# CEQA
# AIR QUALITY
# GUIDELINES

MONTEREY BAY UNIFIED
AIR POLLUTION CONTROL DISTRICT -2008

# CEQA AIR QUALITY GUIDELINES

**Prepared by**

**Monterey Bay Unified Air Pollution Control District**

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**Staff Contributions**

The following individuals contributed to the revisions of the CEQA Air Quality Guidelines:

Jean Getchell, Supervising Air Quality Planner
Robert Nunes, Air Quality Planner
David Fairchild, Air Quality Planner
David Craft, Air Quality Engineer

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# PREFACE

The purpose of these CEQA Air Quality Guidelines is to inform public agencies, consultants, project proponents and the general public of the Monterey Bay Unified Air Pollution Control District's adopted thresholds of significance and to provide guidance in the review and evaluation of air quality impacts of projects that are subject to the California Environmental Quality Act. The Guidelines are intended to provide uniform procedures for assessing air quality impacts and preparing the air quality section of environmental documents.

These Guidelines are an advisory document. They explain the Monterey Bay Unified Air Pollution Control District's recommended procedures for analyzing air quality impacts of projects in the North Central Coast Air Basin (comprised of Monterey, Santa Cruz, and San Benito Counties). This document updates the Guidelines last revised in 2004.

District staff is available to assist you in clarifying any of the guidance in this document and may be reached by calling (831) 647-9411.

The District will periodically update the Guidelines to accommodate new information, technical data, legislation, and legal changes as appropriate. As a recipient of this document, you are on the mailing list to be notified regarding revisions to the "CEQA Air Quality Guidelines." Copies of the Guidelines are available on-line at www.mbuapcd.org.

Monterey Bay Unified Air Pollution Control District
Planning and Air Monitoring Division
24580 Silver Cloud Court
Monterey, CA 93940
(831) 647-9411

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# 1.0 INTRODUCTION

## 1.1 PURPOSE OF CEQA

The California Legislature enacted the California Environmental Quality Act (CEQA) in 1970 (Public Resources Code §21000 et seq). CEQA requires that public agencies (i.e., local, county, regional, and state government) consider and disclose the environmental effects of their decisions to the public and governmental decision-makers. Further, it mandates that agencies implement feasible mitigation measures or alternatives that would mitigate significant adverse effects to the environment.

Perhaps the best known application of CEQA is the requirement that a public agency prepare an Environmental Impact Report (EIR) whenever a project has the potential to create significant effects on the environment. The purpose of an EIR is "to identify the significant effects of a project on the environment, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided" (PRC §21002.1).

CEQA is intended to address a broad range of environmental issues, including water quality, noise, land use, natural resources, transportation, energy, human health, and air quality. The guidance in this document addresses air quality analyses performed under CEQA. However, this guidance also has implications for analyses of human health, water quality, risks of upset, and other environmental areas related to air quality.

## 1.2 PURPOSE OF THE GUIDELINES

The purpose of the Air District's CEQA Air Quality Guidelines (Guidelines) is to assist in the review and evaluation of air quality impacts from projects which are subject to CEQA. Its guidance applies to the North Central Coast Air Basin (NCCAB), which is comprised of Monterey, Santa Cruz, and San Benito Counties.

This is an advisory document intended to provide lead agencies, consultants, and project proponents with uniform procedures for assessing potential air quality impacts and preparing the air quality section of environmental documents. It is also intended to help these entities anticipate areas of concern from the Monterey Bay Unified Air Pollution Control District (District) in its role as a lead, commenting and/or responsible agency for air quality. As a result, the Guidelines are intended to streamline the CEQA review process for the project proponent, the lead agency and the District.

This guidance can be applied to an air quality analysis for any project as defined by CEQA. This includes everything from a site-specific development to a general plan.

From a policy perspective, the Guidelines are intended to assist in the preparation of analyses that inform decision-makers and the public about the air quality implications of a project. While this intent serves to protect the environment, it also discloses relevant information and provides the public with more informed decision-making. Ultimately, the Guidelines are designed to help promote public dialogue about the air quality implications of a public agency's decisions.

## 1.3 DISTRICT'S ROLE IN CEQA

Under CEQA, the District has three roles: Lead Agency, Responsible Agency, and Commenting Agency.

The District is considered a **lead agency** when it has principal responsibility to carry out or approve a project. This typically occurs when the District develops rules, regulations, or air quality plans. Pursuant to CEQA, the District is responsible for coordinating the environmental review of a project with other agencies and the public and determining whether an EIR or Negative Declaration is appropriate. Further, it is responsible for the preparation, consideration, and certification of environmental documentation prior to any decision on the project. When prior environmental documentation from another lead agency is dated or incomplete, the District may also assume the role of lead agency by preparing an EIR for permits over which it has authority.

The District is a **responsible agency** when it has discretionary approval power over a project but does not have the principal authority to carry out the project. The District is often a responsible agency for development projects that require air pollution permits. In this capacity, the District provides comments to the lead agency on its air quality analysis and mitigation measures, if applicable.[1] To help public agencies determine whether air quality permits are required for a project, the District has prepared a handout (Figure 1-1) that identifies projects that often require air quality permits. Public agencies can use this to inform project proponents of potential air quality permit issues.

Finally, the District is considered a **commenting agency** for any project that has the potential to impact air quality and for which it is not a lead or responsible agency[2]. To this end, the District regularly provides comments to lead agencies that prepare environmental documents.

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[1] California Code of Regulations Title 14, Chapter 3 §15000-15387 (hereinafter referred to as CEQA Guidelines) states that when commenting on Draft EIRs and Negative Declarations, responsible agencies are limited to those project activities within the agency's area of expertise or which are required to be approved by the agency [§15096(a)(2)(d)].

[2] CEQA Guidelines §15044 permits any person or entity that is not a responsible agency to comment to a lead agency on any environment impact of a project.

The Guidelines reflect the District's role as a lead, responsible and commenting agency by providing uniform guidance in assessing air quality impacts and preparing analyses.

## 1.4 HOW TO USE THE GUIDELINES

The Guidelines are intended for use by lead agency planners and consultants who prepare air quality sections of CEQA documents. To use this document effectively, the following should be kept in mind:

- **Organization.** This document is organized to reflect the environmental review process for a lead agency. Because each chapter reflects the sequential process in a CEQA air quality analysis, the Guidelines can be used as a reference resource at any step of the environmental review process.

- **Early consultation.** One goal of the Guidelines is to provide information to project proponents about air quality issues early in the planning process. Planners can use Figure 1-1 and information in Chapter 4 to create handouts that inform and encourage project proponents to consider air quality issues and minimize potential impacts before completing a project's scope or design.

- **District support.** The District is available at (831) 647-9411 to answer questions about the guidance in this document and air quality-related questions.

- **Future updates.** The Guidelines will be updated periodically as legislative, legal, and technical changesdevelop.

## 1.5 RELATIONSHIP TO NEPA

Some projects subject to CEQA may also require compliance under federal environmental law, namely the National Environmental Policy Act (NEPA). In such cases, a joint NEPA-CEQA analysis is appropriate. Under certain circumstances, the CEQA Guidelines allow public agencies to use a NEPA document rather than prepare an EIR or Negative Declaration.[3]

This document, which provides guidance for assessing air quality impacts and preparing environmental documents under CEQA, can also be used to prepare a NEPA or joint CEQA-NEPA analysis, unless noted otherwise.

[3] See PRC §21083.5, 21083.6, and 21083.7 and CEQA Guidelines §15220-15229 for more information on combined EIR-EIS projects.

## 1.6 ORGANIZATION OF THE GUIDELINES

This document is comprised of twelve chapters which are generally divided into three parts. Chapters 1-3 provide background information on air quality. Chapters 4-9 provide guidance on preparing air quality analyses. Chapter 10 provides information concerning demolition and deconstruction of buildings, Chapter 11 provides guidance on preparing health risk assessments and evaluating the relationship of land use siting to toxic air contaminants, and Chapter 12 provides information on climate change and assessment of project emissions of greenhouse gases. The Appendices provide support information.

**Chapter 1** explains the purpose of CEQA, the purpose of the Guidelines, how the District operates under CEQA, how lead agency planners and consultants can best utilize this guidance document, and how the Guidelines relate to NEPA requirements.

**Chapter 2** provides background information on air quality regulations at the federal, state, regional, and local levels and how they relate to CEQA. The Air Quality Management Plan and other air quality plans for the NCCAB are described. This information can be used when discussing the background setting for a CEQA air quality analysis.

**Chapter 3** provides background information on air pollution, defines criteria pollutants, the sources of air pollutants, and their effects on human health and welfare.

**Chapter 4** provides guidance to public agency planners on how to provide early consultation at the planning counter with project proponents. The relationship between air quality and the siting of land uses and site design issues is discussed.

**Chapter 5** identifies criteria for determining when air quality impacts are significant. Thresholds of significance are provided for construction, operations, and cumulative impacts. Criteria for preparing a Negative Declaration, Mitigated Negative Declaration, and EIR are summarized.

**Chapter 6** describes how to craft the Environmental Setting portion of an air quality analysis, focusing on key elements: topography and meteorology, State and federal ambient air quality standards, existing ambient air quality, existing emissions at the project site, and determining the location of sensitive receptors.

**Chapter 7** describes how to estimate the impact of a project on local and regional air quality. This chapter describes how to calculate emissions from construction, stationary, and indirect sources; how to undertake dispersion modeling; how to assess localized CO impacts; and how to assess cumulative impacts on local and regional air quality. Special considerations for alternatives, Program EIRs, and Master EIRs are discussed.

**Chapter 8** provides guidance on how to mitigate air quality impacts from construction, stationary sources, off-road mobile sources, indirect sources, localized CO hotspots, and cumulative impacts. Mitigation monitoring programs and reporting are also addressed.

**Chapter 9** provides an overview of toxic air contaminants (TACs), summarizes their regulation, siting considerations for new sources, the criteria for significance, and how to assess their impact.

**Chapter 10** will provide guidance on demolition and deconstruction.

**Chapter 11** will provide guidance on health risk assessments and land use siting.

**Chapter 12** will provide guidance on climate change and assessment of project impacts from greenhouse gases.

The **Appendices** include a glossary of relevant terms, composite emission factors for the North Central Coast Air Basin by pollutant, and, a list of references, and diesel health risk assessment guidance for analyzing health risks.

**Figure 1-1**

## When do I need to check with the Air District?

State law requires any facility which has the potential to emit air contaminants to apply for a permit from the Air District. This list is provided to help you determine whether your project is covered by the Air District's permit requirement.

Asphalt Batch Plant
Abrasive Blasting Equipment
Aggregate Crushing & Screening Equipment
Boilers(>2mm BTU/hr)
Bulk Material Transfer & Storage Equipment
Chrome Plating
Circuit Board Manufacturing
Coating Equipment (>5 gal/yr)
Coffee Roaster
Cogeneration Facilities
Concrete Batch Plant
Cooling Towers
Crematories
Curing & Burnoff Ovens
Deconstruction
Degreasing Operations
Demolition
Dredges
Dry Cleaning Equipment
Dust Collectors
Emission Control Equipment
ETO Sterilizers
Fiberglass Fabrication Operations
Fumigation Chambers
Furnaces
Furniture Stripping Operation
Fume Hoods
Gasoline Dispensing Equipment
Gasoline Storage Equipment
Graphic Arts Printing (>10 lbs/day emissions)
Incinerators
Internal Combustion Engines
Kilns
Laboratory Hoods
Oil Production & Process Equipment
Oil Water Separators
Organic Liquid Storage Tanks
Paint Manufacturing
Paint Spray Booths (>5gal/yr)
Painting - Nonspray (>5gal/yr)
Pile Drivers
Printed Circuit Board Manufacturing
Product Dryers
Resource Recovery Facilities
Sand and Gravel Crushing and Screening
Semiconductor Wafer Fabrication Equipment
Soil & Water Cleanup
Truck Loading & Receiving Equipment/Bulk Materials
Waste Gas Flares
Waste Water Treatment Plants (WWTP) & Pump Stations with Odor Control
Wave Solder/Solder Reflow Machines
Wet Scrubbers
Wood Chippers/Tub Grinders
Wood Working Facilities
(if aggregate horsepower of stationary equipment exceeds 50 hp)

This list is not exhaustive. If you have any doubts or questions about whether you need a permit, please call the Air District at (831) 647-9411, and an engineer will be happy to answer your questions.

**Figure 1-1 (Continued)**

## When do I need to check with the Air District?

Many projects do not require a permit from the Air District. The following information is provided to help you determine whether your project may be exempt from Air District permit requirements. The list is not exhaustive. If you have any doubts or questions about whether your project is exempt, please call the Air District at (831) 647-9411, and an engineer will be happy to answer your questions.

## THE FOLLOWING PROJECTS ARE GENERALLY EXEMPT FROM REQUIRING A PERMIT ISSUED BY THE AIR DISTRICT:

1. Residential
2. Food Preparation at Restaurants and for Personal Consumption
3. Agriculture Operations for Growing Crops or Raising Animals
4. Refrigeration Equipment and Small Cooling Towers.
5. Small Internal Combustion Engines
6. All portable engines that have been registered by the State
7. Space Heaters and Small Natural Gas-fired Boilers (under 2 million BTU/Hr.)
8. Sheet Fed Printing Presses
9. Small Crucible Furnaces
10. Portable Power Tools (used in woodworking)
11. Some Natural Gas Ceramic Kilns
12. Some Metal Forging Operations & Die Casting Machines
13. Some Photographic Development & Printing Equipment
14. Welding & Soldering Equipment
15. Diesel Storage Tanks
16. Small Gasoline Storage Tanks (less than 250 gallons)

Many projects are exempt from permitting requirements, but it is better to be safe than sorry. If you have any questions about whether your project requires a permit from the Air District, please call (831) 647-9411 and ask to speak to an engineer.

*MONTEREY BAY*
Unified Air Pollution Control District
*serving Monterey, San Benito, and Santa Cruz counties*

24580 Silver Cloud Court
Monterey, CA 93940
Voice (831) 647-9411

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# 2.0 AIR QUALITY REGULATION

## 2.1 OVERVIEW

Air quality is regulated by public agencies that range from the federal to the local level. These agencies implement policies, rules, and regulations that establish the criteria for assessing air quality impacts of a project under CEQA.

This chapter describes the regulatory framework for air quality and explains how federal, state, regional, and local regulations relate to a CEQA air quality analysis. Regulation of toxic air contaminants is discussed in Chapter 9, demolition and deconstruction are discussed in Chapter 10, health risk assessment and land use siting are discussed in Chapter 11, and emission of greenhouse gases and global climate change are discussed in Chapter 12.

## 2.2 FEDERAL AIR QUALITY REGULATION

In 1990, the U.S. Congress adopted the federal Clean Air Act Amendments (CAAA), which updated the nation's air pollution control program. The CAAA established a number of requirements, including new deadlines for achieving federal clean air standards.

The Environmental Protection Agency (EPA) is the federal agency charged with administering the CAAA and other air quality-related legislation. As a regulatory agency, EPA's principal functions include setting national ambient air quality standards (AAQS); establishing minimum national emission limits for major sources of pollution; and promulgating regulations.

The CAAA require EPA to approve state implementation plans (SIPs) to meet and/or maintain the national AAQS. California's SIP is comprised of plans developed at the regional or local level. The approved SIP for the North Central Coast Air Basin (NCCAB) consists of the 1994 Maintenance Plan and Contingency Control Measures for the Monterey Bay Region and adopted rules and regulations.

### Relationship to CEQA

The District uses many of EPA's requirements as the basis for determining the significance of air quality impacts under CEQA, including:

- **Ambient Air Quality Standards.** Exceedance of any national AAQS is considered a significant impact to air quality.

- **New Source Review Offset Requirements.** The District uses federal offset thresholds for inhalable particulates ($PM_{10}$) and carbon monoxide (CO) as criteria for significance (82 and 550 lb/day, respectively).

- **Conformity.** Federal regulations requiring that certain general and transportation projects conform with the SIP are used to help determine the cumulative significance of air quality impacts.

## 2.3 STATE AIR QUALITY REGULATION

In 1988, the State legislature adopted the California Clean Air Act (CCAA), which established a statewide air pollution control program. The CCAA's requirements included annual emission reductions, increased development and use of low emission vehicles, and submittal of air quality attainment plans by air districts.

The Air Resources Board (ARB) is the State agency responsible for coordinating both State and federal air pollution control programs in California. The ARB approves local air quality management plans (AQMPs) which address attainment and maintenance of State AAQS as mandated by the CCAA. The ARB also coordinates and approves local plans which eventually become part of the SIP for submittal to the EPA.

### Relationship to CEQA

The District uses many of the State's requirements as the basis for determining the significance of air quality impacts under CEQA, including:

- **Ambient Air Quality Standards.** Exceedance of any State AAQS is considered a significant impact to air quality.

- **Air Quality Management Plans.** Project emissions that are not accounted for in the AQMP's emissions inventory are considered a significant cumulative impact to regional air quality.

- **New Source Review Offset Requirements.** Under State regulations, new or modified stationary sources that would emit 137 pounds per day or more of volatile organic compounds (VOC) or oxides of nitrogen ($NO_x$) are required to offset their emissions. The District considers these thresholds to determine a project's impact on existing regional air quality.

## 2.4 REGIONAL AIR QUALITY REGULATION

The District shares responsibility with the ARB for ensuring that State and national AAQS are achieved and maintained within the NCCAB. State law assigns local air districts the primary responsibility for control of air pollution from stationary sources while reserving to the ARB an oversight function. The District is responsible for developing regulations governing emissions of air pollution, permitting and inspecting stationary sources of air pollution, monitoring of ambient air quality, and air quality planning activities, including implementation of transportation control measures.

In 1994, the District began the process of requesting redesignation from a federal ozone nonattainment area to an attainment area when it submitted a redesignation request and $NO_x$ Exemption Request to the EPA. In conjunction with this request, the District, AMBAG, and San Benito County COG adopted a Maintenance Plan in May 1994 and amended it in October 1994. The District was redesignated to a maintenance area for the federal one hour ozone standard in March 1997. In June 2005 the federal one-hour ozone standard was revoked, and the NCCAB was classified attainment for all federal standards. In 2007 a Federal Maintenance Plan for the NCCAB was submitted to ARB, which is being reviewed by EPA in 2008.

As required by the CCAA, the District adopted the 1991 AQMP for the Monterey Bay Region. The AQMP addressed attainment of the State AAQS for ozone. The AQMP recommended adoption of 20 measures to control emissions of VOC from stationary sources, 5 measures for stationary sources of $NO_x$, and eight transportation control measures. Since the 1991 AQMP was adopted, control requirements have been reduced, and the plan was updated in 1994, 1997, 2000 and 2004 to reflect this change. The 1997 AQMP showed that the District could achieve the required 20 percent reduction in both VOC and $NO_x$ emissions in the near term without adopting any additional regulations. The 1997 AQMP also included updated Transportation Control Measures. The 2000 AQMP concluded the North Central Coast Air Basin remained on the borderline between attainment and nonattainment in part due to variable meteorological conditions occurring from year to year, transport of air pollution from the San Francisco Bay Area, and locally generated emissions.

The District regulates new and modified stationary sources through Rule 207, which incorporates State and federal requirements for new and modified stationary sources as well as District-specific regulations. When net emissions from a new or modified facility exceed State offset thresholds, the increase must be offset, with certain exceptions. The rule also requires application of Best Available Control Technology when a source would emit 25 lb/day or more of VOC or $NO_x$ emissions.

The Association of Monterey Bay Area Governments (AMBAG) is the designated Metropolitan Planning Organization for Monterey, Santa Cruz, and San Benito Counties and their respective cities. While AMBAG does not regulate air pollution, it prepares various transportation control measures and employment and population forecasts which are used in the AQMP. AMBAG is also responsible for ensuring that transportation

plans, programs, and projects conform with the applicable SIP under the federal transportation conformity rule, as applicable. AMBAG also develops planning assumptions that are used to determine conformity of general federal projects with the applicable SIP.

The San Benito County Council of Governments (COG) is a single county COG comprised of the cities of Hollister and San Juan Bautista and County of San Benito. While the San Benito County COG does not regulate air quality, it serves as the Areawide Planning Organization.

Relationship to CEQA

The District establishes the criteria for determining significance of air quality impacts under CEQA in the NCCAB. These are listed in Chapter 5.

AMBAG is responsible for making consistency determinations for population-related projects in Monterey, San Benito and Santa Cruz counties and their respective cities. The District makes all other consistency determinations. Consistency with the AQMP is used to determine a project's cumulative impact on regional air quality under CEQA. Further, AMBAG makes federally-required conformity determinations on transportation plans, programs, and projects which are used to determine the cumulative significance of transportation projects on federal AAQS.

## 2.5 LOCAL AIR QUALITY REGULATION

Local land use decisions have the potential to affect air quality within the region. While local governments do not participate directly in developing the AQMP, they help develop the population and growth forecasts used in the AQMP. Local governments also have the option of establishing local air quality policies through amendments to the General Plan or adoption of ordinances.

Relationship to CEQA

As lead agencies under CEQA, local governments review air quality impacts of proposed projects within their respective jurisdictions.

## 2.6 OTHER AIR QUALITY PLANS

In December 1995, the District prepared the 1995 Report on Attainment of the California Fine Particulate Standard in the Monterey Bay Region. This report found that existing controls on sources of $NO_x$ emissions, which serve as precursors to $PM_{10}$, would likely lead to attainment and maintenance of the State $PM_{10}$ standard through 2010. This report was updated in 1996, 1998 and 2005.

# 3.0 BACKGROUND INFORMATION ON AIR POLLUTANTS

## 3.1 CRITERIA POLLUTANTS

Both the federal Clean Air Act and State Clean Air Act identify pollutants of specific importance, known as criteria pollutants. Acceptable ambient concentrations of these pollutants have been determined, based on requirements specified in each Act. These standards reflect the relationship between various concentrations of pollutants and their adverse effect on humans and the environment. The standards reflect the product of scientific research.

At the federal level, acceptable ambient levels known as the National Ambient Air Quality Standards (NAAQS) have been established for carbon monoxide, sulfur dioxide, nitrogen dioxide, ozone, inhalable particulate matter ($PM_{10}$), fine particulate matter ($PM_{2.5}$), and lead. The NAAQS have been divided into primary and secondary standards. Primary standards refer to air quality necessary to protect the public health. Secondary standards refer to air quality necessary to protect the public welfare (i.e., agriculture, visibility).

The State has adopted AAQS which address the national criteria pollutants and generally set more stringent standards. The State AAQS also establish standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility. Table 3-1 summarizes the federal and State AAQS.

## 3.2 SOURCES AND EFFECTS OF CRITERIA POLLUTANTS

These Guidelines focus on the criteria pollutants of concern in the North Central Coast Air Basin (NCCAB): ozone, $PM_{10}$, and carbon monoxide. This section describes each of these pollutants, their sources, and their effects on human health and welfare.

### Ozone ($O_3$)

Ozone in the lower atmosphere is one of the main components of smog. It is not directly emitted but is formed in the atmosphere over several hours from combinations of various precursors in the presence of sunlight. Nitrogen oxides ($NO_x$) and volatile organic compounds (VOC) are considered to be the primary compounds, or precursors, contributing to the formation of ozone. Ozone is viewed as both a secondary pollutant and a regional pollutant.

Short-term exposure to ozone results in injury and damage to the lung, decreases in pulmonary function, and impairment of immune mechanisms. These changes have been

implicated in the development of chronic lung disease as the result of long-term exposure. Symptoms of ozone irritation include shortness of breath, chest pain when inhaling deeply, wheezing, and coughing. Children and persons with pre-existing respiratory disease (e.g., asthma, chronic bronchitis, emphysema) are at greater risk. In addition, effects on vegetation have been documented at concentrations below the standards.

For the year 2008, daily emissions of VOC and $NO_x$ in the NCCAB are estimated at 76 and 79 tons, respectively, with on-road mobile sources constituting 23% of VOC and 49% of $NO_x$ emissions.

**TABLE 3-1 AMBIENT AIR QUALITY STANDARDS[a]**

| Pollutant | Averaging Time | California Standards[b] | | National Standards[c] | | | |
|---|---|---|---|---|---|---|---|
| | | ppm | µg/m³ | Primary[d] | | Secondary[e] | |
| | | | | ppm | µg/m³ | ppm | µg/m³ |
| Ozone | 1 hour | 0.09 | 180 | | | | |
| | 8 hours | 0.070 | 137 | 0.08 | | 0.08 | |
| Carbon Monoxide | 8 hours | 9.0 | 10,000 | 9.0 | 10,000 | 9.0 | 10,000 |
| | 1 hour | 20.0 | 23,000 | 35.0 | 40,000 | 35.0 | 40,000 |
| Nitrogen Dioxide[f] | Annual | 0.030 | 56 | 0.053 | 100 | 0.053 | 100 |
| | 1 hour | 0.18 | 338 | | | | |
| Sulfur Dioxide[g] | Annual | | | 0.03 | 80 | | |
| | 24 hours | 0.04 | 105 | 0.14 | | | |
| | 3 hours | | | | | 0.5 | 1,300 |
| | 1 hour | 0.25 | 655 | | | | |
| Respirable Particulate Matter ($PM_{10}$)[g] | Annual | | 20 | | 50 | | 50 |
| | 24 hours | | 50 | | 150 | | 150 |
| Fine Particulate Matter ($PM_{2.5}$)[h] | Annual | | 12 | | 15 | | 15 |
| | 24 hours | | | | 35 | | 35 |
| Lead | Calendar quarter | | | | 1.5 | | 1.5 |
| | 30-day avg | | 1.5 | | | | |
| Sulfate | 24 hours | | 25 | | | | |
| Hydrogen Sulfide | 1 hour | 0.03 | 42 | | | | |
| Vinyl Chloride | 24 hours | 0.010 | 26 | | | | |
| Visibility Reducing Particles | 8 hours (10 a.m.- 6 p.m.) | In sufficient amounts to reduce prevailing visibility to < 10 miles when relative humidity of < 70% with equivalent instrument method | | | | | |

[a] Standards first promulgated in ppm concentrations except where noted. Equivalent µg/m³ concentrations based on reference temperature of 25°C and reference pressure of 760 mm of mercury.

[b] California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide, nitrogen dioxide, $PM_{10}$, and visibility reducing particles are values not to be exceeded.

[c] National standards, other than ozone and those based on annual averages, are not to be exceeded more than once a year.

[d] Designed to protect human health with an adequate margin of safety

[e] Designed to protect public welfare (i.e., prevent damage to vegetation, property, visibility)

[f] On February 22, 2007, the Air Resources Board approved staff recommendations to amend the State nitrogen dioxide standard.

[g] $PM_{10}$ refers to respirable particulate matter less than 10 microns in size.

[h] $PM_{2.5}$ refers to respirable particulate matter less than 2.5 microns in size.

## Inhalable Particulates ($PM_{10}$ and $PM_{2.5}$)

Inhalable particulates refer to particulate matter less than 10 microns in diameter ($PM_{10}$). Particulates are classified as primary or secondary, depending on their origin. Primary particles are unchanged after being directly emitted (e.g., road dust) and are the most commonly analyzed and modeled form of $PM_{10}$. Because it is emitted directly and has limited dispersion characteristics, this type of $PM_{10}$ is considered a localized pollutant. In addition, secondary $PM_{10}$ can be formed in the atmosphere through chemical reactions involving gases. In 1997, EPA adopted a fine particulate matter standard of 2.5 microns or less in diameter ($PM_{2.5}$). ARB adopted an annual $PM_{2.5}$ standard in 2002.

### Health Effects Associated with $PM_{10}$ and $PM_{2.5}$

Recent studies undertaken by EPA identify key health effects categories associated with PM include:

- premature mortality;
- aggravation of respiratory and cardiovascular disease as indicated by increased hospital admissions, emergency room visits, school absences, work loss day, and restricted activity;
- changes in lung function and increased respiratory symptoms;
- changes to lung tissues and structure and;
- altered respiratory defense mechanisms.

According to USEPA, recent epidemiological information indicates that several subpopulations are apparently more sensitive to effects of air pollution containing PM. Observed effects include decreases in pulmonary function reported in children and increased mortality reported in the elderly and individual with cardiopulmonary disease.

### Particulate Matter in the NCCAB

In 2005 daily emissions of $PM_{10}$ were estimated at 102 tons per day. Of this, entrained road dust represented 35% of all $PM_{10}$ emission, windblown dust 20%, ag tilling operations 15%, waste burning 17%, construction 4%, and mobile sources, industrial processes, and other sources made up 9%[1]

## Carbon Monoxide (CO)

Carbon monoxide is formed by the incomplete combustion of carbon-containing material. Because it is directly emitted from combustion engines, carbon monoxide can have adverse localized impacts, primarily in areas of heavy traffic congestion. Because it is emitted directly and has limited dispersion characteristics, CO is considered a localized pollutant.

[1] Dust is termed "fugitive" when dust escapes into the atmosphere via a non-stack source. This includes wind blown dust from disturbed soil surfaces, construction sites, ag tilling activities, aggregate processing operations and dust raised by vehicles traveling on paved and unpaved roads.

When carbon monoxide combines with hemoglobin in the blood, the oxygen-carrying capacity of the blood is reduced and the release of oxygen is inhibited or slowed. This condition puts the following at risk: patients with angina, persons with other cardiovascular diseases, chronic obstructive lung disease, or asthma; persons with anemia, and fetuses. At higher levels, CO also affects the central nervous system. Symptoms of exposure may include headaches, dizziness, sleepiness, nausea, vomiting, confusion, and disorientation.

Carbon monoxide emissions in the NCCAB were estimated at 446 tons per day in 2005 with motor vehicles contributing approximately 47% of total emissions. Electric utilities, fires, and other mobile and miscellaneous sources contributed to the remainder.

## 3.3 OTHER POLLUTANTS

Other pollutants of concern in the NCCAB include toxic air contaminants (TACs) and odors. TACs are discussed in Chapter 9. Odors represent emissions of one or more pollutants that are a nuisance to healthy persons and may trigger asthma episodes in people with sensitive airways. Pollutants associated with objectionable odors include sulfur compounds and methane. Typical sources of odors include landfills, rendering plants, chemical plants, agricultural uses, wastewater treatment plants, and refineries. Odors are a complex problem that can be caused by minute quantities of substances. Because people have mixed reactions to odors, the nuisance level of an odor varies.

## 3.4 ADDITIONAL INFORMATION

For further background information, the following documents are available from the Monterey Bay Unified Air Pollution Control District:

- 2004 Air Quality Management Plan for the Monterey Bay Region
- 1994 Federal Maintenance Plan for the Monterey Bay Region and Amendment #1
- 2007 Federal Maintenance Plan for the Monterey Bay Region
- 1998 Report on Attainment of the California Fine Particulate Standard in the Monterey Bay Region
- 2005 Report on Attainment of the California Fine Particulate Standard in the Monterey Bay Region – Senate Bill 656 Implementation Plan

Some of these reports are available on the District's webpage at www.mbuapcd.org

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# 4.0 INITIAL CONSULTATION

## 4.1 INITIAL CONSULTATION AT THE PLANNING COUNTER

A lead agency can proactively address air quality concerns before a project is ever submitted for environmental review by providing information to project proponents during initial consultation. In fact, State CEQA Guidelines direct lead agencies to "encourage the (private) project proponent to incorporate environmental considerations into project conceptualization, design, and planning at the earliest feasible time" [§15004(b)(2)].

This chapter summarizes how potential air quality impacts can be incorporated into the siting and design of a project. Early consultation with project proponents can reduce or eliminate significant air quality impacts before the project is formally submitted to the lead agency. This can ultimately streamline the environmental review and permitting process for both the project proponent and the lead agency.

Public agencies can use the initial consultation phase to address air quality issues most effectively by:

- becoming familiar with the guidance in this document;
- providing handouts on air quality to project proponents (e.g., Figure 1-1); and
- becoming familiar with user-friendly computer programs that perform screening-level air quality analyses, such as URBEMIS (see Chapter 7 for more information); and
- using the District as a resource during the initial consultation process.

## 4.2 SITING OF LAND USES

The siting of a project can greatly influence the significance of an impact on local air quality, particularly if sensitive receptors would be affected. A “sensitive receptor” is generally defined as any residence including private homes, condominiums, apartments, and living quarters; education resources such as preschools and kindergarten through grade twelve (k-12) schools; daycare centers; and health care facilities such as hospitals or retirement and nursing homes. A sensitive receptor includes long term care hospitals, hospices, prisons, and dormitories or similar live-in housing.
Proper siting of a new land use can minimize or eliminate significant impacts to local or regional air quality.

## Exposure of Sensitive Receptors

The siting of a land use could result in significant localized air quality impacts if:

- it would expose surrounding sensitive receptors to significant amounts of air pollution (e.g., locating an industrial plant upwind of a residential subdivision could expose residents to toxic air contaminants), or if

- it is a sensitive receptor that would be exposed to significant amounts of pollution from existing land uses or roadways (e.g., placing an elderly care home near a congested intersection could expose residents to unhealthful levels of carbon monoxide).

When considering the siting of a project, a lead agency should consider the relationship (e.g., proximity, topography, up- or downwind location) of the proposed land use to the surrounding land uses. A lead agency should avoid siting a land use with sensitive receptors near:

- congested intersections where carbon monoxide standards are or could be violated,
- sources of toxic emissions, or
- sources of odors.

Similarly, a lead agency should avoid siting a land use near existing sensitive receptors if it:

- could increase roadway congestion and create or exacerbate carbon monoxide hotspots where health standards are violated,
- emits toxic emissions, or
- emits odors.

The Air District can be contacted regarding the potential incompatibility of land uses given the proximity of land uses with toxic emissions. The District maintains an inventory of all permitted facilities that emit significant amounts of toxic air contaminants (see Chapter 9).

## Indirect Source Emissions

The siting of an indirect source (i.e., land use that attracts mobile sources) could result in significant impacts to local and regional air quality if it encourages reliance on themotor vehicles. For example, projects with poor accessibility to public transit encourage reliance on driving, particularly solo driving. Conversely, siting residential development in job-rich areas discourages long commutes. Thus, projects that minimize traffic impacts reduce ozone-forming precursors that contribute to regional smog as well as localized pollution (e.g., carbon monoxide) that come from congestion.

Local governments can encourage optimal siting of indirect sources by adopting urban design policies that encourage transit use, walking, and bicycling. This can minimize the impact of future development which locates in a jurisdiction. The following siting policies can minimize the air quality impact of a new land use:

- locate indirect sources (e.g., shopping centers, office buildings) near transit stations
- promote high density development within 1/4 mile of a transit station
- encourage mixed-use development (e.g., residential and commercial)
- encourage general densification of residential and commercial land uses
- encourage in-fill
- work towards a jobs/housing balance

## 4.3 SITE DESIGN ISSUES

The site design of a project can also influence its impact on air quality. For example, incorporating design considerations into a project can reduce a facility's demand for energy or vehicle travel to and from the facility. In addition, local governments can proactively reduce air quality impacts of new development ordinances by requiring that new development incorporate design elements that reduce tripmaking to and from these facilities and resulting vehicular emissions from the project.

The following are examples of recommended site design measures:

- Orient buildings to minimize heating and cooling needs
- Provide shade trees to reduce cooling needs
- Include energy-efficient lighting systems
- Include solar water heaters or centralized water heating systems
- Incorporate energy-efficient appliances into residential uses
- Incorporate dedicated pedestrian facilities (e.g., trails) into the site design
- Provide bicycle facilities (e.g., bike lockers, racks)
- Incorporate dedicated bicycle facilities (e.g., trails) into the site design
- Provide showers and lockers in buildings
- Provide on-site bus turnouts
- Provide preferential parking spaces for carpools
- Include supporting retail or service uses in commercial or industrial projects
- Orient building entrances towards transit facilities

The air quality benefits of site design features that are incorporated in the project should be quantified, if possible, and subtracted from the project's total emissions.

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# 5.0 INITIAL STUDY/DETERMINING SIGNIFICANCE

## 5.1 PREPARING THE INITIAL STUDY

This chapter identifies the District's thresholds of significance for air quality impacts. These can be used by a lead agency when preparing the air quality assessment of an Initial Study (or Environmental Assessment under NEPA) to determine if there is substantial evidence that a project may create significant air quality impacts.

When considering a project's impact on air quality, a lead agency must consider all phases (i.e., demolition, grading, building, operation) and provide substantial evidence to support its conclusions in a quantitative analysis whenever possible. Public agencies, project proponents and consultants are encouraged to use computer programs that can provide a quantified, screening-level air quality analysis. For example, , the Air Resources Board and California air districts use and suggest that others use URBEMIS 2007, the newest version of a program that estimates construction emissions (demolition, grading and building), as well as project operational emissions (area source and indirect source emissions) for a project. (Emissions from direct sources are permitted by the Air District or included in the emission inventories of the Air Quality Management Plan). Please see Chapter 7 for more information. Public agencies may also request assistance from Air District staff prior to and during preparation of the air quality analysis of Initial Studies.

The Initial Study must assess a project's primary and secondary impacts on air quality. Primary impacts are immediately related to the project (e.g., construction, stationary, mobile source impacts). Secondary impacts relate more to the effects of the primary impacts than to the project itself (e.g., indirect or growth-inducing impacts). For example, a new sewage treatment plant may induce population growth that itself increases air pollution. Other projects that tend to have secondary air quality impacts include general plan amendments and revisions to sphere of influence guidelines.

The lead agency should also address the air quality effects of other environmental impacts in the Initial Study. For example, substantial energy consumption may indirectly result in increased emissions. If applicable, these emissions should be combined with primary and secondary impacts when comparing a project's total impact to the thresholds of significance in this chapter. Emissions that could occur during unanticipated conditions (e.g., natural or manmade disaster) should be addressed in the Risk of Upset analysis of the Initial Study.

## 5.2 CRITERIA FOR SIGNIFICANCE

CEQA Guidelines §15002 defines "significant effect on the environment" as "a substantial adverse change in the physical conditions which exist in the area affected by the proposed project."
The Environmental Checklist Form (Appendix G of the CEQA Guidelines) provides the following guidance for determining a project's impact on air quality:

> Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations: Would the project:
> (a) Conflict with or obstruct implementation of the applicable air quality plan?
> (b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?
> (c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?
> (d) Expose sensitive receptors to substantial pollutant concentrations?
> (e) Create objectionable odors affecting a substantial number of people?
>
> See Figure 5-1 for recommendations regarding responses to items (a) to (e) above.

Finally, a project is deemed to be of statewide, regional, or areawide significance if it would interfere with the attainment or maintenance of State or national AAQS. Pursuant to CEQA Guidelines §15206, such projects must be submitted to the State Clearinghouse and the Association of Monterey Bay Area Governments (AMBAG).

These definitions are fundamental to determining significance and provide the basis for the criteria developed by the District. The following sections expand on these definitions and provide specific criteria for determining the significance of air quality impacts by pollutant.

## 5.3 CRITERIA FOR DETERMINING CONSTRUCTION IMPACTS

Emissions from construction activities represent temporary impacts that are typically short in duration, depending on the size, phasing, and type of project. Air quality impacts can nevertheless be acute during construction periods, resulting in significant localized impacts to air quality. Table 5-1 summarizes the threshold of significance for construction activities.

### Inhalable Particulates

Construction activities (e.g., excavation, grading, on-site vehicles) which directly generate 82 pounds per day or more of $PM_{10}$ would have a significant impact on local air

quality when they are located nearby and upwind of sensitive receptors. However, District-approved $PM_{10}$ dispersion modeling can be used to refute (or validate) this determination. If modeling demonstrates that direct emissions under individual or cumulative conditions would not cause the exceedance of the State $PM_{10}$ AAQS [50 micrograms per cubic meter ($\mu g/m^3$)] at existing receptors as averaged over 24 hours, the impact would not be considered significant. If ambient air quality in the project area already exceeds the State AAQS, a project would contribute substantially to this violation if it would emit 82 pounds per day or more. If there are existing $PM_{10}$ emissions in the project area, dispersion modeling should be undertaken to determine if the project and existing emissions would cause a violation of the State $PM_{10}$ standard.

Ozone

Construction projects using typical construction equipment such as dump trucks, scrappers, bulldozers, compactors and front-end loaders that temporarily emit precursors of ozone [i.e., volatile organic compounds (VOC) or oxides of nitrogen ($NO_x$)], are accommodated in the emission inventories of State- and federally-required air plans and would not have a significant impact on the attainment and maintenance of ozone AAQS. The District should be consulted regarding emissions from non-typical equipment, e.g., grinders, and portable equipment.

Other Pollutants

Construction projects which may cause or substantially contribute to the violation of other State or national AAQS or that could emit toxic air contaminants could result in temporary significant impacts. See Chapter 9 for a discussion of toxic air contaminants.

**TABLE 5-1**

**THRESHOLD OF SIGNIFICANCE**
**CONSTRUCTION IMPACTS**
**Pollutant: $PM_{10}$**

| Source | Threshold of Significance |
|---|---|
| Direct emissions | 82 lb/day* |

* District-approved dispersion modeling can be used to refute (or validate) this determination of significance if direct emissions would not cause an exceedance of State $PM_{10}$ AAQS
Source: Monterey Bay Unified Air Pollution Control District 2000

Based on this threshold, Table 5-2 identifies the level of construction activity that could result in significant temporary impacts if not mitigated. The threshold should be used for screening purposes and does not represent a definitive threshold.

**TABLE 5-2**

**CONSTRUCTION ACTIVITY WITH POTENTIALLY SIGNIFICANT IMPACTS**
**Pollutant: $PM_{10}$**

| Activity | Potential Threshold* |
|---|---|
| Construction site with minimal earthmoving | 8.1 acres per day |
| Construction site with earthmoving (grading, excavation) | 2.2 acres per day |

* Based on Midwest Research Institute, Improvement of Specific Emission Factors (1995). Assumes 21.75 working weekdays per month and daily watering of site.
Source: Monterey Bay Unified Air Pollution Control District 1996

Note: Construction projects below the screening level thresholds shown above are assumed to be below the 82 lb/day threshold of significance, while projects with activity levels higher than those above may have a significant impact on air quality. Additional mitigation and analysis of the project impact may be necessary for those construction activities.

## 5.4 CRITERIA FOR DETERMINING OPERATIONAL IMPACTS

Emissions from long-term operations generally represent a project's most substantial air quality impact. Table 5-3 summarizes the project-level thresholds of significance for operational impacts by pollutant. An exceedance of any threshold would represent a significant impact on local or regional air quality. When comparing a project's emissions to the thresholds of significance, local conditions should be considered whenever possible. For example, an estimate of indirect source emissions should reflect net new travel generated by a project and account for project-specific conditions (e.g., average trip length, pass-by trips, diverted linked trips). See Section 7.4 for more details.

The following thresholds apply to all indirect and direct emissions, whether or not they are subject to District permit authority, unless noted otherwise.[1] (Prior CEQA Guidelines §15064(h), which became effective in September 1998, was invalidated by the Third

[1] Indirect emissions come from mobile sources that access the project site but generally emit off-site; direct emissions are emitted on-site (e.g., stationary sources, on-site mobile equipment).

District Court of Appeal in Communities for a Better Environment (2002)103 Cal. App.4th 98. As a result, one may no longer assume that project emissions are not significant if they meet a regulatory standard such as a District rule or regulation.) As a result, all direct and indirect emissions should be compared to the threshold(s) of significance.

## Ozone

Projects which would emit 137 pounds per day or more of direct and indirect VOC emissions would have a significant impact on regional air quality by emitting substantial amounts of ozone precursors. Such projects would significantly impact attainment and maintenance of ozone AAQS. Similarly, projects which emit 137 pounds per day or more of direct and indirect $NO_x$ emissions would generate substantial emissions and have a significant impact on regional air quality.

For example, a project that generates 100 pounds per day of direct VOC emissions and 55 pounds per day of indirect VOC emissions would be considered significant. Conversely, a project that generates 100 pounds per day of direct VOC emissions and 55 pounds per day of indirect $NO_x$ emissions would not be considered significant.

Table 5-4 identifies some indirect sources that could significantly impact regional air quality if not mitigated, based on the VOC and $NO_x$ thresholds in Table 5-3. The thresholds are based on default travel and emission factors for 2005 and do not reflect travel characteristics associated with diverted linked trips. As emission factors for motor vehicles decrease over time, the number of units or square feet increases accordingly. As such, this table should be used for general screening purposes and does not represent definitive thresholds.

## Inhalable Particulates

Projects which could generate 82 pounds per day or more of $PM_{10}$ at the project site (e.g., quarries, truck stops) would result in substantial air emissions and have a significant impact on local air quality. However, District-approved dispersion modeling can be used to refute (or validate) this determination. If modeling demonstrates that emissions would not cause an exceedance of the State $PM_{10}$ standard (50 $\mu g/m^3$) at an existing or reasonably foreseeable receptor as averaged over 24 hours, the impact would not be considered significant. If ambient $PM_{10}$ levels already exceed the State AAQS in the project area, the project would contribute substantially to the violation if it would emit more than 82 pounds per day. This would be considered a significant individual and cumulative impact on local air quality, since the background concentration reflects the collective contribution of $PM_{10}$ from nearby sources. If there are existing $PM_{10}$ emissions in the project area, dispersion modeling should be undertaken to determine if project plus existing emissions would cause a violation of the State $PM_{10}$ standard.

**TABLE 5-3**
**THRESHOLDS OF SIGNIFICANCE**
**FOR CRITERIA POLLUTANTS OF CONCERN**
**OPERATIONAL IMPACTS***

| Pollutant Source | Threshold(s) of Significance |
|---|---|
| VOC | 137 lb/day (direct + indirect) |
| $NO_x$, as $NO_2$ | 137 lb/day (direct + indirect) |
| $PM_{10}$ | 82 lb/day (on-site)** |
| | AAQS exceeded along unpaved roads (off-site) |
| CO | LOS at intersection/road segment degrades from D or better to E or F or V/C ratio at intersection/road segment at LOS E or F increases by 0.05 or more or delay at intersection at LOS E or F increases by 10 seconds or more or reserve capacity at unsignalized intersection at LOS E or F decreases by 50 or more*** |
| | 550 lb/day (direct)*** |
| $SO_x$, as $SO_2$ | 150 lb/day (direct)** |

* Projects that emit other criteria pollutant emissions would have a significant impact if emissions would cause or substantially contribute to the violation of State or national AAQS. Criteria pollutant emissions could also have a significant impact if they would alter air movement, moisture, temperature, climate, or create objectionable odors in substantial concentrations. When estimating project emissions, local or project-specific conditions should be considered.

** The District's 82 lb/day operational phase threshold of significance applies only to onsite emissions and project-related exceedances along unpaved roads. These impacts are generally less than significant. On large development projects, almost all travel is on paved roads (0%) unpaved), and entrained road dust from vehicular travel can exceed the significance threshold. Please contact the Air District to discuss estimating emissions from vehicular travel on paved roads. District-approved dispersion modeling can be used to refute (or validate) a determination of significance if modeling shows that emissions would not cause or substantially contribute to an exceedance of State and national AAQS

*** Modeling should be undertaken to determine if the project would cause or substantially contribute (550 lb/day) to exceedance of CO AAQS. If not, the project would not have a significant impact

Source: Monterey Bay Unified Air Pollution Control District.

**TABLE 5-4**

## INDIRECT SOURCES WITH POTENTIALLY SIGNIFICANT IMPACTS ON OZONE*

| Land Use | Threshold for Potential Significance* |
|---|---|
| Single Family Dwelling | 810 dwelling units |
| Apartment-low rise | 1,080 dwelling units |
| Condominium/townhouse general | 1,195 dwelling units |
| Mobile Home | 1,320 dwelling units |
| Elementary School | n/a*** |
| High School | n/a*** |
| Community College (2 year) | 410,000 sq. ft. |
| Convenience Market (24 hours) | 10,500 sq. ft.. |
| Convenience Market with gas pumps | 9,200sq.ft . |
| Discount Store – Freestanding | 161,000 sq. ft |
| Fast Food w/ Drive Thru | 15,600 sq. ft. |
| Fast Food w/o Drive Thru | 10,800 sq. ft. |
| Hotel | 880 rooms |
| Motel | 9050 rooms |
| Government Office Building | 112,000 sq. ft. |
| Medical Office | 193,500 sq. ft. |
| Office – General | 930,000 sq. ft. |
| Office Park | 675,000 sq. ft. |
| Quality Restaurant | 106,000 sq. ft. |
| Restaurant (Sit-Down; High Turnover) | 59,000 sq. ft. |
| Regional Shopping Center <570,000 sq. ft. | 120,000 sq. ft. |
| Supermarket | 69,000 sq. ft. |
| Light Industrial | 1,040,000 sq. ft. |
| Industrial Park 810dwelling units | 1,390,000 sq. ft. |

* This screening table is for illustrative purposes only and does not represent definitive activity levels. Rather, these are levels at which indirect sources (light duty cars/trucks) and area sources could potentially emit 137 lb/day or more of VOC or $NO_x$, prior to mitigation in the year 2005. These thresholds do not reflect local context or project-specific conditions (e.g., pass-by trips or diverted linked trips);

** Land uses that generate emissions from stationary sources or generate medium- and heavy-duty truck traffic would lower units or square footage

*** Typical school sizes are significantly below the thresholds of significance.

Source: Monterey Bay Unified Air Pollution Control District, based on URBEMIS2002.

Projects which would indirectly generate $PM_{10}$ from travel on unpaved roads could result in substantial off-site emissions and significantly impact local air quality. $PM_{10}$ dispersion modeling should be undertaken to determine if indirect emissions along one or more unpaved roads would cause the exceedance of the State $PM_{10}$ AAQS at an existing or reasonably foreseeable receptor as averaged over 24 hours. If so, the impact would be considered significant. The District should be contacted for more information.

Carbon Monoxide

Indirect sources which would significantly affect levels of service (LOS) at intersections or road segments could cause or substantially contribute to violation of State or national AAQS for carbon monoxide. The following would represent a potentially significant impact to intersections or road segments after mitigation (references are to peak-hour LOS):

- Intersections or road segments that operate at LOS D or better that would operate at LOS E or F with the project's traffic, or
- Intersections or road segments that operate at LOS E or F where the volume-to-capacity (V/C) ratio would increase 0.05 or more with the project's traffic, or
- Intersections that operate at LOS E or F where delay would increase by 10 seconds or more with the project's traffic, or
- Unsignalized intersections which operate at LOS E or F where the reserve capacity would decrease by 50 or more with the project's traffic. This criterion is based on the turning movement with the worst reserve capacity or
- Project would generate substantial heavy duty truck traffic or generate substantial traffic along urban street canyons or near a major stationary source of CO.

If any of these scenarios would occur, carbon monoxide modeling should be undertaken to determine if indirect source emissions would cause an exceedance of State or national AAQS at existing or reasonably foreseeable receptors. If modeling demonstrates that the project would not cause an exceedance of CO AAQS, the project would not have a significant impact on local air quality.

For cumulative analyses, the traffic impact of the project should be combined with that of other closely related past, present, and reasonably foreseeable future projects. The cumulative impact should be compared to the same criteria above to determine if cumulative development could cause an exceedance of State or national AAQS at existing or reasonably foreseeable receptors. If so, carbon monoxide modeling should be undertaken.

Sources which directly emit 550 pounds or more per day of carbon monoxide (e.g., industrial operations) would result in substantial air emissions and have a significant impact on local air quality. However, CO modeling can be used to refute (or validate) this determination. If modeling demonstrates that the source would not cause a violation of State or national AAQS [9 ppm or 10,000 $\mu g/m^3$ (8 hour average) or 20 ppm or 23,000 $\mu g/m^3$ (1 hour average)] at existing or reasonably foreseeable receptors, the project would not have a significant impact on local air quality.

## Oxides of Sulfur[2]

Sources which directly emit 150 pounds or more per day of oxides of sulfur as sulfur dioxide ($SO_2$) (e.g., industrial operations) would result in substantial air emissions and have a significant impact on air quality. However, modeling can be used to refute (or validate) this determination. If modeling demonstrates that the source would not cause a violation of State or national AAQS at existing or reasonably foreseeable receptors, the project would not have a significant impact on air quality.

## Other Pollutants

Projects which emit other criteria pollutants could have a significant impact if total emissions would cause or substantially contribute to the violation of State or national AAQS. Projects which have the potential to emit toxic air contaminants could also result in significant air quality impacts (Chapter 9). In addition, projects which alter air movement, moisture, temperature, or climate either locally or regionally could have significant air quality impacts.

Projects which would emit pollutants associated with objectionable odors in substantial concentrations could result in significant impacts if odors would cause injury, nuisance, or annoyance to a considerable number of persons or would endanger the comfort, health, or safety of the public. Because people have mixed reactions to odors, the nuisance level of an odor varies. Estimation of potential odor impacts should be coordinated with the District.

## Temporary Emissions

The significance of projects that emit pollutants on a temporary or infrequent basis is based on a variety of factors, including the pollutant(s) in question and potential to create a violation or contribute substantially to an existing or projected violation. Examples of such temporary projects include occasional military exercises or annual activities that generate substantial emissions for a short time, excluding construction projects. Temporary projects will be reviewed by the District on a case-by-case basis.

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[2] Oxides of sulfur, as sulfur dioxide ($SO_2$), are formed by the combustion of sulfur containing materials (e.g., coal, fuel oil, tires). High levels of ambient $SO_2$ may increase the risk of adverse symptoms in asthmatic patients.

## 5.5 CRITERIA FOR DETERMINING CUMULATIVE IMPACTS AND CONSISTENCY

An air quality analysis should address a project's cumulative impact on ozone and localized pollutants. The criteria for assessing cumulative impacts on localized air quality (i.e., carbon monoxide, $PM_{10}$) are discussed in Section 5.4. The remainder of this section is devoted to the criteria used to determine a project's cumulative impact on ozone levels for projects. Consistency with the AQMP does not mean that a project will not have a significant project-specific adverse air quality impact. However, inconsistency with the AQMP is considered a significant cumulative adverse air quality impact.

CEQA Guidelines §15125(b) requires that an EIR discuss consistency between the proposed project and applicable regional plans, including the Air Quality Management Plan (AQMP). Consistency determinations with the AQMP are used by the District to address a project's cumulative impact on regional air quality (i.e., ozone levels).

The District prepares air quality plans which address attainment of the State ozone AAQS and maintenance of federal AAQS. These plans accommodate growth by projecting growth in emissions based on different indicators. For example, population forecasts adopted by AMBAG are used to forecast population-related emissions. Through the planning process, emission growth is offset by basinwide controls on stationary, area, and transportation sources of air pollution.

Projects which are not consistent with the AQMP have not been accommodated in the AQMP and will have a significant cumulative impact on regional air quality unless emissions are totally offset. AMBAG provides consistency determinations for population related projects. The District provides consistency determinations for all other projects. Criteria for making consistency determinations are outlined below.

### Population Related Projects

Projects related directly to population growth will generate population-related emissions (e.g., motor vehicles, residential heating and cooling emissions). Population-related emissions have been forecast in the AQMP using population forecasts adopted by AMBAG. Thus, population-related projects which are consistent with these forecasts are consistent with the AQMP.

For a proposed residential project, consistency is determined by comparing the project population at the year of project completion with the forecast for the appropriate five year increment (e.g., if project completion is 2004, the project would be compared with year 2005 forecasts) for the jurisdiction in which the project is located. A proposed residential project is consistent with the AQMP if the population increase resulting from the project will not cause the estimated cumulative population (i.e., existing population plus population from locally approved and unconstructed projects) to exceed forecasts for the next five year increment. In Monterey County, consistency with population forecasts is

based on comparing a project's population with countywide forecasts to avoid confusion related to declining population forecasts for cities on the Monterey Peninsula.

Consistency of indirect emissions associated with a commercial, industrial or institutional projects intended to meet the needs of the population as forecast in the AQMP is determined by comparing the estimated current population of the county in which the project is to be located with the applicable population forecast in the AQMP. If the estimated current population does not exceed the forecasts, indirect emissions associated with the project are deemed to be consistent with the AQMP. AMBAG should be contacted to request consistency determinations for population related projects.

### Non-Residential Population Related Commercial, Industrial and Institutional

Non-residential population related activities (e.g., hotels, motels) will be evaluated on a case-by-case basis for consistency. The District should be contacted for a consistency determination.

### Stationary and Area Source Emissions

Consistency of direct emissions associated with equipment or process operations of a commercial, industrial or institutional facility subject to District permit authority is determined by assessing whether the emission source complies with all applicable District rules and regulations, including emission offset and emission control requirements and/or whether or not project emissions are accommodated in the AQMP. Emissions from sources not subject to District permit authority may be deemed consistent with the AQMP if such emissions are forecasted in the AQMP emission inventory. The District should be contacted for a determination.

### Wastewater Treatment Projects

District Rule 216, Permit Requirements for Wastewater and Sewage Treatment Facilities, requires that new or modified wastewater treatment facilities be consistent with the adopted AQMP. Consistency of wastewater treatment facilities is determined by comparing project forecasts for the proposed service area with the applicable AQMP forecasts. AMBAG maintains forecasts for geographic areas as small as Traffic Analysis Zones which enables it to forecast population for service areas that differ from city and county boundaries and cross jurisdictional boundaries.

District Rule 216 requires that affected projects also remain consistent with the plan. This is accomplished by requiring establishment of a system to track and report hook-ups for new or modified wastewater treatment facilities.

Transportation Projects

The emissions from a transportation project must be consistent with the emissions budget in State-required AQMP. Transportation projects are defined as roadways, roadway improvements, and transit improvements. A project that is inconsistent with the AQMP has not been accommodated in the emissions budget and will have a significant cumulative impact on attainment of the State's ozone AAQS unless project emissions are totally offset. AMBAG should be contacted to request consistency determinations for population related project.

## 5.6 CRITERIA FOR NEGATIVE DECLARATIONS, MITIGATED NEGATIVE DECLARATIONS, AND EIRS[3]

A Negative Declaration is an appropriate environmental document if all of the following criteria are met:

(1) Short-term construction will emit less than 82 lb/day of $PM_{10}$ **or** will not cause a violation of $PM_{10}$ AAQS at existing receptors; and the equipment used is" typical construction equipment" as specified in Section 5.3, herein, which is accommodated in the emission inventories of State- and federally-required air plans(regarding attainment and maintenance of ozone AAQS).

(2) Long-term operation of the project will:

a) emit less than 137 lb/day of VOC or $NO_x$;
b) directly emit less than 550 lb/day of CO **or** will not cause a violation of CO AAQS at existing or reasonably foreseeable receptors;
c) not significantly impact traffic levels of service **or** will not cause a violation of CO AAQS or contribute 550 lb/day to an existing or projected violation at existing or reasonably foreseeable receptors;
d) directly emit less than 82 lb/day of $PM_{10}$ on-site **or** will not cause a violation of $PM_{10}$ AAQS or contribute 82 lb/day to an existing or projected violation at existing or reasonably foreseeable receptors;
e) not indirectly generate $PM_{10}$ along unpaved roads **or** will not cause a violation of $PM_{10}$ AAQS or contribute 82 lb/day to an existing or projected violation at existing or reasonably foreseeable receptors; and

[3] The criteria for Negative Declarations are equivalent to those for a NEPA Finding of No Significant Impact (FONSI) while the criteria for an EIR are equivalent to those for a NEPA Environmental Impact Statement (EIS).

f) directly emit less than 150 lb/day of $SO_x$ **or** will not cause a violation of $SO_2$ AAQS at existing or reasonably foreseeable receptors.

(3) The project will not cause a violation of any other State or national AAQS.

(4) The project is consistent with the Air Quality Management Plan.

(5) The project will not have any other significant adverse impacts (e.g., create objectionable odors; alter air movement, moisture, temperature, or climate).

These criteria are summarized in Figure 5-1, which can be used by lead agencies as a checklist to determine a project's significance on air quality.

A Mitigated Negative Declaration is appropriate if all of the criteria for a Negative Declaration are met by incorporating one or more mitigation measures into the project prior to release of the Negative Declaration.

If a Negative Declaration or Mitigated Negative Declaration is not appropriate, the project's air quality impacts should be analyzed in an EIR pursuant to CEQA requirements.

**FIGURE 5-1**

## CHECKLIST FOR SIGNIFICANCE OF AIR QUALITY IMPACTS

(See Table 5-3 for Details*)

**Would the project:**

**(a) Conflict with or obstruct implementation of the applicable air quality plan?**

- Emit 137 or more of VOC or $NO_x$?
- Be inconsistent with the AQMP?

**(b) Violate any air quality standard or contribute substantially to an existing or project air quality violation?**

- Emit 137 or more of VOC or $NO_x$?
- Directly emit 550 lb/day or more of CO?*
- Generate traffic that significantly affects levels of service*
- Directly emit 82 lb/day or more of $PM_{10}$ on site during operation or construction*
- Generate traffic on unpaved roads of 82 lb/day or more of $PM_{10}$?*
- Directly emit 150 lb/day or more of $SO_x$?

**(c) Result in a cumulatively considerable net increase of any criteria pollutant for which the NCCAB is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?**

**(d) Expose sensitive receptors to substantial pollutant concentrations?**

- Cause a violation of any CO, $PM_{10}$ or toxic air contaminant standards at an existing or reasonably foreseeable sensitive receptor?

**(e) Create or expose a substantial number of people to objectionable odors?**

Note: This table summarizes detailed criteria in Chapter 5.

<u>If the response to any of these questions is "yes" (after mitigation), an EIR must be prepared for the project.</u>

**TABLE 5-5**

## POPULATION FORECAST FOR NORTH CENTRAL COAST AIR BASIN[1]

| AREA[2] | 2000 | 2005 | 2010 | 2020 | 2030 |
|---|---|---|---|---|---|
| **MONTEREY COUNTY** | | | | | |
| Carmel | 4,081 | 4,095 | 3,947 | 3,900 | 3,945 |
| Del Rey Oaks | 1,650 | 1,652 | 1,594 | 1,577 | 1,594 |
| Gonzales | 7,525 | 9,229 | 12,463 | 16,791 | 29,145 |
| Greenfield | 12,583 | 15,097 | 18,627 | 24,512 | 29,854 |
| King City | 11,094 | 12,885 | 15,484 | 19,381 | 23,360 |
| Marina | 19,163 | 23,172 | 30,567 | 34,362 | 35,357 |
| Monterey | 29,674 | 29,863 | 28,824 | 28,481 | 28,815 |
| Pacific Grove | 15,522 | 15,586 | 15,046 | 14,880 | 15,073 |
| Salinas | 143,776 | 146,687 | 165,141 | 184,434 | 213,063 |
| Sand City | 261 | 384 | 370 | 365 | 369 |
| Seaside | 33,097 | 34,221 | 34,888 | 34,855 | 35,148 |
| Soledad | 11,363 | 18,376 | 21,142 | 28,192 | 40,363 |
| Soledad Prisons | 11,271 | 11,271 | 11,271 | 11,271 | 11,271 |
| Unincorporated | 100,252 | 110,083 | 105,485 | 124,067 | 135,375 |
| **County Total** | **401,312** | **432,600** | **464,847** | **527,069** | **602,731** |
| **SANTA CRUZ COUNTY** | | | | | |
| Capitola | 10,033 | 10,869 | 10,978 | 11,104 | 11,136 |
| Santa Cruz | 54,593 | 56,953 | 57,768 | 59,924 | 63,987 |
| Scotts Valley | 11,385 | 13,182 | 13,667 | 14,062 | 14,275 |
| Watsonville | 44,265 | 52,716 | 56,779 | 65,473 | 70,418 |
| Unincorporated | 135,326 | 133,824 | 136,167 | 142,132 | 145,031 |
| **County Total** | **255,602** | **267,544** | **275,396** | **292,695** | **304,847** |
| **SAN BENITO COUNTY** | | | | | |
| Hollister | 34,413 | 38,280 | 44,423 | 53,485 | 59,703 |
| San Juan Batista | 1,549 | 2,032 | 2,905 | 3,593 | 4,315 |
| Unincorporated | 17,272 | 18,099 | 16,562 | 18,098 | 19,773 |
| County Total | 53,234 | 58,411 | 63,890 | 75,176 | 83,791 |
| Hollister | 34,413 | 38,280 | 44,423 | 53,485 | 59,703 |
| **BASIN TOTAL** | **710,148** | **758,598** | **804,333** | **894,940** | **991,369** |

1 Association of Monterey Bay Area Governments, 2004
2 Census Data

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# 6.0 ENVIRONMENTAL SETTING

## 6.1 CONTENTS OF SETTING SECTION

The Environmental Setting section should describe ambient air quality conditions from both a local and regional perspective as they exist before commencement of the proposed action. The description should provide sufficient information to permit independent evaluation by those who would review the environmental document (other public agencies, planning consultants and scientific experts, and the general public). If the proposed project is to be compared with an adopted plan, the setting should describe the existing physical conditions as well as the potential future conditions accommodated by the plan.

The following information should be included in the environmental setting discussion:

- Topography and meteorology
- State and national ambient air quality standards (AAQS)
- Summary of ambient air quality, including violations of State and national AAQS for the previous three years
- Existing emissions from the project site (prior to implementation of the proposed project)
- Existing and reasonably foreseeable sensitive receptors near the project site

This chapter describes the recommended content for these topics and discusses the environmental setting of the North Central Coast Air Basin (NCCAB). This discussion can be incorporated into the environmental setting of the EIR or Negative Declaration as appropriate.

## 6.2 TOPOGRAPHY AND METEOROLOGY

Because topography and meteorology heavily influence air quality, the environmental setting should identify the existing regional setting. Where applicable, local topography and meteorological conditions that may influence local air quality should be addressed.

The NCCAB is comprised of Monterey, Santa Cruz and San Benito Counties. The basin lies along the central coast of California and covers an area of 5,159 square miles. The northwest sector of the basin is dominated by the Santa Cruz Mountains. The Diablo Range marks the northeastern boundary, and together with the southern extent of the Santa Cruz Mountains forms the Santa Clara Valley which extends into the northeastern tip of the Basin. Farther south, the Santa Clara Valley evolves into the San Benito Valley which runs northwest-southeast and has the Gabilan Range as its western boundary. To the west of the Gabilan Range is the Salinas Valley, which extends from Salinas at its northwestern end to King City at its southeastern end. The western side of the Salinas Valley is formed by the Sierra de Salinas, which also forms the eastern side of the smaller Carmel Valley. The coastal Santa Lucia Range defines the western side of the Carmel Valley.

The semi-permanent high pressure cell in the eastern Pacific is the basic controlling factor in the climate of the air basin. In the summer, the high pressure cell is dominant and causes persistent west and northwest winds over the entire California coast. Air descends in the Pacific High forming a stable temperature inversion of hot air over a cool coastal layer of air. The onshore air currents pass over cool ocean waters to bring fog and relatively cool air into the coastal valleys. The warmer air aloft acts as a lid to inhibit vertical air movement.

The generally northwest-southeast orientation of mountainous ridges tends to restrict and channel the summer onshore air currents. Surface heating in the interior portion of the Salinas and San Benito Valleys creates a weak low pressure which intensifies the onshore air flow during the afternoon and evening.

In the fall, the surface winds become weak, and the marine layer grows shallow, dissipating altogether on some days. The air flow is occasionally reversed in a weak offshore movement, and the relatively stationary air mass is held in place by the Pacific High pressure cell, which allows pollutants to build up over a period of a few days. It is most often during this season that the north or east winds develop to transport pollutants from either the San Francisco Bay area or the Central Valley into the NCCAB.

During the winter, the Pacific High migrates southward and has less influence on the air basin. Air frequently flows in a southeasterly direction out of the Salinas and San Benito Valleys, especially during night and morning hours. Northwest winds are nevertheless still dominant in winter, but easterly flow is more frequent. The general absence of deep, persistent inversions and the occasional storm systems usually result in good air quality for the basin as a whole in winter and early spring.

In Santa Cruz County, coastal mountains exert a strong influence on atmospheric circulation, which results in generally good air quality. Small inland valleys such as Scotts Valley with low mountains on two sides have poorer circulation than at Santa Cruz on the coastal plain. In addition, Scotts Valley is downwind of major pollutant generating centers, and these pollutants have time to form oxidants during transit to

Scotts Valley. Consequently, air pollutants tend to build up more at Scotts Valley than at Santa Cruz.

Monterey Bay is a 25-mile wide inlet, which allows marine air at low levels to penetrate the interior. The Salinas Valley is a steep-sloped coastal valley which opens out on Monterey Bay and extends southeastward with mountain ranges of two to three thousand feet elevation on either side. The broad area of the valley floor near the mouth is twenty five miles wide, narrowing to about six miles at Soledad, which is forty miles inland, and to three miles wide at King City, which is about sixty miles from the coast. At Salinas, near the northern end of the Valley, west and northwest winds occur about one-half the time during the entire year. Although the summer coastal stratus rarely extends beyond Soledad, the extended sea breeze, which consists of warmer and drier air currents, frequently reaches far down the Salinas Valley. In the southern end of the Valley, which extends into the South Central Coast Air Basin to Paso Robles, winds are generally weaker most of the year except during storm periods.

Hollister, at the northern end of the San Benito Valley, experiences west winds nearly one-third of the time. The prevailing air flow during the summer months probably originates in the Monterey Bay area and enters the northern end of the San Benito Valley through the air gap through the Gabilan Range occupied by the Pajaro River. In addition, a northwesterly air flow frequently transports pollutants into the San Benito Valley from the Santa Clara Valley.

## 6.3 STATE AND FEDERAL AIR QUALITY STANDARDS

The State and federal governments have established AAQS for certain pollutants, known as criteria pollutants, to protect the public health and welfare. The environmental setting should identify State and federal AAQS, focusing on the criteria pollutants of primary concern within the basin: ozone and inhalable particulates. In addition, carbon monoxide pollution should be addressed given the increasing traffic congestion within the basin.

The following summarizes the State and national AAQS for ozone, $PM_{10}$, $PM_{2.5}$ and carbon monoxide. A complete summary of State and national AAQS is provided in Section 3.1, Table 3-1.

### Ozone

The Air Resources Board (ARB) has set a health based AAQS for ozone that includes two components that are not to be exceeded. The ambient concentration of ozone is not to exceed 0.09 parts per million (ppm) averaged over a one-hour period and 0.070 ppm averaged over an eight-hour period. The revised State AAQS, which includes the stringent eight-hour component, became effective in May of 2006. Both components of the standard must be met for an area to achieve the revised State AAQS for ozone. The

Environmental Protection Agency (EPA) has set the federal ozone AAQS at 0.08 ppm, averaged over an eight-hour period.

### Inhalable Particulates

The ARB has established a health based AAQS for $PM_{10}$ which also includes two not to exceed components. The ambient concentration of $PM_{10}$ is not to exceed 50 micrograms per cubic meter ($\mu g/m^3$) averaged over a 24-hour period and 30 $\mu g/m^3$ measured as an annual average. The EPA's 24-hour AAQS for $PM_{10}$ is 150 $\mu g/m^3$, and its annual average AAQS is 50 $\mu g/m^3$. EPA's $PM_{2.5}$ 24-hour standard is 65 $\mu g/m^3$ and the annual average is 15 $\mu g/m^3$. ARB's annual $PM_{2.5}$ standard is more stringent at 12 $\mu g/m^3$.

### Carbon Monoxide

The ARB's primary AAQS for carbon monoxide is greater than 20 ppm for a one-hour period; the EPA's primary and secondary AAQS is greater than 35 ppm for one hour. For an eight-hour average, the ARB and EPA AAQS is greater than 9 ppm.

## 6.4 ATTAINMENT STATUS OF THE NCCAB

Under the Federal Clean Air Act, the NCCAB is designated a maintenance area for the federal one-hour ozone AAQS. The NCCAB was redesignated from a moderate nonattainment area to a maintenance area in 1997 after meeting the federal one-hour ozone standard in 1990. The NCCAB is designated as an attainment area for the federal eight-hour ozone AAQS.

Prior to revision of the State AAQS for ozone, the NCCAB was close to attaining the State one-hour AAQS, which was reflected in the area's nonattainment-transitional designation. However, in November 2006 ARB issued new designations to reflect the introduction of the stringent eight-hour requirement and the NCCAB, like several other areas in California, was redesignated from nonattainment-transitional to nonattainment for the State AAQS. Further, the NCCAB is designated a nonattainment area for the State $PM_{10}$ AAQS and an attainment area for the State $PM_{2.5}$ AAQS.

Table 6-1 summarizes the attainment status of the NCCAB. The following section describes ambient air quality in the Basin.

**TABLE 6-1**

**ATTAINMENT STATUS**
**OF THE NORTH CENTRAL COAST AIR BASIN**
**May 2007**

| Pollutant | Federal | State |
|---|---|---|
| Ozone ($O_3$) - 1 hour | Maintenance* | Nonattainment** |
| Ozone ($O_3$) - 8 hour | Attainment | |
| Carbon Monoxide (CO) | Unclassified/Attainment | Monterey Attainment<br>San Benito-Unclassified<br>Santa Cruz-Unclassified |
| Nitrogen Dioxide ($NO_2$) | Unclassified/Attainment | Attainment |
| Sulfur Dioxide ($SO_2$) | Unclassified | Attainment |
| Inhalable Particulates ($PM_{10}$) | Unclassified/Attainment | Nonattainment |
| Inhalable Fine Particulate ($PM_{2.5}$) | Unclassifiable/Attainment | Attainment |

Notes:
* The Federal 1 hour standard was revoked in the NCCAB on June 15, 2005.
** In November 2006, ARB issued new designations to reflect the addition of an 8-hour average to the State AAQS for ozone. The NCCAB was redesignated from nonattainment-transitional to nonattainment.

## 6.5 EXISTING AMBIENT AIR QUALITY

The environmental setting discussion of an EIR or Negative Declaration should summarize ambient air quality by identifying violations of State and national AAQS for the previous three years, including data from the closest ambient monitoring station. The setting should include basinwide data for ozone given its regional characteristics.

Ambient air quality is monitored at seven District-operated monitoring stations located in Salinas, Hollister, Carmel Valley, Santa Cruz, Scotts Valley, Davenport, and Watsonville. In addition, the National Park Service operates a station at the Pinnacles National Monument and an industry consortium operates a station in King City. Table 6-2 summarizes pollutants monitored at these stations.

Based on monitoring data from ambient monitoring stations, ozone concentrations exceeded the State AAQS on 22 days in 2003, 11 days in 2004, 4 days in 2005, and 19 days in 2006. The majority of these violations involved the 8-hour component of the State AAQS and occurred at the Pinnacles monitoring station, where the State AAQS was exceeded on 48 days between 2003-2006. Ozone concentrations exceeded the federal 8-hour ozone standard on 2 days in 2003, 0 days in 2004, 1 day in 2005 and 2 days in 2006.

Most of these federal exceedances also occurred at the Pinnacles monitoring station. Table 6-3 summarizes the exceedances of the State and federal ozone AAQSs.

There were no recorded violations of the federal $PM_{10}$ 24-hour AAQS at District monitoring stations from 2003 to 2006.

### Inhalable Particulates

The North Central Coast Air Basin is a nonattainment area for the State $PM_{10}$ AAQS with 8 violation days in 2003 (including 3 days that were impacted by a large fire at Fort Ord in October of 2003), 7 days in 2004, 3 days in 2005, and 4 days in 2006 at monitoring stations throughout the air basin Table 6-4 summarizes the recorded violations of the State 24-hour $PM_{10}$ AAQS between 2003 and 2006. The actual number of violations is likely higher than indicated by the table because $PM_{10}$ monitoring is only conducted once every 6 days according to a nationwide sampling schedule set by EPA. Overall, coastal exceedances were due in large part to naturally occurring sea salt, while fugitive dust is a major contributor to exceedances at the inland sites.

### Carbon Monoxide

There have been no recorded violations of the federal or State carbon monoxide AAQS at District monitoring stations. However, based on air quality dispersion modeling, violations have been predicted at heavily congested intersections within the basin.

## 6.6 EXISTING EMISSIONS FROM THE PROJECT SITE

An air quality analysis should describe any existing emissions from the project site. This should include emissions from any direct (i.e., stationary sources) or indirect (i.e., mobile) sources. The guidance in Chapter 7 can be used to quantify these emissions. By establishing an emission inventory for the existing environment, the air quality analysis can estimate the project's net impact on the environment.

## 6.7 SENSITIVE RECEPTORS

For CEQA purposes, a sensitive receptor is generically defined as as any residence including private homes, condominiums, apartments, and living quarters; education resources such as preschools and kindergarten through grade twelve (k-12) schools; daycare centers; and health care facilities such as hospitals or retirement and nursing homes. A sensitive receptor includes long term care hospitals, hospices, prisons, and dormitories or similar live-in housing.
The location of sensitive receptors should be explained in terms that draw a relationship to the project site and potential air quality impacts (e.g., proximity, topography, up- or downwind location).

The environmental setting of an air quality analysis should identify existing receptors in the vicinity of the project site, since a project would have a significant impact if it exposes sensitive receptors to significant amounts of pollution. The analysis should also describe reasonably foreseeable sensitive receptors. This would include future receptors if development is pending, as well as potential receptors that could reasonably be sited nearby based on permitted zoning or land use designations.

In addition, an air quality analysis should identify sensitive receptors near roadways and intersections that could be significantly impacted by the project's traffic. These receptors could be significantly affected by new CO hotspots or exacerbation of existing hotspots. In identifying sensitive receptors for CO modeling, the analysis should focus on receptors where there is a reasonable expectation of continuous human exposure for one or eight hours. As a result, receptor locations for an 8-hour analysis may not necessarily be the same as those for a 1-hour analysis. Table 6-5 summarizes examples of some reasonable carbon monoxide receptor site locations based on the analysis period.

**TABLE 6-2**
## AMBIENT AIR MONITORING STATIONS IN NORTH CENTRAL COAST AIR BASIN
**May 2007**

| Parameters Monitored | SAL | HOL | CVY | SCR | WAT | KC | SCV | PIN | DAV |
|---|---|---|---|---|---|---|---|---|---|
| Ozone | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Nitrogen Dioxide | ● | | | | | | | | ● |
| Oxides of Nitrogen | ● | | | | | | | | ● |
| Sulfur Dioxide | | | | | | | | | ● |
| Carbon Monoxide | ● | | | | | | | | ● |
| Inhalable Particulates ($PM_{10}$) | ● | ● | ● | ● | ● | ● | | | ● |
| Inhalable Fine Particulates ($PM_{2.5}$) | ● | ● | | ● | | | | | ● |
| Wind Speed | ● | ● | | | ● | ● | | ● | ● |
| Wind Direction | ● | ● | | | ● | ● | | ● | ● |
| Ambient Temperature | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Operated By | **MBU** | **MBU** | **MBU** | **MBU** | **MBU** | **IND** | **MBU** | **NPS** | **MBU** |

**Legend**

SAL Salinas Ambient Air Monitoring Station
HOL Hollister Ambient Air Monitoring Station
CVY Carmel Valley Ambient Air Monitoring Station
SCR Santa Cruz Ambient Air Monitoring Station
WAT Watsonville Ambient Air Monitoring Station,
SCV Scotts Valley Ambient Air Monitoring Station
DAV Davenport Ambient Air Monitoring Station
PIN Pinnacles Ambient Air Monitoring Station, Pinnacles National Monument
KC King City Ambient Air Monitoring Station,
MBU Monterrey Bay Unified Air Pollution Control District
IND Industry
NPS National Parks Service

Note: Localized pollutant data from Davenport monitoring station is influenced by nearby stationary sources
Source: Monterey Unified Air Pollution Control District.

**TABLE 6-3**

## EXCEEDANCES OF THE STATE AND FEDERAL AAQS FOR OZONE IN THE NORTH CENTRAL COAST AIR BASIN 2003-2006

| Year | Monitoring Station | Federal (Station Days) | State (Station Days) | |
|---|---|---|---|---|
| | | 8-Hour Only | 1-Hour | 8-Hour |
| **2003** | **Pinnacles** | **1** | **2** | **19** |
| | Scotts Valley | 0 | 1 | 2 |
| | Hollister | 0 | 0 | 5 |
| | King City | 0 | 0 | 2 |
| | Carmel Valley | 0 | 0 | 1 |
| **2004** | **Pinnacles** | **0** | **0** | **8** |
| | Hollister | 0 | 0 | 3 |
| | Scotts Valley | 0 | 0 | 3 |
| | Carmel Valley | 0 | 0 | 2 |
| | Santa Cruz | 0 | 0 | 1 |
| | Watsonville | 0 | 0 | 1 |
| **2005** | **Pinnacles** | **1** | **2** | **4** |
| **2006** | **Pinnacles** | **1** | **2** | **17** |
| | Hollister | 1 | 1 | 5 |
| | Scotts Valley | 0 | 0 | 1 |
| | Carmel Valley | 0 | 0 | 1 |
| | King City | 0 | 0 | 1 |

Note: The data do not equal the number of air basin days the ozone AAQS was violated, as violations at two or more monitoring stations on the same day are considered to be one violation day for the air basin.

Source: Monterey Bay Unified Air Pollution Control District, May 2007.

**TABLE 6-4**

## VIOLATIONS OF STATE $PM_{10}$ AAQS IN NORTH CENTRAL COAST AIR BASIN 2003-2006

| Station | Date | Concentration ($\mu g/m^3$) |
|---|---|---|
| **Davenport** | 5/27/03 | 65 |
| | 6/2/03 | 63 |
| | 10/12/03 | 70 |
| | 3/10/04 | 80 |
| | 3/16/04 | 51 |
| | 4/27/04 | 72 |
| | 5/3/04 | 54 |
| | 6/14/04 | 58 |
| | 12/17/04 | 59 |
| | 6/15/05 | 66 |
| | 10/13/05 | 54 |
| | 5/11/06 | 51 |
| | 6/16/06 | 64 |
| | 9/20/06 | 51 |
| **Moss Landing*** | 3/28/03 | 87 |
| | 5/27/03 | 52 |
| | 6/2/03 | 71 |
| | 9/12/03 | 59 |
| | 10/24/03 | 57** |
| | 10/25/03 | 59** |
| | 10/28/03 | 51** |
| | 3/10/04 | 56 |
| | 4/27/04 | 52 |
| | 5/22/05 | 58 |
| **Salinas** | 6/2//03 | 52 |
| | 10/24/03 | 55** |
| | 10/25/03 | 55** |
| | 10/28/03 | 66** |
| | 10/26/06 | 51 |
| **Santa Cruz** | 7/2/04 | 78 |

* Moss Landing closed in July 2005 due to high concentrations of naturally occurring sea salt.
** Sample likely impacted by smoke from large fire at Fort Ord.
Note: $PM_{10}$ monitoring conducted once every 6 days.
Source: Monterey Bay Unified Air Pollution Control District

**TABLE 6-5**

## EXAMPLES OF REASONABLE RECEPTOR SITES
## Pollutant: Carbon Monoxide

| Receptor Site | Adequate 1-hour receptor | Adequate 8-hour receptor |
|---|---|---|
| Median strips or roadways | | |
| Within intersections or on crosswalks at intersections | | |
| Sidewalks where general public has access on a continuous basis | ● | |
| Parking lot where pedestrians have continuous access | ● | |
| Property lines of hospitals, rest homes, schools, playgrounds | ● | ● |
| Property lines of residences where continuous outdoor exposure is expected | ● | ● |
| Setbacks of residences where continuous exposure is expected | ● | ● |

Source: Monterey Bay Unified Air Pollution Control District, 1995, based on Institute of Transportation Studies, University of California Davis, Final Draft "Project-Level CO Protocol", 1995.

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# 7.0 QUANTIFYING AIR POLLUTANTS

## 7.1 PREPARING AN IMPACT ANALYSIS

The impact analysis of an Environmental Impact Report (EIR) or Negative Declaration should address a project's direct and indirect impacts on air quality. Direct impacts are immediately related to the project, including short-term, temporary effects from construction and long-term emissions from its operation. This includes other impacts that may affect air quality (e.g., energy use that produces emissions). Indirect impacts occur later in time or location. For example, expanding a sewage treatment plant may induce population growth that increases impacts to air quality.

An impact analysis should support its conclusions by providing empirical evidence and reasoned inferences and conclusions. A quantitative analysis should be used whenever possible, particularly when quantitative criteria for determining significance exists.[1] For example, an EIR for a project that may exceed the District's significance threshold for volatile organic compounds (VOC) of 137 lb/day should quantify the project's daily emissions. However, a qualitative approach may be used when technical constraints (e.g., lack of information) or professional judgment make a quantitative analysis infeasible or impractical.[2]

An air quality analysis should conclude whether each impact is considered significant or less-than-significant prior to application of mitigation measures, based on the criteria in Chapter 5. The analysis should address the pollutants appropriate to the project; at a minimum, this should include the nonattainment pollutants for the North Central Coast Air Basin (NCCAB): inhalable particulates ($PM_{10}$) and ozone-precursors VOC and ($NO_x$). The results should be presented in the appropriate unit(s) of measurement based on the applicable standard or threshold (e.g., pounds per day, micrograms per cubic meter). Emission estimates should represent net impacts to the existing environment.

This chapter provides guidance on how to manually quantify emissions from construction activities and stationary sources. The Guidelines recommend computer models that are available

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[1] NEPA requires that a Draft EIS integrate, to the fullest extent possible, surveys and studies required by federal law [e.g., Fish and Wildlife Coordination Act, Endangered Species Act), other environmental review laws, and executive orders (40 C.F.R. §1502.25(a)].

[2] When there is incomplete or unavailable information, NEPA requires lead agencies to acknowledge that relevant scientific information is lacking. They must obtain such information unless the costs of doing so are exorbitant or the means to obtain it are unknown. Finally, if information is unobtainable, the EIS must summarize credible evidence and evaluate the impacts based on theoretical approaches accepted in the scientific community (40 C.F.R. §1502.22).

to perform analyses for indirect sources including those requiring a carbon monoxide analysis, along with default input values to help ensure that results reflect local conditions.

## 7.2 CALCULATING CONSTRUCTION EMISSIONS

Short-term construction operations generate fugitive dust, approximately 64% of which is $PM_{10}$.[3] An air quality analysis should describe the scope of construction activities and quantify emissions using the following guidance. Emission factors for construction activities can also be found in the Environmental Protection Agency's (EPA) Compilation of Air Pollutant Emission Factors, AP-42, Volume I. URBEMIS2007 calculates fugitive dust emissions from demolition, as well. Calculating VOC and $NO_x$ emissions from typical construction equipment is not necessary because temporary emissions of these ozone precursors have been accommodated in State- and federally-required air plans. Typical construction equipment would be scrappers, tractors, dozers, graders, loaders, and rollers. The District should be contacted regarding emissions from other types of construction equipment.

### Fugitive Dust and $PM_{10}$

The primary sources of construction-related dust include grading, excavation, road construction, and travel on unpaved surfaces. During construction, fugitive dust is generated when wheels or blades pulverize and break down surface materials. The resulting dust, which includes $PM_{10}$, is subsequently entrained by wind erosion or vehicle tires, where it becomes a nuisance and potential health hazard to those living and working nearby. In addition, other sources (e.g., exhaust from heavy-duty diesel-powered equipment) can contribute to $PM_{10}$ levels at and around a construction site.

Daily $PM_{10}$ emissions for construction activities should be quantified for all projects, including emissions from grading and excavation. Minimal grading generates about 10 pounds per day per acre on average, while excavation and earthmoving activities generate about 38 lb/day/acre.[4] The District encourages a more detailed analysis of $PM_{10}$ emissions by breaking down the construction site into its component operations. Current methodologies and models, such as EPA's "$PM_{10}$ Open Fugitive Dust Source Computer Model Package," calculate emission rates from numerous source categories, including unpaved roads, paved roads, materials handling, construction, demolition.

If construction activities may have a significant impact on $PM_{10}$ levels at sensitive receptor locations during the period of activity, dispersion modeling should be performed. A protocol

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[3] Air Resources Board, Methods for Assessing Area Source Emissions in California (1991), based on construction and demolition activities. This is an assumed average. Actual $PM_{10}$ content depends on several factors (e.g., silt content).

[4] Midwest Research Institute, Improvement of Specific Emission Factors (1995). Assumes 21.75 working weekdays per month. Emission factors assume daily watering of worksite.

describing methodologies to be used should be approved by the District prior to undertaking modeling.

## 7.3 CALCULATING STATIONARY SOURCE EMISSIONS

Stationary source emissions represent the majority of long-term operational emissions from most industrial land uses. The air quality analysis should identify anticipated equipment, processes, and other stationary sources. Net emissions should be estimated for all projects in conjunction with District permitting requirements. The analysis should quantify all stationary source emissions, whether the source is subject to District permit authority or not. The following assumptions, at a minimum, are needed to estimate emissions:

- quantity of equipment
- type of equipment
- rate and quantity of fuel consumption and/or process throughput
- number of hours of operation per day
- reduction in emissions from District requirements (e.g., Rule 207, Review of New or Modified Sources; Rule 1000, Permit Guidelines and Requirements for Sources Emitting Toxic Air Contaminants)

If specific information on stationary sources is not available, the analysis should assume a worst-case scenario. Where specific information is available, the analysis should use maximum daily emissions expected during the year. In addition, all on-site mobile source emissions (e.g., truck travel) and other indirect emissions should be added to on-site stationary source emissions.

The latest emission factors in EPA's AP-42 (Volume I) should be used to calculate daily emissions unless more accurate emission data are available (e.g., actual stack test data). For equipment and processes that are not addressed in AP-42, procedures for emission calculations should be determined in consultation with the District.

### Industrial Sources of $PM_{10}$

The District should be contacted regarding emission estimates and modeling for projects with long-term operations that may significantly impact $PM_{10}$ levels (e.g., mining, sand and gravel, quarrying operations). A protocol describing methodologies to be used to estimate $PM_{10}$ impacts should be approved by the District before undertaking dispersion modeling. The following parameters should be incorporated into a $PM_{10}$ protocol:

#### Parameters for $PM_{10}$ Modeling/Emissions Inventory Protocol

1. Describe the proposed operation and process(es), including hours of operation.

2. Describe all on-site sources of stationary and mobile source emissions (e.g., equipment types, truck travel, storage piles).

3. Describe how an emissions inventory will be developed for all sources associated with the proposed project. In particular, the basis of the emission factors to be used should be explained (e.g., source tests, AP-42, etc).

4. Explicitly state that the linkage between the emissions inventory (i.e., source categories, averaging times) and emission rates used in modeling will be clearly defined. Emissions should be based on maximum operational rates expected within the time frames of the particular AAQS being assessed.

5. The fraction of $PM_{10}$ in total particulate matter should be based on a materials analysis of samples taken from proposed source operations and activity areas, if possible.

6. The fraction of other air contaminants (e.g., crystalline silica, asbestos) in total particulate matter should also be based on a material analysis of appropriate samples.

7. Identify the screening and/or detailed dispersion model(s) to be used with a brief statement as to why the selected model(s) is appropriate for the subject application.

8. Identify an appropriate background concentration that reflects ambient $PM_{10}$ levels at the project site based on the following protocol:

   i) one year of continuous ambient monitoring at the project site using Reference Method or Equivalent Method instrumentation; or

   ii) explicitly model ambient $PM_{10}$ concentrations based on an emission inventory of nearby sources and verify results using portable monitors; or

   iii) use portable monitors to determine average concentrations for representative 24-hour periods and statistically relate the short term results to the longer term; or

   iv) identify the highest 24-hour concentration in each of the last three years from the nearest District-operated ambient monitoring station and select the third highest value. The most recent third high for the nearest District station can be found at the ARB web-site http://www.arb.ca.ca.gov/adam/welcome.html.

9. Identify the location of existing or reasonably foreseeable sensitive receptors (e.g., residences, hospitals, schools) near the project site. Further guidance is provided in Section 6.7.

10. At a minimum, estimate the maximum ground-level $PM_{10}$ concentrations at existing or reasonably foreseeable sensitive receptors for comparison with applicable AAQS.

11. Determine whether $PM_{10}$ generated by the project would cause a violation of applicable $PM_{10}$ AAQS at any existing or reasonably foreseeable sensitive receptor location. If ambient concentrations already exceed the State 24-hour AAQS, determine if the project would substantially contribute to the existing or projected violation.

12. When site specific wind data are not available and off-site data are used to represent wind patterns at the project site, the analysis should compare the exposures of both sites. If local terrain features affecting the wind patterns at the project site would result in higher concentrations, as compared to terrain features affecting the off-site data base being used for the modeling, the modeled concentrations should be increased accordingly so that the public health exposure is not understated.

13. Define and quantify mitigation measures to be applied to the emissions analysis and modeling.

### Odors

If a project would emit pollutants associated with odors in substantial amounts, the analysis should assess the impact on existing or reasonably foreseeable sensitive receptors. The American Society of Testing Materials has developed procedures to assess odor impacts (Standard Methods E679 and E1432). These methods establish a sensory threshold of detection or recognition of odors that is derived from the best-estimate value of a representative sample group. Once a sensory threshold is established, it should be compared to average or typical concentrations of odor-causing pollutants at existing or reasonably foreseeable sensitive receptors. A protocol for assessing odor impacts should be determined with the District.

## 7.4 CALCULATING INDIRECT SOURCE EMISSIONS

The primary source of long-term emissions associated with residential, commercial, institutional, and certain industrial land uses is motor vehicles. These land uses typically do not emit significant amount of air pollutants directly but attract motor vehicles that do (e.g., employee and visitor trips and delivery trucks) and are referred to as indirect sources.

Motor vehicle and area source emissions associated with indirect sources should be calculated for all projects. The District recommends using the latest version of the URBEMIS computer program. The most current version is URBEMIS2002. The program is available upon request from the District or on-line at www.urbemis.com

### URBEMIS

The URBEMIS program calculates direct and indirect source emissions for VOC, $NO_x$, $PM_{10}$ and CO based on the latest version of EMFAC emission factors.

#### Recommended Inputs to URBEMIS

The following inputs to the URBEMIS program are recommended. If different values are used, documentation for the inputs should be provided.

Project Year. Estimates should be based on the date of project occupancy. If URBEMIS does not identify the specific year of occupancy, use the year closest to the date of occupancy.

Season. Two runs should be performed: summer and winter. Use "summer" when calculating VOC, $NO_x$ and $PM_{10}$ emissions and "winter" when calculating CO emissions.

Trip Speed, Length, Percentages, Distribution of Travel, Temperature and Vehicle Fleet Mix.. These factors were developed for the NCCAB and each of its constituent counties (Monterey, San Benito and Santa Cruz) in 2007. Please refer to the URBEMIS website for guidance.

Trip Rate. Use defaults unless project-specific data are available. See Section 8.5 for guidance on how to incorporate project-specific trip data into URBEMIS. For multi-use developments, trip rates can be modified if internal vehicle trips that would occur between two or more uses are replaced by non-emitting modes (e.g., walking, bicycling). If so, trip generation rates for each applicable land use should be modified, based on the expected on-site capture rate. For example, if 10% of vehicle trips to a residential and retail development will be captured within the project site by non-emitting modes, the trip rates for each land use should be reduced by 10%.

Double Counting. Multi-use development often have overall trip generation rates that are lower than the sum of the individual trip rates. For example, a mixed residential and retail project will generate internal trips between each other, resulting in vehicle travel that is "captured" on-site. URBEMIS provides for adjustment for internal trips between residential and nonresidential land uses.

Pass-by Trips. URBEMIS provides the option of eliminating pass-by trips from emission calculations. Pass-by trips are existing trips that would be "captured" by a project's proposed new use. Such trips may be deducted from the trips generated by that use.

Entrained Road Dust ($PM_{10}$)

In addition to tire wear and exhaust, mobile sources generate $PM_{10}$ when tires entrain fugitive dust on roadways. In particular, when a vehicle travels on paved and unpaved roads, the force of the rolling tires pulverizes the surface material, lifting and dropping fugitive dust which is entrained by strong air currents from the vehicle.

The District recommends quantification of entrained road dust only for travel on unpaved roads. URBEMIS2007 provides an option for calculating these emissions. Modeling of entrained road dust from indirect sources traveling on unpaved roads is recommended for projects emitting greater than 82 lbs/day, and should be done with a line source model that estimates concentrations at existing or reasonably foreseeable receptors along the roadway. The preferred models for estimating roadside concentrations include ARB's CALINE4, or EPA's Fugitive Dust Model, CAL3QHC, or CAL3QHCR models. If modeling concentrations near an intersection, CAL3QHC or CAL3QHCR are the recommended models. The District can be contacted for more information on a protocol.

Heavy Duty Mobile Sources

Industrial land uses (e.g., mining operations, quarries) may use heavy-duty trucks and mobile sources during normal operations that are not considered indirect sources. VOC and $NO_x$

emissions associated with gasoline and diesel-powered heavy-duty mobile construction equipment can be quantified based on the pounds per horse power per hour emission factors in Tables 7-1 and 7-2. Additional factors such as number of vehicles, hours of daily operation, and duration of use should be determined or assumed to estimate total emissions from these mobile sources.

**TABLE 7-1**

## EMISSION FACTORS FOR HEAVY-DUTY DIESEL-POWERED EQUIPMENT

Emission Factor - Pounds/HP-Hr

| HP | Model Year | VOC | CO | NOx | PM |
|---|---|---|---|---|---|
| 51-120 | 1987 or older | 0.00317 | 0.01058 | 0.02866 | 0.00185 |
| | 1988-1997 | 0.00218 | 0.00769 | 0.01929 | 0.00152 |
| | 1998-2003 | 0.00218 | 0.00769 | 0.01521 | 0.00152 |
| | 2004 | 0.00101 | 0.00712 | 0.01243 | 0.00086 |
| | 2005 | 0.00062 | 0.00692 | 0.01151 | 0.00064 |
| 121-175 | 1969 or older | 0.00291 | 0.00970 | 0.03086 | 0.00170 |
| | 1970-1971 | 0.00243 | 0.00970 | 0.02866 | 0.00146 |
| | 1972-1979 | 0.00220 | 0.00970 | 0.02646 | 0.00121 |
| | 1980-1984 | 0.00207 | 0.00948 | 0.02425 | 0.00121 |
| | 1985-1987 | 0.00194 | 0.00926 | 0.02425 | 0.00121 |
| | 1988-1996 | 0.00150 | 0.00595 | 0.01801 | 0.00084 |
| | 1969 or older | 0.00291 | 0.00970 | 0.03086 | 0.00170 |
| 121-175 | 1997-2002 | 0.00150 | 0.00595 | 0.01521 | 0.00084 |
| | 2003 | 0.00073 | 0.00595 | 0.01160 | 0.00053 |
| | 2004 | 0.00049 | 0.00595 | 0.01041 | 0.00042 |
| | 2005 | 0.00035 | 0.00595 | 0.00979 | 0.00035 |
| 176-250 | 1969 or older | 0.00291 | 0.00970 | 0.03086 | 0.00170 |
| | 1970-1971 | 0.00243 | 0.00970 | 0.02866 | 0.00146 |
| | 1972-1979 | 0.00220 | 0.00970 | 0.02646 | 0.00121 |
| | 1980-1984 | 0.00207 | 0.00948 | 0.02425 | 0.00121 |
| | 1985-1987 | 0.00194 | 0.00926 | 0.02425 | 0.00121 |
| | 1988-1995 | 0.00150 | 0.00595 | 0.01801 | 0.00084 |
| | 1996-2002 | 0.00071 | 0.00203 | 0.01378 | 0.00033 |
| | 2003 | 0.00042 | 0.00203 | 0.01102 | 0.00026 |
| | 2004 | 0.00031 | 0.00203 | 0.01010 | 0.00024 |
| | 2005 | 0.00026 | 0.00203 | 0.00966 | 0.00024 |
| 251-500 | 1969 or older | 0.00278 | 0.00926 | 0.03086 | 0.00163 |
| | 1970-1971 | 0.00231 | 0.00926 | 0.02866 | 0.00139 |
| | 1972-1979 | 0.00209 | 0.00926 | 0.02646 | 0.00117 |
| | 1980-1984 | 0.00198 | 0.00926 | 0.02425 | 0.00117 |
| | 1985-1987 | 0.00185 | 0.00904 | 0.02425 | 0.00117 |
| | 1988-1995 | 0.00150 | 0.00595 | 0.01801 | 0.00084 |

Table 7-1 (Continued on Next Page)

**TABLE 7-1 - Continued**

## EMISSION FACTORS FOR HEAVY-DUTY DIESEL-POWERED EQUIPMENT

Emission Factor - Pounds/HP-Hr

| HP | Model Year | VOC | CO | NOx | PM |
|---|---|---|---|---|---|
| | 1996-2000 | 0.00071 | 0.00203 | 0.01378 | 0.00033 |
| | 2001 | 0.00042 | 0.00203 | 0.01091 | 0.00026 |
| | 2002 | 0.00031 | 0.00203 | 0.00994 | 0.00024 |
| | 2003-2004 | 0.00026 | 0.00203 | 0.00946 | 0.00024 |
| | 2005 | 0.00022 | 0.00203 | 0.00882 | 0.00024 |
| | 2001 | 0.00042 | 0.00203 | 0.01091 | 0.00026 |
| | 2002 | 0.00031 | 0.00203 | 0.00994 | 0.00024 |
| 501-750 | 1969 or older | 0.00278 | 0.00926 | 0.03086 | 0.00163 |
| | 1970-1971 | 0.00231 | 0.00926 | 0.02866 | 0.00139 |
| | 1972-1979 | 0.00209 | 0.00926 | 0.02646 | 0.00117 |
| | 1980-1984 | 0.00198 | 0.00926 | 0.02425 | 0.00117 |
| | 1985-1987 | 0.00185 | 0.00904 | 0.02425 | 0.00117 |
| | 1988-1995 | 0.00150 | 0.00595 | 0.01801 | 0.00084 |
| | 1996-2001 | 0.00071 | 0.00203 | 0.01378 | 0.00033 |
| 501-750 | 2002 | 0.00042 | 0.00203 | 0.01091 | 0.00026 |
| | 2003 | 0.00031 | 0.00203 | 0.00994 | 0.00024 |
| | 2004-2005 | 0.00026 | 0.00203 | 0.00946 | 0.00024 |
| 750 | 1969 or older | 0.00278 | 0.00926 | 0.03086 | 0.00163 |
| | 1970-1971 | 0.00231 | 0.00926 | 0.02866 | 0.00139 |
| | 1972-1979 | 0.00209 | 0.00926 | 0.02646 | 0.00117 |
| | 1980-1984 | 0.00198 | 0.00926 | 0.02425 | 0.00117 |
| | 1985-1987 | 0.00185 | 0.00904 | 0.02425 | 0.00117 |
| | 1988-1999 | 0.00150 | 0.00595 | 0.01801 | 0.00084 |
| | 2000-2005 | 0.00071 | 0.00203 | 0.01378 | 0.00033 |

NOTES: Values converted from g/Bhp-hr. * 0.00220462= lbs./ bhp-hr. Source: ARB, *Methods to find the cost effectiveness of Funding Air Quality Projects*, 2004 Ed., Table 6 .Operating hours for off road agricultural and construction equipment vary widely, and load factors can vary between 0.43 and 0.78. See ARB's 2003 Carl Moyer guidelines for load factors by use. Source: Air Resources Board Emission Inventory for Off-Road Large Compression-Ignited Engines, using the Off-Road Emissions Model of Mail Out MSC #99-32.

EXAMPLE: Daily $NO_x$ emissions from a 1987 Model Year 150 HP diesel engine operated at a load factor of .65 for 4 hours per day:

Daily NOx = 4 Hrs/ Day x 150 HP x 0.65 load factor x 0.02425 Lbs./ Hp-hr = 9.46 Lbs / Day

**Please contact the district to discuss the most current emission factors developed by ARB (EMFAC2007).**

**TABLE 7-2**

## EMISSION FACTORS FOR HEAVY-DUTY GASOLINE-POWERED EQUIPMENT

| Engine Category - Manufacture Date, Size OR Use | Emission Factor - Pounds per HP-Hour | | | | |
|---|---|---|---|---|---|
| | VOC | CO | $NO_x$ | $PM_{10}$ | VOC |
| All Engines Manufactured Prior To 1996 (1) | 0.015 | 0.438 | 0.011 | 0.0007 | 0.015 |
| All Engines Manufactured Since 1996 (2) | 0.011 | 0.635 | 0.009 | 0.0007 | 0.011 |

Notes: (1) Source AP-42, Table 3.3-1 (10/92)
(2) California Air Resource Board "Regulation to Establish Portable Equipment Registration", Table 2 (6/98)

## 7.5 ESTIMATING LOCALIZED CARBON MONOXIDE IMPACTS

Congested intersections and roadways may result in localized, high concentrations of carbon monoxide (CO), commonly known as CO hotspots that can exceed State and federal AAQS. If the screening thresholds in Chapter 5 are met under project or cumulative conditions, further analysis should be undertaken. The predicted 1-hour and 8-hour concentrations should be compared to the AAQS to determine if the project's impacts would be significant.

An air quality analysis should assess CO concentrations at existing or reasonably foreseeable sensitive receptors for the following scenarios:

•existing conditions, and
•existing conditions with the project.

In addition, a cumulative analysis should analyze conditions upon build out of proposed and pending projects that are reasonably foreseeable, including projects outside of the control of the agency. If general plan forecasts are used, the cumulative analysis should focus on the build out year of the general plan. Thus, a cumulative analysis may be based on a build out date that is after build out of the project. The analysis should address future traffic conditions that account for ambient growth, specific cumulative development projects, and the proposed project to determine if cumulative development would violate or substantially contribute to violations of the AAQS.

If a project would generate diverted linked trips, the impact on carbon monoxide levels near roadways and intersections where traffic is diverted should be included. However, pass-by trips that do not divert onto new roadways can be discounted from a CO analysis.

## CO Hotspot Screening Procedure

A screening analysis can be conducted to confirm whether the project could significantly affect CO levels prior to undertaking more extensive dispersion modeling. This is useful for lead agencies when assessing air quality impacts at the Initial Study stage.
A CO screening model should be used for those projects that trigger the level of significance for CO (Table 5-3, page 5-5). The District recommends using the screening procedure developed by Caltrans. The screening procedure is contain in Caltrans' Transportation Project-Level Carbon Monoxide Protocol (CO Protocol), which can be downloaded from the Caltrans Environmental Division's webpage, at http://www.dot.ca.gov/hq/env/air/index.htm.

If the screening results in CO concentrations fall below standards, no further CO analysis is required. If the results predict concentrations above standards, lead agencies may either: 1) make a finding of a significant impact and identify mitigation measures, or 2) conduct a more detailed analysis using CALINE4. If the results of the CALINE4 analysis indicate significant impact(s), mitigation measure(s) should be quantified by estimating the effects of the measure(s) on traffic volumes and/or speeds, and CO concentrations.

## Using the Screening Procedure

The screening analysis was designed to estimate 1-hour and 8-hour CO concentrations for projects involving signalized intersections. The methodology estimates 1-hour CO levels, which then can be converted to estimates of 8-hour CO levels. The purpose of the screening procedure is to obtain conservative estimates of CO concentrations without having to run CALINE 4. Step by step instructions on how to use the screening procedure are given in Appendix A, "Screening Procedure," of the Caltrans CO Protocol.

The screening procedure is not applicable to all projects, i.e., vehicles in cold start mode greater than 50%, percentage of heavy-duty gasoline trucks, greater than 1.2%, traffic volumes greater than 1,000 vehicles/hour/lane, and January mean minimum temperatures less than $35^{\circ}$F.

The screening analysis requires the user to input certain information, such as intersection type, traffic volume, analysis year, background CO concentration, and average cruise speed. All of the needed information is outlined in the screening protocol. Most of the information is project-specific and must be supplied. The District recommends using the highest CO concentration reported over the last three years for the Salinas air monitoring station for background CO concentrations. District staff can provide the current information to be used.

## Using the Detailed Procedure for Carbon Monoxide Analysis

If the screening procedure is not applicable for the subject project or if the screening procedures indicates a potential CO hotspot, the CALINE4 model should be run as outlined in Appendix B, "Detailed Analysis" of the Caltrans CO Protocol. CALINE4 also requires the user to supply certain input parameters. The inputs should be as recommended in the CO Protocol, except for background data pertinent to the NCCAB. If inputs other than those recommended in the

Caltrans CO Protocol or these Guidelines are used, they should be justified and documented to the satisfaction of the lead agency and included in the environmental document.

## 7.6 ASSESSING CUMULATIVE IMPACT, CONSISTENCY, AND CONFORMITY

A consistency analysis and determination serve as the project's analysis of cumulative impacts on regional air quality, i.e., ozone levels. Project emissions which are not consistent with the AQMP are not accommodated in the AQMP and will have a significant cumulative impact unless offset. Analyses are performed by AMBAG for population-related projects and the District for all others. The formal determination of consistency should be included in the Negative Declaration of Draft EIR. Assessing the cumulative impact of a project on localized pollutants $PM_{10}$ and CO concentrations is discussed in Sections 7.3 and 7.5, respectively.

As of June 2005, the NCCAB met all federal air quality standards. As a result, it is no longer subject to federal conformity requirements. If air quality worsens in the future and the NCCAB no longer meets federal standards, it would again become subject to conformity. For transportation or general projects that involve federal funding, permits, or approval, a draft determination of project conformity should be included in the Draft EIR/EIS. A final conformity determination should be included in the Final EIR/EIS.

## 7.7 PROJECT ALTERNATIVES

An analysis of alternatives should ascertain if any significant impacts to air quality associated with the proposed project would be eliminated or reduced below significance, even if an alternative would impede the attainment of the project objectives or be more costly. Conversely, if an alternative creates a new significant impact, the impact must be addressed, though in less detail than the project analysis. If a quantitative analysis for a particular project impact was performed, a quantitative analysis should be done for each alternative (e.g., if CO modeling identifies significant impacts from the proposed project, alternatives should be modeled to determine if impacts are reduced below significance).

## 7.8 PREPARATION OF PROGRAM EIRS

CEQA and the CEQA Guidelines identify several types of EIRs, each of which require a different level of analysis. For example, Program EIRs generally apply to multiple projects, phased projects, and regulatory programs. The air quality analysis for a Program EIR would be less detailed than a project EIR because the effects could not be predicted with the same level of certainty and detail. However, there is generally enough data available to quantify air quality impacts.

Program EIRs are prepared for projects that involve the implementation of a series of actions that can be characterized as one large project, such as multiple and phased projects, general plans, specific plans, and zoning ordinances. A Program EIR characterizes the overall program by analyzing the cumulative effects of the elements that comprise "the project."

### General Plans, Specific Plans, and Zoning Ordinances

The air quality analysis of an EIR (Program EIR or otherwise) for a general plan, specific plan, or zoning ordinance should defer any unknown impacts for subsequent EIRs or negative declarations. When comparing the project to an adopted plan or policy, the analysis should examine the existing physical conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced as well as potential future conditions discussed in the existing plan (CEQA Guidelines §15125(e)). The EIR should focus on the project's cumulative air quality impact on regional ozone and its localized impact on carbon monoxide levels. A project's cumulative impact should be analyzed by determining its consistency with the AQMP (Section 5.5). Its localized impact should be assessed by identifying whether build-out would create or substantially contribute to carbon monoxide "hotspots" where federal or state AAQS are exceeded (Section 5.4).

### Multiple and Phased Projects

A Program EIR is appropriate for phased projects or a series of individual projects that comprise a larger project with significant impacts. A Program EIR ensures consideration of the cumulative impacts of the entire project, as opposed to a case-by-case analysis. The air quality analysis should analyze the temporary impact of construction activities of each phase of the larger project. The EIR should also assess the ultimate long-term operations impact upon build-out of all elements of the project. In the event that some phases or elements of the project are not clearly defined, the Program EIR can assume a worst-case scenario for those elements or defer unknown impacts for subsequent EIRs or negative declarations.

## 7.9 PREPARATION OF MASTER EIRS

CEQA also authorizes the use of Master EIRs for general plans, specific plans, phased projects, regulation, redevelopment projects, or staged transportation projects. While the scope of a Master EIR's air quality analysis should be similar in most ways to that of a Program EIR, there are procedural requirements unique to a Master EIR. In particular, a Master EIR must, to the greatest extent possible, evaluate the cumulative impacts, growth inducing impacts, and irreversible significant effects of specific, subsequent projects on air quality. As such, an air quality analysis in a Master EIR must address the following subjects:

- Significant air quality effects of subsequent projects to be discussed within the scope of the Master EIR
- Potential air quality effects of subsequent projects for which sufficient information is lacking for full assessment
- Cumulative air quality impacts relating to subsequent projects
- Mitigation measures for subsequent projects
- Air quality analysis for each alternative to a subsequent project
- Irreversible changes to air quality relating to subsequent projects
- Secondary air quality impacts from growth inducing impacts from subsequent projects

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# 8.0 MITIGATION MEASURES

## 8.1 CRITERIA FOR MITIGATION MEASURES

An environmental impact report (EIR) or Mitigated Negative Declaration (MND) should identify each significant air quality impact and propose one or more feasible mitigation measures that could reasonably be expected to reduce impacts below significance and quantify the effectiveness of each measure.[1] A Mitigated Negative Declaration (MND) should identify measures included as part of the project to reduce impacts on air quality to a less than significant level. If a mitigation measure would create a new significant impact, its effect should be evaluated, though in less detail than the project analysis.

The analysis should distinguish between proposed measures and those which have been incorporated and addressed as part of the project. For example, bicycle facilities designed into a proposed office building should be analyzed in the discussion of project impacts. Conversely, an EIR that recommends adding shower facilities based on the project's impacts should address the benefits in the mitigation analysis.

The EIR should conclude whether the proposed mitigation measure(s) would reduce each significant impact to a less than significant level. If not, the project would have an unavoidable significant impact on air quality; the EIR should explain why other mitigation measures are deemed infeasible. In addition, if an alternative design could reduce impacts below significance, the document should address the implications of the significant impacts and why the lead agency chooses to accept them rather than require the environmentally superior alternative.

This chapter recommends feasible measures that can reasonably be expected to reduce air quality impacts from construction, stationary sources, indirect sources, localized carbon monoxide impacts, and cumulative impacts. Tables 8-2 through 8-6 summarize the estimated effectiveness of these measures. Emission reductions should be quantified based on the same assumptions used to forecast project emissions, e.g., maximum daily emissions should be mitigated by measures that achieve maximum daily emission reductions.

## 8.2 MITIGATING CONSTRUCTION EMISSIONS

### Inhalable Particulates

There are several feasible mitigation measures that address the many sources of $PM_{10}$ during the construction phase of a project (e.g., grading, wind erosion, entrained dust). Common measures

[1] NEPA does not require separate discussion of mitigation measures of growth inducing impacts. However, this discussion must be added before an EIS can be used as an EIR.

include watering, chemical stabilization, or reducing surface wind speeds with windbreaks. Table 8-2 summarizes feasible mitigation measures for $PM_{10}$, the source of emissions that would be affected, the effectiveness of the measure in mitigating emissions, and the source of assumptions.

The impact of a mitigation measure can be quantified by identifying the source of $PM_{10}$ that would be affected, estimating emissions from the source, and applying a mitigation effectiveness factor to those emissions. For example, watering active, unpaved construction areas with full coverage can reduce fugitive $PM_{10}$ from construction equipment and other mobile sources by 50%, reducing daily emissions from 70 lb/day/acre to 35 lb/day/acre.

When quantifying two or more mitigation measures, avoid double-counting of emission reductions, as the impact of two or more mitigation measures is not necessarily additive. In fact, multiple measures applied to the same source of $PM_{10}$ will not be additive. For example, installing wheel washers and paving roads may reduce on-road entrained $PM_{10}$ by 50% and 90%, respectively. However, the combined impact of both is not a 140% reduction in $PM_{10}$ (or 100%, for that matter). Instead, the impact of a second measure would be based on the amount of $PM_{10}$ that remains after implementing the first or primary mitigation measure.

Because construction-related emissions of $PM_{10}$ vary based on a number of factors (e.g., activity types, area of activity, silt content), the level of mitigation necessary to reduce impacts below significance will vary. In general, mitigation measures that address larger sources of $PM_{10}$ during construction (e.g., grading, excavation, entrained dust from unpaved roads) have the greatest potential to substantially reduce fugitive dust.

<u>Feasible Mitigation Measures</u>

- Water all active construction areas at least twice daily. Frequency should be
- based on the type of operation, soil, and wind exposure.
- Prohibit all grading activities during periods of high wind (over 15 mph).
- Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).
- Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut and fill operations and hydro seed area.
- Haul trucks shall maintain at least 2'0" of freeboard.
- Cover all trucks hauling dirt, sand, or loose materials.
- Plant tree windbreaks on the windward perimeter of construction projects if adjacent to open land.
- Plant vegetative ground cover in disturbed areas as soon as possible.
- Cover inactive storage piles.
- Install wheel washers at the entrance to construction sites for all exiting trucks.
- Pave all roads on construction sites.
- Sweep streets if visible soil material is carried out from the construction site.
- Post a publicly visible sign which specifies the telephone number and person to contact regarding dust complaints. This person shall respond to complaints and take corrective action within 48 hours. The phone number of the Monterey Bay

Unified Air Pollution Control District shall be visible to ensure compliance with Rule 402 (Nuisance).

- Limit the area under construction at any one time.

## 8.3 MITIGATING STATIONARY SOURCE EMISSIONS

Stationary sources that comply with District rules and regulations generally, but not conclusively, do not create a significant impact on air quality. However, if a project's total emissions (permitted and nonpermitted) are significant, stationary source emissions can be reduced by limiting activity (e.g., quantity, type of equipment, process throughput). In addition, mitigation measures can be applied to stationary sources that are unregulated by the District. Mitigation measures for such stationary sources can include Reasonably Available Control Technology (RACT) or Best Available Control Technology (BACT) that is above-and-beyond District rules and requirements. In addition, off-site mitigation measures can be used to reduce emissions of ozone precursors [i.e., volatile organic compounds (VOC) and oxides of nitrogen ($NO_x$)]. For example, a stationary source may mitigate its emissions by retrofitting off-site sources of VOC or $NO_x$.

### Feasible Mitigation Measures

- Limit the quantity of equipment.
- Limit the type of equipment.
- Limit the rate and quantity of fuel consumption and/or process throughput.
- Limit the number of hours of operation per day.
- Apply RACT or BACT to stationary sources unregulated by the District.
- Off-site mitigation

For specific control technologies, please refer to CAPCOA's BACT Clearinghouse, the South Coast Air Quality Management District's BACT Clearinghouse, or EPA's AP-42 Com-pilation of Air Pollutant Emission Factors (Volume I). These sources can be used to quantify the effectiveness of mitigation measures. The District can also be contacted for assistance.

### Odors

Odors from stationary sources can be mitigated by modifying processes that generate emissions associated with odors (e.g., sulfur compounds, methane). This can usually be accomplished through a process change or additional control equipment. If quantitative methods (e.g., American Society of Testing Materials Standard Method E679 or E1432) were used to predict odor impacts, a similar analysis should be done for the post-mitigation scenario to determine if impacts would be reduced below significance.

## 8.4 MITIGATING OFF-ROAD MOBILE SOURCE EMISSIONS

For some industrial facilities (e.g., quarries, landfills), emissions of VOC and $NO_x$ from heavy duty equipment can be mitigated through controls on equipment and activity. This includes

limits on the number of vehicles, type of fuel used, hours of daily operation, or duration of use. Table 8-3 summarizes recommended mitigation measures and identifies the estimated effectiveness of each measure, based on EPA emission factors.

The net impact of a mitigation measure can be quantified by multiplying an efficiency factor by the unmitigated emissions from the affected equipment.

Feasible Mitigation Measures

- Limit the pieces of equipment used at any one time.
- Minimize the use of diesel-powered equipment (i.e., wheeled tractor, wheeled loader, roller) by using gasoline-powered equipment to reduce $NO_x$ emissions.
- Limit the hours of operation for heavy-duty equipment.
- Undertake project during non-zone season (November 1 – April 30).
- Off-site mitigation

## 8.5 MITIGATING INDIRECT SOURCE EMISSIONS

Emissions from motor vehicles that travel to and from residential, commercial, institutional, and some industrial land uses (i.e., indirect sources) can generally be mitigated by reducing vehicle activity or using cleaner fuels. The mitigation measures in this section are intended to reduce emissions of VOC, $NO_x$, and CO.

Indirect source emissions can be reduced by implementing transportation demand management (TDM) measures that reduce vehicle travel. Some TDM measures shorten the length of a trip without eliminating it, resulting in fewer vehicle miles traveled (VMT). For example, a new telecommute center will often shorten, but not eliminate, a commute trip. This reduces running emissions, which make up about 44% of VOC emissions and 72% of $NO_x$ emissions from cars and small trucks. However, most of the following measures eliminate an entire vehicle trip and the emissions associated with starting and stopping a car (start-up and hot soak); thus, they are more effective in reducing emissions than those that only reduce running emissions. In addition, the following measures reduce vehicle congestion and idling, which can reduce carbon monoxide (CO) levels near roadways (Section 8.6).

### Commercial, Industrial, and Institutional Projects

Demand-based mitigation measures are often implemented at commercial, industrial, and institutional worksites where the travel patterns of employees on standard work schedules can be modified.[2] The following discussion focuses on feasible options for reducing commute travel by developing facility improvements that can be built into a new project. This is the preferred approach to mitigating commute-based emissions because the implementation of "hardware"

[2] While TDM measures can be used to reduce non-work-related travel (e.g., shopping trips, travel to sporting events), they are much more difficult to implement and rarely elicit substantial results. The District should be contacted regarding quantification of such mitigation measures.

improvements can be assured and monitored. In addition, employer-based measures (e.g., telecommuting) are identified. However, because requirements on future tenants may not be enforceable, these should only be used if implementation can be assured (e.g., single tenant that is building the project agrees to enforceable requirements).

Feasible Mitigation Measures

Facility Improvements

- Provide preferential carpool/vanpool parking spaces
- Implement a parking surcharge for single occupant vehicles
- Provide for shuttle/mini bus service
- Provide bicycle storage/parking facilities
- Provide shower/locker facilities
- Provide onsite child care centers
- Provide transit design features within the development
- Develop park-and-ride lots
- Off-site mitigation

Employer-Based Measures

- Employ a transportation/rideshare coordinator
- Implement a rideshare program
- Provide incentives to employees to rideshare or take public transportation
- Implement compressed work schedules
- Implement telecommuting program

Quantifying TDM Mitigation Measures

The impact of a TDM measure can be quantified by: 1) estimating the reduction in travel (i.e., vehicle trips and/ or VMT), and 2) converting it into equivalent emissions.

Estimating Reduction in Travel. Table 8-4 summarizes the potential reduction in commute travel (i.e., trips and/or miles traveled) to and from a project site after implementing a mitigation measure at that site. These conservative estimates were based on published case studies and literature; these site-specific default values do not reflect the impact of transit and trip reduction programs on regional, subregional, or even areawide travel characteristics.[3]

These estimates of travel reductions are conservative for several reasons. First, the effectiveness of demand-based measures is variable and highly site-specific, influenced by numerous off-site factors and local parameters (e.g., climate, terrain, accessibility of transit) that can not be fully

[3] JHK & Associates, Inc. Transportation-Related Land Use Strategies to Minimize Motor Vehicle Emissions (1995), prepared for the Air Resources Board, notes that "[i]t is difficult to quantify reductions in vehicle use and emissions from individual transportation-related land use strategies applied separately or on a site-specific basis, as opposed to community-wide."

captured in this simplified approach. Second, program design is also critical in the success of a site-specific TDM strategy, and the numerous parameters of designing a program can not be captured in this approach. Third, because these reductions in travel would be applied to trip generation rates, they are reductions above-and-beyond normal mode shares that are inherent to ITE rates. Thus, reductions in travel from each mitigation measure are above-and-beyond "average" participation rates for ridesharing, transit, bicycling, or walking. Finally, CEQA discourages undue speculation and reliance on mitigation measures of unknown efficacy in concluding that significant effects will be substantially lessened.

Thus, the mitigation estimates, which apply to generic programs in the absence of favorable external factors, should be used as defaults in lieu of site-specific information. Because many factors increase the efficacy of a mitigation measure, the District encourages air quality analyses to justify higher reductions by identifying favorable conditions. Similarly, packages of mitigation measures that may yield synergistic benefits should also be recognized.

A mitigation measure's impact in reducing commute vehicle trips can be estimated by using the following approach:

Commute Trips Reduced = Average Daily Commute Trips x Mitigation Effectiveness Factor

The number of average daily commute trips to and from a land use can be estimated in two ways: average daily trips (ADT) to and from a development can be multiplied by the percentage of trips that are made for commute purposes (see Table 8-1 for defaults), or the estimated number of employees can be multiplied by a per capita daily travel factor (e.g., 2 trips/employee/day). For example, 10 employees x 2 trips per day = 20 commute trips/day.

Similarly, a mitigation measure's impact in reducing commute VMT (without reducing vehicle trips) can be quantified using the following approach:

Commute VMT Reduced = Average Daily Commute VMT x Mitigation Effectiveness Factor

Example

Based on ITE rates, a 20,000 square foot government office building would generate 1,378 ADT (68.9 ADT per 1,000 sq. ft.). Based on Table 8-1, 10% of these trips (137 ADT) to and from the government office use are commute trips. Assume that bicycle storage and parking facilities would be developed in the proposed project. These facilities can reduce 2% of work trips from employees once the building is occupied (Table 8-4), or 2% of 138 ADT. Thus, implementing this mitigation measure could reduce 3 trips per day from the facility.

Commute Trips Reduced: 138 ADT x 2% = 2.8 ADT reduced

Converting Travel Reductions to Emission Reductions Using URBEMIS. URBEMIS can convert the mitigated number of vehicle trips into equivalent emissions by editing the original file for the unmitigated project and modifying the trip rate for the appropriate land use(s) using a

"dummy" trip rate that reflects the number of vehicle trips after mitigation.[4] The following instructions explain how to address non-residential projects:

1. After loading the URBEMIS file from the Main Menu, modify the description of the land use.

2. From the menu of land uses, edit the land use(s) affected by the mitigation measure(s) by entering a "dummy" value of 1 at the "Size" input.

3. Enter the number of vehicle trips after mitigation at the "Trips Per" input. This allows URBEMIS to calculate emissions based on an adjusted number of trips.

   Example: A 10,000 sq. ft. discount store would generate 900 ADT (employee and customer trips). If a mitigation measure would reduce ADT from 900 to 895, the following illustrates how the screen should look before and after (note that ADT for the "BEFORE" scenario is 10 x 90 ADT = 900 ADT):

| Unit Type | Size | Trips Per | %Work | Type |
|---|---|---|---|---|
| **BEFORE** | Discount Store | 10 | 90/ 1000 sq.ft. | 7.0 C |
| **AFTER** | Discount Store | 1 | 895/ 1000 sq.ft. | 7.0 C |

4. End modifications to the project description and return to the Main Menu.

5. Recalculate emissions. Note that the trip rate that was input in Step 3 is reflected in the estimate of "Total Trips."

[4] URBEMIS multiplies the trip rate by a project's size to calculate ADT. Multiplying a "dummy" trip rate (i.e., ADT) by a "dummy" project size (i.e., 1) achieves the same result.

**TABLE 8-1**
**[To be Updated in Next Update per URBEMIS 2007]**
**PERCENT WORK TRIPS BY LAND USE**

| Land Use | Percent Work Trips |
|---|---|
| General Light Industrial | 50% |
| General Heavy Industrial | 90% |
| Industrial Park | 41.5% |
| Manufacturing | 48% |
| Warehousing | 2% |
| Hotel | 5% |
| Motel | 5% |
| Resort Hotel | 5% |
| Racquet Club | 5% |
| Elementary School | 20% |
| High School | 10% |
| College | 5% |
| University | 5% |
| Church/Synagogue/Temple | 3% |
| Day Care Center | 5% |
| Library | |
| Hospital | 25% |
| General Office 10,000 - over 800,000 sq. ft. | % |
| Medical Office | 7% |
| Government Office | 10% |
| Office Park | 48% |
| Discount Store | |
| Shopping Center 10,000 - over 1,600,000 sq. ft. | 2% |
| Quality Restaurant | 8% |
| High Turnover Restaurant | 5% |
| Fast Food | 5% |
| Service Station | 2% |
| Supermarket | % |
| Convenience Store | 2% |
| Bank | 2% |

Sources: URBEMIS 2002

## Residential Projects

Mitigation measures implemented at residential projects can enhance the effectiveness of work-based TDM measures by addressing the "other" end of a commute trip. These measures can also reduce vehicle usage for non-work purposes (e.g., shopping, recreation), which represent 48% of trips made in the region.[5] As such, they represent a potentially significant source of travel reductions.

While many feasible mitigation measures could apply to residential projects, the District limits its guidance to two quantifiable, facility-based measures and off-site mitigation.. This is due to the lack of quantified research on facility-based measures in residential projects.

### Feasible Mitigation Measures

Provide bicycle paths within major subdivisions that link to an external network
Provide pedestrian facilities within major subdivisions
Off-site mitigation

### Quantifying TDM Mitigation Measures

While TDM mitigation measures for residential development can reduce travel of all types, their effectiveness is assumed to be minimal for two reasons. First, non-work travel behavior from the home is generally difficult to influence. Unlike commuting, non-work travel (e.g., shopping, personal) is usually non-recurrent, unscheduled, or impulsive. Second, while transportation facilities within a residential development may induce some shifts to alternative modes, travel behavior is equally, if not more, influenced by off-site facilities (e.g., workplace, shopping destination, areawide bicycle facilities).

Thus, an air quality analysis should use conservative assumptions. The values in Table 8-5 are based on the assumption that TDM measures minimally reduce travel from a residential project. These assumptions can be applied to all ADT from a residential project. If a mitigation measure is anticipated to be more effective, the assumptions should be justified.

## Other Indirect Source Measures

Indirect source emissions can be reduced by replacing vehicles that use gasoline or diesel fuel with cleaner burning alternative fuels such as methanol, compressed natural gas, and electricity. Emission reductions would be based on the extent to which clean-fuel vehicles replace conventional vehicles (i.e., number of vehicles, activity levels). Table 8-6 summarizes potential emission reductions by fuel type.

### Feasible Mitigation Measure

Utilize clean burning fuels in fleet vehicles

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[5] Three County Travel Model Documentation Report, Association of Monterey Bay Area Governments.

## 8.6 MITIGATING LOCALIZED CARBON MONOXIDE IMPACTS

Mitigating localized CO impacts on existing or reasonably foreseeable sensitive receptors can be accomplished by improving traffic circulation at intersections or roadway links impacted by the project. This can be done by: a) reducing travel to and from the project site, b) shifting travel away from peak periods, and c) increasing roadway capacity with traffic flow improvements. In many cases, these types of measures may already be required to mitigate traffic impacts and improve levels of service. This section describes how to determine if CO concentrations near roadways would be reduced below levels of significance.

### Transportation Demand Management (TDM)

The following TDM mitigation measures from Section 8.5 reduce traffic volumes on roadways that serve the project. Reducing congestion reduces vehicle idling, increases traffic speeds, and allows vehicles to operate more efficiently, reducing CO levels near roadways.

#### Feasible Mitigation Measures

- Provide preferential carpool/vanpool parking spaces
- Implement a parking surcharge for single occupant vehicles
- Provide for shuttle/mini bus service
- Provide bicycle storage/parking facilities
- Provide shower/locker facilities
- Provide onsite child care centers
- Provide transit design features within the development
- Develop park-and-ride lots
- Employ a transportation/rideshare coordinator
- Implement a rideshare program
- Provide incentives to employees to rideshare or take public transportation
- Implement compressed work schedules
- Implement telecommuting program

In addition, the following employer-based mitigation measure can reduce congestion by shifting travel demand out of peak commute periods. As with other employer-based measures, this should only be required when implementation from future tenant(s) is assured.

#### Feasible Mitigation Measure

- Implement flexible work schedules that do not reduce transit ridership

#### Quantifying TDM Mitigation Measures

The benefit of TDM measures on congestion can be quantified with the CALINE or CAL3QHC models. If peak hour traffic speed through an intersection or roadway would increase, the

appropriate running exhaust factor should be used. Any changes in traffic volume and/or speed should be based on output from a traffic model. After revising the assumption for either variable, CALINE or CAL3QHC should be run again to determine mitigated concentrations. The difference between the modeled concentrations with and without mitigation measures is the reduction in ambient CO levels attributable to mitigation.

### Transportation Systems Management (TSM)

TSM mitigation measures such as synchronized traffic lights and dedicated turn pockets can improve traffic circulation by increasing vehicle capacity on a roadway or at an intersection given the same volume of traffic. Such "hardware" improvements are often required to mitigate impacts of a project's traffic to acceptable levels of service. This can often reduce CO levels near affected roadways and eliminate potential exceedances of AAQS.

#### Quantifying TSM Mitigation Measures

The benefit of TSM improvements can be quantified with the CALINE or CAL3QHC model based on the improvement in circulation (e.g., traffic speed, increased capacity) on each link. Any changes in assumed speed should be based on traffic data from a model. If peak hour speeds through an intersection or roadway would increase, the appropriate running exhaust factor should be used. After revising the emission factor, CALINE or CAL3QHC should be run again to estimate mitigated concentrations. The difference between the modeled concentrations with and without mitigation is the reduction in ambient CO levels.

## 8.7 MITIGATING CUMULATIVE IMPACTS

Projects which are not consistent with the AQMP have not been accommodated in the AQMP and will have significant cumulative impacts on the attainment and maintenance of ozone standards. This section identifies feasible mitigation measures, by project type, that can substantially reduce cumulative impacts on regional ozone levels by ensuring consistency.

### Residential Projects

Because residential projects directly influence population growth, their cumulative impact can be mitigated by reducing the number of dwelling units and/or phasing the development so that the project's population is consistent with growth projections in future years. The following measures can reduce cumulative impacts below levels of significance if the reduction in population results in consistency with forecasts in the AQMP.

#### Feasible Mitigation Measures

- Phase development of residences so that population growth from the project is consistent with projections for forecast years in the AQMP.
- Ensure that the jurisdiction's population forecasts are updated in the next AQMP by working with AMBAG or the appropriate local agency.

- Reduce number of residences to ensure growth is consistent with the AQMP.[6]
- Implement sufficient transportation control measures to fully offset any increase in emissions related to future population in excess of AQMP forecasts.

Population Related Commercial, Industrial and Institutional Projects

Commercial, industrial or institutional projects are intended to meet the needs of a population forecasted in the AQMP. If a project is located in a county that already exceeds projected growth, its indirect emissions would also be inconsistent with the AQMP and cannot be mitigated by revising the project. Instead, the District recommends the following measure, which would mitigate long-term cumulative impacts on ozone levels below significance.

Feasible Mitigation Measure

Ensure that the jurisdiction's population forecasts are updated in the next AQMP by working with AMBAG or the appropriate local agency.

Non-Population Related Commercial, Industrial and Institutional Projects

Mitigating cumulative impacts from non-residential population related activities (e.g., hotels, motels) that are inconsistent with the AQMP should be discussed with the District.

Stationary and Area Source Emissions

Because stationary and area sources subject to District permit authority are consistent with the AQMP if they comply with District rules, mitigation measures are unnecessary provided the project complies with District rules and regulations. This determination only applies when all emissions from a stationary sources are regulated under by the permit.

Wastewater Treatment Projects

District Rule 216 requires that new or modified wastewater treatment facilities are consistent with the adopted AQMP. Therefore, mitigation measures are unnecessary provided the project complies with District Rule 216.

Transportation Projects

A transportation project that is inconsistent with the emissions budget in the State-mandated AQMP can be mitigated if net emissions are totally offset. The efficacy of a mitigation measure will vary and should be quantified based on improvements in circulation derived from a model (e.g., DTIM). An EIR or MND should conclude whether mitigation measures would reduce impacts below significance by eliminating net increases in emissions.

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[6] Per PRC §21085, this can only be implemented if the lead agency finds that there are no other feasible measures or alternatives that would provide comparable levels of mitigation.

Feasible Mitigation Measures

- Revise the scope of the project to fully offset any increase in emissions.
- Implement sufficient transportation control measures to fully offset any increase in emissions related to future population in excess of AQMP forecasts.

## 8.8 MITIGATION MONITORING AND REPORTING

State law requires a lead agency to adopt a mitigation monitoring plan to enforce the implementation of mitigation measures (PRC §21081.6). This must occur when the lead agency adopts CEQA findings in conjunction with approving a project with significant impacts for which an EIR or MND was prepared.[7].

The mitigation monitoring plan should include the following information:

Agency/entity responsible for implementing mitigation measure
Source of funding for mitigation measure (e.g., capital improvements)
Timeframe for implementing mitigation measure
Agency responsible for monitoring
Specific criteria for judging compliance
Enforcement mechanism (e.g., condition on tenant leases, property title)

Reporting mechanism

If a responsible or trustee agency calls for a mitigation measure, the lead agency can require it to submit a monitoring program for the proposed measure [PRC §21081.6(a)].

[7] The State's Office of Planning and Research finds that "it makes sense to design the program at the same time mitigation measures are being drafted and to circulate the draft program and the Draft EIR concurrently...Ideally, the program would be available along with the project environmental document" (Tracking CEQA Mitigation Measures Under AB3180. April 1989).

**TABLE 8-2**
**[To be Updated in Next Update per URBEMIS 2007]**

**MITIGATION MEASURES CONSTRUCTION EMISSIONS**
**Pollutant: $PM_{10}$** (Fugitive Dust)

| Mitigation Measure | Source Category | Effectiveness | Source |
|---|---|---|---|
| Water all active construction sites at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure. | Fugitive emissions from active, unpaved construction areas | 50% | U.S. EPA, "AP-42, Vol. I." Pg 11.2.4-1. |
| Prohibit all grading activities during periods of high wind (over 15 mph). | Grading emissions | Reduces potential for exceedance | SCAQMD, "SIP for $PM_{10}$ in the Coachella Valley" 1990. Pg 5-15 |
| Apply chemical soil stabilizers on inactive construc-tion areas (disturbed lands within construction projects that are unused for at least four consecutive days). | Wind erosion from inactive areas | Up to 80% | U.S. EPA, "AP-42, Vol. I." Pg. 11.2.4-1. |
| Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut and fill operations and hydro seed area. | Wind erosion from inactive areas | Up to 80% | U.S. EPA, "AP-42, Vol. I." Pg. 11.2.4-1. 90% |
| Haul trucks shall maintain at least 2'0" of freeboard. | Spills from haul trucks | 90% | MBUAPCD |
| Cover all trucks hauling dirt, sand, or loose materials. | | 90% | MBUAPCD |
| Plant tree windbreaks on the windward perimeter of construction projects if adjacent to open land. | Wind erosion from inactive areas | 4% (15% for mature trees) | SCAQMD, "SIP for $PM_{10}$ in the Coachella Valley" 1990. Pg 5-15 |
| Plant vegetative ground cover in disturbed areas as soon as possible. | Wind erosion from inactive areas | 5%-99% (based on planting plan) | SCAQMD, "SIP for $PM_{10}$ in the Coachella Valley" 1990. Pg 5-15 |
| Cover inactive storage piles. | Wind erosion from storage piles | Up to 90% | U.S. EPA "AP-42, Vol. I." Page 11.2.3-4) |

**TABLE 8-2 – Continued**

## MITIGATION MEASURES CONSTRUCTION EMISSIONS
**Pollutant: $PM_{10}$** (Fugitive Dust)

| Mitigation Measure | Source Category | Effectiveness | Source |
|---|---|---|---|
| Install wheel washers at the entrance to construction sites for all exiting trucks. | On-road entrained $PM_{10}$ | 50% | SCAQMD, "SIP for $PM_{10}$ in the Coachella Valley" 1990. Pg 4-11 |
| Pave all roads at construction sites. | On-road entrained $PM_{10}$ | 90% | SCAQMD, "SIP for $PM_{10}$ in the Coachella Valley" 1990. Pg 4-12 |
| Sweep streets if visible soil material is carried out from the construction site. | On-road entrained $PM_{10}$ | 34% | SCAQMD, "SIP for $PM_{10}$ in the Coachella Valley" 1990. Pg 5-18. |
| Post a publicly visible sign with the telephone number and person to contact regarding dust complaints. This person shall respond and take corrective action within 48 hours. The phone number of the MBUAPCD shall also be visible to ensure compliance with Rule 402 (Nuisance). | All emissions | Minimizes nuisance levels | MBUAPCD |
| Limit the area under construction at any one time. | Fugitive emissions from active, unpaved construction areas | 71 lb/acre/day | MBUAPCD based on U.S. EPA "AP-42," Vol. I |

Note: These effectiveness estimates are not additive within a source category (i.e., the benefit of 2 or more mitigation measures that address the same source of emissions would not be the sum of both measures).

**TABLE 8-3**

## MITIGATION MEASURES
## HEAVY DUTY EQUIPMENT
## Pollutant: $NO_x$ and PM10

| Mitigation Measure | NOx Effectiveness | PM Effectiveness | Source |
|---|---|---|---|
| Limit use of equipment | See Tables 7-3 and 7-4 for hourly emission saving by type | | |
| Replace diesel- powered equipment with gasoline-powered. | See U.S. EPA, "AP-42, Volume II." 1985. | | |
| Use PuriNOx emulsified diesel fuel in existing engines. | 14% reduction | 63% reduction | ARB interim verification of 1/31/01 |
| Modify engine with ARB verified retrofit | Up to 25 % reduction | Up to 85 % reduction | Table 8-4 |
| Repower with current standard diesel technology. | Up to 91% reduction | Up to 69% reduction | Table 7-3 |
| Repower with CNG/ LNG technology. | Up to 73% reduction if new engine cert. is 0.5 g. NOx, 23% if new engine cert. is 1.5 g. NOx. | 75-80% reduction | ARB, 2004 MV Fees guidelines, Table 5. |

Note: These effectiveness estimates are not additive within a source category (i.e., the benefit of 2 or more mitigation measures that address the same source of emissions would not be the sum of both measures).

**TABLE 8-4**

**MITIGATION MEASURES**
**RETROFITS AND/OR REPOWERS FOR HEAVY DUTY DIESEL ENGINES**
**Pollutant: $NO_x$ and $PM_{10}$**

| Applicable Engine Model Years; Manufacturers, or Use | Mitigation Measure[(1)] | Percent Reductions $NO_x$ | Percent Reductions $PM_{10}$ |
|---|---|---|---|
| 1993-2002; specific 4-stroke diesel engines– contact manufacturer | Retrofit with DPF from Lubrizol,Cleaire, Donaldson | 0-25% | 85% |
| 1993-2003; specific 4-stroke diesel engines without EGR– contact manufacturer | Retrofit with an ARB Level 3 verified DPF from ECS-Lubrizol | 0% | 85% |
| 1993-2002; Caterpillar with PSA bi-fuel system. | Retrofit with an ARB Level3 verified DPF from Clean Air Power | 0% | 85% |
| 1993-2002; specific 4-stroke diesel engines used as emergency generators --contact manufacturer | Retrofit with an ARB Level3 verified DPF retrofit from Clean Air systems | 0% | 85% |
| 1991-2002; many 4-stroke diesel engines over 150 Bhp – contact manufacturer | Retrofit with an ARB Level1 verified DOC from Cleaire, Donaldson or Lubrizol | 0-25% | 25% |
| Any. Older baseline engines result in greater reductions. | Repower with new current Tier 1 or 2 diesel engine | 25-69% | 25-86% |

**TABLE 8-5**
**MITIGATION MEASURES**
**COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL LAND USES**

| Mitigation Measure | Est. Reduction in Commute Activity | | Assumptions | Source |
|---|---|---|---|---|
| | Trips | VMT | | |
| Provide preferential carpool/vanpool parking spaces | 0.5% | Same | SOV rate ↓ 1%, of which 50% is net ↓ in trips (assumes shift to 2 person HOV), or 1% x 50% = 0.5% | Orski, Kenneth, Can Management of Transportation Demand Work?, 1990. |
| Implement a parking surcharge for single occupant vehicles | 2.0% | 1.5% | Surcharge of $3/day/employee SOV | Harvey, Greig, Pricing as a Transportation Control Measure, 1991 |
| Provide for shuttle/mini bus service | 2.0% | Same | None | Orski, Kenneth, Can Management of Transportation Demand Work?, 1990. |
| Provide bicycle storage/parking facilities and shower/locker facilities. | 1.0% | 0.5% | Mode share ↑ 1% (trips ↓ 1%). Avg. bicycle trip length 50% of avg. work trip length (5 vs. 10 miles), or 1% ↓ trips x 50% trip length = 0.5% ↓ VMT | U.S. EPA, TCM Information Documents, 1991 and Calif. Energy Commission, Energy-Aware Planning Guide, 1993. |
| Provide onsite child care centers | N/A | 2.0% | 7% use daycare, avg. work trip length 10 miles + 5 mile diverted linked trip to child care ctr. Reduces diverted linked trips (33% of VMT), or 7% x 33% ↓ VMT ≈ 2% ↓ VMT | Calif. Energy Commission, Energy-Aware Planning Guide, 1993 and Association for Commuter Transportation, Case Study Series, 1990. |
| Provide transit design features within the development | 0.05% | 0.1% | None | The Planning Center/JHK Assoc., TCM Effectiveness, 1992. |

**TABLE 8-5 -Continued**

## MITIGATION MEASURES
## COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL LAND USES

| Mitigation Measure | Est. Reduction in Commute Activity | | Assumptions | Source |
|---|---|---|---|---|
| | Trips | VMT | | |
| Develop park-and-ride lots | 10% per space occupied | 89% per space occupied | 4 mile avg. to lot, 11% of avg. home-work distance for park-n-riders (35 miles); 10% of VT to lot by bike/walk | Weant and Levinson, Parking, 1990. |
| Employ a transportation/ rideshare coordinator | 2.0% | Same | Exposes 25% to ridesharing; of 17% that take part, 50% ↓ net trips (assumes SOV shift to 2-person HOV), or 25% x 17% x 50% ↓ trips ≈ 2% ↓ trips and VMT | Multisystems, Paratransit Options, 1990. |
| Implement a rideshare program | .0% | Same | Availability of rideshare material and information 50% as effective as program with rideshare coordinator | See above |
| Provide incentives to employees to rideshare or take public transportation | 1.0% | Same | Subsidies/incentives ↓ SOV by 2%, with 50% ↓ net trips (assumes SOV shift to 2-person HOV), or 2% trips x 50% ↓ trips = 1% trips and VMT | Orski, Kenneth, Can Management of Transportation Demand Work?, 1990. |
| Implement compressed work schedules | 2.0% | Same | 9/80 schedule ↓ 10% of trips, with 20% employee participation per day (staggered days off), or 10% ↓ in trips x 20% = 2% trips and VMT | California Energy Commission, Energy-Aware Planning Guide, 1993. |
| Implement telecommuting program | 1.5% | 3% | 10% of employees ↓ 15% of trips, or 10% x 15% = 1.5% ↓ trips. Avg. trip length for telecommuter 20 miles (200% of 10 mile avg.), or 1.5% ↓ trips x 200% = 3% ↓ VMT | Cambridge Systematics, TCM Info. Documents, 1991 and Kitamura, et al, Telecommuting & Travel Demand 1990. |

**TABLE 8-6**

## MITIGATION MEASURES
## RESIDENTIAL LAND USES

| Mitigation Measure | Estimated Reduction in All Travel | | Source |
|---|---|---|---|
| | Trips | VMT | |
| Provide bicycle paths within major subdivisions that link to an external network | 0.1% | Negl. | MBUAPCD, 1991 AQMP Appendix A, TCM Measure 9 |
| Provide pedestrian facilities within major subdivisions | 0.1% | Negl | MBUAPCD, 1994. |

**TABLE 8-7**

## MITIGATION MEASURES
## ALTERNATIVE FUELS
## Pollutants: VOC, $NO_x$

| Mitigation Measure | Emission Reductions vs. Conventional Vehicle | | Assumptions | Source |
|---|---|---|---|---|
| | VOC | $NO_X$ | | |
| Utilize electric fleet vehicles | 100% | 100% | No on-road emissions | ARB MV Fees Table 7 for passenger cars |
| Utilize Ultra Low-Emission fleet vehicles | 82% | 64% | | ARB MV Fees Table 7 for passenger cars |
| Utilize methanol fleet vehicles | 71% | 64% | 85 (85% methanol, 15% gas) | ARB MV Fees Table 7 for passenger cars |
| Utilize liquid propane gas fleet vehicles | 71% | 64% | LPG vehicles are LEV | ARB MV Fees Table 7 for passenger cars |
| Utilize compressed natural gas fleet vehicles | | | | |

This table compares running exhaust emission factors for Light Duty Passenger Vehicles(up to 3,750 lbs). Factors do not apply to retrofitted vehicles; these efficiencies will decrease over time. Assumes that clean-fuel vehicles meet State Certification Standards for Low Emission Vehicles (Passenger Cars and Light-Duty Trucks under 3,750 lbs):

2000 baseline emissions for Light Duty Passenger Vehicles in grams/mile: VOC 0.28; $NO_x$ 0.7; Source: ARB MV Fees Table 7 for passenger cars.

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# Addendum to CEQA Guidelines
# Chapter 9.0, Toxics

Suspension of REL for Acrolein (1-hour Acute Standard)

The Air District Board suspended application of the reference exposure level (REL, i.e., threshold) for acute impacts of acrolein in June 2007. Due to the ongoing delay by the State Office of Environmental Health Hazard Assessment in adopting a revised REL, which now appears to be the fall of 2008 at the earliest, Air District suspension of the REL will continue through the end of 2008. As a result, District comment letters on projects subject to CEQA will not address the short-term impacts of acrolein from diesel equipment.

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# 9.0 TOXIC AIR CONTAMINANTS

## 9.1 OVERVIEW

Toxic air contaminants (TACs) are pollutants which may be expected to result in an increase in mortality or serious illness or which may pose a present or potential hazard to human health. Health effects include cancer, birth defects, neurological damage, damage to the body's natural defense system, and diseases which lead to death.

TACs can be separated into carcinogens and noncarcinogens based on the nature of the physiological degradation associated with exposure to the pollutant. For regulatory purposes, carcinogens are assumed to have no safe threshold below which health impacts will not occur. Noncarcinogenic TACs differ in that generally there is an assumed safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

## 9.2 REGULATION OF TOXIC AIR CONTAMINANTS

Toxic air contaminants are not considered criteria pollutants because the federal and California Clean Air Acts do not address them specifically through the setting of National or State Ambient Air Quality Standards[1]. Instead, EPA and ARB regulate hazardous air pollutants and toxic air pollutants, respectively, through statutes and regulations. In conjunction with District rules, they establish the regulatory framework for TACs.

### Federal

The EPA has established National Emission Standards for Hazardous Air Pollutants (NESHAPs) as required by the federal Clean Air Act Amendments. These include source-specific regulations that limit allowable emissions of such pollutants.

### State

The State regulates TACs primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588).

The Tanner Air Toxics Act institutes a formal procedure for designating substances as TACs. This includes research, public participation, and scientific peer review before ARB designates a substance as a TAC. The ARB then adopts an Airborne Toxics Control Measure (ATCM) for sources that emit designated TACs. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below the threshold. If there is no safe

[1] Permissible exposure levels (PELs) and reference exposure levels (RELs) associated with toxic air contaminants have been established in State law for some criteria pollutants (e.g., CO, $SO_2$, $NO_2$) and represent exposure levels that can cause adverse health effects.

threshold, the measure must incorporate Best Available Control Technology to minimize emissions. Air districts adopt and enforce the ATCM locally.

The Air Toxics Hot Spots Act requires that existing facilities that emit toxic substances:

- Prepare a toxic emissions inventory
- Prepare a risk assessment if emissions are significant
- Notify the public of significant risk levels
- Prepare and implement risk reduction measures

These requirements apply to facilities that: a) either manufacture, formulate, use, or release toxic substances, and emit more than 10 tons per year of criteria pollutants; b) fall into facility categories listed in Appendix E1 or E2 of the State's Emissions Inventory Criteria and Guidelines Regulation; or c) are listed on a District's toxic inventory list.

Regional

The District regulates TACs from new or modified sources under Rule 1000 and a Board approved protocol. They apply to any source which requires a permit to construct or operate pursuant to District Regulation II (Permits) and has the potential to emit carcinogenic or noncarcinogenic TACs. TACs are listed in Title I, California Administrative Code §5155 or are established by the Office of Environmental Health Hazards Assessment, CAPCOA Risk Assessment Guidelines, U.S. Environmental Protection Agency, or Rule 1000, §3.1.2. Rule 1000 also requires sources of carcinogenic TACs to install best control technology and reduce cancer risk to less than one incident per 100,000 population. Sources of noncarcinogenic TACS must apply reasonable control technology.

The District also implements Rule 1003, Air Toxic Emissions Inventory and Risk Assessments, which establishes and implements the Air Toxics Hot Spots Act. Unlike Rule 1000, Rule 1003 affects existing facilities and addresses several times as many TACs. It also requires that potential noncancer health effects from acute and chronic exposure to toxic emissions are compared RELs, another indicator of potential adverse health effects. Rule 1003 also requires that any increased cancer risk resulting from an existing facility's emissions is less than one incident per 100,000 population.

The District enforces the NESHAPs by reference in Rule 424 and addresses demolition and/or renovation activities which are subject to the asbestos NESHAP in Rule 306. In addition, if a new or modified source of hazardous emissions is within 1,000 feet from the outer boundary of a school site, the District is required to notify families of children enrolled and all persons within 1,000 feet of the source before approving any permits (Health & Safety Code §42301.6).

## 9.3 SITING CONSIDERATIONS

As discussed in Chapter 4, the siting of a project can largely influence whether it will result in significant air quality impacts. Proper siting of a new land use can minimize or eliminate potentially significant air quality impacts. A public agency should avoid siting a sensitive receptor near a source of toxic emissions and vice-versa. The District can be contacted regarding the potential incompatibility of land uses that involve TACs.

The District maintains an inventory of all facilities that emit significant amounts of TACs. If a project involves purchasing a school site or constructing a new elementary or secondary school, § 15186 (c) (2), CEQA Guidelines, requires a lead agency to consult with the air district to identify facilities that emit hazardous air pollutants within 1/4 mile of the site.

## 9.4 CRITERIA FOR SIGNIFICANCE

### Construction

Equipment or processes that emit non-carcinogenic TACs could result in significant impacts if emissions would exceed the threshold that is based on the best available data [i.e., acute (1-hour) REL, chronic (annual) REL]. The District should be contacted regarding the appropriate threshold. In addition, temporary emissions of a carcinogenic TAC that can result in a cancer risk greater than one incident per 100,000 population are considered significant.

### Operations

Operational equipment or processes would not result in significant air quality impacts if they would comply with Rule 1000. Equipment or processes not subject to Rule 1000 that emit non-carcinogenic TACs could result in significant impacts if emissions would exceed the threshold that is based on the best available data [i.e., acute (1-hour) REL, chronic (annual) REL, PEL/420]. The District should be contacted regarding the appropriate threshold. In addition, emissions of a carcinogenic TAC that can result in a cancer risk greater than one incident per 100,000 population are considered significant.

Likewise, a project which would be located adjacent to a source of TACs unregulated by Rule 1000 may also result in significant impacts to air quality and human health and require modeling. Common sources of TACs include diesel fueled internal combustion engines, parking areas for diesel fueled heavy duty trucks and buses, gasoline stations and dry cleaners.

## 9.5 ASSESSING IMPACTS OF TOXIC AIR CONTAMINANTS

The District should be contacted regarding specific requirements and calculation methodologies that apply to new or modified projects subject to Rule 1000. For sources not subject to Rule 1000, the District recommends that a protocol be submitted to the District for approval before an analysis is undertaken. Impact analyses for sources of TACs should include project level and cumulative impacts. See Appendix C, Diesel Health Risk Assessment Guidance for Analyzing the Health Risks near: Truck Stops; Warehouse/Distribution Centers; Transit Centers and Training Idling.

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# 10.0 DEMOLITION AND DECONSTRUCTION

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# 11.0 HEALTH RISK ASSESSMENTS AND LAND USE SITING

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# 12.0 CLIMATE CHANGE AND ASSESSMENT OF PROJECT IMPACTS FROM GREENHOUSE GASES

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