

8 CUMULATIVE AIR QUALITY IMPACTS

8.1 INTRODUCTION

The Environmental Checklist Form ([Appendix G](#)) of the State CEQA Guidelines: includes the following checklist question:

- III.c. Would the project 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)?

As a result of past, present, and future development projects within the District's jurisdiction, and the current nonattainment status of the Sacramento Valley Air Basin (SVAB) for ozone and particulate matter, a cumulatively significant air quality impact exists.

By its very nature, air pollution is largely a cumulative impact. Ambient air quality standards are violated or approach nonattainment levels due to past development that has formed the urban fabric, and attainment of standards can be jeopardized by increasing emissions-generating activity in the region. The nonattainment status of regional pollutants is a result of past and present development within the SVAB. Thus, this regional impact is a cumulative impact, and projects would contribute to this impact on a cumulative basis. A project's emissions may be individually limited, but cumulatively considerable when taken in combination with past, present, and future development projects.

Consequently, the District's approach to [thresholds of significance](#) is relevant to whether a project's individual emissions would result in a cumulatively considerable adverse contribution to the SVAB's existing air quality conditions. If a project's emissions would be less than these levels, the project would not be expected to result in a cumulatively considerable contribution to the significant cumulative impact. However, as explained in detail in Section 8.3, an exceedance of the project-level thresholds does *not necessarily* constitute a significant cumulative impact.

As discussed in [Chapter 6 Greenhouse Gas Emissions](#), global climate change is also, by its very nature, a cumulative impact. Greenhouse gas (GHG) emissions contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change (e.g., sea level rise, impacts to water supply and water quality, public health impacts, impacts to ecosystems, impacts to agriculture, and other environmental impacts). No single project could generate enough GHG emissions to contribute noticeably to a change in the global average temperature. However, the combination of GHG emissions from past, present, and future projects contribute substantially to the phenomenon of global climate change and its associated environmental impacts. See Chapter 6 for detailed guidance about analyzing and mitigating GHG emissions.

Cumulative impacts refer to the incremental effect of several projects that may have an individually minor, but collectively significant, impact on air quality. [CEQA Guidelines Section 15355\(b\)](#) defines cumulative impact as:

- Two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts, and
- The change in the environment which results from the incremental impact of the project when added to other closely related past, present, or reasonably foreseeable future projects, and can result from individually minor, but collectively significant, projects taking place over a period of time.

Therefore, all new development in Sacramento County that results in an increase in air pollutant emissions above those assumed in regional air quality plans contributes to cumulative air quality impacts. The objective of this chapter is to provide guidance for identifying when an individual project's increase in air pollutant emissions is cumulatively considerable.

8.2 ANALYSIS EXPECTATIONS

The District recommends that analyses of cumulative impacts to air quality include the following:

- The geographic context within which cumulative air quality impacts would occur from construction-generated emissions and project operations (e.g., state, regional, local);
- The air quality conditions of the project area (e.g., nonattainment, attainment, unclassified);
- A list or discussion of past, present, and reasonably foreseeable future projects producing related or cumulative impacts that affect air quality, including those projects outside the jurisdiction or control of the lead agency;
- If the project itself would have significant or less-than-significant air quality impacts alone;
- Whether the project is consistent with demographic projections (e.g., population, employment, vehicle miles traveled) assumed in the applicable air quality attainment plan;
- A significance determination about the project's potential for cumulative impacts, without mitigation; and
- A discussion of feasible mitigation necessary to reduce impacts and whether the mitigation would be sufficient to reduce impacts to a level that is less than cumulatively considerable or if the impact would remain significant and unavoidable.

8.3 SIGNIFICANCE CRITERIA FOR CUMULATIVE IMPACTS

8.3.1 NONATTAINMENT POLLUTANTS

OZONE

Sacramento County is designated nonattainment for the State 1-hour and 8-hour and the federal 8-hour [AAQS](#) for ozone. The Sacramento Regional Ozone Attainment Plan ([OAP](#)) was developed by the air districts in the Sacramento Region to bring the region into attainment. The OAP is the regional component of the State Implementation Plan ([SIP](#)), which is the State's plan for attaining the federal 8-hour ozone [AAQS](#) as required by the Federal Clean Air Act (FCAA). The SIP accounts for projected increases in air pollutant emissions resulting from regional growth (including construction-generated emissions) anticipated according to local land use plans (e.g., general plans, regional transportation plans). Overall, the SIP must demonstrate that the increase in emissions will be more than offset through the implementation of control measures contained within the SIP to achieve at least three percent per year reduction in ozone precursor emissions.

Guidance for evaluating the cumulative contribution of ozone precursors from construction activity and operations is discussed separately below.

Construction-Generated Emissions of Ozone Precursors

The District recommends that lead agencies follow this framework when making a determination of cumulative air quality impacts for construction-generated ozone precursor emissions:

- 1) Project-level significance: Would the project result in emissions that exceed the applicable ozone precursor project-level [thresholds of significance](#)?
 - a. If no, the project would not be considered cumulatively considerable, and would be **less than significant** for this cumulative impact.
 - b. If yes, implement mitigation measures identified in [Chapter 3](#) for reducing construction-generated NO_x emissions, including payment into the District's Construction NO_x Mitigation Fee Program. If construction-generated NO_x emissions can be reduced or offset below 85 lb/day with mitigation, the project would not be considered cumulatively considerable, and would be **less than significant** for this cumulative impact. If construction-generated NO_x emissions cannot be mitigated or offset below 85 lb/day, the project would substantially contribute to this **significant** air quality impact.

Operational Emissions of Ozone Precursors

The District recommends that lead agencies follow this framework when making a determination of cumulative air quality impacts for operational emissions:

- 1) Project-level significance: Would the project result in emissions that exceed the applicable ozone precursor project-level thresholds?
 - a. If no, the project would not be considered cumulatively considerable, and would be **less than significant** for this cumulative impact.
 - b. If yes, proceed to step 2.
- 2) SIP consistency: Would the project involve a change in a land use designation established by the applicable local land use plan and/or general plan?
 - a. If no, the project would not be considered cumulatively considerable, and would be **less than significant** for this cumulative impact.
 - b. If yes, proceed to step 3.
- 3) Is the existing land use designation part of a general plan and regional transportation plan that was adopted prior to the time the most current ozone attainment plan emissions baseline assumptions were developed? Coordination with the District and SACOG (Sacramento Area Council of Governments) may be necessary to answer this question.
 - a. If no, the development of the project site is not accounted for in the emissions budget contained in the SIP and is thereby, inconsistent with the SIP. The project would be expected to result in a substantial contribution to this **significant** air quality impact.
 - b. If yes, proceed to step 4.
- 4) Would the project's total emissions and/or emissions per capita be less than or equal to those that would result from buildout of the existing land use designation?
 - a. If no, the project would substantially contribute to this significant air quality impact.
 - b. If yes, the project would not conflict with the emissions budget in the SIP. This impact would be considered less than cumulatively considerable, and **less than significant**.

If the lead agency finds that any of these conditions for cumulatively considerable impacts are met and cannot be mitigated below the significance level, then a determination of significant cumulative air quality impacts must be made.

PARTICULATE MATTER

Construction-Generated Emissions of Particulate Matter

The District has adopted thresholds of significance to maintain and/or attain the federal PM₁₀ and PM_{2.5} standards and to strive to meet the state standards. PM directly emitted from a project is generally regarded as having regional and localized impacts, however, PM₁₀ and

PM_{2.5} are the largest concern during construction (e.g., site preparation phase) of a proposed project.

The District recommends that lead agencies follow this framework when making a determination of cumulative air quality impacts from construction generated PM emissions:

- 1) Project-level significance: Would the project result in emissions that exceed the applicable PM₁₀ and PM_{2.5} project-level [thresholds of significance](#)?
 - a. If no, proceed to step 2.
 - b. If yes, proceed to step 3.
- 2) Would the project incorporate basic construction emissions control practices (see [Chapter 3](#))?
 - a. If no, the project would substantially contribute to this **significant** air quality impact. Implement basic construction emissions control practices to minimize cumulative impacts from fugitive dust.
 - b. If yes, the project would not be considered cumulatively considerable, and would be **less than significant** for this cumulative impact.
- 3) Would the project incorporate all feasible mitigation measures to reduce PM₁₀ and PM_{2.5} emissions below the thresholds of significance (including enhanced exhaust and fugitive dust control practices and mitigation fees)?
 - a. If no, the project would substantially contribute to this significant air quality impact. Implement all feasible mitigation measures and proceed to step 4.
 - b. If yes, the project would not be considered cumulatively considerable, and would be less than significant for this cumulative impact.
- 4) Would construction activity occur in close proximity to sensitive receptors?
 - a. If no, implement all feasible mitigation measures so the project would not be considered cumulatively considerable, and would be **less than significant** for this cumulative impact.
 - b. If yes, proceed to step 5.
- 5) If PM₁₀ and PM_{2.5} emissions from the project are greater than the thresholds of significance and the project is located in close proximity to sensitive receptors, would the project result in short-term construction-generated PM₁₀ or PM_{2.5} emissions levels that would exceed the AAQS ?
 - a. If no, the project would not be considered cumulatively considerable, and would be **less than significant** for this cumulative impact.

- b. If yes, the project would substantially contribute to this **significant** air quality impact.

Operational Emissions of Particulate Matter

Operational emissions of PM from a project are mainly from mobile sources, considering that wood smoke is controlled by District Rules 417 and 421. The District thresholds of significance for PM₁₀ and PM_{2.5} are in place to reduce the PM contribution from new development, including cumulative contributions.

The District recommends that lead agencies follow this framework when making a determination of cumulative air quality impacts for operational PM emissions:

- 1) Project-level significance: Would the project result in emissions that exceed the applicable PM project-level thresholds?
 - a. If no, the project would not be considered cumulatively considerable, and would be less than significant for this cumulative impact.
 - b. If yes, proceed to step 2.
- 2) PM attainment plan consistency: Would the project involve a change in a land use designation established by the applicable local land use plan and/or general plan?
 - a. If no, the project would not be considered cumulatively considerable, and would be less than significant for this cumulative impact.
 - b. If yes, proceed to step 3.
- 3) Is the existing land use designation part of a general plan and regional transportation plan that was adopted prior to the time the PM attainment plan emissions baseline assumptions were developed? Coordination with the District and SACOG (Sacramento Area Council of Governments) may be necessary to answer this question.
 - a. If no, the development of the project site is not accounted for in the emissions budget contained in the PM attainment plan and is thereby, inconsistent with the PM attainment plan. The project would be expected to result in a substantial contribution to this significant air quality impact.
 - b. If yes, proceed to step 4.
- 4) Would the project's total emissions and/or emissions per capita be less than or equal to those that would result from build out of the existing land use designation?
 - a. If no, the project would substantially contribute to this significant air quality impact.

- b. If yes, the project would not conflict with the emissions budget in the PM attainment plan. This impact would be considered less than cumulatively considerable, and less than significant.

If the lead agency finds that any of these conditions for cumulatively considerable impacts are met and cannot be mitigated below the significance level, then a determination of significant cumulative air quality impacts must be made.

8.3.2 ATTAINMENT POLLUTANTS

For pollutants for which the region is in attainment, such as sulfur dioxide (SO₂) and nitrogen dioxide (NO₂), there is no air quality plan that addresses growth in emissions of these pollutants. There is a maintenance plan for carbon monoxide (CO) that estimates growth in emissions but relies on continued mobile source control programs in which CARB is responsible (http://www.arb.ca.gov/planning/sip/co/final_2004_co_plan_update.pdf). Therefore, the following pollutant-specific criteria apply for determining the significance of cumulative impacts.

CARBON MONOXIDE

In general, CO is not considered to be a regionally significant pollutant that would have a cumulative impact. Because the region is in attainment for CO, a cumulatively significant impact does not already exist. The project emissions are not, in most cases, considered cumulatively significant if the project alone would not result in a localized exceedance of the [AAQS](#) because the project-level analysis considers the project-generated concentration of CO in combination with background CO concentrations. However, should the possibility exist for CO hotspots caused by the proposed project, in combination with other nearby projects, the District may require modeling of the combined CO emission concentrations. An example of where modeling would be required is when the proposed project and one or more other large projects change the traffic volume on the same roadway links or at the same intersections such that the screening criteria in Section 4.3.2 of [Chapter 4](#) would be exceeded. If modeling shows that CO concentrations resulting from both projects, in addition to background CO concentrations, result in a violation of an applicable [AAQS](#) for CO, further mitigation would need to be considered to allow an impact determination of less than cumulatively considerable and less than significant.

SULFUR DIOXIDE AND NITROGEN DIOXIDE

SO₂ and NO₂ can also contribute to area-wide PM emissions by transforming sulfate and nitrate into particulate aerosols. No readily available model exists for predicting the combined ambient effects of PM, SO₂, and NO₂ emissions. A project would not be considered cumulatively significant for SO₂ and NO₂ if the project is not significant for project-level emissions.

8.3.3 TOXIC AIR CONTAMINANTS

Emissions of TACs generally have localized effects. Because the District's [threshold of significance](#) for health risk exposure from TACs is based on the incremental increase in health risk from a project's TAC emissions the District considers implementation of the project-level mitigation requirements to be sufficient for a finding of less than cumulatively considerable for cumulative impacts of TACs. However, to make this finding, it is assumed that the project is in compliance with all applicable emission limits and mitigation measures required by the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (ARB), District rules and regulations, and local ordinances. Therefore, the project-level threshold of significance for evaluating TACs generated by a project should also be used to determine whether a project's TAC emissions are cumulatively considerable.

8.3.4 GREENHOUSE GAS EMISSIONS

As described above, GHG emissions, and their associated contribution to climate change, are inherently a cumulative impact issue. Therefore, project-level impacts of GHG emissions are treated as one-in-the-same as cumulative impacts. For instructions on analysis of project-level GHG impacts, see [Chapter 6](#). For instructions on analysis of general and area plan-level GHG impacts, see [Chapter 9](#).

8.4 ANALYSIS PROCEDURES

The lead agency or project applicant should refer to the analyses outlined in Chapters 3, 4, 5, 6, and 9 to determine if any of the significance criteria listed above would be exceeded. If necessary, mitigation measures are available in these chapters that reduce the impacts to below the significance level.

8.5 MITIGATION

This section describes what the District considers to be feasible mitigation in light of existing regulations and research. Our understanding about mitigation and its effectiveness changes over time, as more refined analyses and emission reduction technologies become available. Project planners and environmental document preparers are urged to contact the District as early as possible in the planning stages of a project to obtain information regarding the latest mitigation methods and measures. Air quality mitigation measures must, by definition, go beyond existing regulations.

Due to the nature of mitigating a project's contribution to cumulative impacts, the District recommends that lead agencies address cumulative air quality impacts as early as possible in the development review process.

Chapters 3 and 4 describe the District's recommended feasible mitigation strategies for project-level impacts that may also be used for cumulative air quality impacts for criteria air pollutants. These measures have been implemented by other projects within the Sacramento Region and are considered feasible for most projects. A project applicant may propose other measures that achieve equivalent emission reductions as those identified by the District.