CITY OF BERKELEY

OFFICE OF THE MAYOR

To: Honorable Members of the City Council

From: Mayor Jesse Arreguín and Councilmember Sophie Hahn

Subject: Commit to C40 Race to Zero Campaign

RECOMMENDATION

Adopt a Resolution committing the City of Berkeley to the C40 Race to Zero Campaign.

BACKGROUND

The City of Berkeley has long been a leader on climate action. In 2006, Berkeley residents voted to reduce the community's greenhouse gas (GHG) emissions by 80% below 2000 levels by 2050, and the resulting Climate Action Plan (CAP) was adopted by Berkeley City Council in 2009. In 2018, then-Governor Brown committed California to carbon neutrality by 2045, the Berkeley City Council resolved to become a "Fossil Fuel-Free City," and the Council declared a Climate Emergency, all steps to signal the urgency of these ambitious goals and the need to act on climate threats in an equitable manner.

In July, 2020 City staff provided a detailed update on the Climate Action and Resilience plans, which provided a summary of the work being done to date throughout the City to meet Berkeley's ambitious climate goals (Attachment 2). Key efforts include the development of Berkeley's first Electric Mobility Roadmap, the Natural Gas Prohibition Ordinance, the Building Energy Savings Ordinance, and promoting active transportation. More recently, the City Council took action to remove parking minimums in most new construction.[1] These actions demonstrate Berkeley's climate leadership and the critical role for cities to play in climate action.

The Race to Zero is a global campaign run by the COP26 Presidency and High-Level Climate Champions to rally leadership and support from businesses, cities, regions and investors for a healthy, resilient, zero carbon transition that prevents future threats, creates decent jobs, and unlocks inclusive, sustainable growth. The objective is to build momentum around the shift to a decarbonized economy ahead of COP26, where governments must strengthen their contributions to the Paris Agreement. This will send

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[1] Berkeley City Council Special Meeting Annotated Agenda, January 26, 2021, https://www.cityofberkeley.info/Clerk/City_Council/2021/01_Jan/Documents/01-26_Special_Annotated_Agenda_pdf.aspx

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governments a resounding signal that cities, regions, businesses and investors are united in meeting the Paris goals and creating a more inclusive and resilient economy.[2]

By adopting this resolution the City will leverage its commitment to climate action and join with other cities and leaders who share our vision for a better future based on a set of principles that address equity and the environment.

ENVIRONMENTAL IMPACT
Joining coalitions in support of national and international agreement toward climate action is critical to Berkeley's goals of achieving a more sustainable, equitable and resilient future.

FINANCIAL IMPLICATIONS
The recommended action is based on consultation and suggestion of City staff. It is not anticipated that this effort will require any additional staff work at this time.

CONTACT PERSON
Jesse Arreguín, Mayor, (510) 981- 7100

Attachments:
1. Resolution
2. Climate Action Plan and Resilience Update, July 21, 2020
3. March 2021 Climate Mayors Presentation, Race to Zero Overview

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[2]About Cities Race to Zero, https://www.c40knowledgehub.org/s/cities-race-to-zero?language=en_US

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RESOLUTION NO. ##,###-N.S.

COMMITTING THE CITY OF BERKELEY TO THE RACE TO ZERO CAMPAIGN

WHEREAS, on June 2, 2009, the Berkeley City Council adopted the Berkeley Climate Action Plan to reduce greenhouse gas emissions by 80% of Berkeley's 2000 emissions level; and

WHEREAS, on April 1, 2016, the City of Berkeley released its Resilience Strategy; and

WHEREAS, on November 1, 2016, the Berkeley City Council approved Berkeley's participation in the East Bay Community Energy (EBCE) Authority and authorized implementation of EBCE in Berkeley; and

WHEREAS, on June 12, 2018, the Berkeley City Council declared a Climate Emergency and resolved to become a "Fossil Fuel-Free City"; and

WHEREAS, on July 23, 2019, Berkeley City Council adopted a Prohibition of Natural Gas Infrastructure in New Buildings (BMC Chapter 12.80); and

WHEREAS, on December 3, 2019, Berkeley City Council held a public hearing and adopted an electric-favored reach code to complement the Natural Gas Prohibition; and

WHEREAS, on July 21, 2020, Berkeley City Council adopted the first Berkeley Electric Mobility Roadmap; and

WHEREAS, this demonstrable leadership on climate action has made Berkeley a regional and national model that can be leveraged by joining national campaigns and coalitions for climate actions; and

WHEREAS, the Race to Zero Campaign is a global campaign run by the COP26 Presidency and High-Level Climate Champions to rally leadership and support from businesses, cities, regions and investors for a healthy, resilient, zero carbon transition that prevents future threats, creates decent jobs, and unlocks inclusive, sustainable growth; and

WHEREAS, the objective of this campaign is to build momentum around the shift to a decarbonized economy ahead of COP26, where governments must strengthen their contributions to the Paris Agreement; and

WHEREAS, there are five requirements to join the Race to Zero:

1. Endorse the four principles
2. Pledge to reach net zero in the 2040s or by mid-century at the latest and limit warming to 1.5℃.
3. Plan to set an interim 2030 target consistent with a fair share of 50% global emission reductions

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4. Begin at least one inclusive and equitable climate action.[3]
5. Publish your target and action to a reporting platform and report progress annually; and

WHEREAS, the City of Berkeley has already taken partial or complete action on the requirements; and

NOW THEREFORE, BE IT RESOLVED that the Berkeley City Council pledges to join the Race to Zero Campaign and commits itself to the following principles:

1. We recognize the global climate emergency.
2. We are committed to keeping global heating below the 1.5°C goal of the Paris Agreement.
3. We are committed to putting inclusive climate action at the center of all urban decision- making, to create thriving and equitable communities for everyone.
4. We invite our partners – political leaders, CEOs, trade unions, investors, and civil society – to join us in recognizing the global climate emergency and help us deliver on science-based action to overcome it; and

BE IT FURTHER RESOLVED that the Berkeley City Council commits to reaching net-zero in 2045 or sooner and limit warming to 1.5℃; and

BE IT FURTHER RESOLVED that the Berkeley City Council will plan to set an interim 2030 target consistent with a fair share of 50% global emission reductions; and

BE IT FURTHER RESOLVED that the Berkeley City Council will continue to pursue inclusive and equitable climate actions and publish the results of the progress.

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[3] https://www.c40knowledgehub.org/s/race-to-zero-thank-you?language=en_US

Office of the City Manager

ACTION CALENDAR
July 21, 2020

To: Honorable Mayor and Members of the City Council

From: Dee Williams-Ridley, City Manager

Submitted by: Timothy Burroughs, Director, Department of Planning and Development

Subject: Climate Action Plan and Resilience Update

SUMMARY
The City of Berkeley has long been a leader on climate action. In 2006, Berkeley residents voted to reduce the community's greenhouse gas (GHG) emissions by 80% below 2000 levels by 2050, and the resulting Climate Action Plan (CAP) was adopted by Berkeley City Council in 2009. In 2018, then-Governor Brown committed California to carbon neutrality by 2045, the Berkeley City Council resolved to become a "Fossil Fuel-Free City," and the Council declared a Climate Emergency, all steps to signal the urgency of these ambitious goals and the need to act on climate threats in an equitable manner.

The community is making notable progress in reducing GHG emissions. Based on the best currently available data from 2018, the community has reduced overall GHG emissions by 26% since 2000, despite population increasing by 18% and an expanding economy.[1] This achievement is largely due to reduced energy use in buildings and the transition to purchasing cleaner electricity provided by East Bay Community Energy (EBCE), Alameda County's community-based electricity provider, which started enrolling customers in 2018. EBCE currently offers product options to purchase electricity that are either emissions-free (Brilliant 100 or Renewable 100) or have half of the emissions compared to PG&E (Bright Choice). Further declines in emissions due to this change are anticipated in 2019. The leadership and commitment of the Berkeley community and City Council to create and join EBCE were critical in achieving this success.

Although Berkeley has made significant progress, additional work is required to achieve the City's ambitious goal to become a Fossil Fuel-Free City. Alongside GHG emission reductions, staff also remains committed to developing community resilience, adapting to the changing climate, and advancing racial equity. As the world faces unprecedented challenges in recovering from COVID-19 and addressing racial justice, the City can

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[1] Staff Report: Berkeley Economic Dashboards, March 26, 2019:
https://www.cityofberkeley.info/uploadedFiles/Manager/Economic_Development/2019-03-26%20Item%2026%20Berkeley%20Economic%20Dashboards.pdf

rebuild as a stronger, more equitable, and more resilient community by prioritizing solutions that address climate change while advancing racial equity.

This report provides a summary of work being done throughout the City to meet Berkeley's ambitious climate goals.

<u>CURRENT SITUATION AND ITS EFFECTS</u>
City staff annually calculates community greenhouse gas (GHG) emissions to understand which sectors and fuels contribute the most emissions in Berkeley, track progress toward the community's climate goals, and provide data that can be used for prioritizing programs and policies.

Figure 1 below shows the community emissions inventory for 2018, the most recent available data: emissions from transportation account for over half (59%) and emissions from buildings account for over a third (37%). Due to the purchase of clean electricity from East Bay Community Energy (EBCE) starting in 2018, emissions from the building electricity sector are substantially less than previous years.

2018 Greenhouse Gas Inventory

Commercial Natural Gas 14%

Commercial Electricity 4%

Transportation 59%

Residential Natural Gas 17%

Summary:
Buildings: 37%
Transportation: 59%
Waste: 3%
Water: <1%

Residential Electricity 3%

Municipal Buildings <1%

Water Consumption & Waste Water <1%
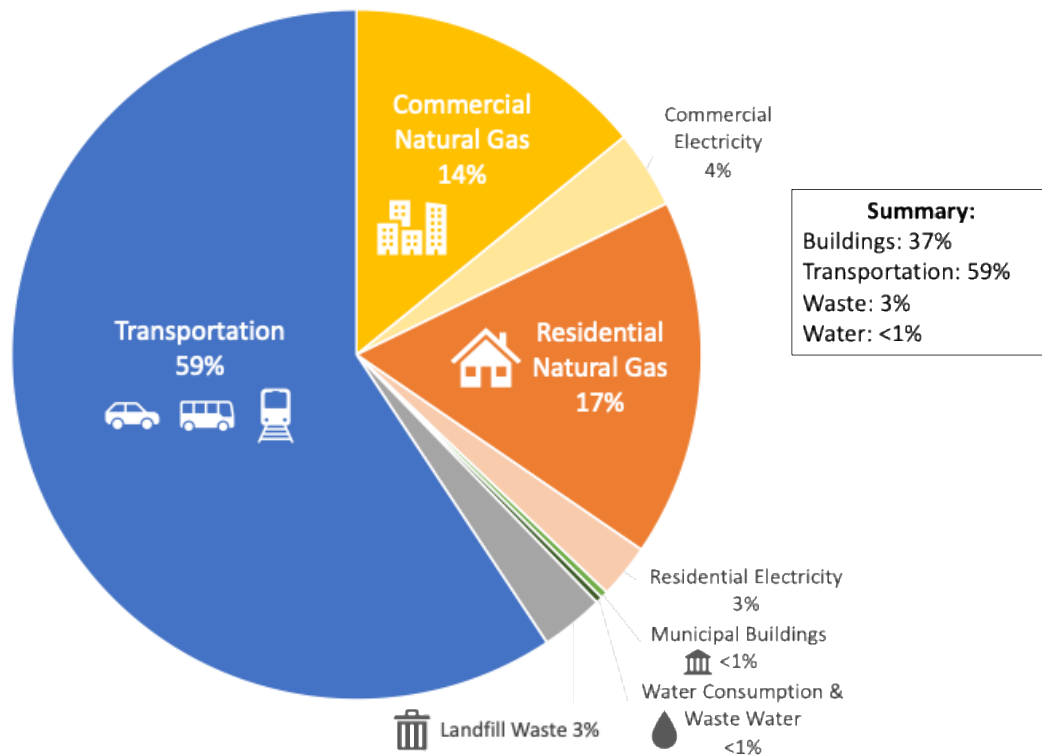
Landfill Waste 3%

Figure 1 - Pie chart of 2018 community-wide GHG emissions inventory, broken down by sector and fuel.

According to 2018 data, Berkeley reduced GHG emissions by 26% below year 2000 levels, even as its population grew by 18% and Berkeley's economy expanded. This significant decrease in emissions can largely be attributed to Berkeley joining EBCE in 2018. Even though customers transitioned to EBCE over the course of 2018 and during a portion of the year were still using PG&E electricity, overall community emissions were significantly less because in 2018 EBCE's electricity was considerably cleaner than PG&E's (approximately half the amount of carbon dioxide equivalent [CO_2e]). It is anticipated that building energy emissions will continue to drop for 2019—the first complete year of Berkeley's participation in EBCE—and going forward, as EBCE continues to reduce the carbon intensity of its electricity.

Energy usage also has declined since 2000. The residential sector decreased electricity usage by 20% and natural gas usage by 26%, and the commercial and industrial sectors decreased electricity usage by 32% and natural gas usage by 2%. Attachment 1 provides more detail on Berkeley's sector-based GHG inventory, as well as an overview of a 2013 consumption-based inventory which accounts for the GHGs released to produce, transport, sell, use, and dispose of goods consumed in Berkeley.

The community accomplishments to date are impressive, but more is needed to achieve Berkeley's ambitious goals. The City is actively working on analyses and strategic planning initiatives to identify how best to make Berkeley's buildings and transportation more efficient, and free of fossil fuels. These efforts will determine the most valuable and achievable programs and policies. This work aligns with the Strategic Plan priority of advancing the City's goal to be a global leader in addressing climate change, advancing environmental justice, and protecting the environment.

In order to truly achieve a more sustainable and resilient future, especially as the City rebuilds from COVID-19, it is critical to prioritize and consider the impacts on **equity** (who benefits, who is burdened, who is left out), **resilience** (how to make the community stronger and better able to recover from challenges together), **climate change** (how to mitigate and adapt to the impacts of climate change), **health and well-being** (how to improve health and social outcomes for all), and **prosperity** (how to encourage workforce development and good quality, high-paying local jobs). These overarching values guide staff's work to achieve Berkeley's climate goals.

Key accomplishments and examples of work underway at the City to reduce GHG emissions and address the climate emergency are described below. Although the data for GHG emissions is for the calendar year of 2018, the progress on programs described in the following sections includes efforts since December 6, 2018, the last time that this report was updated for City Council.

Equity

Prioritizing the advancement of equity outcomes into policies and programs.

Climate change affects everyone, but its impacts are not felt equally. Programs and policies that address climate change must prioritize communities that have been subject to structural and institutional racism and/or are disproportionately affected by climate change. City staff is committed to applying an equity approach to climate work to ensure that policies, plans, and programs are developed in a way that involves input and collaboration with community members and organizations representing underserved communities. This approach begins with an analysis of who benefits, who is burdened, and who is excluded from City sustainability programs and policies in order to prioritize policy solutions that advance equity, accessibility, and inclusion.

Examples of equity work underway in OESD include:

- **Existing Building Electrification Strategy:** Staff is working with a team of building electrification experts to develop a report with short and long-term equitable strategies to electrify all of Berkeley's existing buildings. To ensure that equity is at the center of this Strategy, equity expertise and deliverables were integrated into the procurement process and contract. The Ecology Center is serving as the consultant on equity and is facilitating discussions with community organizations on this topic. The team is using an equity analysis to understand the impacts of policy options on the most vulnerable and impacted communities, in order to identify solutions that advance equity.

- **Electric Mobility Roadmap**: Providing equity, both in the process of developing strategies, as well as in implementing equitable solutions that are meaningful and measurable, was a clear and consistent focus while creating the Electric Mobility Roadmap (Roadmap). Community organizations who work with underserved communities, including low-income populations, communities of color, and people with disabilities, were interviewed as part of the early needs assessment phase, became thought-partners as draft strategies and actions were developed, and remain potential partners for implementation. Greenlining Institute was a paid strategic advisor on this project and provided clear, thoughtful direction and language to ensure that equity was addressed in a meaningful way.

- **Proposed Resilient Homes Equity Pilot Program:** Concurrent to the referral to update the Transfer Tax Rebate Program, staff is recommending that Council consider supporting the development of a parallel equity program (the Resilient Homes Equity Pilot Program) that would provide funding for low-income residents who are not able to access the existing Seismic or future proposed Resilience

Transfer Tax Rebate Program. This program could support homeowners' ability to remain in their homes, improve resilience in an aging building stock, and serve as a replicable example of how City programs can operationalize equity and assure equitable distribution of City resources. If approved by Council, staff would design the program in collaboration with community stakeholders to meet the needs of frontline communities such as low-income communities, communities of color, and those most affected by the impacts of climate change.

Transportation

Biggest opportunity sector, advancing opportunities for people to safely walk, bike, take public transit, and electrify mobility options.

Transportation accounts for 59% of Berkeley's total 2018 GHG inventory. This is the largest sector of GHG emissions and the most challenging to tackle. The City continues to work to get people out of cars by prioritizing walking and biking, and into less-polluting modes of transportation.

As the City and transportation agencies continue to respond to and recover from COVID-19, transportation services and emissions from this sector will be impacted. For example, with more people working from home, emissions from commutes have decreased, but as people begin to go back to work, those who have access to private vehicles may prefer to use their own vehicles over public transit. There are also many equity impacts related to travel options. Support will be needed to maintain momentum for positive travel behaviors, like walking, biking, and telecommuting; rebuilding trust in public transit will be critical.

Active Transportation and Reducing Vehicle Miles
Active transportation refers to strategies encourage walking, biking, and public transit over single occupancy vehicles. Strategies in this area include: bike share and other shared micromobility options; transit infrastructure investments to increase ridership by reducing transit travel time and delay; safe, abundant pedestrian and bicycle infrastructure; and eliminating severe traffic crashes for all travelers. The City continues to focus new compact, mixed-use development along public transit corridors in designated Priority Development Areas, particularly in or near Downtown Berkeley, at BART stations, and along San Pablo Avenue. Additionally, in order to reduce the amount of time and miles driven in single occupancy vehicles, strategies include the goBerkeley parking management program, which reduces vehicle travel associated with searching for parking; and car sharing service options, including one-way car share.

Strategic work within this sector includes updating and implementing transportation plans. The Pedestrian Plan Update and the Transit-First Policy Implementation Plan are

scheduled for completion by the end of 2020. The Pedestrian Plan will propose programs, policies, and projects to make walking more comfortable and safe, with a particular focus on infrastructure to improve street crossings and reduce motor traffic speeds. The Transit-First Policy Implementation Plan is anticipated to establish protocols for bus stop location and transit signal priority, lay out a schedule for future transit corridor studies, and contain transit-supportive street design prototypes. Implementation of the Berkeley Strategic Transportation (BeST) Plan is also underway, including the adoption of the Berkeley Vision Zero Action Plan in March 2020, with the goal of ending traffic deaths and severe injuries on Berkeley streets by the year 2028. Traffic safety improvements and housing density near jobs have contributed to Berkeley having the highest walking commute rate in California (among cities with populations over 5,000), and the highest bicycling commute rate in the nation among cities of 100,000 residents or more.

Implementation of the Berkeley Bicycle Plan (2017) supports bicycle travel and commuting by reducing traffic stress experienced by existing and potential bicyclists. According to surveys completed for the Bicycle Plan, low stress bikeways could encourage up to 71% of Berkeley residents to try cycling or to cycle more. Nearly 10% of Berkeley residents bike to work, and approximately 14% of all trips in Berkeley are by bicycle. Following the successful rollout of regional bike share (Bay Wheels) in Berkeley in 2018, staff have continued to work with electric scooter share companies and other vendors to bring the next generation of micromobility to Berkeley in a safe, accessible way. In December 2019 the City Council approved the conceptual design for a new protected bikeway on Milvia Street between Hearst Avenue and Blake Street through Downtown Berkeley. The project is fully funded as part of the Affordable Housing and Sustainable Communities grant for the Berkeley Way project and is scheduled to be constructed in 2021. The Center Street Garage continues to serve as the permanent home for the Downtown Berkeley Bike Station, offering secure valet bike parking, rentals, and repairs.

Upcoming projects highlight Berkeley's Transit First, Complete Streets, Vision Zero, and economic development policies. Most notably, the City received a grant of over $7 million in federal funding to design and construct the Southside Complete Streets project, including transit time reliability improvements, traffic safety projects, and better access to Southside businesses. The project will focus on adding bus only lanes, protected bikeways, pedestrian crossing safety improvements, and passenger and loading zone improvements at various locations on Telegraph Avenue, Bancroft Way, Dana Street, and Fulton Street. The project will kick off public engagement in fall 2020, with construction scheduled for 2023.

Electric Mobility Roadmap
Staff began work with the community and Energy Commission in late 2018 to draft Berkeley's first Electric Mobility Roadmap (Roadmap). The Roadmap supports clean transportation, including walking, biking, public transportation, and a wide range of

electric vehicles, with a focus on equitable and affordable access. The Roadmap identifies strategies and actions to achieve these four goals:

- Ensure Equity in Access to Electric Mobility
  Maximize electric mobility benefits in underserved communities
- Improve Alternatives to Driving
  Shift trips to walking, cycling, and shared electric modes
- Achieve Zero Net Carbon Emissions
  Eliminate emissions from private vehicles
- Demonstrate City Leadership
  Lead by example and guide the electric mobility transition

The Roadmap includes scenario modeling of what is needed to reach carbon neutrality by 2045 and found that electric vehicle (EV) sales in Berkeley would need to reach about 90% of vehicle purchases by 2025 and nearly 100% by 2030 (up from 16% in 2017). This would translate to EVs being approximately 25% of vehicles in use within Berkeley by 2025, 55% by 2030, and 100% by 2045. However, these numbers could be offset by supporting clean alternatives to driving which could also reduce the total number of vehicles and provide co-benefits such as lower traffic congestion and healthy, active transportation, as well as reduced or eliminated GHG emissions.

Electric Vehicles & Charging Stations
The City continues to install EV charging stations for public use, and promote the use of electric vehicles. As of October 2018, EVs were nearly 4% of registered personal vehicles in Berkeley. There were 105 total publicly-available EV charging ports listed on PlugShare and the Department of Energy's Alternative Fuels Data Center in Berkeley as of February 2019[2]. The City of Berkeley currently provides a total of 73 Level 2 EV charging ports for public and fleet charging, including 37 new EV charging ports that were installed in Center Street Garage at the end of 2019.

Fleet
Tied to the Roadmap goal of demonstrating City leadership, staff worked with EBCE to conduct a municipal fleet electrification assessment. This assessment, also scheduled for City Council consideration on July 28, 2020, presents an EV deployment and associated charging infrastructure plan through 2030 including distributed energy resource (solar and battery storage) charging options. If investments can be made to transition the light duty municipal fleet to EVs over the next 10 years, it will reduce the associated lifecycle (well-to-wheels) GHG emissions of these vehicles from 56.6 to 2.1 metric tons, a 96% reduction by 2030.

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[2] These stations were located on municipal property and at Berkeley businesses including grocery stores, offices, and hotels. Residential home charging stations are not included.

Buildings

Reducing energy use, promoting cleaner energy, and transitioning all buildings to clean electricity.

In the 2018 inventory, buildings account for 37% of GHG emissions in Berkeley, and of those emissions 83% are from natural gas. Natural gas use in buildings account for 31% of all community emissions. Key accomplishments have been made to reduce energy use in buildings, use cleaner electricity in buildings, as well as to transition buildings away from natural gas infrastructure to clean electricity.

Removing natural gas from buildings, or building electrification, not only reduces GHG emissions, but it also improves indoor air quality and safety by removing the potential for natural gas leaks. Furthermore, the elimination of gas in buildings will ultimately allow for the strategic decommissioning of natural gas distribution infrastructure and the associated leakage of methane leakage, the main component of natural gas. This is significant because methane traps 86 times more heat that carbon dioxide. Berkeley's building electrification strategy is based on the following three objectives:

1. **No new connections** to the natural gas distribution system,
2. Creating requirements or incentives to **promote electrification** in existing buildings throughout the City, and
3. Developing a plan for **strategic electrification by geographic area** that allows for the early retirement and decommissioning of the natural gas distribution infrastructure and elimination of associated methane emissions.

Berkeley is a leader in advancing electrification in new buildings, specifically through its Natural Gas Prohibition and 2019 Energy Reach Code. Progress is being made in each of the objectives, as reported below.

1. **No new connections to natural gas**
   Berkeley is achieving this objective by eliminating gas in new construction through its landmark natural gas prohibition and electric-favored reach code.

   - *Natural Gas Prohibition*
     In July 2019, the City Council adopted the first ordinance in the nation to prohibit the use of natural gas in newly constructed buildings. The Natural Gas Prohibition became effective on January 1, 2020, and applies to new building applications for land use permits or zoning certificates. New buildings subject to the prohibition will use highly efficient heat pumps, for water heating and for heat and air conditioning, and electrically powered appliances. This policy supports

State and City efforts to decarbonize buildings, removing not only the GHGs produced by the combustion of natural gas (methane) within buildings, but new methane pipeline connections as well, and the leakage associated with this potent, and persistent, GHG.

- ***2019 Electric-Favored Energy Reach Code***
  In December 2019, Berkeley City Council adopted local amendments to the California Energy Code. This electric-favored "reach code," approved by the California Energy Commission in February 2020, requires newly constructed buildings to include solar PV systems and feature either all-electric systems or mixed-fuel construction that exceeds the efficiency requirements of the Energy Code and includes electric-readiness. The reach code and prohibition work in tandem to support building electrification and its health, safety, and climate benefits.

2. **Requirements and incentives to promote efficiency and electrification in existing buildings**
   Berkeley is making progress in this area, but additional work identifying and leveraging incentives to offset costs of electrification is needed.

- ***Building Energy Saving Ordinance***
  Berkeley's Building Energy Savings Ordinance (BESO) requires building owners to complete and publicly report building-specific energy efficiency assessments and energy scores. The goal of BESO is to reduce both energy costs and GHG emissions in Berkeley's existing buildings. To date, BESO has achieved many successes, including:

  o Made Berkeley a national model for building energy labeling.
  o Provided data on the energy use and energy efficiency opportunities of Berkeley's existing building stock.
  o 1,532 Energy assessments completed.
  o 1,256 Home Energy Scores[3] completed, with an average of 4.3 out of 10.
  o 92 Large building Energy Star Portfolio Manager Benchmarks completed.
  o 33 large buildings (over 25,000 square feet) have achieved an ENERGY STAR Score of 80 or greater and qualified as High Performance Buildings exempted from the requirement for an energy improvement or assessment every 5 years.

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[3] Developed by the US Department of Energy and its national laboratories, the Home Energy Score provides home owners, buyers, and renters directly comparable and credible information about a home's energy use. Each Home Energy Score is shown on a simple one-to-ten scale, where a ten represents the most efficient homes. More information can be found at:
https://www.energy.gov/eere/buildings/downloads/home-energy-score#:~:text=Developed%20by%20DOE%20and%20its,about%20a%20home's%20energy%20use.&text=Each%20Home%20Energy%20Score%20is,represents%20the%20most%20efficient%20homes.

In February of 2020, a third-party evaluation of the BESO program was completed to assess whether BESO is meeting its goals of being easy, affordable and valuable. The evaluation recommended:

- o Align with Berkeley's electrification and community resilience goals;
- o Identify and leverage incentives to encourage upgrades;
- o Increase the number of energy upgrades that result from the energy assessment recommendations and improve tracking; and
- o Streamline BESO administrative processes for both staff and the public.

Staff is providing a separate complete report to City Council on the BESO Evaluation and proposed recommendations.

- • *Financial Incentives*
  Incentives are critical to the advancement of energy efficiency and electrification. As electrification of buildings requires financial investments by owners, it is important to identify incentives to accelerate adoption of these newer technologies. For the first time, due to recent changes by the California Public Utilities Commission (CPUC) to allow publicly funded energy efficiency dollars to be spent on "fuel switching" (changing from gas to electric appliances), there are now incentives available to electrify residential and multifamily buildings:

  - o The BayREN Home+ program[4] provides both energy efficiency and electrification incentives, a network of certified contractors, and free technical advice. Homeowners can access electrification rebates through the BayREN program for heat pump space heating and cooling ($1,000), heat pump water heaters ($1,000), induction electric ranges or cooktops ($300) and heat pump clothes dryers ($300). Additionally, BayREN offers up to $1,000 for heat pump water heaters through an installer incentive[5]. Multifamily buildings can access incentives through the Bay Area Multifamily Building Enhancements (BAMBE) program[6] for both central and in-unit heat pump HVAC and water heaters, electric dryers, cooktops and heat pump pool heaters.

Figure 2 below shows the rebates provided in Berkeley through the Home+ program in 2019, when the program launched, and the BAMBE program for 2018 and 2019.

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[4] BayREN Home+: https://bayrenresidential.org/
[5] BayREN Heat Pump Water Heater Incentive for Contractors: https://www.bayren.org/hpwh
[6] Bay Area Multifamily Building Enhancements (BAMBE) program:
https://bayareamultifamily.org/programs

2019 Home+:

Year	# of households	# of measures installed	kWh savings	Therms savings	Total rebate amount
2019	93	315	5,947	5,619	$ 124,047

BAMBE:

Year	# of projects	# of units	kWh savings	Therms savings	Total rebate amount
2018	<5	100	13,155	4,138	$ 75,000
2019	<5	103	32,149	3,715	$ 77,250

Figure 2 - Berkeley Rebates from Home+ (2019) and BAMBE Programs (2018-2019)

- ***Existing Building Electrification Strategy***
Achieving Berkeley's GHG emission reductions goals will require phasing natural gas out of existing buildings. The City is working with a team of experts (including the Rocky Mountain Institute, Rincon Consultants, Inc., and the Ecology Center) on a Berkeley Existing Buildings Electrification Strategy to identify long and short-term strategies to make the buildings in Berkeley free of fossil fuels. This analysis will include costs and timelines, as well as identify the most effective policies and programs to achieve the Fossil Fuel-Free City goal. This Strategy is being developed with the Ecology Center as a dedicated equity consultant, to ensure that the policies and programs are evaluated with racial and social equity as a priority.

The team is currently conducting a technoeconomic analysis focused on Berkeley buildings and a review of strategies for accelerating an electrification transition. Over the next few months, City staff will be engaging community stakeholders and technical experts to evaluate policy options, with a final report expected for Council consideration in early 2021. Strategies being evaluated include piloting neighborhood electrification, financing for whole building electrification, and targeted electrification at specific leverage points like time of sale and/or time of replacement policies. An initial finding is that pairing solar PV with whole home electrification has a viable payback, therefore it is important to promote or subsidize solar, especially for low or moderate-income residents.

3. **Strategic electrification and early retirement of gas distribution infrastructure**
The City is working to identify geographic opportunity areas that could be considered for strategic electrification, with the goal of retiring the associated gas infrastructure serving adjacent buildings or a neighborhood. Identifying a potential pilot project in a low-income neighborhood could provide health and comfort benefits to households most impacted by climate change. The City is leading the way in exploring this innovative concept.

- ***eLab Accelerator on Strategic Electrification and Retirement of Gas Assets***
The City of Berkeley has been invited to participate in the Rocky Mountain Institute's eLab Accelerator Program on strategic electrification and gas distribution system retirement. This project brings together staff from Pacific Gas and Electric (PG&E), the CA Public Utilities Commission (CPUC), the Natural Resources Defense Council (NRDC), and other experts. The goal is to develop a proposal for a pilot project for specific location(s) that helps existing buildings switch from natural gas to electric for heating/cooling needs, and to also decommission natural gas infrastructure distribution pipelines. The project seeks to identify regulatory and financial barriers and safe and equitable solutions, though no implementation funding has yet been identified.

Municipal Facilities

GHG emissions from municipal facilities account for less than 1% of overall community emissions, but it is important that the City leads by example in making its facilities as clean, efficient, safe, and healthy as possible. Since the City opted its buildings to purchase carbon-free electricity from EBCE, emissions have dropped significantly. The City has also shown leadership in energy efficiency and building electrification. Energy efficiency projects have been successfully completed at James Kenney Recreation Center and the Public Safety Building, and electrification measures have been included in upgrades to the North Berkeley Senior Center and Live Oak Park. The upgrade to the Mental Health Building will result in an all-electric building that is zero emissions.

For more information on progress made in municipal facilities, please see Attachment 2.

Waste

Leading the way towards zero waste in policy, planning and practice.

Although waste is a small contributor to Berkeley's communitywide GHG emissions in comparison to transportation and buildings, reducing the amount of waste produced can directly save energy and emissions related to producing and transporting goods. In addition, reducing the amount of waste that ends up in a landfill reduces methane emissions, a powerful GHG released as organic materials decompose in a landfill.

The Zero Waste Division is strategically planning and implementing programs and services to bring the City closer to its zero landfilled waste goal. Some key efforts toward this goal include:

Zero Waste Transfer Station Rebuild Feasibility Study

The Solid Waste & Recycling Transfer Station Feasibility Study was completed in late 2019 with two options for the replacement of all facilities currently operating at the Second and Gilman streets location. A CEQA Compliance Request for Proposals (RFP) for the project was issued on April 23, 2020 and a contract is scheduled to be awarded by late July 2020. This phase of the project may take up to three years to complete with a Mitigated Negative Declaration or, if necessary, a Final Environmental Impact Report issued and approved. The replacement Facility will serve as the hub for the City to transfer garbage, sorted recyclables, compost and other materials, at a state-of-the-art zero waste facility to meet current and future needs and achieve the City's goal of zero waste.

Senate Bill 1383
On September 19, 2016, SB 1383 was signed into law. This State legislation is designed to reduce short-lived climate pollutants and requires 75% organic waste reduction by 2025 and a 20% increase in recovery of edible food that is currently disposed by 2025. California local jurisdictions have significant, new requirements to implement additional waste reduction programs and enhanced reporting and enforcement protocols to comply with the state legislation. City staff is participating in a regional task force convened by StopWaste to assess the impacts to current programs and policies. The new requirements must be implemented by January 1, 2022.

Single Use Foodware and Litter Reduction Ordinance
On January 22, 2019, City Council unanimously passed the Single Use Foodware and Litter Reduction Ordinance designed to reduce single-use disposable foodware and promote reusable foodware. This ordinance was developed with community and stakeholder input gathered through online and in-person surveys and six public input sessions convened by the City's Zero Waste Commission. The final ordinance incorporated recommendations developed by the Zero Waste Commission that were based on the public and stakeholder input. Outreach material was sent to 840 Prepared Food Vendors in 2019 to inform them of the ordinance requirements and offer available resources, including onsite technical assistance provided by a contracted vendor. It will be necessary to allocate additional funding to provide onsite technical assistance and mini-grants to all Prepared Food Vendors. COVID-19 has impacted the implementation of this ordinance, including the March 31, 2020 Health Order that does not permit customers to bring their own bags, mugs, or other reusable items from home.

Zero Waste Strategic Plan
Based on a Council-approved Zero Waste Commission recommendation, staff plans to release a Request for Proposals for a Zero Waste Strategic Plan by mid-2021 to improve existing programs and propose a roadmap of options and policies that will help the City reach its Zero Waste goal effectively.

Community Outreach & Engagement

Achieving equitable climate action together.

Berkeley is committed to community engagement and education. Recent events and outreach topics have included green and healthy homes, electric vehicles, solar, access to clean energy, and electrification for both residents and building professionals. A summary of outreach events from February 2019-February 2020 can be found in Attachment 4. Outreach is also being conducted focused specifically on communities of color and those most impacted by climate change, as described above in this report.

As COVID-19 social distancing measures have severe impacts on the ability to do in-person outreach events, staff is exploring innovative, safe and accessible engagement strategies to reach impacted communities while limits on public gatherings persist, and will plan for opportunities for innovative, safe in-person community engagement when that approach can safely resume.

Engagement for Marginalized and Front-line Communities: City Council adopted a referral on January 21, 2020 to (1) improve and increase external community engagement, to engage the community and allow for input on new policies and programs which affect marginalized and front-line communities (2) identify the funding resources needed to adequately implement this engagement, and (3) include a Climate Impacts section in all City Council items and staff reports. In response, staff is proposing in a separate report steps to (1) continue engagement around community-driven, equitable climate solutions, and to seek external resources to enable meaningful community engagement of impacted communities around equitable climate solutions; and (2) refer to the Agenda Committee a revision to the Council Rules of Procedures to update the Environmental Sustainability section of City Council items and staff reports as "Environmental Sustainability and Climate Impacts."

Outreach on clean energy
The City highlights energy efficiency, clean energy and electrification strategies in outreach efforts. The City, in conjunction with StopWaste, hosted workshops about the BayREN Home+ and BAMBE programs to help homeowners and multifamily property owners access resources and incentives for energy and water saving upgrades to increase savings, improve indoor air quality and comfort, and decarbonize buildings.

The City promoted access to clean energy by educating the community about EBCE, and the option to opt up to EBCE's Brilliant 100 (100% carbon-free) or Renewable 100 (100% solar and wind) electricity products. The City has increased access to rooftop solar by streamlining permitting and inspection, which was nationally recognized with a SolSmart Gold designation in 2018, and by participating in the seasonal Bay Area

SunShares program for the fourth consecutive year. SunShares provides time-limited group discounts, vetted providers, community workshops, and a streamlined process to remove barriers to solar adoption. Berkeley has been one of the top outreach partners every year (2016-2019), resulting in 77 rooftop solar installations (219 kilowatts).

The 2019 East Bay Electrification Expo, co-convened by the Ecology Center, StopWaste and the Berkeley Climate Action Coalition, showcased the benefits of all electric homes and was one of the highlights of the year. The Expo brought together community members, building professionals, and manufacturers to attend workshops, talk to local residents about electrifying their homes and apartments, watch induction cooktop demonstrations, see ultra-efficient heat pump technology, and meet local contractors experienced with this technology.

Outreach on clean transportation
Staff conducts outreach on the climate, health and financial benefits of electric transportation, focusing on incentives and special programs for income-qualified drivers. Key events included a Berkeley Climate Action Coalition *Clean Transportation Convening* and the 2019 *3rd Annual Ride Electric at the Farmers' Market*, part of National Drive Electric Week. *Ride Electric* showcased the latest electric cars and bikes and local EV drivers and enthusiasts. The City also partnered with 350 Bay Area and the Ecology Center to deliver *Electric Cars 101* workshops. OESD's CivicSpark fellow also translated the presentation into Spanish to help reach underserved, non-English speaking communities.

Berkeley Climate Action Coalition (BCAC)
Since 2012, the Berkeley Climate Action Coalition (BCAC), co-convened by the Ecology Center and the City, has been a vehicle for climate engagement. BCAC's membership has grown to nearly 1,000 people, which includes residents, nonprofits, neighborhood groups, faith-based organizations, schools, businesses and UC Berkeley. From 2012-2016, BCAC received funding from the San Francisco Foundation and the City of Berkeley that supported quarterly convenings on a variety of topics such as climate change and health, intergenerational climate change, clean transportation and energy, and climate justice. Over the years, BCAC has supported a variety of volunteer-led working groups on topics including land use, water, transportation, community choice energy, electrification, and environmental health, and BCAC members continue to play an active role in large public events such as Ride Electric and the East Bay Electrification Expo. BCAC has advocated for free youth bus passes, energy solutions for renters, limiting refinery expansion in frontline communities, community choice energy, and solar for all.

Climate Adaptation & Community Resilience

Strengthening and preparing the community for shocks and stresses, including adapting to the impacts of climate change.

Solar + Storage for Critical Facilities

The City of Berkeley is committed to pursuing resilient energy assurance solutions, like solar and battery storage systems at critical facilities that can operate both on the electricity grid, and separate from the grid to continue operating during a power outage (also called islandable solar + storage systems). These islandable solar + storage systems can bring multiple benefits to the community including reliable backup power in the event of a planned or unplanned power outage, clean, local distributed energy, and potential cost savings. The City is working with EBCE, which received a grant from the Bay Area Air Quality Management District to assess the potential for resilient solar + storage systems at critical municipal facilities throughout Alameda County. The City of Berkeley submitted a list of potential critical facilities to the EBCE project portfolio, which totals 300 buildings across Alameda County.

EBCE and its partners have conducted initial analysis of location and sizing potential for the sites and will launch a territory-wide procurement process that will reduce the cost and complexity of potential system deployment. EBCE recently released a Request for Information to solicit input from potential vendors on procurement options and plans to release a full Request for Proposals for vendors to bid on the various projects in Summer/Fall 2020. The City will have the opportunity to participate in the procurement and eventual implementation of solar + storage. If the City Council decides to move forward, additional funding may be needed to retrofit buildings in order to install the solar + storage at those sites.

Sea Level Rise

The City's Parks, Recreation & Waterfront Department provided a one-time funding request to Council to provide resources to complete a Shoreline Stabilization Project and the Waterfront Master Plan, which will contain a sea level rise study.[7]

Local Hazard Mitigation Plan (LHMP)

The recently updated LHMP, approved in 2019, identifies climate change as a man-made hazard that will affect the Berkeley community. The LHMP is the main document

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[7] City of Berkeley, "Shoreline Stabilization Project and the Berkeley Waterfront Sea-Level Rise Study" Staff Report, June 19, 2018: https://www.cityofberkeley.info/uploadedFiles/Clerk/Level_3_-_General/Shoreline%20Stabilization%20Project%20061918.pdf

that houses the City's climate adaptation work. This includes hazards such as extreme heat, sea-level rise and flooding, and water security.

Bay Area Climate Adaptation Network (BayCAN)
Berkeley is a founding member and participates in the Steering Committee of the Bay Area Climate Adaptation Network (BayCAN), a network of local government staff helping coordinate an effective and equitable response to the impacts of climate change. BayCAN works to share best practices, develop opportunities for collaboration and program implementation, and secure funding and resources for climate adaptation.

UC Berkeley and The Berkeley Lab

UC Berkeley and the Berkeley Lab are not included in Berkeley's GHG emissions inventory since their campuses are outside of the City's jurisdiction. However, both institutions track their own emissions reduction goals and are engaged community partners in addressing climate change. The Berkeley Lab has partnered directly with the City on several innovative sustainability projects including building data management tools and zero-net energy analysis of municipal buildings. UC Berkeley has collaborated on the Berkeley Climate Action Coalition and has provided research and technical assistance on a variety of projects. Please see Attachment 3 for progress reports from both UC Berkeley and the Berkeley Lab on their individual climate goals, programs, and policies.

BACKGROUND
In recognition of the climate crisis, the City has added additional climate goals to bolster the Climate Action Plan goal of reducing greenhouse gas emissions below 2000 levels by the year 2050. These local goals include:

- **Fossil Fuel Free Berkeley:** In June 2018, Berkeley City Council referred a proposed resolution[8] to the Energy Commission and Transportation Commission to further implement the Climate Action Plan and establish a goal of becoming a Fossil Fuel Free City.

- **Climate Emergency:** On June 12, 2018, the Berkeley City Council adopted a Climate Emergency Declaration[9].

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[8] Fossil Fuel Free City proposed resolution:
https://www.cityofberkeley.info/Clerk/City_Council/2018/06_June/Documents/06-12_Annotated_Agenda.aspx
[9] Climate Emergency Declaration: https://www.cityofberkeley.info/uploadedFiles/Council_2/Level_3_-_General/Climate%20Emergency%20Declaration%20-%20Adopted%2012%20June%202018%20-%20BCC.pdf

Climate Action Plan and Resilience Update

-   **Net-Zero Carbon Emissions:** In 2018, Mayor Arreguin announced the City's intention to achieve zero net carbon emissions by 2045, in alignment with California state-wide goals.

-   **Vision 2050:** Vision 2050, supported by Measure R in the November 2018 election, is an effort to develop a framework for a 30-year sustainable infrastructure plan. The goal of the Vision 2050 plan is to ensure that Berkeley is prepared for climate change by identifying and guiding the implementation of a climate smart, technologically advanced, integrated, and efficient infrastructure system.

In order to achieve these ambitious goals, ***Berkeley's path to a clean energy future*** is summarized below and described in more detail in the 2018 CAP Update Report to City Council[10]:

-   Step 1 – Reduce energy use and waste
-   Step 2 – Support clean electricity
-   Step 3 - Electrify transportation and buildings

The framework and overarching values (equity, resilience, climate change, health and well-being, and prosperity) guide the work to achieve the City's climate goals.

ENVIRONMENTAL SUSTAINABILITY
The City's Climate Action Plan, Resilience Strategy, Local Hazard Mitigation Plan, and Strategic Plan all contribute to advancing the community towards a clean and resilient energy future that successfully meets Berkeley's climate goals. Mitigation of GHG emissions within Berkeley and planning for the impact of climate change are interrelated and, with careful strategic planning, can address environmental concerns and achieve a more sustainable, equitable, and resilient future.

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[10] Staff Report: Climate Action Plan Update, December 6, 2018:
https://www.cityofberkeley.info/recordsonline/api/Document/AS1qYEO88qcY6Ips8nwbGgL4jGxxlSquza3ESlDOTS6DL2nWI1jPxxzLJVhyvQgYDIlKPuJDdT3oigVB31dHEfM%3D/

POSSIBLE FUTURE ACTION

This report provides the City Council with an update on GHG emission trends, an overview of associated current activities, and the planning efforts underway to develop strategies to accelerate the rate of GHG emission reductions to reach Berkeley's increasingly ambitious climate goals. The current strategic planning efforts for transportation, waste, and buildings will provide a pathway for concentrated reductions in energy use, clean electricity, and electrification of the building and transportation sectors. Staff will return to the City Council for direction on prioritization and funding based on the findings of these strategic plans. As the community responds to and recovers from the impacts of COVID-19, strategic prioritization will need to be applied to identify target areas of focus, and equity and resilience should continue to be central in recovery efforts.

FISCAL IMPACTS OF POSSIBLE FUTURE ACTION

Current climate action priorities are funded by existing grants, enterprise funds, and General Fund allocations. Staff continues to seek additional grants and other sources of funding to accelerate existing efforts. The fiscal impacts of accelerating CAP implementation are currently unknown, but are expected to be significant, and are dependent on City Council's policy choices. Some areas of future investment could include support for additional staff to implement the Mobility Roadmap, resources to incentivize electrification upgrades, funding to support pilot equity programs, and capital funding to make municipal building improvements for electrification, air quality and ventilation improvements, and resilience through solar + storage.

Strategic electrification is key to achieving Berkeley's ambitious climate goals. However, current rate structures and projected increases can impede electrification efforts, making electrification a costly option. Moving forward, close collaboration and cooperation with PG&E and EBCE will be necessary to create rates that are equitable and provide a pathway to fossil-free energy sources for Berkeley residents and businesses and ensure a resilient and safe electricity grid. An equitable transition to clean electricity will require strategic investment in buildings and people.

CONTACT PERSON

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Attachments:
1: 2018 Berkeley Community-Wide Greenhouse Gas Inventory
2: Municipal Facilities Update
3: Progress Report from UC Berkeley & the Berkeley Lab
4: Summary of Community Outreach Events, February 2019-February 2020

Attachment 1: Berkeley's Community-Wide Greenhouse Gas Emissions Inventory

Introduction
In order to understand the sources of community-wide greenhouse gas (GHG) emissions, City staff conducts an annual GHG emission inventory. Data is gathered from regional entities on sector-specific activities, and is then converted to metric tons of carbon dioxide equivalent (MT CO_2e). The inventory utilizes the best available data (despite challenges regarding access to accurate, consistent datasets) and follows the Global Covenant of Mayors for Climate & Energy protocol which allows the City to report consistently to the community and to other agencies. This inventory focuses on emissions that are created within Berkeley's border, considering sectors like transportation, the built environment, landfilled solid waste, water consumption, and wastewater usage. A separate inventory methodology called a "consumption-based inventory" accounts for the impacts of goods and services consumed by Berkeley residents and businesses, even if the related emissions were created elsewhere. These two approaches, compared side-by-side, can help paint a more holistic picture of Berkeley's carbon footprint and how reduction strategies should be prioritized.

Community-Wide GHG Emission Inventory
Creating and updating a consistent GHG emissions inventory helps to define the extent to which certain sectors and fuels contribute to GHG emissions, and helps to track progress toward the community's climate goals over time. This type of inventory focuses on emissions that have occurred within Berkeley's jurisdictional boundaries, which includes the following emissions sources: transportation modeled from traffic analysis, building electricity usage, building natural gas consumption, landfilled solid waste, as well as emissions from water consumption and wastewater treatment. The most recent full year of available data is from 2018. Although this inventory does not include UC Berkeley and The Berkeley Lab, as they are outside the City's jurisdiction, they continue to be valued partners in efforts working to improve Berkeley's shared community and combat climate change. See Attachment 3 of the Climate Action Plan Update for progress reports from UC Berkeley and the Berkeley Lab.
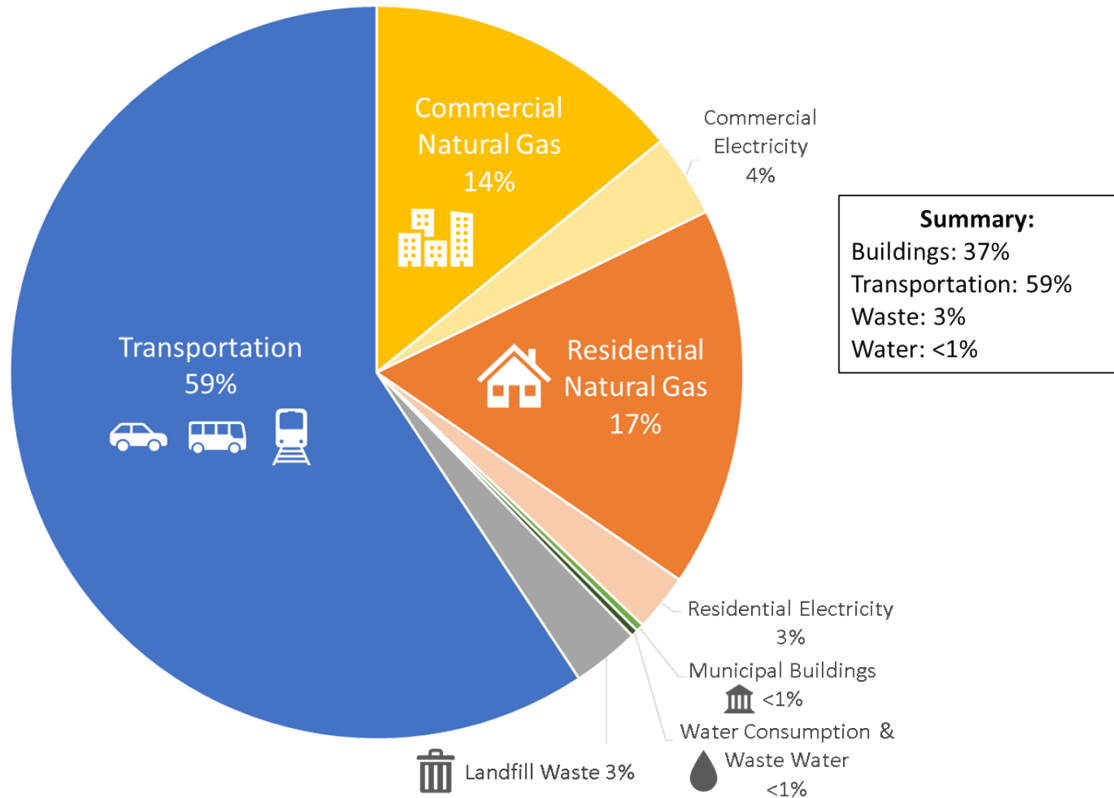
2018 Greenhouse Gas Inventory

Figure 1: Pie chart of 2018 community-wide GHG emissions inventory, broken down by sector and fuel.

Creating an emissions inventory that tracks each sector and fuel individually informs policies and programs that may provide the biggest impact to achieving the Climate Action Plan (CAP) emission reduction goals. The distribution seen in Figure 1 is similar to inventories conducted in the past, with over half of emissions coming from the transportation sector, calculated from a regional traffic analysis model conducted by the Metropolitan Transportation Commission.

Energy usage data in Berkeley buildings is provided by East Bay Community Energy (EBCE) and PG&E, and is broken down into residential, municipal, and commercial (including industrial) buildings—for both electricity use and natural gas combustion. The built environment is the second largest source of emissions at 37%.

Other sectors include landfilled waste, water consumption, and wastewater treatment. These sectors, although seemingly small based on this inventory, represent much broader environmental concerns, such as the impact on water management systems as California experiences more frequent and intense droughts. Solid waste, particularly organic material, emits methane when landfilled, which is accounted for in this inventory. However, the impacts related to the production, transport, and consumption

of goods and services, long before reaching a landfill, must also be considered. Please see the section below on consumption-based inventories for more detail.

Current Community-Wide Sector-Based GHG Emission Trends
The most current community emissions are compared to the CAP baseline year of 2000, to identify reductions achieved thus far. A historic summary of Berkeley's annual emissions inventories from 2000 to 2018 is provided in Figure 2. Please note that due to data access issues for accurate building energy use data between 2014-2017, years of inventory data developed with assumptions are represented in shaded coloring, and as no inventory was calculated for 2017 this year of data is omitted.
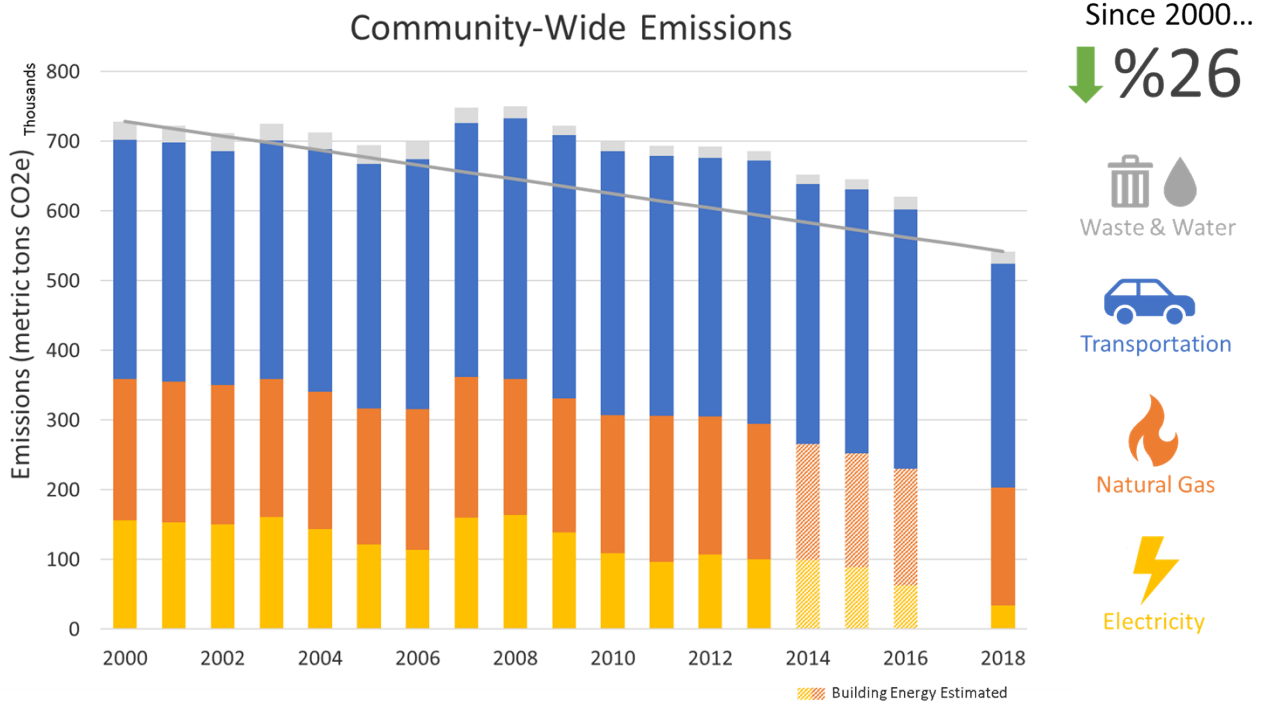
Figure 2: Historic Berkeley emissions inventories back to 2000, broken out into building natural gas and electricity, transportation, and other (water, wastewater treatment, and landfilled solid waste).

Community-wide emissions were 26% below 2000 levels in 2018 even though Berkeley's population increased approximately 18% and the economy expanded[1] during that same time period.

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[1] Staff Report: Berkeley Economic Dashboards, March 26, 2019:
https://www.cityofberkeley.info/uploadedFiles/Manager/Economic_Development/2019-03-26%20Item%2026%20Berkeley%20Economic%20Dashboards.pdf

	Residential	Commercial / Industrial / Municipal	All Buildings
Electricity Usage	-20%	-31%	-28%
Electricity GHG Emissions	-73%	-81%	-78%
Natural Gas Usage	-26%	-2%	-17%
Natural Gas GHG Emissions	-26%	-4%	-17%

Table 1: Summary of 2018 trend in electricity and natural gas usage within each building sector—compared to 2000 baseline year.

This is a notable achievement, with reductions resulting from a combination of state, regional, and local efforts including:

- Cleaner electricity mix: As seen in Table 1 above, the GHG emissions from electricity have decreased by 78% in all buildings since 2000. This is largely due to the community joining EBCE, as well as State laws like the Renewables Portfolio Standard (RPS) which require utilities to increase the amount of renewable energy on the grid, causing the GHG emissions produced per kilowatt-hour of electricity consumed to decrease. Participation in EBCE, which has half as much carbon in its Bright Choice base product than PG&E's base product, as well as offering its Brilliant 100 carbon-free and Renewable 100 fully renewable products, has had a significant impact in accelerating the Berkeley community toward emissions-free electricity.
- Reduction in building energy use: See Table 1 above for a breakdown of electricity and natural gas reductions in each building sector since 2000. Energy efficiency measures contribute to these savings, including those reached through rebate programs such as Energy Upgrade California, more efficient lighting and appliances, and improved building envelopes. Reducing the energy needs of a building first reduces the cost and feasibility of renewable energy and electrification efforts.
- Increased rooftop solar: According to data from the California Solar Initiative, Berkeley businesses and residents collectively installed over 2,618 solar photovoltaic (PV) systems from 2000 to 2018, increasing solar capacity to approximately 10,930 kW AC, providing renewable energy to power buildings and adding any excess clean electricity back into the grid.
- Water consumption: The community reduced its water consumption in buildings by 26% between 2000-2018, and a 2% decrease in consumption between 2017 and 2018. Water conservation continues to be critical as the Bay Area is expected to experience further drought in the coming years.
- Reduction of landfilled waste: The community has significantly reduced the amount of waste sent to landfills since 2000 through the expansion of recycling and composting services. Further reductions could be achieved through source reduction, preventing waste by reusing items or avoiding disposable, single-use products.

- Transportation: Transportation is the largest source of community-wide emissions, and modeled data shows a decrease of 6% from 2000 to 2018. The municipal vehicle fleet decreased emissions by 28% due to cleaner and more efficient vehicles.

In comparison, statewide emissions decreased approximately 10% from 2000[2] to 2017. This however cannot be directly compared to the 26% reduction achieved in Berkeley by 2018, as the City does not have a complete dataset available for 2017, and there were significant GHG reductions in 2018 when it joined EBCE. Statewide emissions reductions are expected to accelerate with the recent passing of SB 350, which sets a goal for 50% of the electricity in California to come from renewable energy by 2030, and doubling the energy efficiency of buildings in the next 15 years.

Considerations for tracking progress

Natural Gas Emissions: It is important to note that emissions from natural gas may be much larger than what is depicted in this inventory. According to research conducted by San Francisco Department of the Environment, current emissions methodology may severely underestimate the impact of leakage throughout the entire natural gas system. Not only do natural gas leaks pose a health and safety threat to the community but they also release methane (the main component in natural gas) into the atmosphere, which traps 86 times more heat than carbon dioxide. Natural gas leakage is estimated to be approximately 1.4%, whereas new independent studies average that leakage could be 4.52%, with estimates seen up to 12%.[3] A methodology to integrate this into Berkeley's emissions inventory is not yet available.

Data Access & Accuracy: A CPUC ruling regarding data privacy has severely hindered staff's ability to attain accurate and consistent building energy usage data from PG&E for the GHG emissions inventory. The ruling dictates certain thresholds a dataset must meet in order to protect individual customer usage data from being disaggregated from the total. This ruling resulted in an incomplete dataset from PG&E between 2014-2017.

Consumption-Based GHG Emissions Inventory
Although the more traditional emission inventory that Berkeley uses—known as a "production-based" or "sector-based" inventory, like the one described above—lays a foundation for key climate policy and program planning, taking a look at the emissions beyond Berkeley's borders can be beneficial to addressing the climate crisis as a regional or global issue. An individual's impact on the environment does not end at its city's boundaries, but extends to imported and exported goods consumed by that individual. Consumption-based inventories take into account the entire life cycle of a specific product to calculate its GHG emissions. Included are goods and services such as air travel (even if, as for Berkeley, the airport is located outside of a jurisdictional

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[2]California Air Resources Board, GHG Current California Emission Inventory Data:
https://www.arb.ca.gov/cc/inventory/data/data.htm. Please note methodologies between state, regional, and local emissions inventories may vary slightly.
[3] Methane Math: How Cities Can Rethink Emissions from Natural Gas, San Francisco Department of the Environment (November 2017) https://sfenvironment.org/download/methane-math-how-cities-can-rethink-emissions-from-natural-gas

Climate Action Plan Update
Attachment 1 – Greenhouse Gas Inventory

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boundary), food, appliances, and construction of buildings. See Figure 3 for a diagram
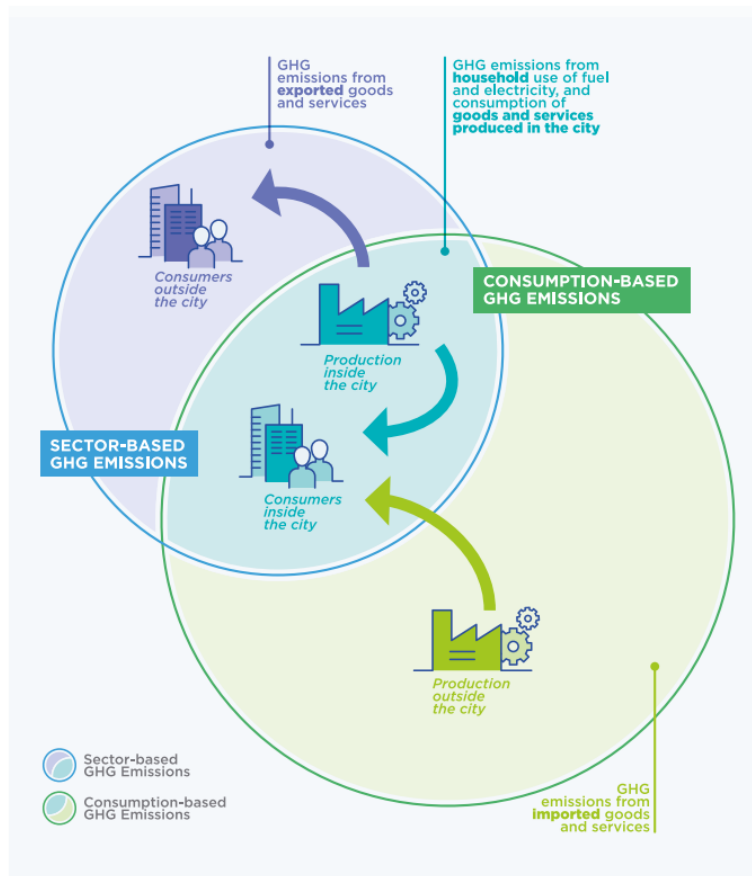of the relationship between consumption- and sector-based approaches.

*Figure 3: A diagram depicting the relationship between sector- and consumption-based approaches to
GHG emissions tracking. [4]*

Although this type of inventory would be helpful to track Berkeley's complete carbon
emission profile, capturing this data accurately has been proven very complex.
Currently no standardized or accurate methodology across cities has yet been adopted.
However, the CoolClimate Network, a research partnership including UC Berkeley,
created a consumption-based inventory for every city in the Bay Area using 2013 data.[5]
This inventory was presented to Council in December 2018[6]. Though it has not been
updated, the 2013 data showed that Berkeley has a relatively low carbon footprint per
household, in comparison with other Alameda County cities. This could be due to
Berkeley's denser housing, transit service, and biking and pedestrian infrastructure.

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[4] C40 Cities, Consumption-Based GHG Emissions of C40 Cities. https://www.c40.org/researches/consumption-based-emissions
[5] Bay Area Air Quality Management District, Consumption-Based GHG Emissions Inventory:
https://www.baaqmd.gov/about-air-quality/research-and-data/emission-inventory/consumption-based-ghg-emissions-inventory
[6] CAP Report Update to City Council, December 18, 2018:
https://www.cityofberkeley.info/recordsonline/api/Document/AS1qYEO88qcY6Ips8nwbGgL4jGxxlSquza3ESlDOTS6DL2nWl1jPx
xzLJVhyvQgYDIlKPuJDdT3oigVB31dHEfM%3D/

Due to overlapping categories with the sector-based approach (shown in Figure 3), this consumption-based inventory cannot be added directly into Berkeley's sector-based inventory. However, analyzing both inventories separately paints a more complete picture of how Berkeley residents and businesses, as global consumers, can address their carbon footprint. The outcome of the consumption-based study can be found in the last CAP Update Report to Council, as well as on an interactive online SF Bay Area Carbon Footprint Map[7], where specific sectors can be isolated and compared across Berkeley zip codes.

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[7] Bay Area Air Quality District, SF Bay Area Carbon Footprint Map.
https://baaqmd.maps.arcgis.com/apps/MapSeries/index.html?appid=94b9eff6547f459fba27a6853327e1a2

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Climate Action Plan Update
Attachment 2 – Municipal Facility Update

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Attachment 2 – Municipal Facility Update

Staff continues to make improvements in municipal facilities to increase energy efficiency, lower energy costs, reduce greenhouse gas (GHG) emissions, and transition buildings toward being all-electric powered by clean electricity. Municipal buildings purchase emissions-free electricity, the Brilliant 100 product from East Bay Community Energy.

Electrification Retrofits of Municipal Buildings

Several buildings undergoing construction include plans to advance electrification, including:

- **The Mental Health Clinic** is being retrofitted as a zero-emissions building and will have no gas meter on site. Using a grant from the Berkeley Lab, the historic building includes passive daylighting, saving on electric lighting, and will use high efficiency electric heat pumps for space heating, cooling and ventilation. Water heating and other appliances are all electric. This building will have a formal case study done, as the Berkeley Lab grant includes energy monitoring of all systems. The building is scheduled for completion in October 2020.

- **Live Oak Recreation Center** is also currently under construction. This will be a nearly all-electric building, with heat pumps providing space heating and cooling and water heating. Supplementing the heat pumps will be a number of ceiling fans in the social hall, art room, and other activity rooms, to facilitate cooling and help prevent air stagnation. The kitchen will have an electric induction range. The roof and electrical system will be solar PV-ready, but funding has not been identified for a solar installation. The gas furnace in the theater will be the only fossil-fuel component remaining. The building is scheduled for completion in October 2020.

- **North Berkeley Senior Center** is currently undergoing a major seismic improvement renovation, which has been expanded to include the electrification of a number of the building's energy systems. These will include replacing the three boilers which provided forced hot water heating, with new high efficiency electric heat pumps, and solar PV to help offset the additional electric load. The solar inverter is "battery-ready", so that if a future battery system can be installed, it could provide both emergency power and will be able to operate from the battery at times of day when energy is most expensive. The building also received high efficiency double paned insulated windows and new wall and attic insulation, which will reduce the overall heating and cooling loads. At this time, the building will still have a natural gas range and oven, and there is no funding identified for battery storage. The building is planned for completion in November 2020.

Other Energy Efficiency, Emissions Reduction and Cost Savings Projects

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Attachment 2 – Municipal Facility Update

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In the past 2 years, the City implemented several projects to improve energy efficiency, reduce peak electricity use and reduce GHGs.

- **Automated Demand Response (ADR)** programs aim to reduce electricity during times of peak demand, when electricity has the highest cost and GHG emissions. These projects were implemented at the Public Safety Building and the James Kenney Recreation Center, because the energy management software at each site was compatible. The Public Safety Building saved 42,400 kWh, or about $11,000 in air conditioning costs as shown below:

Figure 1- Public Safety Building Energy Use and Cost
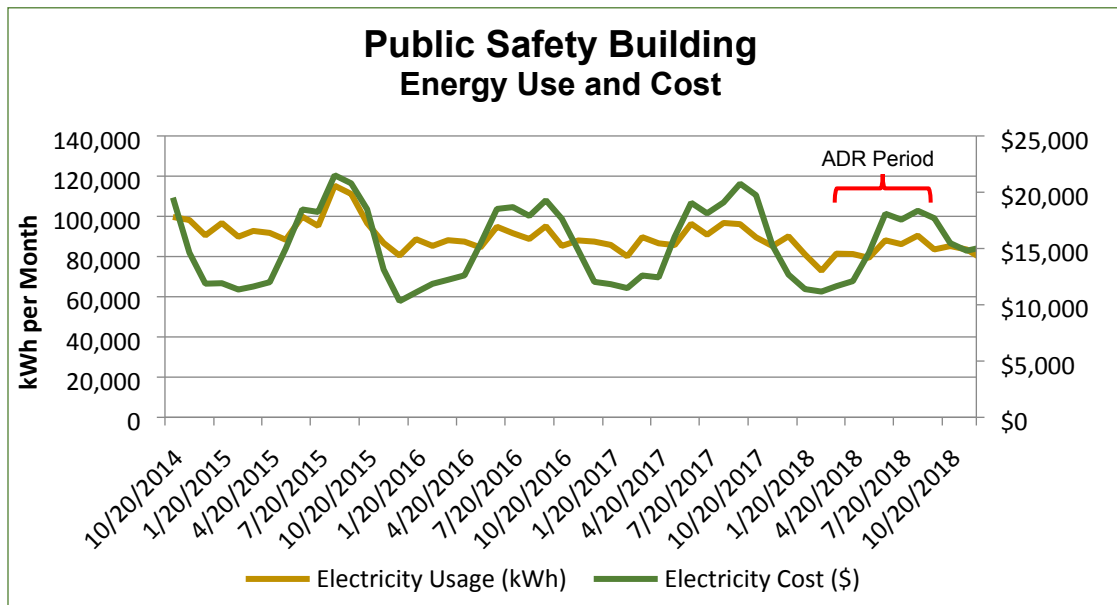
The Public Safety Building also underwent a complete lighting upgrade to high efficiency LEDs. This project was completed in 2019 and was the City's first On-Bill Financing project. The total cost was $250,000, with zero up-front costs from the City of Berkeley. These projects were funded through a PG&E program that provides immediate payment to the energy contractors, and allow the City to repay the loan on its monthly utility bill. The loan payment is roughly equal to the energy cost savings, resulting in no cost increase for the City, while reducing energy use and GHG emissions.

James Kenney Recreation Center had proportionally similar results with its Automated Demand Response lighting project, saving nearly 4,500 kWh, and about $4,000. Note that the energy and cost comparisons were made to 2016 energy use, since the building was under renovation in 2017.
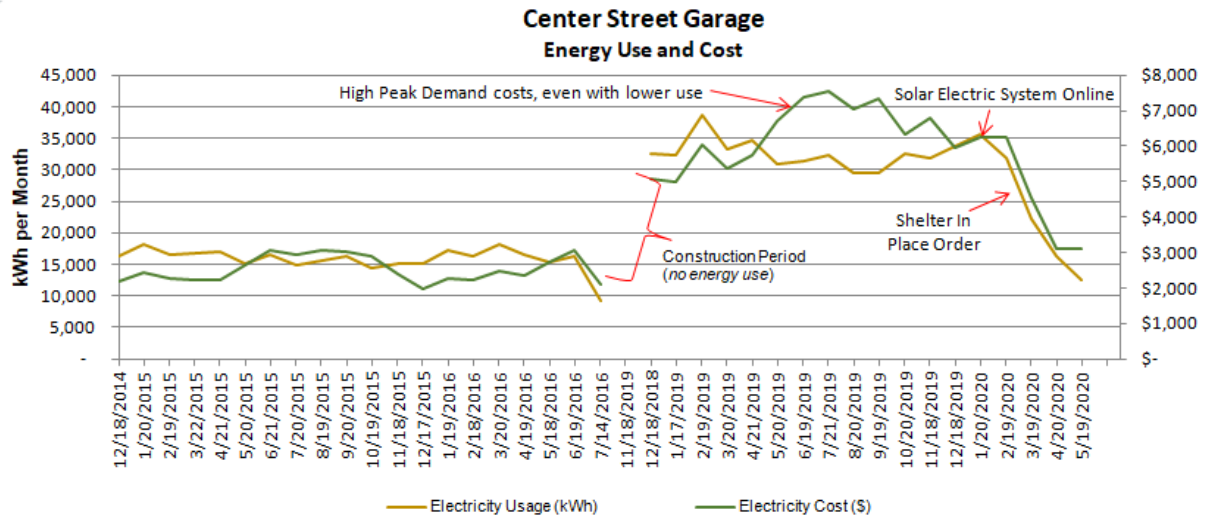
Climate Action Plan Update
Attachment 2 – Municipal Facility Update

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Figure 2 – James Kenney Recreation Center Electricity Use and Cost
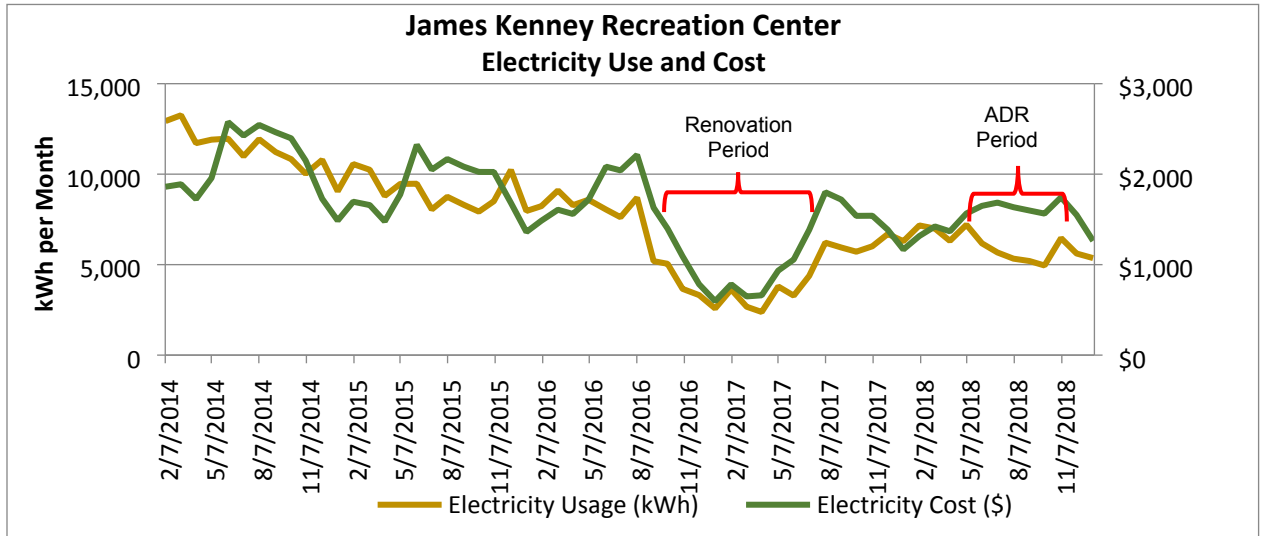
- **On-site Solar PV** at the Center Street Garage was completely rebuilt beginning mid-2016, re-opening in November 2018. The new garage is 300% larger, initially had 20 electric vehicle charging ports, and now has 57. This explains the significant jump in overall costs and use, but there is a similar gain in revenue to help offset this increased cost of operations. The solar PV system was installed last, and due to commissioning and testing, did not come online until January 2020. The effects were immediate, reducing energy costs and energy use.

  Note that before the solar came online, the demand energy cost was comparatively high (green line, below), even though the actual energy consumed was low. High demand was due to the EV charging stations, which were in use at times of day when energy costs are the highest.

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Attachment 2 – Municipal Facility Update   July 21, 2020

Figure 3 - Center Street Garage Energy Use and Cost

Center Street Garage
Energy Use and Cost

- **Future Projects** will be developed as energy efficiency and electrification assessments are completed for buildings, including the Spring Animal Shelter, South Berkeley Senior Center, the Central Library, and the South Berkeley Branch Library. Once these assessments have been completed, the goal is to use On Bill Financing to make energy improvements, including LED lighting, heating, cooling or ventilation improvements. Efficiency in these systems is a fast and efficient way to reduce costs and GHG emissions.

Climate Action Plan Update
Attachment 3 - Progress Report from UC Berkeley and the Berkeley Lab

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WORKSESSION
July 21, 2020

SUSTAINABLE PRACTICES BERKELEY, performance report 2018-2019

UC Berkeley: 2018-2019

UC Berkeley finished its first-ever complete submission for the Sustainability Tracking, Rating and Assessment System, or STARS, earning a high Gold rating with 78.5 points. That result placed UC Berkeley 11th out of 349 colleges and universities having completed a full STARS assessment. The campus's top-ranked environmental sciences programs helped UC Berkeley earn top-notch STARS scores for its sustainability-themed undergraduate and graduate programs and sustainability-focused research. UC Berkeley also earned perfect scores in fields that measure diversity and equity in the campus community. The STARS rating additionally earned UC Berkeley a coveted spot among the top 20 greenest universities, according to the Sierra Club and the Princeton Review.

The popular Cool Campus Challenge returned to UC in April 2019, and UC Berkeley took the overall honor as the Coolest UC, achieving the most carbon-saving points of any UC campus or medical center. Engaging more than 4,200 participants, or 7.5 percent of the campus, UC Berkeley is saving tons of carbon dioxide from participants' actions, equivalent to taking 500 cars off the road for an entire year. Also in support of carbon reduction action, UC Berkeley's chancellor, in coordination with students, signed a memorandum of understanding committing the Berkeley campus to 100 percent clean, renewable energy by 2050.

Berkeley received five best practice awards at the annual California Higher Education Sustainability Conference. UC Berkeley's efforts on zero waste curriculum and operations, environmental justice, toxin reduction and climate action took the honors. The awards highlight the breadth, depth and leadership in sustainability the campus both values and excels in.

UC Berkeley's newest building, the Connie and Kevin Chou Hall at Haas School of Business, is now one of the greenest academic buildings ever. It has earned a trifecta of green building certifications. The building achieved TRUE Zero Waste certification at the highest possible level, along with LEED Platinum Certification for its architectural design, construction and energy efficiency. Most recently it became the campus's first WELL certified space at the Silver level. With no landfill bins in the building, a team of staff and students is working to phase out single-use, disposable materials in favor of reusable containers and supplies, and the building's on-site food vendor adheres to zero waste practices.
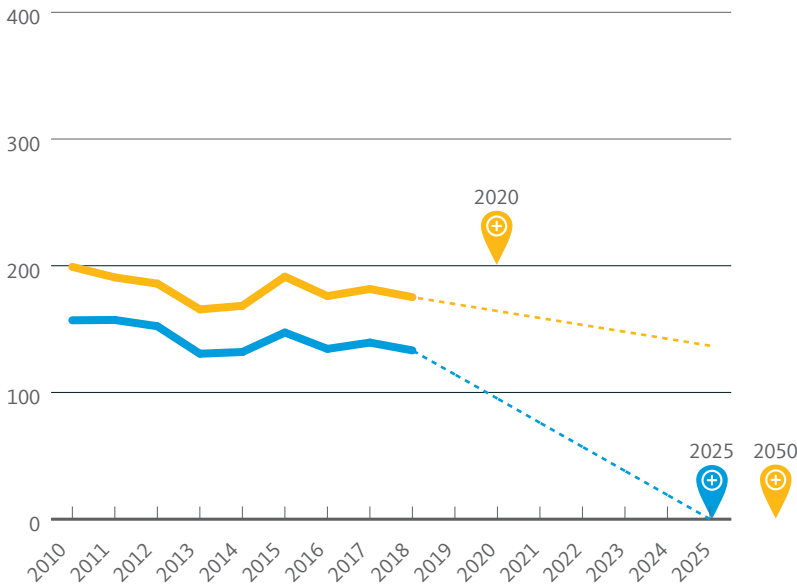

Credit: Elena Zhukova

Excerpt from UC Annual Sustainability report 2019

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WORKSESSION
July 21, 2020

SUSTAINABLE PRACTICES BERKELEY, performance report 2018-2019

UC Berkeley, By the Numbers
2018

GREENHOUSE GAS EMISSIONS

(1,000 metric tons CO_2e)

- Scopes 1 (natural gas, campus fleet, fugitive) + 2 (purchased electricity)
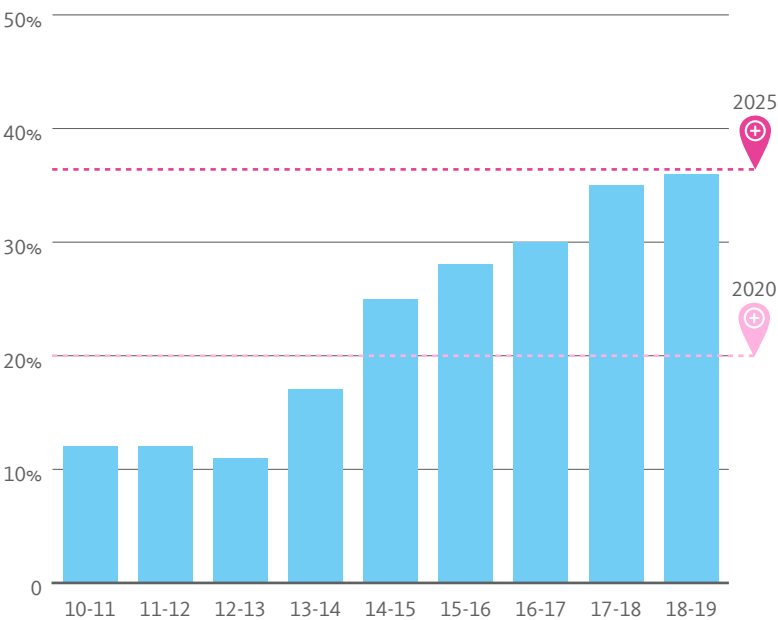- Scopes 1, 2 + 3 (campus commute, business air travel)

Goals:
- 1990 levels by 2020 (scopes 1, 2 + 3)
- Carbon neutral by 2025 (scopes 1 + 2)
- Carbon neutral by 2050 (scopes 1, 2 + 3)

Progress:
- 2020 goal met

WATER

(Percent reduction in per capita potable water consumption)

Goal:
- 20% reduction from baseline in per capita potable water use by 2020 and 36% reduction from baseline in per capita potable water use by 2025

Progress:
- 2020 goal met
- 2025 goal met

2018-19 gallons per capita: 13,185

Excerpt from UC Annual Sustainability report 2019

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WORKSESSION
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SUSTAINABLE PRACTICES BERKELEY, performance report 2018-2019

UC Berkeley, By the Numbers 2018

WASTE

(Daily per capita waste generation in pounds)
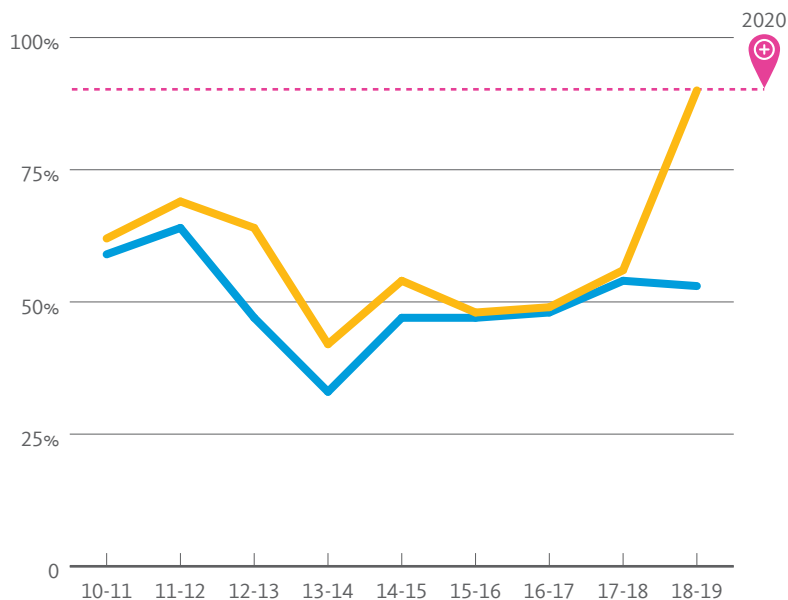
- ● Recycle
- ● Organics
- ● Landfill
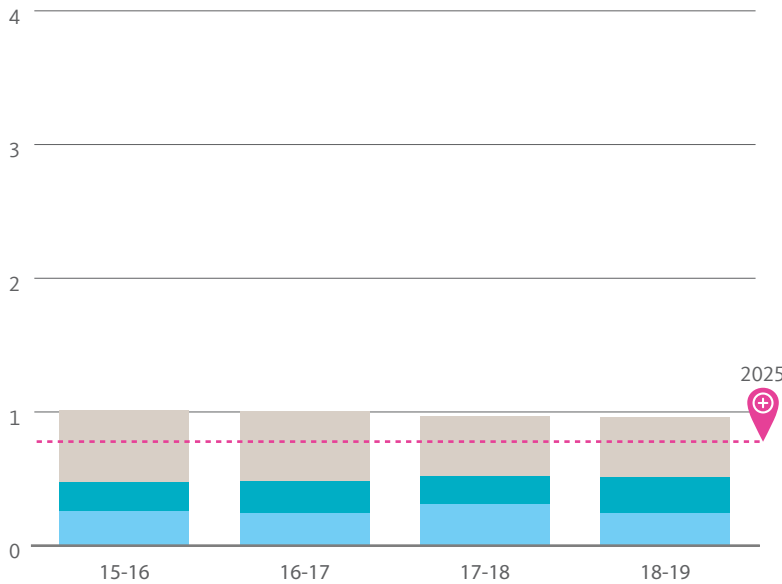
Goals:

- Reduce waste generation per capita to FY 2015-16 levels by 2020, 25 percent below FY 2015-16 levels by 2025, and 50 percent below FY 2015-16 levels by 2030

- Zero waste by 2020

(Diversion rate)

- ● Diversion Rate (C&D + MSW)
- ● Diversion Rate (MSW)

Excerpt from UC Annual Sustainability report 2019

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WORKSESSION
July 21, 2020

SUSTAINABLE PRACTICES BERKELEY, performance report 2018-2019

UC Berkeley, By the Numbers
2018

FOOD

Goal:

- 20% of food service spend to be from sustainable products by 2020

Progress:
Residential: 28%
Retail: 14%

UC Berkeley has met the 2020 goal for residential sustainable food service spend.

PROCUREMENT

Goal:

- 25% green spend as a total percentage of spend per product category

Progress:
Cleaning supplies: 85%

UC Berkeley has met the green spend goal for cleaning supplies.

TRANSPORTATION

Goals:

- 50% of all new light-duty fleet vehicles purchased at each campus will be zero-emission or hybrid by 2025
- Reduce SOV commute rate to no more than 40% of employees and no more than 30% of all employees and students by 2050. (In other words, 60% of employees and 70% of employees and students will use alternative commute modes to get to campus)

GREEN BUILDING

Goals:

- LEED Silver minimum for all new construction
- Certify at least one LEED EBOM project on each campus

Progress:
UC Berkeley added one new LEED Silver building in 2019 to total:

Platinum: 2
Gold: 12
Silver: 7
Certified: 1

This list includes the Connie and Kevin Chou Hall (LEED Platinum in 2018) and the David Blackwell Residence Hall (LEED Gold in 2018).

Number of LEED EBOM projects: 0

SUSTAINABLE BUILDING OPERATIONS AND LABS

Goal:

- Assess three research labs

Progress:
Number of assessed research labs: 18

UC Berkeley has met the sustainable research lab assessment.

Progress:
Percent of all new light-duty fleet vehicles zero-emission or hybrid: 25%

Alternative commute rate:

Employee: 62%
Overall: 83%

UC Berkeley has met the employee and overall alternate commute goal.

Excerpt from UC Annual Sustainability report 2019

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Climate Action Plan Update
Attachment 3 – Progress Report from UC Berkeley and the Berkeley Lab

WORKSESSION
July 21, 2020

2020 Berkeley Lab Greenhouse Gas Emissions Summary for the City of Berkeley

Sustainability Goals

Berkeley Lab pursues three broad initiatives to reach sustainability goals. These initiatives, listed below, are described in greater detail at sbl.lbl.gov.

■ Climate: Improving buildings, greening the energy grid, and low-carbon commutes
■ Waste: Rethinking waste through composting, recycling, and smart purchasing
■ Water: Upgrading fixtures, stopping leaks, and encouraging conservation

Our sustainability goals are driven by requirements of the federal government, California state law, and University of California policy. These goals are continuously updated and summarized here. The primary sustainability goals include:

■ **Efficiency and Climate**
○ Improve energy efficiency 2% annually
○ Reduce overall GHG emissions 30% by 2025 (2015 baseline)
○ Procure or produce at least 7.5% of electricity use from renewable sources
■ **New Construction**
○ Limit new construction energy use to 35%-50% of an existing building baseline
○ Outperform energy code by 30%
○ Eliminate on-site fossil fuel use in new construction by 2020
○ Meet additional requirements in the Berkeley Lab Sustainability Standards for New Construction
■ **Waste Minimization**
○ Achieve Zero Waste by 2020 (>90% waste diversion)
○ Reduce solid waste per capita 50% by 2030
■ **Water Conservation**
○ Reduce per capita water consumption 36% by 2025 (2007 baseline)

Strategies

The Lab's key current sustainability strategies include:

● **BUILDINGS**: Improve efficiency, enhance performance, and eliminate GHG impacts
● **RENEWABLE ENERGY**: Decarbonize our energy supply, develop local generation and storage
● **FOOD AND ORGANICS**: Minimize the impacts of our food choices
● **MATERIALS**: Create the building blocks of a circular materials economy
● **TRANSPORTATION**: Electrify and lower impacts from commute choices
● **WATER**: Waste less water
● **AIR QUALITY AND HEALTH**: Reduce pollution and improve health

Greenhouse Gas Emissions

Total Berkeley Lab greenhouse gas emissions for fiscal year 2019 (ending September 2019) were 54,864 MTCO2e. These emissions are 29% below 2008 levels and 20% below 2015 levels. Emissions are updated annually in December and shared in the data section of the Sustainable Berkeley Lab website (see sbl.lbl.gov/data.) These emissions are reported according to a federal greenhouse gas reporting protocol and include Scope 1 direct emissions from onsite combustion of fuels and emissions of gases used for refrigeration and scientific research, Scope 2 indirect emissions from purchased electricity, as well as Scope 3 indirect emissions from employee commuting, business air and ground travel, electricity transmission and distribution, off-site wastewater treatment, and off-site municipal solid waste disposal.

Sustainability Metrics

As of spring 2020, Berkeley Lab is maintaining an annual energy savings portfolio of 13.0 million kWh and water savings of 20 million gallons. This is equivalent to the energy generation from an 8.4 MW photovoltaic array, which would occupy 25 football fields or 33 acres. Other key sustainability performance metrics for the Lab, as of October 1, 2019 include:

- Lab-wide energy use intensity (weather-corrected energy consumption divided by square footage) has improved 14% since FY 2015. See Change in Energy Use Intensity and Consumption from Baseline at sbl.lbl.gov/data for more detail.
- The Lab has made particular progress in reducing natural gas consumption. Lab-wide weather-corrected natural gas consumption as of October 2019 is 13% lower than in FY 2015.
- 21% of electricity use (and 16% of all energy use) is procured or generated from renewable sources (beyond the renewables included in the grid power mix).
- Waste diversion is at 75% (see chart), and diversion from construction and demolition projects is at 84%.
- Water use intensity is 16% below 2007 levels (see chart).

Awards

The Lab's sustainability efforts were recognized by five awards since our last report to the Council.

- The Lab was awarded a 2020 Best Practice Award in Overall Sustainable Design for the newly completed Integrative Genomics Building. The award will be presented by the California Higher Education Sustainability Conference in July.

- The Lab won a 2019 Department of Energy Sustainability Award - Outstanding Sustainability Program or Project for its policy on Sustainability Standards for New Construction.

- The Lab received a 2019 Best Practice Award from the California Higher Education Sustainability Conference for advanced use of SkySpark (a building analytics platform) to support the ongoing commissioning (OCx) process.

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- The Lab received a 2019 "Accelerating Smart Labs" Project Award from the Department of Energy, on behalf of the Better Buildings Smart Lab Accelerator. The award recognizes the Lab's innovative approach to generate energy and water savings through continual improvement in building operations, what the Lab calls an ongoing commissioning (OCx) process.

- The Lab received a 2019 EPEAT Purchaser Award from the Green Electronics Council. The award recognizes the Lab's efforts to purchase sustainable Information Technology (IT) products. Berkeley Lab is one of eight organizations that achieved the Five-Star level, and one of 59 organizations that received an EPEAT Purchaser Award.

Highlights

Recent highlights are summarized below.

CLIMATE

Energy Information and Management

- **Energy and Water Savings in High Performance Computing**: The Lab has continued work with its high-performance computing center (known as NERSC) to protect savings and strengthen monitoring capabilities. The Lab verified annual maintained savings of over 1.8 million kWh at NERSC - approximately 37% of the baseline "non-compute" electricity use - and over 500,000 gallons of water. See details on the NERSC Efficiency Optimization at sbl.lbl.gov/progress.

- **Efficiency Improvements in Berkeley Labs Computing Center**: The power utilization effectiveness (or PUE, a measure of the non-compute load as a percentage of the total data center load) at the Lab's Berkeley Research Computing Center has been reduced from an average of 1.45 to 1.37 in the last year. This means that the "overhead" energy use of the facility was reduced by 18%. These savings have been generated by decommissioning computer room air conditioning (CRAC) units in favor of rear door heat exchangers at each rack.

- **Site-Wide Exterior Lighting**: The Lab continues efforts to modernize exterior lighting on its Hill campus. See a Lighting Modernization project overview at sbl.lbl.gov/progress. A retrofit of fixtures in the building 50 garage completed in early FY 2019 resulted in 95 percent energy savings and higher quality lighting.

- **ISO 50001 Implementation**: The Lab has completed a two-year project to align energy and water management

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activities to ISO 50001, an international energy management standard. ISO 50001 alignment is a key strategy to ensure that energy and water management at the Lab is strategic, effective, and persistent. The primary project deliverable is an online Energy and Water Management System Manual. A new energy and water management policy has also been finalized to support ISO 50001 certification. ISO 50001 efforts have been coordinated closely with the Lab's Energy Technologies Area, which was instrumental in developing the standard.

Green Building

- **Updated Sustainability Standards for New Construction**: The Lab updated its policy on Sustainability Standards for New Construction in April 2019.

- **High Performance New Construction**: The Integrated Genomics Building was occupied in November 2019 and is designed to meet deep energy efficiency targets (consuming 36% of the energy used by the prior facility in Walnut Creek), use no natural gas, and offset about 15% of its total energy use with rooftop photovoltaics. See more details about the Integrative Genomics Building (IGB) Design at sbl.lbl.gov/progress. Photovoltaic panels are planned for future installation.

Transportation

- **Increased Electric Vehicle Charging**: The Lab increased the size of its charging community by about 28% in FY 2019 to (from 145 to 171). Approximately 95 EV drivers are charging regularly each month at the Lab's main site. Details about the Staff EV Charging Program are available at sbl.lbl.gov/progress.

- **Improved Shuttle Routes**: In November 2018, the Lab introduced a new shuttle route serving north Berkeley, intended to reduce single-occupancy vehicle trips and avoid the need for 75 parking spaces at the Lab's main site. The Lab continues to optimize shuttle routes from the Rockridge BART station, which were expanded in September 2018. As of October 2019, the Lab also updated its NextBus Alert system, which allows riders on all shuttle routes to be notified when the next shuttle is arriving at a stop.

WASTE

- **Online Waste Guide**: The Lab has continued hosting an online Waste Guide (wasteguide.lbl.gov) to educate the Lab community on how to reduce, reuse, and recycle more than 250 items. The Guide has been very useful and popular. It

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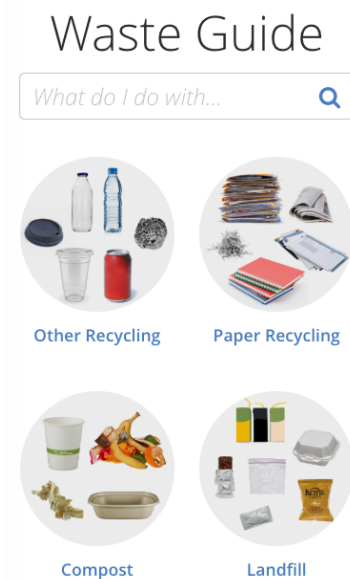
indicates how to dispose of items and provides additional details about what happens after items are put in the bin.

- **Site-Wide Waste Audits**: The Lab has maintained its site-wide waste audit system to track building-level diversion and identify the composition of waste streams in order to better target diversion efforts. Explore Waste Diversion by Building at sbl.lbl.gov/data and read about the Lab's data-driven waste diversion efforts at sbl.lbl.gov/progress.

- **IGB Pioneers as First Zero Waste Building**: IGB has demonstrated leadership by committing to be the Lab's first building to go "zero waste," with updated infrastructure to reach and sustain greater than 90% waste diversion.

- **New Policies for Zero Waste and Waste Reduction**: New policies were finalized this year to clarify roles and responsibilities related to achieving zero waste (greater than 90% diversion).

WATER

- **New Water Policies:** Three policies were finalized this year intended to reduce water consumption. These include policies defining limitations for landscape watering, for water-conserving restroom fixtures, and to eliminate water waste associated with single-pass cooling. Single-pass cooling refers to the use of a cold water supply as a source of cooling in which water is run through a piece of laboratory or building cooling system equipment to a drain.

ATTACHMENT 4: Sustainability Community Outreach Events
February 2019 – February 2020

DATE	EVENT	ATTENDEES*	PARTNERS**
2/1/19	**Equity & Adaption Training**	48	Urban Sustainability Directors Network (USDN), Movement Strategy Center, Rami & Assoc.
2/7/19	**East Bay Electrification Expo**	280	Ecology Center, StopWaste
3/15/19	**Electric Mobility Stakeholder Workshop**	50	
3/19/19	**Senior Center East Bay Community Energy (EBCE) Outreach** (tabling)		
3/26/19	**Bay Area Multifamily Building Enhancements (BAMBE) Multi-Family Workshop - large properties**	34	StopWaste
3/26/19	**BAMBE Multi-Family Workshop - small properties**	25	StopWaste
4/8/19	**Senior Center EBCE Outreach** (tabling + presentation)	20	
5/4/19	**Energy Town Hall** (tabling + presentation)	40	Hosted by: Councilmembers Harrison & Bartlett
6/23/19	**Electric Cars 101 Workshop**	30	Ecology Center, 350 Bay Area
6/25/19	**Electric Cars 101 Workshop**	30	Ecology Center, 350 Bay Area
6/29/19	**Making a Healthier Home Workshop**	30	Ecology Center, StopWaste
8/22/19	**Clean Transportation Convening**	135	Berkeley Climate Action Coalition (BCAC), Ecology Center
9/14/19	**3rd Annual Ride Electric**	300-500	Ecology Center
10/15/19	**2019 SunShares Workshop**	50	Ecology Center
10/16/19	**Planning Department Open House** (tabling)	n/a	
10/20/19	**City of Berkeley Open House** (tabling)	n/a	Hosted by: City Manager
11/5/19	**Get Ready for 2020: Electrification for Home Builders & Designers Workshop**	98	BCAC, Ecology Center, StopWaste
11/9/19	**Awakening the Dreamer Symposium** (tabling)		Hosted by: Unitarian Universalist Church, Pachamama Alliance
11/17/19	**Making a Healthier Home Workshop**	75	StopWaste, City of Albany
1/21/20	**Citizen's Climate Lobby (CCL): Climate Restoration - We Are Not Doomed!** (tabling)	n/a	Hosted by CCL: BCAC + multiple community partners
2/26/20	**Bridge Association of Realtors: Electrification 101 for Realtors Workshop**	63	Hosted by: Bridge Association of Realtors

*Total attendees (participants, staff & presenters) for workshops only.

**Unless noted, OESD was either the lead entity or a co-host of events. At events hosted by another organization or City department, OESD participated by tabling and/or presenting.

March 2021 Network Call

Welcome

- Leading today's call is James Ritchotte, Climate Mayors Director

- Any technical problems or questions during today's call, please email Rupal Prasad at USDN: rupalprasad@usdn.org

Agenda: March 9, 2021

I. Welcome

II. Mayor's Moment – Mayor Sylvester Turner, City of Houston, TX

III. Cities Race to Zero – Laura Jay, Regional Director for North America, C40

IV. Climate Mayors EV Purchasing Collaborative

V. Policy and Organizational Update

Mayor's Moment – Sylvester Turner, City of Houston, TX
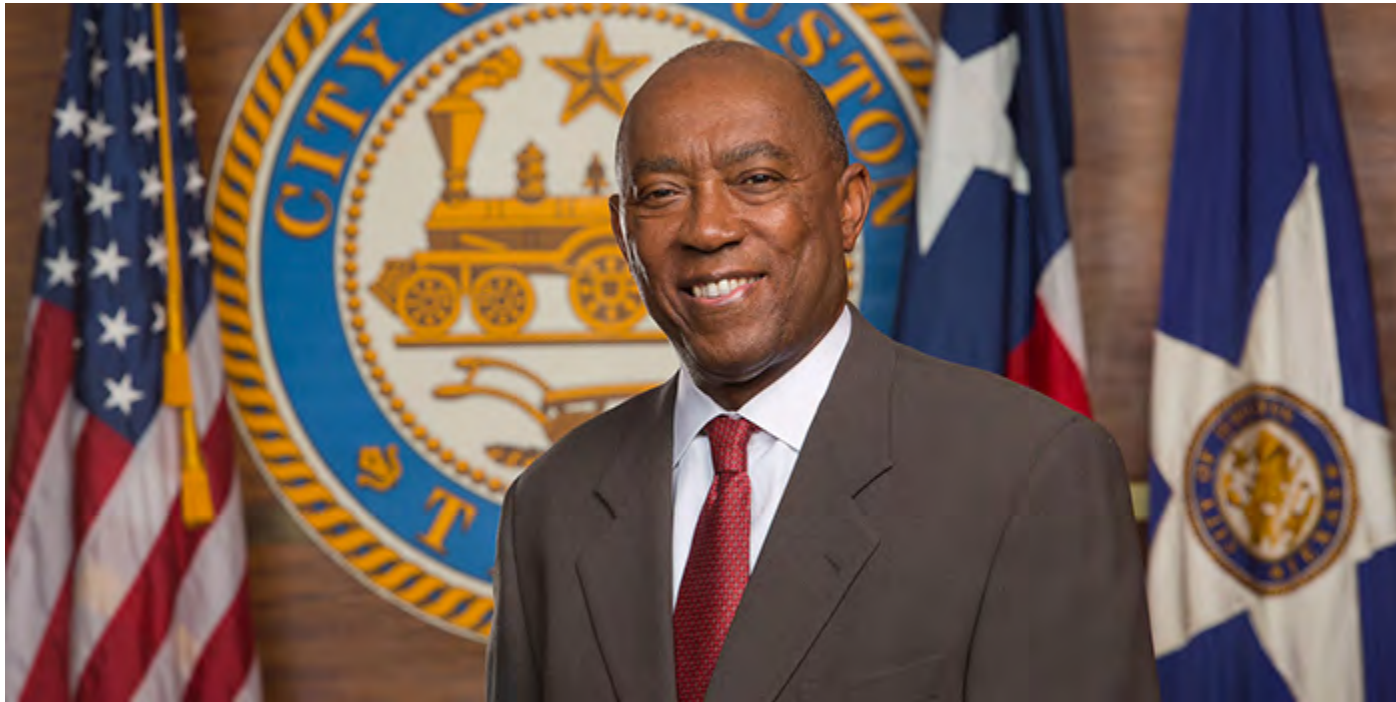
CITIES RACE TO ZERO
DRIVING A GREEN AND JUST RECOVERY IN 1000 CITIES

© Henning Witze

© Anadolu Agency

COP26
November 1-12, 2021
Glasgow, Scotland

The most important milestone since the adoption of the Paris Agreement: for the first time nations are expected to present new and enhanced pledges showing how they will reach net-zero emissions by 2050.

EVERYONE
has a role to play

"Every country, city, financial institution and company should adopt plans for transitioning to net zero emissions by 2050 **and take decisive action now to put themselves on the right path towards achieving this vision".**

Antonio Guterres, Secretary General of the United Nations,
"State of the Planet" speech, 2/12/2020

CITIES RACE TO ZERO

Official partner for cities into the global Race to Zero campaign run by the UNFCCC.

Race to Zero rallies cities, regions, businesses, and investors committed to the 1.5°C goal of the Paris Agreement and to achieving net zero emissions by 2050 at the very latest.

To join go to www.citiesracetozero.org and sign the **Cities Race to Zero pledge.**

"As the first generation of leaders to recognize the scale of the impending climate crisis and the last generation to be able to prevent it, I invite you to join the **Cities Race to Zero".**

Eric Garcetti, Mayor of Los Angeles,
Friend of COP26 & C40 Chair

SAN FRANSICO

WHY
US CITIES SHOULD JOIN THE RACE

It is critical for US cities be at the table as the Biden Administration implements its climate ambitions.

By aligning city efforts with the science and likely targets of the Biden Administration, cities stand to directly benefit from policies and programs that will implement these targets and bolster equity and generate good paying jobs

Who is already in the Race?

452
Cities

45
Investors

549
Universities

22
Regions

7%
Global CO2 emissions

0.62
Billion people

12%
Global economy US$9.81 trillion in revenue

MEDIA COVERAGE

2.8 million readership of outlets which published articles on Race to Zero launch

i News
'Race to Zero': Businesses, cities and investors join forces in UN-backed net zero emissions campaign

The Telegraph
Together, for a cleaner world

edie
Race to Zero: COP26 campaign launched to push nations towards net-zero targets

BBC NEWS
UN launches push for net-zero emissions by 2050
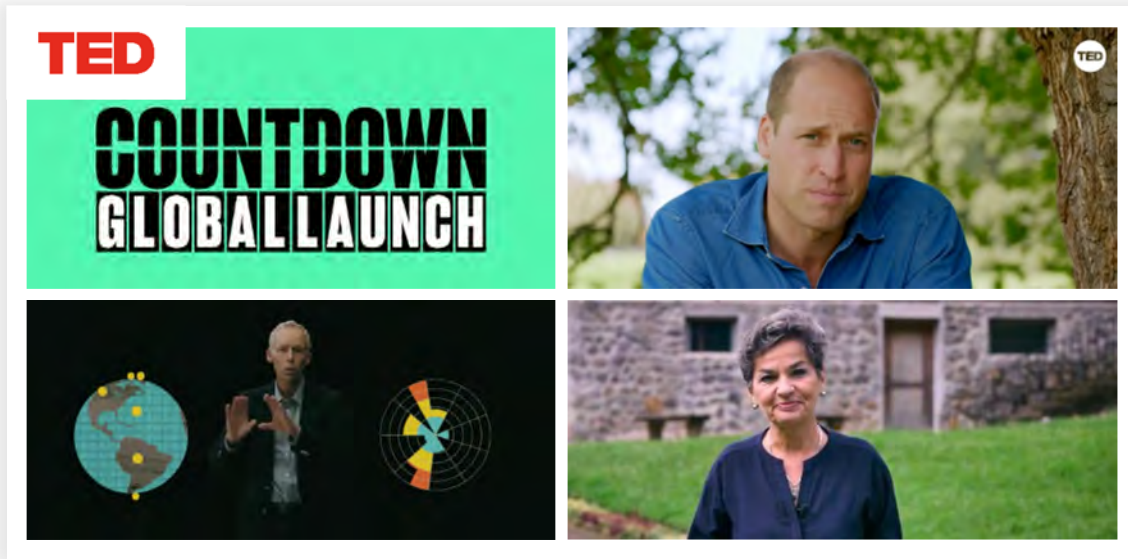
BusinessGreen
Starting gun fired for UN-backed 'Race to Zero' campaign

CURRENT±
UNFCCC Race to Zero campaign pushes for net zero coalition of global actors

TED
COUNTDOWN GLOBAL LAUNCH

OBJECTIVE: 1000 CITIES JOIN CITIES RACE TO ZERO

Cities Race to Zero pledge:
5 REQUIREMENTS

01

Endorse the following principles:

- We recognize the global climate emergency.

- We are committed to keeping global heating below the 1.5°C goal of the Paris Agreement.

- We are committed to putting inclusive climate action at the center of all urban decision-making, to create thriving and equitable communities for everyone.

- We invite our partners – political leaders, CEOs, trade unions, investors, and civil society – to join us in recognizing the global climate emergency and help us deliver on science-based action to overcome it.

02

Pledge to reach net-zero in the 2040s or by mid-century at the latest and limit warming to 1.5°C.

03

Plan to set an interim 2030 target consistent with a fair share of 50% global emission reductions.

04

Proceed to planning at least one inclusive climate action, e.g. Procure only zero emission buses from 2025.

05

Publish your target and action to your usual reporting platform and report progress annually.

WHY join?

01

Increase your city's efforts to address equity, climate, economic recovery and job growth

02

Align your city's climate actions with what science requires to meet the Paris Agreement

03

Demonstrate your city's leadership in this global movement and at the biggest climate event of the decade

04

Access global media platforms to tell stories of what climate action means in your local community to a global audience

JOINING:
step-by-step

01
Go to the Cities Race to Zero portal

www.citiesracetozero.org

02
Click on Join Cities Race to Zero

You're starting the pledging process

03
Carefully read the Cities Race to Zero pledge

Make sure you understand the 5 pledge requirements

JOINING:
step-by-step

04
Select where you will be reporting you target and action commitment

CDP-ICLEI Unified Reporting System and MyCovenant are recognized platforms of Cities Race to Zero. If you do not currently report, please say so on the form!
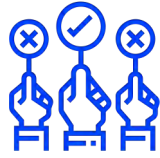
05
Commit to at least one action

There are over 50 high-impact inclusive actions that could set your city on the path to a green and just recovery and 1.5°C.

06
Sign and submit the Cities Race to Zero pledge

Only a mayor, council leader or equivalent can sign (or personnel authorized on their behalf). You are now committed to delivering all 5 Cities Race to Zero requirements.

Race to Resilience

This sister campaign is designed to put people and nature first in pursuit of a resilient world.

The objective of Race to Resilience is to build the resilience of 4 billion people from vulnerable groups and communities.

Cities can join Race to Resilience at the same time as Cities Race to Zero on www.citiesracetozero.org **by committing to at least one additional resilience action.**

© Giovanni Corti

SETTING
a 1.5°C target

Cities that already have a 1.5°C science-based target need to report it to their existing report platforms. If you've never reported before, we will guide you in this process.

Cities that are not sure their target is science-based and 1.5°C compliant need to report it and Cities Race to Zero partners will check for alignment.

Cities that do not have a 1.5°C science-based target need to start developing one or updating existing target as soon as possible.

ICLEI USA & CDP are working on support to US cities in setting Science Based Targets.

Guide for cities

To help you chose the best methodology to set a 1.5°C compliant, science-based target.

Action planning

Cities can choose among 50+ high-impact inclusive actions that will set them on a path to 1.5°C, deliver a green a just recovery from COVID-19, as well as better health, air quality, jobs and resilience for all.

All signatories must commit to at least one action before COP26; it can be an action already underway, a new action, or multiple!

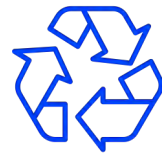Resources are available to help you successfully plan and deliver these actions.

Create green and heathy streets

Create a more inclusive society

Reduce air pollution & ensure clean air

Develop zero-carbon buildings

Advance towards zero waste

Move towards resilient sustainable energy systems
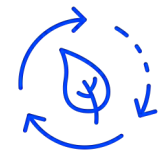
Create sustainable food systems
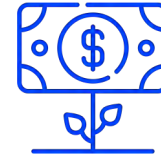
Divest from fossil fuels & invest in a sustainable future

REPORTING

Signatories should report their targets and actions through the CDP-ICLEI Unified Reporting System or MyCovenant.

In 2021, cities will report the information they have, even if incomplete. By 2022, cities will report confirmed or updated targets, and start reporting progress annually.

Cities that already report to of these platforms will not have new reporting requirements.

Cities that have not reported before will be guided through this process.

© holgs

CHAMPIONING
Cities Race to Zero

Committed cities are invited to champion this global campaign and help recruit their peers in their country, region, why not even sister-cities?

Get in touch if you would like to champion Cities Race to Zero!

Unsure if you are in the Race?
Ask us: info@citiesracetozero.org

© Sarah Bastin

Thank you

Laura Jay, Regional Director for North America at C40 Cities

ljay@c40.org

info@citiesracetozero.org

www.citiesracetozero.org

The Collaborative Reach

257 committed cities, counties, ports, universities, and transit agencies

4,106 light-duty electric vehicles and buses committed

2,633 electric vehicles procured to date

1,257 charging stations installed to date

Electrification Coalition

# Dashboard for Rapid Vehicle Electrification - DRVE

Improving Fleet Analysis from Top to Bottom

- Standard fleet analysis can be costly, take weeks/months, and be difficult to interpret results.

- Through the DRVE Tool, the Electrification Coalition is focused to create an accessible, easy-to-use analysis tool that analyzes fleet data in minutes.

- Focused on bringing light, medium, and heavy-duty fleet analysis under one tool; typically separated for analysis.

Electrification Coalition

The Results: The Dashboard

- Dashboard Analysis View
- Ability to view and sort analysis by vehicle type, size, and other profiles.
- Light, Medium, and Heavy-Duty options
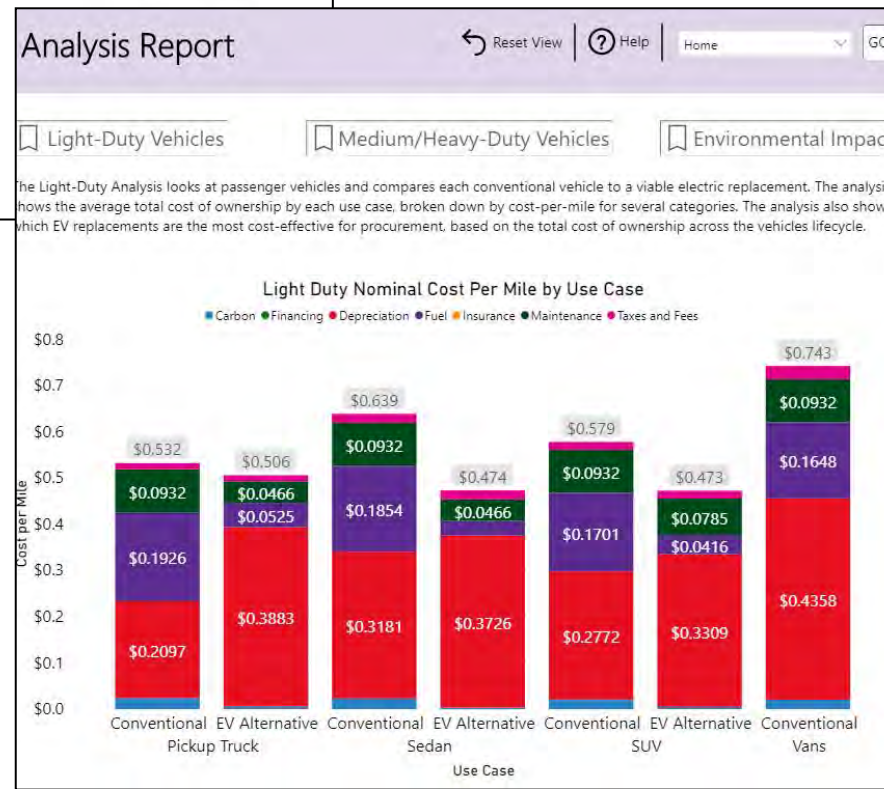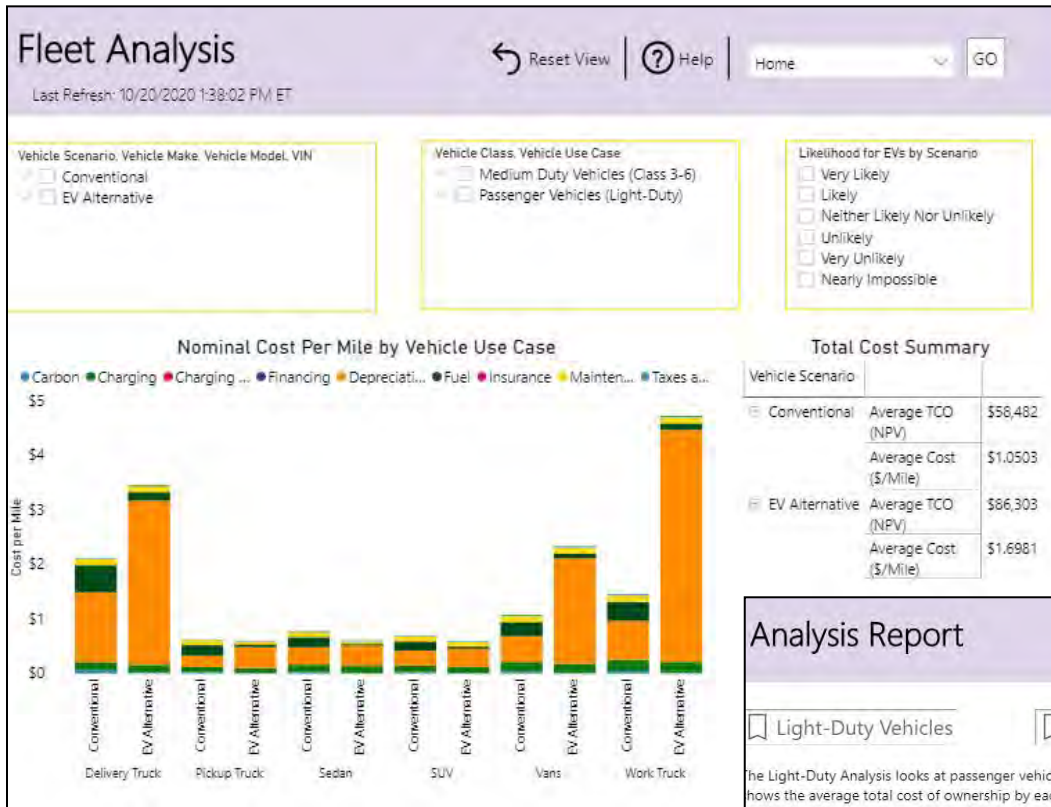
DRVE Tool Recap

- Pulls from automated FHWA, DOE, EPA, and FuelEconomy.gov sources; will scale as new vehicle options become available.

- Upload and ingest data of any type (CSV, Excel)
  - Key input is vehicle VIN number

- Runs analysis on-computer

- New Features released/underway:
  - Automated Report Download
  - More charging planning features
  - DRVE "light" tool – allows for rendering of data within Excel file as well

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DRVE webinar for Climate Mayors

- March 18
- 2 PM ET
- Register Here:
- https://us02web.zoom.us/webinar/register/WN_mQOZ7IsMQ5K69YYlyUKS2Q

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Over 250 public entities across the country have joined!

Thank you!

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Policy and Organizational Update

- Governance and Strategic Planning Process
- Climate Mayors Meeting with White House Office of Domestic Climate Policy
- Earth Day
  - Climate Leaders Summit
  - City action/announcements
- Congressional Activity
  - COVID-19 Relief and Recovery Act
  - CLEAN Future Act

Thank You

- Next call will be on April 13, 2021

- Materials from today's call will be distributed this week

- Please contact James Ritchotte (jritchotte@climate-mayors.org) if you have any questions