FTA 2018; Caltrans 2020

According to Caltrans impact criteria shown in Table 4.11-1, the damage threshold for historic sites (which are most sensitive to impacts from groundborne vibration) is 0.12 in./sec. PPV. Groundborne vibration from hoe rams, bulldozers, caisson drilling, loaded trucks, and jackhammers would not exceed the 0.1 in./sec. PPV threshold for sensitive historic sites. While groundborne vibration from vibratory rollers would only exceed the threshold for building damage for historic sites at 25 feet from the source, vibration levels from pile driving would exceed one or more of the building damage thresholds shown in Table 4.11-1 for historic sites, general old buildings, and older and newer

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residential structures. Furthermore, vibration levels associated with pile driving would also exceed the threshold of 0.25 in./sec. PPV for human annoyance at various distances up to 75 feet, as shown in Table 4.11-10.

As discussed in Section 4.4, *Cultural Resources*, a portion of Shattuck Avenue has been identified as an eligible historic district for its significance in Berkeley's early history, with a period of significance of 1895 to 1958. Although all buildings would be subject to potential impacts from construction vibration, buildings with historic significance would each have varying degrees of susceptibility to groundborne vibration damage depending on the structural integrity of said buildings.

To minimize the effect of construction vibration, the City would impose its Standard Conditions of Approval. The following Standard Condition of Approval would apply to projects involving construction in residential zoning districts:

Damage Due to Construction Vibration. The project applicant shall submit screening level analysis prior to, or concurrent with demolition building permit. If a screening level analysis shows that the project has the potential to result in damage to structures, a structural engineer or other appropriate professional shall be retained to prepare a vibration impact assessment (assessment). The assessment shall take into account project specific information such as the composition of the structures, location of the various types of equipment used during each phase of the project, as well as the soil characteristics in the project area, in order to determine whether project construction may cause damage to any of the structures identified as potentially impacted in the screening level analysis. If the assessment finds that the project may cause damage to nearby structures, the structural engineer or other appropriate professional shall recommend design means and methods of construction that to avoid the potential damage, if feasible. The assessment and its recommendations shall be reviewed and approved by the Building and Safety Division and the Zoning Officer. If there are no feasible design means or methods to eliminate the potential for damage, the structural engineer or other appropriate professional shall undertake an existing conditions study (study) of any structures (or, in case of large buildings, of the portions of the structures) that may experience damage. This study shall establish the baseline condition of these structures, including, but not limited to, the location and extent of any visible cracks or spalls; and include written descriptions and photographs.

With implementation of the Standard Conditions of Approval, groundborne vibration from vibratory rollers and vibration levels from pile driving would not occur in a manner that would damage buildings. Impacts would be less than significant.

Mitigation Measure

The Standard Conditions of Approval listed above is equivalent to feasible mitigation measures for projects proposed under the Housing Element Update. No additional mitigation measures are required.

Threshold: For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?
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Impact NOI-4 HOUSING DEVELOPMENTS ACCOMMODATED UNDER THE PROPOSED HEU WOULD NOT BE EXPOSED TO INTERMITTENT NOISE LEVELS FROM OVERHEAD FLIGHT PATTERNS FROM AIRPORTS IN THE CITY AS THERE ARE NONE LOCATED WITHIN THE CITY. FURTHERMORE, WHILE THE PROJECT WOULD NOT EMPHASIZE BUILDING HOUSING IN THE IMMEDIATE VICINITY OF THE AIRPORT, ALL RESIDENTIAL DEVELOPMENT WOULD, NONETHELESS, BE REQUIRED TO INCORPORATE NOISE INSULATION FEATURES PER STATE AND LOCAL STANDARDS TO REDUCE INTERIOR NOISE LEVELS TO BELOW 45 dBA. THEREFORE, THE IMPACT OF AIRPORT OR AIRSTRIP OPERATIONS ON NEW DEVELOPMENT WOULD BE LESS THAN SIGNIFICANT.

As discussed in Section 4.8, *Hazards and Hazardous Materials*, the Berkeley General Plan Environmental Management Element does not identify any airports in the City. The nearest airport to the City of Berkeley is the Oakland (OAK) Airport which is located 11 miles south. According to the Oakland International Airport Land Use Compatibility Plan, the City Berkeley is located outside of the airport's noise contours and the airport influence area illustrated in Figure 3-1 of the Airport Land Use Compatibility Plan (Alameda County 2010). Therefore, the proposed Housing Element Update would not expose people residing or working in the plan area to excessive noise levels. This impact would be less than significant.

Mitigation Measures

This impact would be less than significant. No mitigation measures are required.

d. Cumulative Impacts

The geographic area to analyze cumulatively considerable noise impacts includes Berkeley and immediately adjacent areas that could be indirectly affected by noise generated in the city.

Construction Noise

Construction of future development projects in Berkeley would produce temporary noise impacts that would be localized to a project site and sensitive receivers within the immediate vicinity. Therefore, only sensitive receivers located in close proximity to each construction site would be potentially affected by each activity. Nonetheless, construction activities associated with individual housing development projects accommodated under the proposed Housing Element Update may overlap for some time with construction activities for other development projects. Typically, if a development site is 500 feet or more away from another site then noise levels would have attenuated to a point that they would not combine to produce a cumulative noise impact. Therefore, construction noise levels would typically become cumulative only if two development sites were to have construction occurring within 500 feet of each other. However, under a worst-case scenario, noise from construction activities for two projects within 1,000 feet of each other could contribute to a cumulative noise impact for sensitive receivers located equidistant between the two construction sites with concurrent on-site activities.

Construction activities associated with future development would be required to comply with Section 13.40 of the BMC and would not occur during nighttime hours between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, and between the hours of 8:00 p.m. and 9:00 a.m. on weekends and holidays. It is anticipated that even with implementation of the Standard Conditions listed

under Impact NOI-1, construction noise levels associated with some of the housing development proposed under the proposed Housing Element Update would not be reduced below the applicable FTA noise limits for construction noise on a case-by-case basis. Nonetheless, larger development projects could combine together, or combine with smaller development projects. Based on the locations of the potential housing sites displayed in Figure 2-4 of Section 2, *Project Description*, this could substantially increase noise levels at specific neighboring noise-sensitive receivers since many sites are located in proximity to each other. Therefore, concurrent construction of development projects accommodated under the proposed Housing Element Update could result in cumulatively considerable impacts. This impact would be cumulatively considerable and cumulative impacts would be significant and unavoidable.

On-site Operational Noise

On-site operational noise impacts are localized to an individual development site and sensitive receivers within the immediate vicinity. Future development in the City would include mechanical equipment, loading, trash pick-up, and other noise-generating activities. However, such activities would be typical of the urban environment in the City and on-site activities would be required to comply with applicable provisions of the BMC. The incremental effect of the proposed Housing Element Update with respect to on-site operational noise would not be cumulatively considerable and cumulative impacts would be less than significant.

Off-site Operational Noise

Cumulative development through the year 2031 would generate vehicle trips, thereby increasing traffic on area roadways. As shown in Table 4.11 9, future daily VT levels by the year 2031 with future development from the proposed Housing Element Update, which accounts for cumulative residential development in the city, would not double existing VT levels or increase mobile noise by more than 3 dBA. Therefore, the effect of the proposed Housing Element Update on off-site traffic noise would not be cumulatively considerable and cumulative impacts would be less than significant.

Groundborne Vibration

Operational groundborne vibration impacts are localized to a project site and sensitive receivers within the immediate vicinity. However, it is not anticipated that new residential development within the City would include substantial sources of operational ground-borne vibration. Therefore, cumulative impacts related to operational ground-borne noise and vibration at any sensitive receiver would not be significant. Impacts related to operational groundborne vibration would not be cumulatively considerable and cumulative impacts would be less than significant.

Construction of future development projects in the City would produce temporary vibration impacts that would be localized to a project site and sensitive receivers in the immediate vicinity. Therefore, only sensitive receivers located in close proximity to each construction site would be potentially affected by each individual activity. Nonetheless, construction activities associated with individual housing development projects from the proposed Housing Element Update may overlap for some time with construction activities for other development projects. For the combined vibration impact from simultaneous construction projects to reach cumulatively significant levels, intense construction from these projects would have to occur simultaneously in close proximity to a sensitive receiver. With implementation of the Standard Condition of Approval to control vibration, intense vibration impacts during construction for future development in Berkeley would be less than

significant. Therefore, concurrent construction of development projects accommodated under the proposed Housing Element Update in combination with the cumulative projects would not reach levels such that cumulative impacts would occur. . Impacts related to construction groundborne vibration would not be cumulatively considerable and cumulative impacts would be less than significant.

Airport Noise

Aircraft-related noise impacts occur largely in the vicinity of airports or airstrips. Although citywide growth could increase the number of people who are exposed to overhead aircraft-related noise impacts, such impacts would be localized in nature. In addition, new residential development would not result in a direct increase to aircraft operations that would increase noise exposure to aircraft overflight patterns within and outside the city. The proposed Housing Element Update would have no contribution to any cumulative impact related to airport hazards or noise. Impacts related to airport or airstrip noise would not be cumulatively considerable and cumulative impacts would be less than significant.

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4.12 Population and Housing

This section describes the existing population, housing, and employment characteristics of Berkeley and evaluates the potential impacts related to population and housing that could result from implementation of the proposed House Element Update.

4.12.1 Setting

Population, housing, and employment data are primarily available on a city/town, county, regional, and state level. This EIR uses data collected and provided at the city level, supplemented by data available at the census tract level.

a. Current Population and Housing

Table 4.12-1 provides 2022 estimates of population and housing for Berkeley. Berkeley has an estimated 2022 population of 124,563 and 52,921 housing units, with an average household size of 2.17 people (California Department of Finance 2022).

Table 4.12-1 Current Population and Housing Stock for Berkeley

	City of Berkeley	Alameda County
Population (# of people)	124,563	1,651,979
Average Household Size (persons/household)	2.17	2.66
Total Housing Units (# of units)	52,921	633,198
Vacant Housing Units	4,544 (8.6%)	31,957 (5.0%)

Source: California Department of Finance 2022

Household Composition

Small households (one to two persons per household) traditionally occupy units with zero to two bedrooms; family households (three to four persons per household) normally occupy units with three to four bedrooms. Large households (five or more persons per household) typically occupy units with four or more bedrooms. The number of units in relation to the household size may reflect preference and economics. Many small households obtain larger units and some large households live in small units. As shown in Table 4.12-1, the average household size in Berkeley was an estimated 2.17 persons in 2022.

b. Population, Housing, and Employment Projections

Table 4.12-2 shows population, housing, and employment projections for Berkeley based on the growth forecasts provided by the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC) in Plan Bay Area 2040. According to the Plan Bay Area 2040 population projections, Berkeley's population was anticipated to grow 13 percent by the year 2040. ABAG and MTC project relatively small employment growth (4 percent) in Berkeley between 2020 and 2040.

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Table 4.12-2 2040 Plan Bay Area Population, Housing, and Employment Projections for Berkeley

	2022	2040 (projected)	Projected 2022-2040 Growth (Percent Increase)
Population (# of people)	124,563 ¹	140,935 ²	16,372 (13%)
Housing (# of units)	52,921	55,370 ²	2,449 (5%)
Employment (# of jobs)	116,435 ³	121,670 ²	5,235 (4%)

¹ Source: California Department of Finance 2022

² ABAG and MTC 2017

³ Based on 2020 data

Plan Bay Area 2050 is the most recent regional long-range plan and regional growth forecast for the Bay Area (ABAG and MTC 2021). Though it does not include projections by city, it does include employment and housing projections for Northwest Alameda County which includes Albany, Berkeley, and Emeryville. These projections are shown in Table 4.12-3.

Table 4.12-3 2050 Plan Bay Area Population, Housing, and Employment Projections for Northwest Alameda County

	2015	2050 (projected)	Projected Growth (Percent Increase)
Housing (# of units)	73,000	115,000	42,000 (57%)
Employment (# of jobs)	115,000	162,000	7,000 (5%)

Source: ABAB and MTC 2021

4.12.2 Regulatory Setting

c. State Regulations

California Housing Law

California Housing Element law (Government Code Sections 65580 to 65589.8) requires that local jurisdictions outline the housing needs of their community, the barriers or constraints to providing that housing, and actions proposed to address these concerns over an eight-year planning period. In addition, Housing Element law requires each city and county to accommodate its “fair share” of the region’s projected housing need over the Element planning period. Cities and counties must demonstrate that adequate sites are available to accommodate this need, and that the jurisdiction allows for development of a variety of housing types. This housing need requirement is known as the Regional Housing Needs Allocation (RHNA) and apportions to each jurisdiction part of the Bay Area’s projected need (City of Berkeley 2015).

The Sustainable Communities and Climate Protection Act of 2008 (SB 375, Steinberg)

Senate Bill (SB) 375 focuses on aligning transportation, housing, and other land uses to achieve regional greenhouse gas (GHG) emission reduction targets established under the California Global Warming Solutions Act, also known as Assembly Bill (AB) 32. SB 375 requires Metropolitan Planning Organizations (MPO) to develop a Sustainable Communities Strategy (SCS) as part of the Regional

Transportation Plan (RTP), with the purpose of identifying policies and strategies to reduce per capita passenger vehicle-generated GHG emissions. As set forth in SB 375, the SCS must: (1) identify the general location of land uses, residential densities, and building intensities within the region; (2) identify areas within the region sufficient to house all the population of the region, including all economic segments of the population, over the course of the planning period; (3) identify areas within the region sufficient to house an eight-year projection of the regional housing need; (4) identify a transportation network to service the regional transportation needs; (5) gather and consider the best practically available scientific information regarding resource areas and farmland in the region; (6) consider the state housing goals; (7) establish the land use development pattern for the region that, when integrated with the transportation network and other transportation measures and policies, will reduce GHG emissions from automobiles and light-duty trucks to achieve GHG emission reduction targets set by the California Air Resources Board (CARB), if there is a feasible way to do so; and (8) comply with air quality requirements established under the Clean Air Act.

The City of Berkeley is located in the jurisdiction of ABAG, a Joint Powers Agency established under California Government Code Section 6502 et seq. Pursuant to federal and State law, ABAG serves as a Council of Governments, a Regional Transportation Planning Agency, and the MPO for the counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma and contains 101 cities. ABAG is responsible for preparing the RTP/SCS and RHNA in coordination with other State and local agencies. These documents include population, employment, and housing projections for the region.

Existing law requires local governments to adopt a housing element as part of their general plan and update the housing element every four to eight years. SB 375 requires the RHNA to allocate housing units within the region in a manner consistent with the development pattern adopted by the SCS.

AB 1763

AB 1763, effective January 1, 2020, amends the State Density Bonus Law (Section 65915) to allow for taller and denser 100 percent affordable housing developments, especially those near transit, through the creation of an enhanced affordable housing density bonus.

California Housing Accountability Act

This State law, originally enacted in 1982 and last amended in 2017, prevents localities from disapproving proposed developments that comply with “all applicable, objective general plan, zoning, and subdivision standards and criteria,” unless they find that the development would have an unavoidable impact on public health or safety that can only be mitigated by rejecting the project or reducing its size (Hernandez and Golub 2017). Compliance with objective standards and criteria is defined as “substantial evidence that would allow a reasonable person to conclude” that a project complies. The Housing Accountability Act also prevents localities from disapproving or reducing the size of developments that have a minimum amount of affordable housing (either 20 percent of units for lower-income households or 100 percent of units for moderate-income households), except under specific circumstances. Mixed-use developments with at least two-thirds of their square footage devoted to residential use also qualify for this protection.

Senate Bill 35

In 2017, California enacted Senate Bill (SB) 35 to streamline the approval of affordable housing projects. This law applies in localities that are not meeting their RHNA goals for construction of

above-moderate income housing units or units for households below 80 percent of the area median income (AMI) (California Legislative Information 2017). These thresholds under SB 35 apply to the City of Berkeley. Applicable localities are required to streamline the approval of eligible housing projects by providing a ministerial approval process. To qualify for streamlining, a project must meet all of a range of criteria related to affordability, including but not limited to the number of units, residential zoning, floor area dedicated to residential uses, environmental constraints, demolition of residential units, historic buildings, and consistency with objective zoning standards (California Legislative Information 2017). CEQA review is not required for eligible projects because they are subject to a ministerial approval process.

Housing Crisis Act

The Housing Crisis Act of 2019 (SB 330) seeks to speed up housing production in the next half decade by eliminating some of the most common entitlement impediments to the creation of new housing, including delays in the local permitting process and cities enacting new requirements after an application is complete and undergoing local review—both of which can exacerbate the cost and uncertainty that sponsors of housing projects face. In addition to speeding up the timeline to obtain building permits, the bill prohibits local governments from reducing the number of homes that can be built through down-planning or down-zoning or the introduction of new discretionary design guidelines. The bill is in effect as of January 1, 2020 and expires on January 1, 2030.

SB 330 also regulates demolition of existing housing. It prohibits urbanized jurisdictions from approving a housing development that requires demolition of residential units unless the project creates at least as many units as would be demolished (California Legislative Information 2019). Local jurisdictions also are prohibited from approving a project that would demolish occupied or vacant “protected units,” unless the project meets several criteria (e.g., replacing all protected units, providing relocation benefits, and giving a right of first refusal to displaced residents for comparable units in the new development). Protected units are defined as subject to a covenant, ordinance, or law that restricts rent to levels affordable to persons and families of lower or very low income; subject to rent control; or occupied by low or very low income households; among other factors. These requirements for demolition do not supersede local demolition controls that are more protective of lower income households.

d. Regional

Regional Housing Needs Assessment (RHNA)

ABAG prepares the RHNA mandated by State law so that local jurisdictions can use this information during their periodic updates of the General Plan Housing Element. The RHNA identifies the housing needs for very low income, low income, moderate income, and above moderate-income groups, and allocates these targets among the local jurisdictions that comprise ABAG. The RHNA addresses existing and future housing needs based on the most recent U.S. Census, data on forecasted household growth, historical growth patterns, job creation, household formation rates, and other factors. The need for new housing is distributed among the four income groups so that each community moves closer to the regional average income distribution, referred to as a “social equity adjustment.” The most recent RHNA allocation, the 6th Cycle Final RHNA Plan, was adopted by ABAG’s Executive Board on December 16, 2021. The City of Berkeley was assigned a RHNA of 8,934 units for the 2023 to 2031 planning period. Local jurisdictions are required by State law to update their General Plan Housing Elements based on the most recently adopted RHNA allocation.

Association of Bay Area Governments

ABAG produces growth forecasts in four-year cycles so that other regional agencies, including the MTC and the Bay Area Air Quality Management District (BAAQMD), can use the forecasts to make funding and regulatory decisions. The ABAG projections are the basis for the RTP, regional Ozone Attainment Plan, the BAAQMD's Clean Air Plan, and the EBMUD's Urban Water Management Plan. In this way, ABAG projections have practical consequences that shape growth and environmental quality. General plans, zoning regulations, and growth management programs of local jurisdictions inform the ABAG projections. The projections are also developed to reflect the impact of "smart growth" policies and incentives that could be used to shift development patterns from historical trends toward a better jobs-housing balance, increased preservation of open space, and greater development and redevelopment in urban core and transit-accessible areas throughout the region. ABAG calculates the RHNA for individual jurisdictions within Alameda County, including Berkeley.

Plan Bay Area

Plan Bay Area 2050 was adopted on October 21, 2021. Plan Bay Area 2050 is a limited and focused update of the region's previous integrated Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), Plan Bay Area, adopted in 2013. Plan Bay Area 2050 builds upon the growth pattern and strategies developed in the original Plan Bay Area but with updated planning assumptions that incorporate key economic, demographic and financial trends from the last four years (ABAG and MTC 2021).

In 2008, MTC and ABAG initiated a regional effort (FOCUS) to link local planned development with regional land use and transportation planning objectives. Through this initiative, local governments identified Priority Development Areas (PDAs). The PDAs form the implementing framework for Plan Bay Area. The PDAs are areas along transportation corridors which are served by public transit that allow for opportunities for development of transit-oriented development, infill development within existing communities that are expected to take in most of the future development. Overall, over two-thirds of all regional growth by 2040 is allocated within PDAs. The PDAs throughout the Bay Area are expected to accommodate 78 percent (or over 509,000 units) of new housing and 62 percent (or 690,000) of new jobs. Designated PDAs in Berkeley include: University Avenue, San Pablo Avenue, Telegraph Avenue (which was later amended to include the Southside), Adeline Street, South Shattuck Avenue, and the Downtown.

e. Local Regulations

City of Berkeley Municipal Code

In addition to the goals stated in the City's Housing Element, the City of Berkeley has a history of programs and initiatives to protect existing affordable housing and create new supplies of affordable housing, some of which are codified in the Berkeley Municipal Code (BMC) and described below.

- **Rent Stabilization and Eviction for Good Cause Program.** In 1980, Berkeley residents passed the Rent Stabilization and Eviction for Good Cause Ordinance (BMC Chapter 13.76). The Ordinance is one of the strongest rent stabilization laws in the state and regulates residential rents for most rental units in Berkeley. For virtually all of Berkeley's approximately 26,000 rental units, the Ordinance provides tenants with increased protection against unwarranted evictions helping to maintain affordable housing and preserve community diversity (City of Berkeley 2022a).

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- **City of Berkeley Ellis Act Implementation Ordinance.** The Ellis Implementation Ordinance establishes the process for withdrawing residential rental property from the rental housing market (BMC Chapter 13.77).
- **Relocation Ordinance.** BMC Section 13.84 requires property owners to provide certain protections and compensation for tenants who are temporarily displaced due to repairs needed to bring their unit into compliance.
- **Financial Mitigation of Adverse Impact on Displaced Persons.** BMC Section 13.77.055 states that the tenants of any residential rental unit who are required to move as a result of the owner's withdrawal of the accommodation from rent or lease shall be entitled to a relocation payment in the sum of \$15,000 from the owner.
- **Good Cause Required for Eviction.** No landlord shall be entitled to recover possession of a rental unit covered by the terms of BMC Chapter 13.76.130, unless said landlord shows the existence of one of the grounds for eviction specified in the chapter. Relocation assistance is required to tenant households where at least one occupant has resided in the unit for one year or more and additional assistance to low-income households; or households with disabled or elderly tenants, minor children, or tenancies which began prior to January 1, 1999.
- **Condo Conversion Limits.** BMC Section 21.28.040 implements the Condominium Conversion Ordinance that restricts property owners from converting rental units to condominiums. Condominium conversion removes multifamily rental housing from the market and can decrease the number of units available to rental households with lower incomes. Accordingly, Berkeley's Ordinance limits the approval of condominium conversions to 100 units per year and charges a fee which is deposited into the City's Housing Trust Fund to offset the impact of reducing the rental housing stock.
- **Demolition Controls.** The City's Demolition and Dwelling Unit Controls (BMC Chapter 23.326) limits the ability of property owners to demolish or eliminate existing housing units and requires one-to-one replacement of removed units, or payment of an impact fee for affordable housing, in order to protect the affordable housing supply and existing tenants.
- **Density Bonus.** The State Density Bonus Law, originally adopted by California in 1979, allows new residential development to be built at a higher density than is allowed under local zoning if the project includes units affordable for low-income households. The BMC enforces this law and calculates a project's density bonus based on a project's number of below-market rate units, the income level targeted by these units, and the proposed project size.
- **Inclusionary Housing Ordinance.** The City of Berkeley Inclusionary Housing Ordinance for ownership housing (BMC Section 23.C.12) requires developers of market-rate ownership housing to include affordable ownership units or pay a fee.
- **Affordable Housing Mitigation Fee.** In 2011, the City Council enacted an Affordable Housing Mitigation Fee that requires developers of new market-rate rental projects to pay a fee (BMC Section 22.20.065). Effective July 1, 2020, this fee is \$39,746 per new unit of rental housing, payable at the issuance of a certificate of occupancy (City of Berkeley 2022b).¹ If the fee is paid in its entirety no later than issuance of the building permit, the fee is \$36,746 per new unit. Developers can reduce this fee by including units affordable to low-income households, and the fee is waived if at least 20% of a development's units are affordable. Revenues generated from

¹ Effective as of July 1, 2018. The City of Berkeley Housing Mitigation Fee is adjusted annually based on the California Construction Cost Index.

these fees go to the City's Housing Trust Fund and are used to develop or preserve affordable housing.

- **Commercial Linkage Fee.** The City established an affordable housing fee linkage fee on commercial development in 1993 (BMC Section 22.20.065). The commercial linkage fee is levied on developers of new commercial development. Fees range from \$2.25 to \$4.50 per square foot, depending on building use. Revenues from these fees go to the City's Housing Trust Fund.

Other City of Berkeley Programs/Initiatives

The City also provides a number of programs and initiatives that support the policies and ordinances described above:

- **Eviction Prevention.** The City's Housing Retention Program provides financial assistance to tenants to avoid eviction due to non-payment of rent. Qualifying households can receive one-time grants up to \$5,000 to prevent eviction and maintain permanent housing.² The Housing and Community Services Department administers this program and partners with the East Bay Community Law Center to conduct intake for applicants.
- **Family, Senior and Disabled Housing.** The City supports and encourages projects that include units affordable and suitable for households with children and large families, support housing programs that increase the ability of senior households to remain in their homes or neighborhoods and encourage provision of an adequate supply of suitable housing to meet the needs of people with disabilities.
- **Senior and Disabled Home Rehabilitation Loan Program.** The Housing and Community Services Department oversees the Senior and Disabled Rehabilitation Loan Program, which enables low-income senior and disabled homeowners to make essential health, safety, and accessibility repairs. This program provides eligible Berkeley homeowners with interest-free, deferred payment loans of up to \$100,000.
- **Housing Trust Fund.** A housing trust fund is a designated source of public funds—generated through various means—that is dedicated to creating affordable housing. The City created its Housing Trust Fund in 1990, and the fund receives revenue from Affordable Housing Mitigation Fees, Commercial Linkage fees, federal Community Development Block Grant funds, and federal HOME funds. Affordable housing developers can apply for loans from the Housing Trust Fund to support their projects, and the Housing and Community Services Department administers the fund.

4.12.3 Impact Analysis

a. Methodology and Significance Thresholds

The proposed project does not involve specific development projects and so the project itself would not result in direct physical changes to population or housing. However, effects on population and housing could occur as a result of the proposed zoning changes. Future development projects could replace existing housing units or add new units, increasing Berkeley's population. Population growth could result in physical changes related to transportation, air quality, noise, and public services and utilities, as well as other environmental resource areas. These physical impacts are analyzed under the other environmental topics in this EIR.

² Currently, residents who have been financially impacted by the COVID-19 pandemic may be eligible for up to \$10,000 in additional assistance under the City's Housing Retention Program (Berkeley 2020).

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In accordance with Appendix G of the CEQA Guidelines, the proposed project would result in a significant impact on the environment related to population and housing if it would:

1. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure); or
2. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

Although CEQA requires an EIR to consider a project’s growth-inducing impacts, CEQA provides that the EIR “should not assume that growth is necessarily beneficial, detrimental, or of little significance.” The underlying purpose of the Housing Element Update is to accommodate housing needs, which includes needs as a result of population growth and existing growth in the City. Even substantial growth is not a significant impact if it accommodates growth projections for the City that can be accommodated by existing or planned facilities and services, and is consistent with the City’s General Plan, as well as State and regional policies and regulations. As such, a significant impact for purposes of this threshold is whether the updates to the Housing Element will induce unplanned growth.

b. Project Impacts and Mitigation Measures

Threshold 1: Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Impact POP-1 THIS EIR ASSUMES FULL BUILDOUT OF 19,098 RESIDENTIAL UNITS IN BERKELEY THROUGH 2031, WHICH EQUATES TO A POPULATION INCREASE OF AN ESTIMATED 47,443 RESIDENTS COMPARED TO THE EXISTING POPULATION. HOWEVER, GROWTH RESULTING FROM THE PROJECT IS ANTICIPATED AND WOULD NOT CONSTITUTE SUBSTANTIAL UNPLANNED POPULATION GROWTH. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

For the purposes of this EIR, buildout under the proposed HEU would add up to 19,098 additional residential units to the city by the year 2031 (see Section 2, *Project Description*). This additional housing would lead to an increase of approximately 47,443 residents in the city from 2023 to 2031, as shown in Table 4.12-4.

Table 4.12-4 Housing Element Update Population Estimates

Unit Type ¹	Persons per Unit	# of Units	Population
Single Family	3.5	113	396
Accessory Dwelling Units	1.5	800	1,200
R-1	3	770	2,310
Southside Multi-Family	2.5	1,000	2,500
BART Stations Multi-Family	2.5	2,400	6,000
Other Multi-Family ²	2.5	14,015	35,038
Total		19,098	47,443

¹ Based on unit types assumed in the transportation analysis prepared by Kittelson & Associates 2022. Numbers may not add due to rounding.

² Including middle housing rezoning in the R-1A, R-2, R-2A, and MU-R

In the unlikely event that all potential buildout of the EIR Sites Inventory and in the middle housing rezoning districts and Southside occurs, and assuming the growth is all new and not already accounted for under existing projections, the total population of the city in 2031 would be 172,006 (124,563 current population + 47,443 new residents), or a population increase of approximately 38%.

The proposed project would be consistent with State requirements for the RHNA and would be within the growth forecasts for Northwest Alameda County in Plan Bay Area 2050, which projects a 57% increase in population for Northwest Alameda County.

Further, growth under the propose HEU would be concentrated in locations where such development is encouraged by adopted plans due to their proximity to transit and transportation corridors. ABAG has designated several PDAs in Berkeley. PDAs are transit-rich areas that are intended to accommodate most future development in the Bay Area. Designated PDAs in Berkeley include: University Avenue, San Pablo Avenue, Telegraph Avenue (which was later amended to include the Southside), Adeline Street, South Shattuck Avenue, and the Downtown. By focusing development in areas with existing transit infrastructure, PDAs minimize growth in undeveloped parts of the Bay Area, helping to reduce reliance on automotive travel, vehicle miles traveled, and associated greenhouse gas emissions (ABAG 2022). Many of the inventory sites are within PDAs along University Avenue, San Pablo Avenue, Telegraph Avenue, at the Ashby BART Station site, and in the Southside.

In addition, the State requires that all local governments adequately plan to meet the housing needs of their communities (HCD 2021). Given that the State is currently in an ongoing housing crisis due to an insufficient housing supply, the additional units under the proposed project would further assist in addressing the existing crisis and meeting the housing needs of the City's communities. Furthermore, the proposed HEU would first be submitted to the HCD for review and approval to ensure that it would adequately address the housing needs and demands of the City. Approval by the HCD would ensure that population and housing growth under the 2023-2031 Housing Element would not be substantial or unplanned.

Lastly, this analysis is conservative because it assumes a maximum buildout scenario and includes sites already planned for development and maximum buildout under the proposed zoning changes. The project's actual contribution to population growth may be less than estimated in Table 4.12-4. In addition, the project would not involve the extension of roads or other infrastructure that could indirectly lead to population growth. As discussed in Section 4.13, *Public Services and Recreation*, and Section 4.16, *Utilities and Service Systems*, the city is mostly developed and is supported by existing public services and infrastructure which are sufficient to serve the additional housing units. Therefore, the project would not result in substantial unplanned population growth, either directly or indirectly. This impact would be less than significant.

Mitigation Measures

This impact would be less than significant. No mitigation is required.

Threshold 2: Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

Impact POP-2 IMPLEMENTATION OF PROPOSED PROJECT WOULD NOT RESULT IN THE DISPLACEMENT OF SUBSTANTIAL NUMBERS OF PEOPLE OR HOUSING. THE PROPOSED PROJECT WOULD FACILITATE THE DEVELOPMENT OF NEW HOUSING IN ACCORDANCE WITH STATE AND LOCAL HOUSING REQUIREMENTS, WHILE PRESERVING EXISTING RESIDENTIAL NEIGHBORHOODS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

“Substantial” displacement would occur if the proposed project would displace more residences than would be accommodated through growth facilitated by the project. The goal of the proposed project is to accommodate and encourage new residential development in Berkeley at the inventory sites and in other locations such as the North Berkeley and Ashby BART station sites, the middle housing rezoning districts, and in the Southside. The proposed project addresses the need for future housing development beyond that required by the RHNA to account for a reasonable sites buffer. This buffer of additional units, which is considered in the inventory of candidate housing sites analyzed in this EIR, is intended to help the City address future “no net loss,” if it becomes necessary to identify a replacement site for the Housing Element Update if a site is developed with fewer units or at a higher income category than assumed in the sites inventory. A portion of the housing units would be developed at a density range that could accommodate low and very-income housing as required to meet the RHNA 6th Cycle allocation. Development under the proposed HEU could result in up to an estimated 19,098 new housing units developed by 2031. The types of housing units anticipated under the proposed project would generally fall into the following categories of development projects: single-family, multi-family residential, and/or mixed-use development on vacant sites, redevelopment of existing nonresidential and residential sites that would allow residential use or higher density residential use. Therefore, overall, the proposed HEU would add to the City’s housing stock to meet housing goals.

On an individual site basis, it is possible that some redevelopment projects could result in displacement of current housing. However, the proposed HEU includes policies to reduce displacement impacts. For example, Policy H-5 in the HEU seeks to protect tenants from large rent increases, arbitrary evictions, hardship from relocation, and the loss of their homes. For displaced residents with lower incomes, Policies H-1 through H-3 in the HEU seek to increase affordable housing for Berkeley residents with lower income levels, develop additional funds for permanently affordable housing, and ensuring below market rate rental housing remains affordable for the longest period that is economically and legally feasible. In addition, projects that involve demolition or elimination of dwelling units would be subject to BMC Chapter 23.326, which stipulates that demolition of dwelling units only be approved if it is found that the elimination of the dwelling units would not be materially detrimental to the housing needs and public interest of the affected neighborhood and the city. Further, BMC Chapter 23.326 includes tenant protections for displaced residences. When demolition of an occupied unit is approved, the project applicant is required to provide assistance with moving expenses and subsidize the rent differential for a comparable replacement unit. If a tenant is displaced due to the owner withdrawing the building from rent or lease or for repairs to bring the unit into compliance, BMC Chapters 13.77.055 and 13.84 entitle the tenant to relocation compensation and certain protections. Lastly, BMC Chapter 13.76.130 requires landlords to have good cause for evictions and provide relocation assistance to households as specified in Section 13.76.130A.9.

In summary, the proposed project would facilitate the development 19,098 additional dwelling units throughout Berkeley. Proposed residential units would provide additional housing opportunities for residents if residents are displaced during buildout of the proposed project. Therefore, the proposed project would not result in the net loss or displacement of housing, necessitating the construction of replacement housing elsewhere. This impact would be less than significant.

Mitigation Measures

This impact would be less than significant. No mitigation is required.

c. Cumulative Impacts

Inducement of Substantial Population Growth

As discussed in Section 3, *Environmental Setting*, the topic of population and housing has cumulative implications on the entire Bay Area region, not just on the City of Berkeley. Therefore, this cumulative impact analysis is based on Plan Bay Area 2050, the Bay Area's most recent RTP/SCS. The proposed HEU would accommodate projected citywide population and housing growth through 2031. By its nature, the impact analysis under Impact POP-1 considers cumulative impacts associated with population growth throughout the City and consistent with the Plan Bay Area. The Housing Element Update incorporates regional growth anticipated by ABAG's RHNA projections and thus considers cumulative growth. The proposed HEU would not considerably contribute to a significant impact associated with unplanned population growth.

Displacement of People and Housing

Implementation of the proposed HEU would accommodate the City's forecasted population and housing demand through 2031. The proposed HEU would result in an overall net increase of housing units in the City, including affordable housing, and would not result in substantial displacement of people or housing. Other jurisdictions in the region are updating their respective Housing Elements and have similar impacts related to displacement, but they would contain programs and policies to provide housing for low-income and special needs populations. While the proposed HEU would have no direct physical effects, subsequent development under the proposed HEU could result in the demolition of some existing housing units within Berkeley. However, the proposed HEU includes policies to minimize the loss of existing housing and to promote the growth of affordable housing. Continued implementation of existing City regulations, policies and programs also would preserve existing housing stock and assist those at risk of displacement. As a result, implementation of the proposed HEU would not considerably contribute to a significant cumulative impact from the displacement of substantial numbers of existing housing units or people.

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4.13 Public Services and Recreation

This section evaluates potential environmental impacts from implementation of the proposed HEU with respect to the following public services: fire protection services, police protection services, public schools, and parks and recreation facilities. Other public facilities and services such as water, wastewater, and solid waste are addressed in Section 4.16, *Utilities and Service Systems*.

4.13.1 Setting

a. Fire Protection

The Berkeley Fire Department (BFD) provides fire protection and emergency medical services for the city of Berkeley. This service area represents 11 square miles and approximately 124,563 residents. The BFD operates seven fire stations including seven engine companies, two truck companies and four ambulances (City of Berkeley 2022a). The BFD is organized into five divisions, including: Office of the Fire Chief, Administrative and Fiscal Services, Operations, Fire Prevention, and Special Operations. The department has 140 full time equivalent employees (Berkeley Fire Department 2022). The Berkeley Fire Department is responsible for protecting life and property. As needed, these Fire Officers are available 24/7 to respond to fire incidents. The eastern edge of the City of Berkeley is in a very high severity fire hazard zone, as discussed in more detail in Section 4.17, *Wildfire*.

Facilities

The Fire Department maintains seven fire stations within City limits as shown in Figure 4.13-1:

- Station 1: 2442 Eighth Street
- Station 2: 2029 Berkeley Way
- Station 3: 2710 Russell Street
- Station 4: 1900 Marin Avenue
- Station 5: 2680 Shattuck Avenue
- Station 6: 999 Cedar Street
- Station 7: 3000 Shasta Road

Response Times

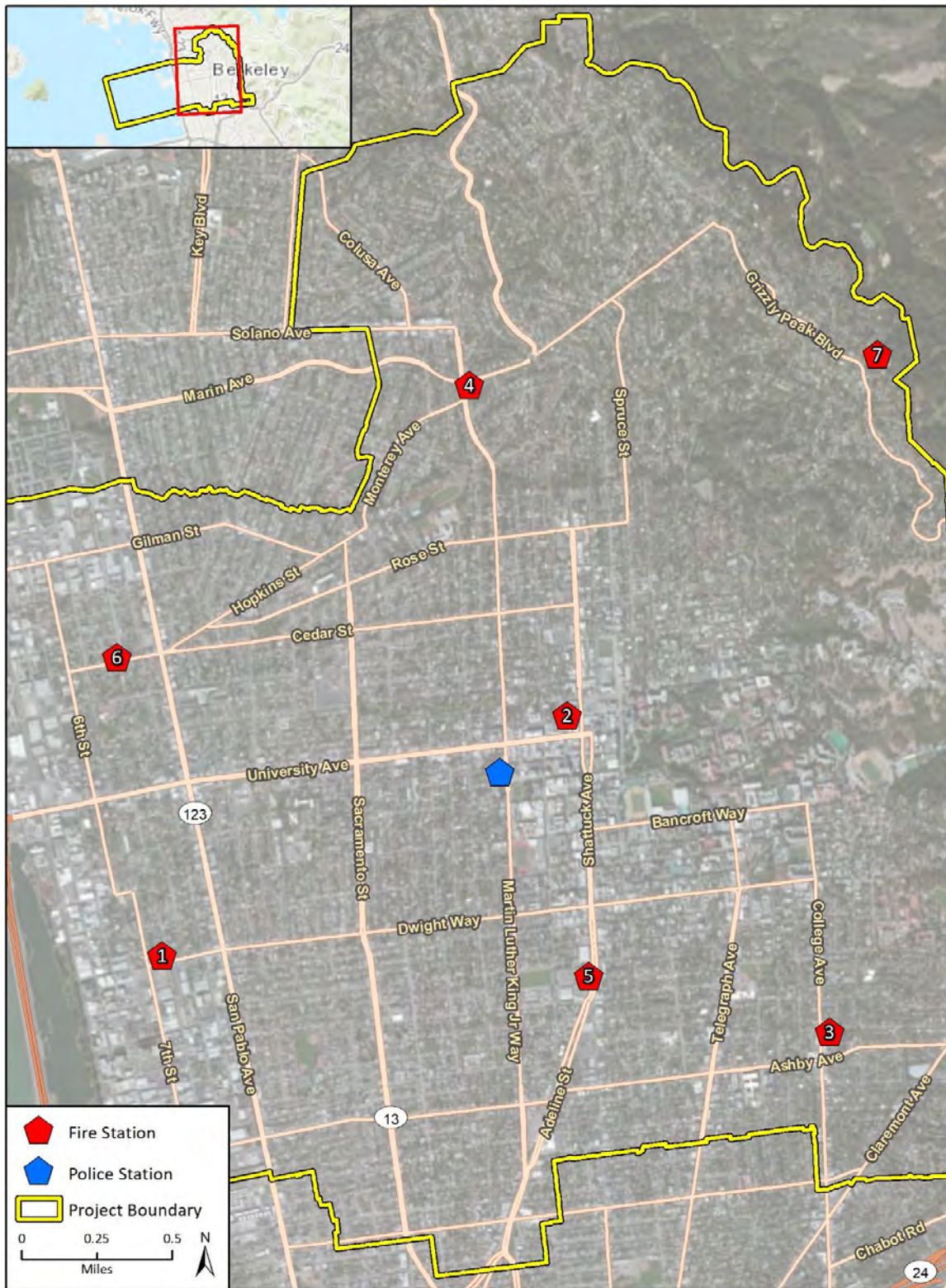
The BFD has an average response time of five minutes and fifteen seconds (5:15) from when the station receives the call to the first unit arriving on the scene. The median response time is 4:46 (City of Berkeley 2021).

b. Police Services

The Berkeley Police Department (BPD) provides police protection services to the city of Berkeley. The BPD is organized into five divisions, including: Office of the Chief, Operations, Investigations, Professional Standards, and Support Services. The BPD consists of 154 sworn officers and is headquartered at 2100 Martin Luther King Jr. Way.

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Figure 4.13-1 Fire and Police Stations in Berkeley



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Fig X Fire Stations in Berkeley

Response Times

According to Lieutenant Matt McGee of the Community Services Bureau with the BPD, BPD response times are subject to variations depending on available personnel, call volumes, and other patrol demands. A priority 1 call for the BPD, a call which requires immediate response and there is reason to believe that an immediate threat to life exists, has an average response time of 6.2 minutes. A priority 3 call for the BPD, which requires an immediate response but does not present a significant threat of physical injury or major property damage, has an average response time of 31.6 minutes.

c. Schools

The Berkeley Unified School District (BUSD) operates three preschools, 11 elementary schools (grades K-5), three middle schools (grades 6-8), one large comprehensive high school (grades 9-12), a continuation high school (grades 9-12), and an adult school (BUSD 2020a). The District's overall enrollment for the 2020-2021 school year was 9,559 students (Ed-Data.org 2022).

BUSD is divided into three elementary school zones: Central, Northwest, and Southeast. Two of the middle schools are zoned, while one is a magnet school. Parents of students entering the District fill out an enrollment form and list their preferences for schools. Parents may request any school in the district, but first priority will be given to students living within a school's attendance zone.

d. Parks

The City of Berkeley's Parks, Recreation and Waterfront Department administers recreation centers and maintains the parks, waterfront, and urban forest within the city limits. In this department, the Parks Division maintains 54 parks; 21 turf medians, triangles, and dividers; 44 parking and vacant lots; 75 paths, walks and steps; 40 undeveloped paths; and the Berkeley Marina (City of Berkeley 2020b). There are 250 acres of parkland within city limits, which is a ratio of approximately two park acres per 1,000 residents (City of Berkeley 2022b). In addition to the public open space managed by the City's Parks Divisions, Berkeley contains parts of the Bay Trail and the 1,854-acre McLaughlin Eastshore State Park, and residents are adjacent to the East Bay Regional Park District's 2,079-acre Tilden Regional Park and 208-acre Claremont Canyon Regional Preserve. Including these additional parklands, Berkeley's park acres-to-persons ratio increases to approximately 25.5 acres per 1,000 residents. Parks are shown in Figure 4.13-2.

Several recreational facilities within the University campus may also serve as parks and recreational uses for residents. The University has a general philosophy of keeping the campus open for the public to utilize open spaces.

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Figure 4.13-2 Parks in Berkeley



Imagery provided by Microsoft Bing and its licensors © 2022.

Fig X Parks in Berkeley

4.13.2 Regulatory Setting

a. Federal

There are no federal regulations pertaining to public services that are applicable to this analysis. Applicable State and local regulations are described below.

b. State

California Fire and Building Code

The State of California provides minimum standards for building design through the California Building Code (CBC), which is located in Part 2 of Title 24, California Building Standards Code, of the CCR. The CBC is based on the International Building Code but has been amended for California conditions. It is generally adopted on a jurisdiction-by-jurisdiction basis, subject to further modification based on local conditions. Commercial and residential buildings are plan-checked by local building officials for compliance with the CBC. Typical fire safety requirements of the CBC include: the installation of sprinklers in all high-rise buildings; the establishment of fire resistance standards for fire doors, building materials, and particular types of construction; and the clearance of debris and vegetation within a prescribed distance from occupied structures in wildfire hazard areas.

California Code of Regulations

The California Code of Regulations, Title 5 Education Code, governs all aspects of education within the State. California State Assembly Bill 2926 (AB 2926) – School Facilities Act of 1986 – was enacted by the State of California in 1986 and added to the California Government Code (Section 65995). It authorizes school districts to collect development fees, based on demonstrated need, and generate revenue for school districts for capital acquisitions and improvements. It also established that the maximum fees which may be collected under this and any other school fee authorization are \$1.50 per square foot (\$1.50/ft²) for residential development and \$0.25/ft² for commercial and industrial development. AB 2926 was expanded and revised in 1987 through the passage of AB 1600, which added Section 66000 et seq. of the Government code. Under this statute, payment of statutory fees by developers serves as total mitigation under CEQA to satisfy the impact of development on school facilities. However, subsequent legislative actions have alternatively expanded and contracted the limits placed on school fees by AB 2926.

California Senate Bill 50

As part of the further refinement of the legislation enacted under AB 2926, the passage of SB 50 in 1998 defined the Needs Analysis process in government Code Sections 65995.5-65998. Under the provisions of SB 50, school districts may collect fees to offset the costs associated with increasing school capacity as a result of development. SB 50 generally provides for a 50/50 State and local school facilities match. SB 50 also provides for three levels of statutory impact fees. The application level depends on whether State funding is available; whether the school district is eligible for State funding; and whether the school district meets certain additional criteria involving bonding capacity, year-round schools, and the percentage of moveable classrooms in use.

California Government Code sections 65995-65998 sets forth provisions to implement SB 50. Specifically, in accordance with section 65995(h), the payment of statutory fees is “deemed to be

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full and complete mitigation of the impacts of any legislative or adjudicative act, or both, involving, but not limited to, the planning, use, or development of real property, or any change in governmental organization or reorganization...on the provision of adequate school facilities.” The school district is responsible for implementing the specific methods for mitigating school impacts under the Government Code.

Pursuant to Government Code section 65995(i), “A State or local agency may not deny or refuse to approve a legislative or adjudicative act, or both, involving, but not limited to, the planning, use, or development of real property, or any change in governmental organization or reorganization as defined in section 56021 or 56073 on the basis of a person's refusal to provide school facilities mitigation that exceeds the amounts authorized pursuant to this section or pursuant to section 65995.5 or 65995.7, as applicable.”

California Education Code section 17620(a)(1) states that the governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement against any construction within the boundaries of the district, for the purpose of funding the construction or reconstruction of school facilities.

State Public Park Preservation Act (California Public Resource Code Section 5400 – 5409)

The State Public Park Preservation Act is the primary instrument for protecting and preserving parkland in California. Under the Act, cities and counties may not acquire any real property that is in use as a public park for any non-park use unless compensation or land, or both, are provided to replace the parkland acquired. This ensures a no net loss of parkland and facilities.

Quimby Act (California Government Code Section 66477)

The Quimby Act allows cities and counties to adopt park dedication standards/ordinances requiring developers to set aside land, donate conservation easements, or pay fees towards parkland when property is subdivided.

c. Local

Berkeley General Plan

Fire Protection Goals, Policies, and Actions

The Disaster Preparedness and Safety Element and the Transportation Element of the City's General Plan contain the following policies and actions related to fire protection services (City of Berkeley 2001a, 2001c):

Policy S-1 Response Planning. Ensure that the City's emergency response plans are current and incorporate the latest information on hazards, vulnerability, and resources. (Also see Transportation Policy T-28.)

Action G. Conduct coordinated planning and training between local and regional police, fire, and public health agencies in preparation for natural and man-made disasters, and ensure that the City's disaster response communication technologies are compatible with regional agency communication technologies.

Policy S-22 Fire Fighting Infrastructure. Reduce fire hazard risks in existing developed areas.

Action A. Develop proposals to make developed areas more accessible to emergency vehicles and reliable for evacuation. Consider restricting on-street parking, increasing parking fines in hazardous areas, and/or undergrounding overhead utilities. Require that all private access roads be maintained by a responsible party to ensure safe and expedient passage by the Fire Department at any time, and require approval of all locking devices by the Fire Department. Ensure that all public pathways are maintained to provide safe and accessible pedestrian evacuation routes from the hill areas.

Action B. Evaluate existing access to water supplies for fire suppression. Identify, prioritize, and implement capital improvements and acquire equipment to improve the supply and reliability of water for fire suppression. Continue to improve the water supply for firefighting to assure peak load water supply capabilities. Continue to work with EBMUD to coordinate water supply improvements. Develop aboveground, (transportable) water delivery systems.

Action C. Provide properly staffed and equipped fire stations and engine companies. Monitor response time from initial call to arrival and pursue a response time goal of four minutes from the nearest station to all parts of the city. Construct a new hill area fire station that has wildland firefighting equipment and ability.

Policy S-23 Property Maintenance. Reduce fire hazard risks in existing developed areas by ensuring that private property is maintained to minimize vulnerability to fire hazards.

Action A. Continue and expand existing vegetation management programs.

Action B. Property owners shall be responsible for maintaining their structures at a reasonable degree of fire and life safety to standards identified in adopted codes and ordinances.

Action C. Promote smoke detector installation in existing structures. Require the installation of smoke detectors as a condition of granting a permit for any work on existing residential and commercial buildings and as a condition for the transfer of property.

Action D. Promote fire extinguisher installation in existing structures, particularly in kitchens, garages, and workshops.

Action E. Require bracing of water heaters and gas appliances and the anchoring of houses to foundations to reduce fire ignitions following earthquakes.

Policy S-24 Mutual Aid. Continue to fulfill legal obligations and support mutual aid efforts to coordinate fire suppression within Alameda and Contra Costa Counties, Oakland, the East Bay Regional Park District, and the State of California to prevent and suppress major wildland and urban fire destruction.

Action A. Work with inter-agency partners and residents in vulnerable areas to investigate and implement actions to improve fire safety, using organized outreach activities and councils such as the Hills Emergency Forum and the Diablo Fire Safe Council.

Action B. Establish close coordination with the California Department of Forestry to minimize the risk of wildland fire in the hill areas.

Policy S-25 Fire Safety Education. Use Fire Department personnel to plan and conduct effective fire safety and prevention programs.

Action A. Provide fire safety presentations and programs to local schools, community groups, and neighborhoods.

Action B. Provide fire safety classes for high-occupancy institutional land uses, and commercial and industrial occupancies.

Action C. Develop and implement a program to improve public awareness and disseminate appropriate warnings during times of high fire danger.

Policy T-28 Emergency Access. Provide for emergency access to all parts of the city and safe evacuation routes. (Also see Disaster Preparedness and Safety Policy S-22.)

Action A. Do not install new full diverters or speed humps on streets identified on the Emergency Access and Evacuation Network map unless it is determined by the Fire and Police Departments that the installation will not significantly reduce emergency access or evacuation speeds. The Fire Department should be able to access all Berkeley locations within four minutes (see Disaster Preparedness and Safety Element). All other proposed traffic calming devices or obstructions to the free flow of traffic on these streets should be reviewed by the Fire and Police Departments to ensure that the proposed change will not significantly increase emergency response times or hinder effective evacuation of adjacent neighborhoods.

Action B. Maintain and improve pedestrian pathways throughout the city that are dedicated for public use and provide an alternative to the streets in case of an emergency evacuation.

Action C. Maintain and make available to the public up-to-date maps of all emergency access and evacuation routes.

Action D. Where necessary, consider parking restrictions to ensure adequate access for emergency vehicle access and evacuation in hill area neighborhoods with narrow streets.

Action E. Prioritize evacuation routes for undergrounding of overhead utilities.

Police Protection Goals, Policies, and Actions

The Disaster Preparedness and Safety Element, the Transportation Element and the Economic Development & Employment Element of the City's General Plan provide the following policies and actions related to police protection services (City of Berkeley 2001a, 2001c, 2001e):

Policy S-1 Response Planning. Ensure that the City's emergency response plans are current and incorporate the latest information on hazards, vulnerability, and resources. (Also see Transportation Policy T-28.)

Action G. Conduct coordinated planning and training between local and regional police, fire, and public health agencies in preparation for natural and man-made disasters, and ensure that the City's disaster response communication technologies are compatible with regional agency communication technologies.

Policy T-28 Emergency Access. Provide for emergency access to all parts of the city and safe evacuation routes. (Also see Disaster Preparedness and Safety Policy S-22.)

Action A. Do not install new full diverters or speed humps on streets identified on the Emergency Access and Evacuation Network map unless it is determined by the Fire and Police Departments that the installation will not significantly reduce emergency access or evacuation speeds. The Fire Department should be able to access all Berkeley locations within four minutes (see Disaster Preparedness and Safety Element). All other proposed traffic calming devices or obstructions to the free flow of traffic on these streets should be reviewed by the Fire and Police Departments to ensure that the proposed change will not significantly increase emergency response times or hinder effective evacuation of adjacent neighborhoods.

Policy ED-4 Neighborhood and Avenue Commercial Districts. Provide programs and services to assist neighborhood and avenue commercial districts. (Also see Land Use Policies LU-26 and LU-27.)

Action A. City efforts in neighborhood and avenue commercial zones should:

1. Maintain adequate levels of police presence.

Schools Goals, Policies, and Actions

The Land Use Element of the City's General Plan has the following policies and actions related to schools (City of Berkeley 2001b):

Policy LU-13 Basic Goods and Services. Ensure that neighborhoods are well served by commercial districts and community services and facilities, such as parks, schools, child-care facilities, and religious institutions.

Action B. Maximize joint City/Unified School District use of and planning for facilities such as recreation, libraries, and cultural centers.

Parks and Recreation Goals, Policies, and Actions

The Open Space and Recreation Element of the Berkeley General Plan cites a goal in the City's 1977 Master Plan of providing 2 acres of parkland per 1,000 people. This element also has the following policies related to parks and recreation (City of Berkeley 2001d):

Policy OS-2 Maintenance, Repair, and Enhancements. Within the context of open space resource allocations, give highest priority to maintaining and improving the City's existing network of open space and recreation facilities.

Policy OS-4 Working with Other Agencies. Work with the Berkeley Unified School District, the University of California, the East Bay Municipal Utility District, and the East Bay Regional Park District to improve, preserve, maintain, and renovate their open space and recreation facilities.

Policy OS-6 New Open Space and Recreational Resources. Create new open space and recreational resources throughout Berkeley.

Policy OS-7 Serving Disadvantaged Populations. Within the context of open space resource allocations for new or expanded facilities, give high priority to providing additional facilities for populations that are disadvantaged or underserved.

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Policy OS-8 Community Gardens. Encourage and support community gardens as important open space resources that build communities and provide a local food source.

Policy OS-14 Regional Open Space. Coordinate with regional open space agencies such as the East Bay Regional Park District, neighboring cities, and private sector and nonprofit institutions to maintain, improve, and expand the region's open space network.

The Land Use Element of the City's General Plan has the following policies and actions related to parks and recreation (City of Berkeley 2001d):

Policy LU-13 Basic Goods and Services. Ensure that neighborhoods are well served by commercial districts and community services and facilities, such as parks, schools, child-care facilities, and religious institutions.

Action B. Maximize joint City/Unified School District use of and planning for facilities such as recreation, libraries, and cultural centers.

In 1986, City of Berkeley voters passed the Berkeley Public Parks and Open Space Preservation Ordinance ("Measure L") which requires the Berkeley City Council to preserve and maintain existing public parks and open space according to the following regulations:

1. That wherever public parks and open space currently exist in Berkeley, such use shall continue and be funded at least to allow the maintenance of the present condition and services.
2. That all undedicated or unimproved open space owned or controlled by the City of Berkeley (including land held by the City in trust) shall be retained and funded by the Berkeley City Council to enable public recreational use of those lands.
3. That those census tracts containing less than the Master Plan guideline of two acres of parks and open space per 1,000 population shall be singled out as having a high priority for funding the acquisition, development and maintenance of parks and recreational facilities.

Berkeley Municipal Code

Chapter 19.48, Berkeley Fire Code, of the Berkeley Municipal Code (BMC) adopts the 2019 California Fire Code as the City's fire code and provides City-specific amendments, as necessary. This chapter regulates the use of construction materials and requires the installation of specific fire safety features in new construction in Berkeley. Additionally, this chapter requires the coordination of the review of development applications between the City and the MOFD and regulates building design, siting, and vegetation management to enhance maximum fire prevention and protection

Berkeley Local Hazard Mitigation Plan

The City adopted its Local Hazard Mitigation Plan in 2019. The mitigation goals and priorities of the City's LHMP are to increase Berkeley's level of preparation for potential disasters and to minimize the impacts associated with natural and man-made hazards; identify strategies and tools to facilitate community disaster and hazards awareness and education; provide for the safety of Berkeley citizens by maintaining efficient, well-trained, and adequately equipped City personnel; encourage a disaster-resistant City and surrounding area by reducing the potential for loss of life, property damage, and environmental degradation from disasters and hazards; reduce the vulnerability of public and private facilities and infrastructure to the effects of earthquakes, fire, and landslides; and promote conditions and strategies that will accelerate the capacity for physical and

economic recovery from disasters and hazards (City of Berkeley 2019). The City Fire Department and Police Department is designated to respond to hazards and emergencies in Berkeley.

Berkeley Unified School District – School Facilities Fee

Per SB 50 (described above, the Berkeley Board of Education adopted a School Facility Fee for new housing and commercial development in order to help the Berkeley Unified School District (BUSD) meet the costs of expanding their facilities to accommodate increased enrollment caused by new development. These fees are directed towards maintaining adequate service levels, which would ensure that impact to schools that could result from development projects in the project sites would be offset by development fees and, in accordance with State law, reduce potential impacts to a less-than-significant level

4.13.3 Impact Analysis

a. Significance Thresholds and Methodology

According to Appendix G of the *CEQA Guidelines*, impacts related to public services and recreation from implementation of the proposed project would be significant if it would:

1. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other objectives for any of the public services:
 - a. Fire protection;
 - b. Police protection;
 - c. Schools;
 - d. Parks; or
 - e. Other public facilities;
2. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or
3. Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Impacts related to thresholds 1(a), 1(b), 1(c), 1(d), 2 and 3 are analyzed below. Impacts related to other public facilities (Threshold 1(e)) such as water, wastewater and landfills are addressed in Section 4.16, *Utilities and Service Systems*.

This analysis considers the *CEQA Guidelines* Appendix G thresholds, as described above, in determining whether the proposed Project, including future development accommodated by the proposed HEU, would result in impacts related to the provision of public services. The evaluation was based on reviewing the regulations and determining their applicability to the proposed HEU. Public services information was acquired through review of relevant documents and communications with City staff, BFD, BPD, and BUSD. The determination that the proposed HEU would or would not result in "substantial" adverse effects concerning public services considers the relevant policies and regulations established by local and regional agencies, the proposed HEU's

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compliance with such policies, and whether the HEU would create the need for new or expanded facilities, the construction of which could result in environmental impacts.

In *City of Hayward v. Trustees of California State University* (2015) 242 Cal.App.4th 833, the Court of Appeal held that significant impacts under CEQA consist of adverse changes in any of the physical conditions within the area of a project and potential impacts on public safety services are not an environmental impact that CEQA requires a project applicant to mitigate: “[T]he obligation to provide adequate fire and emergency medical services is the responsibility of the city. (Cal. Const., art. XIII, § 35, subd. (a)(2) [“The protection of the public safety is the first responsibility of local government and local officials have an obligation to give priority to the provision of adequate public safety services.”].) Thus, the need for additional fire and police protection services is not an environmental impact that CEQA requires a project proponent to mitigate.

b. Project Impacts and Mitigation Measures

Threshold 1a: Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered fire protection facilities, or the need for new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives?

Impact PS-1 DEVELOPMENT FACILITATED BY THE PROPOSED HEU WOULD RESULT IN AN INCREASE OF POPULATION AND BUILDINGS WITHIN BERKELEY. THE PROJECTED POPULATION INCREASE WOULD INCREASE DEMAND FOR FIRE PROTECTION SERVICES AND POTENTIALLY CREATE THE NEED FOR A NEW OR ALTERED FIRE STATION. HOWEVER, COMPLIANCE WITH POLICIES IN THE 2020 GENERAL PLAN WOULD REDUCE IMPACTS RELATED TO FIRE SERVICE FACILITIES TO A LESS THAN SIGNIFICANT LEVEL.

The proposed HEU would not expand the BFD service area but would result in an increased population within the existing service area. As described in Section 2, *Project Description*, the proposed HEU could facilitate the development of approximately 19,098 housing units. The additional housing units would result in approximately 47,443 additional persons in Berkeley and the BFD district (see Section 4.12, *Population and Housing*, for population estimation methodology). The increase in residents associated with the project could increase demand for fire protection and emergency medical services such that additional staff, equipment or facilities would be needed to meet response time goals.

The continued implementation of policies and actions in the Berkeley General Plan would improve the ability of fire protection facilities to serve this future development and allow fire protection services to maintain response time goals. Policy S-22 in the City’s Disaster Preparedness and Safety Element calls for the City to provide adequately staffed and equipped Fire Stations and to pursue a response time goal of four minutes from the nearest station to all parts of Berkeley.

Further, future development under the proposed HEU would be required to comply with basic building designs and standards for residential buildings as mandated by the Berkeley Fire Code, under BMC Section 19.48. In some cases, older buildings not constructed to today’s more stringent levels of fire-safety regulation would be replaced by new buildings compliant with existing regulations, improving fire safety on those sites. Compliance with designs and standards and other fire safety requirements would reduce the demand for fire protection services and thereby reduce the need for new fire stations. Future development under the proposed HEU would be required to comply with abatement of fire-related hazards and pre-fire management prescriptions as outlined

under the California Health and Safety Code and the California Fire Plan. A list of typical fire-related requirements included in these codes and that would apply to typical residential projects allowed by the proposed HEU are as follows:

- a. Adequate marking of exterior building openings
- b. Openings and fire escape stairs and balconies
- c. Internal access, including via hallways and doorways
- d. Manual and automatic fire alarm systems
- e. Fire Fighter Air Replenishment Systems
- f. Internal building sprinkler systems
- g. New fire hydrants
- h. External fire protection (setbacks, fire-resistant materials, etc.)

New residential projects allowed by the proposed HEU would be reviewed for compliance with these requirements and compliance with other building and safety regulations several times during different phases of project development. During the entitlement and pre-application phase, new residential projects that require Use Permits are subject to an Interdepartmental Roundtable Review. As a part of this review, representatives from several City departments, including the Building and Safety Division, the Transportation Division, and the Fire Department, review the entitlement plan set and provide comments regarding Fire and Building Code requirements that will apply to the project. If the plans present a potential access or safety issue, this review offers an early opportunity to identify the problem and discuss solutions. For example, the Fire Department can suggest that an additional stairway be included in a residential building to provide additional egress. During the building permit process, projects are reviewed again by several City departments, including the Fire Department, to ensure compliance with all applicable code regulations. If a project does not comply with code requirements related to fire safety and access, the applicant will be issued a correction letter, which must be addressed before the building permit is approved. During the construction process, projects are subject to regular inspections to ensure that buildings are being constructed in accordance with the approved plans. Finally, after construction is complete, the projects are subject to regular inspections to confirm continued structural adequacy and safety.

In November 2020, the City of Berkeley passed Measure FF, which mandates that the City adopt an ordinance enacting a tax on construction and improvements within Berkeley. Measure FF is estimated to generate \$8.5 million annually, which would be used to implement a state-of-the-art 911 dispatch system to ensure rapid assistance to emergency medical calls, increase ambulance and paramedic capacity, to better meet the needs of all residents, and strengthen wildfire, earthquake and other disaster prevention and preparedness with new, expanded emergency warning systems, fire fuel reduction and evacuation planning. These funds will allow the Fire Department to address increased call volumes and emergency medical service needs that result from city-wide increases in residential density, including the anticipated increase allowed under the proposed HEU.

Due to compliance with Fire Code requirements and other City efforts to ensure adequate fire protection services, with the increased demand for fire protection services associated with the proposed HEU response time goals would continue to be met. Therefore, impacts related to fire protection facilities under the proposed HEU would be less than significant.

Should the BFD and the City determine that new or expanded facilities are needed to provide fire protection services to Berkeley, it is not known where such facilities would be located. No location

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has been identified for a new fire station as part of the proposed HEU. Nonetheless, this EIR analyzes the impact associated with development on vacant and underutilized sites throughout Berkeley. A potential future facility would likely be developed as infill development on one of the inventory sites. As infill development, it is not anticipated that the construction of a new fire station would cause additional significant environmental impacts beyond those identified in this EIR. The environmental effects of constructing a fire station would be consistent with the impacts determined in other sections of this EIR, which would be less than significant or less than significant with mitigation with the exception of impacts related to historical resources and construction noise. When and if the Fire Department proposes a new station and identifies an appropriate site and funding, the City will conduct a complete evaluation of the station's environmental impacts under CEQA.

Mitigation Measures

This impact would be less than significant without mitigation. No mitigation is required.

Threshold 1b: Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered police protection facilities, or the need for new or physically altered police protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives?

Impact PS-2 DEVELOPMENT FACILITATED BY THE PROPOSED HEU WOULD RESULT IN AN INCREASE IN THE CITY'S POPULATION. THE PROJECTED POPULATION INCREASE WOULD INCREASE DEMAND FOR POLICE PROTECTION SERVICES AND POTENTIALLY CREATE THE NEED FOR NEW OR ALTERED POLICE SERVICE FACILITIES. HOWEVER, COMPLIANCE WITH POLICIES IN THE 2020 GENERAL PLAN WOULD REDUCE IMPACTS RELATED TO POLICE FACILITIES TO A LESS THAN SIGNIFICANT LEVEL.

Implementation of the proposed HEU would increase the population served by the Berkeley Police Department. Although the Police Department does not factor in population increases when determining its staffing needs, population growth in Berkeley could result in an increase in reported incidents, leading to longer response times unless the Police Department increases staffing. Police protection services are not typically "facility-driven," meaning such services are not as reliant on facilities in order to effectively patrol a beat. An expansion of, or intensification of development within, a beat does not necessarily result in the need for additional facilities if police officers and patrol vehicles are equipped with adequate telecommunications equipment in order to communicate with police headquarters. However, if the geographical area of a beat is expanded, population increases, or intensification/redevelopment of an existing beat results in the need for new police officers, new or expanded facilities may be needed.

Policies in the City's General Plan listed above aim to ensure that there is adequate staffing to meet existing service demands. Police protection service levels would continue to be evaluated and maintained by BPD in accordance with existing policies, procedures and practices as development occurs over the lifetime of the HEU. Future housing developers would be required to submit a service questionnaire to the BPD in conjunction with their applications to ensure that police protection services are available to serve the proposed housing development.

Should the BPD and the City determine that new or expanded facilities are needed to provide police protection services to Berkeley, it is not known where such facilities would be located. No location has been identified for a new police station as part of the proposed HEU. Nonetheless, this EIR

analyzes the impact associated with development on vacant and underutilized sites throughout Berkeley. A potential future facility would likely be developed as infill development on one of the inventory sites. As infill development, it is not anticipated that the construction of a new police station would cause additional significant environmental impacts beyond those identified in this EIR. The environmental effects of constructing a police station would be consistent with the impacts determined in other sections of this EIR, which would be less than significant or less than significant with mitigation with the exception of impacts related to historical resources and construction noise. When and if the Police Department proposes a new station and identifies an appropriate site and funding, the City will conduct a complete evaluation of the station's environmental impacts under CEQA.

Therefore, the impact related to police protection services and facilities would be less than significant.

Mitigation Measures

This impact would be less than significant without mitigation. No mitigation is required.

Threshold 1c: Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered schools, or the need for new or physically altered schools, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives?

Impact PS-3 DEVELOPMENT FACILITATED UNDER THE PROPOSED HEU WOULD RESULT IN AN INCREASE IN POPULATION IN BERKELEY, RESULTING IN THE NEED FOR ADDITIONAL OR EXPANDED SCHOOL FACILITIES. HOWEVER, GOVERNMENT CODE 65995 (B) WOULD REQUIRE FUNDING FOR THE PROVISION OR EXPANSION OF NEW SCHOOL FACILITIES TO OFFSET IMPACTS FROM NEW RESIDENTIAL DEVELOPMENT. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The proposed project would not directly affect local schools but would generate new students entering the BUSD. As shown in Table 2-2 in Section 2, *Project Description*, the proposed project could result in 19,098 new dwelling units in Berkeley by 2031. In the study prepared for BUSD's adopted School Facilities Fee on new residential and commercial/industrial development, the District used a blended student generation rate of 0.191 for all housing types (BUSD 2016). Based on this generation rate, development under the proposed project would add an estimated total of 3,648 new students over time (through 2031). These students would be distributed throughout the schools that serve Berkeley depending on their grade level and on their location. The addition of 3,648 new students would result in an increase of 39 percent from the BUSD enrollment of 9,409 students in the 2020-21 school year (Ed-Data.org 2022).

However, to offset a project's potential impact to schools as discussed in Regulatory Setting, Government Code 65995 (b) establishes the base amount of allowable developer fees a school district can collect from development projects located within its boundaries. The fees obtained by BUSD are used to maintain the desired school capacity and the maintenance and/or development of new school facilities. Future development facilitated by proposed project would be required to pay school impact fees which, pursuant to Section 65995 (3) (h) of the California Government Code (Senate Bill 50, chaptered August 27, 1998), are "deemed to be full and complete mitigation of the impacts of any legislative or adjudicative act, or both, involving, but not limited to, the planning, use, or development of real property, or any change in governmental organization or

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reorganization.” Additionally, BUSD utilizes an “controlled choice” student assignment system to meet zone-wide diversity goals and to ensure appropriate seating capacity at schools (BUSD 2022). BUSD will continue to evaluate demand, capacity, and plans for facility needs as future projects under the Housing Element are built out, including any required adjustments to the zones in the controlled choice program relative to new student population generated from additional housing development in Berkeley.

There are no planned improvements to add capacity through expansion. In the event that BUSD constructs a new school or physically alters an existing facility, a project-specific environmental analysis would be required under CEQA to address site-specific environmental concerns. As described above, existing laws and regulations would require funding for the provision or expansion of new school facilities to offset impacts from new residential development and impacts would be less than significant.

Mitigation Measures

This impact would be less than significant without mitigation. No mitigation is required.

Threshold 1d:	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered parks, or the need for new or physically altered parks, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives?
Threshold 2:	Would the proposed project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?
Threshold 3:	Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Impact PS-4 DEVELOPMENT ASSOCIATED WITH THE PROPOSED HEU WOULD INCREASE THE POPULATION OF BERKELEY AND THE USE OF EXISTING PARKS AND RECREATIONAL FACILITIES. HOWEVER, NO PLANS FOR THE EXPANSION OR CONSTRUCTION OF NEW PARKS OR RECREATIONAL FACILITIES ARE ANTICIPATED. THEREFORE, THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The proposed HEU would not include the provision of new parks or the physical alteration of existing parks or recreation centers. As described in Section 2, *Project Description*, full buildout of the project would increase the population in Berkeley by 47,443 new residents by 2031, which would increase use of parks.

In addition to the public open space managed by the City’s Parks Divisions, Berkeley contains parts of the Bay Trail and the Eastshore State Park, and Tilden Regional Park and Claremont Canyon Regional Preserve are adjacent to Berkeley. When considering parkland adjacent, the ratio of parkland per resident would be approximately 25.5 acres per 1,000 residents.

Policies and actions in Berkeley’s Open Space and Recreation Element, referenced above in Section 4.13.2 *Regulatory Setting*, are designed ensure that adequate parks and recreational facilities are provided to accommodate increase in new residents.

In accordance with General Plan policies, the City continually evaluates and plans for expansion or renovations of parks and recreation facilities as need to accommodate demand. For example,

Ohlone Park is currently planned for \$2,300,000 in investment to renovate existing features. Compliance with General Plan policies, particularly OS-1, OS-2, OS-6, would ensure park facilities are kept up to date and park acreage to population ratio is maintained within Berkeley. Compliance with General Plan policies and actions would potentially result in development of new recreational opportunities including parks. Should future park or recreational facilities be identified for construction, it is not known where such facilities would be located. No location has been identified for new facilities of the proposed HEU. Nonetheless, this EIR analyzes the impact associated with development on vacant and underutilized sites throughout Berkeley. A potential future facility would likely be developed as infill development on one of the inventory sites. As infill development, it is not anticipated that the construction of facilities in would cause additional significant environmental impacts beyond those identified in this EIR. The environmental effects of constructing facilities would be consistent with the impacts determined in other sections of this EIR, which would be less than significant or less than significant with mitigation with the exception of impacts related to historical resources and construction noise. When and if the Parks Department proposes new facilities and identifies an appropriate site and funding, the City will conduct a complete evaluation of the station's environmental impacts under CEQA.

City of Berkeley goals and policies regulations and Standard Conditions of Approval discussed throughout this EIR would ensure that impacts from construction of new parks and enhancements to existing parks are reduced to the extent feasible. Impacts to parks and recreation would be less than significant.

Mitigation Measures

This impact would be less than significant without mitigation. No mitigation is required.

c. Cumulative Impacts

Cumulative development in Berkeley, including but not limited to new development facilitated by the Housing Element, would increase demand for public services provided by the City, including fire and police protection services, parks, and libraries. As described in Section 3, *Environmental Setting*, cumulative development involves buildout associated with the proposed HEU in combination with development under the University of California, Berkeley's Long Range Development Plan.

Fire Protection

The HEU in combination with buildout under the LRDP could increase population such that there is an increase in reported incidents, leading to longer response times unless the Fire Department increases staffing. As described above under Impact PS-1, with continued implementation of General Plan policies, Fire Code requirements, and with additional funding sources under Measure FF, it is not anticipated that a new fire station is needed to serve cumulative development in Berkeley. Therefore, the cumulative impacts related to fire protection facilities would be less than significant, and the proposed HEU's contribution to these impacts would not be cumulatively considerable.

Police Protection

The HEU in combination with buildout under the LRDP could increase population such that there is an increase in reported incidents, leading to longer response times unless the Police Department increases staffing. Should additional staffing be needed to serve the areas around the project sites accounting for future cumulative development, staffing is reviewed each budget cycle and considers

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historical and current year information related to police services. Overall, although additional staffing is may be needed, it is not anticipated that additional police department facilities would be needed to serve cumulative growth in the project areas. Further, the University of California Police Department would assist with police protection services for University-owned properties. Therefore, the cumulative impacts related to police facilities would be less than significant, and the proposed HEU's contribution to these impacts would not be cumulatively considerable.

Schools

Cumulative development would increase the number of children attending BUSD schools. However, as stated in Impact PS-3, compliance with Senate Bill 50 would require applicants for future development in Berkeley to pay school impact fees established to offset potential impacts from new development. Therefore, pursuant to CGC Section 65994(h), the cumulative impact relating to school capacity would be less than significant, and the HEU's contribution to this impact would not be cumulatively considerable.

Parks and Recreation Facilities

Cumulative projects also would increase demand for park and recreational facilities. As described in Section 3, *Environmental Setting*, cumulative development involves buildout associated with the University of California, Berkeley's LRDP, which would involve construction of a new housing development to replace the open space at People's Park. This would result in a decrease of 2.8 acres of park land as well as additional residents in Berkeley that would utilize City park and recreation spaces. Nonetheless, University housing projects would primarily serve University students and staff who would have access to recreational opportunities associated with the University campus. Because existing parkland in and near Berkeley is adequate to serve overall demand, it is not anticipated that population growth from cumulative development would result in substantial deterioration of existing park facilities. As described in the *Impact Analysis* section above, the project would increase the population of Berkeley thereby reducing the ratio of parkland within the city limits to parkland ratio to approximately 1.69 acres per 1,000 residents, which is below the City's goal of two acres of parkland per 1,000 people. Nonetheless, when considering parkland adjacent to the City such as the Eastshore State Park, Claremont Canyon Regional Park, and Tilden Regional Park, the ratio of parkland per resident would be substantially higher, approximately 25.5 acres per 1,000 residents, which is well above the City's goal. There are planned improvements to parks and recreational facilities near HEU sites and future development on the sites would involve public and private open space for future residents. Therefore, cumulative development would not result in a significant impact related to parks, and the HEU would not make a considerable contribution to a cumulative impact.

4.14 Transportation

This section describes the potential impacts related to transportation, including conflicts with transportation plans, vehicle miles traveled (VMT), project-related transportation hazards, and emergency access, associated with the implementation of the proposed Housing Element Update (HEU). The information provided in this section was based primarily on research and analysis provided by a VMT Impact Assessment authored by Kittelson and Associates (Kittelson), included as Appendix G to this report.

4.14.1 Setting

a. Existing Street Network

The street network serving the city is described below.

Regional

Regional access to Berkeley is provided through several freeways and state highways, including Interstate 80/580 (I-80/580), State Route 24 (SR 24), and State Routes 13 (Ashby Avenue) and 123 (San Pablo Avenue).

Major Streets/Arterials

- **San Pablo Avenue (SR 123)** is a major north-south state highway that runs about 7.4 miles between Interstate 580 in Oakland in the south and Interstate 80 in Richmond in the north. It spans for approximately 2.5 miles in the City of Berkeley. It is a four-lane boulevard with a median strip for its entire length. San Pablo Avenue is used as an alternate route to the Eastshore Freeway (Interstate 80) when that freeway is congested. San Pablo Avenue is maintained by the California Department of Transportation (Caltrans). The speed limit on San Pablo Avenue is 30 miles per hour (mph). On-street parking is provided along both sides of the street. SR 123 is part of the National Highway System, a network of highways that are considered essential to the country's economy, defense, and mobility by the Federal Highway Administration (FHWA).
- **Ashby Avenue (SR 13)** is an east-west major state highway that runs about 9.8 miles between Interstate 580 in Oakland in the south and Interstate 80 in Berkeley in the west. It spans for approximately 3.5 miles in the City of Berkeley. It is generally a four-lane highway with some two-lane sections that is enclosed by the eastern hills of Oakland and the entire freeway lies within the earthquake fault zone of the Hayward Fault. The speed limit on Ashby Avenue is 25 mph. On-street parking is provided at some portions of Ashby Avenue. However, during the peak commute hours, on-street parking prohibitions on the north side of the street in the morning and the south side in the evening provide an additional automobile lane east of San Pablo Avenue. SR 13 is part of the California Freeway and Expressway System, and is part of the National Highway System, a network of highways that are considered essential to the country's economy, defense, and mobility by the FHWA.
- **Adeline Street** is a northeast-southwest major street with four to six automobile lanes and a center median. On-street parking is provided on both sides of the street either as parallel parking or as angled parking with a raised buffer between the parking and the adjacent through automobile lanes. A combination of metered, time limited, and unrestricted parking options are

available along the corridor. A Class II bicycle lane is provided on Adeline Street from Ashby Avenue to Fairview Street and a cycletrack (Class IV facility) is provided on Adeline Street from Ashby Avenue to Stuart Street. Alameda-Contra Costa Transit District (AC Transit) Line F runs along Adeline Street. The speed limit on Adeline Street is 25 miles per hour (mph).

- **Shattuck Avenue** is a north-south four lane major street that connects with Adeline Street. Most blocks of Shattuck Avenue provide angled parking on both sides of the street with a raised buffer between the parking and the adjacent through automobile lanes. South of Adeline Street, Shattuck Avenue is a collector street with two lanes and on-street parallel parking. AC Transit Line 18 runs along Shattuck Avenue. The speed limit on Shattuck Avenue is 25 mph.
- **Martin Luther King (MLK), Jr. Way** is a north-south major street with two lanes in each direction. MLK Jr. Way is adjacent to Adeline Street in the vicinity of the Ashby BART station and is concurrent with Adeline Street between Fairview and 63rd Streets before separating to the south of the station at the border with the City of Oakland. On-street parking is provided along most of the street. AC Transit Line 12 runs along MLK Jr. Way. The roadway's speed limit is 25 mph.
- **Dwight Way** is an eastbound two-lane one-way major street north of the Ashby station. Dwight Way provides on-street parking on both sides of the street. AC Transit Line 36 runs along Dwight Way. The speed limit is 25 mph.
- **Sacramento Street** is a north-south major street with two lanes in each direction with a raised center median. On-street parking is available along most of the street on both sides of the roadway. AC Transit Lines 52, 88, 688, and J run along Sacramento Street. The speed limit is 30 mph from Rose Street to the southern city limits.
- **University Avenue** is an east-west arterial with two travel lanes in both directions and a raised center median. It is designated as a scenic route. On-street parking is available on both sides of the roadway. AC Transit Lines 51B, 800, and FS run along University Avenue. The speed limit is 25 mph, except from the Eastshore Highway to Fifth street, where the speed limit is 35 mph. The City of Berkeley Vision Zero Plan and 2020 Pedestrian Plan identifies University Avenue as a High-Injury Street.

b. Traffic Conditions

Analysis Methodology

This section examines how proposed updates based on the housing element would impact the transportation system under the California Environmental Quality Act (CEQA). This section uses the metric of vehicle miles traveled to analyze transportation-related impacts consistent with Senate Bill 743 and the state *CEQA guidelines*. Pursuant to California Public Resources Code section 21099(b)(2) and *CEQA Guidelines* §15064.3, "a project's effect on automobile delay shall not constitute a significant environmental impact." Because the City has updated its CEQA thresholds in accordance with these state regulations, this analysis does not make significance conclusions with respect to changes to Levels of Service (LOS).

Vehicle Miles Traveled

Vehicle miles traveled (VMT) is determined by multiplying the number of vehicular trips by the trip distance in miles. For example, one vehicle that travels ten miles in a day generates 10 VMT. For the purposes of this Environmental Impact Report (EIR), VMT is expressed on a daily basis for a typical weekday. VMT values in this analysis represent the full length of a given trip and are not truncated

at jurisdiction boundaries. Additionally, these VMT values are for trips beginning or ending in the City (i.e., are associated with land uses within the City of Berkeley). Trips passing through the City without stopping are not included in these VMT estimate, as the City has little to no control over such trips.

Although the absolute amount of VMT may be reported, transportation impact analysis is typically based on VMT expressed as an efficiency metric. VMT efficiency metrics, such as VMT per resident and VMT per employee, allow the VMT performance of different land use quantities to be compared. Such metrics provide a measure of travel efficiency and help depict whether people are traveling by vehicle more or less over time, across different areas, or across different planning scenarios. A per-capita or per-employee decline in VMT compared to a baseline conditions indicates that the land use patterns and transportation network are operating more efficiently.

The regional travel demand model maintained by Alameda County Transportation Commission (Alameda CTC) is used to identify the VMT generated by land uses in Berkeley as well as the entire county. One measure of VMT is used in this analysis:

- **VMT per capita for residential land uses.** Includes VMT for all trips produced by a dwelling unit’s residents, such as to work, school, or shop, on a typical weekday. VMT estimates for the 2020 baseline modeled conditions are shown in Table 4.14-1.

Table 4.14-1 Demographics and VMT Per Capita, 2020 Baseline Conditions

Units	Bay Area Region	Berkeley
Population	7,915,267	128,004
Residential VMT	180,468,151	1,436,244
VMT Per Capita	22.80	11.22

Source: Alameda County, Kittelson & Associates, Inc. 2022

According to the California Office of Planning and Research (OPR) Technical Advisory, screening thresholds can be used to quickly identify projects that can be expected to cause a less than significant impact without conducting a detailed study (OPR 2018). The City of Berkeley guidelines include several screening criteria. The criterion applicable to the project is the “Projects in Low VMT Areas” criterion. According to the Low VMT Areas criterion, projects that are located in low-VMT areas and that have characteristics similar to other uses already located in those areas can be presumed to generate VMT at similar rates. The low-VMT areas in Berkeley are defined based on the results of the Alameda County Transportation Commission (CTC) Travel Demand Model and are summarized in VMT maps.

c. Transit Access and Circulation

Transit service providers in the City include the National Railroad Passenger Corporation (Amtrak), a passenger railroad service that provides intercity service across the United States; Bay Area Rapid Transit (BART), which provides regional rail service; and Alameda-Contra Costa Transit District (AC Transit), which provides local and Transbay bus service with connections to the Transbay Terminal in San Francisco. Each service is described below.

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BART

BART provides regional rail service throughout the East Bay and across the Bay to San Francisco and the Peninsula. There are three BART stations in the City of Berkeley, including the Downtown Berkeley, North Berkeley, and the Ashby BART stations.

AC Transit

AC Transit is the primary bus service provider in 13 cities and adjacent unincorporated areas in Alameda and Contra Costa Counties, with Transbay service to destinations in San Francisco and San Mateo Counties. AC Transit service in Berkeley is described in Table 4.14-2

Table 4.14-2 AC Transit Service in Berkeley

Route #	Service Description	Stops Serving Plan Area	Hour of Service	Frequency	
				Peak	Off Peak
6	Downtown Oakland to Downtown Berkeley via Telegraph Ave. and Southside Berkeley (UC campus).	Downtown Berkeley BART UC Berkeley Telegraph Avenue	Monday- Sunday: 5:00 AM to 1:00 AM	12-15 minutes	12-15 minutes
7	El Cerrito del Norte BART to Downtown Berkeley via Arlington Ave. and Shattuck Ave.	Downtown Berkeley BART Shattuck Avenue The Circle	Weekdays: 8:08 AM to 7:08 PM	30 min	30 min
12	Northwest Berkeley to Oakland Jack London Sq. via Gilman St., Monterey Av., MLK Jr. Way, 55th St., Temescal District, Pleasant Valley Av., Piedmont Av. Grand Av., and Broadway	MLK Jr. Way at Ashby BART, and Adeline St. at Alcatraz Av.	Monday- Sunday: 6:00 AM to midnight	20 min	30 min
18	University Village, Albany, to Lake Merritt BART via Solano Av., Shattuck Av., MLK Jr. Way, downtown Oakland.	Shattuck Av. at Dwight Way, Parker St. Derby St., Stuart St., Russell St, and Ashby Av.	Weekdays: 5:15 AM to 12:50 AM; Weekends: 6:00 AM to 12:50 AM	15 min	20 min
36	Bancroft Way & Piedmont Ave., Berkeley to West Oakland BART via Bancroft Way/Durant Ave., Shattuck Ave., Dwight Way, 7th St., Public Market Emeryville, Shellmound St., 40th St., and Adeline St.	UC Berkeley Dwight Way 7th Street	Everyday: 5:49 AM – 11:50 AM	29 min	29 min
80	El Cerrito BART Station to Claremont Hotel via Central Av., Pierce St., University Village, 6th St., 7th St., and Ashby Av.	Ashby Av. at MLK Jr. Way, Adeline St., and Shattuck Av.	Monday- Sunday: 6:00 AM to 10:35 PM	20 min	20 min
688 ¹	Supplementary Route - Grand Av. & MacArthur Blvd., Oakland, to Monterey Av. & Hopkins Av. via MacArthur Blvd., Park Blvd., Mountain Blvd., Broadway Terrace, Broadway, College Av., Alcatraz Av., and Sacramento St.	Alcatraz Av. at Adeline St.	Weekdays: 6:45 AM to 7:30 AM and 3:45 PM to 4:30 PM	-	-

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Route #	Service Description	Stops Serving Plan Area	Hour of Service	Frequency	
				Peak	Off Peak
800 ²	All Nighter Route - Richmond BART to San Francisco, via San Pablo Av., University Av., Telegraph Av. and downtown Oakland	Shattuck Ave at Dwight Way, Parker St., and Derby St., Adeline St. at Ward St. and Oregon St., and Ashby Av. at Adeline St.	Weekdays: 12:15 AM to 6:30 AM; Weekends: 11:40 PM to 8:20 AM	30 min	60 min
F	Transbay Route - UC Campus to San Francisco via Shattuck Av., Adeline St. 40th St., and Emeryville	Shattuck Ave at Dwight Way and Parker St., Adeline St. at Oregon St., Ashby Av., Ashby BART, and Alcatraz Av.	Weekdays: 5:10 AM to 1:30 AM; Weekends: 5:00 AM to 12:45 AM	30 min	30 min
51B	Rockridge BART to Berkeley Amtrak and Berkeley Marina, via College Av., Bancroft Way / Durant Av., Shattuck St., Downtown Berkeley, and University Av.	University Av. at Sacramento St. and Acton St.	Monday-Sunday: 5:00 AM to 12:15 AM	15 min	15 min
52	University Village to UC Berkeley Campus, via University Village, Cedar St., Sacramento St., and University Av., looping the UC campus via Hearst Av., Gayley St., Bancroft Way, and Shattuck Av. (Downtown Berkeley)	Cedar St. and Sacramento St; Sacramento St. and Delaware St. (North Berkeley BART), and University Av.	Monday-Sunday: 8:15 AM to 8:30 PM	20 min	20 min
65	Downtown Berkeley to Lawrence Hall of Science or Senior Ave. and Grizzly Peak Blvd. via Hearst Ave., Euclid Ave. and Grizzly Peak Blvd.	Addison St & Oxford St. Euclid Ave & Grizzly Peak Blvd, Centennial Dr & Lawrence Hall of Science	Monday – Friday: 7:33 AM – 7:34 PM	1 hr	1 hr
67	Downtown Berkeley to Grizzly Peak Blvd. and Spruce St. via Oxford St. and Spruce St.	Downtown Berkeley BART Oxford Street Spruce Street Beloit Avenue	Monday – Friday: 8:12 AM – 6:42 PM	30 min	30 min
72	Hilltop Mall to Jack London Square via Moyers Rd., Contra Costa College, San Pablo Ave., El Cerrito del Norte BART, and downtown Oakland.	El Cerrito Plaza BART El Cerrito del Norte BART12th Street/Oakland City Center BART19th St. Oakland BART Oakland Jack London Square Ferry Terminal Hilltop Mall Contra Costa College	Monday – Friday: 4:50 AM – 7:50 PM Weekends: 5:29 AM – 8:28 PM	24 min 30 min	24 min 30 min
72M	Point Richmond to Jack London Square via Garrard Blvd., Macdonald Ave., El Cerrito del Norte BART, San Pablo Ave. and downtown Oakland.	San Pablo Avenue	Everyday: 520 AM – Midnight	-	-

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Route #	Service Description	Stops Serving Plan Area	Hour of Service	Frequency	
				Peak	Off Peak
72R	San Pablo Rapid — Contra Costa College to Jack London Square via El Cerrito del Norte BART, San Pablo Ave. and downtown Oakland.	San Pablo Avenue	Monday – Friday 6:30 AM – 8:00 PM Weekends: 7:30 AM – 7:30 PM	-	-
88	From Downtown Berkeley to Lake Merritt BART via University Ave., Sacramento St., Market St. and downtown Oakland.	Downtown Berkeley University Avenue Sacramento Street	Everyday: 5:30 AM – 10:50 PM	20 min	20 min
604	North Berkeley BART to Oakland Hebrew Day School, Head Royce High School and Bentley School via University Av., Southside Berkeley, College Av. and Ashby Av.	North Berkeley BART; Sacramento St. and University Av.	Monday, Tuesday, Thursday, and Friday: 8:05 AM to 8:45 AM and 3:30 PM to 4:15 PM	-	-
688 ¹	Supplementary Route - Grand Av. & MacArthur Blvd., Oakland, to Monterey Av. & Hopkins Av. via MacArthur Blvd., Park Blvd., Mountain Blvd., Broadway Terrace, Broadway, College Av., Alcatraz Av., and Sacramento St.	Alcatraz Av. at Adeline St.	Weekdays: 6:45 AM to 7:30 AM and 3:45 PM to 4:30 PM	-	-
800	All Nighter Route - Richmond BART to San Francisco, via San Pablo Av., University Av., Telegraph Av. and downtown Oakland.	Shattuck Av. at Dwight Way, Parker St., and Derby St., Adeline St. at Ward St. and Oregon St., and Ashby Av. at Adeline St.	Weekdays: 12:15 AM to 6:30 AM; Weekends: 11:40 PM to 8:20 AM	30 min	60 min
802	All Nighter. Berkeley Amtrak to Uptown Oakland via San Pablo Ave.	Berkeley Amtrak, University Ave and San Pablo Ave, 40 th St & San Pablo Ave, T.L. Way (20 th St) & Broadway	Everyday: 12:41 AM- 4:41 AM	60 min	60 min
851	All Nighter. Downtown Berkeley to Fruitvale BART via Southside Berkeley (UC campus), College Ave., Broadway, Uptown Oakland, Downtown Oakland, Webster St., Santa Clara Ave., Broadway, and Fruitvale Ave.	The 851 bus (Downtown Berkeley) has 57 stops departing from Fruitvale BART and ending in Shattuck Av & Allston Way.	Everyday: 12:15 AM – 4:15 AM	60 min	60 min
E	Caldecott Ln. and Tunnel Rd. to Salesforce Transit Center, San Francisco via Claremont Ave.	Caldecott Lane and Tunnel Road	Mondays – Fridays: 4:20 PM – 6:55 PM	-	-
F	UC campus to Salesforce Transit Center, San Francisco via Shattuck Ave., Adeline St., Market St., 40 th St., and Shellmound St.	Hearst Avenue Bancroft Way Shattuck Avenue Adeline Street	Everyday: 12:10 AM – 11:40 PM	30 min	30 min

Route #	Service Description	Stops Serving Plan Area	Hour of Service	Frequency	
				Peak	Off Peak
FS	Solano Ave. & Colusa St. to Salesforce Transit Center, San Francisco via Shattuck Ave. and University Ave	Thousand Oaks Shattuck Avenue University Avenue	Monday – Friday: 6:10 AM – 7:52 AM	-	-
G	Salesforce Transit Center, San Francisco to El Cerrito Plaza BART via I-80, University Ave., San Pablo Ave., Solano Ave., Colusa Ave. and Fairmount Ave.	University Avenue	Monday – Friday 7:25 AM – 6:25 PM	-	-
J	Transbay Route - Richmond BART to San Francisco, via Sacramento St. and University Av., Berkeley to Salesforce Transit Center, San Francisco via Sacramento St., Ashby Av. and Christie St.	Sacramento St. and Ashby Avenue and University Av.	Weekdays: 7:00 AM to 9:00 AM and 5:00 PM to 7:00 PM	60 min	60 min

Note: Service routes and times listed are reflective of pre-COVID19 pandemic conditions.

¹ Transit information reflects conditions from March 31, 2020

² Transit information reflects conditions from August 9, 2020

Source: AC Transit 2022a

d. Pedestrian Conditions

Pedestrian facilities include crosswalks, sidewalks, pedestrian signals, and off-street paths, which provide safe and convenient routes for pedestrians to access destinations such as institutions, businesses, public transportation, and recreation facilities. A continuous sidewalk network is provided in Berkeley connecting to nearby residential, commercial, and retail facilities. Crosswalks and pedestrian signals are provided at major intersections.

e. Bicycle Conditions

Based on the *City of Berkeley Bicycle Plan* (City of Berkeley 2017), bicycle facilities are classified into several types, including:

- **Class 1 Multi-Use Paths** – provide a completely separated, exclusive right-of-way for bicycling, walking, and other non-motorized uses.
- **Class 2 Bicycle Lanes** – are striped, preferential lanes for one-way bicycle travel on roadways. Some Class 2 bicycle lanes include striped buffers that add a few feet of separation between the bicycle lane and traffic lane or parking aisle.
- **Class 3 Bicycle Routes** – are signed bicycle routes where riders share a travel lane with motorists. Bicycle boulevards (Class 3E) are a special type of Class 3 bicycle route where the shared travel way has low motor vehicle volumes and low speed that prioritize convenient and safe bicycle travel through traffic calming strategies, wayfinding signage, and traffic control adjustments
- **Class 4 Cycletrack** – is an on-street bicycle lane that is physically separated from motor vehicle traffic by a vertical element or barrier, such as a curb, bollards, or parking aisle.

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According to the *City of Berkeley Bicycle Plan*, Berkeley has the fourth highest bicycle commute mode share (8.5 percent) of any city in the United States. Total, there is an estimated 51 miles of bikeways throughout Berkeley (City of Berkeley 2017).

4.14.2 Regulatory Setting

Local, regional, State, and Federal policies regulate many aspects of the City's transportation system, including planning and programming; design; operations; and funding. While the City of Berkeley has primary responsibility for the maintenance and operation of local transportation facilities, there is ongoing coordination between Berkeley staff and regional, state, and federal agencies to plan, manage, and enhance the City's transportation assets; these entities include Alameda County, Alameda County Transportation Commission (ACTC), Metropolitan Transportation Commission (MTC), Caltrans, regional transit providers and Federal Highway Administration.

a. State Regulations

California Department of Transportation (Caltrans)

Caltrans is the owner and operator of the state highway system, which includes facilities in and around Berkeley. In its Vehicle Miles Traveled-Focused Transportation Impact Study Guide (TISG), 2020, Caltrans developed an approach for evaluating the transportation impacts of land use projects and plans on state highway facilities; this document does not address the impacts of transportation projects (Caltrans 2020). In accordance with current CEQA requirements, the TISG does not consider vehicle delay in its evaluation of transportation impacts, instead focusing on VMT. The purposes of the TISG include providing guidance to lead agencies regarding when they should analyze potential impacts to the state highway system; to aid Caltrans staff in reviewing projects; and to ensure consistency in the assessment of impacts and identification of non-capacity increasing mitigation measures.

State Senate Bill 375

Senate Bill (SB) 375, signed in August 2008, directs each of the state's 18 major Metropolitan Planning Organizations to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet emission targets for inclusion in the Regional Transportation Plan (RTP). On September 23, 2010, the California Air Resources Board (CARB) adopted final regional targets for reducing greenhouse gas (GHG) emissions from 2005 levels by 2020 and 2035.

The intent of SB 375 is to use the Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS) to integrate regional land use, regional housing need allocations (RHNA), environmental, and transportation planning to ensure efficient regional planning in the future that leads to reduced greenhouse gas emissions from land and transportation uses. As a result of SB 375, preparation of local RHNA Plans are required to be coordinated and consistent with the RTP/SCS for the length of the housing element cycle. Local governments play a large role in helping to develop the transportation and land use scenarios used in the SCS development process.

State Senate Bill 743

Senate Bill (SB) 743, passed in 2013, resulted in several statewide CEQA changes. It required the California Governor's Office of Planning and Research (OPR) to establish new metrics for determining the significance of transportation impacts of projects within transit priority areas (TPAs) and allows OPR to extend use of the metrics beyond TPAs. OPR selected VMT as the preferred

transportation impact metric and applied their discretion to require its use statewide. This legislation also established that aesthetic and parking effects of a residential, mixed-use residential, or employment center projects on an infill site within a TPA are not significant impacts on the environment. The revised CEQA Guidelines that implement this legislation became effective on December 28, 2018, and state that vehicle LOS and similar measures related to delay shall not be used as the sole basis for determining the significance of transportation impacts for land use projects, and that as of July 1, 2020, this requirement shall apply statewide. The OPR “Technical Advisory on Evaluating Transportation Impacts in CEQA” (December 2018) includes specifications for VMT methodology and recommendations for significance thresholds, screening of project that may be presumed to have less than significant impacts, and mitigation. Lead agencies ultimately have the discretion to set or apply their own significance thresholds, provided they are based on substantial evidence.

Screening criteria include:

- Small projects: The Technical Advisory concludes that, absent any information to the contrary, projects that generate 110 trips per day or less may be assumed to cause a less-than-significant transportation impact.
- Projects near transit stations: Projects located within ½ mile of an “existing major transit stop” or an “existing stop along a high-quality transit corridor” would have a less-than-significant impact on VMT.
- Affordable residential development: Projects consisting of a high percentage of affordable housing may be assumed to cause a less-than-significant transportation impact on VMT because they may improve jobs-housing balance and/or otherwise generate less VMT than market-based units.
- Redevelopment projects: If a proposed redevelopment project leads to a net overall decrease in VMT (when compared against the VMT of the existing land uses), the project would lead to a less-than-significant transportation impact.
- Local-serving retail: Trip lengths may be shortened and VMT reduced by adding “local-serving” retail opportunities that improve retail destination proximity. Page 17 of the Technical Advisory generally describes retail development including stores less than 50,000 square feet as local-serving. In May 2020, OPR staff indicated during online webinars that any retail building that is 50,000 square feet or less may be considered local-serving.

The Technical Advisory recommends thresholds for a general plan, area plan, or community plan where it may have a significant impact on transportation if proposed new residential, office, or retail land uses would in aggregate exceed the respective thresholds recommended for land use projects. For example, a general plan’s residential generated VMT under cumulative conditions would be compared to 15 percent below the baseline citywide or region-wide average to determine impact significance. Another approach commonly used by local and regional agencies is to determine the total VMT per capita (or service population) for the area under consideration for baseline conditions and compare it to the total VMT per capita with the proposed plan in the horizon year. If the VMT per capita is lower in the horizon year with the plan than the VMT per capita under existing conditions, the plan may have a less than significant impact on VMT.

Other key guidance includes:

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- VMT is the most appropriate metric to evaluate a project's transportation impact.
- OPR recommends tour- and trip-based travel models to estimate VMT, but ultimately defers to local agencies to determine the appropriate tools.
- OPR recommends measuring VMT for residential and office projects on a "per rate" basis. Specifically, OPR recommends VMT per capita for residential projects and VMT per employee for office projects.
- OPR recommends that a per capita or per employee VMT that is fifteen percent (15 percent) below that of existing development may be a reasonable threshold (page 10). In other words, an office project that generates VMT per employee that is more than 85 percent of the regional VMT per employee could result in a significant impact. OPR notes that this threshold is supported by evidence that connects this level of reduction to the State's emissions goals.
- For retail projects, OPR recommends measuring the net decrease or increase in VMT in the planning area with and without the project. The recommended impact threshold is any increase in total VMT.
- Cities and counties still have the ability to use measures of delay such as LOS for other plans, studies, or network monitoring. However, according to CEQA section 15064.3, Determining the Significance of Transportation Impacts, "effect on automobile delay shall not constitute a significant environmental impact."

California Building Code

California provides minimum standards for building design through the California Building Code (CBC), which is located in Part 2 of Title 24 of the California Code of Regulations. The CBC is based on the 1997 Uniform Building Code with modifications specific for California conditions. The CBC provides fire and emergency equipment access standards for public roadways, which include specific width, grading, design and other specifications for roads which provide access for fire apparatus. Street modifications in the City of Berkeley are subject to these and other modified State standards. The City of Berkeley adopted the 2019 edition of the CBC in 2019.

b. Regional

Alameda County Transportation Commission

The Alameda County Transportation Commission (Alameda CTC) coordinates transportation planning efforts throughout Alameda County and programs federal, state, regional, and local funding for project planning and implementation. Through its Congestion Management Program (CMP), Alameda CTC oversees and monitors the operations and performance of roadways in the CMP network, which consist of freeways and major arterials that provide connectivity in the County. The Land Use Analysis Program of the CMP requires local jurisdictions to evaluate the potential impacts of proposed land use changes (e.g., General Plan amendments, and developments estimated to generate 100 or more net new PM peak hour automobile trips) on the CMP network.

c. Local

City of Berkeley General Plan

The Transportation Element of the Berkeley General Plan (2001) contains the following policies and actions relevant to the proposed project:

Policy T-2: Public Transportation Improvements. Encourage regional and local efforts to maintain and enhance public transportation services and seek additional regional funding for public and alternative transportation improvements.

Policy T-4: Transit First Policy. Give priority to alternative transportation and transit over single-occupant vehicles on Transit Routes identified on the Transit Network map.

Policy T-10: Trip Reduction. To reduce automobile traffic and congestion and increase transit use and alternative modes in Berkeley, support, and when appropriate require, programs to encourage Berkeley citizens and commuters to reduce automobile trips, such as:

1. Participation in a citywide Eco-Pass Program (also see Transportation Policy T-3)
2. Participation in the Commuter Check Program
3. Carpooling and provision of carpool parking and other necessary facilities
4. Telecommuting programs
5. "Free bicycle" programs and electric bicycle programs
6. "Car-sharing" programs
7. Use of pedal-cab, bicycle delivery services, and other delivery services
8. Programs to encourage neighborhood-level initiatives to reduce traffic by encouraging residents to combine trips, carpool, telecommute, reduce the number of cars owned, shop locally, and use alternative modes
9. Programs to reward Berkeley citizens and neighborhoods that can document reduced car use
10. Limitations on the supply of long-term commuter parking and elimination of subsidies for commuter parking
11. No-fare shopper shuttles connecting all shopping districts throughout the city

Policy T-12: Education and Enforcement. Support, and when possible require, education and enforcement programs to encourage carpooling and alternatives to single-occupant automobile use, reduce speeding, and increase pedestrian, bicyclist, and automobile safety.

Policy T-14: Private Employers. Encourage private employers to reduce the demand for automobile travel through transportation demand management programs that include elements such as:

1. Trip reduction incentives such as Commuter Check and Eco-Pass.
2. Flexible work hours and telecommuting to reduce peak-hour commute congestion.
3. Carpool and vanpool incentives to reduce single-occupancy vehicle use.
4. Provision of mass transit pass/credit instead of free employee parking (parking "cash-out" programs).
5. Providing bicycle facilities.
6. Market pricing mechanisms for employee parking to reduce automotive use and discourage all-day parking.
7. Local hiring policies.
8. Numerical goals for trip reduction

Policy T-15: Local Hiring. Establish Berkeley residency as a preference for hiring, and encourage other public employers, institutions, and private employers to hire locally. (Also see Economic Development and Employment Policy ED-1.)

Policy T-16: Access by Proximity. Improve access by increasing proximity of residents to services, goods, and employment centers. (Also see Land Use Policies LU-13 and LU-23, Housing Policy H-16, and Environmental Management Policy EM-41 Action B.)

Action A. Locate essential commercial and other services in transit-oriented locations to reduce the need for cars and enable people living near transit and services to reduce auto trips.

Action B. Encourage higher density housing and commercial infill development that is consistent with General Plan and zoning standards in areas adjacent to existing public transportation services.

Action D. Encourage siting of child-care facilities and other services in large residential or commercial facilities to reduce traffic impacts associated with child-care drop-off and pick-up.

Action E. In locations served by transit, consider reduction or elimination of parking requirements for residential development.

Policy T-17: Transportation Planning. Involve local residents, businesses, and institutions in all stages of transportation planning

Policy T-18: Transportation Impact Analysis and Vehicle Miles Traveled.¹ When considering transportation impacts under the California Environmental Quality Act, the City shall consider how a plan or project affects all modes of transportation, including transit riders, bicyclists, pedestrians, and motorists, to determine the transportation impacts of a plan or project. Plans and projects shall be designed to deliver significant benefits to travel by pedestrians, bicycle, or transit, and/or reduced impacts on air quality, greenhouse gas emissions, and safety. For the purposes of CEQA, Vehicle Miles Traveled (VMT) shall be the metric used to analyze the transportation impacts of a plan or project.

Policy T-19: Air Quality Impacts. Continue to encourage innovative technologies and programs such as clean-fuel, electric, and low-emission cars that reduce the air quality impacts of the automobile. (Also see Environmental Management Policies EM-18 through EM-22.)

Action A. Establish bicycle and low-emission vehicle preferred parking areas.

Action B. Install electric vehicle charging stations in all City-owned parking facilities downtown and at major parking facilities and employment centers.

Policy T-24: Ashby Avenue. Take actions necessary to reduce congestion, improve pedestrian and bicycle crossings, and improve the quality of life for residents on Ashby Avenue.

Policy T-33: Disabled Parking and Passenger Zones. Ensure adequate disabled parking and passenger drop-off zones.

¹ Amendment to Policy T-18: Level of Service can be found in the City of Berkeley VMT Criteria and Thresholds, June 29, 2020.
file:///C:/Users/gcarsky/Downloads/2020-11-17%20Item%2018%20General%20Plan%20Amendment%20%20Vehicle%20Miles.pdf

Action A. Require access to adequate disabled parking and passenger drop-off zones in all new commercial and residential developments.

Policy T-39: High-Tech Parking. To make the most efficient use of available land, encourage consideration of high-tech computerized parking (e.g., lifts and or "robotics") when replacing existing public parking or when providing off-street parking for multi-family residential projects.

Policy T-40: Parking Impacts. When considering parking impacts under the California Environmental Quality Act for residential projects with more than two units located in the Avenue Commercial, Downtown, or High Density Residential land use classifications, any significant parking impacts identified that result from the project should be mitigated by improving alternatives to automobile travel and thereby reducing the need for parking. Examples include improvements to public transportation, pedestrian access, car sharing programs, and bicycle facility improvements. Parking impacts for these projects should not be mitigated through the provision of additional parking on the site. The City finds that:

1. Parking supply and demand may easily be adjusted by changing local pricing policies and by changing how the supply is managed.
2. As the parking supply increases or parking costs decrease, automobile use becomes a more attractive transportation alternative and demand for parking increases. As parking supply decreases and its price increases, demand decreases.
3. Increasing the parking supply increases automobile use, which causes a measurably negative impact on the environment

Policy T-41: Structured Parking. Encourage consolidation of surface parking lots into structured parking facilities and redevelopment of surface lots with residential or commercial development where allowed by zoning.

Action C. Provide parking and recharging facilities for alternative vehicles such as bicycles and electric and low-emission vehicles.

Action D. Whenever feasible, orient automobile access to parking lots and garages away from designated bicycle ways and boulevards and avoid blank walls along pedestrian ways.

Policy T-43: Bicycle Network. Develop a safe, convenient, and continuous network of bikeways that serves the needs of all types of bicyclists, and provide bicycle-parking facilities to promote cycling.

Action A. Expand the supply of highly secure bicycle parking near transit hubs and commercial areas.

Action B. Encourage business owners to provide bicycle parking, showers, and lockers for employees and bicycle parking for customers.

Policy T-49: Disabled Access. Improve pedestrian access for the entire disabled community.

Action B. Use regulation and incentives to require or encourage accessibility upgrades for private businesses.

Action C. Encourage businesses to exceed the minimum standards set by the ADA "readily achievable barrier removal" requirement.

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Policy T-50: Sidewalks. Maintain and improve sidewalks in residential and commercial pedestrian areas throughout Berkeley and in the vicinity of public transportation facilities so that they are safe, accessible, clean, attractive, and appropriately lighted.

Policy T-51: Pedestrian Priority. When addressing competing demands for sidewalk space, the needs of the pedestrian shall be the highest priority.

Policy T-52: Pedestrian Safety and Accessibility. Provide safe and convenient pedestrian crossings throughout the city.

City of Berkeley VMT Regulations

CEQA Guidelines §15064.3(b) indicates that land use projects would have a significant impact if the project resulted in vehicle miles traveled (VMT) exceeding an applicable threshold of significance. In June 2020, the City of Berkeley adopted the following thresholds of significance for VMT analysis according to the guidance from OPR:

- A residential project's VMT impact is considered less-than-significant if its household VMT per capita is at least 15 percent below the regional average household VMT per capita.
- An employment-generating project's VMT impact is considered less-than-significant if its home-work VMT per worker is at least 15 percent below the regional average home-work VMT per worker.

In addition, the City of Berkeley has developed screening criteria to provide project applicants with a conservative indication of whether a project could result in potentially significant VMT impacts. If the screening criteria are met by a project, the applicant would not need to perform a detailed VMT assessment for their project. The City's screening criteria include the following:

- Projects within Transit Priority Areas
- Low-income housing projects
- Small Projects: Projects defined as generating 836 daily VMT or less
- Locally Serving Public Facility: Projects that generally encompass government, civic, cultural, health, and infrastructure uses which contribute to and support community needs and mostly generate trips within the local area
- Projects in Low VMT Areas: Projects that are located in low-VMT areas and that have characteristics similar to other uses already located in those areas can be presumed to generate VMT at similar rates. The low-VMT areas in Berkeley are defined based on the results of the Alameda CTC model (see Figure 4.6-1) and include the following:
 - Residential projects will be screened out if located in an area that has household VMT per capita that is 15 percent lower than the baseline regional average.
 - Office and industrial projects will be screened out if located in an area that has homework VMT per worker that is 15 percent lower than the baseline regional average.

General Plan Policy T-18 indicates that for the purposes of CEQA, VMT shall be the metric used to analyze the transportation impacts of a plan or project. The City shall also focus on elements such as safety, site access, and circulation when assessing a plan or project's impact.

City of Berkeley Vision Zero Resolution and Vision Zero Action Plan

The Berkeley City Council adopted a Vision Zero Policy (Resolution 68,371-N.S.) in March 2018, with a goal of eliminating traffic deaths and severe injuries by 2028. This resolution directed a Vision Zero task force to develop a Vision Zero Action Plan, which was subsequently created and approved by City Council in March 2020. The plan contains the following policies relevant to the proposed project:

Policy 1.1: Collaboration with City departments, regional and community partners, and mobility providers to achieve Vision Zero Goals.

Policy 2.1: Prioritize high-injury streets and the most vulnerable street users.

Policy 2.2: Design for vulnerable users of the transportation network, including people of all ages and abilities.

Policy 2.3: Deliver Vision Zero traffic safety infrastructure improvements both reactively and proactively.

Policy 3.1: Create a culture of traffic safety by promoting awareness through public information programs and campaigns.

City of Berkeley Complete Street Policy

The Berkeley City Council adopted a Complete Streets Policy (Resolution 65,978-N.S.) in December 2012, to guide future street design and repair activities. “Complete Streets” describes a comprehensive, integrated transportation network with infrastructure and design that allows safe and convenient travel along and across streets for all users, including pedestrians, bicyclists, persons with disabilities, motorists, movers of commercial goods, users and operators of public transportation, emergency vehicles, seniors, children, youth, and families.

City of Berkeley Bicycle Plan

The City of Berkeley Bicycle Plan, approved by Berkeley City Council in May 2017, contains the following policies and actions relevant to the proposed project:

Policy PL-1. Integrate bicycle network and facility needs into all City planning documents and capital improvement projects

Actions

- Follow a multi-disciplinary project scoping process that incorporates the needs of all modes and stakeholders, both internal and external; the design process should include the City divisions, departments, and staff responsible for emergency response, parking, law enforcement, maintenance, and other affected areas.
- Ensure that all traffic impact studies, analyses of proposed street changes, and development projects address impacts on bicycling and bicycling facilities. Specifically, the following should be considered:
 - Consistency with General Plan, Area Plan, and Bicycle Plan policies and recommendations;
 - Impact on the existing bikeway network;
 - Degree to which bicycle travel patterns are altered or restricted by the projects; and

- Safety of future bicycle operations (based on project conformity to Bicycle Plan design guidelines and City, State, and Federal design standards).

Policy PL-2. When considering transportation impacts under the California Environmental Quality Act, the City shall consider how a plan or project affects bicyclists per Berkeley General Plan Policy T-18.

Actions

- Integrate Vehicle Miles Traveled transportation impact analysis thresholds as a State-mandated alternative to Level of Service. Work with the Alameda County Transportation Commission and the Metropolitan Transportation Commission to ensure conformity with County and Regional travel models.
- Establish new City traffic analysis standards that consider all modes of transportation, including pedestrians, bicycles, and transit in addition to automobiles, consistent with a comprehensive, integrated transportation network for all users as described in the City of Berkeley Complete Streets Policy. Utilize Level of Traffic Stress to quantify bicycle transportation in this network-based Complete Streets Policy context.

City of Berkeley Pedestrian Plan

The City of Berkeley Pedestrian Master Plan, adopted in June 2010 and updated in 2020 is a critical component of the City's efforts to meet diverse travel needs and improve mobility for everyone who is walking and traveling with an assistive device in Berkeley. The goals of the Pedestrian Master Plan include the following:

- Increase safety and comfort for people walking.
- Increase equity and transportation choices for all.
- Improve public health and environmental sustainability.

These goals listed in the Berkeley Pedestrian Master Plan reiterate and emphasize the General Plan policies and actions pertaining to pedestrians. Policies relevant to the proposed project include General Plan Policies T-12 (Education and Enforcement), T-49 (Disabled Access), T-50 (Sidewalks), and T-51 (Pedestrian Priority), which are listed above.

City of Berkeley Municipal Code

The City of Berkeley Municipal Code (BMC) has the following applicable sections related to transportation:

- **BMC Chapter 23.334, Transportation Demand Management.** This chapter implements the City's goals reduce vehicle trips, encourage public transit use and promote bicycle and pedestrian safety by requiring a transportation demand management (TDM) program for residential projects with ten or more units, including residential portions of mixed-use projects.
- **BMC Section 23.322.090, Bicycle Parking.** This section sets standards for the provision of bicycle parking for residential and non-residential uses based on the zoning district for non-residential projects and number of dwelling units for residential projects.
- **BMC Section 23.304.100, Site Features in Residential Districts.** This section requires multi-family projects have an unobstructed walkway for pedestrian access from the public right-of-

way to the building and that the walkway be separated and physically protected from a driveway or off-street parking spaces with a minimum 2-foot wide landscaped strip.

4.14.3 Impact Analysis

a. Significance Criteria and Methodology

Consistent with the *CEQA Guidelines*, impacts related to transportation and circulation would be considered potentially significant if implementation of the project would:

1. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities;
2. Conflict or be inconsistent with *CEQA Guidelines* section 15064.3, subdivision (b);
3. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible use (e.g., farm equipment); or
4. Result in inadequate emergency access.

As described in Section 4.14.2, *Regulatory Setting*, to implement SB 743, the *CEQA Guidelines* have been updated to change the criteria for determining what constitutes a significant traffic-related environmental impact to rely upon quantification of VMT instead of LOS. As of July 1, 2020, the VMT-based approach in Section 15064.3 of the *CEQA Guidelines* applies statewide for the purpose of assessing traffic-related impacts under CEQA. As a result, this analysis uses the metric of VMT to determine the project's traffic-related impact. Section 15064.3(b)(1) of the *CEQA Guidelines* states that land use "projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact." According to OPR's Technical Advisory on Evaluating Transportation Impacts, published by the Governor's Office of Planning and Research in December 2018, a 15 percent reduction in VMT per capita from existing development is "generally achievable" and supportive of State goals to reduce greenhouse gas emissions (OPR 2018). However, State guidance allows localities to set their own VMT standards based on substantial supporting evidence.

b. Project Impacts and Mitigation Measures

Threshold 1: Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?
--

Impact TRA-1 THE PROPOSED HEU WOULD NOT CONFLICT WITH A PROGRAM, PLAN, ORDINANCE, OR POLICY ADDRESSING THE CIRCULATION SYSTEM, INCLUDING TRANSIT, ROADWAY, BICYCLE, AND PEDESTRIAN FACILITIES. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The EIR building assumptions include approximately 19,098 residential units at the EIR Sites Inventory, middle housing rezoning districts, and in the Southside area. Given the potential number of new residents and associated vehicle trips, it is expected these would contribute to an increase in traffic on arterials and local streets in Berkeley. However, as described in Section 4.14.2, *Regulatory Setting*, to implement SB 743, the *CEQA Guidelines* have been updated to change the criteria for determining what constitutes a significant traffic-related environmental impact to rely upon quantification of VMT instead of LOS. Therefore, traffic congestion is no longer considered an impact under CEQA.

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Development under the proposed HEU would increase Berkeley's population, especially along transit corridors, in order to encourage alternative modes of transportation, which may result in an increase in transit ridership for AC Transit and BART. However, OPR's technical advisory states that because the criteria for determining the significance of transportation impacts must promote "the development of multimodal transportation networks," when evaluating impacts to multimodal transportation networks, lead agencies generally should not treat the addition of new transit users as an adverse impact. An infill development may add riders to transit systems and the additional boarding and alighting may slow transit vehicles, but it also adds destinations, improving accessibility and proximity. Such development is considered to improve the regional vehicle flow by adding less vehicle travel onto the regional network. Further, AC Transit and BART monitor and plan for anticipated changes in local and regional ridership levels and increased demand through their ongoing evaluation of routes, schedules, ridership, and capacity availability. AC Transit conducts periodic route restructuring and service frequency evaluations such as through their Short-Range Transit Plan (AC Transit 2019) and capital improvement project planning (AC Transit 2022b). BART also has a number of ongoing projects to improve facilities, modernize technology, add train cars, improve safety, and provide capacity relief (BART 2022). The proposed HEU would not conflict with these ongoing efforts.

With respect to pedestrian and bicycle access, as part of the City's entitlement process, future development is required to comply with existing regulations, including General Plan policies and Zoning regulations. Future development under the HEU would be reviewed in accordance with the City's Public Works Department Transportation Program standards, and the department would provide oversight engineering review to ensure that the project is constructed according to City standards. The project would be consistent with the City's 2017 *Bicycle Plan*. The proposed project does not include any modifications to the public right-of-way, and therefore, would not preclude the installation of the planned or proposed bicycle facilities on the streets in the city. Developments facilitated by the proposed project would provide long-term and short-term bicycle parking in accordance with BMC Section 23.322.090 requirements to accommodate the bicycle parking demand generated by the project residents and would also be required to meet applicable requirements for pedestrian access under BMC Section 23.304.100 or other requirements as applicable.

Because the proposed HEU does not include modifications to the existing transportation network and individual future developments would be designed consistent with applicable bicycle and pedestrian facility requirements, the proposed HEU would not conflict with the City's Bicycle Master Plan or the City's Pedestrian Plan. At a programmatic level, the proposed HEU would not conflict with applicable program plans or policies related to the circulation system including the General Plan, Bicycle Master Plan, Complete Streets Policy, or Pedestrian Plan. The proposed HEU would have a less than significant impact.

Mitigation Measures

This impact would be less than significant without mitigation. No mitigation measures are required.

Threshold 2: Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

Impact TRA-2 THE PROPOSED HEU NOT CONFLICT OR BE INCONSISTENT WITH CEQA GUIDELINES SECTION 15064.3, SUBDIVISION (B). THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The Housing Element Update would result in a significant transportation impact if it would conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)(1), which states for land use projects, “Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact.” CEQA Guidelines § 15064.3, subdivision (b)(4) states, “A lead agency has discretion to choose the most appropriate methodology to evaluate a project’s vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project’s vehicle miles traveled and may revise those estimates to reflect professional judgment based on substantial evidence.”

VMT can be presented as total VMT, or as efficiency metrics expressed in VMT per capita, VMT per employee, and VMT per service population on a typical day. Total VMT represents all VMT generated in the city, while VMT per resident, or employee is an efficiency metric that represents VMT generated on a typical day per person who lives and/or works in the City. VMT per capita is measured to evaluate residential projects, VMT per employee for employment projects, and VMT per service population a combination of land uses. For this housing element update, we generally use VMT per capita to assess impacts based on the proposed project.

The City of Berkeley has adopted thresholds to evaluate significant impacts for VMT. For residential uses, the City of Berkeley adopted the threshold of significance for VMT analysis according to the guidance from OPR that a residential project’s VMT impact is considered less-than-significant if its household VMT per capita is at least 15 percent below the regional average household VMT per capita. Therefore, an increase in the VMT per capita under the horizon year with the proposed HEU compared to the respective threshold (15 percent below the regional average VMT per capita) would be considered a significant impact. VMT thresholds by land use type are shown in Table 4.14-3

Table 4.14-3 VMT Thresholds by Land Use Type for Projects

Land Use Type (Units)	Regional Baseline	Threshold
Residential (Household VMT Per Capita)	22.80	19.38

Source: Kittelson & Associates, Inc. 2022

VMT was calculated for the Berkeley Housing Element update by Kittelson & Associates in June 2022 (see Appendix G). Table 4.14-4 summarizes the VMT for 2020 baseline, the applicable threshold, and the future VMT with the proposed housing element update. As shown in the table, the proposed HEU would result in a decreased VMT per capita in comparison to the baseline condition. Residential VMT per capita would decrease by 3 percent, from 11.22 to 10.86, and is below the impact threshold of 19.38. These reductions indicate that the future residential development would provide more opportunities for Berkeley residents and employees to access jobs and services within the City and within shorter distances and by modes other than vehicle.

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Table 4.14-4 VMT Results Summary

Units	Bay Area Region	Berkeley 2020	Berkeley 2031
Population	7,915,267	128,004	182,651
Residential VMT	180,468,151	1,436,244	1,983,715
Household VMT Per Capita	22.80	11.22	10.86

Source: Kittelson & Associates, Inc. 2022

In summary, implementation of the HEU would result in VMT per capita below applicable thresholds and therefore would result in a less than significant impact.

Mitigation Measures

This impact would be less than significant without mitigation. No mitigation measures are required.

Threshold 3: Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible use (e.g., farm equipment)?

Impact TRA-3 THE PROPOSED HEU WOULD NOT SUBSTANTIALLY INCREASE HAZARDS BECAUSE OF A GEOMETRIC DESIGN FEATURE (E.G., SHARP CURVES OR DANGEROUS INTERSECTIONS) OR INCOMPATIBLE USES (E.G., FARM EQUIPMENT). THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

Adoption of the proposed HEU analyzes the amount of new housing units the City will accommodate during the document’s planning period and sets goals and policies for how this housing is implemented. It does not grant entitlements for any specific project or future development. Thus, the plan for new housing and the goals and policies needed to achieve that housing do not have a specific transportation safety impact or hazard. The proposed project would not include hazardous geometric design features or incompatible uses. Each housing application would be evaluated at the project specific level. Circulation components and geometric design features would be reviewed by the City Engineering division and would be in accordance with all applicable City standards and the building plan check process to minimize design hazards. Design review standards include standards for project access points, location, and design, sight lines, roadway modifications, provisions for bicycle and pedestrian transportation connections, and emergency access. As a result, impacts of the proposed project from design features or incompatible uses would be less than significant.

Mitigation Measures

This impact would be less than significant without mitigation. No mitigation measures are required.

Threshold 4: Would the project result in inadequate emergency access?

Impact TRA-4 THE PROPOSED HEU WOULD NOT HAVE THE POTENTIAL TO RESULT IN INADEQUATE EMERGENCY ACCESS. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The HEU process included an analysis of the amount of new housing units the City will accommodate during the document’s planning period, and the HEU sets goals and policies for how this housing is planned and built. It does not grant entitlements for any specific project or future development. Thus, the plan for new housing and the goals and policies needed to achieve that

housing do not have a specific emergency access impact. At the project specific level, future development under the proposed amendments would be required to comply with basic building designs and standards for residential buildings as mandated by the Berkeley Fire Code, under BMC Section 19.48. As described in Section 4.13, *Public Services and Recreation*, as a part of development review, representatives from several City departments and representatives, including the Building and Safety Division, the Transportation Division, and the Fire Department, review the entitlement plan set to ensure compliance with egress requirements and other fire safety features. Future projects would be required to incorporate all applicable design and safety requirements as set forth in the most current adopted building codes and fire and life safety standards. Compliance with these standards is ensured through the City review and building plan check process. Based on the preceding, impacts related to emergency access would be less than significant.

Mitigation Measures

This impact would be less than significant without mitigation. No mitigation measures are required.

c. Cumulative Impacts

CEQA Guidelines 15130(a) require that the cumulative effect of implementing a project be assessed to determine if the project's incremental effect - together with that of other- would be cumulatively considerable. For the purposes of this analysis, the cumulative setting for thresholds 1, 3, and 4 includes the City of Berkeley, as effects associated with those thresholds tend to occur more locally or citywide, while the cumulative setting for Threshold 2, VMT impacts, includes development associated with the proposed HEU and Plan Bay Area 2040, the Bay Area's RTP/SCS.

With respect to Threshold 2, the Housing Element Update envisions full buildout of the housing accommodated by the plan by 2031, with cumulative impacts being evaluated on full implementation. As discussed in Impact T-2, the proposed project would have a less than significant impact related to VMT. Based on technical guidance from the OPR, if a project has a less than significant impact on VMT using an efficiency-based threshold (e.g., VMT per worker), this implies that the project would not contribute to a cumulative VMT impact. Therefore, the project would not have a considerable contribution to a cumulative VMT impact.

For Threshold 1, development under the proposed HEU in conjunction with development under the University of California Berkeley's LRDP would also increase transit ridership for AC Transit and BART. However, as described above, based on OPR guidance, when evaluating impacts to multimodal transportation networks, lead agencies generally should not treat the addition to new transit users as an adverse impact. It is also assumed that planned development outside of the University campus would follow applicable standards for bicycle and pedestrian access and circulation and bicycle parking such that no cumulative impact with respect to bicycle and pedestrian plans or policies would occur.

For thresholds 3 and 4, it is also assumed that LRDP projects would follow applicable standards and regulations to ensure emergency access and avoid dangerous conditions. Generally, the University is proposing housing in projects outside of the main campus area, and these infill residential projects would not involve incompatible uses or dangerous design features. Overall, cumulative impacts would be less than significant.

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4.15 Tribal Cultural Resources

This section evaluates the impacts of the proposed HEU on tribal cultural resources. The analysis is based on Assembly Bill 52 consultation conducted by the City of Berkeley and consulting Tribes.

4.15.1 Regulatory Setting

This section includes a discussion of the applicable State and local laws, ordinances, regulations, and standards governing cultural resources, which must be adhered to before and during implementation of the proposed project.

a. Federal Regulations

No federal regulations are applicable to this resource area.

b. State Regulations

Assembly Bill 52 of 2014

AB 52 expanded CEQA by defining a new resource category, “tribal cultural resources.” AB 52 establishes that “a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment” (Public Resources Code [PRC] Section 21084.2). AB 52 further requires that, when feasible, the lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a tribal cultural resource (PRC Section 21084.3). PRC Section 21074 (a)(1)(A) and (B) defines tribal cultural resources as “sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe” and that meet either of the following criteria:

- a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k).
- b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.

In recognition of California Native American tribal sovereignty and the unique relationship of California local governments and public agencies with California Native American tribal governments and with respect to the interests and roles of project proponents, it is the intent AB 52 to accomplish the following:

1. Recognize that California Native American prehistoric, historic, archaeological, cultural, and sacred places are essential elements in tribal cultural traditions, heritages, and identities.
2. Establish a new category of resources in CEQA called “tribal cultural resources” that considers the tribal cultural values in addition to the scientific and archaeological values when determining impacts and mitigation.
3. Establish examples of mitigation measures for tribal cultural resources that uphold the existing mitigation preference for historical and archaeological resources of preservation in place, if feasible.

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4. Recognize that California Native American tribes may have expertise with regard to their tribal history and practices, which concern the tribal cultural resources with which they are traditionally and culturally affiliated (because CEQA calls for a sufficient degree of analysis, tribal knowledge about the land and tribal cultural resources at issue should be included in environmental assessments for projects that may have a significant impact on those resources).
5. In recognition of their governmental status, establish a meaningful consultation process between California Native American tribal governments and lead agencies, respecting the interests and roles of all California Native American tribes and project proponents, and the level of required confidentiality concerning tribal cultural resources, early in the CEQA environmental review process, so that tribal cultural resources can be identified, and culturally appropriate mitigation and mitigation monitoring programs can be considered by the decision-making body of the lead agency.
6. Recognize the unique history of California Native American tribes and uphold existing rights of all California Native American tribes to participate in, and contribute their knowledge to, the environmental review process pursuant to CEQA.
7. Ensure that local and tribal governments, public agencies, and project proponents have information available, early in CEQA environmental review process, for purposes of identifying and addressing potential adverse impacts to tribal cultural resources and to reduce the potential for delay and conflicts in the environmental review process.
8. Enable California Native American tribes to manage and accept conveyances of, and act as caretakers of, tribal cultural resources.
9. Establish that a substantial adverse change to a tribal cultural resource has a significant effect on the environment.

The formal consultation process requires lead agencies to work with California tribes traditionally and culturally affiliated with the geographic area of the proposed project. This includes those that have previously requested notice and that are listed by the State as having expertise regarding potential resources and impacts. Consultation must be completed before a CEQA document can be certified or adopted.

Senate Bill 18 of 2004

California Government Code Section 65352.3 (adopted pursuant to the requirements of SB 18) requires local governments to contact, refer plans to, and consult with tribal organizations prior to making a decision to adopt or amend a general or specific plan. The tribal organizations eligible to consult have traditional lands in a local government's jurisdiction, and are identified, upon request, by the Native American Heritage Commission (NAHC). As noted in the California Office of Planning and Research's Tribal Consultation Guidelines (2005), "The intent of SB 18 is to provide California Native American tribes an opportunity to participate in local land use decisions at an early planning stage, for the purpose of protecting, or mitigating impacts to, cultural places."

Codes Governing Human Remains

The disposition of human remains is governed by Section 7050.5 of the California Health and Safety Code and PRC Sections 5097.94 and 5097.98 and falls within the jurisdiction of the Native American Heritage Commission (NAHC). If human remains are discovered, the County Coroner must be notified within 48 hours and there should be no further disturbance to the site where the remains were found. If the remains are determined by the coroner to be Native American, the coroner is

responsible for contacting the NAHC within 24 hours. The NAHC, pursuant to Section 5097.98, will immediately notify those persons it believes to be most likely descended from the deceased Native Americans so they can inspect the burial site and make recommendations for treatment or disposal.

c. Local Regulations

City of Berkeley General Plan

As part of the City of Berkeley's General Plan, the Urban Design and Preservation Element outlines guidance for future development and preservation. The General Plan does not explicitly outline any guidance for Tribal Resources. Policies related to cultural resources include the following:

Policies

Policy UD-1 Techniques. Use a wide variety of regulatory, incentive, and outreach techniques to suitably protect Berkeley's existing built environment and cultural heritage.

Policy UD-2 Regulation of Significant Properties. Increase the extent of regulatory protection that applies to structures, sites, and areas that are historically or culturally significant.

Policy UD-12 Range of Incentives. Seek to maintain and substantially expand the range and scale of incentives that the City and/or other entities make available in Berkeley for the preservation of historic and cultural resources.

Policy UD-20 Alterations. Alterations to a worthwhile building should be compatible with the buildings original architectural character.

Policy UD-21 Directing Development. Use City incentives and zoning provisions to direct new development toward locations where significant historic structures or structures contributing to the character of an area will not need to be removed.

Policy UD-36 Information on Heritage. Promote, and encourage others to promote, understanding of Berkeley's built and cultural heritage, the benefits of conserving it, and how to sensitively do that.

4.15.2 Setting

The proposed project lies in the San Francisco Bay Area archaeological region (Milliken et al. 2007, Moratto 1984). Milliken et al. (2007) generally divided the prehistoric chronology of the Bay Area into five periods: The Early Holocene (8,000-3,500 BCE [Before Common Era]), Early Period (3500-500 BCE), Lower Middle Period (500 BCE to 430 CE), the Upper Middle Period (430-1050 CE), and the Late Period (1050 CE-contact).

It is presumed that early Paleoindian groups lived in the area prior to 8,000 BCE; however, no evidence for that period has been discovered in the Bay Area to date (Milliken et al. 2007). Sites dating to this period may be submerged or deeply buried as a result of rising sea levels and widespread sediment deposition that has occurred since the Terminal Pleistocene (Byrd et al. 2017). For this reason, the Terminal Pleistocene Period (ca. 11,700-8,000 BCE) is not discussed here.

The earliest intensive study of archaeology of the San Francisco Bay Area began with N. C. Nelson of the University of California, Berkeley, between 1906 and 1908. He documented over 400 shell mounds throughout the area. Nelson was the first to identify the Bay Area as a discrete archaeological region (Moratto 1984).

a. Ethnography and Ethnohistory

The Huchiun people lived in Berkeley when Spanish soldiers and missionaries arrived in the Bay Area. Huchiun territory extended “along the East Bay shore from Temescal Creek...north to the lower San Pablo and Wildcat Creek drainages in the present area of Richmond” (Milliken 1995:243). The names of two Huchiun villages – Genau and Junchaque – are known from Mission records, but their exact location is unknown (Milliken 1995:243). Huchiun presence near Temescal Creek, approximately four miles to the southwest, in Oakland, is attested in its Mexican-era name, “Arroyo del Temescal o Los Juchiyunes.”

The Huchiun were one of the groups of the Ohlone people who lived along the east, west, and south shores of San Francisco Bay and in the Santa Cruz Mountains, Salinas Valley, and Monterey Bay area. The Ohlone utilized a wide range of resources in a very favorable environment. Those populations living adjacent to the great bays of the region relied heavily on shellfish and aquatic animals for food. In the interior, plant foods like acorns were gathered and stored in great quantity. Large game like deer, elk, and antelope were hunted. Game birds, waterfowl, fish, and shellfish were other major food sources that thrived in the nearby sloughs and marshes of San Francisco Bay (Milliken 1995:16-18; Levy 1978).

Ohlone society was organized in local tribes of 200-400 people living in semi-permanent villages made up of round, domed, or conical thatch homes with frames and a center hearth. Tribelets controlled fixed territories averaging 10 to 12 miles in diameter (Kroeber 1925:219; Milliken *et al.* 2007). Hereditary village leaders, who could be male or female, played an important role in conflict resolution, receiving guests, directing ceremonies, organizing food-gathering expeditions, and leading war parties but did not otherwise exercise direct authority (Levy 1978:487). Despite their autonomy, intermarriage between tribelets appears to have been frequent (Milliken 1995:22-24).

The Huchiun spoke the Chochenyo dialect of the Ohlone language, which was spoken along the eastern shore of San Francisco Bay prior to 1770. Ohlone/Costanoan is a branch of the Yok-Utian subfamily of the Penutian languages, which are spoken along the Pacific Coast from Central California to southeast Alaska. Penutian speakers seem to have entered central California from the northern Great Basin around 4000-4500 years ago and arrived in the San Francisco Bay Area about 1500 years ago, displacing speakers of Hokan languages (Golla 2007:74).

b. Assembly Bill 52 Consultation

The City of Berkeley prepared and mailed AB 52 notification letters on November 18, 2021 to tribes listed by the Native American Heritage Commission. Under AB 52, tribes have 30 days to request consultation from receipt of the notification letters.

On November 24, 2021, the Confederated Villages of Lisjan responded to request consultation under AB 52. The City of Berkeley met with the Confederated Villages of Lisjan over teleconference on December 15, 2021, to discuss the project and proposed mitigation measures. The Confederated Villages of Lisjan requested additional information about the physical extent of the project area, and whether the proposed project could result in changes in areas of tribal concern, specifically the historic Berkeley waterfront/shoreline and Indian Rock. The Confederated Villages of Lisjan also requested drafts of the Cultural Resources and Tribal Cultural Resources sections of the EIR to allow their review of the sections’ historical portrayal of tribal groups.

On February 10, 2022, the City of Berkeley communicated by email with the Confederated Villages of Lisjan and confirmed that the project area does not include any areas adjacent to the historic waterfront/shoreline.

On June 27, 2022, the City of Berkeley communicated by email with the Confederated Villages of Lisjan and shared drafts of the Cultural Resources and Tribal Cultural Resources sections of the EIR and requested comments. No comments were received.

The Confederated Villages of Lisjan requested mitigation measures to be included in the EIR, and included a suggested mitigation measure, in an email to the City of Berkeley on July 8, 2022. Mitigation Measure TCR-1, below, is based upon the proposed mitigation measure.

The City of Berkeley sent an email to the Confederate Villages of Lisjan on August 19, 2022 to conclude AB 52 consultation.

Correspondence related to AB 52 is included in Appendix H.

4.15.3 Impact Analysis

a. Methodology and Significance Thresholds

Consistent with the *CEQA Guidelines*, impacts related to tribal cultural resources would be considered potentially significant if implementation of the project would:

1. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
 - a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k); or
 - b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

b. Project Impacts and Mitigation Measures

Threshold 1: Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

- a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or
- b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

Impact TCR-1 DEVELOPMENT DURING THE PLANNING PERIOD OF THE PROPOSED HEU COULD ADVERSELY IMPACT TRIBAL CULTURAL RESOURCES DUE TO GROUND DISTURBING ACTIVITY DURING CONSTRUCTION. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED.

As part of its tribal cultural resource identification process under AB 52 and SB 18, the City sent letters to 12 Native American Tribal representatives based on a list provided from the NAHC to be informed through formal notification of proposed projects in the geographic area that is traditionally and culturally affiliated with the Tribes. To date, the City has received one response requesting additional consultation under AB 52 or SB 18.

This EIR analyzes potential impacts from implementation of a city-wide planning program and associated zoning changes. Based on the results of AB 52 and SB 18 consultation, tribal cultural resources may be present in areas near the waterfront and near Indian Rock. None of the EIR Inventory Sites or rezoning programs are within these areas. Therefore, tribal cultural resources in the Housing Element areas have not been identified.

Nonetheless, ground-disturbing activities associated with individual development projects during the planning period of the HEU could expose previously unidentified subsurface archaeological resources that may qualify as tribal cultural resources and could be adversely affected by construction. Further, a high potential for Native American cultural resources exists within the Berkeley city limits, according to the City's General Plan EIR.

Adherence to the requirements of AB 52 would require Tribal consultation with local California Native American Tribes prior to implementation of project activities subject to CEQA or SB 35. In compliance with AB 52, a determination of whether project-specific substantial adverse effects on tribal cultural resources would occur along with identification of appropriate project-specific avoidance, minimization, or mitigation measures would be required. Due to the programmatic nature of the proposed HEU it is not possible to fully determine impacts of specific projects on specific sites; however, no tribal cultural resources were identified during consultation. Future projects subject to CEQA and SB 35 would require project-specific tribal cultural resource identification and consultation, and the appropriate avoidance, minimization, or mitigation would be incorporated. As discussed in Section 4.4, *Cultural Resources*, the City has Standard Conditions of

Approval related to the protection of archaeological resources and human remains (including remains that are determined to be of Native American origin) that would apply to future development.

Project-specific tribal cultural resource consultation will occur when specific projects are implemented, and consultation conducted pursuant to the requirements of AB 52. Overall, this impact is potentially significant, and mitigation is required.

Mitigation Measures

The City's Standard Conditions of Approval related to archaeological resources and human remains discussed in Section 4.4, *Cultural Resources*, would apply. In addition, the following mitigation measure would apply to future projects that are determined through tribal consultation to potentially affect tribal cultural resources. Other mitigation may also be required for future projects as determined through the tribal consultation process.

TCR-1 Tribal Cultural Monitoring

For future projects that are determined through tribal consultation to potentially affect tribal cultural resources, in order to mitigate potential adverse impacts to Native American cultural objects and human remains discovered during construction, tribal cultural monitors will be retained to monitor work done in areas of Tribal concern, as determined through tribal consultation. If Native American cultural objects and/or human remains are discovered during construction, work shall be halted within 100 feet of the discovery until the objects have been inspected and evaluated by tribal cultural monitors and a qualified archaeologist meeting the Professional Qualifications Standards of the Secretary of the Interior (36 CFR Part 61). The archaeologist shall, in accordance with the appropriate Guidelines, identify and evaluate the significance of the discovery and develop recommendations for treatment in consultation with the affected Tribe to ensure any impacts to the cultural resource are less than significant. The preferred mitigation is avoidance. If avoidance is not feasible, Project impacts shall be mitigated in consultation with the affected Tribe consistent with the *CEQA Guidelines for Determining the Significance of and Impacts to Cultural Resource, Archaeological Historic and Tribal Cultural Resources*. Such mitigation may include, but is not limited to, additional archaeological testing, archaeological monitoring and/or an archaeological data recovery program. A Native American monitor shall be retained to monitor the ground disturbance when it is suspected that a TCR might be encountered.

Significance After Mitigation

Implementation of Mitigation Measures TCR-1 would reduce impacts related to tribal cultural resources, as actions would be taken to identify, avoid, and retain identified tribal cultural resources. Impacts would be less than significant with mitigation.

c. Cumulative Impacts

While there is the potential for significant cumulative impacts to tribal cultural resources, it is anticipated that potential impacts associated with individual development projects would be addressed on a case-by-case basis and would be subject to City policies and local and State regulations regarding the protection of such resources. With compliance with existing policies and regulations, future development in the city and region would be required to avoid or mitigate the loss of these resources. The proposed project's impacts can be reduced to below a level of significance with the implementation of Mitigation Measure TCR-1 and Standard Conditions of

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Approval (including City policies and local and State regulations) described above. Therefore, significant cumulative impacts to tribal cultural resources would not occur.

4.16 Utilities and Service Systems

This section analyzes the effects of the proposed Housing Element Update on utilities and service systems. It considers potential impacts with respect to water supply and infrastructure, wastewater conveyance and treatment facilities, stormwater and drainage facilities, solid waste disposal, and electricity, natural gas, and telecommunications facilities.

4.16.1 Setting

a. Existing Setting

The following section describes the existing setting with respect to water suppliers, wastewater treatment providers, stormwater drainage facilities, solid waste facilities, electricity and natural gas providers, and telecommunications facilities serving Berkeley.

b. Water Supply

Water Service

Water service to Berkeley is provided by the East Bay Municipal Utility District (EBMUD), a publicly owned utility. EBMUD is responsible for service connections and water delivery to Alameda County and much of Contra Costa County. Approximately 1.4 million people are currently served by EBMUD's water system in a 332-square mile area extending from Crockett on the north, southward to San Lorenzo and portions of Hayward (encompassing the major cities of Oakland and Berkeley), eastward from San Francisco Bay to Walnut Creek, and south through the San Ramon Valley (including Alamo, Danville, and San Ramon).

Approximately 90 percent of the EBMUD water supply originates from the melting snowpack of the Sierra Nevada. The principal water source is the Mokelumne River watershed, a 575-square mile area located in Alpine, Amador, and Calaveras Counties. Water is stored in reservoirs in the Sierra foothills and is transported by aqueduct to filter plants and reservoirs in the East Bay Hills. The other 10 percent of the District's water comes from runoff on protected East Bay Area watershed lands (EBMUD 2020a). The water is treated at one of six water treatment plants (WTP) before delivery to customers.

EBMUD has water rights to 325 million gallons per day (MGD) from the Mokelumne River, subject to the availability of Mokelumne River runoff and numerous flow release obligations. EBMUD's Mokelumne River flow commitments are determined by hydrology, water right priorities, agreements with state and federal regulatory agencies, California State Water Resources Control Board (SWRCB) orders and decisions, federal directives, court decrees, and numerous agreements between EBMUD and other Mokelumne River users, both upstream and downstream of EBMUD's Mokelumne River facilities (EBMUD 2020a).

EBMUD's secondary water supply comes from local runoff from the East Bay area watersheds, which is stored in the terminal reservoirs within EBMUD's service area. Water from local runoff is dependent on hydrologic conditions and terminal reservoir storage availability. Local runoff supplies the East Bay, on average of 23 MGD during normal hydrologic years.

In addition to the EBMUD water supply, Berkeley is comprised of 10 watersheds wholly or partially within City limits (not including the Marina). These watersheds eventually drain into EBMUD

reservoirs, through storm drains to creeks, into homes and businesses, from sinks to sewers, and back out as wastewater, which EBMUD cleans and releases to the San Francisco Bay.

Demand Management and Water Conservation

Northern California's water resources, including EBMUD's supplies, have been stressed by periodic drought cycles. Historical multi-year droughts have significantly diminished the supplies of water available to EBMUD's customers. During the early stages of a drought and throughout a drought period, EBMUD imposes drought management programs to reduce customer demands, thereby saving water for the following year in case drought conditions continue. EBMUD has established a goal of reducing water use by 20 percent district-wide (EBMUD 2020a).

EBMUD completed development of a revised Water Supply Management Program (WSMP) 2040 in April of 2012, which is the District's plan for providing water to its customers through 2040. According to the WSMP, EBMUD's water supplies are estimated to be sufficient during the planning period (2010-2040) in normal and single dry years. The WSMP 2040 emphasizes maximum conservation and recycling, with a total of 50 mgd of future supply to be provided from those two strategies. EBMUD's Urban Water Management Plan 2015 (UWMP) (see Enclosure 2), which is required to be updated every five years, concludes that EBMUD has, and will have, adequate water supplies to serve existing and projected demand within the Ultimate Service Boundary during normal and wet years, but that deficits are projected for multi-year droughts. During multi-year droughts, EBMUD may require significant customer water use reductions and may also need to acquire supplemental supplies to meet customer demand. However, potential supplemental water supply projects that could be implemented to meet projected long-term water supplemental need during multi-year drought periods are also in the planning phases. Supplemental supply will also be needed to reduce the degree of rationing and to meet the need for water in drought years.

Water Distribution

EBMUD operates and maintains all treatment, storage, pumping, and distribution facilities within its service area and is responsible for all facilities up to the location of the water meter (EBMUD 2015). In the vicinity of the project sites, EBMUD's water distribution system provides potable water but is not presently equipped to distribute non-potable water. The pipeline system includes pipes of varying sizes, ranging from six to 16 inches in diameter. The majority of those pipes are eight inches in diameter, and to a lesser extent, 10 and 12 inches in diameter.

c. Wastewater

EBMUD operates the large diameter interceptor sewer and provides municipal wastewater treatment for Berkeley. The EBMUD wastewater system serves approximately 740,000 people in an 88-square-mile area of Alameda and Contra Costa counties along the Bay's east shore, extending from Richmond in the north, southward to San Leandro. EBMUD water customers include residential, industrial, commercial, institutional, and irrigation water users (EBMUD 2020a). EBMUD has set up different wastewater districts. Berkeley's wastewater service district (known as Special District No.1, or SD-1) was established as a separate wastewater district within EBMUD's water service area in 1944. SD-1 treats domestic, commercial, and industrial wastewater for cities of Alameda, Albany, Berkeley, Emeryville, Oakland, and Piedmont. SD-1 has a service capacity of 168 MGD.

The City of Berkeley owns and maintains its own sewage collection system. This system includes 254 miles of City-owned sanitary sewers, 7,200 manholes and other sewer structures, seven sewage

pump stations, and approximately 31,600 lower laterals serving an area of approximately 6,300 acres. Wastewater from East Bay communities to the wastewater treatment plant in Oakland near the entrance of the San Francisco Bay Bridge has a maximum flow of 168 million gallons per day. Primary treatment is provided for up to 320 MGD. On average about 63 million gallons of wastewater was treated every day in 2020.

The City is responsible for maintenance and repair of the lower service laterals (typically located within the public right-of-way) from the property line cleanout to the connection to the City's sewer main. The collection system serving the University of California at Berkeley (UCB) main campus, is owned and maintained by the University but discharges to the City's sewer system, as does the sewer system serving the Lawrence Berkeley National Laboratory (LBNL). Sewers range in age from 30 to 100 years with the average age of 60 years old.

The City of Berkeley also receives wastewater from small adjacent areas of the City of Albany, City of Oakland, and the Stege Sanitary District (Kensington). Wastewater generated in the City's collection system is conveyed to the EBMUD wastewater interceptor system and is treated at EBMUD's Main Wastewater Treatment Plant (MWWTP) located near the eastern terminus of the San Francisco-Oakland Bay Bridge. EBMUD also receives flows from six other "Satellite" collection system agencies: the cities of Alameda, Albany, Emeryville, Oakland, and Piedmont, and the Stege Sanitary District (City of Berkeley 2019).

During the 1980s, EBMUD and the seven Satellite agencies conducted studies to address the problem of overflows and bypasses of untreated wastewater that occurred during large wet weather events due to excessive infiltration and inflow (I/I) into the collection systems. These studies resulted in a long-term program of construction of collection system relief sewers and sewer rehabilitation (called the East Bay I/I Correction Program), and construction by EBMUD of improvements at the MWWTP as well as three new remote Wet Weather Facilities (WWFs) designed to store, provide primary-level treatment, and discharge flows that exceeded the capacity of its interceptor system during wet weather.

Through the I/I Correction Program, the City has rehabilitated or replaced over 227 miles of its gravity sewers and associated lower laterals over the past 30 years. Since 2006, the City has also implemented a private sewer lateral (PSL) certification program requiring the inspection and/or repair or replacement of private (upper) sewer laterals at the time of property transfer or major building remodel. Approximately 36 percent of private laterals have been certified for compliance under the program as of 2019 (City of Berkeley 2019).

The MWWTP has a primary treatment capacity of 320 mgd and a secondary treatment capacity of 168 mgd. Storage basins provide plant capacity for a short-term hydraulic peak of 415 mgd. The average annual daily flow into the MWWTP is approximately 60 mgd, representing 36 percent of the plant's secondary treatment capacity. Treated effluent is disinfected, dechlorinated, and discharged through a deepwater outfall one mile off the East Bay shoreline into San Francisco Bay.

In September of 2014, Berkeley agreed to a Consent Decree with EBMUD and the other six satellite collection system agencies. This decree required the City to do the following:

- Develop plans and programs to reduce inflow and infiltration.
- Reduce sanitary sewer overflows.
- Repair and replace aging sewer pipelines.

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Under the final Consent Decree requirements, Berkeley agreed to replace an average of 4.2 miles of sewer pipeline annually over a 10-year timeframe; replace noncompliant manholes; perform regular condition assessment, spot repairs, and increase required maintenance activities. To date, approximately 36% of City private sewer laterals have been tested or replaced (Berkeley 2022). The City has constructed several relief trunk sewers, completed sewer rehabilitation to reduce infiltration and inflow entry to the system, and removed any wet weather bypasses that existed at the time. Over the past 25 years, these efforts have addressed capacity-related overflows in the system.

d. Stormwater

The City's storm drainage infrastructure consists of 93 miles of underground storm drain pipes and attendant appurtenances. Berkeley's storm drain pipe infrastructure is designed to intercept, collect, and convey stormwater runoff from the public right-of-way directly to the Bay or nearby watercourses that ultimately discharge into the Bay. This infrastructure accepts runoff from public and private facilities (such as buildings, parking lots, and driveways) while protecting them from chronic inundation associated with wet weather. Much of the storm drainpipe infrastructure is over 80 years old and well past its useful life expectancy. The pipes dimensions range from 6" to 108" in diameter (Berkeley 2011).

Due to the age of the City's drainage, Berkeley has adopted various Capital Improvement Projects. These improvements are broken into two distinct categories which are rehabilitation and capital improvement. Rehabilitation or rehab describes construction-related work to correct structural or physical defects to maintain proper functioning and extending the useful life of existing storm drain pipe infrastructure. This can include the following methods:

- Correction of specific problems in a certain section of pipe ("Point Repairs").
- Reinforcement of the inside of an existing pipe with a hardened membrane ("Slip-lining")
- Replacement of a pipe with another pipe with the same hydraulic capacity.

Capital Improvement is any construction project that increases the hydraulic capacity of the storm drain pipe infrastructure. This can include various methods and means such as:

- Construction of new storm drain pipe infrastructure.
- Construction of pump stations or retrofit pipes to operate under pressurized conditions to force more discharge through the same size pipes.
- Enlargement of storm drain pipes by replacing existing pipelines with larger pipelines ("Upsizing")
- Construction of detention facilities, such as Green Infrastructure/storage measures.

Rainwater management also includes bioswales, permeable paving, underground stormwater storage, rain gardens, and rainwater catchment.

Beyond the City's proactive activities to protect water quality and steward watershed resources, there are also water quality regulations and requirements with which the City must comply and/or enforce. The Municipal Regional Stormwater NPDES Permit (MRP) is the current National Pollutant Discharge Elimination System (NPDES) Permit under which the City discharges urban runoff. It covers municipal dischargers in Alameda (such as the City of Berkeley as a Permittee), Contra Costa, San Mateo, and Santa Clara counties, and the cities of Fairfield, Suisun City, and Vallejo. The MRP establishes quality and monitoring requirements for discharging urban runoff. These requirements

include the use of best management practices for new and significant redevelopment projects, public education and outreach, industrial inspections, and guidance to the City's own Public Works staff to reduce or remove pollutant loads from urban runoff to the maximum extent practicable. The MRP requires that trash be reduced. Annual reports are submitted that evaluate the City's efforts in meeting the NPDES performance standards (Berkeley 2011).

e. Solid Waste

The City of Berkeley is one of the few cities in Northern California to operate its own refuse, dual stream recycling and green/food waste curbside collection system as well as material recovery/drop-off and buyback facilities. The City provides curbside recycling, green/food waste, and refuse collection services. The City's Solid Waste Management Division is a part of Public Works and contracts through private entities. Some of the programs offered by the City's Solid Waste Division includes recycling collection programs for businesses as well as residential and commercial refuse and organic waste collection. Solid waste, recyclable, and compostable materials collected by the City and its contracted companies are transported from the Berkeley Transfer Station, located at 1201 Second Street, for sorting or disposal at off-site facilities. The Berkeley Transfer Station currently has a maximum permitted throughput of 560 tons per day (CalRecycle 2019a). The public can also dispose of trash and recycle items such as electronics, mattresses, metals, carpet padding, construction materials, and compatible waste at the Transfer Station. City employs Urban Ore Inc., a local reuse company, to salvage reusable items discarded by Transfer Station customers.

Several private refuse and recycling companies do business in Berkeley. Four private refuse companies have non-exclusive franchises that allow them to collect dry rubbish from Berkeley businesses. These companies pay a franchise fee to the City and report their activities quarterly. Many other Berkeley businesses also have arrangements with private recycling companies that provide customized service.

One permitted landfill in Alameda County has the capacity to accommodate solid waste generated in Berkeley: the Altamont Landfill. The maximum permitted daily throughput at the Altamont Landfill is 11,150 cubic yards, and the maximum permitted capacity is 124.4 million cubic yards. The remaining capacity for solid waste at this landfill is approximately 65.4 million cubic yards (CalRecycle, Solid Waste Information System (SWIS), 2020a). The City of Berkeley has achieved a solid waste diversion rate of 69 percent of its solid waste from landfills through recycling and/or composting efforts (City of Berkeley 2021).

f. Telecommunications, Electricity, and Natural Gas

Telecommunications services in Berkeley are provided by private companies, including AT&T, Comcast Cable, and Sonic which provides internet, phone, and television.

East Bay Community Energy (EBCE) supplies electricity to Berkeley using transmission infrastructure operated and maintained by Pacific Gas & Electric (PG&E). PG&E also provides natural gas to the City. Natural gas and electricity are also addressed in Section 4.5, *Energy*. EBCE provides energy that is 100 percent carbon free.

4.16.2 Regulatory Setting

a. Water Supply

This regulatory setting discussion is specific to the assessment of water supply availability and reliability. Regulations and policies pertaining to water quality and potable drinking water standards are also discussed in Section 4.9, *Hydrology and Water Quality*.

Federal Regulations

Clean Water Act

The federal Clean Water Act (CWA), enacted by Congress in 1972 and amended several times since, is the primary federal law regulating water quality in the United States and forms the basis for several State and local laws throughout the country. The CWA established the basic structure for regulating discharges of pollutants into the waters of the United States. The CWA gave the U.S. Environmental Protection Agency (USEPA) the authority to implement federal pollution control programs, such as setting water quality standards for contaminants in surface water, establishing wastewater and effluent discharge limits for various industry contaminants in surface water, establishing wastewater and effluent discharge limits for various industry categories, and imposing requirements for controlling nonpoint-source pollution. At the federal level, the CWA is administered by the USEPA and USACE. At the State and regional levels in California, the act is administered and enforced by the State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs).

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) regulates public water systems that supply drinking water (42 USC Section 300(f) et seq.; 40 CFR Section 141 et seq.). The principle objective of the federal SDWA is to ensure that water from the tap is potable (safe and satisfactory for drinking, cooking, and hygiene). The main components of the federal SDWA are to:

- Ensure that water from the tap is potable
- Prevent contamination of groundwater aquifers that are the main source of drinking water for a community
- Regulate the discharge of wastes into underground injection wells pursuant to the Underground Injection Control program (see 40 CFR Section 144)
- Regulate distribution systems

State Regulations

Assembly Bill 1826

In October 2014 Governor Brown signed AB 1826, requiring businesses to recycle their organic waste on and after April 1, 2016, depending on the amount of waste they generate per week. This law also requires that on and after January 1, 2016, local jurisdictions across the state implement an organic waste recycling program to divert organic waste generated by businesses, including multifamily residential dwellings that consist of five or more units (although multifamily dwellings are not required to have a food waste diversion program). Organic waste means food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that

is mixed in with food waste. This law phases in the mandatory recycling of commercial organics over time, while also offering an exemption process for rural counties. In particular, the minimum threshold of organic waste generation by businesses decreases over time, which means an increasingly greater proportion of the commercial sector will be required to comply (CalRecycle, 2017b).

Senate Bill 610

Senate Bill 610 (SB 610) amended the California Water Code to require detailed analysis of water supply availability for certain types of development projects. The primary purpose of SB 610 is to improve the linkage between water and land use planning by encouraging greater communication between water providers and local planning agencies and ensuring that land use decisions for certain large development projects are fully informed as to whether sufficient water supplies are available to meet project demands. SB 610 requires the preparation of a Water Supply Assessment (WSA) for certain large development projects unless there is an urban water management plan ("UWMP") that accounts for the demand associated with the project. In the case of Berkeley, the EBMUD UWMP is used to project water demand with the proposed project.

California Safe Drinking Water Act

The California SDWA (Health & Safety Code Section 116270 et seq.; 22 Cal. Code Regs. Section 64400 et seq.) regulates drinking water more rigorously than the federal law. Like the federal SDWA, California requires that primary and secondary maximum contaminant levels (MCLs) be established for pollutants in drinking water; however, some California MCLs are more protective of health. The act also requires the SWRCB to issue domestic water supply permits to public water systems.

The SWRCB enforces the federal and State SDWAs and regulates more than 7,500 public water systems. (Implementation of the federal SDWA is delegated to California). The SWRCB's Division of Drinking Water oversees the State's comprehensive Drinking Water Program (DWP). The DWP is authorized to issue public water system permits.

Sustainable Groundwater Management Act

In September 2014, the governor signed legislation requiring that California's critical groundwater resources be sustainably managed by local agencies. The Sustainable Groundwater Management Act (SGMA) gives local agencies the power to sustainably manage groundwater and requires groundwater sustainability plans to be developed for medium- and high-priority groundwater basins, as defined by the Department of Water Resources (DWR).

EBMUD's service area overlies a significant portion of the East Bay Plan Subbasin. The East Bay Plan Subbasin is a medium priority basin and is therefore required to prepare a groundwater sustainability plan pursuant to the requirements of SGMA. SGMA requires public notifications and hearings, as well active stakeholder communication and engagement in groundwater sustainability plans (East Bay Subbasin Sustainable Groundwater Management, 2018).

California Plumbing Code

The California Plumbing Code is codified in Title 24, California Code of Regulations, Part 5. The Plumbing Code contains regulations including, but not limited to, plumbing materials, fixtures, water heaters, water supply and distribution, ventilation, and drainage. More specifically, Part 5, Chapter 4, contains provisions requiring the installation of low flow fixtures and toilets. Existing development

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will also be required to reduce its wastewater generation by retrofitting existing structures with water efficient fixtures (SB 407 [2009] Civil Code Sections 1101.1 et seq.).

The Water Conservation Act of 2009 (Senate Bill X7-7)

California adopted SB X7-7, or the Water Conservation Act of 2009, in November 2009. The legislation requires urban water retailers to set urban water use targets to achieve a 20 percent reduction in per capita urban water use by December 31, 2020. Additionally, the law requires agricultural water suppliers to prepare, adopt, and regularly update agricultural water management plans. Agricultural and urban water providers are ineligible for certain State grants and loans if they do not adhere to water conservation requirements outlined in the law.

Regional Water Management Plan Report

Adopted by the State legislature in 2002, the Regional Water Management Planning Act, or SB 1672, authorizes preparation of integrated regional water management plans. Such plans are developed by regional water management groups, defined as three or more local public agencies, at least two of which have statutory authority over water supply. Integrated regional water management plans address qualified programs and projects relating to water supply, water quality, flood protection, or other water-related topics undertaken by the participating public agencies. Qualified projects, as detailed in the legislation, include but are not limited to groundwater, urban, and agricultural water management planning efforts, levee or flood control infrastructure maintenance or construction, water recycling projects, and water conservation programs.

Local Regulations

City of Berkeley General Plan

The General Plan's Environmental Management Element includes the following goals and policies applicable to water:

- **EM-23 Water Quality in Creeks and San Francisco Bay.** Take action to improve water quality in creeks and San Francisco Bay.
- **EM-25 Groundwater.** Protect local groundwater by promoting enforcement of state water quality laws that ensure nondegradation and beneficial use of groundwater.
- **EM-26 Water Conservation.** Promote water conservation through City programs and requirements.
- **S-7 Emergency Water Supply.** Protect life and property in the event of an earthquake by evaluating alternate drinking water and firefighting water supply in the event of failure of the East Bay Municipal Utility District (EBMUD) water supply.

b. Wastewater

Federal

Federal Clean Water Act

The Federal Clean Water Act is described in Section 4.16.2, Water Supply.

State and Regional

Standards for wastewater treatment plant effluent are established using State and federal water quality regulations. After treatment, wastewater effluent is either disposed of or reused as recycled water. The RWQCBs set the specific requirements for community and individual wastewater treatment and disposal and reuse facilities through the issuance of Waste Discharge Requirements, required for wastewater treatment facilities under the California Water Code Section 13260.

The California Code of Regulations Title 22, Division 4, Chapter 3, Sections 60301 through 60355 are used to regulate recycled wastewater and are administered by the RWQCBs. Title 22 contains effluent requirements for four levels of wastewater treatment, from un-disinfected secondary recycled water to disinfected tertiary recycled water. Higher levels of treatment have higher effluent standards, allowing for a greater number of uses under Title 22, including irrigation of freeway landscaping, pasture for milk animals, parks and playgrounds, and vineyards and orchards for disinfected tertiary recycled water.

Local

City of Berkeley General Plan

The City of Berkeley's General Plan has the following policies as it relates to wastewater:

- **EM-24 Sewers and Storm Sewers.** Protect and improve water quality by improving the citywide sewer system.

City of Berkeley Municipal Code

Section 17.24.030 of the Berkeley Municipal Code (BMC) is the City's Private Sewer Lateral Ordinance and includes standards for maintenance of private sewer laterals. Property owners must verify that their private sewer lateral meets City standards before selling their building, performing major renovations, or if otherwise required by the City.

Section 17.06.020 of the Berkeley Municipal Code includes construction requirements for sanitary sewers and storm drains. All or any devices, inventions or piping systems which convey directly or indirectly stormwater, surface water, roof runoff, intercepted groundwater or subsurface drainage into sanitary sewers, are prohibited. They are only permitted if a special temporary permit has been obtained from the Director of Public Works. Permits will not be automatically issued and may be issued only when, in the opinion of the Director of Public Works, the denial of a permit would result in extreme hardship, in hazard to property, or in similar conditions.

The BMC also regulates allowable discharges to the City's sewer system and connection fees for the sewer collection system.

c. Stormwater

Federal, State, and local regulations pertaining to stormwater management, drainage, flooding, and water quality are discussed in Section 4.9, *Hydrology and Water Quality*.

d. Solid Waste

Federal

Title 40 of the Code of Federal Regulations

Title 40 of the CFR, Part 258 (Resource Conservation and Recovery Act, Subtitle D), contains regulations for municipal solid waste landfills and requires states to implement their own permitting programs incorporating the Federal landfill criteria.

State

California's Short-Lived Climate Pollutant Reduction Strategy (SB 1383)

Signed into law in September 2016, SB 1383 establishes methane emissions reduction targets for California in a statewide effort to reduce emissions of short-lived climate pollutants. The targets are to reduce organic waste disposal 50 percent by 2020 and 75 percent by 2025. The law also grants CalRecycle the regulatory authority required to achieve the organic waste disposal reduction targets and establishes an additional target that not less than 20 percent of currently disposed edible food is recovered for human consumption by 2025. Enforcement of these targets starts January 1, 2022.

California Integrated Waste Management Act

AB 939 (PRC 41780) requires cities and counties to prepare integrated waste management plans and to divert 50 percent of solid waste from landfills beginning in calendar year 2000 and each year thereafter. AB 939 also requires cities and counties to prepare source reduction and recycling elements as part of the integrated waste management plans. These elements are designed to develop recycling services to achieve diversion goals, stimulate local recycling in manufacturing, and stimulate the purchase of recycled products.

MANDATORY COMMERCIAL ORGANICS RECYCLING AB 1826 of 2014 (PRC Chapter 727, Statutes of 2014) requires businesses that generate a specified amount of organic waste per week to arrange for recycling services for that waste, and that jurisdictions implement a recycling program to divert organic waste from businesses subject to the law. The jurisdictions must report to CalRecycle on their progress in implementing an organic waste recycling program. As of January 1, 2017, businesses that generate four cubic yards or more of organic waste per week shall arrange for organic waste recycling services.

PRC Chapter 343 (Senate Bill 1016)

SB 1016 of 2007 (PRC Chapter 343, Statutes of 2007) requires that the 50 percent solid waste diversion requirement established by AB 939 be expressed in pounds per person per day. SB 1016 changed the CalRecycle review process for each municipality's integrated waste management plan. After an initial determination of diversion requirements in 2006 and establishing diversion rates for subsequent calendar years, the Board reviews a jurisdiction's diversion rate compliance in accordance with a specified schedule. Since January 1, 2018, the Board is required to review a jurisdiction's source reduction and recycling element and hazardous waste element once every two years.

CALGREEN BUILDING CODE

In 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11, Title 24, known as "CALGreen") was adopted as part of the California Building Standards Code. Section 4.408, Construction Waste Reduction Disposal and Recycling, mandates that in the absence of a more stringent local ordinance, a minimum of 50 percent of non-hazardous construction and demolition debris must be recycled or salvaged. The Code requires the applicant to have a construction and waste demolition and diversion plan, for on-site sorting or construction debris, which is submitted to the City of Berkeley for approval.

Regional

COUNTYWIDE INTEGRATED WASTE MANAGEMENT PLAN

In compliance with AB 939, the Alameda County Waste Management Authority adopted the Countywide Integrated Waste Management Plan (CoIWMP) in 1997 and updated the plan in 2020. The CoIWMP provides a plan for reaching the State-mandated goal of 50 percent waste diversion and the county-mandated goal of 75 percent waste diversion. It also mandates that reduction and disposal facilities in Alameda County that require Solid Waste Facility Permits must conform with the CoIWMP's policies and siting criteria (Stop Waste 2018).

Local

Berkeley General Plan

The General Plan's Environmental Management Element includes the following goals and policies applicable to solid waste:

Policy EM-7: Reduced Wastes. Continue to reduce solid and hazardous wastes.

Policy EM-8: Building Reuse and Construction Waste. Encourage rehabilitation and reuse of buildings whenever appropriate and feasible in order to reduce waste, conserve resources and energy, and reduce construction costs.

Policy EM-9: Recycling and Waste Transfer Stations. Ensure convenient access for Berkeley citizens to transfer stations, recycling, composting, and collection of household hazardous waste products.

Policy EM-10: Materials Recovery and Remanufacturing. Support and encourage serial materials recovery and remanufacturing industries.

CITY OF BERKELEY GREEN BUILDING CHECKLIST

A Green Building Checklist to ensure compliance with the 2013 California Green Building Standard Code, also known as CALGreen, is listed on the City's website for both residential and commercial projects. As of January 1, 2014, new construction, additions, and alterations are subject to CALGreen requirements. The checklist must be submitted with and incorporated into the plan sets, and any items that are marked on the checklists must then be referenced and detailed in the plans.

e. Telecommunications, Electricity, and Natural Gas

The regulatory setting regarding energy is more extensively discussed in Section 4.5 Energy.

4.16.3 Impact Analysis

a. Methodology and Significance Thresholds

The following thresholds are based on *CEQA Guidelines* Appendix G. For purposes of this EIR, impacts related to water supplies, wastewater, solid waste, or storm water conveyance are considered significant if implementation of the proposed project would:

1. Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects;
2. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years;
3. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the projects' projected demand in addition to the provider's existing commitments;
4. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals; or
5. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

b. Project Impacts and Mitigation Measures

Threshold 1: Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Threshold 3: Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Impact UTIL-1 DEVELOPMENT UNDER THE PROPOSED HEU WOULD REQUIRE UTILITY SERVICE AND CONNECTIONS FOR WATER SUPPLY, WASTEWATER CONVEYANCE, AND STORMWATER CONVEYANCE, AS WELL AS TELECOMMUNICATIONS, ELECTRICITY, AND NATURAL GAS. EXISTING UTILITY SYSTEMS FOR WATER, WASTEWATER, STORMWATER, ELECTRIC POWER, NATURAL GAS, AND TELECOMMUNICATIONS FACILITIES IN BERKELEY HAVE SUFFICIENT CAPACITY TO SERVE THE PROJECT. RELOCATION OR CONSTRUCTION OF NEW OR EXPANDED FACILITIES RESULTING IN SIGNIFICANT ENVIRONMENTAL IMPACTS WOULD NOT OCCUR, AND ADEQUATE WASTEWATER CAPACITY EXISTS TO SERVE THE PROJECT'S PROJECTED DEMAND IN ADDITION TO THE PROVIDER'S EXISTING COMMITMENTS. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Water

Construction activities associated with development under the proposed HEU would require recycled water for dust suppression, concrete manufacturing, and such activities as washing wheels and equipment. Temporary construction recycled water would be trucked to active construction sites or produced from existing fire hydrants near the applicable site(s), with City approval. As such,

construction water demands would not require new connections or conveyance facilities, as existing or mobile facilities would be used.

New water supply connections and associated facilities would be required for future development accommodated under the proposed HEU to convey potable water supply. Such upgrades would occur within existing utility easements and would be located underground, primarily within existing roadways. Development under the proposed HEU would primarily be located on previously developed sites or infill sites within the city that are currently zoned for residential development. New water service connections would be consistent with utility expansion in urbanized areas, such that minimal areas of new disturbance would occur. Although all parcels in Berkeley have access to public utility infrastructure, in some cases the infrastructure is older and in need of replacement or insufficient to meet the needs of a particular project.

Developers are responsible for funding infrastructure improvements that are required to serve future projects and have not been previously identified as part of a capital improvement program covered by the development impact fees. Consistent with applicable State law, the City's development fees ensure that the developers pay the cost attributable to the increased demand for the affected public facilities reasonably related to the development project in order to refurbish the existing facilities to maintain the existing level of service and achieve an adopted level of service that is consistent with the City's General Plan (California Government Code Section 66001(g)).

Due to the existing built-up nature of the City, it is reasonably anticipated that future improvements for water supply and fire flow requirements would not disturb previously undisturbed areas and would be situated within existing utility rights-of-way, such as but not limited to within public roadways.

The availability and reliability of water supply for the proposed project is addressed below, under Impact UTIL-2. Potential impacts related to relocation or construction of water supply facilities would be less than significant.

Wastewater

Wastewater Treatment

EBMUD's Main Wastewater Treatment Plant (MWWTP) provides wastewater collection and treatment to Berkeley, currently treating an average daily flow of approximately 63 mgd. With a secondary treatment capacity of 168 mgd. Primary treatment can be provided for up to 320 mgd. The average dry weather flow from 2010 to 2019 was approximately 54 mgd (EBMUD 2021).

Table 4.16-1 shows the estimated wastewater generation for development under the proposed HEU. As shown, development under the proposed HEU is estimated to generate 765,688 gallons of wastewater per day. This would also be within the remaining capacity of the MWWTP. Therefore, the plant's existing wastewater treatment capacity would be sufficient to accommodate the anticipated residential development under the proposed HEU. Development facilitated by the proposed project would not result in the need to expand the capacity of the MWWTP or exceed the wastewater treatment requirements of the San Francisco RWQCB.

Table 4.16-1 Estimated Wastewater Generation for the Proposed HEU

Potential Buildout Development/ Land Use ¹	Wastewater Generation Factor ¹	Projected Number of Housing Units	Projected Wastewater Generation
Single-family residential	56 gpd/unit	113 units ²	6,328 gpd
Multifamily residential	40 gpd/unit	18,984	759,360 gpd
Total			765,688 gpd

¹ Assumes wastewater generation is 80% of water use, see Table 4.16-4 for water use factors
 gpd = gallons per day

Wastewater Conveyance

Future development under the proposed HEU will require new connections for wastewater conveyance and sufficient capacity for wastewater treatment. As described in Section 4.7.1(b) above, wastewater conveyance in Berkeley is provided by 254 miles of City-owned sanitary sewers, 7,200 manholes and other sewer structures, seven sewage pump stations, and approximately 31,600 service laterals. The City is responsible for maintenance and repair of the service laterals (located within the public right-of-way) from the property line cleanout to the connection to the City’s sewer main. New development in Berkeley would generate wastewater to be conveyed by privately owned upper laterals, City-owned lower laterals and sewer mains, and EBMUD’s interceptor lines. EBMUD projects that 61 mgd of wastewater will be collected and treated in the EBMUD Special District No.1 by 2040. As shown in Table 4.16-1, development under the proposed HEU would generate an estimated 765,688 gallons of wastewater per day, which would be approximately 1.3 percent of the wastewater collected and treated in in the district by 2040.

During wet-weather conditions, additional flow could potentially exceed pipeline capacities and create overflow. New development would be required to comply with the City’s Private Sewer Lateral Ordinance, by eliminating wet-weather infiltration and inflow to private sewer laterals, which would regulate wet-weather contribution from the proposed project. However, the construction of new or expanded sewer mains may be necessary to accommodate additional wastewater flow. The precise sizing of new wastewater conveyance pipes would be determined at the time of installation and would be subject to the approval of the City to ensure that the system would be adequate. Construction of wastewater conveyance pipes would occur within developed areas, such as street corridors that already contain underground infrastructure for utilities, or on other streets adjacent or near to the project sites. Most improvements would be within developed areas and connections would be within existing right-of-way. The impacts of individual new sewer main construction projects would be less than significant due to their temporary nature, adherence to existing requirements, and the already developed nature of wastewater conveyance corridors. General impacts associated with construction of buildout and improvements associated with the proposed rezoning are discussed throughout this EIR.

The City of Berkeley also has regulations for reasonably foreseeable housing development. It must occur in compliance with the requirements of BMC Title 17 which establishes City standards related to wastewater discharge, peak flow, and sewer capacity. Every person, firm, corporation or entity desiring to construct a new connection to sewer services to the City’s sanitary sewer system shall pay a connection fee in the amount as established by City Council resolution. The connection fee shall be determined by assistant City engineer based upon the volume of water discharging from such premises from any source flows into sanitary sewers computed on an equivalent basis for a single family residential unit (Berkeley 1994). To the extent that sewer pipeline upgrades may be

necessary as reasonably foreseeable development under the proposed Project occurs, all costs of operation, maintenance, rehabilitation and improvement of the City's sanitary sewers shall be paid by the users of the City's sanitary sewers. All sanitary sewer construction in the City must follow the following provisions:

- A permit for each connection shall be obtained from the Department of Public Works. At the time of the issuance of such permit, the permittee shall agree in writing to indemnify and hold harmless the City, its officers and employees from any and all claims or demands of whatsoever nature which arise or may arise from the sanitary sewer or storm drain construction covered by such permit.
- Sanitary sewer construction fees shall be as set forth in the public works master fee schedule, as adopted by resolution of the City Council.
- For any work performed, wholly or in part, without first having secured the permit required by the provisions of this section, the person, firm or corporation having performed such work shall pay a permit fee which shall be five times the permit fee provided by this section, and five times the inspection charge for any month, or any fraction thereof, that the work has been in progress without a permit.
- All work shall be done in strict compliance with standard detailed plans and specifications of the City and to the satisfaction of the Director of Public Works, and shall be inspected by a City inspector prior to backfilling the excavation.
- When a sanitary sewer is to be installed in the public right-of-way or other public easement, an amount as set forth in the public works master fee schedule, as adopted by resolution of the City Council, for each permit shall be deposited with the Public Works Department as a guaranty that all sanitary sewer work, including backfill, street paving and cleanup, will be done in a proper and workmanlike manner and in accordance with all City requirements and to the satisfaction of the Director of Public Works. In lieu of such deposit for each permit, a surety company faithful performance bond in the amount set forth in the public works master fee schedule, as adopted by resolution of the City Council, may be filed with the Public Works Department. Such bond shall be conditioned that all sanitary sewer work, including backfill, street paving and cleanup shall be done in a proper and workmanlike manner and in accordance with all City requirements and to the satisfaction of the Director of Public Works. Any such bond may be conditioned as a continuing bond and not be limited to any particular location in the City. The form of such bond shall be approved by the City Attorney. In the event that such work is not done in a proper and workmanlike manner, or not done in accordance with the requirements of this section or any other ordinance or requirement of the City, or not done to the satisfaction of the Director of Public Works, the City may perform or cause to have performed the necessary corrective or cleanup work and deduct the cost thereof to be paid by said surety company on its bond.
- For a period of two years after completion of the sanitary sewer construction (final paving of the sanitary sewer or storm drain trench), the permittee shall be responsible for the maintenance of the sanitary sewer construction and trench paving.

The City of Berkeley also employs a preventive maintenance approach to maintaining the sewer system designed to minimize the occurrences of repeat blockages and sanitary sewer overflows. System-wide preventive maintenance is scheduled each month using the City's computerized maintenance management system.

Additionally, future development associated with the proposed HEU would be required to adhere to Berkeley General Plan requirements related to wastewater infrastructure. Policy EM-24 in the Berkeley General Plan and Chapter 17.05 of the BMC requires that new development pay its fair share of improvements to the sewer system that would be necessary to accommodate increased flows. This policy and BMC requirements would ensure that new developments are not approved until it can be demonstrated that adequate wastewater collection capacity exists, or until a financial commitment to create such capacity has been secured. Therefore, with implementation of General Plan policy EM-24 and BMC Chapter 17.05, new development associated with the proposed rezoning would have adequate wastewater conveyance systems to serve future planned development on the project sites. Accordingly, impacts related to wastewater conveyance would be less than significant.

Therefore, the project would not require or result in the relocation or construction of new or expanded wastewater treatment facilities. Impacts would be less than significant.

Stormwater

Impacts regarding stormwater drainage facilities are discussed in Section 4.9, *Hydrology and Water Quality*. As discussed in that section, with compliance with existing regulations, development under the proposed HEU would not require the relocation or construction of new or expanded storm water drainage, facilities, the construction or relocation of which could cause significant environmental effects.

Electricity and Natural Gas

The project would require connections to existing electrical transmission and distribution systems to serve development facilitated by the project. This service would be provided in accordance with the rules and regulations of EBCE, and PG&E on file with and approved by CPUC. Based on the availability of existing electrical infrastructure, it is not anticipated that the construction of new electrical transmission and distribution lines would be required, and all sites would be able to connect to existing infrastructure. Therefore, there would be adequate electrical facilities to serve development facilitated by the project and impacts related to electricity would be less than significant.

Development facilitated by the project would connect to existing natural gas infrastructure to meet the needs of site residents and tenants. Based on the availability of existing natural gas infrastructure, construction of new natural gas pipelines would not be required, and all sites would be able to connect to existing infrastructure. Therefore, there would be adequate natural gas facilities to serve the development facilitated by the project and impacts related to natural gas would be less than significant.

Telecommunications

Project implementation would require connections to existing adjacent utility infrastructure to meet the needs of site residents and tenants. Based on the availability of existing telecommunications infrastructure, construction of new telephone and cable lines would not be required, and all sites would be able to connect to existing infrastructure. Development facilitated by the project would be required to adhere to applicable laws and regulations related to the connection to existing telecommunication infrastructure. Therefore, there would be adequate telecommunications facilities to serve the development facilitated by the project and impacts related to telecommunications would be less than significant.

Mitigation Measures

Impacts would be less than significant without mitigation. No mitigation measures are required.

Threshold 2: Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Impact UTIL-2 DEVELOPMENT UNDER THE PROPOSED HEU WOULD RESULT IN AN INCREASE IN WATER DEMAND. HOWEVER, THIS INCREASE IN DEMAND CAN BE SERVED BY THE EAST BAY MUNICIPAL UTILITY DISTRICT (EBMUD) WITH DEMAND MANAGEMENT MEASURES REQUIRED BY EBMUD. THIS IMPACT WOULD BE LESS THAN SIGNIFICANT.

The City of Berkeley is served by existing EBMUD, potable water facilities. EBMUD performs a comprehensive demand projection study every ten years; the most recent update, the 2050 Demand Study, was completed in 2020. The 2050 Demand Study is an update of EBMUD's water demand forecasts using a land use based approach that incorporates forecasts of dwelling units and employment from land use agencies into a newly developed water demand model. It is based on projections incorporated from the U.S Census Bureau and the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC). EBMUD has found that while the number of accounts for their service has increased steadily since 1970, the average daily water demand has not increased; outside of droughts, demand remains relatively stable.

Table 4.16-2 indicates the average annual demand of water through 2050 based on land use. The projections indicate that the planning level of demand of MGD, which is the adjusted demand for applying water conservation and cumulative recycled water savings achieved since the 1994 Water Conservation Master Plan was implemented, would be less than the forecasted water demand.

Table 4.16-2 Average Annual Demand Projections by Customer Use Category (MGD)

Land Use	2020	2025	2030	2035	2040	2045	2050
Single-Family Residential	115	117	119	121	125	126	129
Multi-Family Residential	40	44	48	52	59	63	67
Institutional	17	18	20	21	22	24	26
Industrial	33	35	35	36	36	37	37
Commercial	16	18	19	21	22	24	25
Irrigation	13	13	13	13	13	13	13
Forecasted Water Demand	234	245	254	264	277	287	297
Water Conservation	-48	-53	-58	-61	-63	-65	-66
Non-Potable Water	-5	-6	-6	-9	-13	-13	-13
Planning Level of Demand	181	186	190	194	201	209	218

N/A = not available

Source: EBMUD 2020a

¹ Flowrate factors are based on reference material provided by EBMUD: 50 gpd/person for high-rise apartments; 0.216 gpd/sf for commercial retail space

² Total net (or new) commercial buildout of 65,000 sf assumes ground floor commercial space that is a mix of retail or small-scale office space. Because it is not possible to predict the exact mix of retail versus office space, retail space water demand was assumed in order to be conservative with respect to water demand. gpd = gallons per day

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EBMUD also evaluated several different scenarios to assess its need for water under potential drought conditions. These different scenarios capture the uncertainty in long-term planning. Uncertainty is inherent in any future-oriented planning effort and is a driving factor in long-term water resources planning. Water supplies are constantly subject to uncertainties that directly affect the amount and timing availability of the sources of water. In order to address these inherent uncertainties, and as required by Section 10632 of the California Water Code, EBMUD maintains a current Water Shortage Contingency Plan (WSCP), which is published as part of the UWMP, and subject to 5-year updates with the UWMP. The WSCP provides the framework to address water shortages, and identifies actions to manage supply and demand before and during a water shortage to ensure a reliable water supply (EBMUD 2020b).

In order to identify appropriate water shortage response actions for the purposes of the WSCP, EBMUD defines a Base Condition, as well as a High Water Demand Condition and Extreme Drought Condition, which reflect actual demand rates from a recent drought planning sequence and are used for comparison purposes (EBMUD 2020b). The annual water demand under different scenarios for the EBMUD service area is laid out in Table 4.16-3, which also reflects water supplies that EBMUD received under its water service contract with the United States Bureau of Reclamation (USBR) to receive Central Valley Project (CVP) water through the Freeport Regional Water Project; this is a supply option that EBMUD uses during dry year conditions, as needed. A Normal Water Year is a year that EBMUD does not need to implement any Drought Management Program (DMP) measures. A Single Dry Water Year is determined to be a year that EBMUD would implement DMP elements, which includes obtaining Central Valley Project (CVP) water deliveries and setting voluntary rationing goal between 0 to 10 percent. Year 2 would involve the second consecutive dry year is determined as a year that EBMUD would implement DMP elements, which includes continuing to obtain CVP water deliveries and setting a mandatory rationing between 10 – 15 percent. Year 3 includes the third consecutive dry year is determined as a year that EBMUD would implement DMP elements which includes obtaining CVP water deliveries and implementing mandatory rationing of 15 percent.

Based on this table EBMUD anticipates having an adequate water supply to meet demand in its service area, except during the third year of a multi-year drought starting around 2025 or later. During multi-year drought, EBMUD may require substantial reductions in water use by customers and as discussed below, may also need to acquire supplemental supplies to meet demand. New development under the proposed HEU would be subject to the same drought restrictions that apply to all EBMUD customers.

Table 4.16-3 Preliminary EBMUD Baseline Supply and Demand Analysis

	2020	2025	2030	2035	2040	2045	2050
Normal Year							
Mokelumne System (MGD)	>181	>186	>190	>194	>201	>209	>218
EBMUD Planning Level of Demand (MGD)	181	186	190	194	201	209	218
Need For Water	0	0	0	0	0	0	0
Single Dry Year or First Year of Multi-Year Drought							
Mokelumne System	121	126	129	132	138	144	151
CVP Supplies ²	60	60	60	60	60	60	60
Total Supplies (MGD)	181	186	189	192	198	204	211

	2020	2025	2030	2035	2040	2045	2050
Voluntary Rationing (%)	0	0	1%	1%	2%	2%	3%
Need for Water (TAF) ⁵	0	0	0	0	0	0	0
Second Year of Multi-Year Drought							
Mokelumne System	82	86	89	92	98	104	111
CVP Supplies ²	74	74	74	74	74	74	74
Supply Totals	156	161	164	167	172	178	185
Mandatory Rationing (%)	13%	13%	13%	14%	14%	14%	15%
Need for Water (TAF) ⁵	0	0	0	0	0	0	0
Third Year of Multi-Year Drought							
Mokelumne System (MGD)	141	145	146	145	132	118	105
CVP Supplies ²	12	12	12	12	12	12	12
Supply Totals	153	157	158	157	144	130	117
Mandatory Rationing ⁴	15%	15%	15%	15%	15%	15%	15%
Need For Water (TAF) ⁵	0	0	0	0	28	52	75

MGD = million gallons per day, TAF = thousand acre-feet

¹ Planning Level Demand accounts for projected savings from water recycling and conservation programs as discussed in the 2020 UWMP, Chapters 3. Customer demand values are based on the Water Supply Availability and Deficiency received by EBMUD, 2020

² Projected available CVP supplies are taken according to the Drought Management Program Guidelines discussed in Chapter 3.

³ Rationing reduction goals are determined according to projected system storage levels in the Drought Management Program Guidelines discussed in the 2020 UWMP, Chapter 3.

⁵ Need for Water includes unmet customer demand as well as shortages on the Lower Mokelumne River.

Source: EBMUD 2020a

Table 4.16-3 shows that sufficient water supplies are projected to be available to meet existing and projected demands during normal water year (non-drought) conditions, as well as during a single dry year, and during the first two years of a multi-year drought condition. During the third year of a multi-year drought condition, it is projected that water supply shortages would occur starting in year 2040, in the amount of 28,000 AFY, increasing to 52,000 AFY in 2045, and 75,000 AFY in 2050. As discussed above this table, the WSCP which EBMUD maintains with its UWMP identifies actions to manage supply and demand before and during a water shortage, including but not limited to the use of CVP water received from USBR through the Freeport Regional Water Project. The current (2020) WSCP described that drought conditions occurred during 2014-2016, which resulted in EBMUD relying on the Freeport Regional Water Project, with the following findings:

- Take delivery of the supply as early as possible in the drought sequence to maximize delivery of the lower-cost drought supply,
- Maximize production at the West of Hills water treatment plants, and
- Manage the terminal reservoirs to maximize available space for storage (EBMUD 2020a).

These lessons from the 2014-2016 drought were incorporated into EBMUD's DMP and operational decision-making processes moving forward. Specifically, EBMUD's CVP allocation was reduced by 50 percent in the contract year 2014 and by 75 percent in contract year 2015, as the CVP was faced with increasing demands and reduced supplies as the drought continued; EBMUD made up for the reduced allocation by purchasing transfer water in 2015 and by securing options to purchase

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transfer water for 2016 (EBMUD 2020a). The transfer water was more expensive than the CVP water, and should comparable future drought scenarios occur, EBMUD will maximize delivery of lower-cost drought supply at the start of the drought conditions.

The EIR buildout assumes 19,098 housing units. Based on assumptions in the VMT analysis, this includes an estimated 18,985 multifamily housing units and 113 single family housing units. The additional water use for these units is indicated in Table 4.16-4. Overall, the project could increase demand in the City by an estimated 0.96 MGD, or approximately an approximately 0.5 percent increase from the 2030 EBMUD service area demand estimate of 190 MGD as shown on Table 4.16-3.

Table 4.16-4 Estimated Water Use for the Proposed HEU

Potential Buildout Development/Land Use ¹	Water Generation Factor	Projected Number of Housing Units	Projected Water Demand in 2031 (gpd)	Projected Water Demand in 2031 (MGD)
Single-family residential	70 gpd/unit	113 units ²	7,910 gpd	0.008 MGD
Multifamily residential	50 gpd/unit	18,985	949,250 gpd	0.95 MGD
Total			957,160 gpd	0.96 MGD

¹ Based on water use factors provided by EBMUD, 70 gpd/unit for a typical home and 50 gpd/unit for a high-rise apartment.

² Assumed 113 single-family residences and the rest multi-family consistent with the assumptions in the VMT analysis (Kitteson & Associates 2022)

gpd =gallons per day. MGD = million gallons per day

Regardless of implementation of the proposed Housing Element, current water supplies could potentially be insufficient to meet demand from the project. According to the EBMUD UWMP, the EBMUD service area has a water reduction goal of 153 gallons per capita per day (GPCD) by 2020, and in 2020 the MPWD reported its GPCD was 121 GPCD which met the target. Based on the increase of approximately 0.5 percent from the projected 2030 water demand in EMBUD’s UWMP, estimated GPCD with implementation of the project would be 127 GPCD which would still be well below the targeted 153 GPCD.

Further, compliance with the water conservation regulations and policies would help to maintain sufficient supplies. The California Code of Regulations (CCR) Title 24, Part 11 (CALGreen) requires a 20 percent reduction in residential indoor water use that would lower potential water demand. New development would be subject to the CCR concerning water-efficient landscapes (Division 2, Title 23, CCR, Chapter 2.7, Sections 490 through 495). Implementation of the WELO would encourage water conservation for new development and in landscaped areas. The WELO, which reinforces landscape irrigation and water conservation best practices currently required by EBMUD’s Section 31 Regulations, also would encourage the use of drought-tolerant landscaping and low-flow irrigation systems. Furthermore, new development would be subject to other green building and water conservation requirements described in the Water Supply Regulatory Setting. In that event that EBMUD customers would be subject to a Demand Management Plan and other water conservation requirements that will address any shortage in supply.

In summary, compliance with regulatory requirements, proactive management of available supplies, and drought response and conservation efforts conducted by EBMUD collectively support the continued reliability of water supplies currently used in the City of Berkeley. As discussed above with respect to EBMUD’s response to the 2014-2016 drought conditions, EBMUD’s DMP and

operational decision-making processes reflect multi-faceted response to drought conditions, when they occur, and include the purchase of transfer water when available, for use as drought supply when needed. Although Table 4.16-3 projects water supply shortages during the third year of multi-year drought conditions, EBMUD's existing operational protocols provide for responses to such conditions, which would be initiated during the first and second years of multi-year drought conditions. Such responses are not reflected in the projections shown, because the specific actions taken will depend upon dynamic conditions during the first two years of the multi-year drought. As noted, sufficient supplies are anticipated to be available during normal water year conditions and single-drought-year conditions, as well as during the first two years of multi-drought-year conditions. Therefore, sufficient water supplies are available to serve reasonably foreseeable development under the proposed HEU, and appropriate systems are in place to address potential drought-related water supply shortages, such that potential impacts would be less than significant.

Mitigation Measures

Impacts would be less than significant without mitigation. No mitigation measures are required.

Threshold 4:	Would the generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?
Threshold 5:	Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Impact UTIL-3 DEVELOPMENT FACILITATED BY THE PROJECT WOULD NOT GENERATE SOLID WASTE IN EXCESS OF STATE OR LOCAL STANDARDS, OR IN EXCESS OF THE CAPACITY OF LOCAL INFRASTRUCTURE. THE PROJECT WOULD NOT IMPAIR THE ATTAINMENT OF SOLID WASTE REDUCTION GOALS AND WOULD COMPLY WITH FEDERAL, STATE, AND LOCAL STATUTES AND REGULATIONS RELATED TO SOLID WASTE. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

The EIR buildout assumption includes 19,098 additional units through 2031. CalRecycle estimates that multi-family residential uses generate an average of four pounds of solid waste per unit per day (CalRecycle 2019b). As shown in Table 4.16-5, prior to implementation of State-mandated diversion requirements, development associated with the proposed HEU would generate an estimated 76,338 net pounds per day of solid waste, which equates to 38 tons or 76 cubic yards per day. In accordance with California's Integrated Waste Management Act of 1989, cities and counties are required to divert 50 percent of all solid wastes from landfills. The City of Berkeley has achieved a diversion rate of 69 percent, which substantially exceeds this State requirement. Assuming that this diversion rate continues to apply to new development on the project sites, implementation of the project would generate an additional 2.4 tons per day of solid waste for disposal at landfills.

Table 4.16-5 Estimated Solid Waste Generation for the Proposed HEU

Potential Buildout Development/ Land Use	Quantity	Units	Generation Rate	Solid Waste (pounds per day)	Solid Waste (tons per day)	Solid Waste (cubic yards per day) ²
Residential	19,098	dwelling units	4 pounds/unit/day	76,392	38.2	76.3
Total Assuming 69% Diversion Rate				23,682	11.8	23.7

¹ This analysis makes the conservative assumption that all commercial development consists of retail commercial space, which generates more solid waste per square foot than typical generation rates for commercial offices.

² Based on the conversion factor described under Table 4.10-1, County-Service Landfill Capacity for "landfill density" Municipal Solid Waste, of approximately 750 to 1,250 pounds per cubic yard, or an average of 1,000 pounds per cubic yard.

Source: CalRecycle 2020b

As discussed in the Solid Waste Setting, the Altamont Landfill is an active landfill that can accommodate solid waste from Berkeley. This landfill has a combined remaining capacity of approximately 65.4 million cubic yards. With development facilitated by the proposed rezoning, it is estimated that the project sites would generate an additional 23.7 cubic yards per day of solid waste for disposal at landfills. This amount would equate to approximately 8,651 cubic yards per year. This represents 0.013 percent of the current total remaining landfill capacity.

Continued compliance with applicable regulations and Berkeley General Plan policies listed in the Solid Waste Regulatory Setting would ensure that development facilitated by the project complies with federal, state, and local statutes and regulations related to solid waste and would lead to increased recycling and waste diversion. Development facilitated by the project would be required to comply with these policies, including paying a fair share for solid waste services and achieving greater diversion rates than required by AB 939. AB 939 requires the City to divert 50 percent of solid waste from landfills. Local infrastructure would have the capacity to accommodate solid waste generated by the project. Development facilitated by the project would also be required to demonstrate compliance with all applicable regulations. Therefore, anticipated rates of solid waste disposal from the proposed HEU would have a less than significant impact related to solid waste disposal facilities.

Mitigation Measures

Impacts would be less than significant without mitigation. No mitigation measures are required.

c. Cumulative Impacts

A project's environmental impacts are "cumulatively considerable" if the "incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (*CEQA Guidelines* Section 15065[a][3]).

Water

The analysis provided under Impact UTL-2 is cumulative in nature and considers water demand associated with development within EBMUD's service area. EBMUD's average of annual demand by customer use for different land uses contained in Table 4.16-2 indicate that some water use conservation restrictions may be implemented under varying conditions. The UMWP also includes guidelines that future development would be subject to EBMUD's regulations aimed at encouraging

efficient water use, such as Sections 29 and 31 of EBMUD's Regulations Governing Water Service. Section 29, "Prohibiting Wasteful Use of Water," promotes efficient water use by EBMUD customers and includes additional restrictions on wasteful uses of potable water. Section 31, "Water Efficiency Requirements," identifies the types of water efficiency requirements (i.e., maximum flow rates for flow control devices) for water service. Therefore, the cumulative impact related to water supply would be less than significant, and the proposed project would not considerably contribute to a significant impact.

Wastewater

Cumulative development in Berkeley will continue to increase demands on the existing wastewater treatment and conveyance facilities. The MWWTP current capacity is sufficient to serve the anticipated growth in Berkeley. New wastewater conveyance isn't necessary to serve cumulative development at this time. However, individual improvements to the sewer system would occur in existing utility corridors in already developed areas. Therefore, the cumulative impact related to wastewater infrastructure would be less than significant, and the development facilitated by proposed project would not considerably contribute to significant cumulative impact.

Stormwater

Cumulative Impacts regarding stormwater drainage facilities are discussed in Section 4.9, *Hydrology and Water Quality*.

Solid Waste

Cumulative development in Alameda County will continue to increase solid waste generation for disposal at landfills that serve the County. State-mandated solid waste diversion rates (for recycling) would continue to minimize the quantity of waste directed to area landfills, and compliance applicable regulations and with General Plan goals, policies, and actions would maintain or improve upon existing solid waste diversion rates. It is assumed the City of Berkeley will continue to divert at least 65 percent of solid waste from landfills due to its recycling and green waste programs. As discussed in Impact UTL-3, development facilitated by the proposed project would generate a limited amount of solid waste, representing 0.0011 percent of the remaining capacity of existing landfills serving Alameda County. This incremental increase in solid waste would not considerably contribute to a significant impact related to solid waste disposal.

Telecommunications, Electricity, and Natural Gas

The geographic extent of cumulative analysis for telecommunications, electricity, and natural gas includes the entire service territories of the providers for each of these utilities.

Telecommunications

Telecommunication services in Berkeley are provided by private companies, including AT&T, Comcast Cable, and Sonic which provides internet, phone, and are available throughout the City. Connections for new telecommunications services are implemented on an as needed basis, and the service provider used is generally at the discretion of the customer. Cumulative projects will establish telecommunications service connections in the same manner as residential developments under the proposed Project. There are no anticipated limitations to the availability of telecommunications service. Potential cumulative impacts associated with telecommunications would be less than significant.

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Electricity and Natural Gas

Berkeley residents rely on East Bay Community Energy (EBCE) and Pacific as the electricity provider while PG&E is also the natural gas provider for the City. They are responsible for transmitting electricity and natural gas to all land uses within its service area, including the Draft Housing Opportunity Sites. Development considered part of the cumulative analysis includes buildout of local General Plans.

PG&E is subject to the requirements set forth and/or enforced by the CPUC. The need for electric and natural gas infrastructure would be addressed on a case-by-case basis for each cumulative project, and would be subject to CPUC requirements, similar to those applicable to the project. Therefore, cumulative impacts related to electric power and natural gas transmission facilities would be less than significant. Therefore, the proposed project would not have a cumulatively considerable contribution to a cumulative impact regarding electricity and natural gas.

4.17 Wildfire

This section evaluates potential wildfire impacts that could arise from implementation of the proposed HEU. The wildfire analysis consists of a summary of the existing conditions in Berkeley, the regulatory framework, a discussion of the potential wildfire impacts from development during the planning period of the HEU, and mitigation measures to lessen or avoid the potential impacts.

4.17.1 Setting

Wildfire Fundamentals

A wildfire is an uncontrolled fire in an area of extensive combustible fuel, including vegetation and structures. Wildfires differ from other fires in that they take place outdoors in areas of grassland, woodlands, brushland, scrubland, peatland, and other wooded areas that act as a source of fuel or combustible material. In addition, buildings may become involved if a wildfire spreads to adjacent communities. The primary factors that increase an area's susceptibility to wildfire include slope and topography, vegetation type and condition, and weather and atmospheric conditions.

The Governor's Office of Planning and Research (OPR) has recognized that although high-density structure-to-structure loss can occur, structures in areas with low- to intermediate-density housing were most likely to burn, potentially due to intermingling with wildland vegetation or difficulty of firefighter access. In general, increasing density decreases risk of wildfire. The risk of loss of human life, property, natural resources, or economic assets from wildfire is highest at the Wildland-Urban Interface (WUI), which are areas of urban development located adjacent to or even within wildland areas. Additionally, with high winds and low humidity, a wildfire beginning in the WUI area can quickly spread outside of the WUI, as was seen in historical fires in Berkeley. Regions of dense, dry vegetation, particularly in canyon areas and hillsides, pose the most significant potential for wildfire risks.

Approximately one-third of houses in California are currently within a WUI area (OPR 2020). It is important to note that there are varying definitions of what constitutes a WUI, and some local or regional agencies consider some areas to be WUI that are not defined as Wildland Interface or Intermix zones under the Wildland-Urban Interface Building Standards in Title 24, Part 2 of the California Code of Regulations (CCR); these standards are discussed under *Regulatory Setting* below.

The indirect effects of wildland fires can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large, intense fires can harm the soil, waterways, and the land itself. Soil exposed to extreme heat may lose its capacity to absorb moisture and support life.

Wildfire has three basic elements: how and where its ignition occurred; how and why it moves across a landscape from its point of origin; and the fire's nature upon arrival at a location important to the City. In general, a fire's nature is defined by eight characteristics:

1. Direction of the advance of the fire front
2. Speed of the advance of the fire front (rate of spread)
3. Mechanism causing the advance
4. Duration at any one location
5. Structure-related consumption of fuels

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6. Flame length
7. Intensity
8. Gaining control

A fire front's direction of travel is primarily determined by the direction of prevailing winds, geographic aspect, and condition of the fuels in the advanced direction. The speed of a fire front's advance results from conditions at the site of the currently burning material and of lands in the advance direction of the fire. As a fire advances, the overriding influences determining its speed are prevailing wind speed, terrain slope gradient, dominant fuel size classes, and fuel continuity.

Wildfires advance by two principal mechanisms, combustion resulting from radiant heating and remote ignition resulting from ember production. Fire stays at one location primarily due to the size and class of the material being consumed. Grass formations are dominated by low volumes of very "fine" fuels and, depending on the level of dryness, can be consumed, with the fire advancing, in a matter of minutes. On the other hand, tree-dominated formations have significantly greater volumes of available fuel and many larger-sized pieces. Fires can remain at these locations for days, often weeks, and sometimes months (on heavily wooded conifer sites).

Fires burn where fuels are available, which can include vegetation and structures. For example, fires in grasslands burn at one level set by the height of the grass, while fires in brushlands can burn surface fuels and typically consume the stems and leafy crowns to the full height of the plants. Fires in tree formations have a much more complex pattern of movement-based primarily on the continuity (or "connectedness") of the fuels.

Flame lengths are generally determined by the volume of fuels burning, the amount of time to total consumption, and the height of the species in the composition. Grassland produces flame lengths typically ranging from one to three feet as they are composed of low volumes of fine materials that are consumed quickly. Flame lengths are at their maximum when the material is dry. Brush formations can produce flame lengths from 4 to 10 feet. Native oak-dominated hardwood formations can generate 20- to 40-foot flame lengths and stands of exotics, such as *Eucalyptus globulus* or *E. cinerea*, or dense conifer stands, over 100 feet. Flame length is important as it sets the distance over which radiant heating-related combustion can occur.

The temperature achieved in a wildfire is directly related to the amount of cellulosic material available for consumption. Grasslands have very low amounts and attain lower temperatures but woodland, characterized by large amounts of highly concentrated cellulosic material, can attain temperatures on the order of 1,800 degrees Fahrenheit.

Gaining control over a wildfire's behavioral character is the objective of response efforts. Grassland fires, burning in low fuel volume, rapid consumption, and at a single level are the easiest to bring under control. On the other end, fires that are burning in high fuel volumes, full spectrum size classes, and entire stand structure involvement, can require days, weeks, even months, to bring under complete control.

Slope and Aspect

According to CAL FIRE, sloping land increases susceptibility to wildfire because fire typically burns faster up steep slopes, and they may hinder firefighting efforts (CAL FIRE 2007b). Following severe wildfires, sloping land is also more susceptible to landslide or flooding from increased runoff during substantial precipitation events. Aspect is the direction that a slope faces, and it determines how much radiated heat the slope will receive from the sun. Slopes facing south to southwest will

receive the most solar radiation and are warmer and drier than slopes facing a northerly to northeasterly direction, increasing the potential for wildfire ignition and spread (University of California 2018).

Vegetation

Vegetation is fuel to a wildfire, and it changes over time with seasonal growth and die-back. The relationship between vegetation and wildfire is complex, but generally some vegetation is naturally fire resistant, while other vegetation is extremely flammable. Some plant types in California landscapes are fire resistant, while others are fire-dependent for their seed germination cycles.

Wildfire behavior depends on the type of fuels present, such as ladder fuels, surface fuels, and aerial fuels. Surface fuels include grasses, logs, and stumps low to the ground. Ladder fuels, such as tall shrubs, young trees, and the lowest branches of mature trees, provide a path for fire to climb upward into the crowns of trees. Aerial fuels include upper limbs, foliage, and branches not in contact with the ground. Ample spacing in between tree crowns and trimming of lower branches close to the ground is effective at preventing fire from either igniting the crown of a tree or spreading from an ignited tree to adjacent trees; conversely, closely packed trees with low branches are especially susceptible to crown ignition and spread (CAL FIRE 2020a). Weather and climate conditions, including drought cycles, can lead to dry vegetation with low moisture content, increasing its flammability.

Weather and Atmospheric Conditions

Wind, temperature, and relative humidity are the most influential weather elements in fire behavior and susceptibility (CAL FIRE 2020a). Fire moves faster under hot, dry, and windy conditions. Wind may also blow embers ahead of a fire, causing its spread. Drought conditions lead to extended periods of excessively dry vegetation, increasing the fuel load and ignition potential.

According to data collected by the East Bay Municipal Utility District (EBMUD), most precipitation falls between November and May and very little falls between late spring and early fall with an average annual rainfall of 25 inches (EBMUD 2020). May through September is the driest time of the year and coincides with what has traditionally been considered the fire season in California. However, increasingly persistent drought and climatic changes in California have resulted in drier winters, and fires during the autumn, winter, and spring months are becoming more common. Prevailing winds in Berkeley called Diablo Wind are generally hot, dry wind from the northeast. A catastrophic fire in Berkeley is most likely to occur under these Diablo Wind conditions. Historically, these winds were associated with the 1991 East Bay Hills fire and the 1923 Berkeley Fire, which burned from Wildcat Canyon to Shattuck Avenue in central Berkeley.

Citywide Conditions

Berkeley faces an ongoing threat from urban and wildland fire. Berkeley's dense development pattern, characterized by older structures including high-rise buildings, multi-storied residential units, and various warehouse, manufacturing, and commercial properties, makes Berkeley susceptible to fire. Berkeley also faces a significant wildland fire danger from its hillsides where the wildland and residential areas interface.

The fire threat is most common during the dry months of May through October and can become extreme when the warm, dry Diablo winds blow out of the northeast. The Diablo winds can be strong and make fires challenging to control. In addition, these wildfires can move with breathtaking

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speed, down from the ridge in 30 minutes, expanding to one square mile in one hour, and then consuming hundreds of residences in one day. There have been 14 wildland fires from 1923 – 1991. This includes the Tunnel Fire in 1991 which destroyed more than 3,354 dwellings in Berkeley and Oakland and claimed 25 lives (Berkeley 2019).

Very High Fire Hazard Severity Zone

In California, State and local agencies share responsibility for wildfire prevention and suppression and federal agencies take part as well. Federal agencies are responsible for federal lands in Federal Responsibility Areas (FRA). The State of California has determined that some non-federal lands in unincorporated areas with watershed value are of statewide interest and have classified those lands as State Responsibility Areas (SRA). CAL FIRE manages SRAs. All incorporated areas and unincorporated lands not in FRAs or SRAs are classified as Local Responsibility Areas (LRA).

While nearly all of California is subject to some degree of wildfire hazard, there are specific features that make certain areas more hazardous. CAL FIRE is required by law to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors (Public Resources Code 4201-4204, California Government Code 51175-89). As described above, the primary factors that increase an area's susceptibility to fire hazards include slope, vegetation type and condition, and atmospheric conditions. CAL FIRE maps fire hazards based on zones, referred to as Fire Hazard Severity Zones (FHSZ). There are three levels of severity: 1) moderate FHSZs; 2) high FHSZs; and 3) Very High Fire Hazard Severity Zones (VHFHSZ). Only the VHFHSZs are mapped for LRAs. Each of the zones influence how people construct buildings and protect property to reduce risk associated with wildland fires. However, none of the fire zones specifically prohibit development or construction. To reduce fire risk under State regulations, development within VHFHSZs must comply with specific building and vegetation management requirements intended to reduce property damage and loss of life in those areas.

CAL FIRE develops initial boundaries for VHFHSZs throughout California, but the final boundaries of a VHFHSZ are adopted by each jurisdiction. The VHFHSZ formally adopted by the City is larger than originally proposed by CAL FIRE, and includes City of Berkeley Fire Zones 2 and 3, as well as approximately 36 individual parcels located near or adjacent to the VHFHSZ. The Wildfire Urban Interface area in Berkeley is the same as the VHFHSZ.

As shown in Figure 4.17-1, much of the Berkeley Hills in the eastern portion of Berkeley lies in a VHFHSZ. Berkeley is also within an LRA and the areas adjacent to the east of Berkeley are within an SRA. Figure 4.17-2, shows the 82 EIR sites inventory locations and the VHFHSZ. Most of the residential areas in this part of Berkeley are also zoned R-1, R-2, and R-2A, districts where density increases are also proposed in the HEU.

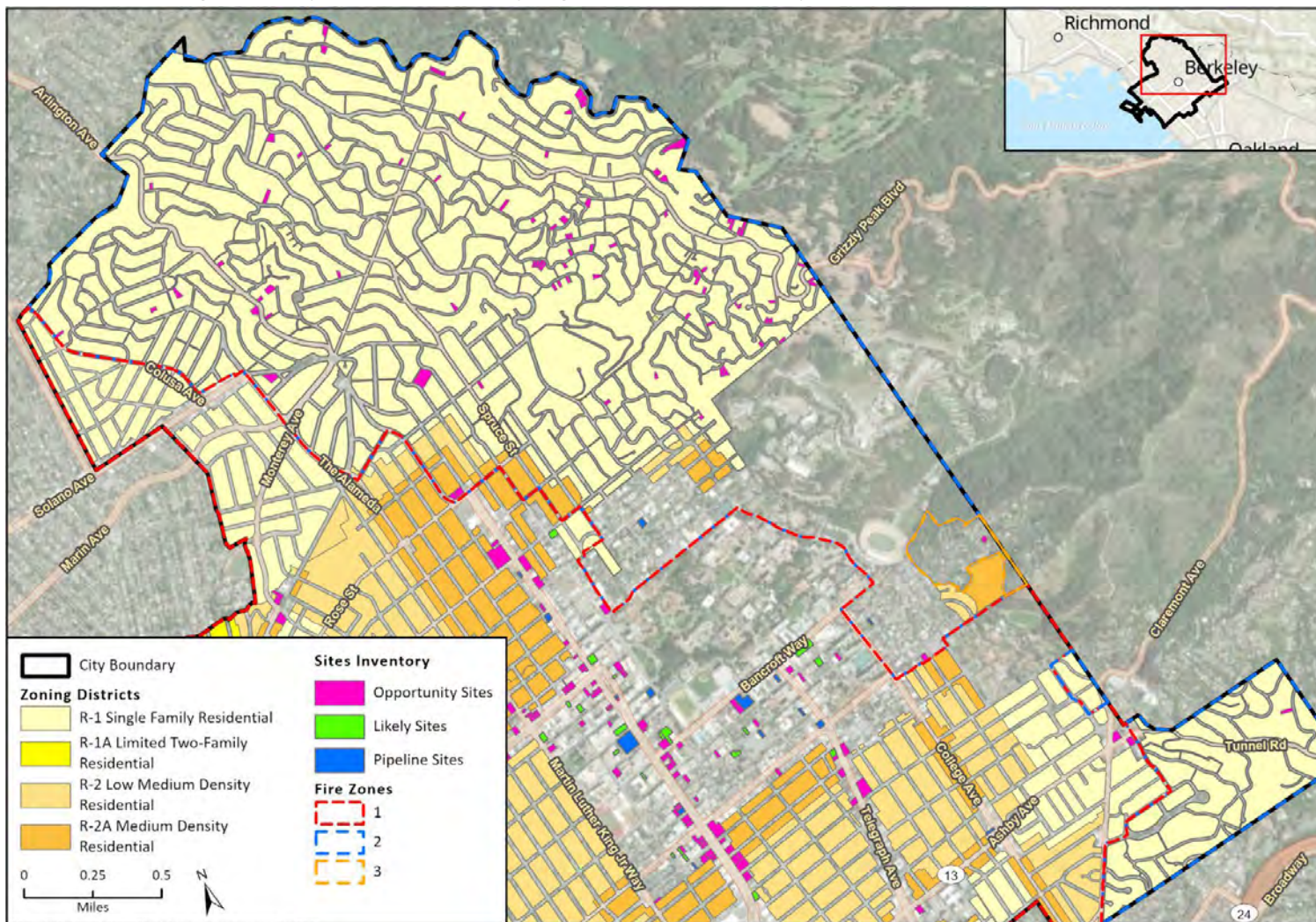
Figure 4.17-1 Berkeley Fire Zones



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Figure 4.17-2 Housing Inventory Sites and the Very High Fire Hazard Severity Zone



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 Additional data provided by the City of Berkeley, 2022.

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 Fig 4.17-2 SHHSZ and Sites

Berkeley Fire Zones

Since the early 20th century, the City of Berkeley has established and adjusted fire zones in Berkeley. While the zones were initially established to address urban fire issues, they have evolved to designate the City's WUI fire hazard. Currently, the Berkeley Fire Department currently has divided the city into Fire Zones 1, 2, and 3, designated in order of ascending fire risk.

Fire Zone 3 is the Panoramic Hill area; Fire Zone 2 covers the remainder of the city's eastern hills; Fire Zone 1, covers the rest of the City west of the hills. Fire Zones 2 and 3 currently include about 8,300 properties. These zones have the strictest fire prevention standards in the City for issues such as building materials for new structures. The City also enforces vegetation management measures in these areas.

4.17.2 Regulatory Setting

a. Federal Laws, Regulations, and Policies

The Disaster Mitigation Act of 2000

The Disaster Mitigation Act of 2000 requires a state-level mitigation plan as a condition of disaster assistance and provides funding to communities developing their own mitigation plans through the Pre-Disaster Mitigation Grant Program. There are two different levels of state disaster plans: "Standard" and "Enhanced." States that develop an approved Enhanced State Plan can increase the amount of funding available through the Hazard Mitigation Grant Program. The Act also established new requirements for local mitigation plans. The City of Berkeley's 2019 Local Hazard Mitigation Plan, adopted as an Appendix to the Disaster Preparedness and Safety Element of the General Plan, meets requirements of the Disaster Mitigation Act of 2000.

National Fire Plan

The National Fire Plan was developed in August 2000, following a historic wildfire season. Its intent is to establish plans for active response to severe wildfires and their impacts to communities while ensuring sufficient firefighting capacity. The plan addresses firefighting, rehabilitation, hazardous fuels reduction, community assistance, and accountability.

b. State Laws, Regulations, and Policies

California Board of Forestry

The Board of Forestry maintains fire safe road regulations, as part of CCR Title 14. This includes requirements for road width, surface treatments, grade, radius, turnarounds, turnouts, structures, driveways, and gate entrances. These regulations are intended to ensure safe access for emergency wildland fire equipment and civilian evacuation.

California Fire and Building Codes (2019)

The California Fire Code is Chapter 9 of CCR Title 24. It establishes the minimum requirements consistent with nationally recognized good practices to safeguard public health, safety, and general welfare from the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structure, and premises, and to provide safety and assistance to firefighters and emergency responders during emergency operations. It is the primary means for authorizing and enforcing

procedures and mechanisms to ensure the safe handling and storage of any substance that may pose a threat to public health and safety. The California Fire Code regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. The California Fire Code and the California Building Code (CBC) use a hazard classification system to determine what protective measures are required to protect fire and life safety. These measures may include construction standards, separations from property lines and specialized equipment. To ensure that these safety measures are met, the California Fire Code employs a permit system based on hazard classification. The provisions of this Code apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure or any appurtenances connected or attached to such building structures throughout California.

More specifically, the Fire Code is included in CCR Title 24. Title 24, part 9, Chapter 7 addresses fire-resistances-rated construction; CBC (Part 2), Chapter 7A addresses materials and construction methods for exterior wildfire exposure; Fire Code Chapter 8 addresses fire related Interior finishes; Fire Code Chapter 9 addresses fire protection systems; and Fire Code Chapter 10 addresses fire related means of egress, including fire apparatus access road width requirements. Fire Code Section 4906 also contains existing regulations for vegetation and fuel management to maintain clearances around structures. These requirements establish minimum standards to protect buildings located in FHSZs within SRAs and WUI Fire Areas. This code includes provisions for ignition-resistant construction standards for new buildings.

Wildland-Urban Interface Building Standards

On September 20, 2007, the Building Standards Commission approved the Office of the State Fire Marshal's emergency regulations amending the CCR Title 24, Part 2, known as the 2007 CBC. These codes include provisions for ignition-resistant construction standards in the WUI.

Interface zones are areas with dense housing adjacent to vegetation that can burn and meeting the following criteria:

1. Housing density class 2 (one house per 20 acres to one house per 5 acres), class 3 (more than one house per 5 acres to one house per acre), or class 4 (more than one house per acre)
2. In Moderate, High, or Very High Fire Hazard Severity Zone
3. Not dominated by wildland vegetation (i.e., lifeform not herbaceous, hardwood, conifer, or shrub)
4. Spatially contiguous groups of 30-meter cells¹ that are 10 acres and larger

Intermix zones are housing development interspersed in an area dominated by wildland vegetation and must meet the following criteria:

1. Not interface
2. Housing density class 2
3. Housing density class 3 or 4, dominated by wildland vegetation
4. In Moderate, High, or Very High Fire Hazard Severity Zone
5. Improved parcels only
6. Spatially contiguous groups of 30-meter cells 25 acres and larger

¹ Note that "30-meter cells" refers to satellite mapping or Geographic Information Systems (GIS) data, and indicates data is presented as 30-meter by 30-meter squares in the source maps used to determine zone types.

Influence zones have wildfire-susceptible vegetation up to 1.5 miles from an interface zone or intermix zone (CAL FIRE 2019b). While the 2007 CBC creates WUI definitions for interface, intermix and influence zones in order to apply required construction standards, many local and regional entities use their own definitions of WUI areas for other purposes, ranging from simple resident awareness and public outreach to further municipal-level standards. Berkeley is most vulnerable to wind-driven fire incident originating in an area adjacent to Berkeley's eastern border, in land owned by UC Berkeley, the Lawrence Berkeley Laboratory, the East Bay Regional Park District, within the City of Oakland or within Contra Costa County. The wildfire risk is worsened by the area's mountainous topography, limited water supply, and minimal access and egress routes.

The California Fire Plan

The Strategic Fire Plan for California is the State's road map for reducing the risk of wildfire. The most recent version of the plan was finalized in January 2019 and directs each CAL FIRE Unit to address and meet incremental requirements to achieve four specific goals by 2023, including improving core capabilities, enhancing internal operations, ensuring health and safety, and building an engaged workforce (CAL FIRE 2019). A core element of the plan is increasing staffing levels from 2.67 employees per position to 3.11 employees per position to ensure adequate staffing during times of increased mobilization.

California Office of Emergency Services

The California Office of Emergency Services (CalOES) prepares the State of California Multi-Hazard Mitigation Plan (SHMP). The SHMP identifies hazard risks and includes a vulnerability analysis and a hazard mitigation strategy. The SHMP is federally required under the Disaster Mitigation Act of 2000 for the State to receive Federal funding. The Disaster Mitigation Act of 2000 requires a state mitigation plan as a condition of disaster assistance.

Fire Risk Reduction Communities

Assembly Bill (AB) 1823 (2019) amended PRC Section 4290.1 to require that, on or before July 1, 2022, the State Board must develop criteria for and maintain a list of local agencies considered to be a "Fire Risk Reduction Community" located in the SRA or VHFHSZ, identified pursuant to GC § 51178, that meet best practices for local fire planning. Criteria that must be used to develop the Fire Risk Reduction Community list include recently developed or updated CWPPs, adoption of the board's recommendations to improve the Safety Element, participation in Fire Adapted Communities and Firewise USA programs, and compliance with the Board's minimum fire safety standards.

In 2022, the City of Berkeley applied for and was accepted onto the inaugural Fire Risk Reduction Communities List.

State Emergency Plan

The foundation of California's emergency planning and response is a statewide mutual aid system which is designed to ensure that adequate resources, facilities, and other support are provided to jurisdictions whenever their own resources prove to be inadequate to cope with a given situation.

The California Disaster and Civil Defense Master Mutual Aid Agreement (California Government Code Sections 8555–8561) requires signatories to the agreement to prepare operational plans to use within their jurisdiction, and outside their area. These plans include fire and non-fire

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emergencies related to natural, technological, and war contingencies. The State of California, all State agencies, all political subdivisions, and all fire districts signed this agreement in 1950.

Section 8568 of the California Government Code, the “California Emergency Services Act,” states that “the State Emergency Plan shall be in effect in each political subdivision of the state, and the governing body of each political subdivision shall take such action as may be necessary to carry out the provisions thereof.” The Act provides the basic authorities for conducting emergency operations following the proclamations of emergencies by the Governor or appropriate local authority, such as a City Manager. The provisions of the Act are reflected and expanded on by appropriate local emergency ordinances. The Act further describes the function and operations of government at all levels during extraordinary emergencies, including war.

All local emergency plans are extensions of the State of California Emergency Plan. The State Emergency Plan conforms to the requirements of California’s Standardized Emergency Management System (SEMS), which is the system required by Government Code 8607(a) for managing emergencies involving multiple jurisdictions and agencies (CalOES 2020). SEMS incorporates the functions and principles of the Incident Command System (ICS), the Master Mutual Aid Agreement, existing mutual aid systems, the operational area concept, and multi-agency or inter-agency coordination. Local governments must use SEMS to be eligible for funding of their response-related personnel costs under state disaster assistance programs. The SEMS consists of five organizational levels that are activated as necessary, including: field response, local government, operational area, regional, and state. CalOES divides the state into several mutual aid regions. The County of Alameda is located in Mutual Aid Region II, which includes Del Norte, Humboldt, Mendocino, Sonoma, Lake, Napa, Marin, Solano, Contra Costa, San Francisco, San Mateo, Alameda, Santa Clara, Santa Cruz, San Benito, and Monterey Counties (CalOES 2021). The City of Berkeley’s 2016 Emergency Operations Plan is aligned with the State Emergency Plan and comports with all SEMS requirements.

Government Code Sections 65302 and 65302.5, Senate Bill 1241 (Kehoe) of 2012

Senate Bill (SB) 1241 requires cities and counties to address fire risk in SRAs and VHFHSZs in the safety element of their general plans. On July 29, 2019, the Board of Forestry and Fire Protection completed its review of Berkeley’s Disaster Preparedness and Safety Element; the City accepted the Board’s recommendations.

The bill also amended CEQA to direct amendments to the *CEQA Guidelines* Appendix G environmental checklist to include questions related to fire hazard impacts for projects located in or near lands classified as SRAs and VHFHSZs. In adopting these Guidelines, the Governor’s Office of Planning and Research recognized that generally, low-density, leapfrog development may create higher wildfire risks than high-density, infill development.² In general, the Draft Housing Opportunity Sites would not be considered leapfrog development sites as they are located near and amongst existing development.

California Public Utilities Commission General Order 166

General Order 166 Standard 1.E requires that investor-owned utilities (IOU) develop a Fire Prevention Plan which describes measures that the electric utility will implement to mitigate the threat of power-line fires generally. Additionally, this standard requires that IOUs outline a plan to

² “Leapfrog development” describes the construction of new development at a distance from existing developed areas, with undeveloped land between the existing and new development.

mitigate power line fires when wind conditions exceed the structural design standards of the line during a Red Flag Warning in a high fire threat area. Fire Prevention Plans created by IOUs are required to identify specific parts of the utility's service territory where the conditions described above may occur simultaneously. Standard 11 requires that utilities report annually to the California Public Utilities Commission (CPUC) regarding compliance with General Order 166 (CPUC 2017). Pacific Gas and Electric Company (PG&E) provides the electrical utility infrastructure for the City of Berkeley. The most recently available report for PG&E that discusses a Wildfire Mitigation Plan is dated February 5, 2021 (PG&E 2021). PG&E has developed an interim fire threat map that shows high fire threat districts according to CPUC. Berkeley is graded in both High Fire District Tier 2 and Tier 3.

California Government Code 51182 and Assembly Bill 3074

California Government Code 51182 sets the requirements for creation of defensible space zones around residential units built in WUI areas. Currently the law requires two zones of vegetation management reaching to 30 feet and 100 feet from the residence. In 2020 the legislature passed Assembly Bill 3074, which requires the Board of Forestry to develop regulations for a third zone within 0 to 5 feet of the home by January 1, 2023. Local and regional fire districts are tasked with regulation and inspection of defensible spaces. As of July 1, 2021, documentation of a compliant Defensible Space Inspection by the jurisdictional fire district is a condition of the sale or transfer of any residential property located in a high FHSZ or VHFHSZ.

Evacuation Route Requirements

In 2019, two separate bills (AB 747 and SB 99) were signed into law that added new requirements for disclosing residential development without at least two points of ingress and egress and addressing the presence and adequacy of evacuation routes in the general plan safety element.

SB 99 (2019) amended GC § 65302(g) to require that, upon the next revision of the housing element on or after January 1, 2020, the safety element must be updated to include information identifying residential developments in hazard areas that do not have at least two emergency evacuation routes (i.e., points of ingress and egress) (GC § 65302(g)(5)).

AB 747 (2019) added GC § 65302.15, which requires that, upon the next revision of a Local Hazard Mitigation Plan (LHMP) on or after January 1, 2022, or beginning on or before January 1, 2022, if a local jurisdiction has not adopted a LHMP, the safety element must be reviewed and updated as necessary to identify evacuation routes and their capacity, safety, and viability under a range of emergency scenarios. If a LHMP, emergency operations plan, or other document that fulfills commensurate goals and objectives, a local agency may use that information in the safety element to comply with this requirement by summarizing and incorporating by reference such a plan or other document into the safety element. The 2019 Local Hazard Mitigation Plan maps Berkeley's Designated Emergency Access and Evacuation Routes.

These new requirements apply to all types of hazards in the safety element and are not unique to fire.

c. Local Laws, Regulations, and Policies

City of Berkeley General Plan

The Disaster Preparedness and Safety Element of the City's General Plan includes the following policies related to wildfires:

Policy S-1: Response Planning. Ensure that the City's emergency response plans are current and incorporate the latest information on hazards, vulnerability, and resources.

Policy S-2: Neighborhood Preparation and Education. Continue to provide education, emergency preparedness training and supplies to the community at the neighborhood level to support neighborhood- and community-based disaster response planning.

Policy S-3: Public Information. Publicize disaster preparedness efforts (such as CERT) and expand public awareness of specific hazards and risks by making available all relevant information including mapping and reports on various hazards, information on vulnerability and risk reduction techniques, evacuation routes, and emergency services, and information on financial and technical assistance resources.

Policy S-4: Special Needs Communities. Continue to work with the social service community to ensure the safety of special needs populations.

Policy S-5: The City's Role in Leadership and Coordination. Ensure that the City provides leadership and coordination of the private sector, public institutions, and other public bodies in emergency preparedness.

Policy S-6: Damage Assessment. Establish and maintain a rapid damage assessment capability.

Policy S-7: Emergency Water Supply. Protect life and property in the event of an earthquake by evaluating alternate drinking water and firefighting water supply in the event of failure of the East Bay Municipal Utility District (EBMUD) water supply.

Policy S-8: Continuity of Operations. Provide for the continuation of City government and services following a major disaster.

Policy S-9: Pre-Event Planning. Establish pre-event planning for post-disaster recovery as an integral element of the emergency preparedness programs of the City Council and each of the City departments.

Policy S-10: Sustaining Mitigation Initiatives. Improve public awareness and establish new public/private partnerships to implement mitigation initiatives in the community and region through programs such as Project Impact.

Policy S-21: Fire Preventive Design Standards. Develop and enforce construction and design standards that ensure new structures incorporate appropriate fire prevention features and meet current fire safety standards.

Policy S-22: Fire Fighting Infrastructure. Reduce fire hazard risks in existing developed areas.

Policy S-23: Property Maintenance. Reduce fire hazard risks in existing developed areas by ensuring that private property is maintained to minimize vulnerability to fire hazards.

Policy S-24: Mutual Aid. Continue to fulfill legal obligations and support mutual aid efforts to coordinate fire suppression within Alameda and Contra Costa Counties, Oakland, the East Bay Regional Park District, and the State of California to prevent and suppress major wildland and urban fire destruction.

Policy S-25: Fire Safety Education. Use Fire Department personnel to plan and conduct effective fire safety and prevention programs.

City of Berkeley 2019 Local Hazard Mitigation Plan

The City of Berkeley's 2019 LHMP is an appendix to the Disaster Preparedness and Safety Element of the City of Berkeley's General Plan. It contains the following mitigation actions to lessen the severity of wildfire:

- Reduce fire risk in existing development through fire code updates and enforcement.
- Reduce fire risk in existing development through vegetation management
- Explore possibility of a program to inspect vacant lots throughout the City
- Manage and promote pedestrian evacuation routes in Fire Zones 2 and 3.
- Improve responder access and community evacuation in Fire Zones 2 and 3 through roadway maintenance and appropriate parking restrictions.
- Explore other strategies for reducing the potential threats of overhead utility wires.
- Complete the Phase 3 undergrounding study spearheaded by the Undergrounding Subcommittee in collaboration with Public Works Department, Fire Department, and Public Works Commission. This is a citywide study to underground overhead wires on arterial and collector streets as a component of maintaining ingress and egress on roads during a major disaster.
- Work with EBMUD to ensure an adequate water supply during emergencies and disaster recovery.
- Define clean air standards for buildings during poor air quality events and use those standards to assess facilities for the Berkeley community.
- Implement energy assurance strategies at critical City facilities.
- Work with partners to identify additional non-City critical facilities and develop strategies to provide clean backup power at these sites.

City of Berkeley Fire Wildfire Evacuation Risk Mitigation Ordinance

The primary purpose of Berkeley Municipal Code (BMC) Chapter 12.99, Wildfire Hazard Evacuation Risk Mitigation Ordinance, is to permit and promote the construction of accessory dwelling units and junior accessory dwelling units while reducing potential impacts of new development in Fire Zones 2 and 3 as designated in the BMC Chapter 19.48 and the Hillside Overlay District. These areas have unique conditions and hazards that require additional restrictions on accessory dwelling units and junior accessory dwelling units (ADUs and JADUs) because of impacts of traffic flow and public safety consistent with Government Code 65852.2. Government Code 65852.2, subdivision (a)(1)(a), allows local agencies to regulate ADUs based on adequacy of water and sewer service, and the impacts of traffic flow and public safety. The Hillside Overlay District (as defined in BMC 23.306.020) includes all lots within Berkeley's designated Very High Fire Hazard Severity Zone that are zoned R-1H (Single-Family Residential—Hillside Overlay), R-2H (Restricted Two-Family Residential— Hillside Overlay), R-2AH (Restricted Multiple-Family Residential—Hillside Overlay), or ES-R (Environmental

Safety-Residential). The Hillside Overlay District contains narrow, steep, and winding streets with substandard widths, steep slopes, sharp curves, and hairpin turns, which make vehicle navigation in this area difficult. Residents in the path of a major fire will attempt to leave via private vehicles with personal belongings. When there is another major hills area fire or an earthquake, emergency access and egress on substandard roadways will be constrained, leading to traffic backups and people needing to abandon vehicles and evacuate on foot. Evacuees will conflict with responders as they try to fight the fire and reach others who need help to leave.

These challenges are especially prevalent in Fire Zone 3, the Panoramic Hill area. Panoramic Way is the only paved road into and out of this neighborhood. It forms a single loop, 12-18' wide, that begins and ends just south of Memorial Stadium. The street's narrow width and hairpin turns make it barely accessible to fire apparatus, which are required to perform three-point-turns to ascend the Hill. Panoramic Way's narrow width also means that at many points the road is not wide enough to allow vehicles to pass one another. Under normal conditions, vehicles responding to medical emergencies have been impeded by commercial vehicles, trash collection trucks, and illegally-parked personal vehicles.

Further intensifying the neighborhood's vulnerability, the Hayward Fault runs under Panoramic Way, just before it crosses the parking lot and bisects the Memorial Stadium. In a catastrophic Hayward Fault earthquake, the Panoramic Hill area will likely be isolated from the City's emergency services, all of which lie on the other side of the fault to the west (with the exception of Fire Station 7, which lies north of the UC Berkeley campus).

Berkeley Fire Code

BMC Chapter 19.48 adopts the California Fire Code and also includes additional provisions known as the Berkeley Fire Code. Berkeley requires that buildings in Fire Zones 2 and 3 (as described above under "Wildland-Urban Interface Building Standards"), which include the hillside areas, utilize ignition resistive construction materials, employ preventative construction methods, and create defensible space in order to make them resistant to wildfire. Specific projects must file a Fire Protection Plan, or Vegetation Management Plan, which is a document prepared for a Wildland-Urban Interface Fire Area. It describes ways to minimize and mitigate potential for loss from wildfire exposure. The Fire Protection Plan shall be prepared in accordance with the latest standards of the Berkeley Fire Department. The Fire Protection Plan must be submitted to, reviewed and approved by the Berkeley Fire Department and must be enforced and maintained by the responsible party or their designated agent. The Berkeley Fire Department may charge an appropriate fee for the review, approval and processing of the Fire Protection Plan in accordance with the hourly rate established by City Council resolution.

Berkeley Emergency Operations Plan

The City's 2016 Emergency Operations Plan (EOP) establishes procedures to implement Berkeley's Multi-Agency Coordination (MAC) System. The MAC system is the element of Berkeley's Emergency Management Program focused on response to and short-term recovery from emergencies, disasters, incidents and events. Berkeley's MAC System is made up of the facilities, equipment, personnel, communications and procedures that City government and external partners use to respond. This EOP Base Plan establishes the authorities, structures and responsibilities of the Policy Level, departments and the Emergency Operations Center (EOC). It describes the City's coordination with County, regional, State and federal entities, as well as external Berkeley partners.

d. Local Guidance and Resources

Extreme Fire Weather

The National Weather Service declares a “Red Flag Warning” when low humidity and high winds combine for elevated fire risk. The Berkeley Fire Department declares “Extreme Fire Weather”—a Berkeley-specific designation—when forecasted wind speeds and humidity levels during a Red Flag Warning would produce especially risky conditions in Berkeley.

The Berkeley Fire Department recommends that residents make plans to leave Fire Zones 2 and 3 during periods of Extreme Fire Weather. Extreme Fire Weather is more rare than Red Flag Warnings. In 2020, Berkeley had 25 days of Red Flag Warnings and only two days of Extreme Fire Weather. This narrow range of weather conditions is when the most destructive fires occur.

Berkeley Ready Household Fire Weather Planning Tool

The City of Berkeley’s Household Fire Warning Tool assists residents in making important decisions on how keep their household safe during fire weather. This tool is a step-by-step guide to making a fire weather plan for a resident’s household ahead of time to address unpredictable and rapidly changing fire conditions individual awareness, family preparedness, and self-sufficiency for potential catastrophes or emergencies. The guide helps residents identify the following:

- Identify the trigger for a resident leaving the hills
- Decide where to go
- Identify evacuation routes

Berkeley Ready Wildfire Evacuation Checklist

The City of Berkeley has developed a Wildfire Evacuation Checklist for residents. This checklist provides guidance on what to include in a Go-Bag, how to prepare your home of a wildfire, guidance on checking on others, and other extra items to bring. The Berkeley Ready Wildfire Evacuation Checklist also provides information on how to set up emergency alerts and locate evacuation zones.

4.17.3 Impact Analysis

a. Methodology and Significance Thresholds

Impacts related to wildfire hazards and risks were evaluated using FHSZ mapping for the City of Berkeley, aerial imagery, and topographic mapping. Impacts of development anticipated during the planning period of the HEU would be considered significant if the proposed project would exacerbate existing conditions.

According to Appendix G of the CEQA Guidelines, development may have a significant adverse impact if the project is in or near SRAs or VHFHSZs and would do any of the following:

1. Substantially impair an adopted emergency response plan or emergency evacuation plan;
2. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire;

3. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or what may result in temporary or ongoing impacts to the environment; or,
4. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

As shown on Figure 4.17-1, Berkeley is not an SRA and the City is locally responsible for any sites located within its boundary. However, as shown on Figure 4.17-2, the EIR sites inventory includes 282 inventory sites located Zone 1, 81 inventory sites in Zone 2, and 1 inventory site in Zone 3. These opportunity sites are currently vacant and/or underutilized sites and are not associated with actual development proposals. In addition, the proposed HEU would encourage additional housing and a mix of housing types in the middle housing rezoning districts (R-1, R-1A, R-2, R-2A, and MU-R). These districts are shown on Figure 2-5 in Section 2, *Project Description*. Most of the area within the VHFHSZ is within the R-1, R-2, and R-2A districts so some of the additional infill middle housing could be in the VHFHSZ.

b. Project Impacts and Mitigation Measures

Threshold 1: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

Impact W-1 DEVELOPMENT DURING THE PLANNING PERIOD OF THE PROPOSED HEU WOULD OCCUR IN HILLSIDE AREAS LOCATED NEAR A STATE RESPONSIBILITY AREA AND IN A VERY HIGH FIRE HAZARD SEVERITY ZONE. THE CITY EMPLOYS MULTIPLE STRATEGIES TO REDUCE THE IMPAIRMENT THE HEU WOULD HAVE ON EMERGENCY RESPONSE AND EVACUATION. NONETHELESS, THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.

As discussed in Section 2, *Project Description*, the project identifies housing sites that will accommodate the RHNA plus an additional buffer; up to a total of 19,098 units. For the purposes of the EIR analysis, 82 are in inventory sites located in Fire Zones 2 and 3, which are considered the VHFHSZ, as shown on Figure 4.17-2. These sites are currently vacant and/or underutilized and are not associated with actual development proposals. Further, the proposed HEU would facilitate increased residential development in the R-1, R-2, and R-2A districts which includes portions within the VHFHSZ.

The City of Berkeley's Emergency Operations Plan (EOP) employs multi-agency coordination to establish proper disaster prevention or mitigate the impacts brought forth by an unexpected emergency event. With coordination set up between County, regional, State, and federal entities, the plan implements an all-hazards approach to prepare the City for a wide range of events of varying magnitudes and intensities.

The City also provides multiple evacuation preparedness strategies. This includes public communication strategies including real-time evacuation mapping using the Zonehaven system, as well as mass notification methods such as AC Alert messages that are sent to phones and emails and the 1610 AM radio system that can broadcast instructions and warnings to the public. Further, Measure FF, which was approved by Berkeley voters in November 2020, is funding additional evacuation management efforts including a network of emergency warning sirens that will alert residents to evacuate or shelter in place by broadcasting spoken, hyperlocal messages.

While increasing residential density in the Berkeley Hills would not necessarily increase the risk of wildfire, as discussed below under Impact W-2, construction of individual housing developments in VHFHSZs could interfere with adopted emergency response or evacuation plans as a result of temporary construction activities within rights-of-way. However, temporary construction barricades or other construction-related obstructions used for project development that could impede emergency access would be subject to the City's Standard Conditions of Approval, which include the following condition to prepare a Transportation Construction Plan subject to City review and approval:

Transportation Construction Plan. The applicant and all persons associated with the project are hereby notified that a Transportation Construction Plan (TCP) is required for all phases of construction, particularly for the following activities:

- Alterations, closures, or blockages to sidewalks, pedestrian paths or vehicle travel lanes (including bicycle lanes);
- Storage of building materials, dumpsters, debris anywhere in the public ROW;
- Provision of exclusive contractor parking on-street; or
- Significant truck activity.

The applicant shall secure the City Traffic Engineer's approval of a TCP. Please contact the Office of Transportation at 981-7010, or 1947 Center Street, and ask to speak to a traffic engineer. In addition to other requirements of the Traffic Engineer, this plan shall include the locations of material and equipment storage, trailers, worker parking, a schedule of site operations that may block traffic, and provisions for traffic control. The TCP shall be consistent with any other requirements of the construction phase.

Contact the Permit Service Center (PSC) at 1947 Center Street or 981-7500 for details on obtaining Construction/No Parking Permits (and associated signs and accompanying dashboard permits). Please note that the Zoning Officer and/or Traffic Engineer may limit off-site parking of construction-related vehicles if necessary to protect the health, safety or convenience of the surrounding neighborhood. A current copy of this Plan shall be available at all times at the construction site for review by City Staff.

Implementation of a TCP would limit the extent to which development during the planning period of the HEU would impair or physically interfere with adopted emergency response or evacuation procedures.

As discussed above and in the regulatory setting, established regulations and safety procedures have been implemented to prevent the impairment of emergency response plans and emergency evacuation plans, including through Fire Department review and approval of construction plans to ensure compliance with the Fire Code. Additional fire evacuation improvements are included within the Wildfire Hazard Evacuation Risk Mitigation Ordinance, giving local agencies the capability to regulate ADU's in accordance to how they would impact traffic flow and water services. Also included in the ordinance is BMC 23.306.020B, which places restrictions on ADU's and JADU's located within the Hillside Overlay District, as they can lead to impacts on traffic flow and public safety if left unmanaged.

Based on all of the above, the City's existing regulations and project review procedures would help to ensure that additional impacts related to impairment of adopted emergency response plan or emergency evacuation plan would be avoided. However, based on this being a plan level analysis

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and the potential for unusual site-specific conditions, project specific or road specific conditions, and the general ongoing fire risk in the Berkeley Hills, future development under the proposed HEU may result in impacts. An impact to emergency operations and evacuations could occur from construction of future projects if they were to result in temporary road closures, therefore potentially reducing available emergency evacuation routes. Construction of new development could involve temporary lane closures or otherwise block traffic that could impede the ability of emergency vehicles to access the area. This would be limited to the duration of the construction period and only affect streets adjacent to the construction site.

The additional residents in the area associated with new residential development could further inhibit safe evacuation by putting more residents in the area that would require evacuation on narrow hillside roadways. Additional residents in the hills could also make wildfire risk more acute because more people will need to use evacuation routes at the same time. As such, impacts related to emergency response plan or emergency evacuation plan would be potentially significant.

Mitigation Measures

The City of Berkeley requires a Transportation Construction Plan as a Standard Condition of Approval and would evaluate emergency access and consistency with the Fire Code and other development requirements as part of the development review process. Further, the City is undertaking emergency evacuation planning as part of citywide efforts described above. No other mitigation measures are feasible to address potential site-specific impacts.

Significance After Mitigation

Implementation of the City's Standard Conditions of Approval for a Transportation Construction Plan requires applicants to prepare a TCP which has the effect of ensuring that emergency evacuation routes are not obstructed or hindered in the event of a wildfire. This would reduce the potential for development under the proposed HEU to hinder or impair emergency access and evacuation during construction. Future development would also be required to comply with applicable development standards including the Berkeley Fire Code. No additional mitigation measures beyond adherence to existing procedures are required or are feasible. Nonetheless, for some development projects, impacts may result from the potential for unusual site-specific or road conditions, project characteristics, and the general ongoing fire risk in the Berkeley Hills. Based on this, impacts would be significant and unavoidable.

Threshold 2: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project due to slope, prevailing winds, and other factors, exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Impact W-2 IMPLEMENTATION OF THE PROPOSED HEU WOULD ENCOURAGE DEVELOPMENT IN THE HILLSIDE AREAS LOCATED NEAR A STATE RESPONSIBILITY AREA AND IN A VERY HIGH FIRE HAZARD SEVERITY ZONE. NEW DEVELOPMENT WOULD BE REQUIRED TO COMPLY WITH EXTENSIVE REGULATIONS AND FIRE SAFETY PROVISIONS IN THE BERKELEY MUNICIPAL CODE, INCLUDING THE FIRE CODE. BASED ON THE EXISTING REGULATORY FRAMEWORK AND PROJECT REVIEW PROCESS WITH BERKELEY FIRE DEPARTMENT, IMPACTS WOULD BE GENERALLY AVOIDED. HOWEVER, IT REMAINS POSSIBLE THAT EVEN WITH EXISTING REGULATIONS, CONSTRUCTION OR OTHER HUMAN ACTIVITIES RELATED TO DEVELOPMENT IN OR NEAR AN SRA OR IN A VHFHSZ COULD EXACERBATE WILDFIRE RISK AND EXPOSE EXISTING AND NEW RESIDENTS TO POLLUTANT CONCENTRATIONS AND UNCONTROLLED SPREAD OF A WILDFIRE. ADDITIONALLY, BY INCREASING THE POPULATION OF THE WUI AREA, MORE PEOPLE WILL BE DIRECTLY THREATENED WHEN A WILDLAND FIRE OCCURS. THEREFORE, THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.

The proposed HEU would encourage development in the R-1, R-2, and R-2A districts in a VHFHSZ. New housing in the VHFHSZ would not be likely to increase the likelihood of fire ignition or speed of spread. It is not expected that build out of the proposed HEU would increase fire risk because it would not create additional wildland spaces and therefore would not increase the extent of the wildland-urban interface. As documented by Keeley and Syphard in the International Journal of Wildland Fire (2018), in recent decades (since circa 1980), human-caused fires have been negatively correlated with population density, meaning more developed areas are less likely to be affected by wildfires throughout the State (Keeley and Syphard 2018) and suggesting that additional development would not necessarily lead to more wildfires.

Additionally, development would be required to comply with State and Local regulations. On a statewide level, the California Fire Code includes safety measures to minimize the threat of fire, including ignition-resistant construction with exterior walls of noncombustible or ignition resistant material from the surface of the ground to the roof system and sealing any gaps around doors, windows, eaves, and vents to prevent intrusion by flame or embers. Under the California Building Standards Code, construction would also be required to adhere to an assortment of building standards, including CCR Title 24, Part 2, which includes specific requirements related to exterior wildfire exposure. The Board of Forestry and Fire Protection, via CCR Title 14, sets forth the minimum development standards for emergency access, fuel modification, setback, signage, and water supply, which help prevent loss of structures or life by reducing wildfire hazards.

On a local level, the Berkeley Fire Code (Section 4907.1 of the City Code) states that buildings and structures within the VHFHSZ must maintain defensible space as outlined in Government Code 51175-51189 and Section 4908 of Berkeley's Municipal Code. Section 16.20.020(G) of the Subdivision Ordinance (Title 16) outlines that the landowner or developer must install water mains, fire hydrants, and fire appurtenances to supply water for fire suppression conformance with district standards. As outlined within the Berkeley Fire Code Section 4902.1, projects within the Wildland Urban Interface must provide a Fire Protection Plan (FPP), which prescribes actions taken to reduce the potential for wildfire exposure through mitigation measures and risk minimization. These actions include utilizing ignition-resistive construction materials, employing preventative construction methods, and creating defensible space. The City requires that the responsible party formulates the FPP based on the Berkeley Fire Department's latest standards. The plan is then sent to the Berkeley Fire Department for review and approval. The Fire Department ensures that the

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plan is properly executed by the responsible party or their designated agent. During Red Flag Warnings, the City also imposes limitations on spark-producing construction activities. Government Code 65852.2 subdivision (a)(1)(A) allows agencies to regulate ADUs with consideration to how they will impact water and sewer services as well as the flow of traffic and public safety. With exclusive focus on the VHFHSZ, BMC 23.306.020B places restrictions on ADUs and JADUs as they have impacts on the flow of traffic as well as public safety.

Increasing development in the VHFHSZ directly increases the number of residents exposed to a wildland-urban interface fire. Additionally, increased density in this area will further complicate evacuation for existing and new residents. Based on documented experiences from the 1991 East Bay Hills Fire, the City expects evacuation during a Diablo-wind-driven fire to be a challenge, requiring many to abandon vehicles and continue on foot. The evacuation challenges in the area are present due to the existing population density, roadway network, and hilly topography, and development in the area will further complicate these efforts. Acknowledging the intractable challenge posed by the VHFHSZ's density, roadways, and topography, the City has evolved its recommendations for fire evacuation. The City encourages residents of the VHFHSZ to understand fire weather and preemptively relocate out of the Berkeley hills during Extreme Fire Weather events. This is to facilitate evacuation in advance of any wildfire event, should one occur. Tools and resources are provided on the City of Berkeley's website to better equip the public to plan for this early departure, as well as for wildfire evacuation response, including a detailed map of the City's emergency access and evacuation routes.

Based on all of the above, the City's extensive regulations and project review scheme would ensure that impacts related to future development under the proposed HEU in the VHFHSZ areas exacerbating wildfire risks and resulting in risks to people and structures from pollutants would be avoided. However, based on the potential for site-specific conditions or hazards; project characteristics that are unique; and the general risk of fire in the Berkeley Hills, impacts may occur. Additionally, by increasing the population of the VHFHSZ, more people will be directly threatened and evacuation and firefighting efforts will be further challenged when a fire occurs. Therefore, impacts are potentially significant.

Mitigation Measures

The City of Berkeley requires various wildfire risk mitigation actions of development projects in the VHFHSZ as part of the Berkeley's Municipal Code, Berkeley Fire Code, and Berkeley Fire Wildfire Evacuation Risk Mitigation Ordinance. Additionally, a Fire Protection Plan is required to reduce the potential for loss due to wildfire exposure through mitigation measure and risk minimization, in accordance with the Berkeley Fire Department's latest standards. No other mitigation measures are feasible.

Significance After Mitigation

Compliance with existing City regulations and the implementation of the City's requirement for a Fire Protection Plan to be prepared for development of housing projects in the Wildland-Urban Interface Fire Area would reduce the potential to exacerbate wildfire risk during construction and after projects are constructed. This would reduce the severity of potential impacts related to exposure to pollutant concentrations from a wildfire or the likelihood of wildfire ignition. No additional mitigation measures beyond adherence to existing procedures are required or are feasible. Nonetheless, for some development projects, even with implementation of these wildfire prevention measures, impacts may result from the potential for unusual site-specific or road

conditions, project characteristics, and the general ongoing fire risk in Berkeley Hills. Additionally, by increasing the population of the VHFHSZ, more people will be directly threatened and evacuation and firefighting efforts will be further challenged when a fire occurs. Based on this, impacts would be significant and unavoidable.

Threshold 3: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project expose people or structures to significant risks, including downslopes or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Impact W-3 IMPLEMENTATION OF THE PROPOSED HEU WOULD ENCOURAGE DEVELOPMENT OF HOUSING ON INVENTORY SITES AND IN THE HILLSIDE OVERLAY DISTRICT LOCATED NEAR A STATE RESPONSIBILITY AREA AND IN A VERY HIGH FIRE HAZARD SEVERITY ZONE. THE PROPOSED HEU COULD EXPOSE PEOPLE AND STRUCTURES TO RISK DUE TO THE TERRAIN AND SLOPE IN THE BERKELEY HILLS. THIS COULD RESULT IN POTENTIAL RISKS SUCH AS LANDSLIDES. THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.

Berkeley faces an ongoing threat from a wildland fire along its hillsides, where wildland and residential areas intermix. This includes proposed housing in in the VHFHSZ under the proposed HEU. If a severe wildfire were to occur in the hillside area of Berkeley, structures downslope would be at risk of landslides.

Berkeley's LHMP provides information on the landslide risk in the hills area. As described in the LHMP, Berkeley's WUI fires can increase the area's risk of landslides. When all supporting vegetation is burned away, hillsides become destabilized and prone to erosion. The charred surface of the earth is hard and absorbs less water. When winter rains come, this leads to increased runoff, erosion, and landslides in hilly areas.

Erosion and land slippage after fires can also lead to temporary or permanent displacement and property damage or loss. In addition, the increase in housing in a VHFHSZ could increase the exposure and vulnerability of people living downslope in these areas.

Development that could occur during the HEU period, such as increased development as a result of rezoning, could expose people and structures to landslides by encouraging development in the hillsides in a VHFHSZ where landslides could occur and could be exacerbated after a wildfire. The City requires a Geotechnical and Seismic Hazard Investigation for all development projects located in a State-designated Seismic Hazard Zone for liquefaction, landslide, or earthquake fault rupture, as defined by the California Seismic Hazards Mapping Act and shown on the "Environmental Constraints Map," sites in the VHFHSZ would be required to prepare a site-specific geotechnical investigation. This would involve identifying the degree of potential hazards, providing design parameters for the project based on the hazard, and describing appropriate design measures to address hazards. Future development would be required to adhere to such recommendations to mitigated landslide hazards. Nonetheless, because of the hillside slopes, landslide susceptibility, and wildfire susceptibility, development under the proposed HEU potentially exposes people and structures to significant risks, including landslides, as a result of runoff, post-fire slope instability, or drainage changes. Therefore, this impact is potentially significant.

Mitigation Measures

The City of Berkeley requires Geotechnical and Seismic Hazard Investigation for development projects located in a State-designated Seismic Hazard Zone and requires numerous wildfire risk reduction measures for projects in the VHFHSZ as part of the Berkeley Municipal Code, Berkeley Fire

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Code, and Berkeley Fire Wildfire Evacuation Risk Mitigation Ordinance. No other mitigation measures are feasible.

Significance After Mitigation

BMC requirement of site-specific geotechnical investigations would reduce potential impacts related to landslides for individual future development projects. These requirements would reduce potential impacts such as landslides due to runoff, post-fire slope instability, or drainage changes following a potential wildfire. However, based on the potential for unusual site-specific conditions or project characteristics, and the general ongoing fire risk in the Berkeley Hills, impacts of a housing development project under the HEU may still occur. Therefore, impacts would be significant and unavoidable.

<p>Threshold 4: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?</p>
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Impact W-4 IMPLEMENTATION OF THE PROPOSED HEU WOULD ENCOURAGE DEVELOPMENT OF HOUSING ON INVENTORY SITES AND IN THE R-1, R-2, AND R-2A DISTRICTS LOCATED NEAR A STATE RESPONSIBILITY AREA AND IN A VERY HIGH FIRE HAZARD SEVERITY ZONE. HOWEVER, THE AREA IS ALREADY DEVELOPED AND SERVED BY EXISTING INFRASTRUCTURE AND IT IS NOT ANTICIPATED THAT INSTALLATION OF NEW INFRASTRUCTURE OR A SUBSTANTIAL INCREASE IN THE MAINTENANCE OF EXISTING INFRASTRUCTURE WOULD OCCUR. SHOULD ADDITIONAL MAINTENANCE OR CONSTRUCTION OF SUCH INFRASTRUCTURE OCCUR, IMPLEMENTATION OF MITIGATION MEASURE W-1 WOULD REDUCE THE RISK OF FIRE DURING CONSTRUCTION. OVERALL, THIS IMPACT WOULD BE SIGNIFICANT AND UNAVOIDABLE.

The proposed HEU would encourage development in a VHFHSZ, but this area is already zoned for residential development and is developed with residences. The project would not place development in new areas such that new or extended roadways, power lines, or other utilities would be required. Therefore, it is not anticipated that the project would require the installation of new infrastructure because the area is already serviced by such infrastructure. As discussed in Section 4.16, *Utilities and Service Systems*, it is not anticipated that new water utility infrastructure would be required. The Berkeley Fire Code authorizes the Fire Chief to specify water supply and road design standards (such as the number of roads required for access to the site, the road width, and weight capacity). New development could require the installation and maintenance of new or improved roads, emergency water sources, power lines or other utilities, the construction and operation of which could introduce potential sources of wildfire ignition, such as the sparking of an overhead power line or construction equipment or the operation of resident vehicles. Compliance with existing State and local fire safety measures would substantially reduce the risk of wildfire. Nonetheless, although ignition sources have declined markedly in recent decades, one notable exception is powerline ignitions (Keeley and Syphard 2018). Wildfire ignitions due to infrastructure (particularly aboveground power lines) may exacerbate fire risk or may result in temporary or ongoing impacts to the environment. Because new development under the HEU would occur as infill development in previously developed areas of Berkeley situated in the VHFHSZ, increased risk associated with new development would most likely be limited to the installation period of new associated infrastructure. Although impacts are unlikely based upon existing regulations, impacts may occur should new development require the installation and maintenance of new or improved

roads, emergency water sources, power lines or other utilities, or if there are unusual site-specific conditions or aspects of the infrastructure project that would increase the general ongoing fire risk in the Berkeley Hills. Impacts are determined to be potentially significant.

Mitigation Measures

The following mitigation measure is required.

W-1 Undergrounding of Power Drops in the VHFHSZs

The City shall require that new or upgraded power drops located in the very high fire hazard severity zone be installed underground. Prior to the issuance of a building permit, the applicant shall submit plans for undergrounding of power drops.

Significance After Mitigation

Implementation of Mitigation Measure W-1, would reduce the potential for impacts under this threshold by placing power lines underground in areas subject to wildfire risk. However, it may not be feasible to impose this requirement on all projects. Additionally, potentially unusual site-specific conditions or aspects of the infrastructure project, including power line installation, may result in wildfire impacts from the installation or maintenance of infrastructure required by build out under the HEU. This impact would therefore remain significant and unavoidable.

c. Cumulative Impacts

A project's environmental impacts are "cumulatively considerable" if the "incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (*CEQA Guidelines* Section 15065[a][3]). The geographic scope for cumulative wildfire impacts is Berkeley and its immediate surroundings. This geographic scope is appropriate for wildfire, because wildfires can cause impacts to large areas. As described in Section 3, *Environmental Setting*, Development that is considered part of the cumulative analysis includes buildout under the propose HEU and buildout under the University of California, Berkeley's Long Range Development Plan (LRDP) and Housing Projects #1 and #2.

In and near Berkeley, the VHFHSZs are located largely along the WUI borders with the hilly northwestern areas, such as those shown in Figure 4.17-1. Within the geographic scope for this cumulative analysis, wildfire-related impacts could be significant if development is in or near Berkeley's VHFHSZ. The proposed LRDP update would involve improvements and development in Campus Park, the Hill Campus West, the Hill Campus East, the Clark Kerr Campus, and the City Environs Properties, portions of which fall within the VHFHSZ. Development within the VHFHSZ could exacerbate wildfire risks. Like development under the proposed HEU, new development under the LRDP would be subject to statewide standards for fire safety in the California Fire Code. Nonetheless, because the proposed HEU could exacerbate wildfire risk in Berkeley's VHFHSZ and development under the proposed LRDP update could also exacerbate such risks, a cumulative impact would occur and the proposed projects' contribution would be cumulatively considerable.

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5 Other CEQA Required Discussions

This section discusses the potential significant environmental effects that cannot be avoided, growth-inducing impacts, and irreversible environmental impacts associated with the implementation of the proposed HEU.

5.1 Significant Environmental Effects that Cannot be Avoided

Section 15126.2(b) of the CEQA Guidelines requires that an EIR describe any significant impacts that cannot be avoided, even with the implementation of feasible mitigation measures. Implementation of the proposed HEU could result in significant and unavoidable impacts related to historical resources (see Section 4.4, *Cultural Resources*), construction noise (see Section 4.11, *Noise*), and wildfire (see Section 4.17, *Wildfire*).

5.2 Growth Inducement

Section 15126(d) of the CEQA Guidelines requires a discussion of a proposed project's potential to foster economic or population growth, including ways in which a project could remove an obstacle to growth. Growth does not necessarily create significant physical changes to the environment. However, depending upon the type, magnitude, and location of growth, it can result in significant adverse environmental effects. The proposed project's growth inducing potential is therefore considered significant if project-induced growth could result in significant physical effects in one or more environmental issue areas.

5.2.1 Population Growth

As discussed in Section 4.12, *Population and Housing*, the development facilitated by the proposed HEU would accommodate regional and local population growth that generates the need for additional housing, including in Berkeley. The proposed project would address the Regional Housing Needs Allocation (RHNA) assigned by ABAG of 8,934 units, of which 3,854 units must be for lower income households and could provide a buffer of an estimated 10,164 units. To meet the objectives of the RHNA and provide sufficient capacity for housing development, the Housing Element identifies sites suited for residential development, and identifies implementation programs and zoning policies to encourage additional housing for all segments of the population. This includes the already-accomplished rezoning for the North Berkeley and Ashby BART stations, programs to encourage additional residential development in the R-1, R-1A, R-2, R-2A, and MU-R districts, and zoning map and height amendments in the Southside area for additional student housing development. Therefore, the Housing Element Update would align with ABAG's RHNA determination and the State's statutory requirements, which are established based on anticipated growth within the city and region.

Overall, full buildout could facilitate an estimated population growth of approximately 47,443 new residents by 2031 based on the maximum facilitated buildout of 19,098 housing units. However, actual development will depend on many factors not reflected in the inventory, including the pace of construction and absorption of new units according to economic cycles, land availability, capital

and financing, construction material and labor costs and availability, and so on. Growth anticipated under the proposed HEU is intended to meet regional housing needs over the longer term. Given that the State is currently in an ongoing housing crisis due to an insufficient housing supply and mismatched incomes and housing costs, the additional units and affordability programs would further assist in addressing the existing crisis and meeting housing needs. Therefore, the project would not result in substantial unplanned population growth, either directly or indirectly.

As discussed in Section 4.2, *Air Quality*, and Section 4.7, *Greenhouse Gas Emissions*, anticipated development under the proposed HEU would not generate air quality or GHG emissions that would result in an unavoidably significant impact. The project would facilitate development of housing on vacant and/or underutilized sites within Berkeley's urban footprint and mostly near transit corridors, BART stations, and Priority Development Areas such as the Southside area, which would reduce the usage of single-occupancy vehicles and vehicle miles traveled (VMT). Furthermore, since the proposed housing inventory sites would be in areas with existing services and infrastructure, and the HEU itself does not propose new roads or infrastructure extensions, the HEU would not induce substantial unplanned growth in Berkeley.

Therefore, any population growth associated with the project would not result in significant long-term physical environmental effects.

5.2.2 Economic Growth

The proposed project would involve new residential development and would not directly result in new commercial or other uses that would generate employment opportunities. Development facilitated by the project would generate temporary employment opportunities during construction. Because construction workers would be expected to be drawn from the existing regional work force, project construction would not be growth-inducing from an employment standpoint. The proposed project would not induce substantial economic expansion to the extent that direct physical environmental effects would result.

5.2.3 Removal of Obstacles to Growth

Berkeley is primarily urbanized with existing infrastructure, including roads, water supply, sewers, storm drains and gas and electric power. The city's existing roadway network would accommodate reasonably foreseeable development under the HEU. In the event that roadway upgrades are required to serve specific future development, such upgrades would likely be minor (e.g., lane reconfiguration or restriping) and are not anticipated to include the construction of new roads. Although new residential development under the HEU may require minor utility upgrades or expansion (e.g., water line connections, site drainage design) on a project-by-project basis, such upgrades would be intended to accommodate the growth planned under the HEU within the City and would not induce growth outside of the city. As discussed in Section 4.16, *Utilities and Service Systems*, such upgrades would likely occur within existing utility easements and would not result in new areas of disturbance. Furthermore, EBMUD's Municipal Wastewater Treatment Plant (MWWTP) serving the City has adequate capacity to treat project-generated sewage, and sufficient water supplies are available to serve reasonably foreseeable development under the HEU; therefore, the project would not necessitate construction of a new wastewater treatment facility or a new potable water facility. Generally, the HEU is specifically intended to concentrate new housing development in areas that are already served by infrastructure in order to ensure that infrastructure is utilized efficiently and in a manner that reduces the environmental impacts of development.

Concentrating development in the urbanized areas near transportation corridors and Priority Development Areas would generally avoid impacts to sensitive environmental conditions, such as agricultural, biological, and mineral resources, and minimize impacts since new development built to current standards would generally improve some existing conditions, such as storm water runoff, surface water quality, and reduce the potential for substantial seismic damage. The HEU would not result in unplanned growth, but rather would upzone sites in R-1, R-1A, R-2, R-2A, and MU-R districts as well as increase housing density in the Southside to ensure that projected growth is accommodated. The HEU is aimed to satisfy the anticipated population growth in the region in an efficient manner consistent with State, regional, and City policies. Therefore, the HEU would efficiently utilize existing infrastructure, reduce regional congestion, and improve air quality.

5.3 Significant and Irreversible Environmental Changes

Section 15126.2(c) of the CEQA Guidelines requires a discussion of any significant irreversible environmental changes that would be caused by a proposed project. Specifically, Section 15126.2(c) states:

Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irreversible commitments of resources should be evaluated to assure that such current consumption is justified.

Construction activities related to reasonably foreseeable development under the Housing Element Update would result in the irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels (including fuel oil), natural gas, and gasoline for automobile and construction equipment, and energy used in manufacturing construction materials. However, as discussed in Section 4.5, *Energy*, use of such resources not be unusual as compared to common construction projects and would not substantially affect the availability of such resources.

Resources that would be consumed as a result of operation of reasonably foreseeable development under the proposed HEU include water. However, as discussed in Section 4.16, *Utilities and Service Systems*, the amount and rate of water consumption would not result in significant environmental impacts related to the unnecessary, inefficient, or wasteful use of resources.

The proposed project would also irreversibly increase local demand for non-renewable energy resources such as petroleum products and natural gas. However, increasingly efficient building design would offset this demand to some degree by reducing energy demands. As described in Section 4.5, *Energy*, development facilitated by the project would be subject to the energy conservation requirements of the California Energy Code (Title 24, Part 6, of the California Code of Regulations and the California Green Building Standards Code (Title 24, Part 11 of the California Code of Regulations). The California Energy Code provides energy conservation standards for all new and renovated residential buildings, and the Green Building Standards Code requires solar access, natural ventilation, and stormwater capture. In addition, new construction would be required to be all electric pursuant to the requirements of BMC Section 12.80 (with limited exemptions and exceptions), which would reduce consumption of nonrenewable energy resources. Consequently, development facilitated by the project would not use unusual amounts of energy or construction

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materials and impacts related to consumption of non-renewable and renewable resources would be less than significant. Consumption of these resources would occur with any development in the region and is not unique to the proposed project.

The proposed HEU demonstrates that the city can accommodate the RHNA for Berkeley without rezoning and also includes implementation programs that would facilitate infill residential development on vacant, undeveloped, and underdeveloped sites in the City of Berkeley as well as locations where such development is encouraged by adopted plans due to their proximity to transit and transportation corridors. Construction and operation of the development facilitated by the project would involve an irreversible commitment of construction materials and non-renewable energy resources. Development would involve the use of buildings and associated infrastructure and landscaping. Consumption of these resources would occur with any development in the region and are not unique to the proposed project. While consumption of natural resources in the City would increase with implementation of the Housing Element Update due to development and associated population increases, it is also likely that in response to greenhouse gas reduction mandates, new technologies or systems will emerge, or will become more cost-effective or user-friendly, that will further reduce the City's reliance upon nonrenewable natural resources. Therefore, the Housing Element Update would not result in the wasteful or inefficient use of natural resources.

6 Alternatives

As required by Section 15126.6 of the *CEQA Guidelines*, this EIR examines a range of reasonable alternatives to the proposed project that would attain most of the basic project objectives (stated in Section 2, *Project Description*, of this EIR) but would avoid or substantially lessen the significant adverse impacts.

As discussed in Section 2, *Project Description*, the objectives for the proposed project are as follows:

1. Adopt policies and programs that meet the City's RHNA with the required buffer, provide additional housing opportunities consistent with other City priorities, remove governmental constraints to the maintenance, improvement and development of housing, and ensure ongoing compliance with State Housing Element law and the No Net Loss provisions of State law through the eight-year cycle.
2. Adopt policies and programs to encourage the development of affordable housing at a range of income levels consistent with RHNA, including at least 2,450 units for Very Low-Income households, at least 1,400 units for Low Income households, and at least 1,400 units for Moderate Income households.
3. Encourage the development of housing with access to transit, jobs, services, and community benefits in a manner that distributes affordable and special needs housing in high resource neighborhoods and affirmatively furthers fair housing.
4. Identify housing policies and programs that will conserve and rehabilitate existing units, provide services to increase housing opportunities for all residents of Berkeley, and increase the energy efficiency of both current and future housing units.

Included in this analysis are three alternatives, including the CEQA-required "no project" alternative, that involve changes to the project that may reduce the project-related environmental impacts as identified in this EIR. Alternatives have been developed to provide a reasonable range of feasible options to consider that would help decision makers and the public understand the general implications of revising or eliminating certain components of the proposed project.

The following alternatives are evaluated in this EIR:

- Alternative 1: No Project
- Alternative 2: No Rezoning in Hillside Overlay
- Alternative 3: No Middle Housing Rezoning

6.1 Alternative 1: No Project Alternative

6.1.1 Description

The "No Project" Alternative involves continued implementation of the existing 2015-2023 Housing Element as well as the City's existing plans and policies that would accommodate development in accordance with the existing land use designations. Table 6-1 outlines an estimation of housing units that would be potentially developed under the No Project Alternative. As shown in the table, this alternative assumes development of 12,450 units, or approximately 6,648 fewer units than the assumed development under the proposed HEU of 19,098 units.

Table 6-1 Housing Units under No Project Alternative

Type of Project	Number of Units
Entitled Projects	2,685
Pipeline Projects	2,415
North Berkeley and Ashby BART Station Projects	2,400
Accessory Dwelling Units	800
Additional 50% Anticipated Development ¹	4,150
Total	12,450

¹ Accounts for housing units within Area Plans (Adeline Corridor Plan, Downtown Area Plan, Southside Plan)

As stated in Section 2, *Project Description*, the City has determined based on the sites inventory that rezoning is not needed to meet the RHNA. However, recent development activity suggests current zoning alone does not deliver the level of deed-restricted affordable housing and economic diversity that the HEU aims to achieve. Therefore, while the No Project Alternative would partially meet Objective 1 by satisfying RHNA, it would not provide the same buffer as the proposed HEU. Further, the No Project Alternative would potentially not meet objectives 2, 3, and 4 to the same extent as with the policies and programs under the proposed HEU.

6.1.2 Impact Analysis

a. Aesthetics

There would be less overall development in the city under the No Project Alternative than there would be under the proposed HEU. Still, as with development under the proposed HEU, most development would occur in Transit Priority Areas and no significant aesthetic impacts would occur. Since less development would occur, there would be fewer possibilities for development to adversely affect scenic vistas. Impacts to scenic vistas would be less than significant, the same as under the proposed HEU and slightly reduced in comparison. Similar to the proposed project, development under the No Project Alternative would be required to comply with the City's development standards and requirements under the BMC that govern aesthetics, as well as policies within the City's Urban Design and Preservation Element. Overall, aesthetics impacts under the No Project Alternative would be less than significant, the same as under the proposed HEU, and slightly reduced in comparison.

b. Air Quality

The No Project Alternative would involve reduced buildout in the City compared to the proposed HEU, resulting in incrementally fewer vehicle trips and mobile emissions than would the proposed HEU. Nonetheless, development under existing plans and regulations would not conflict with the Bay Area Air Quality Management District's (BAAQMD) 2017 Clean Air Plan to reduce greenhouse gas (GHG) emissions or regional planning efforts to reduce vehicle miles traveled (VMT) and meet air quality standards. Therefore, this alternative would have a less than significant impact related to consistency with air quality plans, the same as under the proposed HEU.

Because of the reduced overall buildout, this alternative could involve less construction activity in the city and less overall emissions of criteria air pollutants during construction. Future discretionary projects in Berkeley, when proposed, would be required to undergo CEQA analysis to the extent they are not otherwise exempt, including an analysis of air quality impacts. Similar to the proposed

HEU, mitigation may be required to ensure compliance with the BAAQMD's current recommended basic control measures and the use of Tier 4 Final engines in construction equipment. The impact from construction emissions would remain less than significant with mitigation incorporated. The assumed reduction in buildout under this alternative would result in fewer vehicle trips and associated mobile emissions relative to the proposed HEU. Therefore, similar to the proposed HEU, operational emissions would not exceed the BAAQMD's significance thresholds. This impact would remain less than significant

Due to the reduction in construction emissions, this alternative also would result in lower overall emissions of toxic air contaminants (TACs) during construction. Future discretionary projects in Berkeley, when proposed, would be required to undergo CEQA analysis to the extent they are not otherwise exempt, including an analysis of air quality impacts. Similar to the proposed HEU, mitigation may be required to ensure TAC emissions do not substantially affect sensitive populations.

Similar to the proposed HEU, this alternative would not include uses that generate substantial odorous emissions. Therefore, the impacts related to odors would remain less than significant.

c. Biological Resources

There would be less overall development in the city under the No Project Alternative than there would be under the proposed HEU. As with development under the proposed HEU, development would occur within the city which is largely urbanized and lacking significant biological resources. Overall, biological resources impacts under the No Project Alternative would be slightly reduced compared to those than those under the proposed HEU and would remain less than significant.

d. Cultural Resources

As described in Section 4.4, *Cultural Resources*, there are various buildings within the city that may qualify as historic structures. Under the No Project Alternative there would be less overall development than under the proposed HEU; however, it is still possible that historic structures could be impacted by this development. Therefore, impacts to historical resources would be slightly reduced compared to the proposed project but would remain significant and unavoidable.

Development under this alternative could disturb unrecorded archaeological resources, human remains, and tribal cultural resources, similar to the proposed HEU. However, with adherence to existing regulations regarding the discovery of human remains and compliance with City of Berkeley standard conditions of approval, these impacts would remain less than significant, the same as under the proposed HEU, and would be slightly reduced.

e. Energy

Under the No Project Alternative, fewer total residential units would be developed, which would result in an incremental reduction in energy usage compared to the proposed project. Fewer residential units would decrease electricity and natural gas consumption compared to the proposed HEU, and fewer residents would decrease consumption of gasoline and diesel fuel compared to proposed HEU. Overall, energy impacts under the No Project Alternative would be reduced compared to those under the proposed HEU and impacts would remain less than significant.

f. Geology and Soils

Although the No Project Alternative would result in a reduced buildout compared to the proposed HEU, development could still potentially be subject to seismically-induced ground shaking and other seismic hazards, including liquefaction, landslides, unstable soils, soil erosion, and expansive soils. However, development under the No Project Alternative would be required to comply with policies and requirements within the California Building Code, the BMC, Berkeley General Plan, and the NPDES permit. Impacts would remain less than significant.

While the No Project Alternative would result in less development than the proposed HEU, ground disturbing construction activities in geologic units assigned a high or undetermined paleontological sensitivity could have the potential to significantly impact paleontological resources, similar to the proposed HEU. Therefore, mitigation measures may still be required for discretionary projects to reduce impacts to a less than significant level. However, it is likely that due to the reduced development under this alternative that fewer unidentified paleontological resources would be impacted than under the proposed HEU, making the potential impact less severe than the proposed HEU.

g. Greenhouse Gas Emissions

Under the No Project Alternative, fewer total residential units would be developed, which would result in a smaller anticipated population increase and less construction-related and operational emissions in comparison to buildout under the proposed HEU. This alternative would result in lower GHG emissions than the proposed HEU as it would result in less development. However, this alternative would also not increase the number of residential units within Priority Development Areas (such as in the Southside) and along transit corridors to the same extent as under the proposed HEU, and therefore would not reduce driving distances or encourage the use of transit as much as development under the proposed HEU. Nonetheless, this alternative would not conflict with plans or policies to reduce GHG emissions impacts and therefore those impacts would be less than significant, the same as under the proposed HEU.

h. Hazards and Hazardous Materials

The No Project Alternative would result in less development than the proposed HEU; however, the development allowed under this alternative could still occur within 0.25 mile of a school and could result in the release of hazardous materials. Just as with the proposed HEU, compliance with regional and federal regulations and compliance with policies within the Berkeley General Plan Safety Element and Environmental Management Element, as well as the Hazardous Materials Business Plan and the Local Hazard Mitigation Plan laid out by Berkeley and Alameda County would minimize the risk of releases and exposure to these materials. Impacts would be slightly reduced and would remain less than significant.

As discussed in Section 4.8, *Hazards and Hazardous Materials*, there are multiple locations within Berkeley that are designated as hazardous materials sites. While the No Project Alternative would result in less development overall, it could still occur on these sites. Future development would be subject to the City's Standard Conditions of Approval and the City's Toxics Management Division would evaluate projects to determine if Phase I/Phase II Environmental Site Assessments are required to characterize potential contamination and develop a soil and groundwater management plan to address hazards during construction and operation. Therefore, impacts would be slightly

reduced compared to the proposed HEU since there would be reduced development under this Alternative and impacts would remain less than significant.

i. Hydrology and Water Quality

There would be less overall development in the city under the No Project Alternative than there would be under the proposed HEU, resulting in less construction activities that could release materials and degrade water quality and less discharge to storm drains that could contaminate and affect downstream waters. Similar to the proposed HEU, development under the No Project Alternative would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge and would not substantially alter the drainage pattern on sites and increase surface runoff. Development would be required to comply with the NPDES Construction General Permit, NPDES MS4 General Permit, Provision C.3 of the Municipal Regional Stormwater Permit, the BMC, and the City's General Plan policies, which would reduce impacts to a less than significant level. Impacts under this alternative would be less than those of the proposed HEU due to reduced development and would remain less than significant.

j. Land Use and Planning

The No Project Alternative would involve continuing a pattern of development consistent with existing land use controls and area plans. The No Project Alternative would not physically divide an established community and would not conflict with Plan Bay Area 2050, the Berkeley General Plan, or the BMC. Impacts would be less than significant and the same as those of the proposed HEU.

k. Noise

The No Project Alternative would result in less development than the proposed HEU; however, this alternative would still generate construction and operational noise. Although development would be required to comply with daytime construction hours as set forth in the BMC and implement the City's Standard Conditions of Approval for construction noise, the type of construction equipment, proximity of sensitive receptors to the site, and overall duration of construction are still unknown. Therefore, as with the proposed HEU, construction noise impacts would remain significant and unavoidable, although slightly reduced in comparison with the proposed HEU.

Although operational noise associated with the No Project Alternative would still be regulated by respective standards in the BMC, such noise sources would occur to a lesser degree than under the proposed HEU. Nonetheless, on-site operational noise would remain typical of the urban environment and off-site traffic noise associated with development would not result in a perceptible increase in noise levels. Furthermore, while the No Project Alternative would subject less development to overhead flight patterns from airport, all development would be required to comply with State and local standards to reduce interior noise to acceptable levels. Impacts would remain less than significant.

Development under the No Project Alternative could generate vibration exceeding thresholds for building damage, particularly during construction, similar to the proposed HEU. Future discretionary projects in Berkeley, when proposed, would be required to undergo CEQA analysis to the extent they are not otherwise exempt, including an analysis of noise and vibration impacts. Similar to the proposed HEU, future discretionary projects in Berkeley, when proposed, would be required to implement the City's Standard Condition of Approval to control vibration such that vibration levels would not exceed the vibration criteria for building damage. Furthermore, as with the proposed HEU, it is not anticipated that operation of development under the No Project Alternative would

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involve activities that would result in substantial vibration levels, such as use of heavy equipment and impacts would remain less than significant.

Overall noise impacts under the No Project Alternative would be slightly reduced compared to the proposed HEU.

I. Population and Housing

The No Project Alternative would result in a smaller number of residential units and therefore would result in a smaller population increase than the proposed HEU. Assuming 2.5 persons per unit, the reduction of 6,648 fewer units than under the proposed HEU would reduce population growth by 16,620 people compared to the proposed HEU. Overall population growth would be approximately 30,823, bringing the city's population to 155,386. Similar to the proposed HEU, this would be consistent with State requirements for the RHNA and would be within the growth forecasts for Northwest Alameda County in Plan Bay Area 2050. The No Project Alternative would not involve the extension of roads or other infrastructure that could indirectly lead to population growth. Impacts would be less than significant and generally the same as under the proposed HEU.

m. Public Services and Recreation

The No Project Alternative would result in fewer residential units than the proposed HEU. Therefore, the increase in demand on public services, including police protection, fire protection, schools, and parks would be less than that of the proposed HEU. As with the proposed project, services would be adequate to service future demand; impacts would be slightly reduced compared to the proposed HEU and would remain less than significant.

n. Transportation

VMT under the No Project Alternative would be higher than under the proposed HEU, since it would not increase the number of residential units within Priority Development Areas (such as in the Southside) and along transit corridors to the same extent as under the proposed HEU, and therefore would not reduce driving distances or encourage the use of transit as much as development under the proposed HEU. Therefore, impacts to transportation would be greater than those of the proposed HEU. Nonetheless, it is anticipated that impacts would remain less than significant.

o. Tribal Cultural Resources

Under the No Project Alternative, fewer residential units would be constructed, which would result in a reduced likelihood of impacting tribal cultural resources. Future development would be required to comply with requirements of AB 52 and SB 18, as well as City regulations governing protection of tribal cultural resources and archaeological resources. As a result of consultation under required state laws, mitigation may be required if tribal cultural resources are present. Therefore, impacts to tribal cultural resources would be slightly reduced compared to those of the proposed HEU.

p. Utilities and Service Systems

Under the No Project Alternative, fewer residential units would be constructed and therefore the demand on utilities would be reduced compared to the proposed HEU. This includes a reduction in water supply requirements, wastewater generation, electricity use, solid waste generation, and

telecommunications. Impacts would be less than significant and reduced compared to those of the proposed HEU.

q. Wildfire

The No Project Alternative may result in fewer residential units being constructed in the City's Very High Fire Hazard Severity Zones (VHFHSZ). Therefore, impacts related to wildfire could be reduced when compared to the HEU. Nonetheless, with SB 9 (see explanation below under Alternative 2), development could still occur in the hillside areas such that the unavoidably significant wildfire impacts would not be avoided.

6.2 Alternative 2: No Rezoning in the Hillside Overlay

6.2.1 Description

One of the implementation programs of the proposed HEU is to increase density in the R-1 District. The program would specifically allow increases in the total number of units allowed on a lot, increase the total achievable floor area on a lot, and encourage a mix of unit sizes and densities, adjusting the level of discretion to allow approval of such projects with a Zoning Certificate. Under Alternative 2, this program would not apply to portions of the R-1 district within the Hillside Overlay (R-1H district), which is shown in Figure 6-1.

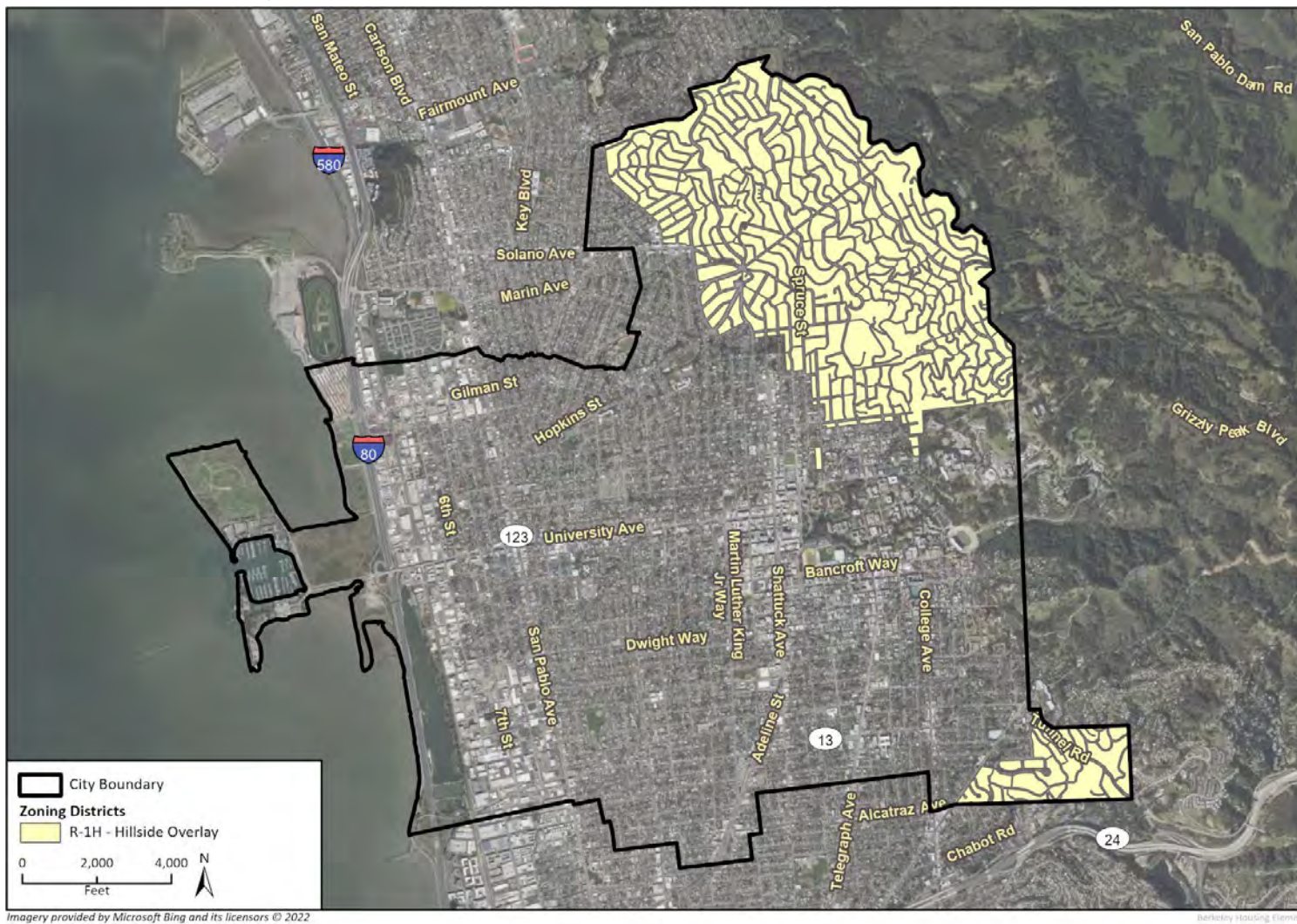
Without the rezoning in the R-1H district, approximately 150 units in the hillside area would not be built compared to buildout under the proposed HEU. However, if the R-1H district remains single family residential, SB 9 would apply there. SB 9, signed into law in 2021 and codified as Government Code sections 65852.21, 66411.7, and 66452.6, requires agencies to ministerially approve to up to two residential units on a parcel within a single-family residential zone if the development meets specific objective criteria. SB 9 also allows splitting one lot into two lots within a single-family residential zone and permitting up to two units on each parcel (four total dwelling units on what was formerly a single-unit lot) if the development complies with specific objective criteria. Based on SB 9 trends, it is anticipated that overall this alternative would not decrease development in the hillside overlay zone compared to buildout assumed under the proposed HEU. This alternative would meet the project objectives.

6.2.2 Impact Analysis

Because this alternative would involve the same buildout assumptions as under the proposed HEU, overall impacts with respect to aesthetics, air quality, biological resources, cultural resources, energy, geology and soils, GHG emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, public services, recreation, transportation, tribal cultural resources, and utilities and service systems would be the same under this alternative. The same mitigation measures would be required and the significant and unavoidable impacts related to historical resources and construction noise would not be avoided. With respect to wildfire, this alternative would not involve rezoning to increase allowed density in the VHFHSZ. Nonetheless, because development could still occur in the hillside areas in the VHFHSZ, the unavoidably significant wildfire impacts would not be avoided.

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Figure 6-1 Hillside Overlay District



6.3 Alternative 3: No Middle Housing Rezoning

6.3.1 Description

As discussed in Section 2, *Project Description*, the Middle Housing Rezoning program of the proposed HEU is intended to increase density in the R-1, R-1A, R-2, R-2A and MU-R districts. These districts are shown on Figure 2-5 in Section 2. The program would include Zoning Ordinance amendments that would allow increases in the total number of units allowed on a lot, increase the total achievable floor area on a lot, encourage a mix of unit sizes and densities, and adjust the level of discretion to approve such projects with a Zoning Certificate. For the purposes of this EIR, the Middle Housing Rezoning program was projected to result in 1,745 units over the Housing Element period.

Under Alternative 3, the Middle Housing Rezoning program would not be included in the Housing Element Update. Without Middle Housing Rezoning as part of the proposed project, approximately 975 units fewer units would be constructed compared to buildout under the proposed HEU, which constitute the effect of not rezoning the R-1A, R-2, R-2A and MU-R districts. As noted above in Alternative 2, the number of additional units in the R-1 district remains the same (770), whether as a result of rezoning or through utilization of SB 9 in a case where no rezoning would occur. Accordingly, the 770 units attributed to the R-1 district are not removed in the analysis of this Alternative. This alternative would meet all of the project objectives, but to a lesser degree than the proposed project, as it includes fewer units.

6.3.2 Impact Analysis

a. Aesthetics

There would be less overall development in the city under Alternative 3 than there would be under the proposed HEU. Still, as with development under the proposed HEU, most development would occur in Transit Priority Areas and no significant aesthetic impacts would occur. Since less development would occur, there would be fewer possibilities for development to adversely affect scenic vistas. Impacts to scenic vistas would be less than significant, the same as under the proposed HEU and slightly reduced in comparison. Similar to the proposed project, development under the Alternative 3 would be required to comply with the City's development standards and requirements under the BMC that govern aesthetics, as well as policies within the City's Urban Design and Preservation Element. Overall, aesthetics impacts under the Alternative 3 would be less than significant, the same as under the proposed HEU, and slightly reduced in comparison.

b. Air Quality

Alternative 3 would involve reduced buildout in the City compared to the proposed HEU, resulting in incrementally fewer vehicle trips and mobile emissions than would the proposed HEU. Nonetheless, development under existing plans and regulations would not conflict with the BAAQMD 2017 Clean Air Plan to reduce GHG emissions or regional planning efforts to reduce VMT and meet air quality standards. Therefore, this alternative would have a less than significant impact related to consistency with air quality plans, the same as under the proposed HEU.

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Because of the reduced overall buildout, this alternative could involve less construction activity in the city and less overall emissions of criteria air pollutants during construction. Nonetheless, future development under this alternative would be required to adhere to the City's standard condition of approval to reduce construction emissions and comply with BAAQMD's construction BMPs in accordance with Mitigation Measure AQ-1. Impacts associated with construction would be slightly increased compared to those under the proposed project but would remain less than significant with mitigation incorporated.

The assumed reduction in buildout under this alternative would result in fewer vehicle trips and associated mobile emissions relative to the proposed HEU. Therefore, similar to the proposed HEU, operational emissions would not exceed the BAAQMD's significance thresholds. This impact would remain less than significant.

Due to the reduction in construction emissions, this alternative also would result in lower overall emissions of toxic air contaminants (TACs) during construction. Nonetheless, construction of individual projects lasting longer than two months or placed within 1,000 feet of sensitive receptors could potentially expose nearby sensitive receptors to substantial pollutant concentrations. Therefore, construction impacts from TAC emissions would be potentially significant and Mitigation Measure AQ-2 would be required to reduce construction related impacts to a less than significant level. Like the proposed HEU, impacts would be less than significant with mitigation. Similar to the proposed HEU, this alternative would not include uses that generate substantial odorous emissions. Therefore, the impacts related to odors would remain less than significant.

c. Biological Resources

There would be less overall development in the city under Alternative 3 than there would be under the proposed HEU. As with development under the proposed HEU, development would occur within the city which is largely urbanized and lacking significant biological resources. Overall, biological resources impacts under Alternative 3 would be slightly reduced compared to those than those under the proposed HEU and would remain less than significant.

d. Cultural Resources

As described in Section 4.4, *Cultural Resources*, there are various buildings within the city that may qualify as historic structures. Under Alternative 3, there would be less overall development than under the proposed HEU; however, it is still possible that historic structures could be impacted by this development. Therefore, impacts to historical resources would be slightly reduced compared to the proposed project and mitigation measures CR-1 and CR-2 to reduce impacts would be required. Nonetheless, impacts would remain significant and unavoidable.

Development under this alternative could disturb unrecorded archaeological resources, human remains, and tribal cultural resources, similar to the proposed HEU. However, with adherence to existing regulations regarding the discovery of human remains and compliance with City of Berkeley standard conditions of approval, these impacts would remain less than significant, the same as under the proposed HEU, and would be slightly reduced.

e. Energy

Under Alternative 3, fewer total residential units would be developed, which would result in an incremental reduction in energy usage compared to the proposed project. Fewer residential units would decrease electricity and natural gas consumption compared to the proposed HEU, and fewer

residents would decrease consumption of gasoline and diesel fuel compared to proposed HEU. Overall, energy impacts under Alternative 3 would be reduced compared to those under the proposed HEU and impacts would remain less than significant.

f. Geology and Soils

Although Alternative 3 would result in a reduced buildout compared to the proposed HEU, development could still potentially be subject to seismically-induced ground shaking and other seismic hazards, including liquefaction, landslides, unstable soils, soil erosion, and expansive soils. However, development under Alternative 3 would be required to comply with policies and requirements within the California Building Code, the BMC, Berkeley General Plan, and the NPDES permit. Impacts would remain less than significant.

While the Alternative 3 would result in less development than the proposed HEU, ground disturbing construction activities in geologic units assigned a high or undetermined paleontological sensitivity could have the potential to significantly impact paleontological resources, similar to the proposed HEU. Therefore, Mitigation Measure GEO-1 would still be required to reduce impacts to a less than significant level. However, it is likely that due to the reduced development under this alternative that fewer unidentified paleontological resources would be impacted than under the proposed HEU, making the potential impact less severe than the proposed HEU.

g. Greenhouse Gas Emissions

Under Alternative 3, fewer total residential units would be developed, which would result in a smaller anticipated population increase and less construction-related and operational emissions in comparison to buildout under the proposed HEU. This alternative would result in lower GHG emissions than the proposed HEU as it would result in less development. However, this alternative would also not increase the number of residential units in Priority Development Areas or along transit corridors to the same extent as under the proposed HEU, and therefore would not reduce driving distances or encourage the use of transit as much as development under the proposed HEU. Nonetheless, this alternative would not conflict with plans or policies to reduce GHG emissions impacts and therefore those impacts would be less than significant, the same as under the proposed HEU.

h. Hazards and Hazardous Materials

Alternative 3 would result in less development than the proposed HEU; however, the development allowed under this alternative could still occur within 0.25 mile of a school and could result in the release of hazardous materials. Just as with the proposed HEU, compliance with regional and federal regulations and compliance with policies within the Berkeley General Plan Safety Element and Environmental Management Element, as well as the Hazardous Materials Business Plan and the Local Hazard Mitigation Plan laid out by Berkeley and Alameda County would minimize the risk of releases and exposure to these materials. Impacts would be slightly reduced and would remain less than significant.

As discussed in Section 4.8, *Hazards and Hazardous Materials*, there are multiple locations within Berkeley that are designated as hazardous materials sites. While Alternative 3 would result in less development in certain areas, it could still occur on these sites. Future development would be subject to the City's Standard Conditions of Approval and the City's Toxics Management Division would evaluate projects to determine if Phase I/Phase II Environmental Site Assessments are required to characterize potential contamination and develop a soil and groundwater management

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plan to address hazards during construction and operation. Therefore, impacts would be slightly reduced compared to the proposed HEU since there would be reduced development under this Alternative and impacts would remain less than significant.

i. Hydrology and Water Quality

There would be less overall development in the city under Alternative 3 than there would be under the proposed HEU, resulting in less construction activities that could release materials and degrade water quality and less discharge to storm drains that could contaminate and affect downstream waters. Similar to the proposed HEU, development under Alternative 3 would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge and would not substantially alter the drainage pattern on sites and increase surface runoff. Development would be required to comply with the NPDES Construction General Permit, NPDES MS4 General Permit, Provision C.3 of the Municipal Regional Stormwater Permit, the BMC, and the City's General Plan policies, which would reduce impacts to a less than significant level. Impacts under this alternative would be less than those of the proposed HEU due to reduced development and would remain less than significant.

j. Land Use and Planning

Alternative 3 would involve continuing a pattern of development consistent with existing land use controls and area plans. Alternative 3 would not physically divide an established community and would not conflict with Plan Bay Area 2050, the Berkeley General Plan, or the BMC. Impacts would be less than significant and the same as those of the proposed HEU.

k. Noise

Alternative 3 would result in less development than the proposed HEU; however, this alternative would still generate construction and operational noise. Although development would be required to comply with daytime construction hours as set forth in the BMC and implement the City's Standard Conditions of Approval for construction noise, the type of construction equipment, proximity of sensitive receptors to the site, and overall duration of construction are still unknown. Therefore, as with the proposed HEU, construction noise impacts would remain significant and unavoidable, although slightly reduced in comparison with the proposed HEU.

Although operational noise associated with Alternative 3 would still be regulated by respective standards in the BMC, such noise sources would occur to a lesser degree than under the proposed HEU. Nonetheless, on-site operational noise would remain typical of the urban environment and off-site traffic noise associated with development would not result in a perceptible increase in noise levels. Furthermore, while Alternative 3 would subject less development to overhead flight patterns from airport, all development would be required to comply with State and local standards to reduce interior noise to acceptable levels. Impacts would remain less than significant.

Development under Alternative 3 could generate vibration exceeding thresholds for building damage, particularly during construction, similar to the proposed HEU. Future discretionary projects in Berkeley, when proposed, would be required to implement the City's Standard Condition of Approval to control vibration. With implementation of Standard Conditions of Approval, significant vibration impacts would not occur. Furthermore, as with the proposed HEU, it is not anticipated that operation of development under Alternative 3 would involve activities that would result in substantial vibration levels, such as use of heavy equipment and impacts would remain less than significant.

I. Population and Housing

Alternative 3 would result approximately 975 fewer residential units and therefore would result in a smaller population increase than the proposed HEU. Assuming 2.5 persons per unit, the reduction of 975 fewer units than under the proposed HEU would reduce population growth by 2,438 people compared to the proposed HEU. Overall population growth would be approximately 45,005 bringing the city's population to 169,568. Similar to the proposed HEU, this would be consistent with State requirements for the RHNA and would be within the growth forecasts for Northwest Alameda County in Plan Bay Area 2050. Alternative 3 would not involve the extension of roads or other infrastructure that could indirectly lead to population growth. Impacts would be less than significant and would remain less than significant.

m. Public Services and Recreation

Alternative 3 would result in fewer residential units than the proposed HEU. Therefore, the increase in demand on public services, including police protection, fire protection, schools, and parks would be less than that of the proposed HEU. As with the proposed project, services would be adequate to service future demand; impacts would be slightly reduced compared to the proposed HEU and would remain less than significant.

n. Transportation

VMT per capita under Alternative 3 would be higher than under the proposed HEU, since it would not increase the number of residential units and along the San Pablo Avenue transit corridor to the same extent as under the proposed HEU, and therefore would not reduce driving distances or encourage the use of transit as much as development under the proposed HEU. Therefore, impacts to transportation would be greater than those of the proposed HEU. Nonetheless, it is anticipated that impacts would remain less than significant.

o. Tribal Cultural Resources

Under Alternative 3, fewer residential units would be constructed, which would result in a reduced likelihood of impacting tribal cultural resources. Future development would be required to comply with requirements of AB 52 and SB 18, as well as City regulations governing protection of tribal cultural resources and archaeological resources, and Mitigation Measure TCR-1. Therefore, impacts to tribal cultural resources would be slightly reduced compared to those of the proposed HEU, and impacts would remain less than significant with mitigation incorporated.

p. Utilities and Service Systems

Under Alternative 3, fewer residential units would be constructed and therefore the demand on utilities would be reduced compared to the proposed HEU. This includes a reduction in water supply requirements, wastewater generation, electricity use, solid waste generation, and telecommunications. Impacts would be less than significant and reduced compared to those of the proposed HEU.

q. Wildfire

Alternative 3 may result in fewer residential units being constructed in the City's Very High Fire Hazard Severity Zones (VHFHSZ). Therefore, impacts related to wildfire would be reduced when compared to the HEU. Nonetheless, with SB 9 (see explanation below under Alternative 2),

development could still occur in the hillside areas such that the unavoidably significant wildfire impacts would not be avoided.

6.4 Environmentally Superior Alternative

Table 6-2 indicates whether each alternative's environmental impact is greater than, less than, or similar to that of the proposed HEU for each of the issue areas studied.

Alternative 1 (*No Project*) assumes continued implementation of the existing 2015-2023 Housing Element. Alternative 1 also assumes that the City's existing plan and policies would continue to accommodate development in accordance with existing land use designations. This alternative would result in less impacts to aesthetics, air quality, biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, public services and recreation, tribal cultural resources, utilities and service systems, and wildfire due to the decrease in residential units developed. However, impacts relating to transportation would be greater than under the Project as this alternative would not prioritize development in Priority Development Areas or near transit corridors, and therefore would not decrease VMT since fewer residents would be in proximity to transit, jobs, and services. In addition, this alternative would not eliminate the unavoidably significant impacts related to historical resources, construction noise, and wildfire. Furthermore, Alternative 1 would not fulfill Project Objective 1 because the continued implementation of the existing 2015-2023 Housing Element would result in the development of fewer residential units and therefore, would not accommodate employment, housing, and population growth projections forecasted through the planning horizon year of 2031 to the same extent as under the proposed HEU. In addition, Alternative 1 would not fulfill Project Objectives 2 and 3 because continued implementation of the existing 2015-2023 Housing Element would not address the need for additional affordable housing options throughout Berkeley in a manner that affirmatively furthers fair housing.

Alternative 2 (*No Rezone in the Hillside Overlay*) would include the same development as the proposed HEU; therefore, impacts would be equal to that of the proposed HEU. Alternative 2 would continue to fulfill Project Objectives as it would be able to accommodate employment, housing, and population growth projections forecasted through the planning horizon year of 2031; increase affordable housing options throughout the city; and place housing in proximity to transit, jobs, services, and community benefits.

Alternative 3, *No Middle Housing Rezoning*, includes approximately 975 fewer units than the buildout included in the analysis of the proposed project. This alternative would result in less impacts to aesthetics, air quality, biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, public services and recreation, tribal cultural resources, utilities and service systems and wildfire due to the decrease in residential units developed. However, impacts relating to transportation would be greater than under the proposed HEU as this alternative would not prioritize development near in Transit Priority Areas or major transit corridors, and therefore would not decrease VMT since fewer residents would be in proximity to transit, jobs, and services. Also, as the alternative makes no changes to the proposed project within the City's Very High Fire Hazard Severity Zones (VHFHSZ), wildfire impacts would be the same as under the proposed project. In addition, this alternative would not eliminate the unavoidably significant impacts related to historical resources, construction noise, and wildfire.

Nevertheless, as Alternative 3 slightly reduces the severity of impacts resulting from the proposed project, it is the environmentally superior alternative.

Table 6-2 Impact Comparison of Alternatives

Issue	Proposed Project Impact Classification	Alternative 1: No Project	Alternative 2: No Rezone in Hillside Overlay	Alternative 3 No Middle Housing Rezone
Aesthetics	Less than significant	+	=	+
Air Quality	Less than significant with mitigation incorporated	+	=	+
Biological Resources	Less than significant	+	=	+
Cultural Resources	Significant and unavoidable	+	=	=
Energy	Less than significant	+	=	+
Geology and Soils	Less than significant with mitigation incorporated	+	=	+
Greenhouse Gas Emissions	Less than significant	+	=	+
Hazards and Hazardous Materials	Less than significant	+	=	+
Hydrology and Water Quality	Less than significant	+	=	+
Land Use and Planning	Less than significant	=	=	=
Noise	Significant and unavoidable	+	=	=
Population and Housing	Less than significant	+	=	+
Public Services and Recreation	Less than significant	+	=	+
Transportation	Less than significant	-	=	-
Tribal Cultural Resources	Less than significant with mitigation incorporated	+	=	+
Utilities and Service Systems	Less than significant	+	=	+
Wildfire	Significant and unavoidable	=	=	=

+ Superior to the proposed Project (reduced level of impact)
 - Inferior to the proposed Project (increased level of impact)
 = Similar level of impact to the proposed Project

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Section 5, Other CEQA Related Discussions

None.

7.2 List of Preparers

This EIR was prepared by the City of Berkeley, with the assistance of Rincon Consultants, Inc. Consultant staff involved in the preparation of the EIR are listed below.

RINCON CONSULTANTS, INC.

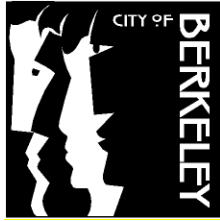
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Appendix A

Notice of Preparation (NOP) and NOP Comments



Planning and Development Department
Land Use Planning Division

NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE PROPOSED CITY OF BERKELEY HOUSING ELEMENT UPDATE

Notice is hereby given that the City of Berkeley is preparing a Draft Environmental Impact Report (EIR) for the City's Housing Element Update ("the project") and is requesting comments on the scope and content of the Draft EIR. The EIR is being prepared by the City of Berkeley, which is the Lead Agency for the project, in accordance with the California Environmental Quality Act (CEQA), the State CEQA Guidelines, and local CEQA guidelines.

In accordance with CEQA Guidelines section 15082, this Notice of Preparation (NOP) is being sent to the California State Clearinghouse, Alameda County Clerk, responsible agencies, trustee agencies, adjacent cities, and members of the public including individuals and organizations in order to solicit comments on the scope and content of the analysis in the EIR.

WRITTEN COMMENTS: Responses to this NOP and any questions or comments should be directed in writing to: *Grace Wu, Senior Planner, Land Use Planning Division, 1947 Center Street, 2nd Floor, Berkeley, CA 94704; or GWu@cityofberkeley.info*. Comments on the NOP must be received **on or before 5pm on Monday, February 21, 2022**. In addition, comments may be provided at the EIR Scoping Meeting (see details below). Comments should focus on significant environmental issues, reasonable alternatives, and mitigation measures.

EIR PUBLIC SCOPING MEETING: The City of Berkeley will conduct a public scoping session on **Wednesday, February 9, 2022** as part of a scheduled Planning Commission meeting to receive comments on the scope and contents of the EIR. The meeting will start at **7:00 PM** and be held via video and teleconference. Interested parties should check the Planning Commission website for information on how to join the meeting and to confirm the meeting date, time, and agenda: [https://www.cityofberkeley.info/Clerk/Commissions/Commissions_Planning Commission_Homepage.aspx](https://www.cityofberkeley.info/Clerk/Commissions/Commissions_Planning_Commission_Homepage.aspx) The agenda will be posted by 5pm on Friday, February 4, 2022.

PROJECT TITLE: City of Berkeley 2023-2031 Housing Element Update

PROJECT LOCATION: The project, which is an update to the Housing Element of the General Plan, is applicable to the entire City of Berkeley (citywide). The City of Berkeley is located in the East Bay of the San Francisco Bay Area in northern Alameda County. Berkeley is bordered by the cities of Oakland and Emeryville to the south and the city of Albany and the unincorporated community of Kensington to the north, the Berkeley Hills (Contra Costa County) to the east, and the San Francisco Bay to the west. The city

encompasses approximately 17.2 square miles (approximately 7.2 of which is underwater in the San Francisco Bay) with a population of approximately 122,580 residents and 51,500 housing units. The city contains a combination of residential, commercial, and industrial development.

Interstate 580/880, San Pablo Avenue (SR-123), Sacramento Street, Martin Luther King Jr. Way, and Shattuck Avenue provide the major north-south routes through the city, as does Bay Area Rapid Transit (BART). Major east-west routes include Marin Avenue, University Avenue, and Ashby Avenue.

The regional setting and existing city limits are depicted on Figure 1.

PROJECT SPONSOR: City of Berkeley

PROPOSED PROJECT DESCRIPTION and BACKGROUND: The proposed project consists of a comprehensive update to the Housing Element and related edits to the City's General Plan Land Use Element and Berkeley Municipal Code.

The Housing Element is one of the seven state-mandated elements of the local General Plan and is required to be updated every eight years. The City of Berkeley is preparing the 2023-2031 Housing Element Update to comply with the legal mandate that requires each local government to identify adequate sites for housing to meet the existing and projected housing needs for varying income-levels in the community. It is intended to provide the city with a comprehensive strategy for promoting the production of safe, decent and affordable housing, and affirmatively furthering fair housing during the housing cycle. The Housing Element Update establishes goals, policies, and actions to address the existing and projected housing needs in Berkeley.

The goals, policies, and actions in the Housing Element are required to meet Berkeley's Regional Housing Needs Assessment (RHNA) allocation. Berkeley's latest RHNA allocation calls for 8,934 new housing units, including 3,854 new units for residents in the low- and very low-income categories. The City must demonstrate to the State Department of Housing and Community Development (HCD) that the City's Housing Element has adequate land capacity and implementing policies to accommodate its RHNA allocation. In addition, HCD recommends that cities identify a "buffer" of 15% to 30% above RHNA for lower- and moderate-income categories. Thus, overall, the City's zoning and other land use regulations must accommodate between approximately 9,750 and 10,500 new units.

To identify the housing sites to be included in the Housing Element, the City will identify suitable and available housing sites and their capacity, screen for vacant and underutilized parcels, evaluate and analyze sites, and calculate potential buildout.

In conjunction with the Housing Element Update, the City anticipates amendments to the General Plan including revising the Land Use Element to maintain consistency with the updated Housing Element. The Land Use Element revisions are to ensure consistency among all General Plan Elements upon implementation of the updated Housing Element.

More information about the proposed project can be found on the City's website:

<https://www.cityofberkeley.info/housingelement/>

PROBABLE ENVIRONMENTAL EFFECTS: Approval of the proposed Housing Element Update would not approve any physical development (e.g., construction of housing or infrastructure). However, the EIR will assume that such actions are reasonably foreseeable future outcomes of the Housing Element Update. As such, the EIR will evaluate the potential physical environmental impacts that could result from future actions for implementing the policies proposed under the Housing Element Update at a programmatic level, in accordance with CEQA Guidelines Section 15168.

The topical areas that will be addressed in the EIR are: Aesthetics, Air Quality, Biological Resources, Cultural Resources, Energy, Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Land Use and Planning, Population and Housing, Public Services and Recreation, Transportation, Tribal Cultural Resources, Utilities and Service Systems, and Wildfire.

The Draft EIR will also examine a reasonable range of alternatives to the proposed project, including the CEQA-mandated No Project Alternative and other potential alternatives that may be capable of reducing or avoiding potential environmental effects while meeting most of the basic objectives of the project. In addition, the EIR will address cumulative impacts, growth inducing impacts, and other issues required by CEQA.



Grace Wu, Senior Planner

Date of Distribution: January 21, 2022

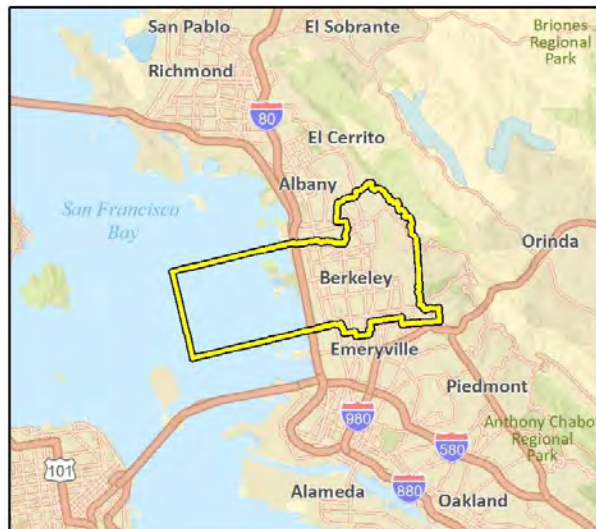
Attachments: Figure 1: City of Berkeley Location Map

Figure 1 City of Berkeley Location Map



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 City of Berkeley 





February 7, 2022

Grace Wu, Senior Planner
Land Use Planning Division
1947 Center Street, 2nd Floor
Berkeley, CA 94704

Re: Notice of Preparation of a Draft Environmental Impact Report for the Proposed
City of Berkeley Housing Element Update, Berkeley

Dear Ms. Wu:

East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Notice of Preparation of a Draft Environmental Impact Report for the Proposed City of Berkeley Housing Element Update, which encompasses the entirety of the City of Berkeley (City). EBMUD has the following comments.

WATER SERVICE

Effective January 1, 2018, water service for new multi-unit structures shall be individually metered or sub-metered in compliance with California State Senate Bill 7 (SB-7). SB-7 encourages conservation of water in multi-family residential, mixed-use multi-family and commercial buildings through metering infrastructure for each dwelling unit, including appropriate water billing safeguards for both tenants and landlords. EBMUD water services shall be conditioned for all development projects within the Housing Element Update that are subject to SB-7 requirements and will be released only after the project sponsor has satisfied all requirements and provided evidence of conformance with SB-7.

Main extensions that may be required to serve any specific developments within the Housing Element Update to provide adequate domestic water supply, fire flows, and system redundancy will be at the project sponsor's expense. Pipeline and fire hydrant relocations and replacements due to modifications of existing streets, and off-site pipeline improvements, also at the project sponsor's expense, may be required depending on EBMUD metering requirements and fire flow requirements set by the local fire department. When the development plans are finalized for individual projects within the Housing Element Update, project sponsors for individual projects should contact EBMUD's New Business Office and request a water service estimate to determine costs and conditions of providing water service to the development. Engineering and installation of new and relocated pipelines and services require substantial lead time, which should be provided for in the project sponsor's development schedule.

Project sponsors for individual projects within the Housing Element Update should be aware that EBMUD will not install piping or services in contaminated soil or groundwater

Grace Wu, Senior Planner
February 7, 2022
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(if groundwater is present at any time during the year at the depth piping is to be installed) that must be handled as a hazardous waste or that may be hazardous to the health and safety of construction and maintenance personnel wearing Level D personal protective equipment. Nor will EBMUD install piping or services in areas where groundwater contaminant concentrations exceed specified limits for discharge to the sanitary sewer system and sewage treatment plants. The project sponsor must submit copies to EBMUD of all known information regarding soil and groundwater quality within or adjacent to the project boundary and a legally sufficient, complete, and specific written remediation plan establishing the methodology, planning and design of all necessary systems for the removal, treatment, and disposal of contaminated soil and groundwater.

EBMUD will not design piping or services until soil and groundwater quality data and remediation plans have been received and reviewed and will not start underground work until remediation has been carried out and documentation of the effectiveness of the remediation has been received and reviewed. If no soil or groundwater quality data exists, or the information supplied by the project sponsor is insufficient, EBMUD may require the project sponsor to perform sampling and analysis to characterize the soil and groundwater that may be encountered during excavation, or EBMUD may perform such sampling and analysis at the project sponsor's expense. If evidence of contamination is discovered during EBMUD work on the project site, work may be suspended until such contamination is adequately characterized and remediated to EBMUD standards.

WASTEWATER SERVICE

EBMUD's Main Wastewater Treatment Plant (MWWTP) and interceptor system are anticipated to have adequate dry weather capacity to accommodate the proposed wastewater flows for individual projects within the Housing Element Update and to treat such flows provided that the wastewater generated by the project meets the requirements of the EBMUD Wastewater Control Ordinance. However, wet weather flows are a concern. The East Bay regional wastewater collection system experiences exceptionally high peak flows during storms due to excessive infiltration and inflow (I/I) that enters the system through cracks and misconnections in both public and private sewer lines. EBMUD has historically operated three Wet Weather Facilities (WWFs) to provide primary treatment and disinfection for peak wet weather flows that exceed the treatment capacity of the MWWTP. Due to reinterpretation of applicable law, EBMUD's National Pollutant Discharge Elimination System (NPDES) permit now prohibits discharges from EBMUD's WWFs. Additionally, the seven wastewater collection system agencies that discharge to the EBMUD wastewater interceptor system ("Satellite Agencies") hold NPDES permits that prohibit them from causing or contributing to WWF discharges. These NPDES permits have removed the regulatory coverage the East Bay wastewater agencies once relied upon to manage peak wet weather flows.

A federal consent decree, negotiated among EBMUD, the Satellite Agencies, the Environmental Protection Agency (EPA), the State Water Resources Control Board (SWRCB), and the Regional Water Quality Control Board (RWQCB), requires EBMUD

Grace Wu, Senior Planner
February 7, 2022
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and the Satellite Agencies to eliminate WWF discharges by 2036. To meet this requirement, actions will need to be taken over time to reduce I/I in the system. The consent decree requires EBMUD to continue implementation of its Regional Private Sewer Lateral Ordinance (www.eastbaypsl.com), construct various improvements to its interceptor system, and identify key areas of inflow and rapid infiltration over a 22-year period. Over the same time period, the consent decree requires the Satellite Agencies to perform I/I reduction work including sewer main rehabilitation and elimination of inflow sources. EBMUD and the Satellite Agencies must jointly demonstrate at specified intervals that this work has resulted in a sufficient, pre-determined level of reduction in WWF discharges. If sufficient I/I reductions are not achieved, additional investment into the region's wastewater infrastructure would be required, which may result in significant financial implications for East Bay residents.

To ensure that individual projects within the Housing Element Update contributes to these legally required I/I reductions, the lead agency should require the project sponsors comply with EBMUD's Regional Private Sewer Lateral Ordinance. Additionally, it would be prudent for the lead agency to require the following mitigation measures for individual projects within the Housing Element Update: (1) replace or rehabilitate any existing sanitary sewer collection systems, including sewer lateral lines to ensure that such systems and lines are free from defects or, alternatively, disconnected from the sanitary sewer system, and (2) ensure any new wastewater collection systems, including sewer lateral lines, for the project are constructed to prevent I/I to the maximum extent feasible while meeting all requirements contained in the Regional Private Sewer Lateral Ordinance and applicable municipal codes or Satellite Agency ordinances.

WATER RECYCLING

EBMUD's Policy 9.05 requires that customers use non-potable water, including recycled water, for non-domestic purposes when it is of adequate quality and quantity, available at reasonable cost, not detrimental to public health, and not injurious to plant, fish, and wildlife to offset demand on EBMUD's limited potable water supply. Appropriate recycled water uses include landscape irrigation, commercial and industrial process uses, toilet and urinal flushing in non-residential buildings, and other applications.

EBMUD's current recycled water infrastructure and services do not extend through the City limits, however, the City is located within the designated service boundaries of EBMUD's East Bayshore Recycled Water Project. As part of EBMUD's long term water supply planning, future expansion plans will extend recycled water to various locations within Berkeley and could potentially serve projects within the Housing Element Update. As EBMUD plans and implements its recycled water supply expansion to the City, EBMUD recommends that the City and project sponsors continue to coordinate closely with EBMUD. The project sponsors are required to provide an estimate of expected water demand for potential recycled water uses for each project in the Housing Element Update

Grace Wu, Senior Planner
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to further explore the options and requirements relating to recycled water use. Accordingly, EBMUD will assess and consider the feasibility of providing recycled water to projects within the Housing Element Update for appropriate uses.

WATER CONSERVATION

Individual projects within the Housing Element Update presents an opportunity to incorporate water conservation measures. EBMUD requests that the City include in its conditions of approval a requirement that the project sponsor comply with Assembly Bill 325, "Model Water Efficient Landscape Ordinance," (Division 2, Title 23, California Code of Regulations, Chapter 2.7, Sections 490 through 495). The project sponsors should be aware that Section 31 of EBMUD's Water Service Regulations requires that water service shall not be furnished for new or expanded service unless all the applicable water-efficiency measures described in the regulation are installed at the project sponsor's expense.

If you have any questions concerning this response, please contact Timothy R. McGowan, Senior Civil Engineer, Major Facilities Planning Section at (510) 287-1981.

Sincerely,



David J. Rehnstrom
Manager of Water Distribution Planning

DJR:KTL:grd
sb22_032 City of Berkeley Housing Element Update Response

cc: City of Berkeley
2180 Milvia Street
Berkeley, CA 94704



STATE OF CALIFORNIA

Gavin Newsom, Governor

NATIVE AMERICAN HERITAGE COMMISSION

Received

FEB 09 2021

Land Use Planning

January 26, 2022

Grace Wu
City of Berkeley
1947 Center Street, 2nd Floor
Berkeley, CA 94704

Re: 2022010331, City of Berkeley Housing Element Update Project, Alameda County

Dear Ms. Wu:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit. 14, § 15064.5 (b) (CEQA Guidelines § 15064.5 (b))). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines § 15064 (a)(1))). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

PARLIAMENTARIAN
Russell Atebery
Karuk

COMMISSIONER
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Nomlaki

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NAHC HEADQUARTERS
1550 Harbor Boulevard
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(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

- 1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project:** Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

 - a. A brief description of the project.
 - b. The lead agency contact information.
 - c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
 - d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

- 2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report:** A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subs. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

 - a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

- 3. Mandatory Topics of Consultation If Requested by a Tribe:** The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

 - a. Alternatives to the project.
 - b. Recommended mitigation measures.
 - c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).

- 4. Discretionary Topics of Consultation:** The following topics are discretionary topics of consultation:

 - a. Type of environmental review necessary.
 - b. Significance of the tribal cultural resources.
 - c. Significance of the project's impacts on tribal cultural resources.
 - d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

- 5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process:** With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

- 6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document:** If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

 - a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
 - b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

- 7. Conclusion of Consultation:** Consultation with a tribe shall be considered concluded when either of the following occurs:
- a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
 - b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).
- 8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document:** Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).
- 9. Required Consideration of Feasible Mitigation:** If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).
- 10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:**
- a. Avoidance and preservation of the resources in place, including, but not limited to:
 - i. Planning and construction to avoid the resources and protect the cultural and natural context.
 - ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
 - b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
 - i. Protecting the cultural character and integrity of the resource.
 - ii. Protecting the traditional use of the resource.
 - iii. Protecting the confidentiality of the resource.
 - c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
 - d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).
 - e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).
 - f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).
- 11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource:** An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
- a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.
 - b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
 - c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalePAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
 - a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
 - b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: <http://nahc.ca.gov/resources/forms/>.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

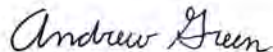
1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
 - a. If part or all of the APE has been previously surveyed for cultural resources.
 - b. If any known cultural resources have already been recorded on or adjacent to the APE.
 - c. If the probability is low, moderate, or high that cultural resources are located in the APE.
 - d. If a survey is required to determine whether previously unrecorded cultural resources are present.
2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
 - a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
 - b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
 - a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
 - b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
 - a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, § 15064.5(f) (CEQA Guidelines § 15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
 - b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
 - c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code § 7050.5, Public Resources Code § 5097.98, and Cal. Code Regs., tit. 14, § 15064.5, subdivisions (d) and (e) (CEQA Guidelines § 15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address:
Andrew.Green@nahc.ca.gov.

Sincerely,



Andrew Green
Cultural Resources Analyst

cc: State Clearinghouse



February 9, 2022

Grace Wu, Senior Planner
City of Berkeley, Land Use Planning Division
1947 Center St, 2nd Floor
Berkeley, CA, 94704

SUBJECT: Response to the Notice of Preparation (NOP) of a Draft Environmental Impact Report for the City of Berkeley Housing Element Update

Dear Grace Wu,

Thank you for the opportunity to comment on the Notice of Preparation (NOP) of the Draft Environmental Impact Report (DEIR) for the City of Berkeley Housing Element Update. The project would include all 17.2 square miles of the City of Berkeley, located in northern Alameda County. The proposed comprehensive Housing Element Update will be based on the City's latest Regional Housing Needs Allocation which requires the City of Berkeley's zoning and other land use regulations to accommodate between approximately 9,750 and 10,500 new units. The Housing Element Update will identify suitable and available housing sites by screening for vacant and underutilized parcels, evaluating sites and calculating the capacity of potential buildouts. The Land Use Element of the General Plan will be updated as needed to maintain consistency with the updated Housing Element.

The Alameda County Transportation Commission (Alameda CTC) respectfully submits the following comments:

Basis for Congestion Management Program (CMP) Review

- It appears that the proposed project will generate at least 100 p.m. peak hour trips over existing conditions, and therefore the CMP Land Use Analysis Program requires the City to conduct a transportation impact analysis of the project. For information on the CMP, please visit: <https://www.alamedactc.org/planning/congestion-management-program/>.

Use of Countywide Travel Demand Model

- The Alameda Countywide Travel Demand Model should be used for CMP Land Use Analysis purposes. The CMP requires local jurisdictions to conduct travel model runs themselves or through a consultant. The City of Berkeley and the Alameda CTC signed a Countywide Model Agreement on September 15, 2010. Before the model can be used for this project, a letter must be submitted to the Alameda CTC requesting use of the model and describing the project. A copy of a sample letter agreement is available upon request. The most current version of the Alameda CTC Countywide Travel Demand Model was updated in May 2019 to be consistent with the assumptions of Plan Bay Area 2040.

Impacts

- The DEIR should address all potential impacts of the plan on the Metropolitan Transportation System (MTS) roadway network.
 - MTS roadway facilities in the plan area include:
 - I-80/I-580 in Berkeley, Emeryville, and Albany
 - SR-24 in Berkeley and Oakland
 - SR 123/San Pablo Avenue in Berkeley, Emeryville, Albany, and Oakland
 - SR 13/Ashby Avenue in Berkeley and Oakland
 - University Avenue in Berkeley, and Shattuck Avenue, Telegraph Avenue, and Martin Luther King Jr. Boulevard in Berkeley and Oakland
 - For the purposes of CMP Land Use Analysis, the Highway Capacity Manual 2010 freeway and urban streets methodologies are the preferred methodologies to study vehicle delay impacts.
 - The Alameda CTC has *not* adopted any policy for determining a threshold of significance for Level of Service for the Land Use Analysis Program of the CMP.
- The DEIR should address potential impacts of the project on Metropolitan Transportation System (MTS) transit operators.
 - MTS transit operators potentially affected by the plan include: AC Transit, BART, and Capital Corridor
 - Transit impacts for consideration include the effects of project vehicle traffic on mixed flow transit operations, transit capacity, transit access/egress, need for future transit service, and consistency with adopted plans.
- The DEIR should address potential impacts of the plan to people biking and walking in and near the plan area, especially nearby roads included in the Countywide High-injury Network and major barriers identified in the Countywide Active Transportation Plan.
 - Impacts to consider on conditions for cyclists include effects of vehicle traffic on cyclist safety and performance, site development and roadway improvements, and consistency with adopted plans.

Mitigation Measures

- Alameda CTC's policy regarding mitigation measures is that to be considered adequate they must:
 - Adequately sustain CMP roadway and transit service standards;
 - Be fully funded; and
 - Be consistent with project funding priorities established in the Capital Improvement Program of the CMP, the Countywide Transportation Plan (CTP), and the Regional Transportation Plan (RTP) or the Federal Transportation Improvement Program, if the agency relies on state or federal funds programmed by Alameda CTC.
- The DEIR should discuss the adequacy of proposed mitigation measure according to the criteria above. In particular, the DEIR should detail when proposed roadway or transit route improvements are expected to be completed, how they will be funded, and the effect on service standards if only the funded portions of these mitigation measures are built prior to Project completion. The DEIR should also address the issue of transit funding as a mitigation measure in the context of the Alameda CTC mitigation measure criteria discussed above.

Grace Wu
February 9, 2022
Page 3

- Jurisdictions are encouraged to discuss multimodal tradeoffs associated with mitigation measures that involve changes in roadway geometry, intersection control, or other changes to the transportation network. This analysis should identify impacts to automobiles, transit, bicyclists, and pedestrians. The HCM 2010 MMLOS methodology is encouraged as a tool to evaluate these tradeoffs, but project sponsors may use other methodologies as appropriate for particular contexts or types of mitigations.
- The DEIR should consider the use of TDM measures, in conjunction with roadway and transit improvements, as a means of attaining acceptable levels of service. Whenever possible, mechanisms that encourage ridesharing, flextime, transit, bicycling, telecommuting and other means of reducing peak hour traffic trips should be considered.

Thank you for the opportunity to comment on this NOP. Please contact me at (510) 208 7484 or Chris G. Marks, Associate Transportation Planner at (510) 208-7453, if you have any questions.

Sincerely,



Cathleen Sullivan
Director of Planning

cc: Chris G. Marks, Associate Transportation Planner
Shannon McCarthy, Associate Transportation Planner

From: [Alfred Twu](#)
To: [Wu, Grace](#)
Subject: Housing Element scoping comments
Date: Friday, February 11, 2022 7:59:08 PM

WARNING: This is not a City of Berkeley email. Do not click links or attachments unless you trust the sender and know the content is safe.

Grace,

Here are my comments on the Housing Element scoping.

More capacity needed to meet the RHNA goals

In the last cycle, the current zoning led to about 2,943 units being built.

For this cycle, 4,370 units are expected to come from the "Additional Sites" not including BART, ADUs, and entitled projects. These additional sites have a capacity of 8,574 units. To have a better chance at meeting housing goals, especially since there is less remaining zoned capacity today than there was in the last cycle, more Potential Additional Sites should be identified.

Consider a larger-number-of-units alternative

The BART rezone draft EIR had an alternative with taller buildings that was found to be the environmentally superior alternative. Please also add a larger-number-of-units alternative to be studied.

Include Councilmember Taplin's proposed Affordable Housing Overlay

The RHNA process classifies all large high-density sites as Low Income, however, in practice in Berkeley these types of sites are used both for low income and high income housing. Adding an Affordable Housing Overlay to large low-density sites to allow high density affordable housing could provide more places for low income housing to go.

Consider rezoning R-1, R-1A, R-2 zones next to commercial zones and the North Berkeley BART to R-3 or R-4

The blocks next to the commercial zones areas have similarly excellent transit access, and have the added benefit of being quieter places to live than the commercial corridor itself.

Allow limited retail in residential zones

Retail in residential areas with limited operating hours (for example, 8 or 9pm close times) can reduce the need for driving to go shopping.

Gilman, Claremont, and North Shattuck should have additional capacity added

These are some of the highest income and opportunity areas in the city, and to affirmatively further fair housing, more capacity should be added here.

Thanks
Alfred

From: [Kevin Burke](#)
To: [Wu, Grace](#)
Subject: Housing element comment
Date: Friday, February 11, 2022 10:56:21 PM

WARNING: This is not a City of Berkeley email. Do not click links or attachments unless you trust the sender and know the content is safe.

I am a life long Bay Area resident and I am interested in moving to Berkeley.

I would appreciate if it was possible for Berkeley to add more housing so people can move in without people needing to move out or move into their cars. More housing will also mean more impact fees that can be used to add BMR housing, student housing, better quality roads, etc.

I support increasing density throughout Berkeley, especially in the wealthy areas, and making it legal to build fourplexes throughout the city with ministerial approval.

Kevin

--

Kevin Burke
phone: 925-271-7005 | kevin.burke.dev

From: [Markus Feyh](#)
To: [Wu, Grace](#)
Subject: Comments on Berkeley's Housing Element
Date: Sunday, February 13, 2022 10:50:26 PM

WARNING: This is not a City of Berkeley email. Do not click links or attachments unless you trust the sender and know the content is safe.

Hello,

Please study increasing the density in the C-SA - South Area Commercial District, which would bring it in line with the most recently updated C-AC Adeline Corridor Commercial District zoning.

In addition, please study:

1. Removing the height restrictions between sub-areas (see Table 23.204-28. C-SA MAXIMUM BUILDING HEIGHT)
2. Increasing the lot coverage percentages (see Table 23.204-30. C-SA LOT COVERAGE STANDARDS FOR MIXED USE AND RESIDENTIAL-ONLY USES)
3. Reducing setbacks when abutting or confronting residential lots (see 23.204.150(E)(5))

Please also study merging C-SA into the C-AC Adeline Corridor Commercial District

Sincerely,
Markus Feyh



Feb 21, 2022

Jordan Klein
Department of Planning and Development
1947 Center Street, 3rd Floor
Berkeley, CA 94704

Director Klein,

East Bay for Everyone is a membership organization committed to building just cities through land use, transit and housing policy. We write to provide the following principles and policy suggestions as Berkeley prepares an update to its 6th Cycle Housing Element.

We also request that the Draft EIR (DEIR) explore the environmental consequences of the policies below where applicable, so that the scope of the EIR is broad enough to include any of these policies should Council choose to include them in the final Housing Element.

High Level Goals

1. Encourage new housing in affluent, high-resource neighborhoods and areas well-served by transit and bicycle infrastructure.
2. Development without displacement
 - a. Ensure that any redevelopment of existing rent controlled housing includes robust protections for tenants, including compliance with right to return and no net loss provisions of SB 330.
3. Provide opportunities for longtime and multi-generational Berkeleyans to realize the increased value of their property without selling their property and leaving the city.
4. Create more ADA-accessible, family-sized and deed-restricted affordable units.
5. Create substantial quantities of lower-cost “missing middle” housing throughout Berkeley’s lower-density neighborhoods.
 - a. Small unit development permitted by-right makes providing ADU-like units more flexible and accessible to people with disabilities. Simple construction and permitting for multi-family housing opens urban home-building to smaller, local contractors, property owners, and land trusts.
 - b. This “missing middle” housing type can satisfy moderate-income housing needs, allowing the city to concentrate affordable housing funds on the most needy.

6. Enable and encourage larger multifamily buildings on commercial and transit corridors.
7. Allow for a variety of housing types and sizes, including townhomes, small apartment buildings, and bungalow courts.

With these goals in mind, we suggest the following the policies for consideration within the draft housing element:

Increased density along transit corridors, up to 8-12 stories

- For commercial parcels near BART and along major bus corridors (lines 51, 6, 18, and 12), rezone for 6-8 stories of mixed-use housing.
- With the potential of cross-laminated timber construction, it may also be worth exploring 12-story buildings, particularly in Downtown and Southside. We expect local area plans to evaluate buildings taller than 12 stories.
- For single-family and duplex parcels within 0.5 miles of BART stations, consider midrise, mixed-use zoning for 4 to 5 stories rather than just missing middle.

Increased “missing middle” housing throughout Berkeley neighborhoods

- These revisions should apply in R-1, R-1A, R-2, R-2A, and MU-R zones citywide.
- Four (4) units on any lot that allows ADUs. A base zoning of 8 units if near transit, and up to 12 units near transit if the project includes 2 affordable units (50% density bonus). All approvals should be ministerial.
 - Due to fire and building codes, the maximum of 12 units would likely only be feasible on certain larger lots.
 - Four units trigger the ADA's requirement of at least one accessible unit.
 - Allow flexibility for the subdivision of existing non-conforming structures
 - No public hearings if the appearance from the street is unchanged.
 - One public hearing for input if appearance from the street changes significantly.
- Rules should be crafted with multiple housing types in mind: small apartment buildings, bungalow courts, and townhouses. Modular or pre-fabricated construction should be encouraged. Planning staff should consult with architects, engineers and contractors to conform policy design with current and expected building industry standards.
- As part of the code update, Planning could develop a pre-approved plan for a four-unit dwelling that would work on the vast majority of residential lots. Architectural ornamentation and exterior finishes can accommodate neighborhood and owner preference.
- Loosen development standards to be at least as permissive as ADU standards. Ensure that setback requirements and FAR do not interfere with the ability to build 4-12 units where allowed.
- Allow ministerial lot splits/condo mapping for newly-built units (not house conversions).
- Enforce Berkeley's demolition protections and SB 330 where applicable.

Citywide Affordable Housing Overlay

Berkeley City Council referred adoption of an Affordable Housing Overlay to the Housing Element process. The proposed overlay would allow for additional height and density of affordable housing developments anywhere in Berkeley, including lower-density neighborhoods, outside of the Very High Fire Hazard Severity Zone (VHFHSZ). This proposed AHO must be included for analysis in the DEIR.

Ministerial Approval Process

- Adopt an ordinance for fully ministerial approval of qualifying housing developments, modeled on the one recently adopted in Sacramento. This would facilitate faster and more cost effective construction of needed homes, while reducing the discretionary review burden on planning staff and planning commissions.
 - Qualifying developments should be zoning compliant. Berkeley may also consider as requirements a maximum development size (in Sacramento this is 200 units; square footage may make sense as an alternative) and electing for on-site Affordable Housing rather than an in-lieu fee.
- Include a menu of commonly chosen density bonus concessions that could be used in this ministerial process for qualifying developments.

Tenant Protections

- Audit enforcement of demolition protections, no net loss and right to return required by SB330 within the planning process. Incorporate these standards directly into Berkeley law, as well as permit application forms.
- Coordinate with Berkeley's Rent Board to provide clear processes for tenant right to return required by SB330.
- Create a local rental registry in order to capture rental data and enforce tenant protections, including demolition protections.

We look forward to continuing to engage with the City of Berkeley in the 6th Cycle Housing Element Update.

Sincerely,

Greg Magofña
Co-Executive
East Bay for Everyone

Sid Kapur
Chapter Lead
East Bay YIMBY

Appendix B

Special-Status Species in the Vicinity of the Project Area

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Local, state, and federal agencies regulate special-status species and require an assessment of their presence or potential presence to be conducted on-site prior to the approval of any proposed development on a property. The potential occurrence table of special-status species is based upon known ranges, habitat preferences for the species, species occurrence records from the CNDDB species occurrence records from other sites in the vicinity of the project area, and previous reports for the Plan Area.

Table B-1 Special Status Plant Species and Sensitive Natural Communities Known to Occur or with Potential to Occur in the Vicinity of the Project Area

Scientific Name Common Name	Status Fed/State Global Rank/ State Rank CRPR	Habitat Requirements
<i>Amsinckia lunaris</i> bent-flowered fiddleneck	None/None G3/S3 1B.2	Annual herb. Cismontane woodland, coastal bluff scrub, valley and foothill grassland. Elevations: 10-1640ft. (3-500m.) Blooms Mar-Jun.
<i>Arctostaphylos franciscana</i> Franciscan manzanita	FE/None GHC/S1 1B.1	Perennial evergreen shrub. Coastal scrub. Serpentine outcrops in chaparral. Elevations: 195-985ft. (60-300m.) Blooms Feb-Apr.
<i>Arctostaphylos imbricata</i> San Bruno Mountain manzanita	None/SCE G1/S1 1B.1	Perennial evergreen shrub. Chaparral, coastal scrub. Rocky. Elevations: 900-1215ft. (275-370m.) Blooms Feb-May.
<i>Arctostaphylos montana</i> ssp. <i>ravenii</i> Presidio manzanita	FE/SCE G3T1/S1 1B.1	Perennial evergreen shrub. Chaparral, coastal prairie, coastal scrub. Open, rocky serpentine slopes. Elevations: 150-705ft. (45-215m.) Blooms Feb-Mar.
<i>Arctostaphylos pacifica</i> Pacific manzanita	None/SCE G1/S1 1B.1	Evergreen shrub. Chaparral, coastal scrub. Elevations: 1085-1085ft. (330-330m.) Blooms Feb-Apr.
<i>Arctostaphylos pallida</i> pallid manzanita	FT/SCE G1/S1 1B.1	Perennial evergreen shrub. Broadleafed upland forest, chaparral, cismontane woodland, closed-cone coniferous forest, coastal scrub. Grows on uplifted marine terraces on siliceous shale or thin chert. May require fire. Elevations: 605-1525ft. (185-465m.) Blooms Dec-Mar.
<i>Arenaria paludicola</i> marsh sandwort	FE/SCE G1/S1 1B.1	Perennial stoloniferous herb. Marshes and swamps. Openings, sandy. Elevations: 10-560ft. (3-170m.) Blooms May-Aug.
<i>Astragalus tener</i> var. <i>tener</i> alkali milk-vetch	None/None G2T1/S1 1B.2	Annual herb. Playas, valley and foothill grassland, vernal pools. Alkaline. Elevations: 5-195ft. (1-60m.) Blooms Mar-Jun.
<i>Calochortus tiburonensis</i> Tiburon mariposa-lily	FT/SCT G1/S1 1B.1	Perennial bulbiferous herb. Valley and foothill grassland. On open, rocky, slopes in serpentine grassland. Elevations: 165-490ft. (50-150m.) Blooms Mar-Jun.
<i>Calystegia purpurata</i> ssp. <i>saxicola</i> coastal bluff morning-glory	None/None G4T2T3/S2S3 1B.2	Perennial herb. Coastal bluff scrub, coastal dunes, coastal scrub, north coast coniferous fores. Elevations: 0-345ft. (0-105m.) Blooms (Mar)Apr-Sep.
<i>Carex comosa</i> bristly sedge	None/None G5/S2 2B.1	Perennial rhizomatous herb. Coastal prairie, marshes and swamps, valley and foothill grassland. Lake margins, wet places; site below sea level is on a Delta island. Elevations: 0-2050ft. (0-625m.) Blooms May-Sep.

Special-status Species in the Vicinity of the Project Area

Scientific Name Common Name	Status Fed/State Global Rank/ State Rank CRPR	Habitat Requirements
<i>Carex praticola</i> northern meadow sedge	None/None G5/S2 2B.2	Perennial herb. Meadows and seeps. Moist to wet meadows. Elevations: 0-10500ft. (0-3200m.) Blooms May-Jul.
<i>Castilleja affinis</i> var. <i>neglecta</i> Tiburon paintbrush	FE/SCT G4G5T1T2/S1S 2 1B.2	Perennial herb (hemiparasitic). Valley and foothill grassland. Rocky serpentine sites. Elevations: 195-1310ft. (60-400m.) Blooms Apr-Jun.
<i>Chloropyron maritimum</i> ssp. <i>palustre</i> Point Reyes salty bird's-beak	None/None G4?T2/S2 1B.2	Annual herb (hemiparasitic). Marshes and swamps. Usually in coastal salt marsh with <i>Salicornia</i> , <i>Distichlis</i> , <i>Jaumea</i> , <i>Spartina</i> , etc. Elevations: 0-35ft. (0-10m.) Blooms Jun-Oct.
<i>Chloropyron molle</i> ssp. <i>molle</i> soft salty bird's-beak	FE/SCR G2T1/S1 1B.2	Annual herb (hemiparasitic). Marshes and swamps. In coastal salt marsh with <i>Distichlis</i> , <i>Salicornia</i> , <i>Frankenia</i> , etc. Elevations: 0-10ft. (0-3m.) Blooms Jun-Nov.
<i>Chorizanthe cuspidata</i> var. <i>cuspidata</i> San Francisco Bay spineflower	None/None G2T1/S1 1B.2	Annual herb. Coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub. Sandy. Elevations: 10-705ft. (3-215m.) Blooms Apr-Jul(Aug).
<i>Chorizanthe robusta</i> var. <i>robusta</i> robust spineflower	FE/None G2T1/S1 1B.1	Annual herb. Chaparral, cismontane woodland, coastal dunes, coastal scrub. Gravelly (sometimes), sandy (sometimes). Elevations: 10-985ft. (3-300m.) Blooms Apr-Sep.
<i>Cirsium andrewsii</i> Franciscan thistle	None/None G3/S3 1B.2	Perennial herb. Broadleaved upland forest, coastal bluff scrub, coastal prairie, coastal scrub. Mesic, serpentinite (sometimes). Elevations: 0-490ft. (0-150m.) Blooms Mar-Jul.
<i>Clarkia franciscana</i> Presidio clarkia	FE/SCE G1/S1 1B.1	Annual herb. Coastal scrub, valley and foothill grassland. Serpentine outcrops in grassland or scrub. Elevations: 80-1100ft. (25-335m.) Blooms May-Jul.
<i>Collinsia multicolor</i> San Francisco collinsia	None/None G2/S2 1B.2	Annual herb. Closed-cone coniferous forest, coastal scrub. Serpentine (sometimes). Elevations: 100-900ft. (30-275m.) Blooms (Feb)Mar-May.
<i>Dirca occidentalis</i> western leatherwood	None/None G2/S2 1B.2	Perennial deciduous shrub. Broadleaved upland forest, chaparral, cismontane woodland, closed-cone coniferous forest, north coast coniferous forest, riparian forest, riparian woodland. On brushy slopes, mesic sites; mostly in mixed evergreen and foothill woodland communities. Elevations: 80-1395ft. (25-425m.) Blooms Jan-Mar(Apr).
<i>Eriogonum luteolum</i> var. <i>caninum</i> Tiburon buckwheat	None/None G5T2/S2 1B.2	Annual herb. Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Serpentine soils; sandy to gravelly sites. Elevations: 0-2295ft. (0-700m.) Blooms May-Sep.
<i>Eryngium jepsonii</i> Jepson's coyote-thistle	None/None G2/S2 1B.2	Perennial herb. Valley and foothill grassland, vernal pools. Clay. Elevations: 10-985ft. (3-300m.) Blooms Apr-Aug.
<i>Extriplex joaquinana</i> San Joaquin spearscale	None/None G2/S2 1B.2	Annual herb. Chenopod scrub, meadows and seeps, playas, valley and foothill grassland. In seasonal alkali wetlands or alkali sink scrub with <i>Distichlis spicata</i> , <i>Frankenia</i> , etc. Elevations: 5-2740ft. (1-835m.) Blooms Apr-Oct.

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Scientific Name Common Name	Status Fed/State Global Rank/ State Rank CRPR	Habitat Requirements
<i>Fissidens pauperculus</i> minute pocket moss	None/None G3?/S2 1B.2	Moss. North coast coniferous forest. Moss growing on damp soil along the coast. In dry streambeds and on stream banks. Elevations: 35-3360ft. (10-1024m.)
<i>Fritillaria liliacea</i> fragrant fritillary	None/None G2/S2 1B.2	Perennial bulbiferous herb. Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland. Often on serpentine; various soils reported though usually on clay, in grassland. Elevations: 10-1345ft. (3-410m.) Blooms Feb-Apr.
<i>Gilia capitata</i> ssp. <i>chamissonis</i> blue coast gilia	None/None G5T2/S2 1B.1	Annual herb. Coastal dunes, coastal scrub. Elevations: 5-655ft. (2-200m.) Blooms Apr-Jul.
<i>Gilia millefoliata</i> dark-eyed gilia	None/None G2/S2 1B.2	Annual herb. Coastal dunes. Elevations: 5-100ft. (2-30m.) Blooms Apr-Jul.
<i>Helianthella castanea</i> Diablo helianthella	None/None G2/S2 1B.2	Perennial herb. Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. Azonal soils, Partial shade (often), rocky (usually). Elevations: 195-4265ft. (60-1300m.) Blooms Mar-Jun.
<i>Hemizonia congesta</i> ssp. <i>congesta</i> congested-headed hayfield tarplant	None/None G5T2/S2 1B.2	Annual herb. Valley and foothill grassland. Grassy valleys and hills, often in fallow fields; sometimes along roadsides. Elevations: 65-1835ft. (20-560m.) Blooms Apr-Nov.
<i>Hesperolinon congestum</i> Marin western flax	FT/SCT G1/S1 1B.1	Annual herb. Chaparral, valley and foothill grassland. In serpentine barrens and in serpentine grassland and chaparral. Elevations: 15-1215ft. (5-370m.) Blooms Apr-Jul.
<i>Heteranthera dubia</i> water star-grass	None/None G5/S2 2B.2	Perennial herb (aquatic). Marshes and swamps. Alkaline, still or slow-moving water. Requires a pH of 7 or higher, usually in slightly eutrophic waters. Elevations: 100-4905ft. (30-1495m.) Blooms Jul-Oct.
<i>Hoita strobilina</i> Loma Prieta hoita	None/None G2?/S2? 1B.1	Perennial herb. Chaparral, cismontane woodland, riparian woodland. Serpentine; mesic sites. Elevations: 100-2820ft. (30-860m.) Blooms May-Jul(Aug-Oct).
<i>Holocarpha macradenia</i> Santa Cruz tarplant	FT/SCE G1/S1 1B.1	Annual herb. Coastal prairie, coastal scrub, valley and foothill grassland. Light, sandy soil or sandy clay; often with nonnatives. Elevations: 35-720ft. (10-220m.) Blooms Jun-Oct.
<i>Horkelia cuneata</i> var. <i>sericea</i> Kellogg's horkelia	None/None G4T1?/S1? 1B.1	Perennial herb. Chaparral, closed-cone coniferous forest, coastal dunes, coastal scrub. Old dunes, coastal sandhills; openings. Sandy or gravelly soils. Elevations: 35-655ft. (10-200m.) Blooms Apr-Sep.
<i>Lasthenia conjugens</i> Contra Costa goldfields	FE/None G1/S1 1B.1	Annual herb. Cismontane woodland, playas, valley and foothill grassland, vernal pools. Vernal pools, swales, low depressions, in open grassy areas. Elevations: 0-1540ft. (0-470m.) Blooms Mar-Jun.
<i>Layia carnosa</i> beach layia	FE/SCE G2/S2 1B.1	Annual herb. Coastal dunes, coastal scrub. On sparsely vegetated, semi-stabilized dunes, usually behind foredunes. Elevations: 0-195ft. (0-60m.) Blooms Mar-Jul.

Special-status Species in the Vicinity of the Project Area

Scientific Name Common Name	Status Fed/State Global Rank/ State Rank CRPR	Habitat Requirements
<i>Leptosiphon rosaceus</i> rose leptosiphon	None/None G1/S1 1B.1	Annual herb. Coastal bluff scrub. Elevations: 0-330ft. (0-100m.) Blooms Apr-Jul.
<i>Lessingia germanorum</i> San Francisco lessingia	FE/SCE G1/S1 1B.1	Annual herb. Coastal scrub. On remnant dunes. Open sandy soils relatively free of competing plants. Elevations: 80-360ft. (25-110m.) Blooms (Jun)Jul-Nov.
<i>Lilaeopsis masonii</i> Mason's lilaeopsis	None/SCR G2/S2 1B.1	Perennial rhizomatous herb. Marshes and swamps, riparian scrub. Tidal zones, in muddy or silty soil formed through river deposition or river bank erosion. In brackish or freshwater. Elevations: 0-35ft. (0-10m.) Blooms Apr-Nov.
<i>Meconella oregana</i> Oregon meconella	None/None G2G3/S2 1B.1	Annual herb. Coastal prairie, coastal scrub. Open, moist places. Elevations: 820-2035ft. (250-620m.) Blooms Mar-Apr.
<i>Monolopia gracilens</i> woodland woollythreads	None/None G3/S3 1B.2	Annual herb. Broadleafed upland forest, chaparral, cismontane woodland, north coast coniferous forest, valley and foothill grassland. Grassy sites, in openings; sandy to rocky soils. Often seen on serpentine after burns, but may have only weak affinity to serpentine. Elevations: 330-3935ft. (100-1200m.) Blooms (Feb)Mar-Jul.
<i>Oenothera deltooides</i> ssp. <i>howellii</i> Antioch Dunes evening-primrose	FE/SCE G5T1/S1 1B.1	Perennial herb. Inland dunes. Remnant river bluffs and sand dunes east of Antioch. Elevations: 0-100ft. (0-30m.) Blooms Mar-Sep.
<i>Pentachaeta bellidiflora</i> white-rayed pentachaeta	FE/SCE G1/S1 1B.1	Annual herb. Cismontane woodland, valley and foothill grassland. Open dry rocky slopes and grassy areas, often on soils derived from serpentine bedrock. Elevations: 115-2035ft. (35-620m.) Blooms Mar-May.
<i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i> Choris' popcornflower	None/None G3T1Q/S1 1B.2	Annual herb. Chaparral, coastal prairie, coastal scrub. Mesic sites. Elevations: 10-525ft. (3-160m.) Blooms Mar-Jun.
<i>Plagiobothrys diffusus</i> San Francisco popcornflower	None/SCE G1Q/S1 1B.1	Annual herb. Coastal prairie, valley and foothill grassland. Historically from grassy slopes with marine influence. Elevations: 195-1180ft. (60-360m.) Blooms Mar-Jun.
<i>Polemonium carneum</i> Oregon polemonium	None/None G3G4/S2 2B.2	Perennial herb. Coastal prairie, coastal scrub, lower montane coniferous forest. Elevations: 0-6005ft. (0-1830m.) Blooms Apr-Sep.
<i>Polygonum marinense</i> Marin knotweed	None/None G2Q/S2 3.1	Annual herb. Marshes and swamps. Coastal salt marshes and brackish marshes. Elevations: 0-35ft. (0-10m.) Blooms (Apr)May-Aug(Oct).
<i>Sanicula maritima</i> adobe sanicle	None/SCR G2/S2 1B.1	Perennial herb. Chaparral, coastal prairie, meadows and seeps, valley and foothill grassland. Moist clay or ultramafic soils. Elevations: 100-785ft. (30-240m.) Blooms Feb-May.
<i>Stebbinsoseris decipiens</i> Santa Cruz microsaris	None/None G2/S2 1B.2	Annual herb. Broadleafed upland forest, chaparral, closed-cone coniferous forest, coastal prairie, coastal scrub, valley and foothill grassland. Open areas in loose or disturbed soil, usually derived from sandstone, shale or serpentine, on seaward slopes. Elevations: 35-1640ft. (10-500m.) Blooms Apr-May.

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Scientific Name Common Name	Status Fed/State Global Rank/ State Rank CRPR	Habitat Requirements
<i>Streptanthus albidus</i> ssp. <i>peramoenus</i> most beautiful jewelflower	None/None G2T2/S2 1B.2	Annual herb. Chaparral, cismontane woodland, valley and foothill grassland. Serpentine outcrops, on ridges and slopes. Elevations: 310-3280ft. (95-1000m.) Blooms (Mar)Apr-Sep(Oct).
<i>Streptanthus glandulosus</i> ssp. <i>niger</i> Tiburón jewelflower	FE/SCE G4T1/S1 1B.1	Annual herb. Valley and foothill grassland. Shallow, rocky serpentine slopes. Elevations: 100-490ft. (30-150m.) Blooms May-Jun.
<i>Stuckenia filiformis</i> ssp. <i>alpina</i> northern slender pondweed	None/None G5T5/S2S3 2B.2	Perennial rhizomatous herb (aquatic). Marshes and swamps. Shallow, clear water of lakes and drainage channels. Elevations: 985-7055ft. (300-2150m.) Blooms May-Jul.
<i>Suaeda californica</i> California seablite	FE/None G1/S1 1B.1	Perennial evergreen shrub. Marshes and swamps. Margins of coastal salt marshes. Elevations: 0-50ft. (0-15m.) Blooms Jul-Oct.
<i>Trifolium amoenum</i> two-fork clover	FE/None G1/S1 1B.1	Annual herb. Coastal bluff scrub, valley and foothill grassland. Sometimes on serpentine soil, open sunny sites, swales. Most recently cited on roadside and eroding cliff face. Elevations: 15-1360ft. (5-415m.) Blooms Apr-Jun.
<i>Trifolium hydrophilum</i> saline clover	None/None G2/S2 1B.2	Annual herb. Marshes and swamps, valley and foothill grassland, vernal pools. Mesic, alkaline sites. Elevations: 0-985ft. (0-300m.) Blooms Apr-Jun.
<i>Triphysaria floribunda</i> San Francisco owl's-clover	None/None G2?/S2? 1B.2	Annual herb. Coastal prairie, coastal scrub, valley and foothill grassland. On serpentine and non-serpentine substrate (such as at Pt. Reyes). Elevations: 35-525ft. (10-160m.) Blooms Apr-Jun.
Northern Coastal Salt Marsh	None/None G3/S3.2	Coastal salt marshes, alkaline flats. The USFWS Wetland Inventory (1996 national list) recognizes <i>Sarcocornia pacifica</i> as an OBL plant.
Northern Maritime Chaparral	None/None G1/S1.2	Varied topography. Soils are commonly shallow over colluvium and many kinds of bedrock.
Serpentine Bunchgrass	None/None G2/S2.2	All topographic locations. Soils may be deep with high clay content, loamy, sandy, or silty derived from mudstone, sandstone, or serpentine substrates.
Valley Needlegrass Grassland	None/None G3/S3.1	All topographic locations. Soils may be deep with high clay content, loamy, sandy, or silty derived from mudstone, sandstone, or serpentine substrates
<i>Viburnum ellipticum</i> oval-leaved viburnum	None/None G4G5/S3? 2B.3	Perennial deciduous shrub. Chaparral, cismontane woodland, lower montane coniferous forest. Elevations: 705-4595ft. (215-1400m.) Blooms May-Jun.

Special-status Species in the Vicinity of the Project Area

Table B-2 Special Status Animal Species Known to Occur or with Potential to Occur in the Vicinity of the Project Area

Scientific Name Common Name	Status Fed/State Global Rank/ State Rank CDFW	Habitat Requirements
<i>Bombus crotchii</i> Crotch bumble bee	None/ST G2/S1S2	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include <i>Antirrhinum</i> , <i>Phacelia</i> , <i>Clarkia</i> , <i>Dendromecon</i> , <i>Eschscholzia</i> , and <i>Eriogonum</i> .
<i>Bombus crotchii</i> Crotch bumble bee	None/ST G2/S1S2	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include <i>Antirrhinum</i> , <i>Phacelia</i> , <i>Clarkia</i> , <i>Dendromecon</i> , <i>Eschscholzia</i> , and <i>Eriogonum</i> .
<i>Danaus plexippus pop. 1</i> monarch - California overwintering population	FC/None G4T2T3/S2S3	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.
<i>Euphydryas editha bayensis</i> Bay checkerspot butterfly	FT/None G5T1/S1	Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay. <i>Plantago erecta</i> is the primary host plant; <i>Orthocarpus densiflorus</i> and <i>O. purpurascens</i> are the secondary host plants.
<i>Acipenser medirostris pop. 1</i> green sturgeon - southern DPS	FT/None G3T1/S1	Spawning site fidelity. Spawns in the Sacramento, Feather and Yuba Rivers. Presence in upper Stanislaus and San Joaquin Rivers may indicate spawning. Non-spawning adults occupy marine/estuarine waters. Delta Estuary is important for rearing juveniles. Spawning occurs primarily in cool (11-15 C) sections of mainstem rivers in deep pools (8-9 meters) with substrate containing small to medium sized sand, gravel, cobble, or boulder.
<i>Archoplites interruptus</i> Sacramento perch	None/None G2G3/S1 SSC	Historically found in the sloughs, slow-moving rivers, and lakes of the Central Valley. Prefers warm water. Aquatic vegetation is essential for young. Tolerates wide range of physio-chemical water conditions.
<i>Eucyclogobius newberryi</i> tidewater goby	FE/None G3/S3	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.
<i>Spirinchus thaleichthys</i> longfin smelt	FC/ST G5/S1	Euryhaline, nektonic and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15-30 ppt, but can be found in completely freshwater to almost pure seawater.
<i>Ambystoma californiense pop. 1</i> California tiger salamander - central California DPS	FT/ST G2G3T3/S3 WL	Lives in vacant or mammal-occupied burrows throughout most of the year; in grassland, savanna, or open woodland habitats. Need underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding.
<i>Rana boylei</i> foothill yellow-legged frog	None/SE G3/S3 SSC	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis.

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Scientific Name Common Name	Status Fed/State Global Rank/ State Rank CDFW	Habitat Requirements
<i>Rana draytonii</i> California red-legged frog	FT/None G2G3/S2S3 SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.
<i>Emys marmorata</i> western pond turtle	None/None G3G4/S3 SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.
<i>Masticophis lateralis euryxanthus</i> Alameda whipsnake	FT/ST G4T2/S2	Typically found in chaparral and scrub habitats but will also use adjacent grassland, oak savanna and woodland habitats. Mostly south-facing slopes and ravines, with rock outcrops, deep crevices or abundant rodent burrows, where shrubs form a vegetative mosaic with oak trees and grasses.
<i>Aquila chrysaetos</i> golden eagle	None/None G5/S3 FP WL	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.
<i>Athene cunicularia</i> burrowing owl	None/None G4/S3 SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.
<i>Circus hudsonius</i> northern harrier	None/None G5/S3 SSC	Coastal salt and freshwater marsh. Nest and forage in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.
<i>Coturnicops noveboracensis</i> yellow rail	None/None G4/S1S2 SSC	Summer resident in eastern Sierra Nevada in Mono County. Freshwater marshlands.
<i>Egretta thula</i> snowy egret	None/None G5/S4	Colonial nester, with nest sites situated in protected beds of dense tules. Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.
<i>Elanus leucurus</i> white-tailed kite	None/None G5/S3S4 FP	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.
<i>Falco peregrinus anatum</i> American peregrine falcon	FD/SD G4T4/S3S4 FP	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression or ledge in an open site.
<i>Geothlypis trichas sinuosa</i> saltmarsh common yellowthroat	None/None G5T3/S3 SSC	Resident of the San Francisco Bay region, in fresh and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.
<i>Haliaeetus leucocephalus</i> bald eagle	FD/SE G5/S3 FP	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.

Special-status Species in the Vicinity of the Project Area

Scientific Name Common Name	Status Fed/State Global Rank/ State Rank CDFW	Habitat Requirements
<i>Hydroprogne caspia</i> Caspian tern	None/None G5/S4	Nests on sandy or gravelly beaches and shell banks in small colonies inland and along the coast. Inland freshwater lakes and marshes; also, brackish or salt waters of estuaries and bays.
<i>Laterallus jamaicensis coturniculus</i> California black rail	None/ST G3T1/S1 FP	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.
<i>Melospiza melodia pusillula</i> Alameda song sparrow	None/None G5T2?/S2S3 SSC	Resident of salt marshes bordering south arm of San Francisco Bay. Inhabits Salicornia marshes; nests low in Grindelia bushes (high enough to escape high tides) and in Salicornia.
<i>Melospiza melodia samuelis</i> San Pablo song sparrow	None/None G5T2/S2 SSC	Resident of salt marshes along the north side of San Francisco and San Pablo bays. Inhabits tidal sloughs in the Salicornia marshes; nests in Grindelia bordering slough channels.
<i>Rallus obsoletus obsoletus</i> California Ridgway's rail	FE/SE G3T1/S1 FP	Salt water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs.
<i>Sternula antillarum browni</i> California least tern	FE/SE G4T2T3Q/S2 FP	Nests along the coast from San Francisco Bay south to northern Baja California. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, land fills, or paved areas.
<i>Antrozous pallidus</i> pallid bat	None/None G4/S3 SSC	Found in a variety of habitats including deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts in crevices of rock outcrops, caves, mine tunnels, buildings, bridges, and hollows of live and dead trees which must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	None/None G4/S2 SSC	Occurs throughout California in a wide variety of habitats. Most common in mesic sites, typically coniferous or deciduous forests. Roosts in the open, hanging from walls & ceilings in caves, lava tubes, bridges, and buildings. This species is extremely sensitive to human disturbance.
<i>Neotoma fuscipes annectens</i> San Francisco dusky-footed woodrat	None/None G5T2T3/S2S3 SSC	Typically found in forest habitats with moderate to dense understory. Can occur in chaparral, riparian woodlands, and coniferous forests, particularly redwood. Builds middens out of grasses, leaves, and woody debris. This subspecies is found only in the San Francisco Bay region.
<i>Nyctinomops macrotis</i> big free-tailed bat	None/None G5/S3 SSC	Low-lying arid areas in Southern California. Need high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.
<i>Reithrodontomys raviventris</i> salt-marsh harvest mouse	FE/SE G1G2/S1S2 FP	Only in the saline emergent wetlands of San Francisco Bay and its tributaries. Pickleweed is primary habitat, but may occur in other marsh vegetation types and in adjacent upland areas. Does not burrow; builds loosely organized nests. Requires higher areas for flood escape.

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Scientific Name Common Name	Status Fed/State Global Rank/ State Rank CDFW	Habitat Requirements
<i>Scapanus latimanus parvus</i> Alameda Island mole	None/None G5T1Q/SH SSC	Only known from Alameda Island. Found in a variety of habitats, especially annual and perennial grasslands. Prefers moist, friable soils. Avoids flooded soils.
<i>Taxidea taxus</i> American badger	None/None G5/S3 SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.

Appendix C

Eligibility Status of Housing Inventory Sites

Table C-1 Eligibility Status of Housing Inventory Sites

Address	APN	Date of Construction	Site Type	Eligibility Status
1207 10th Street	60-2354-15-3	1960	Pipeline	Unknown
2031 2Nd Street	56-1954-10	1957	Opportunity	Unknown
2116 5th Street	56-1959-17-5	1955	Opportunity	Unknown
2422 5th Street	56-1944-11	1914	Pipeline	Unknown
2431 5th Street	56-1943-19-1	1957	Opportunity	Unknown
1618 6th Street	57-2117-4-2	1968	Opportunity	Unknown
1650 6th Street	57-2117-9-3	1960	Opportunity	Unknown
1650 6th Street	57-2117-6-1	1976	Opportunity	Unknown
1650 6th Street	57-2117-5	1981	Opportunity	Unknown
1700 6th Street	58-2118-22-2	1977	Opportunity	Unknown
2325 6th Street	56-1941-19	1925	Pipeline	Unknown
2416 6th Street	56-1943-10-1	1928	Opportunity	Unknown
2022 7th Street	56-1966-6	1913	Opportunity	Unknown
2015 8th Street	56-1972-18	1918	Pipeline	Unknown
1930 9th Street	57-2092-7	1945	Opportunity	Unknown
2830 9th Street	53-1659-16-5	1910	Opportunity	Unknown
801 Addison Street	56-1961-16-1	1965	Opportunity	Unknown
1417 Addison Street	56-1996-12-3	1967	Opportunity	Unknown
1728 Alcatraz Avenue	52-1532-16	1965	Opportunity	Unknown
2714 Alcatraz Avenue	52-1563-179	1915	Pipeline	Unknown
2108 Allston Way	57-2030-1	1930	Opportunity	Unknown
901 Ashby Avenue	53-1641-9-5	1984	Opportunity	Unknown
1331 Ashby Avenue	53-1623-12-1	1920	Pipeline	Unknown
2001 Ashby Avenue	53-1591-18-3	1969	Pipeline	Unknown
2414 Ashby Avenue	52-1573-76-1	1910	Opportunity	Unknown
3009 Ashby Avenue	64-4235-8-4	1964	Opportunity	Unknown
3048 Ashby Avenue	64-4236-4	1963	Opportunity	Unknown
742 Bancroft Way	56-1945-1-2	1970	Opportunity	Unknown
2113 Bancroft Way	57-2029-7-2	1961	Opportunity	Unknown
2190 Bancroft Way	55-1893-1	1953	Opportunity	Unknown
1825 Berkeley Way	57-2063-11	1910	Pipeline	Unknown
1841 Berkeley Way	57-2063-6-1	1981	Opportunity	Unknown
1504 Bonita Avenue	59-2268-6-1	1924	Pipeline	Unknown
2068 Center Street	57-2026-4-12	1961	Opportunity	Unknown
2236 Channing Way	55-1888-27	1967	Pipeline	Unknown
2317 Channing Way	55-1884-6	1953	Pipeline	Unknown
3170 College Avenue	52-1410-16-1	1989	Opportunity	Unknown
2510 Durant Avenue	55-1876-23	1914	Opportunity	Unknown

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Address	APN	Date of Construction	Site Type	Eligibility Status
2538 Durant Avenue	55-1876-21-1	1922	Pipeline	Unknown
2000 Dwight Way	55-1822-18	1924	Pipeline	Unknown
2012 Dwight Way	55-1822-21	1904	Pipeline	Unknown
2316 Dwight Way	55-1831-25	1950	Opportunity	Unknown
2750 Dwight Way	55-1850-3-3	1957	Opportunity	Unknown
2033 Emerson Street	53-1592-9	1900	Opportunity	Unknown
2210 Harold Way	57-2027-2-2	1938	Pipeline	Unknown
1157 Hearst Avenue	57-2086-14	1945	Pipeline	Unknown
1173 Hearst Avenue	57-2086-13	1927	Pipeline	Unknown
1035 Heinz Avenue	53-1661-20	1928	Opportunity	Unknown
1043 Heinz Avenue	53-1661-19	1922	Opportunity	Unknown
1550 Hopkins Street	60-2434-20-1	1951	Opportunity	Unknown
1601 Hopkins Street	60-2435-28-1	1978	Opportunity	Unknown
2000 Kittredge Street	57-2028-13	1974	Opportunity	Unknown
2150 Kittredge Street	57-2029-16	1981	Opportunity	Unknown
2176 Kittredge Street	57-2029-2-4	1963	Pipeline	Unknown
1711 M L King Jr Way	58-2170-17	1895	Pipeline	Unknown
1921 M L King Jr Way	57-2059-1-1	1928	Opportunity	Unknown
1933 M L King Jr Way	57-2059-12	1948	Opportunity	Unknown
2099 M L King Jr Way	57-2024-13	1938	Pipeline	Unknown
2105 M L King Jr Way	57-2022-9-2	1957	Opportunity	Unknown
2139 Oregon Street	53-1685-11	1924	Pipeline	Unknown
770 Page Street	59-2325-3-1	1943	opportunity	Unknown
920 Pardee Street	54-1747-11	1984	opportunity	Unknown
1013 Pardee Street	54-1745-18-4	1952	opportunity	Unknown
2105 Parker Street	55-1824-14	1908	opportunity	Unknown
3028 Regent Street	52-1574-44	1915	Pipeline	Unknown
2091 Rose Street	60-2455-67	1963	Opportunity	Unknown
1197 San Pablo Avenue	60-2410-5	1942	Opportunity	Unknown
1200 San Pablo Avenue	60-2354-2	1978	Pipeline	Unknown
1223 San Pablo Avenue	60-2405-27	1955	Opportunity	Unknown
1229 San Pablo Avenue	60-2405-24-1	1953	Opportunity	Unknown
1275 San Pablo Avenue	60-2405-21	1958	Opportunity	Unknown
1299 San Pablo Avenue	60-2405-20	1966	Opportunity	Unknown
1337 San Pablo Avenue	60-2404-20	1920	Opportunity	Unknown
1340 San Pablo Avenue	60-2353-9	1959	Opportunity	Unknown
1346 San Pablo Avenue	60-2353-10	1958	Opportunity	Unknown
1399 San Pablo Avenue	60-2404-18-1	1972	Opportunity	Unknown
1425 San Pablo Avenue	60-2396-15	1946	Opportunity	Unknown

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Eligibility Status of Housing Inventory Sites

Address	APN	Date of Construction	Site Type	Eligibility Status
1429 San Pablo Avenue	60-2396-14	1973	Opportunity	Unknown
1440 San Pablo Avenue	59-2331-2	1922	Opportunity	Unknown
1443 San Pablo Avenue	60-2395-16	1920	Opportunity	Unknown
1456 San Pablo Avenue	59-2331-3	1916	Opportunity	Unknown
1460 San Pablo Avenue	59-2331-4	1916	Opportunity	Unknown
1501 San Pablo Avenue	60-2395-17	1942	Opportunity	Unknown
1507 San Pablo Avenue	60-2395-33-1	1951	Opportunity	Unknown
1513 San Pablo Avenue	60-2395-31	1963	Opportunity	Unknown
1519 San Pablo Avenue	60-2395-29	1925	Opportunity	Unknown
1521 San Pablo Avenue	60-2395-28	1939	Opportunity	Unknown
1620 San Pablo Avenue	58-2128-3-1	1950	Opportunity	Unknown
1629 San Pablo Avenue	59-2287-25	1939	Opportunity	Unknown
1633 San Pablo Avenue	59-2287-24	1923	Opportunity	Unknown
1634 San Pablo Avenue	58-2128-8-1	1946	Opportunity	Unknown
1639 San Pablo Avenue	59-2287-21-2	1955	Opportunity	Unknown
1640 San Pablo Avenue	58-2128-10	1985	Opportunity	Unknown
1724 San Pablo Avenue	58-2127-9-1	1945	Opportunity	Unknown
1730 San Pablo Avenue	58-2127-12	1963	Opportunity	Unknown
1740 San Pablo Avenue	58-2127-14-3	1925	Pipeline	Unknown
1814 San Pablo Avenue	57-2087-3	1918	Opportunity	Unknown
1819 San Pablo Avenue	57-2086-29-3	1978	Opportunity	Unknown
1835 San Pablo Avenue	57-2086-25-1	1980	Pipeline	Unknown
1955 San Pablo Avenue	57-2085-15	1955	Opportunity	Unknown
2040 San Pablo Avenue	56-1978-8-2	1916	Opportunity	Unknown
2111 San Pablo Avenue	56-1982-2-1	1941	Opportunity	Unknown
2197 San Pablo Avenue	56-1983-40-1	1967	Opportunity	Unknown
2198 San Pablo Avenue	56-1977-13	1928	Pipeline	Unknown
2234 San Pablo Avenue	56-1976-15-1	1958	Opportunity	Unknown
2235 San Pablo Avenue	56-1983-31-3	1988	Opportunity	Unknown
2301 San Pablo Avenue	56-1926-21	1964	Opportunity	Unknown
2366 San Pablo Avenue	56-1933-24-3	1965	Opportunity	Unknown
2400 San Pablo Avenue	56-1932-4-1	1905	Opportunity	Historic
2407 San Pablo Avenue	56-1928-27-1	1953	Opportunity	Unknown
2424 San Pablo Avenue	56-1932-8-3	1962	Opportunity	Unknown
2546 San Pablo Avenue	54-1780-8-1	1980	Opportunity	Unknown
2603 San Pablo Avenue	54-1785-16	1925	Opportunity	Unknown
2613 San Pablo Avenue	54-1785-15	1925	Opportunity	Unknown
2617 San Pablo Avenue	54-1785-13	1955	Opportunity	Unknown
2619 San Pablo Avenue	54-1785-12	1925	Opportunity	Unknown

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Address	APN	Date of Construction	Site Type	Eligibility Status
2625 San Pablo Avenue	54-1786-16	1961	Opportunity	Unknown
2641 San Pablo Avenue	54-1786-14-1	1958	Opportunity	Unknown
2246 San Pablo Avenue	56-1976-17	1989	Opportunity	Unknown
2720 San Pablo Avenue	54-1744-7	1945	Pipeline	Unknown
2727 San Pablo Avenue	54-1742-34	1926	Opportunity	Unknown
2729 San Pablo Avenue	54-1742-33	1926	Opportunity	Unknown
2733 San Pablo Avenue	54-1742-32	1948	Opportunity	Unknown
2734 San Pablo Avenue	54-1744-22-5	1955	Opportunity	Unknown
2795 San Pablo Avenue	54-1742-29	1926	Pipeline	Unknown
2830 San Pablo Avenue	53-1661-14	1958	Opportunity	Unknown
2832 San Pablo Avenue	53-1661-15-1	1966	Opportunity	Unknown
2835 San Pablo Avenue	53-1662-21	1947	Opportunity	Unknown
2839 San Pablo Avenue	53-1662-20	1948	Opportunity	Unknown
2840 San Pablo Avenue	53-1661-18-1	1928	Opportunity	Unknown
2843 San Pablo Avenue	53-1662-19	1947	Opportunity	Unknown
2849 San Pablo Avenue	53-1662-17-1	1948	Opportunity	Unknown
2959 San Pablo Avenue	53-1629-19-1	1948	Opportunity	Unknown
3000 San Pablo Avenue	53-1633-1-1	1925	Pipeline	Unknown
1550 Shattuck Avenue	59-2263-10-1	1960	Opportunity	Unknown
1607 Shattuck Avenue	58-2178-24-1	1940	Opportunity	Unknown
1720 Shattuck Avenue	58-2175-4	1947	Opportunity	Unknown
1730 Shattuck Avenue	58-2175-5	1967	Opportunity	Unknown
1748 Shattuck Avenue	58-2175-6	1923	Opportunity	Unknown
1848 Shattuck Avenue	57-2050-5	1964	Opportunity	Unknown
1926 Shattuck Avenue	57-2051-5	1989	Opportunity	Unknown
1950 Shattuck Avenue	57-2053-1	1921	Opportunity	Unknown
1974 Shattuck Avenue	57-2053-2	1921	Opportunity	Unknown
2000 Shattuck Avenue	57-2025-1	1948	Opportunity	Unknown
2020 Shattuck Avenue	57-2025-4	1955	Opportunity	Unknown
2024 Shattuck Avenue	57-2025-5-2	1920	Opportunity	Unknown
2120 Shattuck Avenue	57-2023-3	1930	Opportunity	Historic
2301 Shattuck Avenue	55-1893-16	1979	Opportunity	Unknown
2333 Shattuck Avenue	55-1893-12	1966	Opportunity	Unknown
2414 Shattuck Avenue	55-1896-2	1947	Opportunity	Unknown
2420 Shattuck Avenue	55-1896-3	1940	Opportunity	Unknown
2428 Shattuck Avenue	55-1896-4	1940	Opportunity	Unknown
2450 Shattuck Avenue	55-1897-6	1918	Opportunity	Unknown
2480 Shattuck Avenue	55-1897-1-3	1925	Opportunity	Unknown
2520 Shattuck Avenue	55-1822-4	1910	Opportunity	Unknown

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Address	APN	Date of Construction	Site Type	Eligibility Status
2524 Shattuck Avenue	55-1822-5	1928	Opportunity	Unknown
2530 Shattuck Avenue	55-1822-6	1905	Opportunity	Unknown
2550 Shattuck Avenue	55-1821-1-1	1985	Opportunity	Unknown
2555 Shattuck Avenue	55-1824-16	1939	Opportunity	Unknown
2558 Shattuck Avenue	55-1821-3	1927	Opportunity	Unknown
2576 Shattuck Avenue	55-1821-4	1917	Opportunity	Unknown
2609 Shattuck Avenue	55-1825-19	1933	Opportunity	Unknown
2621 Shattuck Avenue	55-1825-15-2	1948	Opportunity	Unknown
2627 Shattuck Avenue	55-1826-20	1940	Opportunity	Unknown
2821 Shattuck Avenue	53-1685-20-1	1969	Opportunity	Unknown
2847 Shattuck Avenue	53-1686-20	1963	Opportunity	Unknown
2920 Shattuck Avenue	53-1590-5-1	1955	Opportunity	Unknown
3054 Shattuck Avenue	53-1594-2	1927	Opportunity	Unknown
2328 Telegraph Avenue	55-1878-3	1915	Pipeline	Unknown
2347 Telegraph Avenue	55-1877-11	1929	Opportunity	Unknown
2566 Telegraph Avenue	55-1837-2	1920	Opportunity	Unknown
2587 Telegraph Avenue	55-1839-19-1	1986	Opportunity	Unknown
2600 Telegraph Avenue	55-1836-6-3	1957	Opportunity	Unknown
2650 Telegraph Avenue	55-1835-9-1	1964	opportunity	Unknown
3030 Telegraph Avenue	52-1576-27-1	1964	Opportunity	Unknown
3031 Telegraph Avenue	52-1574-81	1955	Pipeline	Unknown
805 University Avenue	57-2097-1-6	1950	Opportunity	Unknown
811 University Avenue	57-2097-14-1	1952	Opportunity	Unknown
833 University Avenue	57-2096-10-1	1961	Opportunity	Unknown
907 University Avenue	57-2093-15-1	1988	Opportunity	Unknown
975 University Avenue	57-2092-9	1960	Opportunity	Unknown
1010 University Avenue	56-1973-6-1	1928	Opportunity	Unknown
1011 University Avenue	57-2089-12-1	1943	Opportunity	Unknown
1111 University Avenue	57-2085-26	1939	Opportunity	Unknown
1181 University Avenue	57-2085-8-1	1960	Opportunity	Unknown
1187 University Avenue	57-2085-7-2	1962	Opportunity	Unknown
1198 University Avenue	56-1979-1	1966	Opportunity	Unknown
1199 University Avenue	57-2085-7-1	1949	Opportunity	Unknown
1333 University Avenue	57-2073-8	1938	Opportunity	Unknown
1375 University Avenue	57-2073-4	1948	Opportunity	Unknown
1399 University Avenue	57-2073-2	1940	Opportunity	Unknown
1461 University Avenue	57-2072-6	1948	Opportunity	Unknown
1548 University Avenue	56-2003-24-1	1959	Opportunity	Unknown
1619 University Avenue	57-2070-9-1	1952	Opportunity	Unknown

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Address	APN	Date of Construction	Site Type	Eligibility Status
1699 University Avenue	57-2070-3	1954	Opportunity	Unknown
1760 University Avenue	56-2011-25-1	1912	Opportunity	Unknown
1761 University Avenue	57-2061-6-1	1956	Opportunity	Unknown
1800 University Avenue	57-2016-18-1	1968	Opportunity	Unknown
1865 University Avenue	57-2060-2	1947	Opportunity	Unknown
1909 University Avenue	57-2059-10	1951	Opportunity	Unknown
1915 University Avenue	57-2059-9	1979	Opportunity	Unknown
1921 University Avenue	57-2059-8	1925	Opportunity	Unknown
1929 University Avenue	57-2059-7	1963	Opportunity	Unknown
2000 University Avenue	57-2025-13	1979	Pipeline	Unknown
2011 University Avenue	57-2053-14-2	1972	Opportunity	Unknown
2017 University Avenue	57-2053-11	1925	Opportunity	Unknown
2029 University Avenue	57-2053-8-1	1952	Opportunity	Unknown
2058 University Avenue	57-2025-19	1917	Opportunity	Unknown
2154 University Avenue	57-2034-12	1925	Opportunity	Historic
2109 Virginia Street	58-2178-18	1928	Opportunity	Unknown

Appendix D

Energy Modeling Results

City of Berkeley HE Operational Energy

Last Updated: 06/07/22

Populate one of the following tables (Leave the other blank):

Annual VMT	OR	Daily Vehicle Trips
Annual VMT: 236,867,442		Daily Vehicle Trips: Trips: Average Trip Distance:

Fleet Class	Fleet Mix	Fuel Economy (MPG) [1]	
Light Duty Auto (LDA)	0.555274	Passenger Vehicles	24.1
Light Duty Truck 1 (LDT1)	0.059572	Light-Med Duty Trucks	17.6
Light Duty Truck 2 (LDT2)	0.187289	Heavy Trucks/Other	7.5
Medium Duty Vehicle (MDV)	0.120548	Motorcycles	44
Light Heavy Duty 1 (LHD1)	0.022031		
Light Heavy Duty 2 (LHD2)	0.005855		
Medium Heavy Duty (MHD)	0.011319		
Heavy Heavy Duty (HHD)	0.007376		
Other Bus (OBUS)	0.000945		
Urban Bus (UBUS)	0.000497		
Motorcycle (MCY)	0.025792		
School Bus (SBUS)	0.000881		
Motorhome (MH)	0.002622		

Fleet Mix

Vehicle Type	Percent	Fuel Type	Annual VMT:		Fuel Consumption
			VMT	Vehicle Trips: VMT	(Gallons)
Passenger Vehicles	55.53%	<i>Gasoline</i>	131,526,332	0.00	5,457,524
Light-Medium Duty Trucks	36.74%	<i>Gasoline</i>	87,027,230	0.00	4,944,729
Heavy Trucks/Other	5.15%	<i>Diesel</i>	12,204,832	0.00	1,627,311
Motorcycle	2.58%	<i>Gasoline</i>	6,109,285	0.00	138,847

Total Gasoline Consumption (gallons)	10,541,101
Total Diesel Consumption (gallons)	1,627,311

Sources:

[1] United States Department of Transportation, Bureau of Transportation Statistics. 2021. National Transportation Statistics. Available at: <https://www.bts.gov/topics/national-transportation-statistics>.

Appendix E

Greenhouse Gas Emissions Modeling Results

City of Berkeley Housing Element Operational (Single Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

**City of Berkeley Housing Element Operational (Single Family)
 Bay Area AQMD Air District, Annual**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	113.00	Dwelling Unit	36.69	203,400.00	323

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	64
Climate Zone	5			Operational Year	2031
Utility Company	User Defined				
CO2 Intensity (lb/MW hr)	135	CH4 Intensity (lb/MW hr)	0	N2O Intensity (lb/MW hr)	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics - East Bay Community Energy is the primary electricity provider, for conservative analysis will use Bright Choice Plan (40 percent renewable)

Land Use - Based on EIR growth assumption of 113 single-family units and 323 new residents.

Construction Phase - Operational model, no construction

Off-road Equipment - Operational model, no construction

Trips and VMT - Operational model, no construction

Architectural Coating - BAAQMD Regulation 8 Rule 3, Nonflat Coating

Vehicle Trips - Default CalEEMod trip generation rates used

Woodstoves - Berkeley Natural Gas prohibition, BAAQMD Regulation 6 Rule 3: No woodburning devices

Area Coating - BAAQMD Regulation 8 Rule 3, Nonflat Coating

Energy Use - Assume 90 percent of development will not include natural gas pursuant to BMC Section 12.80 (natural gas ban)

Water And Wastewater - EBMUD Wastewater treatment plant 100 percent aerobic

City of Berkeley Housing Element Operational (Single Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Area Mitigation - BAAQMD Regulation 8 Rule 3, Nonflat Coating

Water Mitigation - Pursuant to CalGreen 20 percent indoor water use reduction

Energy Mitigation - Pursuant to Section 150.1(c)(14) of the 2019 Building Energy Efficiency Standards, low-rise residential up to 3 stories must install PV systems

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	150.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	100
tblAreaCoating	Area_EF_Residential_Exterior	150	100
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	100	150
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	100	150
tblConstructionPhase	NumDays	55.00	1.00
tblEnergyUse	NT24E	6,155.97	6,845.71
tblEnergyUse	NT24NG	2,615.00	261.50
tblEnergyUse	T24E	45.71	9,534.91
tblEnergyUse	T24NG	35,976.14	3,597.64
tblFireplaces	FireplaceDayYear	11.14	0.00
tblFireplaces	FireplaceHourDay	3.50	0.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	28.25	0.00
tblFireplaces	NumberNoFireplace	9.04	0.00
tblFireplaces	NumberWood	48.59	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	0	135
tblTripsAndVMT	WorkerTripNumber	8.00	0.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00

CalEEMod Version: CalEEMod.2020.4.0

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City of Berkeley Housing Element Operational (Single Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblWoodstoves	NumberCatalytic	4.52	0.00
tblWoodstoves	NumberNoncatalytic	4.52	0.00
tblWoodstoves	WoodstoveDayYear	21.06	0.00
tblWoodstoves	WoodstoveWoodMass	956.80	0.00

2.0 Emissions Summary

City of Berkeley Housing Element Operational (Single Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	:	:	:	:	:	:	:	:	:	:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	:	:	:	:	:	:	:	:	:	:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)

City of Berkeley Housing Element Operational (Single Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

		Highest		
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2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	1.3706	1.3706	1.3100e-003	0.0000	1.4032
Energy											0.0000	147.7500	147.7500	4.5000e-004	4.3000e-004	147.8883
Mobile											0.0000	684.6657	684.6657	0.0410	0.0313	695.0092
Waste											27.5378	0.0000	27.5378	1.6274	0.0000	68.2236
Water											2.6048	3.4343	6.0391	8.9700e-003	5.6600e-003	7.9513
Total											30.1426	837.2205	867.3631	1.6792	0.0374	920.4756

City of Berkeley Housing Element Operational (Single Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	1.3706	1.3706	1.3100e-003	0.0000	1.4032
Energy											0.0000	23.2710	23.2710	4.5000e-004	4.3000e-004	23.4093
Mobile											0.0000	684.6657	684.6657	0.0410	0.0313	695.0092
Waste											27.5378	0.0000	27.5378	1.6274	0.0000	68.2236
Water											2.0839	2.9464	5.0302	7.1700e-003	4.5300e-003	6.5600
Total											29.6216	712.2536	741.8753	1.6774	0.0362	794.6053

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.73	14.93	14.47	0.11	3.02	13.67

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Architectural Coating	Architectural Coating	1/2/2023	1/2/2023	5	1	

Acres of Grading (Site Preparation Phase): 0

City of Berkeley Housing Element Operational (Single Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	684.6657	684.6657	0.0410	0.0313	695.0092
Unmitigated											0.0000	684.6657	684.6657	0.0410	0.0313	695.0092

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,066.72	1,078.02	966.15	2,434,250	2,434,250
Total	1,066.72	1,078.02	966.15	2,434,250	2,434,250

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.555274	0.059572	0.187289	0.120548	0.022031	0.005855	0.011319	0.007376	0.000945	0.000497	0.025792	0.000881	0.002622

City of Berkeley Housing Element Operational (Single Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated											0.0000	124.4790	124.4790	0.0000	0.0000	124.4790
NaturalGas Mitigated											0.0000	23.2710	23.2710	4.5000e-004	4.3000e-004	23.4093
NaturalGas Unmitigated											0.0000	23.2710	23.2710	4.5000e-004	4.3000e-004	23.4093

City of Berkeley Housing Element Operational (Single Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - Natural Gas

Unmitigated

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	436083											0.0000	23.2710	23.2710	4.5000e-004	4.3000e-004	23.4093
Total												0.0000	23.2710	23.2710	4.5000e-004	4.3000e-004	23.4093

Mitigated

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	436083											0.0000	23.2710	23.2710	4.5000e-004	4.3000e-004	23.4093
Total												0.0000	23.2710	23.2710	4.5000e-004	4.3000e-004	23.4093

City of Berkeley Housing Element Operational (Single Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	2.03281e+006	124.4790	0.0000	0.0000	124.4790
Total		124.4790	0.0000	0.0000	124.4790

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

City of Berkeley Housing Element Operational (Single Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	1.3706	1.3706	1.3100e-003	0.0000	1.4032
Unmitigated											0.0000	1.3706	1.3706	1.3100e-003	0.0000	1.4032

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping											0.0000	1.3706	1.3706	1.3100e-003	0.0000	1.4032
Total											0.0000	1.3706	1.3706	1.3100e-003	0.0000	1.4032

City of Berkeley Housing Element Operational (Single Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping											0.0000	1.3706	1.3706	1.3100e-003	0.0000	1.4032
Total											0.0000	1.3706	1.3706	1.3100e-003	0.0000	1.4032

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

City of Berkeley Housing Element Operational (Single Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	5.0302	7.1700e-003	4.5300e-003	6.5600
Unmitigated	6.0391	8.9700e-003	5.6600e-003	7.9513

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	7.3624 / 4.64152	6.0391	8.9700e-003	5.6600e-003	7.9513
Total		6.0391	8.9700e-003	5.6600e-003	7.9513

City of Berkeley Housing Element Operational (Single Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	5.88992 / 4.64152	5.0302	7.1700e-003	4.5300e-003	6.5600
Total		5.0302	7.1700e-003	4.5300e-003	6.5600

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	27.5378	1.6274	0.0000	68.2236
Unmitigated	27.5378	1.6274	0.0000	68.2236

City of Berkeley Housing Element Operational (Single Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	135.66	27.5378	1.6274	0.0000	68.2236
Total		27.5378	1.6274	0.0000	68.2236

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	135.66	27.5378	1.6274	0.0000	68.2236
Total		27.5378	1.6274	0.0000	68.2236

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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City of Berkeley Housing Element Operational (Single Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

City of Berkeley Housing Element Operational (Multi-Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

**City of Berkeley Housing Element Operational (Multi-Family)
 Bay Area AQMD Air District, Annual**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Mid Rise	17,427.00	Dwelling Unit	458.61	17,427,000.00	42630
Condo/Townhouse	1,570.00	Dwelling Unit	98.13	1,570,000.00	4490

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	64
Climate Zone	5			Operational Year	2031
Utility Company	User Defined				
CO2 Intensity (lb/MW hr)	135	CH4 Intensity (lb/MW hr)	0	N2O Intensity (lb/MW hr)	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics - East Bay Community Energy is the primary electricity provider, for conservative analysis will use Bright Choice Plan (40 percent renewable)

Land Use - Based on EIR growth assumption of 17,427 multi-family units, 1,570 condo/townhome units and 47,120 new residents. ADUs included as condo/townhouse for a conservative assumption.

Construction Phase - Operational model, no construction

Off-road Equipment - Operational model, no construction

Trips and VMT - Operational model, no construction

Architectural Coating - BAAQMD Regulation 8 Rule 3, Nonflat Coating

Vehicle Trips - Default CalEEMod trip generation rates used

Woodstoves - Berkeley Natural Gas prohibition, BAAQMD Regulation 6 Rule 3: No woodburning devices

Area Coating - BAAQMD Regulation 8 Rule 3, Nonflat Coating

Energy Use - Assume 90 percent of development will not include natural gas pursuant to BMC Section 12.80 (natural gas ban)

City of Berkeley Housing Element Operational (Multi-Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Water And Wastewater - EBMUD Wastewater treatment plant 100 percent aerobic

Area Mitigation - BAAQMD Regulation 8 Rule 3, Nonflat Coating

Water Mitigation - Pursuant to CalGreen 20 percent indoor water use reduction

Solid Waste -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	150.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	100
tblAreaCoating	Area_EF_Residential_Exterior	150	100
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	100	150
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	100	150
tblConstructionPhase	NumDays	660.00	1.00
tblEnergyUse	NT24E	3,054.10	3,743.84
tblEnergyUse	NT24E	3,795.01	4,484.75
tblEnergyUse	NT24NG	2,615.00	261.50
tblEnergyUse	NT24NG	2,615.00	261.50
tblEnergyUse	T24E	90.83	1,628.05
tblEnergyUse	T24E	42.95	4,847.25
tblEnergyUse	T24NG	5,828.01	582.80
tblEnergyUse	T24NG	18,214.40	1,821.44
tblFireplaces	FireplaceDayYear	11.14	0.00
tblFireplaces	FireplaceDayYear	11.14	0.00
tblFireplaces	FireplaceHourDay	3.50	0.00
tblFireplaces	FireplaceHourDay	3.50	0.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	2,614.05	0.00

City of Berkeley Housing Element Operational (Multi-Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblFireplaces	NumberGas	235.50	0.00
tblFireplaces	NumberNoFireplace	697.08	0.00
tblFireplaces	NumberNoFireplace	62.80	0.00
tblFireplaces	NumberWood	2,962.59	0.00
tblFireplaces	NumberWood	266.90	0.00
tblLandUse	Population	49,841.00	42,630.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	0	135
tblTripsAndVMT	WorkerTripNumber	2,736.00	0.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	NumberCatalytic	348.54	0.00
tblWoodstoves	NumberCatalytic	31.40	0.00
tblWoodstoves	NumberNoncatalytic	348.54	0.00
tblWoodstoves	NumberNoncatalytic	31.40	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

City of Berkeley Housing Element Operational (Multi-Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	:	:	:	:	:	:	:	:	:	:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	:	:	:	:	:	:	:	:	:	:	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)

City of Berkeley Housing Element Operational (Multi-Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

		Highest		
--	--	---------	--	--

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	230.4107	230.4107	0.2195	0.0000	235.8988
Energy											0.0000	8,476.8888	8,476.8888	0.0184	0.0176	8,482.5917
Mobile											0.0000	65,977.8089	65,977.8089	3.9499	3.0134	66,974.5558
Waste											1,773.8609	0.0000	1,773.8609	104.8322	0.0000	4,394.6653
Water											437.9112	577.3504	1,015.2616	1.5072	0.9523	1,336.7322
Total											2,211.7721	75,262.4588	77,474.2308	110.5273	3.9833	81,424.4437

City of Berkeley Housing Element Operational (Multi-Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	230.4107	230.4107	0.2195	0.0000	235.8988
Energy											0.0000	8,476.8888	8,476.8888	0.0184	0.0176	8,482.5917
Mobile											0.0000	65,977.8089	65,977.8089	3.9499	3.0134	66,974.5558
Waste											1,773.8609	0.0000	1,773.8609	104.8322	0.0000	4,394.6653
Water											350.3289	495.3279	845.6568	1.2058	0.7619	1,102.8333
Total											2,124.1898	75,180.4362	77,304.6260	110.2258	3.7929	81,190.5448

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.96	0.11	0.22	0.27	4.78	0.29

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Architectural Coating	Architectural Coating	1/2/2023	1/2/2023	5	1	

Acres of Grading (Site Preparation Phase): 0

City of Berkeley Housing Element Operational (Multi-Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

City of Berkeley Housing Element Operational (Multi-Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	65,977.80 89	65,977.80 89	3.9499	3.0134	66,974.55 58
Unmitigated											0.0000	65,977.80 89	65,977.80 89	3.9499	3.0134	66,974.55 58

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	94,802.88	85,566.57	71,276.43	208,147,551	208,147,551
Condo/Townhouse	11,492.40	12,779.80	9,859.60	26,428,968	26,428,968
Total	106,295.28	98,346.37	81,136.03	234,576,519	234,576,519

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Condo/Townhouse	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.555274	0.059572	0.187289	0.120548	0.022031	0.005855	0.011319	0.007376	0.000945	0.000497	0.025792	0.000881	0.002622
Condo/Townhouse	0.555274	0.059572	0.187289	0.120548	0.022031	0.005855	0.011319	0.007376	0.000945	0.000497	0.025792	0.000881	0.002622

5.0 Energy Detail

City of Berkeley Housing Element Operational (Multi-Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated											0.0000	7,517.2030	7,517.2030	0.0000	0.0000	7,517.2030
Electricity Unmitigated											0.0000	7,517.2030	7,517.2030	0.0000	0.0000	7,517.2030
NaturalGas Mitigated											0.0000	959.6858	959.6858	0.0184	0.0176	965.3887
NaturalGas Unmitigated											0.0000	959.6858	959.6858	0.0184	0.0176	965.3887

City of Berkeley Housing Element Operational (Multi-Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	1.47136e+007											0.0000	785.1746	785.1746	0.0151	0.0144	789.8405
Condo/Townhouse	3.27022e+006											0.0000	174.5112	174.5112	3.3400e-003	3.2000e-003	175.5482
Total												0.0000	959.6858	959.6858	0.0184	0.0176	965.3887

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	1.47136e+007											0.0000	785.1746	785.1746	0.0151	0.0144	789.8405
Condo/Townhouse	3.27022e+006											0.0000	174.5112	174.5112	3.3400e-003	3.2000e-003	175.5482
Total												0.0000	959.6858	959.6858	0.0184	0.0176	965.3887

City of Berkeley Housing Element Operational (Multi-Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.06537e+008	6,523.7901	0.0000	0.0000	6,523.7901
Condo/Townhouse	1.6223e+007	993.4129	0.0000	0.0000	993.4129
Total		7,517.2030	0.0000	0.0000	7,517.2030

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.06537e+008	6,523.7901	0.0000	0.0000	6,523.7901
Condo/Townhouse	1.6223e+007	993.4129	0.0000	0.0000	993.4129
Total		7,517.2030	0.0000	0.0000	7,517.2030

6.0 Area Detail

CalEEMod Version: CalEEMod.2020.4.0

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City of Berkeley Housing Element Operational (Multi-Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	230.4107	230.4107	0.2195	0.0000	235.8988
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	230.4107	230.4107	0.2195	0.0000	235.8988

City of Berkeley Housing Element Operational (Multi-Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping											0.0000	230.4107	230.4107	0.2195	0.0000	235.8988
Total											0.0000	230.4107	230.4107	0.2195	0.0000	235.8988

City of Berkeley Housing Element Operational (Multi-Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping											0.0000	230.4107	230.4107	0.2195	0.0000	235.8988
Total											0.0000	230.4107	230.4107	0.2195	0.0000	235.8988

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

City of Berkeley Housing Element Operational (Multi-Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	845.6568	1.2058	0.7619	1,102.8333
Unmitigated	1,015.2616	1.5072	0.9523	1,336.7322

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	1135.44 / 715.82	931.3557	1.3827	0.8736	1,226.2585
Condo/Townhouse	102.292 / 64.4883	83.9059	0.1246	0.0787	110.4737
Total		1,015.2616	1.5073	0.9523	1,336.7322

City of Berkeley Housing Element Operational (Multi-Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	908.351 / 715.82	775.7678	1.1061	0.6989	1,011.6900
Condo/Townhouse	81.8335 / 64.4883	69.8890	0.0997	0.0630	91.1433
Total		845.6568	1.2058	0.7619	1,102.8333

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1,773.8609	104.8322	0.0000	4,394.6653
Unmitigated	1,773.8609	104.8322	0.0000	4,394.6653

City of Berkeley Housing Element Operational (Multi-Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	8016.42	1,627.2608	96.1684	0.0000	4,031.4698
Condo/Townhouse	722.2	146.6001	8.6638	0.0000	363.1955
Total		1,773.8609	104.8322	0.0000	4,394.6653

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	8016.42	1,627.2608	96.1684	0.0000	4,031.4698
Condo/Townhouse	722.2	146.6001	8.6638	0.0000	363.1955
Total		1,773.8609	104.8322	0.0000	4,394.6653

9.0 Operational Offroad

City of Berkeley Housing Element Operational (Multi-Family) - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
----------------	--------

11.0 Vegetation

Appendix G

Noise Analysis

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 04/14/2022
 Case Description: Berkeley Housing Element

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
50 Feet from Construction	Residential	65.0	65.0	65.0

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	50.0	0.0
Dozer	No	40		81.7	50.0	0.0
Jackhammer	Yes	20		88.9	50.0	0.0

Results

		Noise Limit Exceedance (dBA)				Noise Limits (dBA)				
Night		Calculated (dBA)		Day Night		Evening				
		Day	Evening							
Equipment	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Excavator	N/A	N/A	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	N/A	N/A	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A
Jackhammer	N/A	N/A	88.9	81.9	N/A	N/A	N/A	N/A	N/A	N/A
Total			88.9	84.2	N/A	N/A	N/A	N/A	N/A	N/A

Groundborne Noise and Vibration Modeling

Notes
 The reference distance is measured from the nearest anticipated point of construction equipment to the nearest structure. Last Updated: 09/29/2021

Equipment	Reference Level Inputs			
	PPV _{ref} (in/sec)	Lv _{ref} (VdB)	RMS _{ref} (in/sec)	Reference Distance
Impact Pile Driver	0.644	112	0.398	25
Sonic Pile Driver	0.17	105	0.178	25
Vibratory Roller	0.21	94	0.050	25
Hoe Ram	0.089	87	0.022	25
Large bulldozer	0.089	87	0.022	25
Caisson drilling	0.089	87	0.022	25
Loaded trucks	0.076	83	0.014	25
Jack hammer	0.035	79	0.009	25
Small bulldozer	0.003	58	0.001	25

Equipment	Vibration Level at Receiver			
	Distance (feet)	PPV _x (in/sec)	Lv _x (VdB)	RMS _x (in/sec)
Impact Pile Driver	25	0.6440	112	0.398
Sonic Pile Driver	25	0.1700	105	0.178
Vibratory Roller	25	0.2100	94	0.050
Hoe Ram	25	0.0890	87	0.022
Large bulldozer	25	0.0890	87	0.022
Caisson drilling	25	0.0890	87	0.022
Loaded trucks	25	0.0760	83	0.014
Jack hammer	25	0.0350	79	0.009
Small bulldozer	25	0.0030	58	0.001

Equipment	Vibration Contours		
	Distance to (feet)		
	0.100 PPV	72.0 VdB	0.0080 RMS
Impact Pile Driver	136	1645	872
Sonic Pile Driver	40	791	419
Vibratory Roller	49	250	133
Hoe Ram	22	120	64
Large bulldozer	22	120	64
Caisson drilling	22	120	64
Loaded trucks	19	79	42
Jack hammer	10	52	28
Small bulldozer	1	6	3

Sources
 California Department of Transportation (Caltrans). 2020. Transportation and Construction Vibration Guidance Manual. April 2020. Available at: <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf>
 Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September 2018. Available at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

Variables	
V _{ref}	1E-06
Crest Factor (PPV/RMS)	4
Soil Type (Choice: default, hard, or sands)	default
n value	1.1

Groundborne Noise and Vibration Modeling

Notes
 The reference distance is measured from the nearest anticipated point of construction equipment to the nearest structure. Last Updated: 09/29/2021

Variables	
V _{ref}	1E-06
Crest Factor (PPV/RMS)	4
Soil Type (Choice: default, hard, or sands)	default
n value	1.1

Equipment	Reference Level Inputs			
	PPV _{ref} (in/sec)	Lv _{ref} (VdB)	RMS _{ref} (in/sec)	Reference Distance
Impact Pile Driver	0.644	112	0.398	25
Sonic Pile Driver	0.17	105	0.178	25
Vibratory Roller	0.21	94	0.050	25
Hoe Ram	0.089	87	0.022	25
Large bulldozer	0.089	87	0.022	25
Caisson drilling	0.089	87	0.022	25
Loaded trucks	0.076	83	0.014	25
Jack hammer	0.035	79	0.009	25
Small bulldozer	0.003	58	0.001	25

Equipment	Vibration Level at Receiver			
	Distance (feet)	PPV _x (in/sec)	Lv _x (VdB)	RMS _x (in/sec)
Impact Pile Driver	50	0.3004	105	0.186
Sonic Pile Driver	50	0.0793	98	0.083
Vibratory Roller	50	0.0980	87	0.023
Hoe Ram	50	0.0415	80	0.010
Large bulldozer	50	0.0415	80	0.010
Caisson drilling	50	0.0415	80	0.010
Loaded trucks	50	0.0355	76	0.007
Jack hammer	50	0.0163	72	0.004
Small bulldozer	50	0.0014	51	0.000

Equipment	Vibration Contours		
	Distance to (feet)		
	0.100 PPV	72.0 VdB	0.0080 RMS
Impact Pile Driver	136	1645	872
Sonic Pile Driver	40	791	419
Vibratory Roller	49	250	133
Hoe Ram	22	120	64
Large bulldozer	22	120	64
Caisson drilling	22	120	64
Loaded trucks	19	79	42
Jack hammer	10	52	28
Small bulldozer	1	6	3

Sources
 California Department of Transportation (Caltrans). 2020. Transportation and Construction Vibration Guidance Manual. April 2020. Available at: <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf>
 Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September 2018. Available at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

Groundborne Noise and Vibration Modeling

Notes
 The reference distance is measured from the nearest anticipated point of construction equipment to the nearest structure. Last Updated: 09/29/2021

Equipment	Reference Level Inputs			
	PPV _{ref} (in/sec)	Lv _{ref} (VdB)	RMS _{ref} (in/sec)	Reference Distance
Impact Pile Driver	0.644	112	0.398	25
Sonic Pile Driver	0.17	105	0.178	25
Vibratory Roller	0.21	94	0.050	25
Hoe Ram	0.089	87	0.022	25
Large bulldozer	0.089	87	0.022	25
Caisson drilling	0.089	87	0.022	25
Loaded trucks	0.076	83	0.014	25
Jack hammer	0.035	79	0.009	25
Small bulldozer	0.003	58	0.001	25

Equipment	Vibration Level at Receiver			
	Distance (feet)	PPV _x (in/sec)	Lv _x (VdB)	RMS _x (in/sec)
Impact Pile Driver	75	0.1923	102	0.119
Sonic Pile Driver	75	0.0508	95	0.053
Vibratory Roller	75	0.0627	84	0.015
Hoe Ram	75	0.0266	77	0.007
Large bulldozer	75	0.0266	77	0.007
Caisson drilling	75	0.0266	77	0.007
Loaded trucks	75	0.0227	73	0.004
Jack hammer	75	0.0105	69	0.003
Small bulldozer	75	0.0009	48	0.000

Equipment	Vibration Contours		
	Distance to (feet)		
	0.100 PPV	72.0 VdB	0.0080 RMS
Impact Pile Driver	136	1645	872
Sonic Pile Driver	40	791	419
Vibratory Roller	49	250	133
Hoe Ram	22	120	64
Large bulldozer	22	120	64
Caisson drilling	22	120	64
Loaded trucks	19	79	42
Jack hammer	10	52	28
Small bulldozer	1	6	3

Sources
 California Department of Transportation (Caltrans). 2020. Transportation and Construction Vibration Guidance Manual. April 2020. Available at: <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf>
 Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September 2018. Available at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

Variables	
V _{ref}	1E-06
Crest Factor (PPV/RMS)	4
Soil Type (Choice: default, hard, or sands)	default
n value	1.1

Groundborne Noise and Vibration Modeling

Notes
 The reference distance is measured from the nearest anticipated point of construction equipment to the nearest structure. Last Updated: 09/29/2021

Variables	
V _{ref}	1E-06
Crest Factor (PPV/RMS)	4
Soil Type (Choice: default, hard, or sands)	default
n value	1.1

Equipment	Reference Level Inputs			
	PPV _{ref} (in/sec)	Lv _{ref} (VdB)	RMS _{ref} (in/sec)	Reference Distance
Impact Pile Driver	0.644	112	0.398	25
Sonic Pile Driver	0.17	105	0.178	25
Vibratory Roller	0.21	94	0.050	25
Hoe Ram	0.089	87	0.022	25
Large bulldozer	0.089	87	0.022	25
Caisson drilling	0.089	87	0.022	25
Loaded trucks	0.076	83	0.014	25
Jack hammer	0.035	79	0.009	25
Small bulldozer	0.003	58	0.001	25

Equipment	Vibration Level at Receiver			
	Distance (feet)	PPV _x (in/sec)	Lv _x (VdB)	RMS _x (in/sec)
Impact Pile Driver	100	0.1402	99	0.087
Sonic Pile Driver	100	0.0370	92	0.039
Vibratory Roller	100	0.0457	81	0.011
Hoe Ram	100	0.0194	74	0.005
Large bulldozer	100	0.0194	74	0.005
Caisson drilling	100	0.0194	74	0.005
Loaded trucks	100	0.0165	70	0.003
Jack hammer	100	0.0076	66	0.002
Small bulldozer	100	0.0007	45	0.000

Equipment	Vibration Contours		
	Distance to (feet)		
	0.100 PPV	72.0 VdB	0.0080 RMS
Impact Pile Driver	136	1645	872
Sonic Pile Driver	40	791	419
Vibratory Roller	49	250	133
Hoe Ram	22	120	64
Large bulldozer	22	120	64
Caisson drilling	22	120	64
Loaded trucks	19	79	42
Jack hammer	10	52	28
Small bulldozer	1	6	3

Sources
 California Department of Transportation (Caltrans). 2020. Transportation and Construction Vibration Guidance Manual. April 2020. Available at: <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf>
 Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September 2018. Available at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

Groundborne Noise and Vibration Modeling

Notes
 The reference distance is measured from the nearest anticipated point of construction equipment to the nearest structure. Last Updated: 09/29/2021

Equipment	Reference Level Inputs			
	PPV _{ref} (in/sec)	Lv _{ref} (VdB)	RMS _{ref} (in/sec)	Reference Distance
Impact Pile Driver	0.644	112	0.398	25
Sonic Pile Driver	0.17	105	0.178	25
Vibratory Roller	0.21	94	0.050	25
Hoe Ram	0.089	87	0.022	25
Large bulldozer	0.089	87	0.022	25
Caisson drilling	0.089	87	0.022	25
Loaded trucks	0.076	83	0.014	25
Jack hammer	0.035	79	0.009	25
Small bulldozer	0.003	58	0.001	25

Equipment	Vibration Level at Receiver			
	Distance (feet)	PPV _x (in/sec)	Lv _x (VdB)	RMS _x (in/sec)
Impact Pile Driver	125	0.1097	97	0.068
Sonic Pile Driver	125	0.0289	90	0.030
Vibratory Roller	125	0.0358	79	0.009
Hoe Ram	125	0.0152	72	0.004
Large bulldozer	125	0.0152	72	0.004
Caisson drilling	125	0.0152	72	0.004
Loaded trucks	125	0.0129	68	0.002
Jack hammer	125	0.0060	64	0.002
Small bulldozer	125	0.0005	43	0.000

Equipment	Vibration Contours		
	Distance to (feet)		
	0.100 PPV	72.0 VdB	0.0080 RMS
Impact Pile Driver	136	1645	872
Sonic Pile Driver	40	791	419
Vibratory Roller	49	250	133
Hoe Ram	22	120	64
Large bulldozer	22	120	64
Caisson drilling	22	120	64
Loaded trucks	19	79	42
Jack hammer	10	52	28
Small bulldozer	1	6	3

Sources
 California Department of Transportation (Caltrans). 2020. Transportation and Construction Vibration Guidance Manual. April 2020. Available at: <https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf>
 Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment Manual. September 2018. Available at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

Variables	
V _{ref}	1E-06
Crest Factor (PPV/RMS)	4
Soil Type (Choice: default, hard, or sands)	default
n value	1.1

Attenuation and Contours

Noise Attenuation and Contours	
Input Variables	
Point or Line Source	Point
Hard or Soft Site	Hard
Attenuation Rate	6 dBA/Doubling of Distance <i>(Choice: 3, 4.5, 6, or 7.5)</i>
Reference Noise Level	70 dBA
Reference Distance	50 feet
<i>Note: Within 0-10 feet from the source, there is virtually no attenuation.</i>	

Noise Level at Receiver		
Distance to Receiver		Noise Level
50	ft	70.0 dBA
100	ft	64.0 dBA
150	ft	60.5 dBA
200	ft	58.0 dBA
400	ft	51.9 dBA
300	ft	54.4 dBA

Noise Contours	
Noise Level Contour	Distance from Source
80 dBA	16 ft
75 dBA	28 ft
70 dBA	50 ft
65 dBA	89 ft
60 dBA	158 ft
55 dBA	281 ft
50 dBA	500 ft
45 dBA	889 ft

Groundborne Noise and Vibration Modeling

Notes

The reference distance is measured from the nearest anticipated point of construction equipment to the nearest structure. Last Updated: 04/14/2022

Equipment	Reference Level Inputs			
	PPV _{ref} (in/sec)	Lv _{ref} (VdB)	RMS _{ref} (in/sec)	Reference Distance
Impact Pile Driver	0.644	112	0.398	25
Sonic Pile Driver	0.17	105	0.178	25
Vibratory Roller	0.21	94	0.050	25
Hoe Ram	0.089	87	0.022	25
Large bulldozer	0.089	87	0.022	25
Caisson drilling	0.089	87	0.022	25
Loaded trucks	0.076	83	0.014	25
Jack hammer	0.035	79	0.009	25
Small bulldozer	0.003	58	0.001	25

Equipment	Vibration Level at Receiver			
	Distance (feet)	PPV _x (in/sec)	Lv _x (VdB)	RMS _x (in/sec)
Impact Pile Driver	100	0.1402	99	0.087
Sonic Pile Driver	100	0.0370	92	0.039
Vibratory Roller	100	0.0457	81	0.011
Hoe Ram	100	0.0194	74	0.005
Large bulldozer	100	0.0194	74	0.005
Caisson drilling	100	0.0194	74	0.005
Loaded trucks	100	0.0165	70	0.003
Jack hammer	100	0.0076	66	0.002
Small bulldozer	100	0.0007	45	0.000

Equipment	Vibration Contours		
	Distance to (feet)		
	0.100 PPV	72.0 VdB	0.0080 RMS
Impact Pile Driver	136	1645	872
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Vibratory Roller	49	250	133
Hoe Ram	22	120	64
Large bulldozer	22	120	64
Caisson drilling	22	120	64
Loaded trucks	19	79	42
Jack hammer	10	52	28
Small bulldozer	1	6	3

Sources

California Department of Transportation (Caltrans). 2020. Transportation and Construction



155 Grand Avenue, Suite 505
Oakland, CA 94612
P 510.839.1742

Technical Memorandum

June 23, 2022

Project# 26756

To: Grace Wu
City of Berkeley
1947 Center Street, 2nd Floor
Berkeley, CA 94704

From: Anusha Musunuru, Damian Stefanakis, Kittelsson & Associates, Inc.

CC: Justin Horner, City of Berkeley; Karly Kaufman, Rincon Consultants, Inc.

RE: City of Berkeley Housing Element – Vehicle Miles Traveled (VMT) Impact Assessment Memorandum

INTRODUCTION

Kittelsson and Associates (Kittelsson) has prepared this vehicle miles traveled (VMT) impact assessment for the City of Berkeley Housing Element Update. This VMT assessment is based on Regional Housing Needs Allocation (RHNA) housing units developed by the City of Berkeley. Kittelsson conducted the travel demand modeling with the Alameda County Transportation Commission (CTC) Countywide Model. The VMT assessment is based on the SB 743 requirements and City of Berkeley VMT Guidelines.

The 2023-2031 Draft RHNA estimates include a total of 19,098 units located in the sites inventory within 106 selected traffic analysis zones (TAZs) around the City. Travel forecasts were prepared for both existing 2020 model year and future 2040 cumulative model year conditions. Since the year 2031 represents the Housing Element buildout, VMT for year 2031 was interpolated between 2020 and 2040. VMT results were extracted at the citywide level based on the efficiency metric, VMT per Capita and total VMT. The results were compared to the Bay Area regionwide average to determine if the additional housing units as per the Housing Element Update contribute to a VMT impact under SB 743 and City guidelines.

The overall effect of adding 19,098 housing units in Berkeley in the locations identified by the TAZs in the city and region level VMT is to shorten trip lengths, promote mode choice to transit-related modes and reduce VMT per capita for the City under both 2020 plus project and 2040 plus cumulative project conditions. Kittelsson evaluated the Housing Element Update at the programmatic level using an overall systemwide VMT assessment, i.e., considering all the TAZs within the city for evaluating the VMT impacts.

VMT THRESHOLDS

VMT thresholds are defined using recommendations from the California Office of Planning and Research (OPR) based on their final report, dated December 2018. Cities and counties could opt to develop their own methods, but CEQA impact criteria are generally consistent with OPR recommendations. The City of Berkeley's VMT Criteria and Thresholds were developed and published on June 29, 2020¹. This CEQA analysis is based on the City policy and supplemented with OPR recommendations (where applicable and necessary).

¹ City of Berkeley VMT Criteria and Thresholds, June 2020. Link: <https://berkeleyca.gov/sites/default/files/2022-02/VMT-Criteria-and-Thresholds.pdf>

The City of Berkeley has opted to compare VMT to the Bay Area regionwide average. Based on OPR and City guidelines, any development that does not immediately screen out for a VMT per capita assessment should produce a VMT per capita of 15% less than the baseline Bay Area regionwide average.

In the City of Berkeley, the screening criteria for CEQA Exemptions include the following for housing projects:

1. Within ½ mile of BART stations and Amtrak station,
2. Within ¼ mile of high-quality transit corridor, which has 15-minute frequency fixed-route bus service,
3. Contains 100% affordable housing,
4. All projects (housing related) expected to generate less than 836 daily VMT (usually around 20 residential units) are also exempt, and
5. All projects located in the low VMT areas, in a TAZ that has the household VMT per capita that is 15% lower than the baseline regional average.

VMT RESULTS

For Berkeley, VMT metrics are compared to the Bay Area regionwide average, and an impact is assessed if the project VMT per capita is higher than the established 15% below the regionwide average threshold. At the aggregate level, Table 1 through Table 3 indicates that the Housing Element Update project's overall VMT per capita produces lower VMT than 15% below the regionwide average (10.64 vs 19.31 in 2020, 10.86 vs 19.08 in 2031, and 11.03 vs 18.93 in 2040), and in aggregate is *less than significant* and does screen out from further VMT analysis and evaluation under CEQA.

Tables and figures of the VMT analysis are summarized below.

- Table 1 provides a summary of 2020 VMT per capita at the City, County, and Regionwide level.
- Table 2 provides a summary of 2040 VMT per capita at the City, County, and Regionwide level.
- Table 3 provides a summary of 2031 VMT per capita at the City, County, and Regionwide level.
- Figure 1 displays the sites inventory (except for the projected ADUs) by TAZ in the City of Berkeley.
- Figure 2 displays the 2020 households by TAZ and color coded based on households per acre by TAZ in the City of Berkeley.
- Figure 3 displays the 2040 households by TAZ and color coded based on households per acre by TAZ in the City of Berkeley.
- Figure 4 displays the 2020 population by TAZ and color coded based on population per acre by TAZ in the City of Berkeley.
- Figure 5 displays the 2040 population by TAZ and color coded based on population per acre by TAZ in the City of Berkeley.
- Figure 6 displays the households added as per housing element by TAZ and color coded based on households per acre by TAZ in the City of Berkeley.
- Figure 6A displays the households added as per housing element by TAZ and color coded based on households added by TAZ in the City of Berkeley.
- Figure 7 displays the population added as per housing element by TAZ and color coded based on population per acre by TAZ in the City of Berkeley.
- Figure 7A displays the population added as per housing element by TAZ and color coded based on population added by TAZ in the City of Berkeley.
- Figure 8 displays the 2020 plus project households by TAZ and color coded based on households per acre by TAZ in the City of Berkeley.
- Figure 9 displays the 2040 plus project households by TAZ and color coded based on households per acre by TAZ in the City of Berkeley.

- Figure 10 displays the 2020 plus project population by TAZ and color coded based on population per acre by TAZ in the City of Berkeley.
- Figure 11 displays the 2040 plus project population by TAZ and color coded based on population per acre by TAZ in the City of Berkeley.

Table 1. 2020 City, County, and Regionwide VMT per capita

Scenario	Households	Population	VMT	VMT/capita	15% Below
2020 No-Project					
City	52,293	128,004	1,436,244	11.22	
County	620,008	1,720,139	33,432,049	19.44	
Regionwide	2,887,140	7,915,267	180,468,151	22.80	19.38
2020 Plus Project					
City	71,391	175,466	1,867,472	10.64	
County	639,106	1,767,601	33,888,385	19.17	
Regionwide	2,906,238	7,962,729	180,855,141	22.71	19.31

SOURCE: KITTELSON & ASSOCIATES, INC., 2022

NOTE: NET CHANGE IN METRICS IS ASSOCIATED WITH HOUSING ELEMENT UPDATE
 2020 PLUS PROJECT VMT IS LOWER THAN 15% BELOW REGIONWIDE AVERAGE

Table 2. 2040 City, County, and Regionwide VMT per capita

Scenario	Households	Population	VMT	VMT/capita	15% Below
2040 No-Project					
City	55,366	141,068	1,607,349	11.39	
County	738,755	2,082,721	37,007,548	17.77	
Regionwide	3,431,389	9,626,790	215,286,847	22.36	19.01
2040 Plus Project					
City	74,464	188,530	2,078,822	11.03	
County	757,853	2,130,183	37,536,311	17.62	
Regionwide	3,450,487	9,674,252	215,459,688	22.27	18.93

SOURCE: KITTELSON & ASSOCIATES, INC., 2022

NOTE: NET CHANGE IN METRICS IS ASSOCIATED WITH HOUSING ELEMENT UPDATE
 2040 PLUS PROJECT VMT IS LOWER THAN 15% BELOW REGIONWIDE AVERAGE

Table 3. 2031 City, County, and Regionwide VMT per capita**

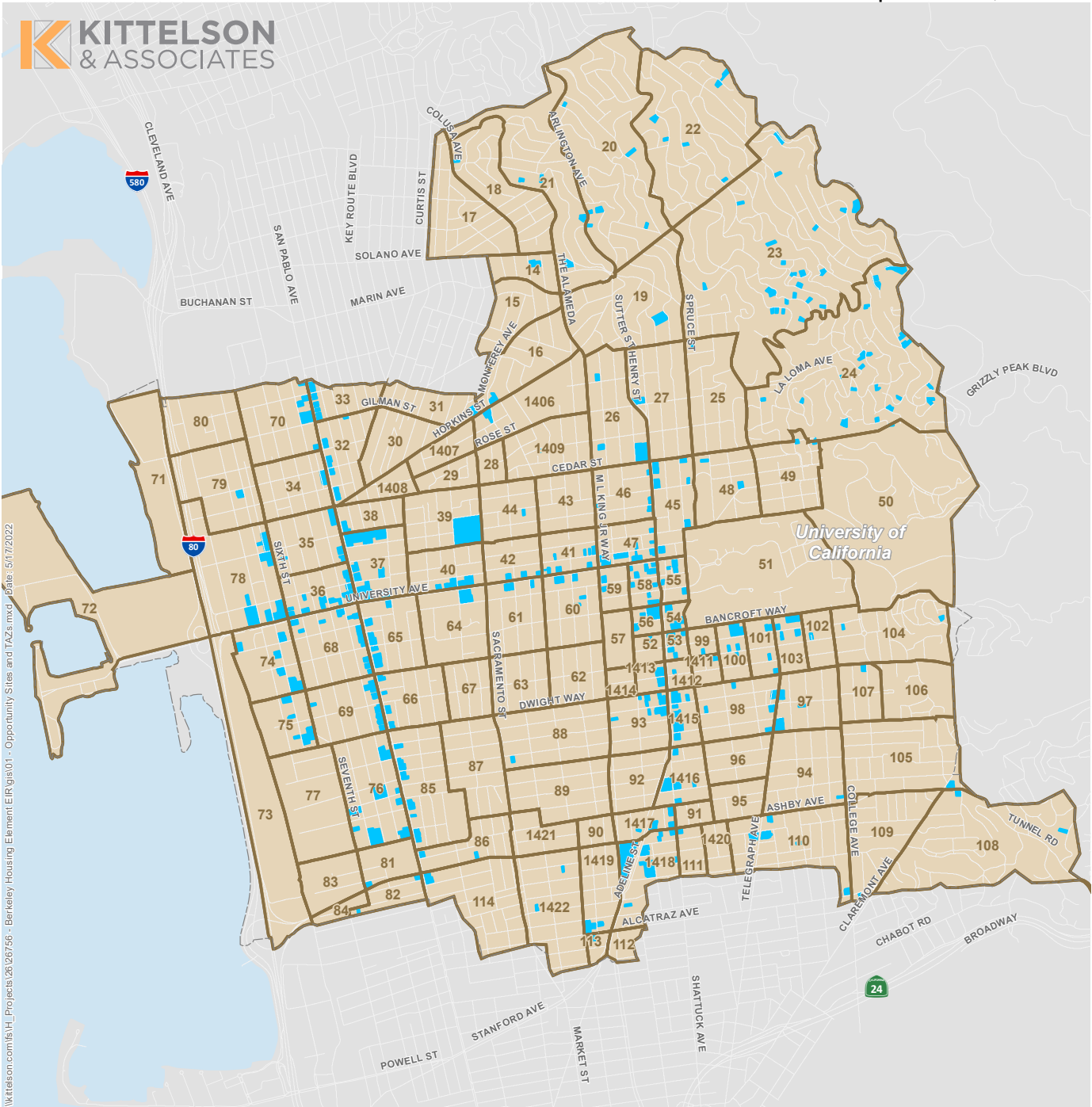
Scenario	Households	Population	VMT	VMT/capita	15% Below
2031 No-Project					
City	53,983	135,189	1,530,352	11.32	
County	685,319	1,919,559	35,398,573	18.44	
Regionwide	3,186,477	8,856,605	199,618,434	22.54	19.16
2031 Plus Project					
City	73,081	182,651	1,983,715	10.86	
County	704,417	1,967,021	35,894,744	18.25	
Regionwide	3,205,575	8,904,067	199,887,642	22.45	19.08

SOURCE: KITTELSON & ASSOCIATES, INC., 2022; ** - INTERPOLATED RESULTS FROM 2020 & 2040.

NOTE: NET CHANGE IN METRICS IS ASSOCIATED WITH HOUSING ELEMENT UPDATE
 2031 PLUS PROJECT VMT IS LOWER THAN 15% BELOW REGIONWIDE AVERAGE

CONCLUSION

The VMT assessment for the Housing Element Update was conducted using the Alameda CTC Countywide model. RHNA housing units were added to the model in each TAZ that represent the sites inventory and projected ADUs. VMT per capita was extracted at the systemwide (City, County, and Regionwide) level for 2020 and 2040. Year 2031 was interpolated from the 2020 and 2040. The results indicate that at the programmatic level, the VMT associated with the additional residential units is more than 15% below the existing regionwide average.



\\kittelson.com\ls\H_Projects\26126756 - Berkeley Housing Element\ER\gis\01 - Opportunity Sites and TAZs.mxd - Date: 5/17/2022




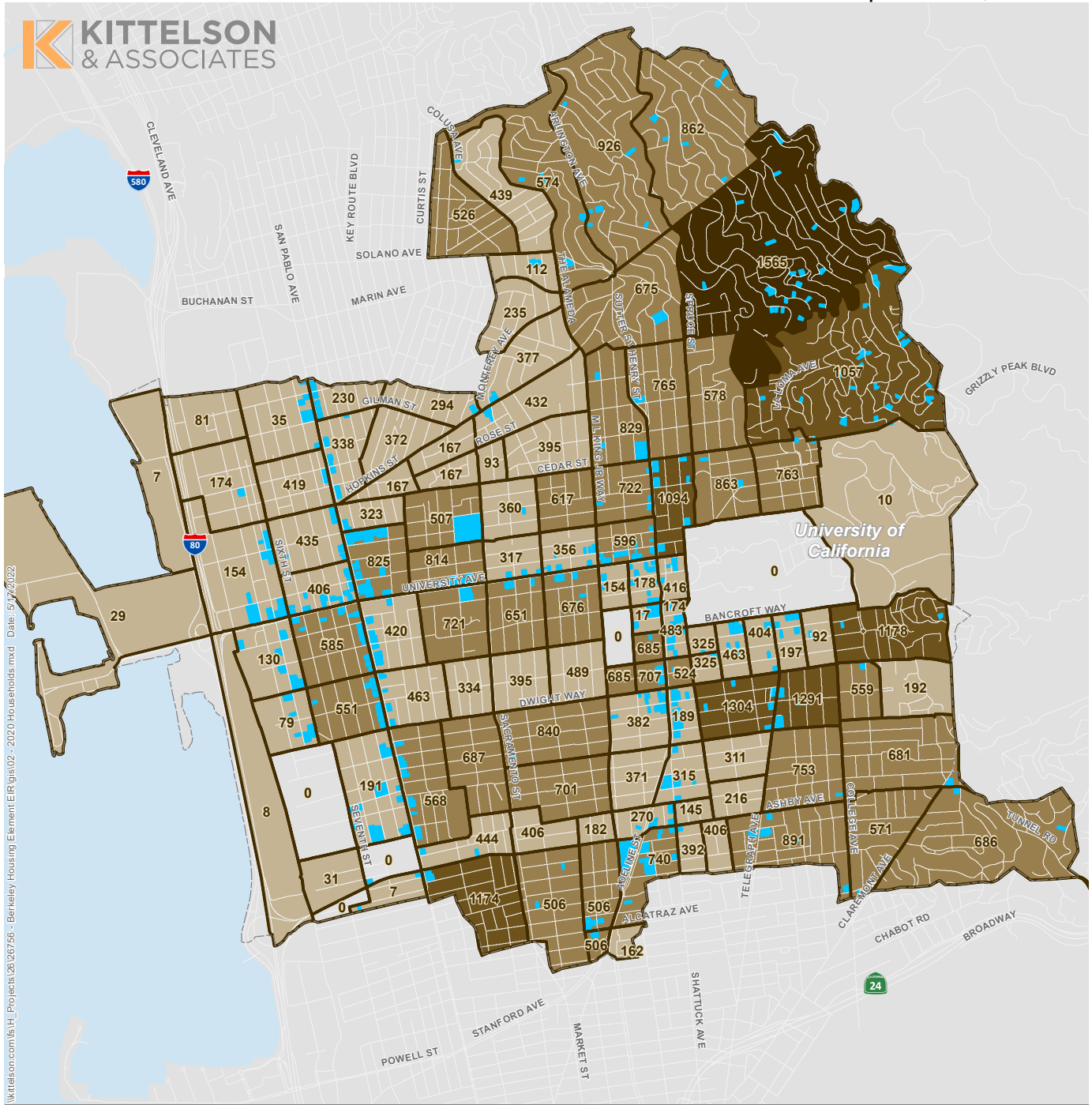
-  Sites Inventory
-  TAZs
-  Berkeley City Boundary



Figure 1

Sites Inventory and TAZs Berkeley, California



2020 Households by TAZ

- 0
- 1 - 500
- 501 - 1000
- 1001 - 1500
- 1501 - 1565
- Sites Inventory
- Berkeley City Boundary



Figure 2

Total 2020 Households: 52,293

**2020 Households
 Berkeley, California**



2040 Households by TAZ

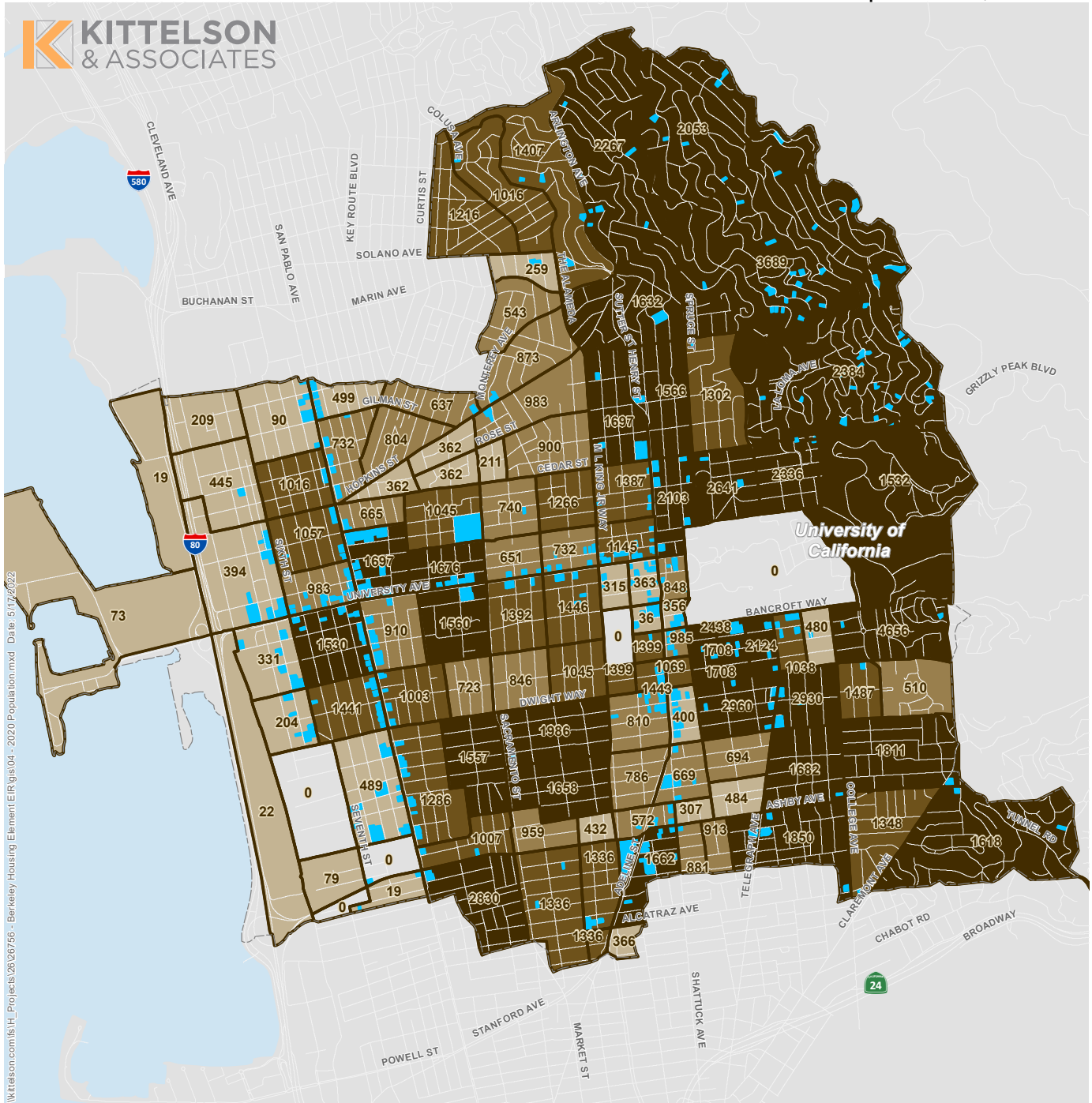
- 0
- 1 - 500
- 501 - 1000
- 1001 - 1500
- 1501 - 1566
- Sites Inventory
- Berkeley City Boundary



Figure 3

**2040 Households
 Berkeley, California**

Total 2040 Households: 55,366



2020 Population by TAZ

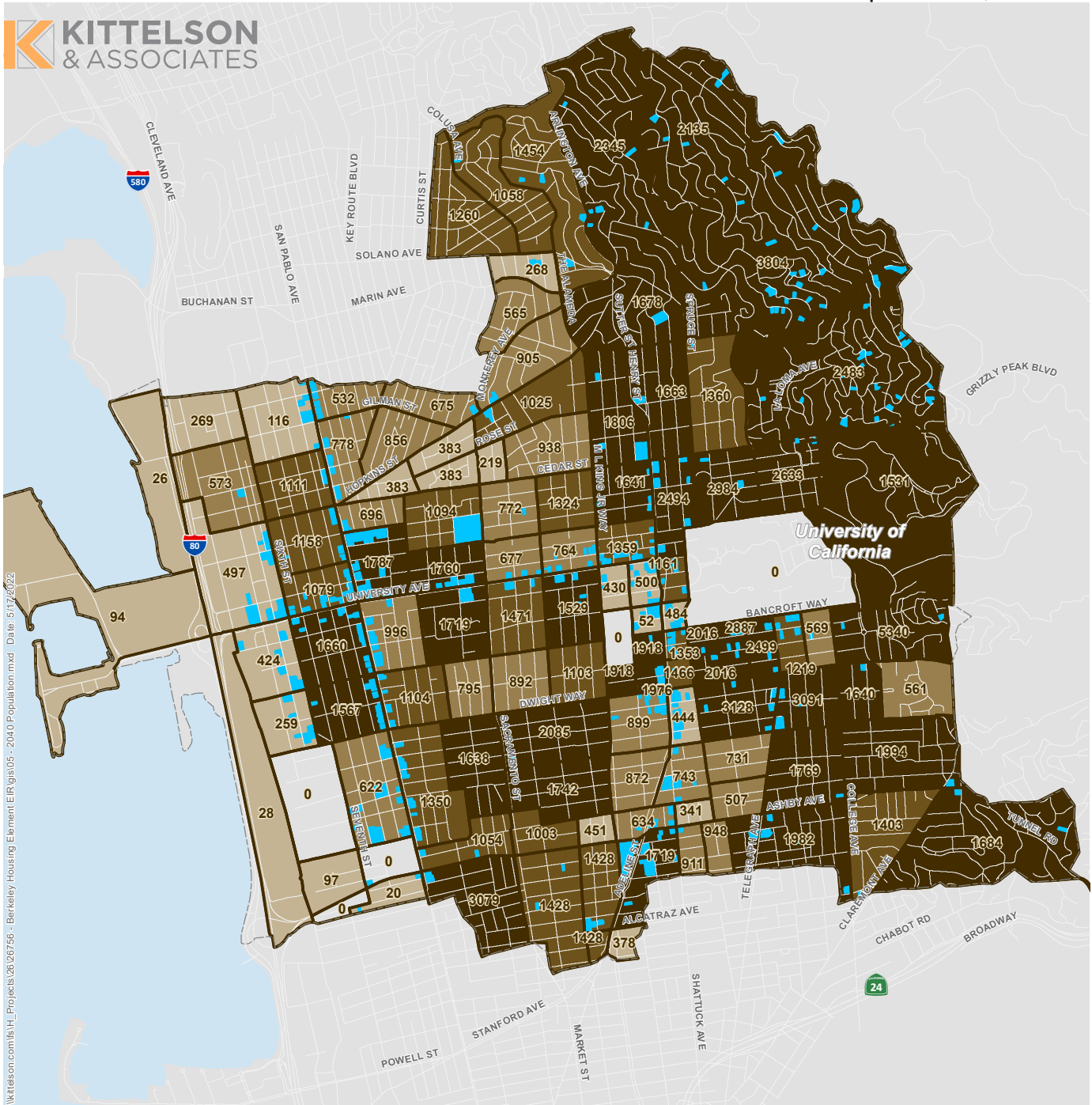
- 0
- 1 - 500
- 501 - 1000
- 1001 - 1500
- 1501 - 4656
- Sites Inventory
- Berkeley City Boundary



Total 2020 Population: 128,004

**2020 Population
 Berkeley, California**

Figure 4



2040 Population by TAZ

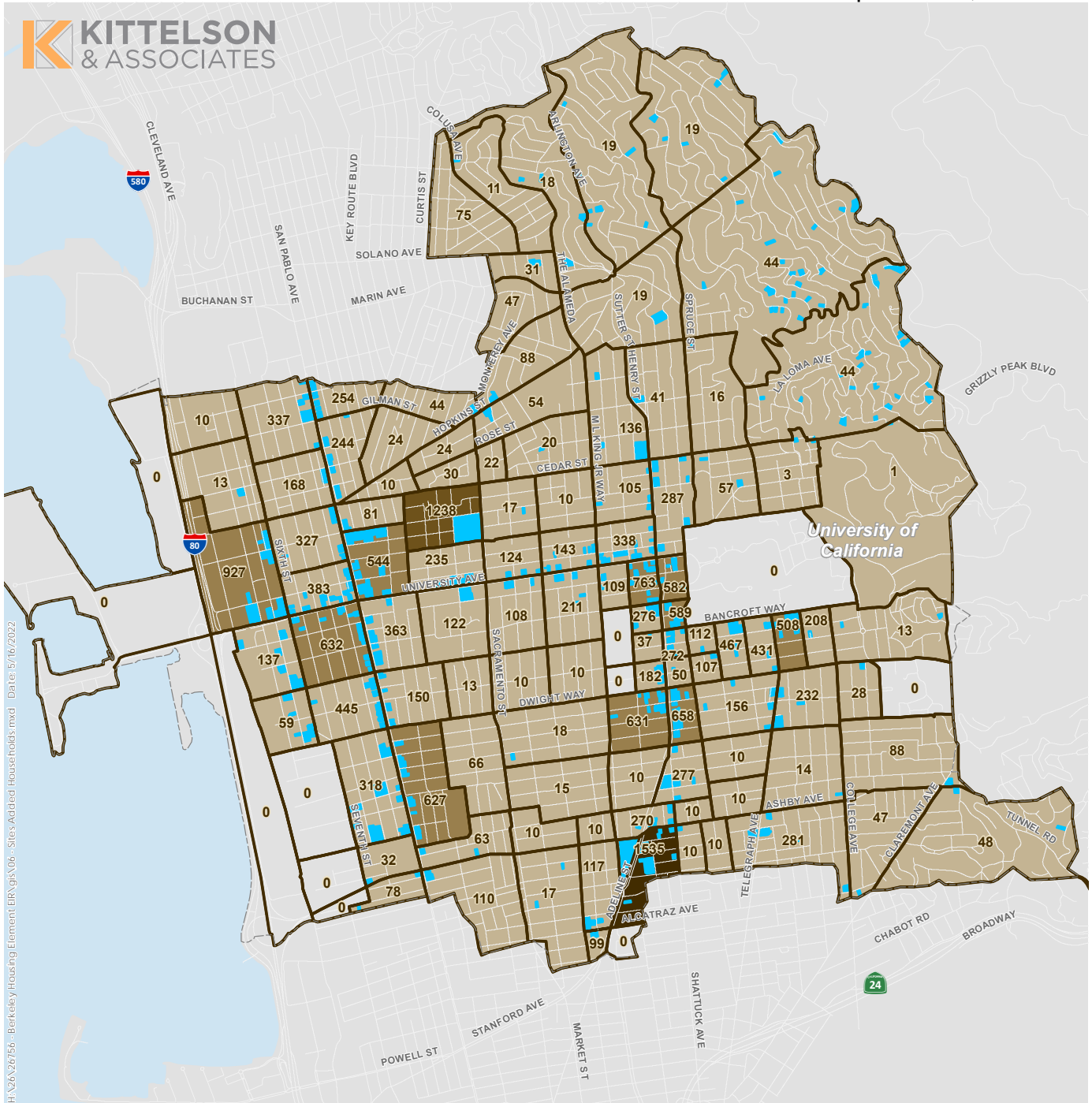
- 0
- 1 - 500
- 501 - 1000
- 1001 - 1500
- 1501 - 5340
- Sites Inventory
- Berkeley City Boundary



Figure 5

Total 2040 Population: 141,068

**2040 Population
 Berkeley, California**



Households Added as per Housing Element by TAZ

- 0
- 1 - 500
- 501 - 1000
- 1001 - 1500
- 1501 - 1535

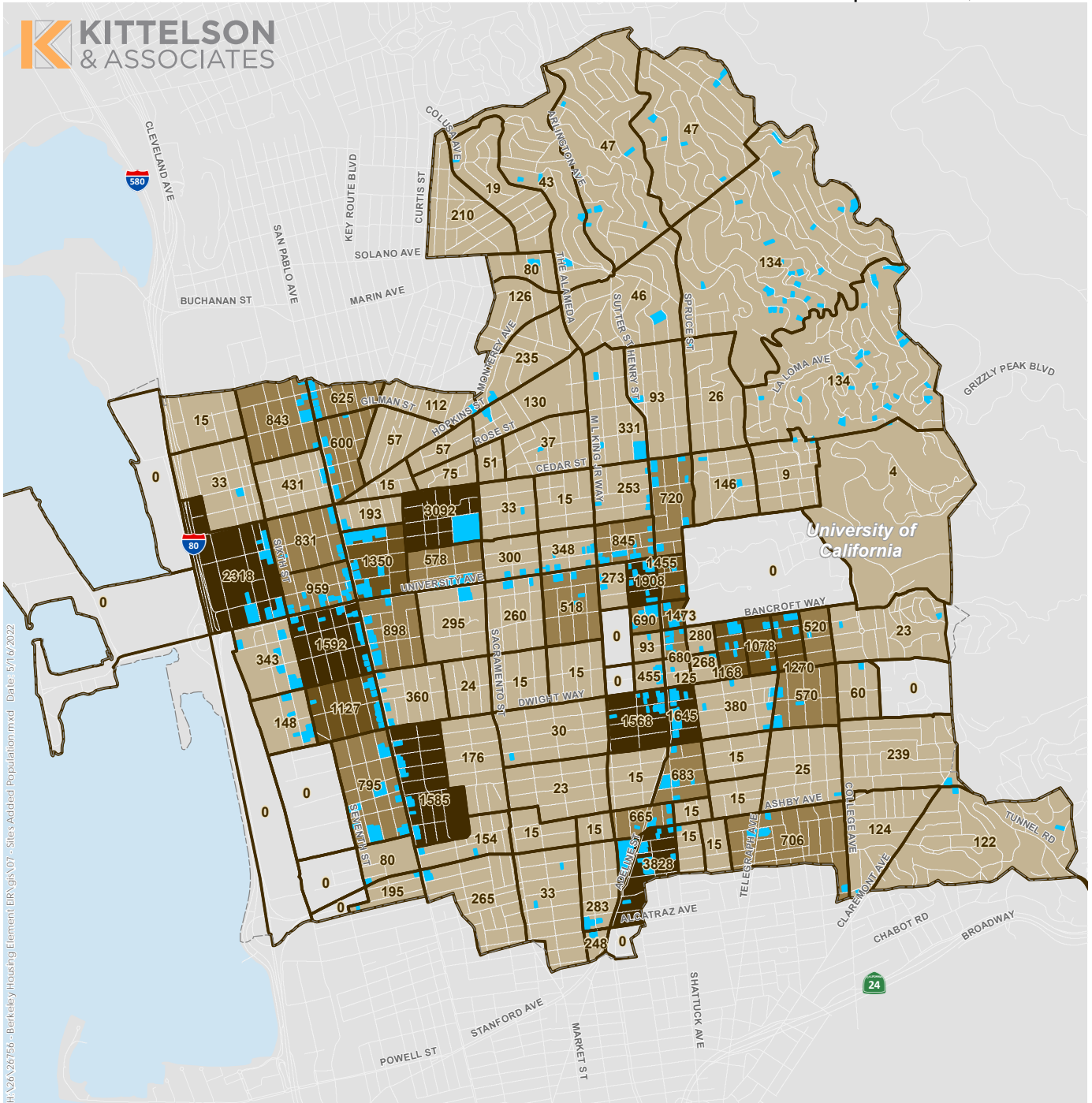
- Sites Inventory
- Berkeley City Boundary



Total Added Households per Housing Element by TAZ: 19,098

Sites Added Households
 Berkeley, California

Figure 6



Population Added as per Housing Element by TAZ

- 0
- 1 - 500
- 501 - 1000
- 1001 - 1500
- 1501 - 3828

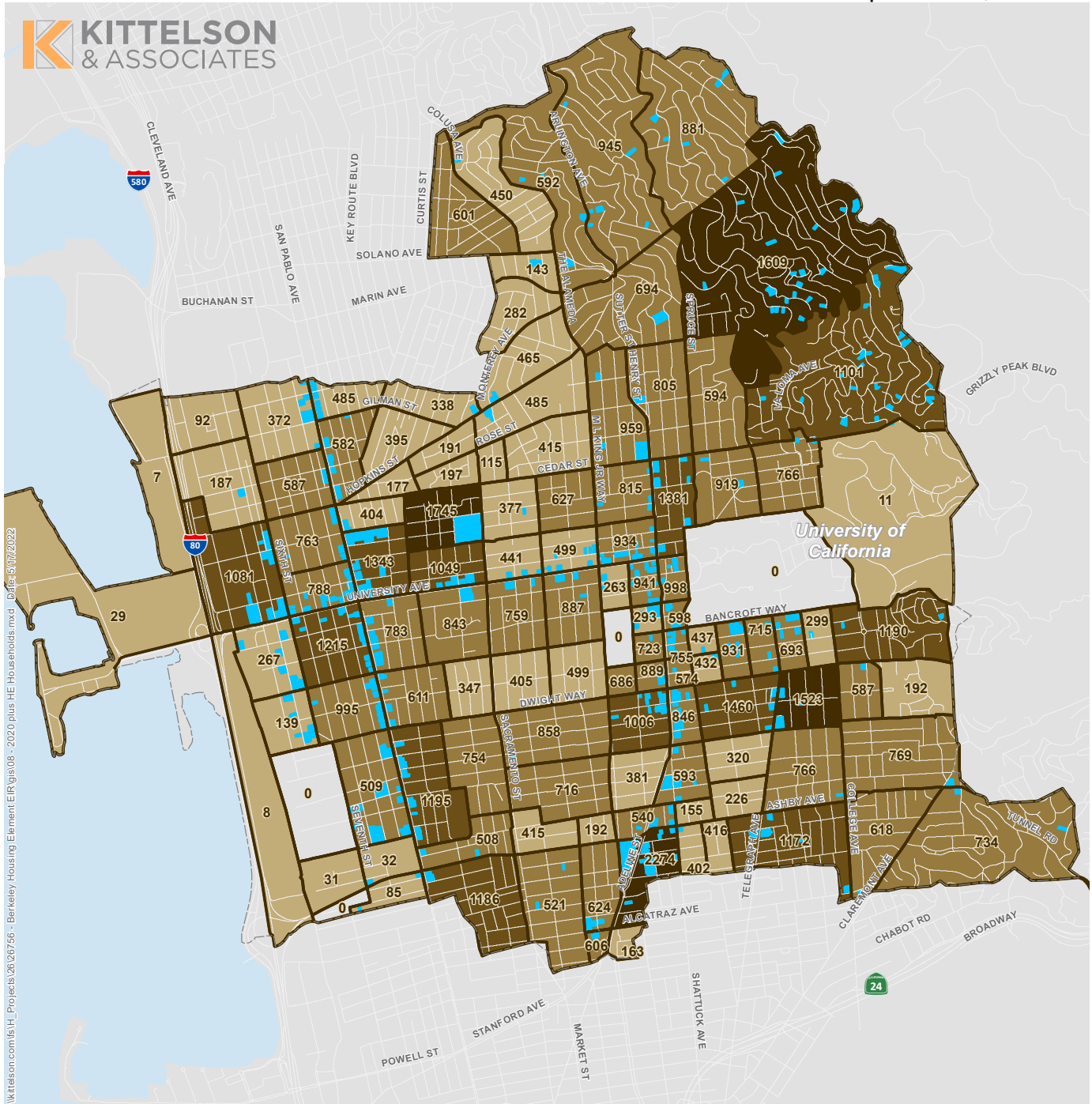
- Sites Inventory
- Berkeley City Boundary



Figure 7

Total Added Population per Housing Element by TAZ: 47,443

Sites Added Population
 Berkeley, California



Plus HE Households by TAZ

- 0
- 1 - 500
- 501 - 1000
- 1001 - 1500
- 1501 - 2274

- Sites Inventory
- Berkeley City Boundary



Figure 8

Total 2020+HE Households: 71,391

**2020 Plus HE Households
 Berkeley, California**



Plus HE Households by TAZ

- 0
- 1 - 500
- 501 - 1000
- 1001 - 1500
- 1501 - 2273
- Sites Inventory
- Berkeley City Boundary



Total 2040+HE Households: 74,464

Figure 9

**2040 Plus HE Households
 Berkeley, California**



Plus HE Population by TAZ

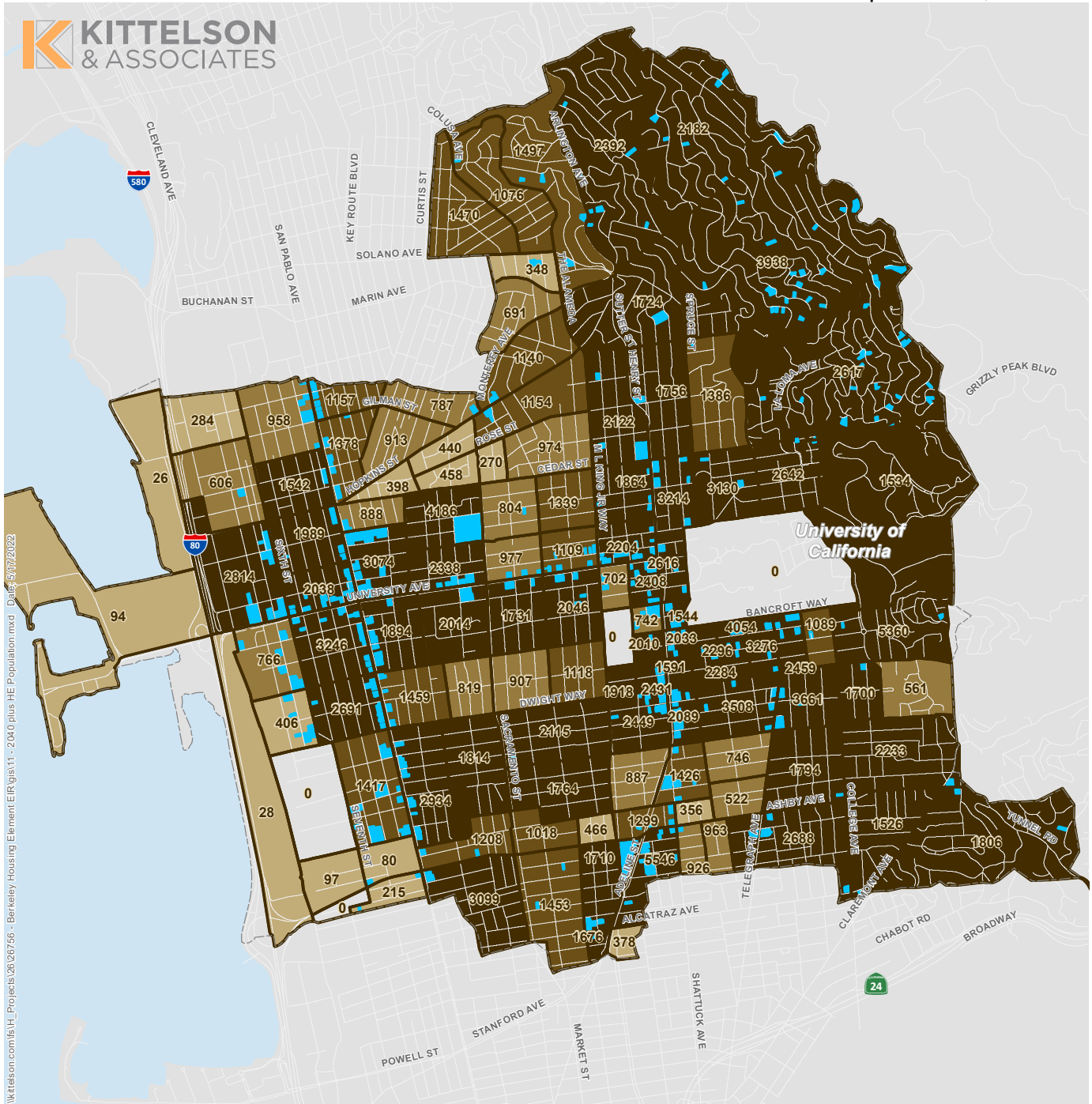
- 0
- 1 - 500
- 501 - 1000
- 1001 - 1500
- 1501 - 5490
- Sites Inventory
- Berkeley City Boundary



Total 2020+HE Population: 175,466

Figure 10

2020 Plus HE Population
 Berkeley, California



Plus HE Population by TAZ

- 0
- 1 - 500
- 501 - 1000
- 1001 - 1500
- 1501 - 5546
- Sites Inventory
- Berkeley City Boundary



Total 2040+HE Population: 188,530

Figure 11

**2040 Plus HE Population
 Berkeley, California**

Communications

From: Pearson, Alene
Sent: Friday, August 26, 2022 4:21 PM
To: Pearson, Alene
Subject: express my thanks..

Hello Commissioners,

As you know, Grace Wu will be stepping into the role of Secretary to the Planning Commission as of the next meeting. I want to express my thanks for your support and partnership during my time in this position – I have really enjoyed the work and working with you.

And although I will no longer be meeting with you every month, I will still be following your meetings closely 😊.

If I can ever be of help, you know how to contact me!

Best,
Alene

Alene Pearson, AICP

Deputy Director, Planning and Development Department

City of Berkeley

apearson@cityofberkeley.info

510-981-7489

Communications

Subject: FW: Planning Commissioner Training thru IGL
Attachments: August Planning Commissioner Trainings- Northern & Southern CA; August Planning Commissioner Trainings- Northern & Southern CA.pdf

From: Pearson, Alene
Sent: Tuesday, July 26, 2022 4:49 PM
To:
Subject: Planning Commissioner Training thru IGL

Dear Commissioners,
Attached you'll find information on a free Planning Commissioner Training hosted by Institute for Local Government. Alameda County's training date is October 21, 2022. You must be a present Planning Commissioner (or Planning Commission staff) to pre-register and attend.
Best,
Alene

Alene Pearson, AICP
Deputy Director, Planning and Development Department
City of Berkeley
apearson@cityofberkeley.info
510-981-7489

Communications

From: Institute for Local Government <info+ca-ilg.org@ccsend.com>
Sent: Tuesday, July 26, 2022 4:31 PM
To: Pearson, Alene
Subject: August Planning Commissioner Trainings- Northern & Southern CA

WARNING: This is not a City of Berkeley email. Do not click links or attachments unless you trust the sender and know the content is safe.



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- How to work effectively with staff and the governing board
- Effective community engagement
- CEQA basics
- Required planning documents
- Local planning challenges and opportunities

In each training session, we reserve time to network and discuss local planning challenges and opportunities, specific for each given region. These trainings are designed to give participants the opportunity to engage with experts in the field and learn from fellow planning commissioners about best practices, emerging trends and lessons learned.

All sessions will run from 9:30am to 4:00pm, with coffee and networking beginning at 9:00am. Please click on your region below for more information and to register. Must be a current planning commissioner or planning commission staff and pre-registered to attend.

Planning Commissioners who miss their county's training may attend a future session in a different county. Local Government agency staff not currently on a Planning Commission may attend these sessions if space allows. Priority is given first to Planning Commissioners and Planning Commission staff.

Please send an email to pctrainings@ca-ilg.org with any questions you may have.

UPCOMING TRAININGS:

- [Sonoma, Napa, Solano and Marin Counties, July 29, 2022](#)
- [Alpine, Mono and Inyo Counties, August 12, 2022](#)
- [San Bernardino and Riverside Counties, August 26, 2022](#)

ADDITIONAL TRAININGS:

- [Los Angeles County, September 12, 2022](#)
- [San Mateo and Santa Clara, October 7, 2022](#)
- [Humboldt, Mendocino and Lake Counties, October 14, 2022](#)
- [Alameda, Contra Costa San Francisco Counties, October 21, 2022](#)
- [Orange County, November 18, 2022](#)
- [Kern, Tulare, Kings and Fresno Counties, TBD 2023](#)
- [San Luis Obispo, Santa Barbara and Ventura Counties, TBD 2023](#)
- [Shasta, Trinity, Siskiyou, Lassen, Plumas, Modoc and Del Norte Counties, TBD 2023](#)
- [Tehama, Glenn, Butte, Colusa, Yuba and Sutter Counties, TBD 2023](#)

PAST TRAININGS:

- Sacramento and Yolo Counties, April 22, 2022
- El Dorado, Placer and Sierra Counties, April 29, 2022
- Calaveras, Tuolumne, Mariposa, Nevada and Amador Counties, May, 13, 2022
- Imperial County, June 16, 2022
- San Diego, June 17, 2022
- Santa Cruz, San Benito and Monterey Counties, July 22, 2022





[Register Here](#)

These trainings are hosted by ILG in partnership with PlaceWorks and the California Department of Housing & Community Development.



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Communications

From: Matthew Lewis <matthew@matthewmlewis.com>
Sent: Tuesday, July 12, 2022 6:07 PM
To: Housing Element <HousingElement@cityofberkeley.info>
Subject: Comments on Berkeley Housing Element

WARNING: This is not a City of Berkeley email. Do not click links or attachments unless you trust the sender and know the content is safe.

July 12, 2022

Grace Wu, Senior Planner
Planning and Development Department
City of Berkeley
1947 Center Street, Second Floor
Berkeley, CA 94704

Subject: City's Housing Element Exacerbates Harm to Human Health, Exposes Residents to Dangerous Street Conditions, and Fails to Affirmatively Further Fair Housing; Housing Must Be Located 500 Feet from Major Sources of Air Pollution, or the City Must Actively Mitigate Pollution

Dear Ms. Pearson,

I am writing with my comments on the city's Draft Sites Inventory for the 6th Cycle Berkeley Housing Element, presented to the Planning Commission on May 4, 2022. I appreciate the amount of time and effort that went into completing the inventory, and so it is with great disappointment that I must register my strong objections to what is clearly an illegal and, therefore, non-certifiable housing element.

Many other Berkeley residents have commented on the questionable nature of many of the sites in the inventory, and on the city's failure to locate zoning-compliant sites in Berkeley's historically exclusionary neighborhoods, which is itself a disqualifying factor for certification under AFFH. I will limit my comments to the sites the city has focused on for the majority of new housing, including very-low, low- and moderate-income units, which are primarily along the high-traffic corridors of San Pablo Avenue, University Avenue, and Shattuck Avenue.

In recent years, the city has had the opportunity to improve street safety and reduce pollution from traffic on two of these three major thoroughfares (Telegraph and San Pablo). Options included dedicated bus lanes, protected bike lanes, traffic calming and road diet interventions, bulb-outs and other pedestrian safety features, raised crosswalks, lower speed limits (made possible by recent state legislation), and more frequently signalized intersections. But rather than follow current best practices in street design, safety improvements, and pollution reduction, the city made political decisions to maintain current levels of car speed, traffic, and pollution.

These decisions are material to the city's sites inventory. Concentrating most new housing – particularly low-income and other subsidized housing – on high-speed traffic corridors presents numerous health and safety risks that the city is choosing to exacerbate with current practices. In essence, in exchange for locating virtually no new housing in wealthier, lower-density neighborhoods, the city is choosing to subject most of its future residents, particularly but not exclusively lower-income residents along San Pablo and University Avenues, to dangerous levels of air pollution and significant personal risk of traffic violence on the streets where their homes will be located.

The evidence about the detrimental human health effects of locating dense housing on busy traffic thoroughfares is robust. According to the [US Environmental Protection Agency](#):

Air pollutants from cars, trucks and other motor vehicles are found in higher concentrations near major roads. People who live, work or attend school near major roads appear to have an increased incidence and severity of health problems associated with air pollution exposures related to roadway traffic including higher rates of asthma onset and aggravation, cardiovascular disease, impaired lung development in children, pre-term and low-birthweight infants, childhood leukemia, and premature death.

The [California Air Resources Board \(CARB\) has published technical guidance](#) for cities pursuing infill development on high-traffic corridors (such as San Pablo, University, and Telegraph):

The foremost strategy for reducing pollution exposure near high-volume roadways is to minimize traffic pollution in the first place. A key mechanism for this is the reduction of vehicle miles traveled (VMT). State legislation including Senate Bills 375 and 743, are specifically designed to facilitate VMT reductions from passenger cars by encouraging and facilitating the replacement of vehicle trips with walk, bike, and transit trips.

CARB's 2005 Land Use Handbook also recommended that residential uses (which is covered by "sensitive uses") not be physically located such that residents would be exposed to harmful pollutants:

The 2005 Land Use Handbook recommends that health protective distances (500 feet at minimum, if there is no site-specific information available) be implemented to separate sensitive uses from freeways, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/ day.

San Pablo Avenue carries more than 100,000 vehicles per day, and so, under best practices to protect human health, should not have any new homes located within 500 feet without substantial mitigation measures to prioritize transit-only lanes, reduce dangerous vehicle speeds, enhance the safety of pedestrian and bicycle facilities, and reduce air pollution. [Alameda County has determined that San Pablo Avenue is a deadly/dangerous corridor](#) for people who travel by mode other than personal vehicle, and is in the process of designing safety enhancements for the cities that share a border with Berkeley:

Bicyclist- and pedestrian-involved collisions are overrepresented in the collision records along San Pablo Avenue relative to existing volumes (Figure 3). Most collisions along San Pablo Avenue occur in or near intersections (within 100 feet) (see High Injury Network shown in Figure 7 on pg. 5). Unsafe speed is a common collision factor between modes. This indicates a need for safety improvements focusing on intersections and intersection approaches to protect pedestrians and bicyclists as well as projects that reduce auto speeds.

But the [City of Berkeley opted out of these enhancements](#) and so will not be applying them to the section of San Pablo within its borders in the near future; while the city's political stance on San Pablo has changed, the timing of the improvements are not likely to coincide with the need for housing during the 6th RHNA cycle.

Based on the city's deliberate blockage of safety and transit interventions on San Pablo; its failure to implement any form of street safety or traffic/VMT reductions on University and Shattuck; and its blockage of street safety and transit interventions on Telegraph, it is entirely likely that the future residents along these high-traffic corridors will be exposed to even greater pollution and traffic hazards, as is the current policy of the City of Berkeley.

Knowingly exposing future residents to these unsafe and unhealthy conditions is counter to both the spirit and the letter of Affirmatively Furthering Fair Housing. In essence, the City of Berkeley is concentrating most of its proposed new housing sites in the 6th RHNA cycle along physically dangerous and highly polluted traffic corridors. The city's political failure to act to mitigate traffic hazards and air pollution should disqualify most of these sites from consideration, given the high health impacts – including permanent lung and developmental damage, severe injury, and death – that are the result of current traffic engineering standards and related management practices on these streets.

As mitigation and to correct these profound errors in its housing element, the city should consider either a) letting go of its oppositional stance on safe streets, transit, and clean air, and follow CARB best practices along these corridors to reduce air pollution and traffic hazards, or b) reducing its reliance on these corridors during the 6th cycle, and follow CARB technical guidance to locate most of its denser, lower and moderate-income housing in neighborhoods located at least 500 feet away from these high-hazard areas, so as to protect the health and safety of its residents.

Thank you very much for your consideration,

Matthew Lewis
Berkeley
District 3

CC:

Planning Commission

Alene Pearson, Deputy Director of Planning and Development

City of Berkeley Planning Commission

Communications

From: Pearson, Alene
Sent: Thursday, July 7, 2022 1:47 PM
To:
Subject: Public Comment on City of Berkeley Draft Housing Element Update

Dear Commissioners,

Thanks for your participation in last night's meeting. We really appreciate your thoughtful feedback on the referrals!

Below is information requested on how to provide comments on the draft Housing Element Update.

The public comment period ends on July 14, 2022.

Thanks for sharing with your networks.

Best,
Alene

Alene Pearson, AICP

Deputy Director, Planning and Development Department

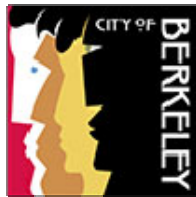
City of Berkeley

apearson@cityofberkeley.info

510-981-7489

July 7, 2022

[View this message as a webpage](#)



Finding Solutions to Berkeley Housing Choices

Housing Element Update



One week left! Provide comments on the City of Berkeley's draft Housing Element.

The public review period for the draft Housing Element Update **closes next Thursday, July 14th.**

The draft Housing Element Update, sites inventory map, and appendices are available at <https://cityofberkeley.info/HousingElement>.

Berkeley Housing Element 2023-2031

To provide specific feedback or download a PDF copy, please use the drop down menu to select each section and click anywhere in the document to add a comment.

- [Berkeley Housing Element Public Draft](#)
- [Sites Inventory Map](#)
- [Appendix A. Publicly Assisted Housing](#)
- [Appendix B. Development Standards](#)
- [Appendix C. Sites Inventory](#)
- [Appendix D. Review of 5th Cycle](#)
- [Appendix E. Affirmatively Furthering Fair Housing \(AFFH\)](#)
- [Appendix F. Outreach and Engagement](#)

For general feedback on the Housing Element Update: <https://bit.ly/HEUGeneralFeedback>.

The Housing Element Update will serve as the City of Berkeley's housing plan for the next 8 years (2023-2031). It is an important opportunity for Berkeley's residents and stakeholders to come together on assessing

housing needs, identifying policy and resource priorities, and finding solutions to implement a wide range of housing choices.

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