

4 OPERATIONAL CRITERIA AIR POLLUTANT AND PRECURSOR EMISSIONS

4.1 INTRODUCTION

Operational emissions typically represent the majority of a project's air quality impacts. After a project is built, operational emissions are anticipated to occur continuously throughout the project's lifetime. Due to their long-term nature, operational emissions will cumulatively contribute to the criteria air pollutant emissions inventory for Sacramento County. Operational activities also have the potential to expose sensitive receptors to substantial pollutant concentrations. Therefore, lead agencies shall assess emissions generated by project operations and determine if they could result in a significant impact to air quality. If operational emissions will result in a significant impact, lead agencies shall implement all feasible mitigation to reduce the impact.

Criteria air pollutants and precursors of primary concern from operational activities in Sacramento County include emissions of reactive organic gases (ROG or VOC) and oxides of nitrogen (NO_x), particulate matter with an aerodynamic resistance diameter of 10 microns or less (PM₁₀), and fine particulate matter with an aerodynamic resistance diameter of 2.5 microns or less (PM_{2.5}). Other pollutants such as carbon monoxide (CO), sulfur dioxide and lead are of less concern because operational activities are not likely to generate substantial quantities of these criteria air pollutants and the Sacramento Valley Air basin has been in attainment for these criteria air pollutants for multiple years.

In December 2018 the California Supreme Court issued a decision in the *Sierra Club v. County of Fresno* (2018) 6 Cal. 5th 502 case regarding the Friant Ranch project. The Court determined that air quality analysis include a reasonable effort to connect a project's emissions to likely health consequences or explain in meaningful detail why it is not feasible to do so. Lead agencies and project proponents should use the District's [Friant Guidance](#) to address the court's decision.

Land use development projects typically include the following sources of operational criteria air pollutant and precursor emissions:

- Motor vehicle trips generated by the particular land use (i.e., vehicles arriving and leaving the project site), including those by residents, shoppers, workers, and vendors;
- Fuel combustion from landscape maintenance equipment;
- Natural gas combustion emissions used for space heating, water heating, and cooking;
- Evaporative emissions of ROG associated with the use of consumer products;

- Evaporative emissions of ROG from application of architectural coatings as part of building maintenance;
- Although less common, hearth fuel combustion emissions from residential fireplaces and wood stoves. **IMPORTANT NOTE: CalEEMod currently assume no fireplaces or wood stoves are included in a new development project in Sacramento County;** and
- Some projects may also involve the operation of stationary equipment such as backup emergency generators with diesel engines and boilers.

Operational greenhouse gas (GHG) emissions and toxic air contaminants (TACs) are not discussed in this chapter. Refer to [Chapter 6 Greenhouse Gas Emissions](#) for further guidance regarding operational GHG emissions and [Chapter 5 Toxic Air Contaminant Emissions](#) for further guidance regarding operational TAC emissions.

4.2 ANALYSIS EXPECTATIONS

The District recommends that CEQA analyses addressing the potential impacts of operational-related emissions of criteria air pollutants and precursors include the following:

- The nature of operational activities including the emission source types and level of activity associated with each;
- The earliest year where operational emissions are anticipated to commence. If a project will be constructed in phases and portions will become operational after each phase, then lead agencies shall disclose the timing (i.e., year) of each phase;
- Discussion of whether the project's scope and size qualify it to be analyzed using the [District's Operational Criteria Air Pollutant Screening Levels tables](#) for ROG, NO_x, PM₁₀ and PM_{2.5};
- Discussion of best available control technologies (BACT) for stationary sources and [best management practices \(BMPs\) for land development projects](#) that apply;
- If the analysis cannot be completed using the District's Operational Criteria Air Pollutant Screening Levels table, then a quantification of the maximum daily mass emissions of ROG, NO_x, PM₁₀, and PM_{2.5} (and annual emissions of PM) that will be generated by the project's operational activities (expressed in pounds per day [lbs./day] and also tons per year for PM) is recommended. Disclose the input parameters, assumptions, and calculations used to estimate the emission levels. If a project will become operational in phases, lead agencies shall quantify the maximum daily operational mass emission levels after construction of each individual phase. (Quantification of mass emission levels of these pollutants is not necessary for projects that can be analyzed using the [District's Operational](#)

[Criteria Air Pollutant Screening Levels tables](#), as described in Section 4.3.1, Assessing Mass Emissions.);

- A discussion of whether the maximum daily operational emissions will exceed the [District's mass emission thresholds](#) for precursors pollutants ROG, NO_x, PM₁₀ and PM_{2.5}, and whether the annual operational emissions will exceed the District's mass emissions thresholds for PM₁₀ and PM_{2.5};
- A significance determination about the operational criteria air pollutant emissions, without mitigation;
- A discussion of feasible mitigation necessary to reduce impacts and whether the mitigation will be sufficient to reduce impacts to a less-than-significant level or if the impacts will remain significant and unavoidable; and
- An analysis of health effects that may result from project emissions, consistent with the District's [Friant Guidance](#).

4.3 METHODOLOGIES

Ground-level ozone is a pollutant of regional concern. Ozone is formed each day when emissions of ozone precursors, ROG and NO_x, react in the presence of sunlight. Because of the diurnal nature of ozone formation, the mass emissions of ozone precursors are analyzed on a daily basis. PM₁₀ and PM_{2.5} are a local and regional concern, therefore analyzed on both a daily basis and an annual basis. The evaluation of a project's daily mass emissions of ROG, NO_x, PM₁₀ and PM_{2.5} (and annual emissions of PM) pertains, in part, to the following questions regarding air quality from the Environmental Checklist Form ([Appendix G](#)) of the State CEQA Guidelines:

- III.a. Will the project conflict with or obstruct implementation of the applicable air quality plan?
- III.b. Will the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?
- III.c. Will the project expose sensitive receptors to substantial pollutant concentrations?

The District recommends that pollutants with mass emissions thresholds (ROG, NO_x, PM₁₀ and PM_{2.5}) be discussed separately from pollutants with concentration based thresholds. Methodologies for addressing mass emissions and concentration based emissions are discussed separately in greater detail in Section 4.3.1 and Section 4.3.2, respectively.

4.3.1 ASSESSING MASS EMISSIONS

LAND USE DEVELOPMENT PROJECTS

Screening

The District has developed screening levels to help lead agencies analyze operational ROG, NO_x, PM₁₀ and PM_{2.5} emissions from projects in Sacramento County. The operational screening levels shown in the [Operational Criteria Air Pollutant Screening Levels table](#) represent the size of development by land use type at which the [District's operational emissions thresholds of significance](#) for ROG, NO_x, PM₁₀, and PM_{2.5} will not be exceeded.

IMPORTANT NOTE: The screening levels for PM₁₀ and PM_{2.5} in the table assume the project includes [best management practices](#) (BMPs), which allows the project to apply the non-zero PM thresholds of significance. Therefore, emissions from the operation of projects below the screening levels presented in the table will have a less-than-significant impact on air quality.

Lead agencies are encouraged to use the Operational Criteria Air Pollutant Screening Levels table; however, the screening levels shall not be considered absolute and shall not be used to evaluate operational emissions from projects that have one or more of the following characteristics:

- The project will include wood stoves or wood-burning appliances;
- The project does not include BMPs for PM emissions;
- Project trip generation rates are expected to be greater than the default trip rates in CalEEMod.;
- The vehicle fleet mix for the project is expected to be substantially different from the average vehicle fleet mix for Sacramento County. For example, the fleet mix associated with an industrial land use project will likely consist of a higher portion of heavy-duty trucks;
- The project will include mixed-use development; or
- The project will include any industrial land use types (possibly including stationary sources of emissions).

CalEEMod

Emissions associated with the operation of land use development projects shall be estimated using the most recent version of [CalEEMod](#), in accordance with the [CalEEMod User's Guide](#) and District-specific [User Tips](#). The District generally recommends using the default values CalEEMod provides if detailed information about the project's parameters is not known at the time of analysis. Using the default values in the CalEEMod data fields typically results in a more conservative estimate of emissions.

Therefore, when possible, users shall obtain project-specific information (especially traffic studies or travel demand model runs) to estimate operational emissions more accurately.

STATIONARY-SOURCE FACILITIES

An emissions unit consists of a single emission source with an identified emission point, such as a stack, at a facility. Facilities can have multiple emission units located on-site and sometimes the facility as a whole is referred to as a “stationary source.” Stationary sources are typically associated with industrial processes. Examples include boilers, heaters, flares, cement plants, and other types of combustion equipment. The District is responsible for issuing permits to stationary-source facilities to reduce air pollution and to attain (or maintain) the [AAQS](#). Permitted stationary-source facilities are required to implement Best Available Control Technology (BACT), which may include the installation of emissions control equipment or implementation of administrative practices to reduce emissions. Stationary-source facilities may also be required to offset their emissions of criteria air pollutants to be permitted. This may entail shutting down or augmenting another stationary source at the same facility. Facilities also may purchase emission reduction credits to offset emissions.

A stationary source is considered to have a less than significant impact with respect to ozone precursors, PM₁₀ and PM_{2.5} when the source is:

- Subject to either District-level [[District Rule 202](#)] or the federal New Source Review program stationary permitting requirements and, when combined with any associated mobile and area source emissions, the daily emissions of ROG, NO_x, PM₁₀ and PM_{2.5} are below the District’s CEQA thresholds of significance for operational emissions; or
- Subject to permitting and emits levels of ROG, NO_x, PM₁₀ and PM_{2.5} that exceed the District CEQA thresholds of significance for operational emissions, but complies with the District’s BACT and emissions offset requirements, and reduces its combined stationary, mobile and area source emissions below the District CEQA thresholds of significance for operational emissions; or
- Exempt from the District permitting program, including the BACT and offset requirements, and its combined stationary, mobile and area source emissions are below or reduced to below the District CEQA thresholds of significance for operational emissions.

The District’s permitting requirements are applicable to criteria air pollutant emissions from stationary sources. Mobile and area sources of criteria air pollutant emissions from stationary sources must be analyzed and mitigated when necessary. Other potential air quality impacts of a stationary source will also need to be analyzed (e.g., air toxics, GHG and odors). Guidance for analyzing other types of potential impacts of operational emissions to air quality is provided in [Chapter 5](#) (Toxic Air Contaminants), [Chapter 6](#) (Greenhouse Gas Emissions), and [Chapter 7](#) (Odors).

It is important for lead agencies to recognize the District is a Responsible Agency under CEQA for projects that include emissions units requiring a District permit. A discussion of the District's role as a Responsible Agency is described in [Chapter 2](#) (Environmental Review and Thresholds of Significance). The District intends to utilize the environmental document prepared by the lead agency to support the issuance of District permits.

Estimating Stationary Source Emissions

Although CalEEMod is equipped to estimate emissions generated by limited types of stationary sources, the District recommends proponents contact staff prior to using CalEEMod for estimating stationary source emissions. If it is known at the time of environmental analysis that stationary sources will be included in the project, the District's Permitting staff should be consulted for guidance on estimating emissions. Emission factors that have a high level of confidence for industrial processes and equipment are EPA- or ARB-certified factors. If certified factors are not available, then the manufacturer's guaranteed emission factors should be used. If neither of those two sources of emission factors is available then the more general [EPA AP-42 emission factors](#) may be used. To the extent possible, the District recommends that the methodology used to estimate stationary-source emissions be consistent with calculations that will need to be performed to fulfill requirements of the permitting process, which will typically take place subsequent to the lead agency's CEQA review of the project.

DETERMINING LEVEL OF SIGNIFICANCE

Lead agencies shall estimate and disclose a project's operational emissions for both the summer and winter seasons, and annual. Lead agencies shall compare the project's maximum daily operational emissions of precursors ROG, NO_x, PM₁₀ and PM_{2.5} during both seasons and annual emissions of PM to the [District's thresholds of significance](#).

NOTE: Best available control technologies (for stationary sources) and best management practices for PM₁₀ and PM_{2.5} emissions must be included in the design of the project or as mitigation for the lead agency to apply the non-zero PM thresholds of significance. If the project's maximum daily emissions of ROG, NO_x, PM₁₀ or PM_{2.5} during either the summer or winter season or annual emissions of PM will exceed the District's thresholds of significance, then the project will have a significant air quality impact. By exceeding the District's mass emission thresholds for operational emissions of ROG, NO_x, PM₁₀ or PM_{2.5}, the project will be considered to conflict with or obstruct implementation of the District's air quality planning efforts. Furthermore, the project will result in a cumulatively considerable net increase in precursor and PM emissions, for which Sacramento County is nonattainment with respect to one or more of the state and national [AAQS](#). For projects that exceed the District's thresholds of significance, lead agencies shall implement all feasible mitigation to reduce ROG, NO_x and PM emissions.

If a proposed project involves the removal of existing emission sources on the same site as the proposed land use, the District recommends subtracting the existing emissions

levels from the emissions levels estimated for the new proposed land use. This “net” calculation is permissible only if the existing emission sources were operational at the time that the Notice of Preparation (NOP) for the CEQA project was circulated and will continue if the proposed redevelopment project is not approved. This “net” calculation is not permitted for emission sources that ceased to operate (or the land uses were vacated and/or demolished) prior to circulation of the NOP. Per State CEQA Guidelines section 15125, Environmental Setting, where existing conditions change or fluctuate over time, and where necessary to provide the most accurate picture practically possible of a project’s impacts, a lead agency may define existing conditions by referencing historic conditions, or conditions expected when the project becomes operational, or both, that are supported with substantial evidence.

4.3.2 ASSESSING LOCAL EMISSION CONCENTRATIONS

In general, land use development projects do not typically have the potential to result in localized concentrations of criteria air pollutants that expose sensitive receptors to substantial pollutant concentrations. This is because criteria air pollutants are predominantly generated in the form of mobile-source exhaust from vehicle trips associated with the land use development project. These vehicle trips occur throughout a paved network of roads, and, therefore, associated exhaust emissions of criteria air pollutants are not generated in a single location where high concentrations could be formed. However, there may be unique situations where a project with high levels of emissions may require concentration modeling to determine if the emissions will expose sensitive receptors to substantial pollutant concentrations. A substantial pollutant concentration occurs when the project emissions alone would cause an exceedance of the AAQS. Projects that exceed the AAQS are considered to have a significant impact.

DETERMINING LEVEL OF SIGNIFICANCE

If concentration modeling is undertaken and the results do not exceed the respective concentration-based threshold of significance, the project will have a less-than-significant air quality impact. If modeled concentrations will exceed an applicable threshold of significance, the proposed project will result in a significant impact, and all feasible mitigation measures will need to be implemented to reduce emissions. Potential mitigation measures for reducing pollutant specific impacts can be discussed with District staff.

4.3.3 CONFORMITY ANALYSES FOR LARGE INFRASTRUCTURE PROJECTS

Pursuant to the Federal Clean Air Act, transportation and non-transportation projects in Sacramento County that are supported by federal funding or approval and not subject to special exemptions will be required to comply with the Code of Federal Regulations on conformity ([40 CFR 93](#)). More specifically, as explained on the [EPA’s General Conformity web page](#) and [Federal Highway Administration’ Transportation Conformity web page](#), transportation infrastructure projects (e.g. lane widening, change to existing road configuration, new freeway exit) are subject to EPA’s Transportation Conformity

Regulations and will require a Transportation Conformity analysis; and non-transportation projects are subject to EPA's General Conformity Regulations (e.g. dams, levees and other water infrastructure) will require a General Conformity analysis. De Minimis emission levels that trigger a general conformity analysis can be found on the EPA's web page or 40 CFR 93 §153.

As part of the Transportation Conformity analysis for transportation infrastructure projects in Sacramento County, the California Department of Transportation (Caltrans) determines if an infrastructure project was included in the Regional Transportation Plan (RTP) or Regional Transportation Improvement Plan (RTIP), including the associated plan-level conformity analysis (as explained in [Caltrans guidance on conformity analysis](#) and [EPA guidance on conformity analysis](#)). Transportation infrastructure projects that have been accounted for in the RTP and/or RTIP that have approved conformity determinations from the U.S. Department of Transportation will meet the Transportation Conformity requirements and will not be considered to conflict with the [State Implementation Plan](#) (SIP). Similarly, non-transportation infrastructure projects are subject to the General Conformity Regulations.

4.4 MITIGATION

State CEQA Guidelines, Section 21002.1(b) requires lead agencies to mitigate or avoid significant environmental impacts associated with discretionary projects whenever it is feasible. Environmental documents for projects that have significant environmental impacts must identify feasible mitigation measures or alternatives to reduce the impacts. **NOTE:** Best available control technologies (for stationary sources) and best management practices for operational emissions should be disclosed in the environmental document although most are required by regulations. If after the identification of all feasible mitigation measures, a project is still deemed to have significant environmental impacts, the lead agency can approve a project, but must adopt a Statement of Overriding Consideration to explain why further mitigation measures are not feasible, and why approval of a project with significant unavoidable impacts is warranted. This section describes what the District considers to be feasible mitigation in light of existing regulations and research.

The District recognizes that the final determination of feasibility is made by the lead agency. In addition to CEQA requirements, mitigation of air quality impacts is needed to achieve the [AAQS](#). All incremental emission sources, including those associated with land use development projects must be mitigated to the greatest extent possible in order to achieve and maintain the health-based AAQS. Failure to attain commitments of the [State Implementation Plan \(SIP\)](#) and AAQS could result in federal sanctions placed on the region such as the loss of federal transportation funds for local roadway projects and implementation of more stringent emission offset requirements on new and modified stationary sources.

Recognizing that direct and indirect emissions from land development projects can significantly impact the region's air quality, the County of Sacramento and many incorporated cities in the county have adopted land use review requirements in their

respective General Plans. These land use review policies require that projects with significant operational air quality impacts from ozone precursors reduce ROG and NO_x emissions by a minimum of 15% by selecting and implementing mitigation measures. Many general plan policies are also supportive of reducing PM emissions in Sacramento County but have not prescribed a level of reduction. The role of the District is to assist the lead agencies in the creation, verification, and implementation of mitigation measures for ozone precursor and PM emissions.

Operational emission reduction measures must, by definition, reduce emissions beyond existing regulations. Regulatory programs are in place at the federal, state and District level to reduce air pollutant emissions from nearly all sources; however, they are not always sufficient to eliminate air quality impacts. For example, ARB's motor vehicle programs have dramatically reduced average tailpipe emissions from the vehicle fleet but motor vehicle emissions continue to be a predominant source of ozone precursor emissions in the Sacramento Valley Air Basin due to growth in the number of vehicles and in vehicle miles traveled.

If a project's long-term emissions will remain above the applicable threshold of significance after implementation of all feasible on-site mitigation measures, the lead agency can implement a District-approved off-site mitigation strategy to further reduce long-term air quality impacts below the applicable threshold of significance. Each off-site mitigation strategy shall be developed in consultation with, and approved by, the District and the lead agency. An off-site mitigation strategy may only be implemented after all other on-site feasible operational emission reduction measures have been implemented.

For every operational emission reduction measure included in a CEQA document the District recommends the text be as detailed as possible and clearly identify who is responsible for implementation, funding, enforcement, and required maintenance activities. The lead agency shall also explain why the measure will be effective in reducing emissions and why each measure is considered to be feasible. In the case that operational emission reduction measures relate directly or indirectly to policies in the local jurisdiction's General Plan, the District encourages the explanation of these relationships also be included.

Detailed guidance about reducing mass emissions of criteria air pollutant and precursors from land development projects, and criteria air pollutant and precursors from stationary-source emissions is provided in section 4.4.1 and 4.4.2, respectively.

4.4.1 REDUCING MASS EMISSIONS FROM LAND DEVELOPMENT PROJECTS

For land development projects that will exceed the District's operational emissions thresholds of significance for ROG, NO_x, or PM the District recommends the project proponent develop an Air Quality Mitigation Plan (AQMP) describing how the project will reduce operational emissions.

The District's [Guidance for Land Use Emission Reductions](#) (District Guidance) provides a description of the most current feasible mitigation measures to reduce operational

emissions. The District Guidance provides detailed information on how to utilize CalEEMod to select the most appropriate mitigation measures for the project and quantify emission reductions from the mitigation measures selected. If project specific traffic study or travel demand model information was used in the CalEEMod run, mitigation measures must be reviewed to ensure no emission reductions are double counted. All of the measures in the District Guidance include information about the targeted reductions that might be achieved by each measure. The measures and reductions have been substantiated through research identified by a comprehensive literature review. Lead agencies and project proponents can also research and develop additional measures, in consultation with the District, which have reductions that are both quantifiable and substantiated.

The District has determined that a minimum of 15% reduction in mobile source ozone precursor emissions from a project (that is consistent with the State Implementation Plan) can be achieved in a manner that is both administratively and economically feasible. Sacramento County and many incorporated cities have adopted language in their general plans requiring operationally significant projects for ozone precursors to achieve this level of mitigation. Projects with PM emissions that exceed the District's thresholds of significance must incorporate all feasible mitigation in the AQMP.

In order to satisfy Section 21002.1(b) of the State CEQA Guidelines, however, which requires lead agencies to mitigate or avoid significant environmental impacts associated with discretionary projects whenever it is feasible to do, the AQMP developed for a land development project will be required to reduce operational emissions by more than 15% if implementation of additional feasible mitigation is possible. Additionally, if the project is not consistent with the land use assumptions in the State Implementation Plan and Metropolitan Transportation Plan/Sustainable Communities Strategy, the District has determined that a 35% reduction is feasible.

To assist in documenting, quantifying, and monitoring the mitigation measures selected by the project proponent, the District has prescribed that the selected operational mitigation measures be explained in the context of an AQMP. The AQMP can be a standalone document or incorporated into the environmental document. During the environmental review process, and before certification of the CEQA environmental document by the lead agency, the District independently confirms the benefits of the selected measures in the AQMP with a verification letter. The AQMP (including the selected reduction measures) shall be referenced in the CEQA document as an air quality mitigation measure, appended to the document, and referenced as a condition of approval by the lead agency.

4.4.2 REDUCING EMISSIONS FROM STATIONARY SOURCES

Mitigation measures developed for reducing criteria air pollutant and precursor emissions from stationary-source facilities shall be developed on a case-by-case basis in coordination with the District's permitting staff. If best available control technologies (BACT) are required, they should be disclosed. Area- and mobile-source emissions shall be mitigated in the same ways as land development projects, as discussed in

Section 4.4.1. Additional offsets could be implemented, including but not limited to the purchase of emission reduction credits to ensure that a facility's criteria air pollutant emissions are reduced to a less-than-significant level.