L. AIR QUALITY

P P P

This section has been prepared using methodologies and assumptions recommended in the air quality impact assessment guidelines of the Bay Area Air Quality Management District (BAAQMD).[1] In keeping with these guidelines the chapter describes existing air quality, impacts of future traffic on local carbon monoxide levels and consistency of the *Draft General Plan* with the regional air quality plan. Mitigation measures to reduce or eliminate significant impacts, when feasible, are identified.

1 Setting

a0 Meteorology/Climate Conditions. Two meteorological factors affect air quality in Berkeley: wind and temperature. Winds affect the direction of transport of any air pollution emissions and wind also controls the volume of air into which pollution is mixed in a given period of time. While winds govern horizontal mixing processes, temperature inversions determine the vertical mixing depth of air pollutants.

Winds in the Berkeley area display several characteristic regimes. During the day, especially in summer, winds are from the southwest and west as air is funneled through the Golden Gate and then disperses across the entire Bay Area. At night, especially in winter, the land becomes cooler than the ocean and an offshore wind often develops, blowing from the Central Valley toward the ocean.

Often, the daytime onshore flow of marine air is capped by a massive dome of warm air that acts like a giant lid over the region. As the clean ocean air moves inland, pollutants are continually added from below without any dilution from above. As the marine layer collects in inland valleys of the basin and undergoes photochemical transformations under abundant sunlight, it creates unhealthful levels of smog (mainly ozone).

A different type of inversion typically forms at night as cool air pools in low elevations while the air aloft remains warm. Shallow radiation inversions are formed (especially in winter) which trap pollutants near intensive traffic sources, such as freeways, shopping centers, etc., and form localized violations of clean air standards called Ahot spots.@

[1] Bay Area Air Quality Management District, 1996. *BAAQMD CEQA Guidelines*.

Although inversions are found during all seasons of the year, the summertime regional capping inversion and the localized winter radiation inversions are, by far, the most dominant.

b0 Regulatory Setting.

(1) Air Quality Planning. Attempts to combat air quality problems began at the federal level with the enactment of the Clean Air Act of 1967. Initial efforts were the establishment of national ambient standards, designation of local air pollution control districts and creation of an air quality monitoring network.

State and local agencies have over the last 20 years adopted regulations for a multitude of air pollutant sources. After obvious and major sources of pollution were controlled (factories, automobiles) controls were implemented on smaller sources (gasoline vending and solvent-based paints for example).

The federal Clean Air Act and the California Clean Air Act of 1988 require that the State Air Resources Board, based on air quality monitoring data, designate as Anonattainment areas@ portions of the State where the federal or State ambient air quality standards are not met. Because of the differences between the federal and State standards, the designation of nonattainment areas is different under the federal and State legislation.

The California Clean Air Act requires local air pollution control districts to prepare air quality attainment plans. These plans must provide for district-wide emission reductions of five percent per year averaged over consecutive three-year periods or if not, provide for adoption of Aall feasible measures on an expeditious schedule@. The State-mandated regional air quality plan is the *Bay Area >97 Clean Air Plan*.[2]

(2) Criteria Pollutants. Both the U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB) have established ambient air quality standards for common pollutants. These ambient air quality standards are levels of contaminants which represent safe levels that avoid specific adverse health effects associated with each of the pollutants, referred to as Acriteria@ pollutants, as described in criteria documents. Table IV.L-1 identifies the major criteria pollutants, characteristics, health effects and typical sources.

The federal and California state ambient air quality standards are summarized in Table IV.L-2 for important pollutants. The federal and State ambient standards were developed independently with differing purposes and methods, and although both

[2] Bay Area Air Quality Management District, 1997. *Bay Area >97 Clean Air Plan and Triennial Assessment*.

processes attempted to avoid health-related effects, the standards differ in some cases. In general, the California state standards are more stringent, which is particularly true for ozone and PM_{10}.

The USEPA established new national air quality standards for ground-level ozone and for fine Particulate Matter in 1997. On May 14, 1999 the Court of Appeals for the District of Columbia Circuit issued a decision ruling that the Clean Air Act, as applied in setting the new public health standards for ozone and particulate matter, was unconstitutional as an improper delegation of legislative authority to the USEPA. The Court=s opinion is being reviewed and an appeal is likely.

The *West Berkeley Plan*, adopted in 1993, calls for more stringent environmental review and regulation, including the mitigation of air quality impacts, through both industrial and residential planning and zoning measures. The *West Berkeley Plan* contains policies that require the protection of residential uses and the avoidance of establishment of new uses which pose unmitigable environmental hazards, which would create unmitigable odors or toxic air contaminant impacts.

(3) Toxic Air Contaminants. In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TACs) are another group of pollutants of concern in the Bay Area. Toxic Air Contaminants (TACs), are injurious in small quantities and are regulated despite their absence as criteria documents. The identification, regulation and monitoring of TACs is relatively recent compared to that for criteria pollutants. Sources of TACs include: industrial processes; petroleum refining and chrome plating operations; commercial operations such as gasoline stations and dry cleaners; and motor vehicle exhaust. Health effects of TACs can include cancer, birth defects, and neurological damage.

c0 Current Air Quality. Existing air quality in the Berkeley area can be best inferred from ambient air quality measurements conducted by the Bay Area Air Quality Management District (BAAQMD) at its Richmond (13th Street) monitoring site. Table IV.L-3 summarizes the last 3 years of published data from this location and an ozone monitoring site in San Pablo. Table IV.L-3 shows that all State/federal standards are met in Richmond/San Pablo with the exception of the State standards for PM_{10} and ozone. The federal standard for ozone was also exceeded during this period at other monitoring sites within the San Francisco Bay Area Air Basin. The

Table IV.L-1
MAJOR CRITERIA POLLUTANTS

Pollutant	Characteristics	Health Effects	Major Sources
Ozone	A highly reactive photochemical pollutant created by the action of sunshine on ozone precursors (primarily reactive hydrocarbons and oxides of nitrogen). Often called photochemical smog.	**$**Eye irritation **$**Respiratory function impairment.	Combustion sources such as factories and automobiles, and evaporation of solvents and fuels.
Carbon Monoxide	An odorless, colorless gas that is highly toxic. It is formed by the incomplete combustion of fuels.	**$**Impairment of oxygen transport in the bloodstream. **$**Aggravation of cardiovascular disease. **$**Fatigue, headache, confusion, dizziness. **$**Can be fatal in the case of very high concentrations.	Automobile exhaust, combustion of fuels, combustion of wood in woodstoves and fireplaces.
Nitrogen Dioxide	Reddish-brown gas that discolors the air, formed during combustion.	**$**Increased risk of acute and chronic respiratory disease.	Automobile and diesel truck exhaust, industrial processes, fossil-fueled power plants.
Sulfur Dioxide	A colorless gas with a pungent, irritating odor.	**$**Aggravation of chronic obstruction lung disease. **$**Increased risk of acute and chronic respiratory disease.	Diesel vehicle exhaust, oil-powered power plants, industrial processes.
Suspended Particulate Matter (PM_{10})	Solid and liquid particles of dust, soot, aerosols, and other matter that are small enough to remain suspended in the air for a long period of time.	**$**Aggravation of chronic disease and heart/lung disease symptoms.	Combustion, automobiles, field burning, factories, and unpaved roads. Also a result of photochemical processes.

Source: Donald Ballanti, Certified Consulting Meteorologist, 1998.

Table IV.L-2
FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS AND BAY AREA ATTAINMENT STATUS

Pollutant	Averaging Time	California Standard[a]		National Standards[b]	
		Federal Primary Standard Concentration	Attainment Status	Concentration	Attainment Status
Ozone	1-Hour	0.09 ppm (180 ìg/m³)	N	0.12 ppm (235 ìg/m³)	N
	8-Hour			0.08 ppm	U
Carbon Monoxide	8-Hour	9.0 ppm (10 mg/m³)	A	9.0 ppm (10 mg/m³)	A
	1-Hour	20 ppm (23 mg/m³)	A	35 ppm (40 ìg/m³)	A
Nitrogen Dioxide	Annual			0.053 ppm (100 ìg/m³)	A
	1-Hour	0.25 ppm (470 ìg/m³)	A		
Sulfur Dioxide	Annual			80 ìg/m³ (0.03 ppm)	A
	24-Hour	0.04 ppm (105 ìg/m³)	A	365 ìg/m³ (0.14 ppm)	A
	1-Hour	0.25 ppm (655 ìg/m³)	A		
Particulate Matter-Fine ($PM_{2.5}$)	Annual Arithmetic Mean			15 ìg/m³	U
	24-Hour			65 ìg/m³	U
Suspended Particulate Matter (PM_{10})	Annual Arithmetic Mean			50 ìg/m³	A
	Annual Geometric mean	30 ìg/m³	N		
	24-Hour	50 ìg/m³	N	150 ìg/m³	U

Notes: A = Attainment
N = Nonattainment
U = Unclassified
ppm = parts per million
mg/m^3 = milligrams per cubic meter
ìg/m³ = micrograms per cubic meter

[a] California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, and PM_{10} are values that are not to be exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average, then some measurements may be excluded. In particular, measurements are excluded that the ARB determines would occur less than once per year on the average.

[b] National standards other than for ozone and particulates, and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent three-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one.

Source: BAAQMD, 1998. *Bay Area Attainment Status as of September 1998*.

Table IV.L-3
AIR QUALITY DATA FOR RICHMOND, 1995-1997

Pollutant	Standard	Days Exceeding Standard in:		
		1995	1996	1997[a]
Ozone	Federal 1-Hour	0	0	0
Ozone	State 1-Hour	0	0	1
Carbon Monoxide	State/Federal 8-Hour	0	0	-
PM_{10}	Federal 24-Hour	0	0	-
PM_{10}	State 24-Hour	1	0	-

[a] Monitoring discontinued in downtown Richmond in 1997. Data shown is for San Pablo ozone monitoring site which opened in 1997.

Source: California Air Resources Board, 1996-1998. *California Air Quality Data Vols XXVII-XXIV*; Donald Ballanti, Certified Consulting Meteorologist, 1999.

Bay Area currently had until recently attained all federal standards. In June of 1998 the USEPA reclassified the Bay Area from Amaintenance area@ to Anonattainment@ for ozone based on violations of the federal standards at several locations in the air basin. This reversed the air basin=s reclassification to Amaintenance area@ for ozone in 1995. Reclassification required an update to the region=s federal air quality plan. The *Draft San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard*[3] is the current ozone air quality plan required under the federal Clean Air Act. Under the California Clean Air Act Alameda County is a nonattainment area for ozone and PM_{10}. The county has either attainment or unclassified status for other pollutants.

d0 Draft General Plan Policies. Policies in the *Draft General Plan* that pertain to air quality include:

- *Policy LU-18.* Implement the Downtown Plan and take actions to achieve the three goals of the Plan:
  1. Express and enhance Berkeley's unique social and cultural character in the downtown;
  2. Create an appealing and safe downtown environment, with a comfortable pedestrian orientation; and

[3] Bay Area Air Quality Management District, March 1999. *Draft San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard*.

3. Diversify, revitalize and promote the downtown economy.

- *Policy LU-26.* Ensure that new development does not adversely impact existing transportation facilities and services.
- *Policy LU-28.* Maintain and improve Neighborhood Commercial Areas including Elmwood, Solano, and North Shattuck as, pedestrian-friendly, visually attractive areas of human scale and ensure that Neighborhood Commercial areas fully serve neighborhood needs.
- *Policy LU-29.* Maintain and improve Avenue Commercial areas including University, San Pablo, and South Berkeley as pedestrian-friendly, visually attractive areas of human scale and ensure that Avenue areas fully serve neighborhood needs as well as a broader spectrum of needs.
- *Policy LU-30.* Encourage affordable housing in Avenue Commercial areas.
- *Policy T-2: Public Transportation Improvements.* Encourage regional and local efforts to maintain and enhance public transportation services and seek additional regional funding for public and alternative transportation improvements.
- *Policy T-3: Eco Pass City Program.* Increase transit use and reduce automobile traffic and congestion in Berkeley by creating an Eco Pass Program.
- *Policy T-5: Light Rail/Surface Rapid Transit.* Support regional efforts to develop light rail or surface rapid transit service connecting East Bay cities. *(Note: This policy subject to change upon completion of AC Transit Major Investment Study.)*
- *Policy T-9: Ferry Service.* Work with the City of Albany, the racetrack owners, regional transportation agencies, and AC Transit to establish a ferry terminal and regular San Francisco ferry service from Berkeley at the foot of Gilman Street as an alternative to the Bay Bridge and as an essential recovery element following a significant seismic event.
- *Policy T-11: City of Berkeley.* Establish the City of Berkeley as a "Model Employer" in the area of trip and emission reduction.
- *Policy T-13: Major Public Institutions.* Work with other agencies and institutions, such as the University of California, the Berkeley Unified School District, Lawrence Berkeley Laboratory, the Alameda County Court, and neighboring cities to promote Eco Pass and to pursue other efforts to reduce automobile trips.
- *Policy T-14: Private Employers.* Encourage private employers to reduce the demand for automobile travel through transportation demand management programs that include elements, such as:
  - Trip reduction incentives such as ACommuter Check@ and AEco Pass@.

- Flexible work hours and telecommuting to reduce peak hour commute congestion.
- Carpool and vanpool incentives to reduce single occupancy vehicle use.
- Provision of mass transit pass/credit instead of free employee parking (parking Acash-out@ programs).
- Providing bicycle facilities.
- Market pricing mechanisms for employee parking to reduce automotive use and discourage all day parking.
- Local hiring policies.

- *Policy T-16: Access by Proximity*. Improve access by increasing proximity of residents to services, goods, and employment centers.
- *Policy T-20: Air Quality Impacts.* Continue to encourage innovative technologies and programs such as clean fuel, electric and low-emission cars that reduce the air quality impacts of the automobile.
- *Policy T-21: Neighborhood Protection and Traffic Calming.* Take actions to prevent traffic and parking generated by residential, commercial, industrial or institutional activities from being detrimental to residential areas.
- *Policy T-30: Infrastructure Improvements.* Facilitate mobility and the flow of traffic on major and collector streets (shown on the Vehicular Circulation Map on the next page), reduce the air quality impacts of congestion, improve pedestrian and bicycle access and speed public transportation throughout the City, by making improvements to the existing physical infrastructure.
- *Policy T-41: Bicycle Planning.* Integrate the consideration of bicycle travel into City planning activities and capital improvement projects, and coordinate with other agencies to improve bicycle facilities and access within and connecting to Berkeley.
- *Policy T-42: Bicycle Network.* Develop a safe, convenient, and continuous network of bikeways that serves the needs of all types of bicyclists, and provide bicycle-parking facilities to promote cycling.
- *Policy T-43: Bicycle Safety*. Improve bicycle safety for riders, pedestrians, and drivers through continuing education of motorists and bicyclists as well as rigorous enforcement of laws for both bicyclists and automobile drivers.
- *Policy T-44: Bicycle Promotions.* Promote bicycle use by increasing public awareness of the benefits of bicycling and of the available bike facilities and programs.
- *T-45: Bicycle Funding.* Secure sufficient resources from all available sources to fund ongoing bicycle improvements and education.

- *Policy H-15: Transit-Oriented New Construction.* Encourage construction of new medium and high density housing on major transit corridors and in the Downtown consistent with the scale, character, and zoning of these areas.
- *Policy EM-5: Reduce Wastes*. Continue to reduce solid and hazardous wastes generated within the city.
- *Policy EM-8: Materials Recovery and Re-Manufacturing.* Support and encourage serial materials recovery and re-manufacturing industries.
- *Policy EM-10: Education*. Work with other State and local agencies to educate business owners and residents regarding safe use, recycling and disposal of toxic materials, reducing hazardous household wastes, and substitutes for these substances.
- *Policy EM-11: Hazardous Materials Disclosure*. Continue to require the disclosure of hazardous materials usage and encourage businesses using such materials to prepare and implement a plan to reduce the use of hazardous materials and the generation of hazardous wastes.
- *Policy EM-12: Hazardous Material Regulation*. Control and regulate the use, storage and transportation of toxic, explosive, and other hazardous and extremely hazardous material to prevent unauthorized and accidental discharges.
- *Policy EM-13: Environmental Investigation*. When reviewing applications for new development in areas historically used for industrial uses, require environmental investigation as necessary to ensure that soils, groundwater, and buildings affected by hazardous material releases from prior land uses would not have the potential to affect the environment or the health and safety of future property owners or users.
- *Policy EM-14: Risk Reduction*. Work with owners of vulnerable structures with significant quantities of hazardous material to mitigate potential risks.
- *Policy EM-16: Warning Systems*. Establish a way to warn residents of a release of toxic material or other health hazard, such as sirens and/or radio broadcasts.
- *Policy EM-17: Regional Air Quality Action.* Continue working with the Bay Area Air Quality Management District and other regional agencies.
- *Policy EM-18: 15% Emission Reduction B Global Warming Plan.* Make efforts to reduce local emissions by 15% by the year 2010.
- *Policy EM-20: City Vehicles.* Continue to convert fleet vehicles to natural gas, electricity and other alternative fuels. Substitute bicycles for energy powered vehicles whenever possible.
- *Policy EM-21: Alternative Fuels.* Work with the University of California, Berkeley Unified School District and other agencies to establish natural gas fueling and electric vehicle recharging stations accessible to the public.

- *Policy EM-22: Public Awareness*. Increase public awareness of air quality problems, rules and solutions through use of City publications and networks.

2 Impacts and Mitigation Measures

a0 Significance Criteria. The BAAQMD has developed thresholds of significance specifically for Alocal plans@, which includes cities= General Plans. Inconsistency with the most recently adopted Clean Air Plan (CAP) would be considered a significant impact. According to the BAAQMD, the following criteria must be satisfied for a local plan to be determined to be consistent with the CAP and not result in a significant air quality impact:

- The local plan should be consistent with the CAP Population and Vehicle Miles Traveled (VMT) assumptions. This is demonstrated if the population growth over the planning period will not exceed the values included in the current CAP.[4] CAP population assumptions are those identified in the most recent version of the *ABAG Projections* report.
- The local plan demonstrates reasonable efforts to implement the Transportation Control Measures (TCMs) included in the CAP that have cities identified as the implementing agencies.
- The local plan provides for buffer zones around existing and proposed land uses that would emit odors and/or toxic air contaminants. Buffer zones to avoid odors and toxics impacts should be reflected in local plan policies, land use maps and implementing ordinances.

With respect to local concentrations of carbon monoxide, the following significance threshold is recommended:

- A project contributing to carbon monoxide (CO) concentrations exceeding the State Ambient Air Quality Standard of 9 parts per million (ppm) averaged over 8 hours or 20 ppm for 1 hour would be considered to have a significant impact.

[4] BAAQMD guidance includes a second criterion that the rate of increase in VMT for the jurisdiction be no greater than the rate of increase in population. This criterion was based on Health and Safety Code Section 40919(d) which established this performance standard for districts classified as serious nonattainment areas under the California Clean Air Act. Subsequent to the publication of the BAAQMD guidelines this section of the Health and Safety Code was amended and this requirement eliminated.

Implementation of the *Draft General Plan* would also result in a significant impact to air quality if it would:

- Alter air movement, moisture or temperature, or result in any change in climate, either locally or regionally;
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

b0 Impacts and Mitigation Measures. Less-than-significant air quality impacts are shown first in this section, followed by significant impacts.

(1) Less-than-Significant Impacts. The following revisions to *Draft General Plan* policies are suggested to ensure minimization of air quality impacts in the City of Berkeley.

Impact AIR-1: The *Draft General Plan* is not consistent with BAAQMD significance criteria with respect to odors and toxic air contaminants. (LTS)

The *Draft General Plan* does not meet BAAQMD criteria for general plans with respect to odors and toxic air pollutants. The Environmental Management Element contains several policies addressing public safety aspects of the use and storage of toxic or hazardous materials (*Policies EM-5, EM-8,* and *EM-10* through *EM-16*), but does not specifically address the use of buffer zones to avoid odor and/or toxic air contaminant impacts. However, the *West Berkeley Plan* does contain planning polices and zoning measures the objective of which is to protect existing uses from odors and toxic air contaminants. If the *Draft General Plan* is not amended to include policies, such as those in the *West Berkeley Plan,* a significant impact would result. Although the City of Berkeley is generally built out and there is not much vacant land in the vicinity of uses which use or store toxic or hazardous materials, there is the potential for new live-work units or the conversion of industrial uses to commercial or residential uses.

> Mitigation Measure AIR-1: Adopt the *West Berkeley Plan* as an amendment to the *Draft General Plan* and ensure that any new development in the City would be protected from odors or toxic air pollutants through environmental review. (LTS)

Implementation of Policies *LU-18, LU-26, LU-28, LU-29, LU-30, T-2, T-3, T-5, T-9, T-11, T-13, T-14, T-16, T-20, T-21, T-30, T-41* thorough *T-45, H-15, EM-5, EM-8,* and *EM-10* through *EM-22* all relate to air quality, but would not be expected to result in adverse environmental impacts.

Impact AIR-2: Traffic changes would modify levels of carbon monoxide along streets and intersections in Berkeley. (LTS)

Concentrations of carbon monoxide are related to the levels of traffic and congestion along streets and at intersections, which makes it the pollutant of greatest local interest. The modeling for air quality impacts is based on the traffic modeling and analysis for the year 2020 described in the Transportation section and Appendix C of this EIR. The CALINE-4 computer simulation model was applied to eight selected intersections to estimate future worst-case carbon monoxide levels in Berkeley. The CALINE-4 program and the assumptions made in its use are described in Appendix E of this EIR.

The results of the CALINE-4 modeling for the selected intersections are shown in Table IV.L-4 for existing conditions and for the years 2005 and 2020, both with the project. The concentrations in Table IV.L-4 are to be compared to the State and federal ambient air quality standards. Predicted 1-hour concentrations are to be compared to the State standard of 20 parts per million (PPM) and the federal standard of 35 PPM. Predicted 8-hour concentrations in Table IV.L-4 are to be compared to the State and federal standard of 9 PPM.

Existing concentrations meet the 1-hour and 8-hour State and federal ambient air quality standards. Future concentrations of carbon monoxide are dependent on levels of traffic and congestion and the emission rate from the vehicle fleet. Emission rates from vehicles in California have been dropping and will continue to drop in the future as older cars are replaced by newer vehicles that meet more stringent emission standards. Year 2005 and 2020 concentrations at all eight intersections studied are predicted to be below current levels. Project-related increases in traffic volumes would result in an increase in worst-case concentrations of 0.1 to 0.5 part per million at the intersections studied, but predicted concentrations would be well below the State and federal ambient standards. The project impact on local carbon monoxide air quality would therefore be considered less than significant.

Mitigation Measure AIR-2: None required. (LTS)

(2) Significant Air Quality Impacts and Mitigation Measures. One potentially significant air quality impact would occur with implementation of the *Draft General Plan.*

Impact AIR-3: The *Draft General Plan* would allow employment and population growth that would generate additional air emissions, and that would not be consistent with the population and vehicle miles traveled assumptions in the regional Clean Air Plan. (S)

Table IV.L-4
CARBON MONOXIDE CONCENTRATIONS NEAR SELECTED INTERSECTIONS (ppm)

Intersection	Existing (1999)		No Project (2005)		Proposed GP (2005)		No Project (2020)		Proposed GP (2020)	
	1-Hour	8-Hour	1-Hour	8-Hour	1-Hour	8-Hour	1-Hour	8-Hour	1-Hour	8-Hour
Adeline/Martin Luther King	11.2	7.5	9.0	6.0	9.1	6.1	6.8	4.5	6.9	4.5
San Pablo/University	9.8	6.5	7.2	4.8	7.3	4.9	5.8	3.8	5.9	3.8
University/Sacramento	11.2	7.5	7.9	5.2	8.1	5.4	6.3	4.1	6.4	4.2
University/Shattuck	11.1	7.4	8.1	5.4	8.6	5.7	6.2	4.1	6.5	4.2
Ashby/San Pablo	10.8	7.2	7.7	5.1	7.9	5.2	6.1	4.0	6.1	4.0
Gilman/San Pablo	10.5	7.0	7.6	5.0	7.6	5.1	5.9	3.9	6.0	3.9
Most Stringent Standard	20.0	9.0	20.0	9.0	20.0	9.0	20.0	9.0	20.0	9.0

Source: Don Ballanti, Certified Consulting Meteorologist, 1999.

One of the *Draft General Plan*=s objectives is to provide the City of Berkeley=s fair share of regional housing needs as determined by the Association of Bay Area Governments (ABAG). However, according to *BAAQMD CEQA Guidelines*, if a General Plan includes provisions for buffer zones to avoid odor and toxic air impacts as described above, a general plan would not have a significant impact on regional air quality if the following conditions are also met:

- Projected levels of population and employment can be shown to be consistent with the assumptions made in the Clean Air Plan (CAP); and
- Consistency can be shown between the general plan and the regional CAP by implementation of regional Transportation Control Measures (TCMs).

Table IV.L-5 lists *Draft General Plan* policies that constitute implementation of the CAP TCMs. For each TCM, a description is provided and a listing of relevant *Draft General Plan* strategies given. The TCMs listed are those that have been identified with cities as an implementing agency. Cities are not the only implementing agencies for these TCMs; other agencies include counties, the BAAQMD, the Metropolitan Transportation Commission, Congestion Management Agencies and school districts. The *Draft General Plan* demonstrates reasonable efforts to implement the TCMs in the Clean Air Plan.

The *Draft General Plan* envisions a year 2020 population that is about 5 percent greater than current ABAG projections for 2020. The project is therefore *by definition* inconsistent with the population and employment assumptions included in the current CAP. The population increase envisioned under the *Draft General Plan* and projected by the City of Berkeley is an estimate of what the total population would be if the City were to meet its required Regional Housing Needs Determination as mandated by ABAG and the State Department of Housing and Community Development. For this reason only, the population projections embodied in the *Draft General Plan* are not consistent with the latest ABAG projections for Berkeley which were the source of information on households and employment used in the *=97 Bay Area Clean Air Plan*.

In this way, the project does not meet all criteria for consistency with the regional CAP; therefore, regional air quality impacts of the project would be considered to be significant. However, this significant impact would be short-term in nature, since future ABAG Projections would be revised to incorporate the higher population figures projected in the *Draft General Plan*.[5]

Text continues on page 259

[5] ABAG projections are released every two years to be consistent with population and employment trends, as well as current planning documents, including cities= revised General Plans.

Table IV.L-5
IMPLEMENTATION OF CAP TRANSPORTATION CONTROL MEASURES IN GENERAL PLAN

Transportation Control Measure	Description	Relevant General Plan Policies
1. Support Voluntary Employer-Based Trip Reduction programs	Provide assistance to regional and local ridesharing organizations	*Policy T-2: Public Transportation Improvements*. Encourage regional and local efforts to maintain and enhance public transportation services and seek additional regional funding for public and alternative transportation improvements. *Policy T-3: Eco Pass City Program*. Increase transit use and reduce automobile traffic and congestion in Berkeley by creating an Eco Pass Program. *Policy T-10: Trip Reduction.* To reduce automobile traffic and congestion and increase transit use and alternative modes in Berkeley, support, and when appropriate require, programs to encourage Berkeley citizens and commuters to reduce automobile trips, such as: $ Participation in a Citywide Eco Pass Program (See Policy T-3). $ Participation in a Commuter Check Program. $ Carpooling and provision of carpool parking and other necessary facilities. $ Telecommuting programs. $ AFree bicycle@ programs and electric bicycle programs. $ Car-sharing programs. $ Pedal-cab, bicycle delivery services, and other delivery services. $ Programs to encourage neighborhood-level initiatives to reduce traffic by encouraging residents to combine trips, car pool, telecommute, shop locally and use alternative modes. $ Programs to reward Berkeley citizens and neighborhoods that can document reduced car use. *Policy T-11: City of Berkeley.* Establish the City of Berkeley as a "Model Employer" in the area of trip and emission reduction. *Policy T-12: Education and Enforcement.* Support and, when possible, require education and enforcement programs to encourage carpooling, alternatives to single occupant automobile use, reduce speeding, and increase pedestrian, bicyclist and automobile safety. *Policy T-13: Major Public Institutions.* Work with other agencies and institutions, such as the University of California, the Berkeley Unified School District, Lawrence Berkeley Laboratory, the Alameda County Court, and neighboring cities to promote Eco Pass and to pursue other efforts to reduce automobile trips. *Policy T-14: Private Employers.* Encourage private employers to reduce the demand for automobile travel through transportation demand management programs that include elements,

Table IV.L-5 *continued*

		such as: **$** Trip reduction incentives such as ACommuter Check@ and AEco Pass@. **$** Flexible work hours and telecommuting to reduce peak hour commute congestion. **$** Carpool and vanpool incentives to reduce single occupancy vehicle use.**$** Provision of mass transit pass/credit instead of free employee parking (parking Acash-out@ programs). **$** Providing bicycle facilities. **$** Market pricing mechanisms for employee parking to reduce automotive use and discourage all day parking. **$** Local hiring policies. *Policy T-35: Downtown and Southside Parking Management.* Manage the supply of Downtown and Southside public parking to discourage long-term, all day parking, increase the availability and visibility of short-term parking, and support local businesses. *Policy T-36: Satellite Parking Facilities.* Explore opportunities to move existing long-term parking supply out of the Downtown, University and Southside areas by creating satellite parking lots with express shuttle service to the Downtown and Southside Areas. *Policy T-38: Inter-jurisdictional Coordination.* Establish partnerships with adjacent jurisdictions and agencies, such as the University of California and the Berkeley Unified School District to reduce parking demand and encourage alternative modes of transportation.
9. Improve Bicycle Access and Facilities	Improve and expand bicycle lane system by providing bicycle access in plans for all new road construction or modifications Designate a staff person as a Bicycle Program Manager Develop and implement comprehensive bicycle plans Encourage employers and developers to provide bicycle access and facilities	*Policy T-10: Trip Reduction.* To reduce automobile traffic and congestion and increase transit use and alternative modes in Berkeley, support, and when appropriate require, programs to encourage Berkeley citizens and commuters to reduce automobile trips, such as: **$** Participation in a Citywide Eco Pass Program (See Policy T-3). **$** Participation in a Commuter Check Program. **$** Carpooling and provision of carpool parking and other necessary facilities. **$** Telecommuting programs. **$** AFree bicycle@ programs and electric bicycle programs. **$** Car-sharing programs. **$** Pedal-cab, bicycle delivery services, and other delivery services. **$** Programs to encourage neighborhood-level initiatives to reduce traffic by encouraging residents to combine trips, car pool, telecommute, shop locally and use alternative modes. **$** Programs to reward Berkeley citizens and neighborhoods that can document reduced car use. *Policy T-11: City of Berkeley.* Establish the City of Berkeley as a "Model Employer" in the area of trip and emission reduction.

Table IV.L-5 *continued*

		Policy T-13: Major Public Institutions. Work with other agencies and institutions, such as the University of California, the Berkeley Unified School District, Lawrence Berkeley Laboratory, the Alameda County Court, and neighboring cities to promote Eco Pass and to pursue other efforts to reduce automobile trips. *Policy T-14: Private Employers.* Encourage private employers to reduce the demand for automobile travel through transportation demand management programs that include elements, such as: **$** Trip reduction incentives such as ACommuter Check@ and AEco Pass@. **$** Flexible work hours and telecommuting to reduce peak hour commute congestion. **$** Carpool and vanpool incentives to reduce single occupancy vehicle use. **$** Provision of mass transit pass/credit instead of free employee parking (parking Acash-out@ programs). **$** Providing bicycle facilities. **$** Market pricing mechanisms for employee parking to reduce automotive use and discourage all day parking. **$** Local hiring policies. *Policy T-25: Street Maintenance.* Maintain streets, sidewalks, and other public infrastructure to reduce long-term replacement costs. *Policy T-30: Infrastructure Improvements.* Facilitate mobility and the flow of traffic on major and collector streets (shown on the Vehicular Circulation Map on the next page), reduce the air quality impacts of congestion, improve pedestrian and bicycle access and speed public transportation throughout the City, by making improvements to the existing physical infrastructure. *Policy T-30A:* Provide timely pavement maintenance and eliminate hazards on bicycle routes. *Policy T-41: Bicycle Planning,*. Integrate the consideration of bicycle travel into City planning activities and capital improvement projects, and coordinate with other agencies to improve bicycle facilities and access within and connecting to Berkeley. *Policy T-42: Bicycle Network.* Develop a safe, convenient, and continuous network of bikeways that serves the needs of all types of bicyclists, and provide bicycle-parking facilities to promote cycling. *Policy T-43: Bicycle Safety.* Improve bicycle safety for riders, pedestrians, and drivers through continuing education of motorists and bicyclists as well as rigorous enforcement of laws for both bicyclists and automobile drivers.

Table IV.L-5 *continued*

		Policy T-44: Bicycle Promotions. Promote bicycle use by increasing public awareness of the benefits of bicycling and of the available bike facilities and programs. *Policy T-45: Bicycle Funding.* Secure sufficient resources from all available sources to fund ongoing bicycle improvements and education.
15. Local Clean Air Plans, Policies and Programs	Incorporate air quality beneficial policies and programs into local planning and development activities, with a particular focus on subdivision, zoning and site design measures that reduce the number and length of single-occupant automobile trips	*Policy T-16: Access by Proximity.* Improve access by increasing proximity of residents to services, goods, and employment centers. *Policy T-17: Measure S Traffic and Development Capacity Advisory Measure.* Pursue implementation of Measure S: Traffic and Development Capacity Advisory Measure, which included recommendations that the City: **$** Consider establishing level of service standards for all of Berkeley=s major and collector streets and key intersections. Maintain standard traffic generation and mode share standards to be used in all planning and analysis, unless the standards are not applicable to the specific use being considered. **$** Through the California Environment Quality Act environmental review process, consider street capacity in all decisions regarding changes to zoning standards. **$** Encourage mixed residential and commercial uses in commercial areas to reduce trips. **$** Continue to pursue stable and adequate funding for integrated transportation management, to implement trip reduction programs and to monitor traffic volume. **$** Implement trip reduction programs to include ridesharing, transit, Para transit, bicycling, and walking as preferred modes of travel. Plans and programs should discourage the widening of streets, or the loss of pedestrian walkways, bicycle or parking lanes to increase automobile traffic flow. **$** Require that new and existing off-street parking constructed in the City give priority to: disabled persons, vanpools and carpools of 3 or more persons, and short term parking. **$** Establish a parking rate structure for all new and existing City parking lots and garages wherein the daily, weekly and monthly rates are higher than the equivalent cost of commuting by public transit available in the area. (Measures passed by the Berkeley Voters in 1988) *Policy T-20: Air Quality Impacts.* Continue to encourage innovative technologies and programs such as clean fuel, electric and low-emission cars that reduce the air quality impacts of the automobile. *Policy H-15: Transit Oriented New Construction.* Encourage construction of new medium and high density housing on major transit corridors and in the Downtown consistent with the scale,

Table IV.L-5 *continued*

		character, and zoning of these areas.
19. Pedestrian Travel	Review/revise general/specific plan policies to promote development patterns that encourage walking and circulation policies that emphasize pedestrian travel and modify zoning ordinances to include pedestrian-friendly design standards Include pedestrian improvements in capital improvements program Designate a staff person as a Pedestrian Program Manager	*Policy LU-18.* Implement the Downtown Plan and take actions to achieve the three goals of the Plan: 1. Express and enhance Berkeley's unique social and cultural character in the downtown; 2. Create an appealing and safe downtown environment, with a comfortable pedestrian orientation; and 3. Diversify, revitalize and promote the downtown economy. *Policy LU-28.* Maintain and improve Neighborhood Commercial Areas including Elmwood, Solano, and North Shattuck as, pedestrian-friendly, visually attractive areas of human scale and ensure that Neighborhood Commercial areas fully serve neighborhood needs. *Policy LU-29.* Maintain and improve Avenue Commercial areas including University, San Pablo, and South Berkeley as pedestrian-friendly, visually attractive areas of human scale and ensure that Avenue areas fully serve neighborhood needs as well as a broader spectrum of needs. *Policy T-12: Education and Enforcement.* Support and, when possible, require education and enforcement programs to encourage carpooling, alternatives to single occupant automobile use, reduce speeding, and increase pedestrian, bicyclist and automobile safety. *Policy T-16: Access by Proximity.* Improve access by increasing proximity of residents to services, goods, and employment centers. *Policy T-17: Measure S Traffic and Development Capacity Advisory Measure.* Pursue implementation of Measure S: Traffic and Development Capacity Advisory Measure, which included recommendations that the City: **$** Implement trip reduction programs to include ridesharing, transit, Para transit, bicycling, and walking as preferred modes of travel. Plans and programs should discourage the widening of streets, or the loss of pedestrian walkways, bicycle or parking lanes to increase automobile traffic flow. *Policy T-19: Automobile Congestion.* When considering transportation impacts under the California Environmental Quality Act, the City shall consider how a plan or project affects all modes of transportation, including transit riders, bicyclists, pedestrians, and motorists to determine the transportation impacts of a plan or project. Significant beneficial pedestrian, bicycle, or transit effects may offset or mitigate a significant adverse impact on vehicle Level of Service (LOS) to a level of insignificance. The number of transit riders, pedestrians, and bicyclist

Table IV.L-5 *continued*

		potentially affected will be considered when evaluating a degradation of LOS for motorists. *Policy T-46: Create A Pedestrian Plan.* Create a Pedestrian Plan for the purpose of developing additional strategies and policies to make Berkeley safer for pedestrians and to make Berkeley a more pedestrian friendly city. *Policy T-48: Sidewalks and Pedestrian Paths.* Maintain and improve sidewalks in residential and commercial pedestrian areas throughout Berkeley and in the vicinity of public transportation facilities so that they are safe, clean, attractive, and appropriately lighted. *Policy T-49: Pedestrian Priority.* When addressing competing demands for sidewalk space, the needs of the pedestrian shall be the highest priority. *Policy T-50: Pedestrian Safety .* Provide safe and convenient pedestrian crossings throughout the City. *Policy T-51: Intersections with Severe or High Collision Rates.* Reduce pedestrian and bicycle collisions, injuries, and fatalities. Policy T-52: Pathways. Develop and improve the public pedestrian pathway system. Improve those pathways dedicated but not improved for public use.
20. Promote Traffic Calming Measures	Include traffic calming strategies in the transportation and land use elements of general and specific plans Include traffic calming strategies in capital improvements programs	*Policy T-21: Neighborhood Protection and Traffic Calming.* Take actions to prevent traffic and parking generated by residential, commercial, industrial or institutional activities from being detrimental to residential areas. *Policy T-22: Speed Limits.* Pursue changes to State Regulations to allow cities to enforce a 15-mile per hour residential speed limit. *Policy T-23: Traffic Circles and Roundabouts.* Encourage the use of landscaped traffic circles to calm traffic in residential areas. *Policy T-30: Infrastructure Improvements.* Facilitate mobility and the flow of traffic on major and collector streets (shown on the Vehicular Circulation Map on the next page), reduce the air quality impacts of congestion, improve pedestrian and bicycle access and speed public transportation throughout the City, by making improvements to the existing physical infrastructure.

Source: City of Berkeley, *Draft General Plan*, 1999; Don Ballanti, Certified Consulting Meteorologist, 1999.

Population projections under the *Draft General Plan* exceed ABAG projections as a result of strategies that are consistent with regional air quality goals and policies set by the BAAQMD. The higher population projections are a result of the following basic strategy of the *Draft General Plan*: to encourage high- and medium-density housing development along transit corridors.

Table IV.L-5 outlines the policies of the *Draft General Plan* that support regional air quality strategies that constitute implementation of regional TCMs. However, although the *Draft General Plan* is supportive of regional air quality improvement methods, it is technically inconsistent with the regional CAP, according to BAAQMD consistency criteria.

> Mitigation Measure AIR-3: No mitigation would mitigate this impact related to the *Draft General Plan*=s inconsistency with the CAP. This impact would constitute a significant and unavoidable short-term impact. (SU)

Upon *Draft General Plan* approval, the City of Berkeley plans to provide BAAQMD with the information necessary to revise their significance criteria to acknowledge the ABAG Regional Housing Needs Determination, released in June 2000. Additionally, ABAG will have provided new AFair Share@ population estimates to the BAAQMD.