3.5 Air Quality

This section examines the potential for adoption and implementation of the 2004 Land Use, Zoning Code Revisions, and Central District Specific Plan, and Zoning Code revisions to violate any air quality standard, result in a cumulatively considerable net increase of any criteria air pollutant, or expose sensitive receptors to substantial pollutant concentrations. Through the Initial Study process, the project was determined not to result in potential conflicts with implementation of the applicable air quality plan nor result in the creation of objectionable odors. Worksheets documenting the assumptions used in the air quality analysis are included in Appendix C.

This section is divided into ~~four~~ two sections. The first section examines ambient air quality conditions and project impacts. The second section assesses the potential of the project to create carbon monoxide "hot spots." ~~The third section addresses potential toxic air pollutants, and the final section focuses on project conformance with regional air quality management plans.~~

Ambient Air Quality

Environmental Setting

Pasadena lies within the South Coast Air Basin, a 6,600-square-mile area bounded by the Pacific Ocean on the west and the San Gabriel, San Bernardino, and San Jacinto mountains on the north and east. The Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. Due to the unique topography and meteorology of the Basin, ozone (O_3) levels are some of the highest in the country and are expected to continue to violate federal and State ambient air quality standards in spite of vigorous control measures. High levels of respirable particulate matter (PM_{10}) also continue to violate federal and State standards.

Air Pollution Control Effects

Both the federal and State governments have set health-based ambient air quality standards for the following six pollutants:

- Sulfur dioxide (SO_2)
- Lead (Pb)
- Carbon monoxide (CO)
- Respirable particulate matter (PM_{10})
- Nitrogen Oxides (NO_X)
- Ozone (O_3)

Standards for these pollutants are designed to protect the most sensitive persons from illness or discomfort within a margin of safety. The California standards are more stringent than federal standards. Table 24 outlines current federal and State ambient air quality standards.

Despite many strict controls on pollutant emitting sources, the South Coast Air Basin still does not meet federal air quality standards for O_3 and PM_{10}. Due to the phasing out of lead-based gasoline in California, airborne lead pollution (Pb) is no longer a problem in the Basin, nor is pollution from sulfur dioxide (SO_2).

Table 24
Air Pollution Sources, Effects, and Standards

Air Pollutant	State Standard	Federal Primary Standard	Sources	Primary Effects
Ozone (O_3)	0.09 ppm, 1-hour average	0.12 ppm, 1-hour average; 0.08 ppm, 8-hour average	Atmospheric reaction of organic gases with nitrogen oxides in sunlight.	Aggravation of respiratory and cardiovascular diseases; irritation of eyes; impairment of cardiopulmonary function; plant leaf injury.
Carbon Monoxide (CO)	9.0 ppm, 8-hour average; 20 ppm, 1-hour average	9.0 ppm, 8-hour average; 35 ppm, 1-hour average	Incomplete combustion of fuels and other carbon-containing substances such as motor vehicle exhaust; natural events, such as decomposition of organic matter.	Reduced tolerance for exercise; impairment of mental function; impairment of fetal development; death at high levels of exposure; aggravation of some heart diseases (angina); reduced visibility.
Nitrogen Oxides (NO_X)	0.25 ppm, 1-hour average	0.053 ppm, annual average	Motor vehicle exhaust; high-temperature stationary combustion; atmospheric reactions.	Aggravation of respiratory illness; reduced visibility; reduced plant growth; formation of acid rain.
Sulfur Dioxide (SO_2)	0.25 ppm, 1-hour average; 0.05 ppm, 24-hour average with ozone > = 0.10 ppm, 1 hour average or TSP > = 100 μg/m^3, 24-hour average	0.03 ppm, annual average; 0.14 ppm, 24-hour average	Combustion of sulfur-containing fossil fuels; smelting of sulfur-bearing metal ores; industrial processes.	Aggravation of respiratory diseases (asthma, emphysema); reduced lung function; irritation of eyes; reduced visibility; plant injury; deterioration of metals, textiles, leather, finishes, coatings, etc.
Respirable Particulate Matter (PM_{10})	30 μg/m^3, annual geometric mean; > 50 μg/m^3, 24-hour average	50μg/m^3, annual arithmetic mean; 150 μg/m^3, 24-hour average	Stationary combustion of solid fuels; construction activities; industrial processes; industrial processes, atmospheric chemical reactions.	Reduced lung function; aggravation of the effects of gaseous pollutants; aggravation of respiratory and cardio-respiratory diseases; increased coughing and chest discomfort; soiling; reduced visibility
Fine Particulate Matter ($PM_{2.5}$)	No Separate State Standard	65 μg/m^3, 24-hour average; 15 μg/m^3 annual arithmetic mean	Combustion sources such as automobiles, trucks, and stationary sources; atmospheric chemical reactions.	Increased mortality; reduced lung function; aggravation of the effects of gaseous pollutants; aggravation of respiratory and cardio-respiratory diseases; increased coughing and chest discomfort.
Lead	1.5 μg/m^3, 30-day average	1.5 μg/m^3, calendar quarter	Contaminated soil.	Increased body burden; impairment of blood formation and nerve conduction; behavioral and hearing problems in children.
Visibility Reducing Particles	Sufficient to reduce visual range to less than 10 miles at relative humidity less than 70%, 8-hour average (9am - 5pm)			Visibility impairment on days when relative humidity is less than 70 percent.

μg/m^3 = micrograms per cubic meter of air; ppm = parts per million parts of air, by volume.
Source: South Coast Air Quality Management District. *CEQA Air Quality Handbook*. November 2001 (Version 3) update.

Most pollution control programs have relied on the development and application of cleaner technology and add-on emission control devices to vehicular and industrial sources, such as catalytic converters for automobiles. Only recently have efforts been targeted at high-emitting vehicles and industries (e.g. the Vehicle Inspection and Maintenance Program and mandatory maintenance procedures for industrial sources), and at curbing overall vehicle travel (e.g. High Occupancy Vehicle [HOV] lanes).

Past air quality programs have been effective in improving the Basin's air quality. Although the magnitude of the problem depends heavily on the weather conditions in a given year, and improvement effects can only be compared at the same air monitoring station, the days that O_3 level standards have been violated in southern California have declined by more than half, and in the case of Stage 1 Episodes (when O_3 reaches 20 ppm or greater), by approximately 100%. However, these levels still remain at or near the top of all pollution concentrations in the United States.[1]

Monitored Air Quality

The South Coast Air Quality Management District (SCAQMD) monitors air quality throughout the South Coast Air Basin at various monitoring stations. The West San Gabriel Valley Station is located in Pasadena. Table 25 shows monitored air quality for carbon monoxide (CO), O_3, and Nitrogen Oxides (NO_X) at this station from 1992 to 2002 (the latest year for which complete data are available). As shown, CO and NO_X levels have decreased over time, but ozone levels continue to exceed State standards.

Levels of PM_{10} are not measured at the West San Gabriel Valley Monitoring Station but are regularly measured at the East San Gabriel Valley monitoring station. Table 26 identifies the maximum concentration of PM_{10} and the number of days State standards for PM_{10} were exceeded at this station for selected years between 1990 and 2002. As shown, although levels of PM_{10} vary considerably, State standards for PM_{10} have been exceeded regularly.

[1] South Coast Air Quality Management District. *Southland Suffers Worst Smog Season in Six Years.* http://www.aqmd.gov/news1/2003/ smogseasonend2003.html. Sept. 23, 2003.

Table 25
Number of Days State Ambient Air Quality Standards Were Exceeded
West San Gabriel Valley Monitoring Station

Year	Carbon Monoxide[1]		Ozone[2]		Nitrogen[3] Oxides	
	Maximum 1-hour concentration (ppm)	*Days California standard exceeded	Maximum 1-hour concentration (ppm)	*Days California standard exceeded	Maximum 1-hour concentration (ppm)	*Days California standard exceeded
1992	7.3	0	0.27	128	0.22	0
1993	6.3	0	0.22	92	0.18	0
1994	8.5	0	0.26	106	0.18	0
1995	9.1	0	0.21	88	0.22	0
1996	7.1	0	0.17	54	0.19	0
1997	6.0	0	0.14	24	0.17	0
1998	6.3	0	0.17	31	0.16	0
1999	6.6	0	0.12	15	0.16	0
2000	7.4	0	0.16	19	0.17	0
2001	5.0	0	0.16	28	0.15	0
2002	4.0	0	0.137	23	0.15	0

* Number of days state standard was exceeded in a calendar year.
ppm= parts per million
[1] State standard for carbon monoxide: 20 ppm, 1-Hour
[2] State standard for ozone: 0.09 ppm, 1-Hour
[3] State standard for nitrogen oxides: 0.25 ppm, 1-Hour
Source: South Coast Air Quality Management District. *Air Quality Data 1992-2002*.

Table 26
Number of Days State Ambient PM_{10} Standards Were Exceeded
East San Gabriel Valley Monitoring Station

Fine Particulate Matter (PM10)		
Year	**Maximum Concentration (Fg/m^3)**	**Days (%) Samples Exceeding California standard***
1992	222	18 (31)
1993	93	21 (36.2)
1994	114	11 (18.3)
1995	135	15 (25.4)
1996	110	15 (25)
1997	92	17 (30.4)
1998	75	9 (15.3)
1999	data unavailable	
2000	74	14 (23)
2001	86	4 (23)
2002	data unavailable	

Fg/m3 = micrograms per cubic meter of air
*State standard for PM10: 50 Fg/m^3, 24-hour. Collected every 6 days.
Source: South Coast Air Quality Management District. *Air Quality Data 1992-2002*.

Thresholds Used to Determine Level of Impact

Implementation of the 2004 Land Use and Mobility Elements, Zoning Code Revisions, and Central District Specific Plan will result in a significant impact on air quality if long-term operational emissions, due to combined stationary and vehicular emissions, result in any of the following:

- Violate any air quality standard or contribute substantially to an existing or projected air quality violation
- Create a cumulatively considerable net increase of any criteria air pollutant for which the region is in non-attainment
- Expose sensitive receptors to substantial air pollution concentrations

SCAQMD has established air pollution emission thresholds to assist lead agencies in determining whether or not the construction or operation of a project would result in significant air quality impacts. These thresholds are shown in Table 27. If the project is found to exceed these thresholds, it will result in a significant impact on air quality.

Table 27
SCAQMD Thresholds for Significant Contribution to Regional Air Pollution

Pollutant	Threshold of Significant Effect	
	Operation Phase	Construction Phase
Reactive Organic Gases (ROG)	55 lbs/day	75 lbs/day, 2.5 tons/quarter
Nitrogen Oxides (NO_x)	55 lbs/day	100 lbs/day, 2.5 tons/quarter
Carbon Monoxide (CO)	550 lbs/day	550 lbs/day, 24.75 tons/quarter
Fine Particulate Matter (PM_{10})	150 lbs/day	150 lbs/day, 6.75 tons/quarter

Source: South Coast Air Quality Management District. *CEQA Air Quality Handbook*. May, 1993 with updates through 2001.

Environmental Impact

Air quality impacts from future development pursuant to the 2004 Land Use and Mobility Elements, Zoning Code Revisions, and Central District Specific Plan can be classified as either short-term or long-term impacts. Short-term impacts are associated with construction activities, and long-term impacts are associated with the operation of developed land uses and associated vehicular trips.

Short-Term Impacts

For any construction project, short-term pollutant emissions could be produced from the following sources: construction equipment, dust from grading and earthmoving operations, workers' vehicles, and architectural coatings such as paints.

Construction-related air quality impacts will occur continuously over the next 11 years as individual development projects are constructed. Construction activity will primarily generate airborne dust, carbon monoxide (CO), and nitrogen oxides (NO_X). In addition, architectural coatings, exterior paints, and asphalt may release volatile organic compounds (VOC). Because the 2004 Land Use Element and Central District Specific Plan only set forth broad parameters for new development and do not identify specific development proposals, construction-related emissions of individual future developments cannot be quantified at this time. Assuming relatively robust economic conditions over the next 11 years, construction activity will be a constant throughout the City and particularly within the Central District, where land use policy focuses development. While individual development projects will be required to employ construction approaches that minimize pollutant emissions (e.g., watering for dust control, tuning of equipment, limiting truck traffic to non-peak hours), on a cumulative basis over the next 11 years pollutant emissions associated with construction activity will be significant.

Long-Term Impacts

2004 Land Use Element and Zoning Code Revisions
Development over the next 11 years consistent with 2004 Land Use Element policies will result in the addition of approximately 6,581 units to the City's existing housing stock, for a total of 61,323 units, and an additional 4.97 million square feet of nonresidential development, for a total of 47.19 million square feet. This development will generate additional emissions from stationary sources and vehicle trips. Stationary sources are defined by SCAQMD to be those sources that emit

pollution from industrial or commercial processes or various types of equipment.

Table 28 reports the estimated air pollution emissions associated with the change in land uses as a result of implementation of the 2004 Land Use Element in 2015. Future pollutant emissions were calculated using the URBEMIS 2003 Air Pollution Model. Appendix C contains the worksheets documenting the calculations.

Table 28
Estimated Air Pollutant Emissions Associated With Change in Land Use
(Pounds per Day)

Pollutant	Existing Land Use	Proposed Land Use	Difference[1]	Percent Change	SCAQMD Thresholds	Significant Impact?
Carbon Monoxide (CO)	129,495	69,037	(60,458)	-47%	550	No
Reactive Organic Compounds (ROC)	31,058	28,104	(2,954)	-10%	55	No
Nitrogen Oxides (NO_X)	15,192	7,288	(7,904)	-52%	55	No
Sulfur Oxides (SO_2)	104	79	(25)	-24%	150	No
Particulate Matter less than 10 microns (PM_{10})	10,015	11,214	1,199	12%	150	Yes

[1]Numbers in parenthesis indicate a reduction in emissions.
Source: URBEMIS 2003 conducted by Cotton/Bridges/Associates, April, 2004.

As evident from Table 28, for all pollutant categories except PM_{10}, long-term pollutant emissions in year 2015 are projected to decrease relative to 2004. This can be explained by several factors and namely effective efforts of the SCAQMD to improve the Basin's air quality. Factors that will contribute to this reduction, in spite of new development in Pasadena and the region, include:

- Phase-out of older automobiles from the vehicle fleet.
- Improvement of vehicle emissions-control technology, particularly that of diesel vehicles.
- Better control of VOC release from all sources.
- Improvement in emissions-control technologies for commercial and industrial operations.

PM_{10} typically originates from the stationary combustion of solid fuels, construction activities, industrial processes, and atmospheric chemical reactions. A possible explanation for PM_{10} increasing over the next 11 years is a lack of specific legal control measures for this pollutant. PM_{10} will continue to be emitted from diesel exhaust and tire wear, which are difficult to regulate. Levels of PM_{10} have exceeded State standards regularly in the past and are expected to continue exceeding these standards in the future. Therefore, long-term air quality impacts resulting from adoption and implementation of the 2004 Land Use Element and Zoning Code Revisions will be significant, and mitigation measures are required.

Because Pasadena lies within a non-attainment area, the City has identified key City goals to improve mobility and reduce air quality impacts. The 2004 Land Use Element contains the following objectives and policies related to transit and pedestrian-oriented development, traffic congestion, and transit accessibility to reduce pollutant emissions over the long term:

Objective 1 Targeted Development: Direct higher density development away from Pasadena's residential neighborhoods and into targeted areas, creating an exciting urban core with diverse economic, housing, cultural, and entertainment opportunities.

Policy 1.3 Transit-Oriented and Pedestrian-Oriented Development: Within targeted development areas, cluster development near light rail stations and along major transportation corridors thereby creating transit-oriented development "nodes" and encouraging pedestrian access.

Policy 1.4 Mixed Use: Authorize and encourage Mixed Use development in targeted areas, including in-town housing, live-work spaces, and in-town commercial uses.

Objective 20 Land Use/Transportation Relationship: Promote the relationship of land use and transportation services.

Policy 20.1 Transit Accessibility: Increase accessibility to all public transportation services.

Policy 20.2 Traffic Congestion: Reduce traffic congestion and protect residential neighborhoods from traffic impacts.

Policy 20.3 Bicycles/Pedestrians: Promote the use of non-motorized modes of transportation, such as bicycles and walking within the City.

Policy 20.5 Transportation/Human Services Linkage: Provide convenient, economical, and accessible transportation services between residents and agencies delivering human services.

In addition to these policies, the City has adopted a Trip Reduction Ordinance (Municipal Code Title 17.68.220). The purpose of the Ordinance is to reduce the demand for automobile commute trips by requiring the design of major nonresidential development projects to accommodate facilities for alternative modes of transportation. The ordinance is applied citywide to reduce the number of vehicular trips in general, and specifically the use of autos for drive-alone trips. Trip reduction measures are part of the City's project review process. The Ordinance encourages non-auto modes, such as public transit, vanpools, carpools, and bicycles rather than single occupant vehicles. It also encourages alternative work hours that serve to reduce the typical peaking demand upon the street network, parking facilities, and transit systems.

Section 17.50.340 of the Pasadena Municipal Code for Transit-Oriented Development (TOD) establishes parking caps to reduce automobile travel within portions of Pasadena and subsequently reduce vehicular air quality impacts. For nonresidential development projects, the minimum amount of required off-street parking is reduced by 25%, and the current minimums identified in Section 17.46.040 (Number of Off-Street Parking Spaces Required) is established as maximums. The parking requirements may be further reduced through a parking demand study. However, the parking reduction requirements of this Section do not apply to commercial retail sales activities in the CD zoning district. For multi-family residential and mixed-use development projects proposing at least 48 dwelling unite per acre, residential parking shall be a minimum of:

- 1 space for each unit for units with 550 square feet or less to a maximum of 1.25 spaces per unit
- 1.5 spaces for each unit for units with over 550 square feet to a maximum of 1.75 spaces per unit

These parking requirements may be further reduced through a parking demand study and a Minor Conditional Use Permit. The parking cap includes the minimum parking requirement as well as the requirement for guest parking. City Permits for overnight parking on City streets will not be issued for residential development projects built in transit-oriented districts.

Conclusion:

Projected future emissions of three criteria pollutants — CO, NO_x, and ROG — will not exceed SCAQMD thresholds; impact will be less than significant. Projected future emissions of PM_{10} will exceed the established threshold of 150 pounds per day. Impact will be significant, and mitigation is required. Since Pasadena lies in a non-attainment area, mitigation measures are recommended to further reduce air pollutant emissions within the South Coast Air Basin.

2004 Mobility Element

The 2004 Mobility Element guides the continuing development of a multi-modal circulation system that supports planned growth. The anticipated development pattern, as identified in the 2004 Land Use Element, will increase the use of the City's transportation systems, including increased traffic on local and regional roadways. Regional growth, particularly in north Los Angeles County and San Bernardino County, will continue to have effects on the City since Pasadena is a regional economic activity center.

Like the 2004 Land Use Element, the 2004 Mobility Element encourages transit-oriented development and the expansion of public transit services as a means to improve air quality, as demonstrated by the following goals and policies:

Goal: **Promote a Livable and Economically Strong Community**

Policy 1.7 Focus development densities, for residential and non-residential land uses, around the six Gold Line light rail stations within City boundaries.

Policy 1.8 Continue programs to implement both transportation improvements and automobile demand reduction programs that mitigate the impacts attributable to new development.

Policy 1.12 Promote environmentally friendly and convenient transportation services.

Policy 1.18 Support the sustaining of recent improvements in air quality and achieve further significant progress in such improvements to meet State and Federal mandates.

Goal: **Encourage Non-Auto Travel**

Policy 2.9 Foster programs and initiatives that promote non-auto travel such as vanpools, ride-sharing, and car-sharing.

Policy 2.10 Develop zoning guidelines to promote and foster establishment of Transit-Oriented Development Districts adjacent to light-rail stations to encourage living and working within the same community area.

The 2004 Mobility Element contains implementation actions to carry out the City's mobility goals and policies as follows:

Objective 1: Promote a Livable and Economically Strong Community

Action 5.5.1.1 Encourage transit-oriented development along major transit corridors.

Action 5.5.1.8 Air quality improvements, by participating in inter-jurisdictional efforts to continue recent improvements in air quality and to meet State and federal mandates.

Objective 2: Promote a Livable and Economically Strong Community

Action 5.5.2 Expand local transit.

Action 5.5.2.5 Foster non-auto travel demonstration projects.

Action 5.5.2.6 Design and operating conditions for bicycles should be facilitated by planning, constructing, and maintaining facilities used by bicycles and motor vehicles.

Action 5.5.2.10 Promote pedestrian linkages and priority areas.

Objective 4: Manage Traffic on Multimodal Corridors to Promote and Improve Citywide Transportation Services

Action 5.5.4.9 Continue trip-reduction program, as established by the Trip Reduction Ordinance, Chapter 17.68.220 of the Municipal Code.

As discussed under the 2004 Land Use Element impacts, with the exception of PM_{10}, air pollutant emissions are projected to decrease over the next 11 years. The 2004 Mobility Element does not contain any plans or proposals that could result in the increase of pollutant emissions; rather, it contains several policies aimed at reducing automobile dependence and travel, thereby helping to reduce impacts on air quality associated with the use of automobiles. Impact on air quality resulting from adoption implementation of the 2004 Mobility Element will therefore be less than significant, and no mitigation is required.

Conclusion:

Implementation of the Mobility Element will facilitate the reduction of air pollutant emissions over the long term; impact will be less than significant, and no mitigation is required.

Central District Specific Plan

Development over the next 11 years pursuant to the Central District Specific Plan will add approximately 2,750 residential units of the total 6,581 units added to the City's housing stock, and an additional 1.25 million square feet of the projected 4.97 million square feet of net new nonresidential development. New development within the Central District Specific Plan is included in the land use projections of the 2004 Land Use Element and is therefore included in the above calculations and analysis for the 2004 Land Use Element. However, separate calculations have been applied to the Central District to assess the impact related specifically to this project component.

New development anticipated within the Central District Specific Plan will generate additional emissions from stationary sources and vehicle trips relative to existing (2004) conditions. Table 29 reports the estimated air pollutant emissions associated with changes in land use through horizon year 2015. As with the rest of the City, PM_{10} is anticipated to be the only pollutant that exceeds SCAQMD thresholds.

Table 29
Estimated Air Pollutant Emissions Associated With Change in Land Use in Central District
(Pounds per Day)

Pollutant	Existing Land Use	Proposed Land Use	Difference[1]	Percent Change	SCAQMD Thresholds	Significant Impact?
Carbon Monoxide (CO)	38,304	19,063	(19,241)	-50%	550	No
Reactive Organic Compounds (ROG)	5,299	4,356	(943)	-18%	55	No
Nitrogen Dioxide (NO_2)	5,167	2,394	(2,773)	-54%	55	No
Sulfur Oxides (SO_2)	29	21	(8)	-28%	150	No
Particulate Matter less than 10 microns (PM_{10})	2,732	3,182	450	16%	150	Yes

[1]Numbers in parenthesis indicate a reduction in emissions.
Source: URBEMIS 2003 conducted by Cotton/Bridges/Associates, April, 2004.

The Central District Specific Plan contains several policies and programs designed to create a balance of complementary uses within the area. Two components have particular relevance to air quality issues: the Land Use Concept and the Mobility Concept.

The Land Use Concept of the Central District Specific Plan stresses transit villages and promotes moderate-density development surrounding the Gold Line light rail stations to encourage people to live in close proximity to regional transit centers. The plan provides for additional mixed-use development to encourage people to live, work, and shop within a single area that is accessible by foot and other alternative modes of transportation. The Land Use Concept will provide a framework for the development of future projects within the Central District.

The Mobility Concept of the Central District Specific Plan is based on the idea that Downtown will provide for convenient multi-modal movement by foot, bicycle, transit, and car as a necessary step to achieve efficient circulation in the urban core. The intention of the Mobility Concept is for transit to be a convenient and desirable option for movement within and through Downtown, consistent with a vision of pedestrian- and transit-oriented land use and development patterns within the urban core, and to minimize automobile transit. The Central District Specific Plan also calls for expansion of the Pasadena Area Rapid Transit System (ARTS) of buses.

In support of these plans, the Central District Specific Plan contains the following principles and objectives that guide land use and transportation conditions:

General Plan Guiding Principle 1: Growth will be targeted to serve community needs and enhance the quality of life.

Objective 3: Develop Urban Land Patterns: Development patterns will support Downtown's role as Pasadena's distinctive urban core, emphasizing a vibrant community with diverse opportunities. Transit-oriented, pedestrian-oriented, and mixed use development will be encouraged.

General Plan Guiding Principle 5: Pasadena will be a city where people can circulate without cars.

Objective 21: Reduce Auto Dependency: Downtown will provide an integrated and balanced transportation system that accommodates access by foot, bicycle, transit, and car.

Objective 22: Minimize Traffic Impacts: As far as feasible, traffic impacts upon in-town and adjoining residential neighborhoods will be minimized. New development will be directed toward principal mobility corridors and in close proximity to transit stations.

Objective 23: Manage Parking Facilities: Downtown will balance economic vitality with environmental quality in the provision of parking, emphasizing a shared parkin strategy that allows visitors to "park once" and visit many destinations.

Objective 24: Promote Transit Usage: Transit will be a viable option for movement within and through Downtown, emphasizing improved transit connections between the activity centers of Downtown. Regional transit will be supported by transit-oriented development near light rail stations.

Objective 25: Make Downtown Walkable: Downtown will be a safe, convenient and comfortable place to walk, a place where walking is the mode of choice for short trips.

Additionally, the Central District Specific Plan contains the following Implementation Strategies to support these goals and policies:

Transit/ARTS Bus Planning:

- Continue to operate and refine transit routes, including those of the ARTS services
- Emphasize improving connections between Downtown's sub-districts, and to light rail stations

Transit-Oriented Development (TOD) Standards:

- Adopt standards applicable to development within the TOD district
- Standards should promote non-automotive travel, including pedestrian and bicycle use, and reduce parking requirements
- Amend the Zoning Map to reflect TOD boundaries

Coordination with Regional Transit Agencies:

- Maintain an on-going communication with regional transit agencies to ensure proper consideration of local transit needs in the assignment of regional bus routes and level of service

- Consider opportunities to fill gaps in the regional service with local transit service

These implementation actions will assist in reducing overall air pollutant emissions. Implementation of the Central District Specific Plan will not create air quality impacts beyond those discussed above for 2004 Land Use Element impacts. That is, PM_{10} levels will increase over the next 11 years and project impacts relative to this pollutant will be significant. Because development pursuant to the Central District Specific Plan will account for approximately 42% of the City's total future development, it is deduced that development pursuant to the Specific Plan will contribute to the City's creation of PM_{10}. Thus, development pursuant to the Central District Specific Plan will result in a significant impact, and mitigation is required.

Conclusion:

Development pursuant to the Central District Specific Plan will result in a significant impact associated with PM_{10}, and mitigation is required.

Mitigation Measures

Short-Term Construction Impacts

The following mitigation measures will be applied to individual development projects subject to CEQA review:

1. Dust Control (PM_{10})

    - Water all active construction areas at least twice daily.
    - Cover all haul trucks or maintain at least two feet of freeboard.
    - Pave or apply water four times daily to all unpaved parking or staging areas.
    - Sweep or wash any site access points within 30 minutes of any visible dirt deposition on any public roadway.
    - Cover or water twice daily any on-site stockpiles of debris, dirt or other dusty material.
    - Suspend all operations on any unpaved surface if winds exceed 25 mph.
    - Hydroseed or otherwise stabilize any cleared area which is to remain in active for more than 96 hours after clearing is completed.
    - Ensure that all cut and fill slopes are permanently protected from erosion.

2. Emissions (NO_x)

    - Require the construction contractor to ensure that all construction equipment is maintained in peak working order.
    - Limit allowable idling to 10 minutes for trucks and heavy equipment.

3. Off-site Impacts

   - Encourage car pooling for construction workers.
   - Limit lane closures to off-peak travel periods.
   - Park construction vehicles off traveled roadways.
   - Wet down or cover dirt hauled off-site.
   - Wash or sweep away access points daily.
   - Encourage receipt of materials during non-peak traffic hours.
   - Sandbag construction sites for erosion control.

Long-Term Impacts

Mitigation is required to reduce particulate matter (PM_{10}) emissions. Policies within the 2004 Land Use and Mobility Elements will facilitate continued City cooperation with SCAQMD and SCAG to achieve regional air quality improvement goals, encourage alternative transportation modes, and implement transportation demand management strategies. In addition to these policies, the following mitigation measures are required to reduce PM_{10} air quality impacts:

4. In accordance with AQMD Rule 403, the City shall require the following measures to be taken during the construction of all projects to reduce the amount of dust and other sources of PM_{10}:

   - Dust suppression at construction site using surfactants and other chemical stabilizers
   - Wheel washers for construction equipment
   - The watering down of all construction areas

5. The City will continue to implement effective citywide street sweeping.

6. The City will use Best Available Control Technology in its practices, including but not limited to advanced diesel particulate traps on all City vehicles and purchase and use of aqueous diesel fuel vehicles.

   Furthermore, because Pasadena lies in a non-attainment area, the City may consider the following mitigation measures to further reduce air impacts within the South Coast Air Basin:

7. The City will implement transportation systems management techniques that include synchronizing traffic signals and limiting on-street parking.

8. The City will encourage major employers, tenants in business parks and other activity centers, and developers of large new residential developments to participate in transportation management associations.

9. The City will work to divert commercial truck traffic to off-peak periods to alleviate non-recurrent congestion as a means to improve roadway efficiency and reduce diesel emissions.

At the individual project level, it is recommended that the City apply the following mitigation measures which will work toward regional emissions reductions:

10. The City will encourage the incorporation of energy conservation techniques (i.e. installation of energy saving devices, construction of electric vehicle charging stations, use of sunlight-filtering window coatings or double-paned windows, utilization of light-colored roofing materials as opposed to dark-colored roofing materials, and placement of shady trees next to habitable structures) in new developments.

Level of Impact after Mitigation

With implementation of the identified goals and policies in the 2004 Land Use and Mobility Elements and mitigation measures, short-term and long-term air quality impacts will be substantially lessened. However, the degree to which these measures will reduce PM_{10} emissions cannot be quantified at this time. Air pollutants levels of PM_{10} will continue to exceed the SCAQMD threshold criteria for significance. Impact associated with PM_{10} emissions and cumulative construction activity is significant and unavoidable.

Carbon Monoxide Hot Spots

Carbon monoxide (CO) hot spots, or areas where CO is concentrated, typically occur near congested intersections, parking garages, and other locations where a substantial number of vehicles idle. Carbon monoxide is an unhealthy gas (see Table 22) which disperses based on wind speed, temperature, traffic speeds, local topography, and other variables. As vehicles idle in traffic or enclosed spaces, CO can accumulate to create hot spots that can impact sensitive receptors.

Sensitive Receptors

The SCAQMD identifies sensitive receptors as populations that are more susceptible to the effects of air pollution than the general population. Sensitive receptors located in or near the vicinity of known air emissions sources, including freeways and intersections, are of particular concern. In Pasadena, sensitive receptors such as schools with young children, health care facilities, and residences for seniors, are located throughout the project area.

Thresholds Used to Determine Level of Impact

The project will result in a significant impact related to CO hot spots if it will:

- Allow sensitive receptors to locate adjacent to intersections with CO hot spots
- Result in localized carbon monoxide concentrations near existing sensitive receptors

The State of California CO concentration standard, shown in Table 22, is 9 parts per million (ppm) during an 8-hour period and 20 ppm during a 1-hour period. If CO hot spots currently exist, a 1 ppm increase attributable to the project over no project conditions for the 1-hour period will result in a significant impact.

Environmental Impacts

2004 Land Use Element and Zoning Code Revisions
Those intersections projected to experience the worst level of service (LOS)[2] conditions in combination with the highest levels of traffic contributed by project development were selected for CO hot spot analysis. The following intersections were analyzed:

- Fair Oaks Avenue/Colorado Boulevard
- Marengo Avenue/Corson Street
- Marengo Avenue/Union Street
- Lake Avenue/Corson Street

Using the CO model CALINE-4, both 8-hour and 1-hour emission scenarios were analyzed for the selected intersections (see Appendix C). CALINE-4 is a dispersion model used to predict CO levels near highways and arterial streets. Downwind concentration of CO is estimated for the worst-case atmospheric conditions resulting in the least dispersion of pollutants. These atmospheric conditions, which may occur on up to 5 to 10 days per year, typically occur during the morning hours from 7:00 A.M. to 10:00 A.M. or 11:00 A.M., when low wind speeds (less than 1 meter per second), stable air, and constant wind direction combine to minimize dispersal of pollutants. In more typical morning conditions, less stable air and substantially more variation in wind direction disperse pollutants over a much wider area, minimizing the area exposed to the highest pollutant levels. During other times of the day, much lower stability and higher wind speeds are typical.

The CALINE-4 analysis shows that while all study intersections will experience some level of CO concentration, ranging from 7.3 ppm to 8.1 ppm during the 8-hour period and from 5.11 ppm to 5.67 ppm during the 1-hour period, no intersections are anticipated to exceed SCAQMD thresholds for either the 8-hour or 1-hour standard. Therefore, implementation of the 2004 Land Use Element and Zoning Code Revisions will not result in a significant impact with regard to CO hot spots.

Conclusion:

SCAQMD thresholds for CO will not be exceeded due to adoption and implementation of the 2004 Land Use Element and Zoning Code Revisions; therefore, impact will be less than significant, and no mitigation is required.

2004 Mobility Element
The 2004 Mobility Element guides the continuing development of a multi-modal circulation system that supports planned growth as directed in the 2004 Land Use Element. As discussed above under Ambient Air Quality impacts, the 2004 Mobility Element contains several policies to reduce automotive dependency and does not contain policies that could potentially affect CO pollutant emissions or the location of sensitive receptors. As no CO hotspots will be created from development pursuant to the 2004 Land Use Element, no impact will result. Thus, the 2004 Mobility Element has no impact with regard to CO hot spots.

[22] See Section 302 – Transportation and Traffic for a discussion of the level of service concept.

Conclusion:

The 2004 Mobility Element will have no impact with regard to CO hot spots, and no mitigation is required.

Central District Specific Plan
All of the intersections analyzed to determine potential CO hot spot concentrations are within the Central District Specific Plan area. As discussed above, while all intersections will experience some level of CO concentration, no intersection is anticipated to experience an exceedance of SCAQMD thresholds for either the 8-hour or 1-hour SCAQMD standard. No CO hot spots will be created from development pursuant to the Central District Specific Plan, and no sensitive receptors will be located next to existing hotspots. Therefore, implementation of the Central District Specific Plan will have a less than significant with regard to CO hot spots.

Conclusion:

Implementation of the Central District Specific Plan will have a less than significant with regard to CO hot spots, and no mitigation is required.

Mitigation Measures

No impact will result, and no mitigation is required.

Level of Impact after Mitigation

No impact will result.

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