

2.11 Air Quality

2.11.1 Regulatory Setting

The Federal Clean Air Act (FCAA), as amended, is the primary federal law that governs air quality while the California Clean Air Act (CCAA) is its companion state law. These laws, and related regulations by the United States Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (ARB), set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and state ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM)—which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM₁₀) and particles of 2.5 micrometers and smaller (PM_{2.5})—and sulfur dioxide (SO₂). In addition, national and state standards exist for lead (Pb), and state standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H₂S), and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety, and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under the National Environmental Policy Act (NEPA). In addition to this environmental analysis, a parallel “Conformity” requirement under the FCAA also applies.

The conformity requirement is based on FCAA Section 176(c), which prohibits the U.S. Department of Transportation (USDOT) and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to State Implementation Plan (SIP) for attaining the NAAQS. “Transportation Conformity” applies to highway and transit projects and takes place on two levels: the regional (or planning and programming) level and the project level. The proposed project must conform at both levels to be approved.

Conformity requirements apply only in nonattainment and “maintenance” (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. U.S. EPA regulations at 40 Code of Federal Regulations (CFR)

93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for NAAQS and do not apply at all for state standards regardless of the status of the area.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), and in some areas (although not in California), sulfur dioxide (SO₂). California has nonattainment or maintenance areas for all of these transportation-related “criteria pollutants” except SO₂, and also has a nonattainment area for lead (Pb); however, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on emission analysis of Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all transportation projects planned for a region over a period of at least 20 years (for the RTP) and 4 years (for the FTIP). RTP and FTIP conformity uses travel demand and emission models to determine whether or not the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the FCAA and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA) make the determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the FCAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept and scope and the “open-to-traffic” schedule of a proposed transportation project are the same as described in the RTP and FTIP, then the proposed project meets regional conformity requirements for purposes of project-level analysis.

Project-level conformity is achieved by demonstrating that the project comes from a conforming RTP and TIP; the project has a design concept and scope¹ that has not changed significantly from those in the RTP and TIP; project analyses have used the latest planning assumptions and EPA-approved emissions models; and in PM areas, the project complies with any control measures in the SIP. Furthermore, additional

¹ “Design concept” means the type of facility that is proposed, such as a freeway or arterial highway. “Design scope” refers to those aspects of the project that would clearly affect capacity and thus any regional emissions analysis, such as the number of lanes and the length of the project.

analyses (known as hot-spot analyses) may be required for projects located in CO and PM nonattainment or maintenance areas to examine localized air quality impacts.

2.11.2 Affected Environment

2.11.2.1 Topography, Meteorology, and Climate

The project is located in the County of Orange, an area within the South Coast Air Basin (Basin), which includes the County of Orange and the non-desert parts of the counties of Los Angeles, Riverside, and San Bernardino. Air quality regulation in the Basin is administered by the South Coast Air Quality Management District (SCAQMD).

Climate in the Basin is determined by its terrain and geographical location. The Basin is a coastal plain with connecting broad valleys and low hills. The Pacific Ocean forms the southwestern boundary of the Basin, and high mountains surround the rest of the Basin. The region lies in the semipermanent high-pressure zone of the eastern Pacific Ocean. The resulting climate is mild and tempered by cool ocean breezes. This climatological pattern is rarely interrupted. However, periods of extremely hot weather, winter storms, and Santa Ana wind conditions do occur in the Basin.

2.11.3 Environmental Consequences

2.11.3.1 Temporary Impacts

Alternative 1 (Build Alternative)

Temporary effects related to construction of the Build Alternative would occur as a result of the proposed improvements. The Build Alternative would include drainage improvements, shoulder widening (to include bicycle lanes), utility undergrounding, and the safety improvement (which was approved as part of the 2017 State Route 133 Safety Project Mitigated Negative Declaration/Categorical Exclusion that includes a lane extension along SR-133. Construction of the proposed project is anticipated to begin in 2021 and take approximately 26 months.

During construction, short-term degradation of air quality may occur due to the release of particulate emissions generated by excavation, filling, grading, hauling, and other activities related to construction. Emissions from construction equipment would include CO, NO_x, volatile organic compounds (VOCs), directly emitted particulate matter (PM_{2.5} and PM₁₀), and toxic air contaminants such as diesel exhaust particulate matter.

Site preparation and roadway construction would involve clearing, cut-and-fill activities, grading, and paving roadway surfaces. Construction-related effects on air

quality from most roadway projects would be greatest during the site preparation phase because most engine emissions are associated with the excavation, handling, and transport of soils to and from the site. If not properly controlled, these activities would temporarily generate PM₁₀, PM_{2.5}, CO, SO₂, NO_x, and VOCs. Sources of fugitive dust could include disturbed soils at the construction site and trucks carrying uncovered loads of soils.

In addition to dust-related PM₁₀ emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO₂, NO_x, VOCs, and some soot particulate (PM_{2.5} and PM₁₀) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site.

SO₂ is generated by oxidation during combustion of organic sulfur compounds contained in diesel fuel. Under California law and ARB regulations, off-road diesel fuel used in California must meet the same sulfur and other standards as on-road diesel fuel (not more than 15 ppm sulfur), so SO₂-related issues due to diesel exhaust will be minimal.

Some phases of construction, particularly asphalt paving, may result in short-term odors in the immediate area of each paving site(s). Such odors would quickly disperse to below detectable levels as distance from the site(s) increases.

Most of the construction impacts to air quality are short-term in duration and, therefore, will not result in long-term adverse conditions.

The proposed project would comply with SCAQMD Rule 403 requiring the implementation of best available dust control measures during active operations capable of generating fugitive dust. Project Feature PF-AQ-1 includes specific measures to reduce any air quality impacts resulting from construction activities. As a result, construction of the Build Alternative would not result in changes in regional air emissions or mobile source air toxics (MSATs).

PF-AQ-1 The construction contractor must comply with the California Department of Transportation's (Caltrans) Standard Specifications in Section 14.

- Section 14 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances.
- Section 14 is directed at controlling dust. If dust palliative materials other than water are to be used, material specifications are described in Section 18.

Water or dust palliative will be applied to the site and equipment as often as necessary to control fugitive dust emissions. Fugitive emissions generally must meet a “no visible dust” criterion either at the point of emissions or at the right-of-way line, depending on local regulations.

Soil binder will be spread on any unpaved roads used for construction purposes, and on all project construction parking areas.

Trucks will be washed as they leave the right-of-way as necessary to control fugitive dust emissions.

Construction equipment and vehicles will be properly tuned and maintained. All construction equipment will use low sulfur fuel as required by California Code of Regulations Title 17, Section 93114.

A dust control plan will be developed documenting sprinkling, temporary paving, speed limits, and timely revegetation of disturbed slopes as needed to minimize construction impacts to existing communities.

Equipment and materials storage sites will be located as far away from residential and park uses as practicable. Construction areas will be kept clean and orderly.

Environmentally Sensitive Areas (ESAs) or their equivalent will be established near sensitive air receptors. Within these areas, construction activities involving the extended idling of

diesel equipment or vehicles will be prohibited, to the extent feasible.

Track-out reduction measures, such as gravel pads at project access points, to minimize dust and mud deposits on roads affected by construction traffic, will be used.

All transported loads of soils and wet materials will be covered before transport, or adequate freeboard (space from the top of the material to the top of the truck) will be provided to minimize emission of dust (particulate matter) during transportation.

Dust and mud that are deposited on paved, public roads due to construction activity and traffic will be promptly and regularly removed to decrease particulate matter.

To the extent feasible, construction traffic will be scheduled and routed to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.

Mulch will be installed or vegetation planted as soon as practical after grading to reduce windblown particulate in the area. (Be aware that certain methods of mulch placement, such as straw blowing, may themselves cause dust and visible emission issues and may need to use controls such as dampened straw.)

To determine project construction emissions, the Sacramento Metropolitan Air Quality Management District's Roadway Construction Emission Model (RoadMod) was used. The maximum amount of construction-related emissions during a peak construction day is presented in Table 2.11.1. The PM₁₀ and PM_{2.5} emissions assume a 50 percent control of fugitive dust as a result of watering and associated dust-control measures. These emissions are based on the best information available at the time of calculations. The proposed project is anticipated to take approximately 26 months to construct beginning in 2021.

Table 2.11.1 Maximum Build Alternative Construction Emissions

Project Phases	ROG	CO	NO _x	Total PM ₁₀	Total PM _{2.5}
Grubbing/Land Clearing (lbs/day)	1.23	10.82	12.44	5.55	1.53
Grading/Excavation (lbs/day)	6.26	54.03	67.11	8.34	3.86
Drainage/Utilities/Sub-Grade (lbs/day)	3.23	32.25	29.85	6.49	2.42
Paving (lbs/day)	1.45	17.94	13.44	0.74	0.66
Maximum (lbs/day)	6.26	54.03	67.11	8.34	3.86
Total (tons/construction project)	1.13	10.29	11.63	1.84	0.76

Source: LSA (December 2017).

CO = carbon monoxide
lbs/day = pounds per day
NO_x = oxides of nitrogen

PM_{2.5} = particulate matter less than 2.5 microns in size
PM₁₀ = particulate matter less than 10 microns in size
ROG = reactive organic gases

Construction Conformity

Construction activities will not last for more than five years at one general location, so construction-related emissions do not need to be included in regional and project-level conformity analysis (40 CFR 93.123(c)(5)).

Alternative 2 (No Build Alternative)

As the No Build Alternative would not involve any construction activities, no temporary construction-related air quality impacts would occur.

2.11.3.2 Permanent Impacts

Alternative 1 (Build Alternative)

Regional Conformity

The proposed project is listed in the SCAG’s 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), which was found to be conforming by the Federal Highway Administration (FHWA) on June 1, 2016: RTP ID: S2160012, Description: Multimodal corridor improvements. The project is also in the 2017 Federal Transportation Improvement Program (FTIP), which was found to be conforming by the FHWA/FTA on December 16, 2016: Project ID: ORA001103, Description: Grouped Projects for pavement resurfacing and/or rehabilitation.

The design concept and scope of the proposed project is consistent with the project description in the 2016/2040 RTP, 2017 FTIP, and the “open to traffic assumptions” of the 2040 regional emissions analysis. Copies of the 2016/2040 RTP/SCS and 2017 FTIP listings for the proposed project are provided in Appendix F.

Project Level Conformity

The proposed project involves drainage improvements, shoulder widening, undergrounding existing overhead utilities, and provides enhanced safety features.

Table 2 of the 40 CFR 93.126¹ lists project categories that are exempt from the requirement to determine conformity. This list includes projects such as shoulder improvements, pavement resurfacing, and/or rehabilitation, widening narrow pavements, and safety projects. Therefore, the proposed project is exempt under the Clean Air Act conformity rule under 40 CFR 93.126.

Alternative 2 (No Build Alternative)

The No Build Alternative does not include any improvements to SR-133. It is expected that the operational emissions would have similar air quality criteria pollutants and MSAT emissions levels in the project area under the No Build Alternative compared to the proposed project alternative.

2.11.4 Avoidance, Minimization, and/or Mitigation Measures

With the inclusion of the project features described above in Section 2.11.3.1, the Build Alternative would not result in adverse temporary air quality impacts, and no avoidance, minimization, and/or mitigation measures are required.

Since the proposed project would not generate any new vehicle trips, but rather provide enhanced safety features, improved drainage facilities, and removal of fixed objects (power poles), operational effects would remain unchanged.

2.11.4.1 Climate Change

Neither the EPA nor the FHWA has issued explicit guidance or methods to conduct project-level greenhouse gas analysis. The FHWA emphasizes concepts of resilience and sustainability in highway planning, project development, design, operations, and maintenance. Because there have been requirements set forth in California legislation as well as executive orders on climate change, the issue is addressed in Chapter 3, the CEQA chapter of this document. The CEQA analysis may be used to inform the NEPA determination for the project.

¹ Electronic Code of Federal Regulations. 2017. Title 40. Website: https://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&tpl=/ecfrbrowse/Title40/40cfr93_main_02.tpl (accessed November 2017).