

CALIFORNIA GOOD NEIGHBOR
STATE IMPLEMENTATION PLAN

2024 Revision for the 0.070 Parts Per Million Federal 8-Hour Ozone Standard

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Executive Summary

Each time the United States Environmental Protection Agency (U.S. EPA) adopts a new National Ambient Air Quality Standard (NAAQS or standard) or revises an existing standard, the Clean Air Act (Act) requires states to develop and submit an infrastructure state implementation plan (SIP). An infrastructure SIP is administrative in nature as it describes the authorities, resources, and programs a state has in place to implement, maintain, and enforce these federal standards. The infrastructure SIP also contains adequate provisions to address the transport of pollutants from one state to another, where the pollutant could contribute significantly to violations of a standard or interfere with maintenance of a standard. U.S. EPA has developed a four-step framework, described below, that ensures states adequately identify and address such impacts.

In 2018, the California Air Resources Board (CARB or Board) submitted the California Infrastructure State Implementation Plan Revision for the 0.070 Parts Per Million (ppm) Federal 8-Hour Ozone Standard (Infrastructure SIP). On March 30, 2021, U.S. EPA partially approved and partially disapproved the Infrastructure SIP for ozone. Specifically, U.S. EPA approved all elements except those that relate to prevention of significant deterioration, but deferred action on the interstate transport portion of the Infrastructure SIP. On February 13, 2023, U.S. EPA disapproved the interstate transport portion of the Infrastructure SIP for California and several other states¹. U.S. EPA's disapproval identified California's submission as not meeting the State's transport obligations, as it failed to contain the necessary provisions to eliminate emissions that will contribute significantly to nonattainment or interfere with maintenance of the 0.070 ppm 8-hour ozone NAAQS in any other state. Specifically, the U.S. EPA found that California did not provide a sufficient evaluation of additional emissions control opportunities and did not include any permanent and enforceable emissions controls in its SIP submission.

Also related to interstate transport, on June 5, 2023, U.S. EPA finalized a Federal Implementation Plan (FIP) to fulfill the requirements of the Act in mitigating downwind impacts from upwind states whose plans had been disapproved². The FIP secures reductions in ozone-forming emissions of nitrogen oxides (NOx) from electric generating units (EGUs) and industrial facilities (Non-EGUs), and ensures that 28 states including 5 states in the Proposed Supplemental "Good Neighbor" Action (20 states covered for both EGUs and Non-EGUs, 7 states covered for EGUs only, and California as the only state covered for Non-EGUs only) meet the Act's "Good Neighbor" requirements by reducing pollution that significantly contributes to problems attaining and maintaining the 0.070 ppm 8-hour ozone NAAQS. This 2024 Good Neighbor SIP is California's plan to replace its

¹ 88 FR 9336

² 88 Fed.Reg.36654

disapproved interstate transport portion of the Infrastructure SIP and the FIP to meet the requirements for the 0.070 ppm 8-hour ozone NAAQS.

While the national FIP focused on NO_x from stationary sources across the country and in California, California NO_x emissions are dominated by mobile sources. Recognizing this, Congress gave California a unique authority to control mobile source emissions. Therefore, it is appropriate for California to address interstate transport by controlling mobile source emissions. California has evaluated the emissions necessary to address downwind impacts to linked states and the measures available to CARB for implementation in the 2026 timeframe. California has identified the Heavy-Duty Inspection and Maintenance (Clean Truck Check) mobile source rule which has been adopted by CARB and submitted to U.S. EPA for inclusion into the California SIP. The Clean Truck Check is currently being implemented and provides the necessary NO_x emission reductions to address interstate transport of pollutants to downwind nonattainment and maintenance receptors in other states. The Clean Truck Check provides more emission reductions than could be achieved in the FIP.

The 2024 Good Neighbor SIP addresses the issues with U.S. EPA's disapproval of California's transport obligations and replaces the FIP. The Clean Truck Check program is a permanent and enforceable emissions control measure. CARB staff has determined that the Good Neighbor SIP is needed to meet the transport obligations of the 0.070 pm 8-hour ozone standard. The Board is scheduled to consider the 2024 Good Neighbor SIP on July 25, 2024. CARB staff recommends the Board adopt the 2024 Good Neighbor SIP and if adopted, submit it to U.S. EPA as a revision to the California SIP.

I. Introduction

The Good Neighbor Provision

The U.S. EPA established an 8-hour ozone standard of 0.070 ppm in 2015. The Act section 110(a)(2)(D)(i)(I) requires each state to submit to U.S. EPA new or revised SIPs within three years that "contain adequate provisions prohibiting, consistent with the provisions of this subchapter, any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will contribute significantly to nonattainment in, or interfere with maintenance by, any other state with respect to any such national primary or secondary ambient air quality standard." U.S. EPA often refers to section 110(a)(2)(D)(i)(I) as the "Good Neighbor provision" and to SIP revisions addressing this requirement as "Good Neighbor SIPs" or "interstate transport SIPs." CARB, in collaboration with California air districts, prepared this 2024 Good Neighbor SIP to address the interstate transport provisions for the for the 0.070 ppm 8-hour ozone standard.

U.S. EPA's Framework to Address the Good Neighbor Provision

Historically, interstate transport of emissions has been a significant concern for attainment of ozone standards for portions of the United States. Rulemaking to address such transport concerns includes the NO_x SIP Call of 1998³ and the Clean Air Interstate Rule⁴ (CAIR) of 2005 in the eastern U.S. states. In a more recent effort to implement the requirements of the Good Neighbor provision, U.S. EPA promulgated the Cross-State Air Pollution Rule⁵ (CSAPR) in 2011 to address the 0.08 ppm 8-hour ozone NAAQS also in the eastern U.S. states. CSAPR targeted upwind emissions of NO_x based on the U.S. EPA analysis that NO_x emitted in upwind states can form ozone in downwind states and NO_x emissions reductions would provide the most effective reductions in downwind ozone transport. Recently, U.S. EPA has asserted that "the vast majority of the downwind areas of air quality concern are NO_x-limited," to which extent CARB concurs with this portion of their statement with respect to California.⁶ In the eastern U.S. states, U.S. EPA applied this framework in the original CSAPR rulemaking⁷ to address the good neighbor provision for the 0.08 ppm 8-hour ozone NAAQS and the 1997 and 2006 fine particulate matter NAAQS. U.S. EPA

³ U.S. EPA, NO_x Budget Trading Program, <https://www.epa.gov/airmarkets/nox-budget-trading-program#tab-2>, last accessed: December 6, 2023

⁴ U.S. EPA, Clean Air Interstate Rule, <http://archive.epa.gov/airmarkets/programs/cair/web/html/index.html>, last accessed: December 6, 2023

⁵ U.S. EPA, Cross-State Air Pollution Rule (CSAPR), <https://www.epa.gov/csapr>, last accessed: December 6, 2023

⁶ U.S. EPA, Federal "Good Neighbor Plan" for the 2015 Ozone National Ambient Air Quality Standards", 88 FR 36654 page 36671 (June 5, 2023)

⁷ Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals, 76 FR 48208 (August 8, 2011)

again applied this framework in an update to CSAPR (referred to as the CSAPR Update⁸) to address the good neighbor provision for the 0.075 ppm 8-hour ozone NAAQS in the eastern U.S. states. In 2015, in consideration of good neighbor requirements for the 0.070 ppm 8-hour ozone NAAQS, for the first time, the CSAPR approach for addressing interstate transport was applied nationwide, including in California. A brief description of the interstate transport approach is discussed below.

U.S. EPA,⁹ working in partnership with states, established the following four-step framework to address the requirements of the interstate transport provision for the ozone NAAQS:

- (1) Identify monitoring sites that are projected to have problems attaining and/or maintaining the NAAQS (*i.e.*, nonattainment and/or maintenance receptors);
- (2) Identify states that impact those air quality problems in other (*i.e.*, downwind) states sufficiently such that the states are considered “linked” and therefore warrant further review and analysis;
- (3) Identify the emissions reductions necessary (if any), applying a multifactor analysis, to eliminate each linked upwind state's significant contribution to nonattainment or interference with maintenance of the NAAQS at the locations identified in Step 1; and
- (4) Adopt permanent and enforceable measures needed to achieve those emissions reductions.

U.S. EPA noted that, in applying this framework or other approaches consistent with the Act, various analytical approaches may be used to assess each step. U.S. EPA has undertaken several previous regional rulemakings applying this framework, and its analytical approaches have varied over time due to continued evolution of relevant tools and information, as well as their specific application. U.S. EPA also noted that, in developing their own rules, states have flexibility to follow the four-step transport framework (using the U.S. EPA's analytical approach or somewhat different analytical approaches within these steps); or alternative frameworks, so long as their chosen approach has adequate technical justification and is consistent with the requirements of the Act.

U.S. EPA's framework employs a multi-step approach to determine the extent to which a state must reduce its NO_x emissions pursuant to the good neighbor provision. The first two steps are performed simultaneously, as sites with air quality problems are identified via U.S. EPA's modeling, which identifies the upwind states that “contribute significantly” to one

⁸ Cross-State Air Pollution Rule Update for the 2008 Ozone NAAQS, 81 FR 74504 (October 26, 2016)

⁹ See Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone (also known as the NO_x SIP Call), 63 FR 57356 (October 27, 1998); Clean Air Interstate Rule (CAIR) Final Rule, 70 FR 25162 (May 12, 2005); CSAPR Final Rule, 76 FR 48208 (August 8, 2011); CSAPR Update for the 2008 Ozone NAAQS (CSAPR Update) Final Rule, 81 FR 74504 (October 26, 2016)

or more downwind state(s). If a downwind state's receptor site is not in attainment or in maintenance and, if an upwind state contributes emissions equivalent to one percent of the NAAQS at that site, then that upwind state is deemed to have "contributed significantly" and thus, has a linkage to the downwind receptor site. A nonattainment designation means an area has not achieved compliance with the NAAQS. A maintenance designation means the area was formerly in nonattainment but has monitored attainment and is currently under a maintenance plan¹⁰. Any state that has at least one linkage is subject to the Good Neighbor provisions.

U.S. EPA determined that one percent was an appropriate threshold to use in the analysis because there were important, even if relatively small, contributions to identified nonattainment and maintenance receptors from multiple upwind states that were located mainly in the eastern U. S. U.S. EPA has historically found that the one percent threshold is appropriate for identifying interstate transport linkages for states collectively contributing to downwind ozone nonattainment or maintenance problems as that threshold captures a high percentage of the cumulative pollution transport affecting downwind receptors.

The states with a linkage identified in steps one and two are then subject to the third step of the framework. In the third step, the linked state or U.S. EPA determines the emission reductions necessary for each upwind state with a linkage to comply with their good neighbor obligations to a level at which they are no longer making a significant contribution to a downwind receptor site. In response to linkages identified, a state can either demonstrate that its actual contribution is below the screening threshold, or it could evaluate the scope of its transport obligation and identify measures to achieve any needed emission reductions.

For the 0.070 ppm 8-hour ozone NAAQS, the value of a one percent threshold would be a contribution of 0.00070 ppm. The individual upwind state to downwind receptor "linkages" and contributions based on a 0.00070 ppm threshold are identified by U.S. EPA in the Air Quality Modeling Technical Support Document¹¹, which lays out each upwind state and each receptor's contribution received from that upwind state. The U.S. EPA notes that, when applying the CSAPR framework, an upwind state's linkage to a downwind receptor alone does not determine whether the state significantly contributes to nonattainment or interferes with maintenance of a NAAQS to a downwind state.

While the one percent screening threshold has been traditionally applied to evaluate upwind state linkages in eastern states where such collective contribution was identified, the U.S. EPA noted in the CSAPR Update that, as to western states, there may be geographically

¹⁰ United States Environmental Protection Agency, Frequent Questions about General Conformity, <https://www.epa.gov/general-conformity/frequent-questions-about-general-conformity> , last accessed: December 1, 2023

¹¹ Air Quality Modeling Final Rule Technical Support Document, <https://www.epa.gov/system/files/documents/2023-03/AQ%20Modeling%20Final%20Rule%20TSD.pdf> , last accessed: December 1, 2023

specific factors to consider in determining whether the one percent screening threshold is appropriate. For certain receptors, where the collective contribution of emissions from one or more upwind states may not be a considerable portion of the ozone concentration at the downwind receptor, U.S. EPA and states have considered, and could continue to consider, other factors to evaluate those states' planning obligation pursuant to the good neighbor provision.¹² However, where the collective contribution of emissions from one or more upwind states is responsible for a considerable portion of the downwind air quality problem, the CSAPR framework treats a contribution from an individual state at or above one percent of the NAAQS as significant, and this reasoning applies regardless of where the receptor is geographically located.

In the fourth step, the upwind state will analyze and determine what permanent and enforceable measures are needed to achieve the downwind emissions reductions which will ensure the state's contribution to downwind linked receptors falls below the one percent threshold.

California's 2018 Good Neighbor SIP for the 0.070 ppm 8-Hour Ozone NAAQS

In 2015, U.S. EPA strengthened the 8-hour ozone standard to 0.070 ppm based on the latest health data demonstrating impacts at lower levels. Per the Act, states are required to submit an infrastructure SIP including addressing interstate transport within three years of establishing a new NAAQS.

To address interstate transport across the country, on August 4, 2015, U.S. EPA published air quality modeling results¹³ for the entire United States that estimated each state's contribution to every other state and identified upwind states that made significant contributions to downwind nonattainment and maintenance receptors using photochemical modeling analyses. An upwind state was linked to a downwind nonattainment or maintenance area if U.S. EPA's modeling projected that, absent reductions, the upwind state's contribution to the downwind receptor would exceed one percent of the 0.070 ppm 8-hour ozone NAAQS. The approach for identifying nonattainment and maintenance sites and the methods for calculating upwind state contributions were consistent with the approach and methods used in the CSAPR.¹⁴ In the August 2015 modeling memo¹⁵,

¹² See, e.g., 81 FR 31513 (May 19, 2016) (approving Arizona Good Neighbor SIP addressing 2008 ozone NAAQS based on determination that upwind states would not collectively contribute to a considerable portion of the downwind air quality problem).

¹³ Notice of Availability of the Environmental Protection Agency's Updated Ozone Transport Modeling Data for the 2008 Ozone National Ambient Air Quality Standard (NAAQS), 80 FR 46271 (August 4, 2015)

¹⁴ Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals, 76 FR 48208 (August 8, 2011)

¹⁵ Updated Ozone Transport Modeling Data for the 2008 Ozone National Ambient Air Quality Standard, <https://www.regulations.gov/document/EPA-HQ-OAR-2015-0500-0001>, last accessed: December 1, 2023

U.S. EPA suggested that the one percent threshold be considered nationwide as a starting point for evaluation.

On September 27, 2018, CARB adopted the California Infrastructure State Implementation Plan Revision for the 0.070 ppm Federal 8-Hour Ozone Standard (Infrastructure SIP). The Infrastructure SIP included California's interstate transport, also called the good neighbor provisions, for the 0.070 ppm 8-hour ozone NAAQS (2018 Good Neighbor Submission)¹⁶. As part of the 2018 Good Neighbor Submission, CARB expressed concerns that the East Coast-based modeling should not be used for western states and provided the following reasons for why it felt that California had met the good neighbor requirements for the 0.070 ppm 8-hour- ozone NAAQS. These included:

- In 2018, CARB stated that the U.S. EPA modeling results were developed for small, tightly packed states, with metropolitan population centers, in the relatively flat eastern part of the United States where the total impact, from over 10 states at times, would cumulatively result in an outsized impact on downwind states. As such, it was stated that it was inappropriate to both apply the one percent threshold and depend on modeling developed for a different purpose, a different region, and different geographic factors;
- CARB also submitted that aside from California, most nonattainment areas in western states are few and far between. As a result, activities of local populations generate significant emissions of ozone precursors. While many rural areas in California experience high ozone, this is not the case for rural communities in other western states. This indicates that while ozone is transported within California to nearby intrastate rural areas, it does not impact other nearby states significantly due to transport;
- CARB discussed how California's warm, sunny climate and its topography are perfect for forming and trapping air pollutants. Most California cities are built on plains or in valleys surrounded by mountains. These areas are natural bowls that trap air pollution and prevent the air from circulating. These features combined with temperature inversions which trap air pollutants result in little transport of ozone forming pollutants from California to neighboring states; and
- CARB included how California has one of the most comprehensive emission control programs in the country. Comparing emissions across all states by area density and per capita shows that despite having the second highest amount of NOx emissions nationwide, California's NOx emissions by land area fall below that of 16 of the 22 CSAPR states and per capita below that of every state in the country. Due to the stringency of California's air pollution control program, this State's potential impacts on other states have been mitigated by the nation's most stringent emission control program.

¹⁶ 2018 California Infrastructure SIP Revision, <https://ww2.arb.ca.gov/resources/documents/2018-california-infrastructure-sip-revision> , last accessed: December 12, 2023

On March 30, 2021, U.S. EPA partially approved and partially disapproved the Infrastructure SIP for the 0.070 ppm 8-hour ozone NAAQS. Specifically, U.S. EPA approved all elements except those that relate to prevention of significant deterioration, and deferred action on 2018 Good Neighbor Submission. Ultimately, U.S. EPA did not concur with the approach provided in California's 2018 Good Neighbor Submission with regards to U.S. EPA's modeling, U.S. EPA's selection of one percent as the threshold for contribution, nor the criticism of U.S. EPA's application of an eastern state strategy to western states. Additionally, U.S. EPA found that a quantitative analysis was missing for the measures described and their ability to effectively decrease downwind precursor emissions in linked states. As such, U.S. EPA proposed to disapprove the 2018 Good Neighbor Submission portion of the Infrastructure SIP on May 24, 2022¹⁷ and proposed a Federal Implementation Plan¹⁸ (FIP) for California and several other states on April 6, 2022. The overlapping of these two processes left California and a number of other states without the ability to address the SIP disapproval prior to the FIP process being initiated. These two actions began a regulatory clock to ensure that issues were addressed or the FIP would go into effect. The 2018 Good Neighbor Submission disapproval was finalized on February 12, 2023. The FIP was finalized on June 5, 2023¹⁹, effective 60 days later, August 5, 2023. Subsequent to those actions, states can decide to proceed with any action they deem necessary to ensure compliance or replace their previously submitted SIP with an approvable SIP.

The FIP made clear,

*"At any time after the effective date of this rule, states may submit a Good Neighbor SIP to replace the FIP requirements contained in this rule, subject to EPA approval under CAA section 110(a)."*²⁰ U.S. EPA continued, *"the EPA has in this action provided guidance for states on methods by which they could replace this FIP with SIPs, and in so doing, continues to recognize substantial state flexibility in achieving an equivalent degree of emissions reduction that would successfully eliminate significant contribution for the 2015 ozone NAAQS. ... we anticipate that states may identify alternative, equivalent mechanisms that we would be bound to evaluate and approve if satisfactory, should states seek to replace this FIP with a SIP."*²¹

¹⁷ Proposed Air Plan Disapproval; California; Interstate Transport of Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standards, 87 FR 31443 (May 24, 2022)

¹⁸ Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard, Proposed Rule, 87 FR 20036 (April 6, 2022)

¹⁹ Federal "Good Neighbor Plan" for the 2015 Ozone National Ambient Air Quality Standards, <https://www.federalregister.gov/documents/2023/06/05/2023-05744/federal-good-neighbor-plan-for-the-2015-ozone-national-ambient-air-quality-standards>, last accessed: December 1, 2023

²⁰ Federal "Good Neighbor Plan" for the 2015 Ozone National Ambient Air Quality Standards, 88 FR 36658, (June 5, 2023)

²¹ Federal "Good Neighbor Plan" for the 2015 Ozone National Ambient Air Quality Standards, 88 FR 36677; see also 88 FR 36838 et. Seq., (June 5, 2023)

Per the FIP, to remove all FIP provisions through an approved SIP revision, a state must address all required reductions for electric generating unit s(EGU) and non-EGU controls addressed by the FIP from that state.²² However, as discussed below, U.S. EPA's FIP affirmed that emissions reductions are not needed from EGUs in California and California agrees with this assessment. To replace the non-EGU portion of the FIP in a state, the state's SIP must provide NO_x emissions reductions that contribute significantly to nonattainment or interfere with maintenance of the 0.070 ppm 8-hour- ozone NAAQS in any other state.

To address the FIP for the 0.070 ppm 8-Hour ozone NAAQS, California would need to ensure that the revised SIP would have more emission reductions than if the emissions limits identified in the FIP²³ were implemented. Further, to address the disapproval, California would need to follow the four steps outlined in U.S. EPA's framework for interstate transport.

U.S. EPA's Photochemical Modeling

U.S. EPA updated the photochemical modeling that was provided to states in 2015. Per U.S. EPA's the 87 FR 31445,²⁴ "Air Plan Disapproval; California; Interstate Transport of Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standards",

"Following the final Revised CSAPR Update, the EPA made further updates to the 2016 emissions platform to include mobile emissions from the EPA's Motor Vehicle Emission Simulator MOVES3 model²⁵ and updated emissions projections for electric generating units (EGUs) that reflect the emissions reductions from the Revised CSAPR Update, recent information on plant closures, and other sector trends. The construct of the updated emissions platform, 2016v2, is described in the emissions modeling technical support document (TSD) for this proposed rule.²⁶ The EPA performed air quality modeling of the 2016v2 emissions using the most recent public release version of the Comprehensive Air-quality Model with extensions (CAMx) photochemical modeling, version 7.10.20. The EPA now proposes to primarily rely on modeling based on the updated and newly available 2016v2 emissions platform in evaluating these submissions with respect to Steps 1 and 2 of the 4-step interstate transport framework and generally referenced within this action

²² Federal "Good Neighbor Plan" for the 2015 Ozone National Ambient Air Quality Standards, 88 FR 36838, (June 5, 2023)

²³ Federal "Good Neighbor Plan" for the 2015 Ozone National Ambient Air Quality Standards, 88 FR 36842, (June 5, 2023)

²⁴ U.S. EPA, Air Plan Disapproval; California; Interstate Transport of Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standards, Part C. Background on the EPA's Ozone Transport Modeling Information, 87 FR 31445 (May 24, 2022)

²⁵ Additional details and documentation related to the MOVES3 model can be found at <https://www.epa.gov/moves/latest-version-motor-vehicle-emission-simulator-moves>.

²⁶ See Technical Support Document (TSD) Preparation of Emissions Inventories for the 2016v2 North American Emissions Modeling Platform included in the Headquarters docket ID No. EPA-HQ-OAR-2021-0663.

as 2016v2 modeling for 2023. By using the updated modeling results, the EPA is using the most current and technically appropriate information for this proposed rulemaking.”

The U.S. EPA 2016v2 modeling relied upon by the 2018 Good Neighbor Submission disapproval and the 2016v3 modeling relied upon by the FIP were made available in February 2022 and January 2023 respectively, three to four years after the 2018 Good Neighbor Submission. California will use this latest modeling in following the steps in U.S. EPA’s framework to address the FIP and disapproval related to the good neighbor provisions for the 0.070 ppm 8-hour ozone NAAQS. This 2024 Good Neighbor SIP amendment to the initial 2018 Good Neighbor Submission takes into account the updated U.S. EPA modeling now available to CARB for analysis and uses 2019 as the base-year for our analysis. The 2024 Good Neighbor SIP will also follow the four steps in U.S. EPA’s framework.

II. Identification of California's Downwind Receptors and Upwind Contributions

Step One & Two: Identify Downwind Receptors and Upwind Contributions

As part of Step One and Two of U.S. EPA's Four-Step framework, CARB staff used U.S. EPA's latest photochemical modeling results which identified the receptor sites that are expected to have difficulty attaining or maintaining the NAAQS. CARB staff also determined that California is "linked" to a few of these downwind sites, which thereby warrants further analysis of California's potential significant contributions from transported emissions impacting future attainment or maintenance of the NAAQS at these sites. Per U.S. EPA's discussion in 87 FR 31457,²⁷ "Air Plan Disapproval; California; Interstate Transport of Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standards",

"...the EPA performed air quality modeling using the 2016v2 emissions platform to project design values and contributions for 2023. These data were examined to determine if California contributes at or above the threshold of 1 percent of the 2015 8-hour ozone NAAQS (0.70 ppb) to any downwind nonattainment or maintenance receptor. As shown in Table 3 (sic. 5) [included below for reference], the data²⁸ indicate that in 2023, emissions from California contribute greater than 1 percent of the standard (i.e., 0.70 ppb) to nonattainment or maintenance-only receptors in Arizona, Colorado, Nevada, and Utah.²⁹ Emissions from California also contribute greater than 1 percent of the standard to nonattainment receptors on, or representative of, the Morongo and Pechanga reservations.³⁰

²⁷ Air Plan Disapproval; California; Interstate Transport of Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standards, C. Results of the EPA's Step 1 and Step 2 Modeling and Findings for California, 87 FR 31457 (May 24, 2022)

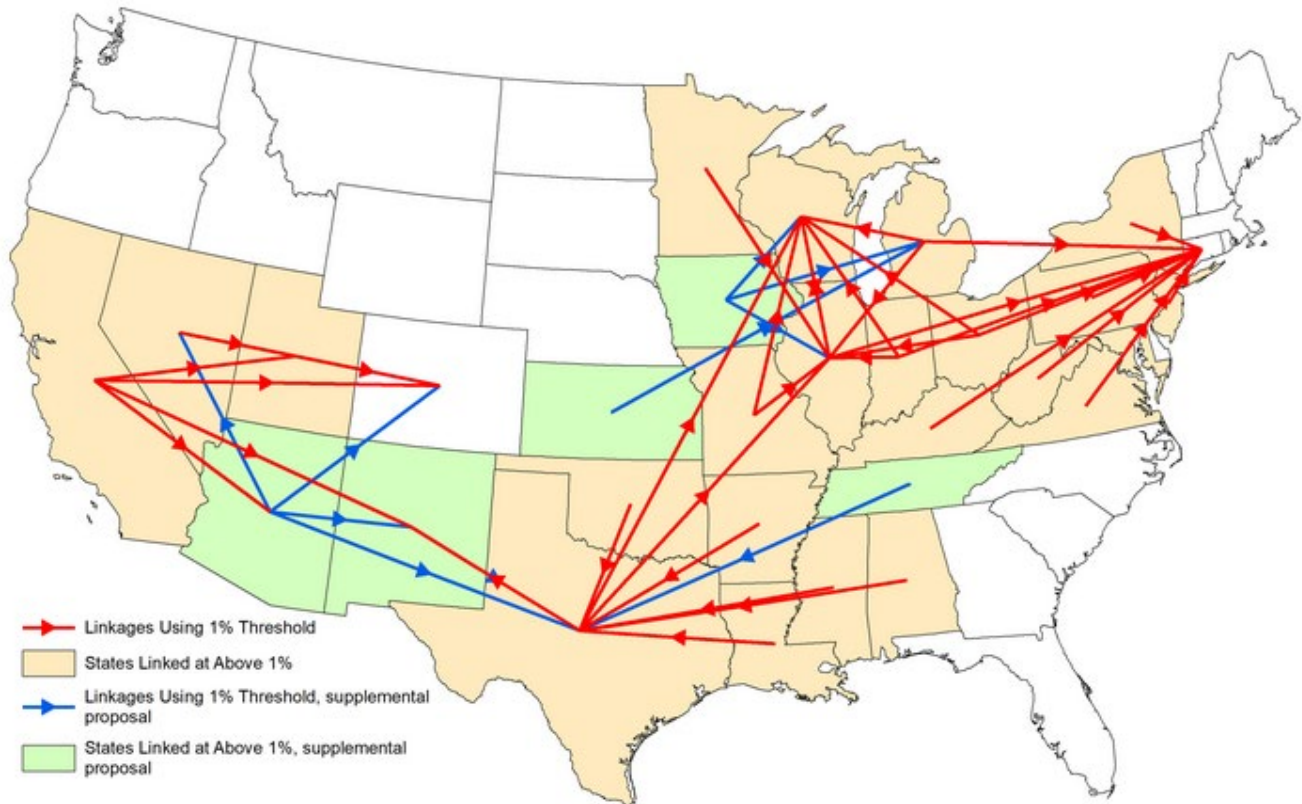
²⁸ Design values and contributions at individual monitoring sites nationwide are provide in the file: 2016v2_DVs_state_contributions.xlsx which is included in docket ID No. EPA-HQ-OAR-2021-0663.

²⁹ These modeling results are consistent with the results of a prior round of 2023 modeling using the 2016v1 emissions platform which became available to the public in the fall of 2020 in the Revised CSAPR Update, as noted in Section I. That modeling showed that California had a maximum contribution greater than 0.00070 ppm to at least one nonattainment or maintenance-only receptor in 2023. These modeling results are included in the file "Ozone Design Values and Contributions Revised CSAPR Update.xlsx" in docket EPA-HQ-OAR-2021-0663.

³⁰ We note that, consistent with the EPA's prior good neighbor actions in California, the regulatory ozone monitor located on the Morongo Band of Mission Indians ("Morongo") reservation is a projected downwind receptor in 2023. See monitoring site 060651016 in Table 3. We also note that the Temecula, California regulatory ozone monitor is a projected downwind receptor in 2023 and in past regulatory actions has been deemed representative of air quality on the Pechanga Band of Luiseño Indians ("Pechanga") reservation.

Therefore, based on the EPA's evaluation of the information submitted by California, and based on the EPA's most recent modeling results for 2023, the EPA proposes to find that California is linked at Steps 1 and 2 and has an obligation to assess potential emissions reductions from sources or other emissions activity at Step 3 of the 4-step framework."

Figure 1: Interstate Pollution Linkages Under the Good Neighbor Plan



Note: Linkages are shown to and from the center of states.

See, e.g., Approval of Tribal Implementation Plan and Designation of Air Quality Planning Area; Pechanga Band of Luiseño Mission Indians, 80 FR 18120, at 18121-18123 (April 3, 2015); see also monitoring site 060650016 in Table 3. The presence of receptors on, or representative of, the Morongo and Pechanga reservations does not trigger obligations for the Morongo and Pechanga Tribes. Nevertheless, these receptors are relevant to the EPA's assessment of any linked upwind states' good neighbor obligations. See, e.g., Approval and Promulgation of Air Quality State Implementation Plans; California; Interstate Transport Requirements for Ozone, Fine Particulate Matter, and Sulfur Dioxide, 83 FR 65093 (December 19, 2018). Under 40 CFR 49.4(a), tribes are not subject to the specific plan submittal and implementation deadlines for NAAQS-related requirements, including deadlines for submittal of plans addressing transport impacts.

Figure 2: EPA Table of California "Linked" Downwind Sites

TABLE 5—CALIFORNIA LINKAGE RESULTS BASED ON EPA UPDATED 2023 MODELING

Receptor ID	Location	Nonattainment/ maintenance	2023 Average design value (ppb)	2023 Maximum design value (ppb)	California contribution (ppb)
40278011	Yuma (AZ)	Maintenance-only	70.5	72.2	5.09
80350004	Denver/Chatfield (CO)	Nonattainment	71.7	72.3	0.91
80590006	Rocky Flats (CO)	Nonattainment	72.6	73.3	1.03
80590011	Denver/NREL (CO)	Nonattainment	73.8	74.4	1.17
320030075	Las Vegas/Northwest (NV)	Maintenance-only	70.0	71.0	7.44
490110004	SLC/Bountiful (UT)	Nonattainment	72.9	75.1	2.25
490353006	SLC/Hawthorne (UT)	Nonattainment	73.6	75.3	2.46
490353013	SLC/Herriman (UT)	Nonattainment	74.4	74.9	1.42
490570002	SLC/Ogden (UT)	Maintenance-only	70.6	72.5	2.24
490571003	SLC/Harrisonville (UT)	Maintenance-only	70.5	71.5	2.16
060651016	Morongo Band of Mission Indians	Nonattainment	89.8	90.9	34.24
060650016	Pechanga Band of Mission Indians (represented by Temecula (CA)).	Nonattainment	72.0	72.9	26.32

California’s Contribution to Downwind States

Based on our analysis and consistent with the FIP, CARB acknowledges that California has contributed greater than one percent of the standard (i.e., 0.00070 ppm) to downwind nonattainment or maintenance-only receptors and is linked to downwind receptors in both the 2023 and 2026 analytic years. Those linked downwind sites are listed in Figure 1 and the interstate pollutant linkages are shown in Figure 2 above.

California used the latest U.S. EPA modeling as shown in Figures 1 and 2 identifying that California contributes more than one percent to downwind air quality problems that warrants further review and analysis. California contributes greater than one percent of the standard to nonattainment or maintenance-only receptors in Arizona, Colorado, Nevada, and Utah. Emissions from California also contribute greater than one percent of the standard to nonattainment receptors on, or representative of, the Morongo and Pechanga reservations.

III. Evaluation of NO_x Emissions Reductions

Step Three of the U.S. EPA's Four-Step framework applies to upwind states with linkages to downwind receptors in other states. In this step, upwind states identify the emission reductions necessary, considering cost and air quality factors, to prevent an identified upwind state from contributing significantly to downwind air quality problems in other states. CARB's analysis of the latest U.S. EPA modeling found that California is an upwind state with linkages to downwind receptors in other states.

Background

For those states that are linked to downwind receptors with air quality problems, U.S. EPA's framework calls for further inquiry into whether the contributions are significant and whether there are cost-effective controls that can be employed to reduce emissions. The FIP identified significant reductions in ozone-forming emissions of NO_x from EGUs and industrial facilities (Non-EGUs), and ensures that 28 states including 5 states in the Proposed Supplemental "Good Neighbor" Action (20 states covered for both EGUs and Non-EGUs, 7 states covered for EGUs only, and California as the only state covered for Non-EGUs only) meet the Clean Air Act's "Good Neighbor" requirements by reducing pollution that significantly contributes to problems attaining and maintaining the 0.070 ppm NAAQS. As required by Step Three, CARB staff investigated U.S. EPA's analysis included in the FIP and California's statewide emission control strategies.

U.S. EPA Emission Reductions Identified in the Federal Implementation Plan

In the FIP, U.S. EPA identified EGUs as a category that could achieve additional emission reductions across the country. U.S. EPA conducted an analysis and determined that additional emissions reductions are not needed from EGUs in California to meet the State's obligations regarding air quality standards for ozone. This is primarily due to EGUs in California being well-regulated and having emission controls in place, resulting in the lowest fossil fuel emissions and the highest percentage of renewable generation among the 26 states examined. U.S. EPA specifically evaluated the emissions from EGUs in California and found that there were no 100 MW or greater coal steam sources that could potentially reduce emissions through retrofit technologies. Therefore, based on their analysis, no additional emission reductions are required from EGUs in California.³¹

"...whereas EPA is able to conclude, based on the foregoing analysis, that additional emissions reductions are not required from EGU sources in

³¹ Air Plan Disapproval; California; Interstate Transport of Air Pollution for the 2015 8-Hour Ozone National Ambient Air Quality Standards, D. Evaluation of Information Provided Regarding Step 3, 87 FR 31459 (May 24, 2022)

California, we can reach no such conclusion with respect to other industrial sources of emissions in the State.”

As part of the FIP, U.S. EPA identified stationary sources and potential emissions reductions for California to address. These stationary sources fall across four categories for facilities in California and vary based on whether it is the annual or ozone season (May - September) reductions being discussed. U.S. EPA also includes the cost per ton of these reductions. The NOx reductions U.S. EPA included in their FIP are listed in Table 1. Additionally, the types of control technologies the FIP assumed would meet the final emissions limits are included in Appendix A.

Table 1: List of categories covered by the FIP and estimated reductions

NAICS Description	Annual Reductions	Ozone Season Emissions Reductions	Average Cost/ Ton (2016\$)
Cement and Concrete Product Manufacturing	2,725	1,135	1,279
Glass and Glass Product Manufacturing	383	160	774
Pipeline Transportation of Natural Gas	512	213	4,718
Waste Treatment and Disposal	221	92	10,271
Total NOx Reductions	3,841	1,600	

Table 9, from Memo to Docket Non-EGU Applicability Requirements and Estimate Emissions Reductions and Costs. (Total line added for clarity)³²

Combined, the FIP identified an estimated NOx reduction of 3,841 tons annually, or 1,600 tons for the ozone season, with an average cost per ton across all categories of \$2,205 (2016\$). Per the FIP, the identified reductions are to be in place at the related facilities by the ozone season of 2026 to ensure an adequate decrease in impacts to be seen in downwind states and compliance with the FIP.

California has the only three extreme ozone nonattainment areas in the country with some of the strictest rules on stationary sources. As part of our assessment of the emission reductions estimated to occur through the FIP and the need to replace the FIP with an approvable good neighbor SIP, CARB worked with the local air districts to assess whether the estimated emission reductions in the FIP would be realized. As summarized in Table 2, the current level of controls at nearly all facilities identified by U.S. EPA and CARB/Districts,

³² Summary of Final Rule Applicability Criteria and Emissions Limits for Non-EGU Emissions Units, Assumed Control Technologies for Meeting the Final Emissions Limits, and Estimated Emissions Units, Emissions Reductions, and Costs, https://www.epa.gov/system/files/documents/2023-03/Memo%20to%20Docket_Non-EGU%20Applicability%20Requirements%20and%20Estimate%20Emissions%20Reductions%20and%20Cost_s_Final.pdf, last accessed: November 14, 2023

effectively meet or exceed U.S. EPA’s FIP proposal. Appendix A contains California’s assessment of the applicable stationary sources based on the FIP requirements.

Table 2: List of Facilities with Units Identified by U.S. EPA, CARB, and Districts

District	City	Facility	Unit Type	Unit Disposition/Rule	Identified By
Bay Area	Cupertino	Lehigh Southwest Cement Company	Cement	Unit Shut Down	EPA
Bay Area	Concord	Pacific Gas & Electric Co - Concord	Engines	District Rule 9-8-206	EPA
Kern	Mojave	Calportland Company	Cement	District Rule 425.3	EPA
Kern	Monolith	Lehigh Southwest Cement - Tehachapi Facility	Cement	District Rule 425.3	EPA
Kern	Lebec	National Cement Co of Calif	Cement	District Rule 425.3	EPA
Mojave Desert	Oro Grande	Calportland - Oro Grande	Cement	District Rule 1161	EPA
Mojave Desert	Apple Valley	Cemex California Cement LLC - Black Mountain	Cement	District Rule 1161	EPA
Mojave Desert	Lucerne Valley	Mitsubishi Cement Corporation - Cushenbury	Cement	District Rule 1161	EPA
Mojave Desert	Hinkley	Pacific Gas & Electric Company - Hinkley	Engines	District Rule 1160	District/CARB
Mojave Desert	Needles	Pacific Gas & Electric Company - Topock	Engines	District Rule 1160	EPA
Mojave Desert	Blythe	Socalgas - Blythe	Engines	District Rule 1160	EPA
San Joaquin	Lost Hills	Chevron Pipeline Company - Lost Hills	Engines	District Rule 4702	District/CARB
San Joaquin	Madera	Ardagh Glass Inc	Glass	District Rule 4354	EPA
San Joaquin	Chowchilla	Certainteed Corp	Glass	District Rule 4354	District/CARB
San Joaquin	Modesto	Gallo Glass Company	Glass	District Rule 4354	EPA
San Joaquin	Kingsburg	Guardian Industries, LLC	Glass	District Rule 4354	EPA
San Joaquin	Tracy	Owens-Brockway Glass Container	Glass	District Rule 4354	EPA
San Joaquin	Fresno	Vitro Flat Glass LLC	Glass	District Rule 4354	EPA
San Joaquin	Crows Landing	Covanta Stanislaus, Inc	Municipal Waste	District Rule 4352	EPA
San Luis Obispo	Arroyo Grande	Phillips 66 - Santa Maria Refinery	Engines	Unit Shut Down	District/CARB
Santa Barbara	Orcutt	Orcutt Hill IC Engines	Engines	District Rule 333	District/CARB
Santa Barbara	Goleta	Southern California Gas Company - La Goleta	Engines	District Rule 333	EPA
Shasta	Redding	Lehigh Southwest Cement Co. (Now Calportland)	Cement	Consent Decree	EPA
South Coast	Valencia	Southern California Gas Company	Engines	District Rule 1110.2	District/CARB
South Coast	Vernon	Owens-Brockway Glass Container Inc	Glass	District Rule 1117	EPA
South Coast	Long Beach	Long Beach City, SERRF Project	Municipal Waste	District Rule 1165	EPA
Ventura	Ventura	Southern California Gas Company	Engines	District Rule 74.9	District/CARB

CARB and the Districts did identify 3 facilities that included units not meeting the FIP control levels. An analysis of facilities without the identified controls on all units, indicates a maximum reduction at 1,236 tons per year or approximately 518 tons for the ozone season

(Table 3). These reductions would only occur if all emissions at the listed facilities could be brought to zero. While this is unlikely to occur, CARB wanted to assess the maximum reductions the FIP may have resulted in.

Table 3: Facilities Identified by U.S. EPA, CARB, or Districts with units not meeting FIP limits

Facility	City	District	Annual NOx (Tons)	Ozone Season NOx Estimate (Tons)	Units Meet FIP Requirements ?
PG&E Topock Compressor Station	Needles	Mojave Desert	577	242	No
SoCalGas	Blythe	Mojave Desert	390	163	No
SERRF Project	Long Beach	South Coast	270	113	No

The FIP estimated reductions from stationary sources identified by U.S. EPA amount to 1,600 tons of NOx per ozone season. CARB’s estimation shows a maximum of 518 tons of NOx reductions per ozone season from all the stationary sources that still needed controls per the FIP in California. Further, U.S. EPA directed states to achieve an equivalent degree of emissions reduction that would successfully eliminate a significant contribution to the 0.070 ppm 8-hour- ozone standard and anticipate that states may identify alternative, equivalent mechanisms that U.S. EPA would be bound to evaluate and approve if satisfactory, should states seek to replace this FIP with a SIP. California will use both of these estimates to identify permanent and enforceable measures to mitigate our emissions impact on our downwind neighbors.

IV. California's Permanent and Enforceable Emission Reductions

Step Four in the U.S. EPA's Four-Step framework calls for states contributing significantly to ozone problems at downwind receptors in other states to adopt permanent and enforceable measures needed to achieve emission reductions. In the FIP, U.S. EPA has indicated that implementation of the FIP will eliminate a significant contribution from the upwind state. Therefore, CARB is evaluating two emission reduction estimates, 1600 tons per ozone season and 518 tons per ozone season, as was discussed above.

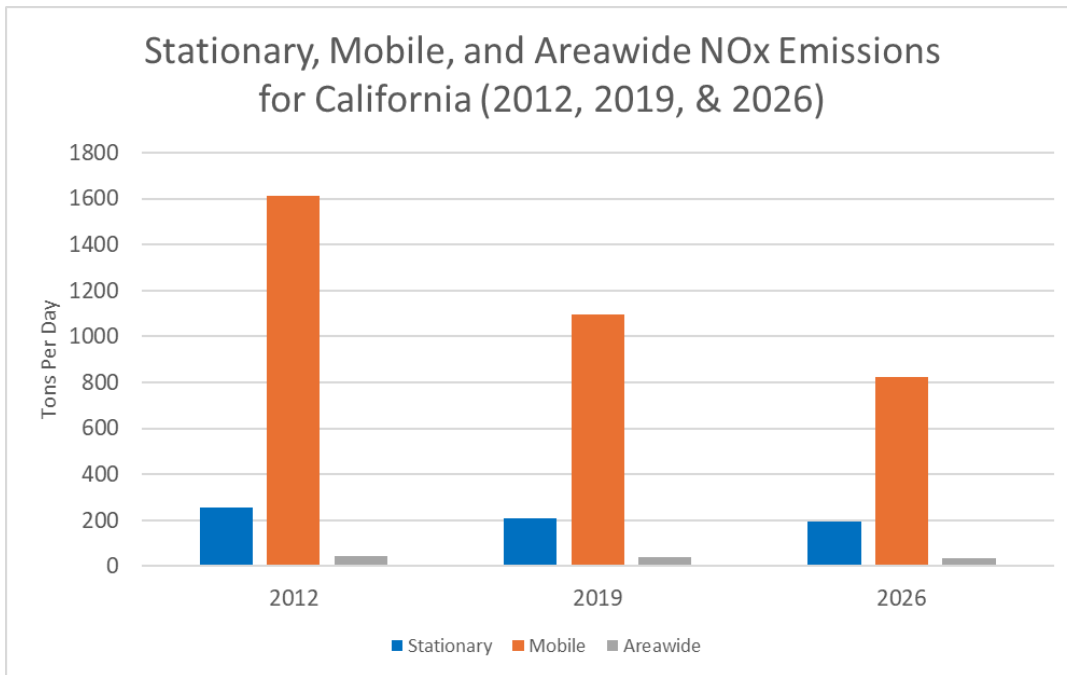
U.S. EPA's most recent modeling shows a linkage from California to other western states with projected air quality nonattainment or maintenance issues in 2023 and 2026. California's currently implemented control programs cover every source category within its jurisdiction and are often significantly stricter than any other state, including in some instances at the federal level.

California has the unique authority to control mobile sources due to the State's nonattainment challenges and the fact that mobile sources dominate the inventory, contributing about 82 percent of the total statewide NO_x inventory in 2019. Therefore, it is appropriate to target mobile source emission reductions to mitigate California's impact on its downwind neighbors. CARB staff have reviewed recently adopted regulations that were included in U.S. EPA's transport air quality modeling and provide emissions reductions in 2026. CARB also looked for adopted regulations that are not included in U.S. EPA's transport air quality modeling and that provide emissions reductions in 2026.

Statewide Emissions

Figure 3 includes a summary of CARB's latest Statewide NO_x emissions inventory. The details of this inventory are documented in Appendix B. As shown in Figure 3, CARB's current mobile source programs, coupled with efforts at the local and federal level, have achieved tremendous success in reducing emissions, resulting in significantly cleaner vehicles and equipment in operation today. Adopted control programs will reduce NO_x emissions in 2026 by 21 percent from 2019 levels, which is already a reduction of over 30 percent from 2012 levels. These programs provide a significant down payment on the needed emission reductions to mitigate our impact on our downwind neighbors. Nonetheless, meeting the NAAQS in California will require large reductions beyond those occurring under existing programs.

Figure 3: Emissions Sources by Source Type (2012, 2019, & 2026)³³



Both oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) are precursors to ozone. Table 4 shows the percentage of California NO_x and VOC emissions that come from mobile, stationary, and areawide sources, based on the 2012 and 2026 emission projections. As emphasized by the values in Table 4, ozone control considerations conclude that a NO_x control strategy focused on mobile source emissions would be most effective for reducing ozone transport. Thus, the primary focus in this report is on reducing NO_x from mobile sources which, despite declining significantly due to state, local, and federal controls, continues to be a major source of emissions. VOCs from consumer products and certain other area sources are also being reduced through a range of CARB programs which are not discussed in this report. The NO_x-focused approach being taken in this report is consistent with the CSAPR Update and prior interstate transport rulemakings, where U.S. EPA has historically focused control measure reviews on sources of NO_x rather than VOCs.

³³ CEPAM, 2022 Ozone SIP Ver 1.01 B without Adjustments, Summer, Base Year 2018 (2012, 2019, 2026). All ocean-going vessels (OGV) emissions extend to 100 nautical miles from shore.

Table 4: California Emissions in 2012 and 2026 by Sector

<i>Modeled Emissions by Sector</i> ³⁴	<i>NO_x</i>			<i>VOCs</i>		
	<i>Mobile</i>	<i>Stationary</i>	<i>Area</i>	<i>Mobile</i>	<i>Stationary</i>	<i>Area</i>
2012 Emissions (% of annual emissions)	84.3%	13.5%	2.2%	48.2%	20.5%	31.3%
2026 Projected Emissions (% of annual emissions)	78.2%	18.4%	3.4%	32.2%	26.2%	41.6%

The California SIP has hundreds of prohibitory rules that limit the emissions of NO_x and VOCs, including district rules and rules on stationary and area sources, and CARB regulations on mobile sources and on consumer products and certain other areawide sources. Many of these rules were developed by the districts and CARB to reduce ozone concentrations in the numerous areas that were designated nonattainment for the 0.12 ppm 1-hour ozone and 0.08 ppm 8-hour ozone NAAQS. These planning requirements associated with the numerous California ozone nonattainment areas, coupled with the increased control requirement stringency for areas classified severe and worse (e.g., lower major source thresholds and increasing permit offset ratios), have served to limit emissions of NO_x and VOCs from California that might affect other states.

California’s Unique Authority

Per the authority in the Act, California is the only state allowed to set mobile source emission standards stricter than U.S. EPA. U.S. EPA has granted California waivers and authorizations for its mobile source control program for decades. In particular, the Act allows California to seek a waiver of the preemption which otherwise prohibits states from enacting emission standards for new motor vehicles. Federal law limiting vehicle pollution has recognized and respected that right for over 50 years by allowing California to set its own new vehicle emissions standards to address California’s extraordinary and compelling air pollution problems. California has led the nation in cleaning up mobile sources precisely because the severity of the air quality challenges in California require more stringent regulations and vehicle emissions standards to protect public health and clear the air. The Act also allows other states to adopt California’s motor vehicle emission standards under section 177 (and several states have indeed adopted California standards). Section 177 requires, among other things, that such standards be identical to the California standards for which a waiver has been granted.

In recognition of California’s early efforts and the extent of its air quality challenges, the State’s authority to regulate emissions from some source categories more stringently than

³⁴ CEPAM, 2022 Ozone SIP Baseline Emission Projection - Ver 1.01 B without Adjustments, Summer, Base Year 2018, OGV emissions extend to 100 nautical miles from shore.

the U.S. EPA has been uniquely preserved under the Act's Section 209(b) waiver provision.³⁵ While U.S. EPA has primary authority for interstate trucks, aircraft, ships, locomotives, and some farm and construction equipment, this waiver provision allows California to seek a waiver from U.S. EPA to continue to enact more stringent emission standards for passenger vehicles, heavy duty trucks, and certain off-road vehicles and engines. Over nearly five decades, CARB has obtained waivers and authorizations for over 100 of its new motor vehicle and other mobile source regulations. CARB's history of progressively strengthening standards as technology advances, coupled with the waiver process requirements, ensures that California's regulations remain the most protective of public health in the nation, and that necessary emission reductions from the mobile sector continue.

The Section 209(b) waiver provision preserves a critical role for California in the control of emissions from new motor vehicles; it recognizes California's service as a "laboratory" to facilitate development of better, more stringent motor vehicle emission standards. For example, CARB's Low-Emission Vehicle (LEV) I, LEV II, and Zero-Emission Vehicle (ZEV) programs have resulted in the production and sales of hundreds of thousands of ZEVs in California since first adopted in 1990, helping advance vehicle technology.

Under State law, CARB has the responsibility to develop SIP strategies for cars, trucks and other mobile sources to meet the NAAQS. Statewide, about 26 million Californians live in communities that exceed the federal ozone NAAQS. Two areas of the State have the most critical air quality challenges: the South Coast Air Basin and the San Joaquin Valley. These regions are two of three areas in the nation with an extreme classification for the federal ozone standard, the third being the Coachella Valley. Coachella Valley's ozone air quality challenge is due to pollution transport from the South Coast Air Basin and benefits significantly from controls in that area. As a result of ongoing control programs, considerable air quality progress has occurred in all three areas, with Coachella Valley being a downwind beneficiary of upwind programs.

Twenty-five years ago, the 0.070 ppm 8-hour ozone NAAQS was exceeded across the entire South Coast Air Basin and San Joaquin Valley. Peak ozone levels were more than two and half times the standard at that time in the South Coast Air Basin and nearly 40 percent above the standard in the San Joaquin Valley. Today, significant portions of both regions meet the standard and peak ozone concentrations in the South Coast Air Basin are within 43 percent of the standard. Moreover, peak levels in the San Joaquin Valley are now within 31 percent of the standard, and the region is on track to meet the federal ozone NAAQS based on analysis of the ongoing benefits of the current control programs. The reduction of ozone concentrations in these two extreme areas has a more direct impact on transport given both their outsized contribution and their proximity to paths of potential transport outside of the State.

³⁵ Vehicle Emissions California Waivers and Authorizations, <https://www.epa.gov/state-and-local-transportation/vehicle-emissions-california-waivers-and-authorizations>, last accessed: November 14, 2023

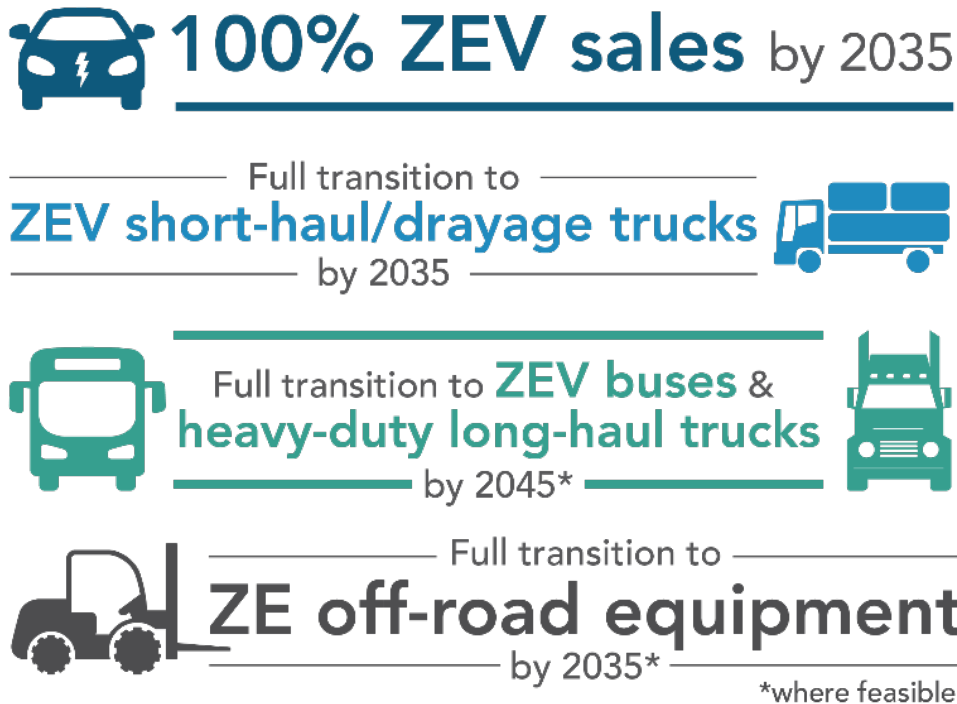
The ongoing implementation and further planned strengthening of California's air pollution control program has and will continue to benefit other states while improving air quality within California. Reducing ozone precursor emissions and ozone concentrations in California can also reduce ozone and ozone precursor transport to neighboring states. Further, other states are able to adopt California's more stringent mobile source controls, allowing these states to further reduce local emissions. This benefits their own air quality beyond the levels otherwise provided by national programs.

Summary of CARB's Mobile Source Controls

As mentioned earlier, reductions in California NO_x emissions can reduce transported ozone impacts for downwind neighbors. CARB's current mobile source control programs have achieved tremendous success in reducing NO_x emissions. Ongoing implementation of these programs will result in substantial further reductions through 2026, providing a significant down payment for meeting not only current, but future NAAQS. This information is included as an example of California's ongoing commitment to a variety of methods of ensuring not only progress within the State, but ensuring downwind impacts are mitigated as well.

In 2020, Governor Newsom signed Executive Order N-79-20 (Figure 4) that established a first-in-the-nation goal for 100 percent of California sales of new passenger cars and trucks to be zero-emission by 2035. The Executive Order also set a goal to transition 100 percent of the drayage truck fleet to zero-emission by 2035, all off-road equipment where feasible to zero-emission by 2035, and the remainder of the medium and heavy-duty vehicles to zero-emission where feasible by 2045.

Figure 4: Governor Newsom Executive Order N-79-20



ZEV commercialization in the light-duty sector is well underway. New vehicle technologies are being rolled out to the public at an increasing pace. Longer-range battery electric vehicles are coming to market that are cost-competitive with gasoline fueled vehicles, fuel cell vehicles are now for sale, and battery costs are declining at faster rates than projected a few years ago. Autonomous and connected vehicle technologies are being installed on an increasing number of new car models. This technology has the potential to deliver enormous gains in safety, while also reducing traffic congestion and improving fuel efficiency. DC fast charging stations are expanding in California, a growing network of retail hydrogen stations is now available, and California is the first state in the nation to certify a station for retail hydrogen fuel sales and has over 65 hydrogen fueling stations.

In the heavy-duty market, zero-emission technologies are commercially available for many uses, and these technologies are increasingly being demonstrated in a range of applications. Further, zero-emission technologies are increasingly being adopted and incorporated into off-road equipment; this began with the smaller equipment and applications including lawn and garden, but zero-emission equipment is now also commercially available for use in agriculture, construction, cargo handling, forklift, and other applications due in large part to CARB's programs. We are also seeing growing market demand for increasingly clean renewable fuels, with formerly non-regulated entities such as airlines expressing interest in voluntarily opting into the renewable fuels market programs operated by CARB.

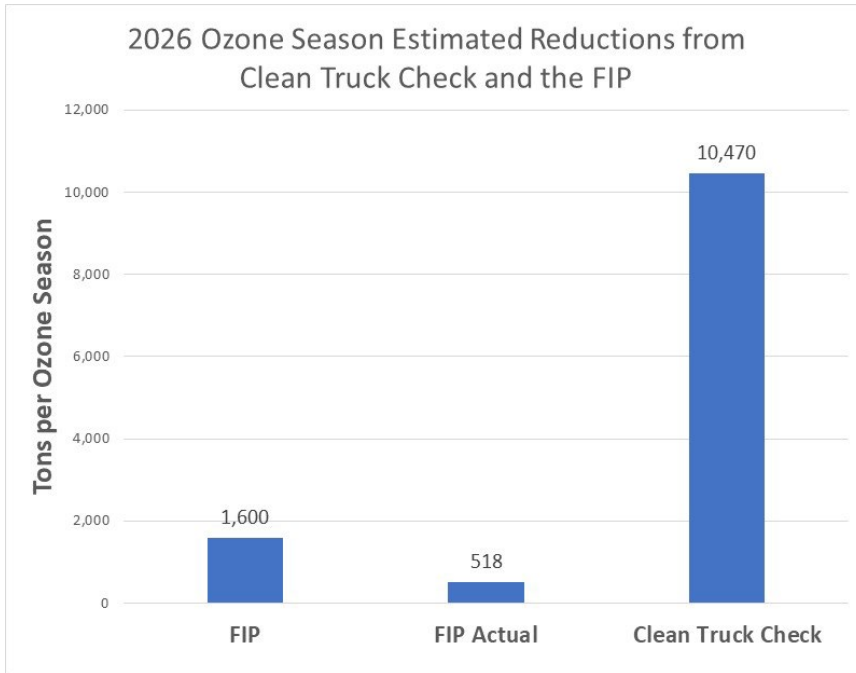
In addition, NO_x emissions from sources that are primarily regulated by the federal government, such as ocean-going vessels (OGVs), aircraft, and locomotives, have historically been reduced as a result of federal activity, although not at the same pace as has been achieved in other sectors. In aggregate, emissions from these sources are projected to remain fairly constant through 2026 and increase in later years, absent additional controls. While emissions from locomotives continue to decline, emissions from OGVs and aircraft are projected to increase. Although primary regulatory authority over many of these sources lies with the federal government, CARB has nonetheless adopted a few major regulations to reduce emissions from OGVs and locomotives under California's limited jurisdiction through waivers. These regulations are not included in the 2024 Good Neighbor SIP.

In March 2017, CARB adopted the 2016 State Strategy for the State Implementation Plan (2016 State SIP Strategy) that included control measures to reduce emissions from mobile sources that are primarily under State and federal jurisdiction, including on-road and off-road mobile sources. The 2016 State SIP Strategy included California's SIP commitment to take action on defined new measures according to a schedule and to achieve aggregate emissions reductions in the South Coast and San Joaquin Valley. Only a few of the measures committed to in the 2016 State SIP Strategy were accounted for in the FIP. CARB reviewed the remaining measures in the 2016 State SIP Strategy to evaluate whether they would be adopted and in place prior to 2026.

CARB identified the Clean Truck Check SIP measure contained in the San Joaquin Valley Supplement to the 2016 State SIP Strategy for the State Implementation Plan (Valley State SIP Strategy) as providing emission reductions in the 2026 timeframe. As a part of the California 2024 Transport SIP, CARB is including a State commitment of 68.4 tons per day (tpd)³⁶ of NO_x emissions reductions in 2026 from the Clean Truck Check Program that is needed to improve air quality across the State and will reduce California's impact on downwind states. These reductions exceed the emissions reductions from CARB's existing mobile source control programs that were accounted for in the FIP. Additionally, as shown in Figure 5, these reductions far exceed both the anticipated reductions from the FIP, as well as the potential maximum actual reductions from the FIP calculated by CARB.

³⁶ EMFAC2021/CEPAM without external adjustment

Figure 5: Comparison of Anticipated NOx Emissions Reductions from the FIP, FIP Actual Reductions, and Clean Truck Check



CARB’s New Permanent and Enforceable Control Measures for the 2024 Transport SIP

CARB has identified the Clean Truck Check as the permanent and enforceable measure to address transport of pollutants to our downwind neighbors. The Clean Truck Check is projected to result in an almost sevenfold decrease in NOx statewide as compared to the FIP’s projected decreases and which CARB is relying on to meet the emission reductions calculated to address California’s significant contribution to downwind receptors as specified in the FIP.

Discussed below are NOx reductions that CARB will achieve through California’s Clean Truck Check. The NOx reductions associated with Clean Truck Check are expected to go well beyond the reductions specified by the FIP to adequately address California’s significant contribution to downwind receptors as shown above in Figure 5.

A. Clean Truck Check Implementation

Clean Truck Check was adopted by CARB on December 9, 2021, and approved by the Office of Administrative Law on October 5, 2022, with implementation currently underway. The Clean Truck Check applies to all on-road non-gasoline heavy-duty vehicles with a gross vehicle weight rating over 14,000 pounds that operate in California, including vehicles registered out of state and out of the country. Clean Truck Check requires vehicle owners to demonstrate that their emissions control systems are properly functioning, thereby reducing

excess NO_x and PM emissions resulting from mal-maintenance, malfunction and tampering. The emission benefits from the Clean Truck Check Program currently accounted for in CARB's on-road emissions inventory model (EMFAC) reflect lower rates of emissions-related deterioration due to induced repairs and better maintenance.

During the Clean Truck Check's first phase in 2023, CARB deployed a network of Portable Emissions Acquisition System (PEAQS) roadside remote sensing devices across the State. Enforcement action will be taken against high-emitting trucks identified with PEAQS, and repairs will be required if follow-up tests indicate the need for maintenance. Another important component of Clean Truck Check is the enforcement of compliance certification requirements beginning in mid-2023; the California Department of Motor Vehicles will hold vehicle registrations of non-compliant California-registered vehicles., preventing them from being legally operated on the road. Beginning in 2024, vehicle owners will demonstrate compliance through periodic vehicle testing (e.g., on-board diagnostics and opacity tests).

B. Emission Estimation Method

CARB staff used the EMFAC2021 model (CARB, 2021a) to assess the emission reductions associated with the Clean Truck Check regulation and scaled the emission reductions to the EMFAC2017 model. EMFAC is California's official on-road (e.g., cars, trucks, and buses) mobile source emissions inventory model, which is used by CARB for various clean air planning and policy development purposes. The latest version of the model is EMFAC2021 and incorporates CARB's latest understanding of statewide and regional vehicle activities, and emissions; and reflects recently adopted heavy duty vehicle regulations. To estimate Clean Truck Check emissions benefits, CARB staff first adjusted EMFAC2017 emissions for all regulations that were adopted before Clean Truck Check, but were not incorporated into EMFAC2017, using scaling factors that CARB submitted to U.S. EPA for conformity purposes as part of the EMFAC2021 approval process (there was a grace period for using EMFAC2017 emissions)³⁷. After that adjustment, CARB staff used the EMFAC2021 model (CARB, 2021a) to assess the emission reductions associated with the Clean Truck Check regulation and scaled the emission reductions to the adjusted EMFAC2017 model baseline that incorporated impacts of "upstream" regulations.

In EMFAC, heavy-duty vehicle base emission rates are comprised of two major components: zero-mile rate (ZMR) and deterioration rate (DR). DR reflects emission increases due to engine and aftertreatment malfunction, as vehicles age and accrue mileage. More details can be found in the EMFAC2021 Technical Support Document (CARB, 2021i). The proposed Clean Truck Check regulation would require vehicle owners to demonstrate that their vehicles' emissions control systems are properly functioning, thereby reducing excess NO_x and PM emissions resulting from malfunctioning engine and aftertreatment control

³⁷ Off-Model Adjustment Factors to Account for Recently Adopted Regulations After Release of the EMFAC2017 Model, https://ww2.arb.ca.gov/sites/default/files/2022-11/emfac2017_adjustment_factors_v1.0.2_ada.pdf, last access: May 30, 2024

system components. To estimate emissions benefits from the proposed regulation, CARB staff calculated scaling factors that are applied to the DR in EMFAC to reflect lower rates of deterioration due to induced repairs and better maintenance required by the proposed Clean Truck Check regulation.

In the Clean Truck Check regulation, three major factors would affect heavy-duty vehicle emission rates, particularly DRs:

- **Effective repair rates:** this is a combination of the efficacy of the Clean Truck Check program in a) identifying the malfunctioning vehicles; and b) inducing effective repairs that result in real world emission reductions. The effective repair rates would vary as the Regulation phases in, and they are modeled to be dynamic to reflect the situations where it is more difficult to identify and repair malfunctioning vehicles, such as when the fleet becomes much cleaner (i.e., as the number of high emitting vehicles shrink significantly, it becomes more difficult to identify and repair them).
- **Repair durability:** The light-duty Smog Check program (BAR, 2020) has proven that not all repairs are durable; and while Clean Truck Check can ensure a malfunctioning vehicle is repaired, there is still a chance for the vehicle to re-fail after a limited timeframe. MacKay's national survey data (refer to Appendix F of the Clean Truck Check Staff Report for details) on heavy-duty vehicle and engine component replacement intervals were used to estimate the annual re-fail rates for repaired vehicles.
- **Inspection frequency:** The Clean Truck Check regulation would require vehicle owners to periodically submit inspection data to the reporting system. The malfunctioning vehicles would be more likely to be identified and repaired earlier with more frequent inspections.

Additional details on the methodology to estimate the emission reductions from Clean Truck Check using EMFAC2021 can be found in Appendix D of the Heavy-Duty Inspection and Maintenance Regulation, published in 2021³⁸.

C. Emissions Reductions from the Clean Truck Check

The State's proposed commitment to achieve an aggregate emissions reduction of 68.4 tpd of NO_x during the 2026 ozone season represents the estimated Statewide emissions reductions from the Clean Truck Check Program that CARB committed to adopt in the Valley State SIP Strategy to address emissions from heavy-duty diesel trucks - one of the largest sources of NO_x emissions in California. While other measures in the 2016 State SIP Strategy and the more recent 2022 State Strategy for the State Implementation Plan (2022 State SIP Strategy) will yield benefits across the State, these emissions reductions represent

³⁸ Appendix D: Emissions Inventory Methods and Results - Proposed Heavy-Duty Inspection and Maintenance Regulation, <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2021/hdim2021/appd.pdf>, last accessed: April 24, 2024

the amount that is needed to meet the good neighbor provisions of the Act. Table 5 below shows the CARB measure providing the needed emissions reductions as well as the schedule on which CARB adopted and began implementation of the measure.

Table 5: Clean Truck Check Program Implementation Date

Regulation	Action	Implementation Began
Heavy-Duty Vehicle Inspection and Maintenance Program (Clean Truck Check)	2021	2023

The Clean Truck Check combines periodic vehicle testing requirements with other emissions monitoring techniques and expanded enforcement strategies to identify vehicles in need of emissions related repairs and ensures any needed repairs are performed. The following table represents the State’s commitment to achieve an aggregate emissions reduction of 68.4 tpd of NOx statewide during the 2026 ozone season to meet the good neighbor provisions of the Act throughout the State. This level of emissions reduction represents approximately seven times the amount of NOx reductions for California quantified from measures outlined in the FIP.

Table 6: Expected NOx Reduction Due to Clean Truck Check Program in 2026

Regulation	NOx Reductions 2026 Ozone Season (tpd)
Heavy-Duty Vehicle Inspection and Maintenance Program (Clean Truck Check)	68.4

While not included in this 2024 Good Neighbor SIP, CARB continues to adopt measures which will achieve emission reductions in future years to meet the ozone NAAQS. Measures from the 2016 State SIP Strategy that will provide reductions beyond 2026 include amendments to the Advanced Clean Cars program (Advanced Clean Cars II), the Heavy-Duty Omnibus Regulation, the Advanced Clean Trucks Regulation, and amendments to both the Small Off-Road Equipment and Transport Refrigeration Unit Regulations. Measures from the 2022 State SIP Strategy that have already been adopted as regulations by CARB include the Advanced Clean Fleets Regulation, amendments to the Off-Road Regulation, and amendments to the Commercial Harbor Craft Regulation.

Overall, NOx emissions from sources that are primarily regulated by the federal government, such as OGVs, aircraft, and locomotives, have historically been reduced as a result of federal activity, although not at the same pace as has been achieved in other sectors. In aggregate, emissions from these sources are projected to remain fairly constant through 2026 and increase in later years without additional controls. While emissions from

locomotives continue to decline, emissions from OGVs and aircraft are projected to increase. Although primary regulatory authority over many of these sources lies with the federal government, CARB has nonetheless adopted a few major regulations to reduce emissions from OGVs and locomotives under California's limited jurisdiction through waivers. CARB encourages U.S. EPA to reduce emissions from sources under their control.

V. Act Section 110(l) Analysis

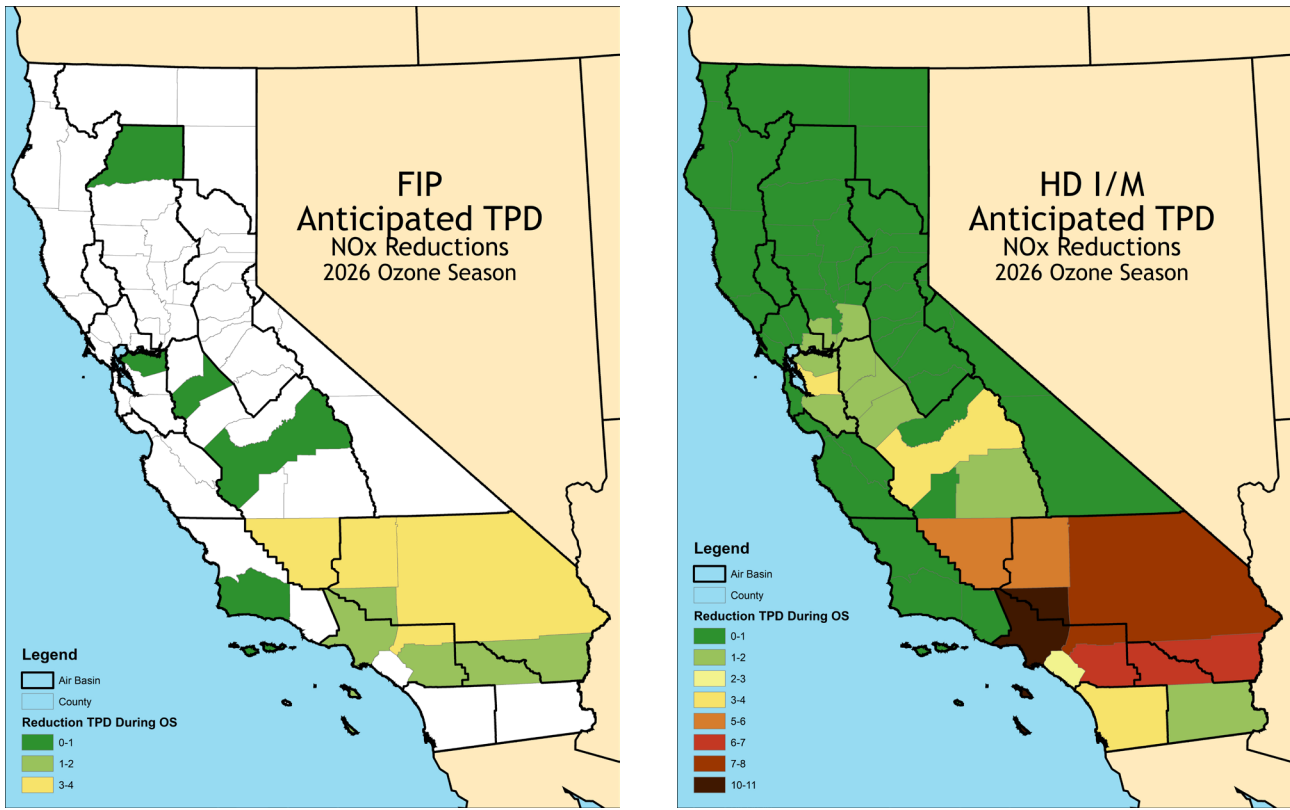
Act section 110 (l) specifies that the U.S. EPA administrator shall not approve a revision of a plan if the revision would interfere with any applicable requirement concerning attainment and reasonable further progress or any other applicable requirement of the Act. In layman's terms, CARB needs to ensure that this 2024 Good Neighbor SIP achieves more emission reductions than in the FIP and that the spatial resolution of the reductions are comparable. Table 7 and Figure 6 below show the spatial distribution of reductions from the Clean Truck Check compared to the reductions outlined in the FIP. CARB wanted to compare the magnitude and location of the reductions in each of the counties across the State to assess subsequent transport of emissions to the neighboring states. Both clearly indicate that the reductions will exceed the amount and spatial extent of FIP reductions in the same areas as the FIP and indeed almost every county of the State except for Shasta County. Shasta County is surrounded by other counties that will provide additional emission reductions.

Table 7: Comparative Impact of Clean Truck Check Reductions to FIP Reductions by County (NOx emissions)

County	HD I/M (tpd)	FIP (tpd)
Alameda	3.547	
Alpine	0.021	
Amador	0.067	
Butte	0.567	
Calaveras	0.079	
Colusa	0.249	
Contra Costa	1.053	0.059
Del Norte	0.018	
El Dorado	0.209	
Fresno	3.612	0.759
Glenn	0.207	
Humboldt	0.308	
Imperial	1.205	
Inyo	0.128	
Kern	5.566	3.971
Kings	0.848	
Lake	0.108	
Lassen	0.035	
Los Angeles	10.066	0.339
Madera	0.717	
Marin	0.181	
Mariposa	0.015	
Mendocino	0.376	
Merced	1.893	
Modoc	0.021	
Mono	0.089	
Monterey	0.512	
Napa	0.214	
Nevada	0.376	
Orange	2.368	

County	HD I/M (tpd)	FIP (tpd)
Placer	0.849	
Plumas	0.042	
Riverside	6.329	0.893
Sacramento	1.946	
San Benito	0.301	
San Bernardino	7.383	3.068
San Diego	3.661	
San Francisco	0.386	
San Joaquin	1.936	
San Luis Obispo	0.268	
San Mateo	0.475	
Santa Barbara	0.651	0.002
Santa Clara	1.945	
Santa Cruz	0.163	
Shasta	0.706	0.820
Sierra	0.006	
Siskiyou	0.555	
Solano	1.143	
Sonoma	0.600	
Stanislaus	1.189	0.547
Sutter	0.099	
Tehama	0.655	
Trinity	0.108	
Tulare	1.010	
Tuolumne	0.059	
Ventura	0.635	
Yolo	0.595	
Yuba	0.083	

Figure 6: Comparative Impact of FIP Reductions to Clean Truck Check Reductions



The 2024 Good Neighbor SIP complies with the Act section 110(l) by demonstrating that the Clean Truck Check will not interfere with Act requirements related to this standard dealing with interstate transport. Using a combination of federal and State emissions data, the 2024 Transport SIP Amendment shows that the reductions necessary to ensure mitigation of downwind impact to maintenance and nonattainment receptors, in accordance with the Good Neighbor Provision of the Clean Air Act, are adequate to bring California below the one percent threshold outlined per modeling conducted by U.S. EPA. Thus, the 2024 Good Neighbor SIP Amendment complies with the Act section 110(l) by demonstrating that the replacement of the FIP with an approvable 2024 Good Neighbor SIP will not interfere with the attainment and maintenance of the federal 8-hour ozone standard or any other Act requirements related to this standard.

VI. Summary

Following U.S. EPA's Four-Step process to address interstate transport, under Step One and Two, California contributes to the following downwind nonattainment and maintenance areas:

- Yuma, Arizona;
- Denver/Chatfield, Colorado;
- Rocky Flats, Colorado;
- Denver/NREL, Colorado;
- Las Vegas/Northwest, Nevada;
- SLC/Bountiful, Utah;
- SLC/Hawthorne, Utah;
- SLC/Herriman, Utah;
- SLC/Ogden, Utah;
- SLC/Harrisonville, Utah;
- Morongo Band of Mission Indians, California; and
- Pechanga Band of Mission Indians, California.

For Step Three, identifying the amount of NO_x reductions to mitigate California's impact on downwind receptors, California will utilize the NO_x reductions identified in the FIP as representative of a significant contribution even though an analysis of the implementation showed a lower implementation level. This significant contribution amounts to 1,600 tons of NO_x during the ozone season.

For Step Four, CARB outlined the mobile source emissions reductions from the Clean Truck Check Program expected to take place within the 2026 timeframe and not accounted for in the U.S. EPA modeling, which will result in an almost sevenfold increase of the FIP identified reductions. California is and will continue to mitigate our emissions impact on our neighboring states. Having documented that this SIP revision achieves more ozone precursor emissions reductions and thus ozone benefits for downwind areas than the FIP, CARB requests U.S. EPA approve the 2026 Good Neighbor SIP to show that California meets its good neighbor obligations for the 0.070 ppm 8-hour- ozone standard.

VII. Environmental Analysis

Introduction

This section provides the basis for CARB's determination that the proposed 2024 Good Neighbor SIP is exempt from the requirements of the California Environmental Air Quality Act (CEQA). A brief explanation of this determination is provided below. CARB's regulatory program, which involves the adoption, approval, amendment, or repeal of standards, rules, regulations, or plans for the protection and enhancement of the State's ambient air quality, has been certified by the California Secretary for Natural Resources under Public Resources

Code section 21080.5 of the CEQA (14 CCR 15251(d)). Public agencies with certified regulatory programs are exempt from certain CEQA requirements, including but not limited to, preparing environmental impact reports, negative declarations, and initial studies. CARB, as a lead agency, prepares a substitute environmental document (referred to as an "Environmental Analysis" or "EA") as part of the Staff Report prepared for a proposed action to comply with CEQA (17 CCR 6000060008). If the SIP is finalized, a Notice of Exemption will be filed with the Natural Resources Agency for public inspection.

Analysis

CARB has determined that the proposed 2024 Good Neighbor SIP is exempt from CEQA under the "general rule" or "common sense" exemption (14 CCR 15061(b)(3)). The common sense exemption states a project is exempt from CEQA if "the activity is covered by the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA." The proposed SIP amendment will not result in a significant adverse impact on the environment since it is limited to describing authorities, resources, and programs California and local air districts already have in place to implement, maintain, and enforce the federal NAAQS and does not contain any proposals for emission control measures or other actions that could result in adverse impacts to the environment. Based on CARB's review it can be seen with certainty that there is no possibility that the proposed SIP may result in a significant adverse impact on the environment; therefore, this activity is exempt from CEQA.

VIII. Board Recommendation

CARB staff has concluded that the 2024 Good Neighbor SIP meets the requirements of the Act for mitigating our impact on downwind neighbors. The 2024 Good Neighbor SIP addresses U.S. EPA's disapproval of the interstate transport requirements for the 0.070 ppm 8-hour ozone NAAQS and the FIP. CARB staff recommends that the Board:

1. Adopt the State commitment to achieve aggregate emission reductions of 68.4 tons per day of NOx emissions;
2. Adopt the 2024 Good Neighbor SIP; and
3. Direct the Executive Officer to submit the 2024 Good Neighbor SIP including the aggregate emissions reduction commitment to U.S. EPA as a revision to the California SIP.