BOARD MEETING DATE: August 2, 2024 AGENDA NO. 26

PROPOSAL: Determine That Proposed Rule 2306 – Freight Rail Yards Does Not Require New Environmental Document; Determine That Proposed Rule 316.2 – Fees for Rule 2306 is Exempt From CEQA; and Adopt Rules 2306 and 316.2

SYNOPSIS: Proposed Rule 2306 (PR 2306) establishes emission reductions targets to ensure that NOx reductions from freight rail yards within the South Coast AQMD jurisdiction will be achieved at levels that are proportional or more-than-proportional to reductions throughout California from implementation of state regulations affecting freight rail yard emission sources. PR 2306 further requires facility-reporting on zero emission infrastructure, and for non-federal public agencies to include PR 2306 compliance requirements in contracting with a freight rail yard owner or operator. Proposed Rule 316.2 establishes fees to recover reasonable costs for South Coast AQMD in implementing PR 2306.

COMMITTEE: Mobile Source, January 19, April 19 and June 21, 2024, Reviewed

RECOMMENDED ACTIONS:
Adopt the attached Resolution:

1. Determining that Proposed Rule 2306 – Freight Rail Yards is a later activity within the scope of the Final Program Environmental Impact Report (EIR) for the 2022 AQMP and the Final Program EIR for the 2016 AQMP such that no new environmental document is required;
2. Determining that Proposed Rule 316.2 – Fees for Rule 2306 is exempt from the requirements of the CEQA;
3. Adopting Rule 2306 and Rule 316.2; and
4. Approving Rule 2306 Calculation Methodology and Data Appendix.

Wayne Nastri
Executive Officer

SLR:IM:IES:ZB:CG:DCH

Background

Proposed Rule 2306 – Freight Rail Yards (PR 2306) is part of the suite of Facility Based Mobile Source Measures (FBMSMs) included in the 2016 and 2022 AQMPs. The FBMSMs aim at collectively addressing emissions related to goods movement and to assist in meeting state and federal ambient air quality standards for ozone and PM2.5 and improving public health, especially for communities located near freight hubs including freight rail yards. NOx is the key pollutant that must be controlled to meet state and federal air quality standards, and over 80 percent of the NOx in the South Coast AQMD region is from mobile sources, especially the heavy-duty vehicles and equipment used in the goods movement sector.

In 2023, CARB adopted an In-Use Locomotive Regulation and Advanced Clean Fleets (ACF) Regulation. Both regulations implement control measures included in the 2022 State SIP Strategy and address key emission sources associated with freight rail yard operations. PR 2306 is designed to supplement these state regulations as they are implemented statewide based on the characteristics of the affected fleets deployed in the state as a whole. Therefore, South Coast AQMD may not necessarily benefit proportionally from statewide implementation of CARB's regulations. PR 2306 will implement the AQMP FBMSMs to achieve emission reductions at all freight rail yards located within the South Coast AQMD region, including but not limited to intermodal facilities and classification yards. PR 2306 will also implement several actions to reduce rail yard emissions that are included in the Community Emission Reduction Plans adopted by the Board for the communities of Wilmington/Carson/West Long Beach, San Bernardino/Muscoy, East Los Angeles/Boyle Heights/West Commerce, and Southeast Los Angeles.

Proposed Rule 316.2 – Fees for Rule 2306 (PR 316.2) is a companion fee rule to PR 2306 to recover the reasonable administrative and implementation costs of PR 2306 in accordance with Health and Safety Code Section 40522.5.

Proposal

PR 2306 seeks to reduce NOx emissions associated with freight rail yard operations by requiring operators of freight rail yards to meet emission reductions targets to ensure the South Coast AQMD region achieves emission reductions that are at least proportional to statewide emission reductions from implementation of CARB's In-Use Locomotive and ACF regulations. The proposed rule requires demonstration and reporting that emission reductions targets for every milestone year are met, using PR 2306 Calculation Methodology and Data Appendix. PR 2306 also requires reporting on zero emission infrastructure planning, development, and utilization as part of facility emission reduction efforts. PR 2306 additionally includes notification and recordkeeping requirements to facilitate rule compliance and enforcement.

PR 2306 applies to owners and operators of proposed, new, and existing freight rail yards, and any non-federal public agency who enters into a contractual agreement with the owner or operator of a freight rail yard in relation to its lease, construction, or operation. PR 2306 requires such non-federal public agencies to include provision(s) that have the effect of requiring the contracted freight rail yard owner or operator to comply with PR 2306.

PR 2306 offers three pathways through which operators can comply with the emission reductions requirements. First, freight rail yard operators are required to meet or exceed the predetermined emission reductions targets specified in the proposed rule that are consistent with emission reductions projected by CARB for the statewide implementation of their In-Use Locomotive and ACF regulations. Second, alternative emission reductions targets may be used in lieu of the predetermined targets, as long as the freight rail yard operator is able to successfully demonstrate that the alternative targets are consistent with actual compliance with the statewide regulations at all freight rail yards throughout the state that are operated by the same operator. A third option is available to the operator of a freight rail yard that experiences throughput declines, where any emission reductions resulting from lower levels of activities may be counted towards meeting or exceeding either the predetermined or the alternative emission reductions targets.

By setting emission reductions targets in accordance with implementation of statewide regulations, PR 2306 will ensure necessary NOx reductions occurring at facility level within the South Coast AQMD region. For all compliance pathways, freight rail yards may obtain emission reductions from not only locomotives and drayage trucks, but also from cargo handling equipment, transportation refrigeration units, and other on-site supporting equipment, to meet or exceed the emission reductions targets. Initial and milestone compliance reports are required to demonstrate compliance with the emission reductions requirements.

PR 2306 additionally requires freight rail yard owners and operators to submit initial and milestone update reports on the planning, developmental status, and use of on- and off-site zero emission infrastructure in support of freight rail yard operations. This reporting will facilitate information sharing and coordination to expedite the development of necessary infrastructure and deployment of zero emission technologies. If the freight rail yard owner and operator identify and report a need to upgrade the electrical service being provided to the freight rail yard, they are required to submit a request to the local electrical utility for such an upgrade according to a specified schedule.

PR 2306 includes exemptions for freight rail yards that meet specific conditions. First, freight rail yards that are not intermodal rail yards and have low activity levels as specified in the proposed rule are exempt from specific provisions and requirements.

Second, certain freight rail yards that are owned or operated by the ports of Long Beach or Los Angeles are exempt from complying with PR 2306, including all intermodal on-dock rail facilities at the two ports, as well as non-intermodal rail facilities whose operations are limited to moving railcars to and/or from marine terminals for the purpose of on-port switching.

If adopted, PR 2306 will become effective when U.S. EPA has approved the inclusion of PR 2306 in the California SIP, granted an authorization for CARB's In-Use Locomotive Regulation, and granted a waiver and/or an authorization for CARB's ACF Regulation either as a whole or in part for its drayage truck requirements. The In-Use Locomotive and ACF regulations are currently under U.S. EPA's review for federal authorization and/or waiver, and CARB is not enforcing them.

PR 316.2 is the companion rule to PR 2306 and establishes fees to recover reasonable costs incurred by South Coast AQMD for the implementation of PR 2306. PR 316.2, which applies to owners and operators of freight rail yards, specifies fee rates for each PR 2306 report and notification, payment due dates, and service charge for returned check, and will be effective upon adoption.

Public Process

PR 2306 and PR 316.2 were developed through a thorough public process that included a series of Working Group and Community Workshop meetings, as well as a Public Workshop. Since the adoption of the 2016 AQMP, staff has conducted 13 Working Group meetings and six Community Workshops. The Working Group included affected facilities, environmental and community representatives, public agencies, consultants, equipment vendors, electrical utilities, labor groups, and other interested parties. Community Workshops were organized to inform the communities affected by freight rail yard operations of this rulemaking, as well as to provide community members and the general public additional opportunities to provide feedback and suggestions. Staff has also conducted freight rail yard visits and had several meetings with individual businesses and community advocate groups during development of the proposed rules. Throughout the public process, staff also held several meetings with other public agencies including CARB, U.S. EPA, the California High Speed Rail Authority, city governments, and other air districts.

Key Issues

Throughout the rulemaking process, staff worked with stakeholders to resolve issues, and the proposed rules include revisions in response to comments received. The remaining key issues pertain to PR 2306 and are listed as follows.

- *Communicating rule performance with the public*

Some community groups have requested that more is needed to communicate to the public whether the rule is working as intended. This could include through air quality

monitoring around freight rail yards, providing information about rule compliance and enforcement, and making freight rail yard data publicly available. Extensive air quality monitoring has already been conducted around freight rail yards as part of Community Air Monitoring Plan implementation for AB 617 communities.[1] Staff is not recommending to include air quality monitoring as part of PR 2306 given this already available data, and that PR 2306 is designed to reduce regional pollution such as ozone and fine particulate matter. Fenceline monitors would not be able to readily detect the impact of emission reductions from PR 2306 and state rules given other emissions sources near freight rail yards, and because the bulk of emission reductions may occur offsite on the rail lines and truck routes leading to these facilities. Rule performance will be evaluated and made available through reporting required by PR 2306. This reported information is detailed and is unlikely to be readily understandable by the public in raw form, though it will be crucial for determining rule compliance and performance. The Board Resolution therefore directs staff to conduct public outreach to identify an appropriate approach to make information and summaries from PR 2306 reports publicly available in a user-friendly format, and to report back to the Mobile Source Committee with a recommended approach that demonstrates the rule's effectiveness.

- *Some environmental stakeholders request that the emission reductions targets in PR 2306 be stronger and take into account more than trucks and locomotives*

PR 2306 emission reductions targets are set at levels to ensure that emission reductions achieved at the facility-level in the South Coast AQMD region will be at least proportional relative to emission reductions from implementation of statewide regulations. This is expected to achieve up to 82 percent NOx emissions reductions by 2037. Compliance with PR 2306 emission reduction requirements can also be achieved through emission reductions from one or more mobile sources associated with freight rail yard operations, such as locomotives, drayage trucks, cargo handling equipment, transportation refrigeration units, and other on-site support equipment, as long as the emission reductions targets are met or exceeded. Compliance with PR 2306 could potentially result in further emission reductions from any mobile sources associated with freight rail yard operations, particularly in the event that statewide compliance with CARB regulations alone does not achieve proportional or greater emission reductions at the applicable freight rail yards as mandated by PR 2306.

- *Concern about potentially overlapping requirements between PR 2306 and implementation of other AQMP FBMSMs*

PR 2306 is part of the suite of AQMP FBMSMs aimed at collectively reducing freight emissions in the South Coast AQMD region. Each FBMSM is designed to address facility emissions from different groups of freight hubs, including freight rail yards. A single freight hub will not be subject to requirements resulting from the implementation of multiple FBMSMs. For example, the exemption from PR 2306 compliance for

[1] https://www.aqmd.gov/nav/about/initiatives/environmental-justice/ab617-134/ab-617-community-air-monitoring

certain port-owned or port-operated freight rail yards is proposed such that these exempted freight rail yards, which are an integral part of commercial marine port operations, will be subject to separate emission reduction obligations through the implementation of another AQMP FBMSM for commercial marine ports.

Emission Reductions and Public Health Benefits
PR 2306, in conjunction with CARB's In-Use Locomotive and ACF regulations, is projected to reduce NOx emissions by an average of 10.5 tons per day over the 2027 - 2050 period. The associated health benefits are estimated based on the health impact modeling completed for the 2022 AQMP. Overall, implementation of PR 2306 in conjunction with the state regulations is expected to result in about 300 premature deaths avoided annually from 2027-2050, and about 2,100 reduced emergency department visits and hospital admissions per year due to various illnesses (asthma, cardiovascular, respiratory, Alzheimer's disease, Parkinson's disease, and ischemic stroke). Expected monetized public health benefits are estimated to be $5 billion annually during the same time period.

California Environmental Quality Act (CEQA)
Pursuant to CEQA and South Coast AQMD's certified regulatory program (Public Resources Code Section 21080.5, CEQA Guidelines Section 15251(l) and South Coast AQMD Rule 110), South Coast AQMD, as lead agency, reviewed PR 2306 and determined that: 1) PR 2306 implements three control measures that were previously adopted in the 2022 AQMP and the 2016 AQMP; 2) the Final Program Environmental Impact Report (EIR) for the 2022 AQMP and the Final Program EIR for the 2016 AQMP evaluated the control measures which are being relied upon for PR 2306, and analyzed their potential environmental impacts; 3) no subsequent EIR would be required per CEQA Guidelines Section 15168 (c)(2) because there are no new or modified physical changes that would result from implementing PR 2306 which were not previously analyzed in the Final Program EIR for the 2022 AQMP and the Final Program EIR for the 2016 AQMP; and 4) the Final Program EIR for the 2022 AQMP and the Final Program EIR for the 2016 AQMP can be relied on for CEQA compliance. Thus, PR 2306 qualifies as a later activity within the scope of the programs approved earlier in the 2022 AQMP and the 2016 AQMP per CEQA Guidelines 15168 (c), and the Final Program EIR for the 2022 AQMP and the Final Program EIR for the 2016 AQMP adequately describe and analyze the activities associated with implementing PR 2306 for the purposes of CEQA such that no new environmental document is required. The analysis supporting this conclusion can be found in Appendix A of the Final Staff Report (Attachment I of this Board Letter).

In addition, pursuant to CEQA Guidelines Sections 15002(k) and 15061, PR 316.2 involves charges by public agencies for the purpose of meeting operating expenses which are statutorily exempt from CEQA pursuant to CEQA Guidelines Section 15273. A Notice of Exemption has been prepared for PR 316.2 pursuant to CEQA Guidelines

Section 15062 and is included as Attachment K of this Board Letter. If PR 316.2 is approved, the Notice of Exemption will be filed for posting with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino counties, and with the State Clearinghouse of the Governor's Office of Planning and Research.

Socioeconomic Impact Assessment

PR 2306 and PR 316.2 will be applicable to approximately 25 freight rail yards within the South Coast AQMD jurisdiction. The portion of estimated compliance costs due to the implementation of PR 2306 are expected to be nominal because the majority share of the costs expected to accrue in the South Coast AQMD jurisdiction will result from the combined implementation of statewide regulations (e.g., CARB's In-Use Locomotive Regulation and CARB's ACF Regulation), which will overlay the implementation of PR 2306. For context and informational purposes, based on an analysis of CARB's staff reports, the estimated South Coast AQMD region-specific portion of statewide costs across all years (2027-2050) to be approximately $2.27 billion in undiscounted 2023 dollars over the period 2027-2050, with $2.87 billion associated with locomotives and -$596 million (i.e., a cost-savings) related to drayage trucks. The net costs are only roughly two percent of the annual monetized health benefits.

In addition, the implementation of PR 2306 involves incremental report and notification preparation costs, which are estimated at $255,290 in undiscounted 2023 dollars, on an annual basis, while PR 316.2 establishes fees for PR 2306 reports and notifications to be paid by freight rail yard owners and operators subject to PR 2306. The annual reporting fees for PR 316.2 are estimated at $106,640, while the notification fees are not estimated because the frequency of notification is unknown and unable to be forecasted. The details of the Socioeconomic Impact Assessment can be found in the Final Staff Report (Attachment I of this Board Letter).

AQMP and Legal Mandates

Pursuant to Health and Safety Code Section 40460 (a), South Coast AQMD is required to adopt an AQMP demonstrating compliance with all federal regulations and standards. South Coast AQMD is also required to adopt rules and regulations that carry out the objectives of the AQMP. The 2016 AQMP committed South Coast AQMD to implement FBMSMs, one of which included MOB-02 – Emission Reductions at Rail Yards and Intermodal Facilities and was subsequently bifurcated to MOB-02A – Emission Reductions at New Rail Yards and Intermodal Facilities and MOB-02B – Emission Reductions at Existing Rail Yards and Intermodal Facilities in the 2022 AQMP. U.S. EPA approved the 2016 AQMP into the SIP, including control measure MOB-02. PR 2306 is needed to reduce NOx emissions to assist in meeting state and federal ambient air quality standards for ozone and fine particulate matter. The South Coast AQMD is required by the California Clean Air act, Health and Safety Code Section 40914, to adopt all feasible measures to attain air quality standards.

Implementation and Resource Impacts

PR 2306 implementation and compliance activities will include review of reports and notifications, audits, inspections, and enforcement activities. Additional staff will be required to administer the PR 2306 program once the rule becomes effective, and the need for added staffing resources will be included in future budget actions. The cost of these staffing resources will be offset through fee revenues collected under PR 316.2.

Attachments

A. Summary of Proposal
B. Key Issues and Responses
C. Rule Development Process
D. Key Contacts List
E. Resolution
F. PR 2306
G. PR 316.2
H. PR 2306 Calculation Methodology and Data Appendix
I. Final Staff Report
J. Supplemental Information for Proposed Rule 316.2 Fee Rates
K. Notice of Exemption from CEQA for PR 316.2
L. Board Presentation

ATTACHMENT A

SUMMARY OF PROPOSAL

Proposed Rule 2306 – Freight Rail Yards

Purpose

- Proposed Rule 2306 (PR 2306) seeks to reduce NOx emissions associated with freight rail yards and the mobile sources attracted to freight rail yards in order to assist in meeting state and federal air quality standards for ozone and fine particulate matter, and to ensure that proportional or greater emission reductions occur in the South Coast AQMD jurisdiction from implementation of state regulations addressing freight rail yard emission sources.

Applicability

- PR 2306 applies to owners and operators of proposed, new, and existing freight rail yards located within the South Coast AQMD jurisdiction, and any non-federal public agency contracting with the owner or operator of a freight rail yard subject to PR 2306.

Requirements

- Freight rail yard operators are required to meet or exceed NOx emission reductions targets in milestone years through multiple compliance pathway options:
    - Meet or exceed the predetermined emission reductions targets as specified in the proposed rule based on compliance projections in CARB's regulatory documentation for CARB's In-Use Locomotive and Advanced Clean Fleets regulations.
    - Meet or exceed the alternative emission reductions targets in lieu of the predetermined targets, provided that the freight rail yard operator can demonstrate successfully that these alternative targets are consistent with the operator's overall state compliance with CARB regulations for all of its operated freight rail yards in the state.
    - An additional compliance pathway is available to the operator of a freight rail yard experiencing throughput declines, where the operator may count emission reductions resulting from decreased activity levels towards meeting or exceeding either the predetermined or alternative emission reductions targets.
- Freight rail yard owners and/or operators are required to submit initial reports and milestone year reports to demonstrate compliance with emission reduction requirements, and to report status and progress on zero emission infrastructure planning, development, and utilization.

- Freight rail yard owners and operators are required to submit to their electrical utility a request to upgrade the electrical service if it is indicated in the initial or milestone zero emission reports that the electrical capacity is insufficient for future operation and compliance needs of the freight rail yard.
- Any non-federal public agency who enters, renews, or amends a contractual agreement in relation to the lease, construction, or operation of a freight rail yard subject to PR 2306 shall include provision(s) that have the effect of requiring the contracted freight rail yard owner or operator to comply with PR 2306.

Reporting

- Freight rail yard operators are required to submit an Initial Facility Information Report, including information about the freight rail yard, throughput data, equipment and vehicles operated on or through the facility to transport or assist in transporting cargo or goods and their associated emissions, and the freight rail yard's aggregate emission factor.
- Freight rail yard owners and operators are required to submit an Initial Zero Emission Infrastructure Report, including the planning, development status, and use of on- and off-site zero emission infrastructure in support of freight rail yard operations.
- Freight rail yard operators are required to submit Milestone Compliance Reports to demonstrate compliance with emission reductions requirements and also include updates to facility information, throughput, equipment and vehicles, and aggregate emission factor.
- Freight rail yard owners and operators are required to submit Zero Emission Infrastructure Status Update Reports and provide updates on information from the Initial Zero Emission Infrastructure Report.

Notifications

- Freight rail yard owners and/or operators shall submit the following notifications to the Executive Officer according to the specified schedule for each notification:
    - Change of Freight Rail Yard Operator Notification
    - Change of Freight Rail Yard Owner Notification
    - Freight Rail Yard Shutdown Notification
    - Exceedance of Low Activity Exemption Threshold Notification
    - Proposed Freight Rail Yard Construction, Conversion, or Expansion Notification

Recordkeeping

- Freight rail yard owners and operators are required to keep all records and supplementary documents that may support the accuracy and validity of submitted information in compliance with PR 2306, to be made available to the Executive Officer upon written request.

Exemptions

- Freight rail yards that are not intermodal rail yards and have switching activities occurring no more than 30 calendar days per year are exempt from specific provisions and requirements.

Proposed Rule 2306 – Freight Rail Yards

- Certain freight rail yards that are owned or operated by the ports of Long Beach or Los Angeles are exempt from complying with PR 2306, including all intermodal on-dock rail facilities at the two ports, as well as non-intermodal rail facilities whose operations are limited to moving rail cars to and/or from marine terminals for the purpose of on-port switching.

Effective Date

- If adopted, PR 2306 will become effective after the U.S. EPA has approved it as part of California's State Implementation Plan (SIP), granted an authorization for CARB's In-Use Locomotive Regulation, and granted an authorization and/or waiver for CARB's Advanced Clean Fleets Regulation as a whole or in part for its drayage truck requirements.

Appendix

- PR 2306 Appendix specifies the equations to calculate the percent reduction of NOx emissions to demonstrate compliance with PR 2306. The equations shall be used along with the accompanying PR 2306 Calculation Methodology and Data Appendix.

Proposed Rule 316.2 – Fees for Rule 2306

Purpose

- Proposed Rule 316.2 (PR 316.2) is intended to collect fees from freight rail yard owners and operators to recover reasonable costs incurred by the South Coast AQMD associated with the implementation of PR 2306.

Applicability

- Freight rail yard owners and operators subject to reporting and notification requirements of PR 2306 will also be subject to the respective fees of PR 316.2.

Requirements

- Freight rail yard owners and operators shall pay the specified fees for each required report and notification submitted pursuant to PR 2306, at the time of report or notification submission.
- A service charge shall be paid for return checks.

ATTACHMENT B

KEY ISSUES AND RESPONSES

Proposed Rule 2306 – Freight Rail Yards

Proposed Rule 316.2 – Fees for Rule 2306

Throughout the rule development process, staff worked with stakeholders to address and resolve key issues. The key remaining issues are listed as follows.

1) *Communicating rule performance with the public*

Some community groups have requested that more is needed to communicate to the public whether the rule is working as intended. This could include through air quality monitoring around freight rail yards, providing information about rule compliance and enforcement, and making freight rail yard data publicly available. Extensive air quality monitoring has already been conducted around freight rail yards as part of Community Air Monitoring Plan implementation for AB 617 communities.[1] Staff is not recommending to include air quality monitoring as part of PR 2306 given this already available data, and that PR 2306 is designed to reduce regional pollution such as ozone and fine particulate matter. Fenceline monitors would not be able to readily detect the impact of emission reductions from PR 2306 and state rules given other emissions sources near freight rail yards, and because the bulk of emission reductions may occur offsite on the rail lines and truck routes leading to these facilities. Rule performance will be evaluated and made available through reporting required by PR 2306. This reported information is detailed and is unlikely to be readily understandable by the public in raw form, though it will be crucial for determining rule compliance and performance. The Board Resolution therefore directs staff to conduct public outreach to identify an appropriate approach to make information and summaries from PR 2306 reports publicly available in a user-friendly format and in manners consistent with transparency obligations under the California Public Records Act. Staff will subsequently report back to the Mobile Source Committee with a recommended approach that demonstrates the rule's effectiveness.

2) *Some environmental stakeholders request that the emission reductions targets in PR 2306 be stronger and take into account more than trucks and locomotives*

PR 2306 emissions reduction targets are set at levels to ensure that emission reductions achieved at the facility-level in the South Coast AQMD region will be at least

[1] https://www.aqmd.gov/nav/about/initiatives/environmental-justice/ab617-134/ab-617-community-air-monitoring

proportional relative to emission reductions from statewide implementation of CARB's In-Use Locomotive and ACF regulations. PR 2306 is designed to supplement these state regulations as they are implemented statewide based on the characteristics of the affected fleets deployed in the state as a whole. Therefore, South Coast AQMD may not necessarily benefit proportionally from statewide implementation of CARB's regulations. PR 2306, in conjunction with the implementation of CARB's statewide regulations, is expected to achieve up to 82% NOx emissions reductions by 2037.

Compliance with PR 2306 emission reduction requirements can be achieved through emission reductions from one or more mobile sources associated with freight rail yard operations, such as locomotives, drayage trucks, cargo handling equipment, transportation refrigeration units, and other on-site support equipment, as along as the emission reductions targets are met or exceeded. Compliance with PR 2306 could potentially result in further emission reductions from any of these mobile sources, particularly in the event that statewide compliance with CARB regulations alone does not achieve proportional or greater emission reductions at the applicable freight rail yards as mandated by PR 2306.

3) *Concern about potentially overlapping requirements between PR 2306 and implementation of other AQMP Facility-Based Mobile Source Measures (FBMSM)*

PR 2306 is part of the suite of AQMP FBMSMs aimed at collectively addressing freight emissions in the South Coast AQMD region. Each FBMSM is designed to address facility emissions from different groups of freight hubs, including freight rail yards,. A single freight hub will not be subject to requirements resulting from the implementation of multiple FBMSMs. For example, the exemption from PR 2306 compliance for certain port-owned or port-operated freight rail yards is proposed such that these exempted freight rail yards, which are an integral part of commercial marine port operations, will be subject to separate emission reduction obligations through the implementation of another AQMP FBMSM for commercial marine ports.

PR 2306 requires a freight rail yard operator to demonstrate compliance with the proposed rule requirements by including any activities that are associated with that specific freight rail yard, whether or not the activities are also associated with the operation of other freight hubs such as another freight rail yard or a marine terminal (e.g., cargo transportation by drayage trucks from a container terminal to an intermodal rail yard). A freight rail yard operator does not need be concerned by the eventual accounting of SIP creditable emission reductions for the South Coast AQMD region. Prior to submitting SIP credit planning requirements to U.S. EPA, staff from South Coast AQMD will evaluate and address any 'double counting' of emission reductions that may occur across multiple regulations. This analysis is not the responsibility of a freight rail yard owner or operator under PR 2306.

ATTACHMENT C

RULE DEVELOPMENT PROCESS

Proposed Rule 2306 – Freight Rail Yards
Proposed Rule 316.2 – Fees for Rule 2306

Facility-Based Mobile Source Measure MOB-02 Working Group Meetings (3)
June 1, 2017; October 4, 2017; January 18, 2018

⬇

Facility-Based Mobile Source Measure MOB-02 Mobile Source Committee Briefings (4)
January 20, 2017; May 19, 2017; October 20, 2017; February 16, 2018

⬇

Facility Based Mobile Source Measure MOB-02 Governing Board Briefings (1)
May 4, 2018

⬇

Initiated Rulemaking
May 2018

⬇

Mobile Source Committee Briefings (12)
February 15, 2019; September 20, 2019; June 18, 2021; April 15, 2022; June 17, 2022; August 19, 2022; January 20, 2023; April 21, 2023; August 18, 2023; January 19, 2024; April 19, 2024; June 21, 2024

⬇

Governing Board Briefings (4)
September 7, 2018; March 1, 2019; October 4, 2019; April 3, 2020

⬇

Community Workshops (6)
November 20, 2019; December 11, 2019; March 25, 2023; April 11, 2023; April 12, 2023; June 5, 2024

⬇

Working Group Meetings (10)
July 30, 2021; September 30, 2021; December 8, 2021; April 12, 2022; June 7, 2022; August 10, 2022; November 15, 2022; February 1, 2023; January 17, 2024; April 17, 2024

⬇

75-Day Notice of Public Workshop
May 17, 2024

⬇

Public Workshop
June 4, 2024

⬇

Set Hearing
June 7, 2024

⬇

30-Day Notice of Public Hearing
July 2, 2024

⬇

Public Hearing
August 2, 2024

Eighty Six (86) months spent in rule development
Thirteen (13) Working Group Meetings
Six (6) Community Workshops
One (1) Public Workshop
Five (5) Governing Board Briefings
Sixteen (16) Mobile Source Committee Meetings

ATTACHMENT D

KEY CONTACTS LIST

Proposed Rule 2306 – Freight Rail Yards
Proposed Rule 316.2 – Fees for Rule 2306

Facilities

- 4th Street
- Anaheim
- Arlington
- City of Industry
- Commerce Eastern
- Dolores
- East Los Angeles
- Hobart
- Intermodal Container Transfer Facility (ICTF)
- Inland Empire
- Kaiser
- La Mirada
- Los Angeles Transportation Center (LATC)
- Los Nietos
- Malabar
- Mead
- Mira Loma
- Montclair
- Montebello
- Pico Rivera
- San Bernardino
- Santa Fe Springs
- Sheila
- Watson
- West Colton

Associations or Entities

- American Short Line and Regional Railroad Association
- Association of American Railroads
- Burlington Northern Santa Fe Railway
- Center for Community Action and Environmental Justice
- Coalition for Clean Air
- Earthjustice
- East Yard Communities for Environmental Justice
- Long Beach Alliance for Children with Asthma
- Move LA
- National Resources Defense Council
- Pacific Environment
- Pacific Harbor Line
- People's Collective for Environmental Justice

- San Pedro Peninsula Homeowners Coalition
- Sierra Club
- Union Pacific Railroad
- United Electrical, Radio & Machine Workers of America
- Westside Long Beach Neighborhood Association

Government Agencies

- California Air Resources Board
- California High-Speed Rail Authority
- City of Colton Electric Department
- City of Long Beach Harbor Department (Port of Long Beach)
- City of Los Angeles Department of Water and Power
- City of Los Angeles Harbor Department (Port of Los Angeles)
- Mojave Desert Air Quality Management District
- U.S. Environmental Protection Agency

Other Interested Parties

- CEA Consulting
- Community Environmental Services
- Pacific Merchant Shipping Association
- Southern California Edison

ATTACHMENT E

RESOLUTION NO. 24-_____

A Resolution of the South Coast Air Quality Management District (South Coast AQMD) Governing Board determining that Proposed Rule 2306 – Freight Rail Yards qualifies as a later activity within the scope of the program approved earlier for the 2022 Air Quality Management Plan (AQMP) and the 2016 AQMP per California Environmental Quality Act (CEQA) Guidelines Section 15168 (c), and the Final Program Environmental Impact Report (EIR) for the 2022 AQMP and the Final Program EIR for the 2016 AQMP adequately describe the activity for the purposes of CEQA such that no new environmental document is required.

A Resolution of the South Coast AQMD Governing Board determining that Proposed Rule 316.2 – Fees for Rule 2306 is exempt from the requirements of CEQA.

A Resolution of the South Coast AQMD Governing Board adopting Rule 2306 – Freight Rail Yards and Rule 316.2 – Fees for Rule 2306, and approving the accompanying Rule 2306 Calculation Methodology and Data Appendix.

WHEREAS, the South Coast AQMD Governing Board finds and determines that Proposed Rule 2306 and Proposed Rule 316.2 are considered a "project" as defined by CEQA; and

WHEREAS, South Coast AQMD has had its regulatory program certified pursuant to Public Resources Code Section 21080.5 and CEQA Guidelines Section 15251(l), and has conducted a CEQA review and analysis of Proposed Rule 2306 and Proposed Rule 316.2 pursuant to such program (South Coast AQMD Rule 110); and

WHEREAS, the South Coast AQMD Governing Board finds and determines that: 1) Proposed Rule 2306 implements Control Measure MOB-02A – Emission Reductions at New Rail Yards and Intermodal Facilities, and Control Measure MOB-02B – Emission Reductions at Existing Rail Yards and Intermodal Facilities which were previously adopted in the 2022 AQMP, and Control Measure MOB-02 – Emission Reductions at Rail Yards and Intermodal Facilities which was previously adopted in the 2016 AQMP; 2) no subsequent Environmental Impact Report (EIR) would be required per CEQA Guidelines Section 15168 (c)(2) because there are no new or modified physical changes that would result from implementing Proposed Rule 2306 which were not previously analyzed either in the Final Program EIR for the 2022 AQMP specific to Control Measures MOB-02A and MOB-02B or the Final Program EIR for the 2016 AQMP specific to Control Measure MOB-02; and 3) the Final Program EIR for the 2022 AQMP and the Final Program EIR for the 2016 AQMP can be relied on for CEQA compliance; and

WHEREAS, the South Coast AQMD Governing Board finds and determines that Proposed Rule 2306 is a later activity within the scope of the program approved earlier in the 2022 AQMP and the 2016 AQMP per CEQA Guidelines Section 15168 (c)(2), and the Final Program EIR for the 2022 AQMP and the Final Program EIR for the 2016 AQMP adequately describe and analyze the activities associated with implementing Proposed Rule 2306 for the purposes of CEQA such that no new environmental document is required; and

WHEREAS, the South Coast AQMD Governing Board finds and determines that based on substantial evidence in the record and in accordance with the noticing requirements in CEQA Guidelines Section 15168 (e), Proposed Rule 2306 qualifies as a later activity within the scope of the program approved earlier for the 2022 AQMP and 2016 AQMP, and the Final Program EIR for the 2022 AQMP and the Final Program EIR for the 2016 AQMP adequately describe the activity for the purposes of CEQA; and

WHEREAS, the South Coast AQMD Governing Board finds and determines after conducting a review of Proposed Rule 316.2 in accordance with CEQA Guidelines Section 15002(k) – General Concepts, the three-step process for deciding which document to prepare for a project subject to CEQA, and CEQA Guidelines Section 15061 – Review for Exemption, procedures for determining if Proposed Rule 316.2 is exempt from CEQA, that Proposed Rule 316.2 is exempt from CEQA; and

WHEREAS, the South Coast AQMD Governing Board hereby finds and determines that it can be seen with certainty that Proposed Rule 316.2 establishes fees, for the purpose of meeting operating expenses including the administration and enforcement of Rule 2306, which are statutorily exempt from CEQA pursuant to Public Resources Code Section 21080(b)(8) and CEQA Guidelines Section 15273; and

WHEREAS, the South Coast AQMD staff has prepared a Notice of Exemption for Proposed Rule 316.2, that is completed in compliance with CEQA Guidelines Section 15062 – Notice of Exemption; and

WHEREAS, Proposed Rule 2306, Proposed Rule 316.2, and supporting documentation, including but not limited to, Proposed Rule 2306 Calculation Methodology and Data Appendix, Supplemental Information for Proposed Rule 316.2 Fee Rates, the Notice of Exemption for Proposed Rule 316.2, and the Final Staff Report which includes Detailed CEQA Analysis and the Final Socioeconomic Impact Assessment, were presented to the South Coast AQMD Governing Board and the South Coast AQMD Governing Board has reviewed and considered this information, as well as has taken and considered staff testimony and public comment prior to approving the project; and

WHEREAS, the South Coast AQMD Governing Board finds and determines, taking into consideration the factors in Section (d)(4)(D) of the Governing Board Procedures (Section 30.5(4)(D)(i) of the Administrative Code), that no modifications have been made to Proposed Rule 2306 and Proposed Rule 316.2 since the Notice of Public Hearing was published that are so substantial as to significantly affect the meaning of Proposed Rule 2306 and Proposed Rule 316.2 within the meaning of Health and Safety Code Section 40726 because: (a) the changes do not impact emission reductions, (b) the changes do not affect the number or type of sources regulated by the

rules, (c) the changes are consistent with the information contained in the Notice of Public Hearing, and (d) the consideration of the range of CEQA alternatives is not applicable because: i) the consideration of the range of CEQA alternatives was conducted in the Final Program EIR for the 2022 AQMP, which evaluated Control Measures MOB-02A and MOB-02B, and the Final Program EIR for the 2016 AQMP which evaluated Control Measure MOB-02, upon which Proposed Rule 2306 relies, and ii) Proposed Rule 316.2 is exempt from CEQA; and

WHEREAS, the South Coast AQMD Governing Board has determined that there is a problem that Proposed Rule 2306 will help alleviate which is that South Coast AQMD is not in attainment of state and federal standards for ozone and fine particulate matter, and a need exists to adopt Proposed Rule 2306 to reduce oxides of nitrogen emissions to assist in meeting state and federal air quality standards for ozone and fine particulate matter, and to facilitate emission reductions from these pollutants related to freight rail yard operations; and

WHEREAS, the South Coast AQMD Government Board adopted the 2016 Air Quality Management Plan and the 2022 Air Quality Management Plan to establish a path toward the goal of attainment of state and federal ambient air quality standards, which included a suite of Facility-Based Mobile Source Measures to address emissions from the goods movement sector, including measures directed at freight rail yards; and

WHEREAS, the South Coast AQMD Governing Board has determined that adoption of Proposed Rule 2306 would also be consistent with Community Emission Reduction Plans adopted for the AB 617 communities in San Bernardino/Muscoy, Wilmington/Carson/West Long Beach, East Los Angeles/Boyle Heights/West Commerce, and Southeast Los Angeles; and

WHEREAS, Proposed Rule 316.2 has been developed to establish fees for freight rail yard owners and operators to fund the South Coast AQMD compliance activities associated with Proposed Rule 2306 pursuant to Health and Safety Code Section 40522.5 that authorizes South Coast AQMD to collect fees to recover reasonable costs associated with regulatory programs for areawide or indirect sources; and

WHEREAS, the South Coast AQMD Governing Board has determined that the Socioeconomic Impact Assessment of Proposed Rule 2306 and Proposed Rule 316.2, as presented in the Final Staff Report, is consistent with the March 17, 1989, Governing Board Socioeconomic Resolution for rule adoption; and

WHEREAS, the South Coast AQMD Governing Board has determined that the Socioeconomic Impact Assessment for Proposed Rule 2306 and Proposed Rule 316.2, as presented in the Final Staff Report, is consistent with the provisions of Health and Safety Code Sections 40440.8 and 40728.5; and

WHEREAS, the South Coast AQMD Governing Board has determined Proposed Rule 2306 and Proposed Rule 316.2 will result in increased costs to the affected industries, with a total annualized cost as specified in the Socioeconomic Impact Assessment, as presented in the Final Staff Report; and

WHEREAS, the South Coast AQMD Governing Board has actively considered the Socioeconomic Impact Assessment and has made a good faith effort to minimize such impacts; and

WHEREAS, the South Coast AQMD staff conducted a Public Workshop regarding Proposed Rule 2306 and Proposed Rule 316.2 on June 4, 2024; and

WHEREAS, Proposed Rule 2306 and the accompanying Proposed Rule 2306 Calculation Methodology and Data Appendix will be submitted to the California Air Resources Board and the United States Environmental Protection Agency for inclusion into the State Implementation Plan; and

WHEREAS, Health and Safety Code Section 40727 requires that prior to adopting, amending, or repealing a rule or regulation, the South Coast AQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the Public Hearing and in the Final Staff Report; and

WHEREAS, the South Coast AQMD Governing Board has determined that Proposed Rule 2306 implements sections of the Federal Clean Air Act including 42 U.S.C. Sections 7410, 7416, 7502, 7511a, and 7513a, and a need exists to adopt Proposed Rule 2306 to reduce oxides of nitrogen emissions to assist in meeting state and federal air quality standards for ozone and fine particulate matter, and to facilitate emission reductions from these pollutants related to freight rail yard operations; and

WHEREAS, the South Coast AQMD Governing Board obtains its authority to adopt, amend or repeal rules and regulations from Health and Safety Code Sections 39002, 39650 through 39669, 40000, 40001, 40440, 40441, 40522.5, 40701, 40702, 40716, 40717, 40725 through 40728, 40910, 40920.5, 41508, 41511 and 41700 and the Federal Clean Air Act; and

WHEREAS, the South Coast AQMD Governing Board has determined that Proposed Rule 2306 and Proposed Rule 316.2 are written or displayed so that its meaning can be easily understood by the persons directly affected by it; and

WHEREAS, the South Coast AQMD Governing Board has determined that Proposed Rule 2306 and Proposed Rule 316.2 are in harmony with, and not in conflict with or contradictory to, existing statutes, court decision, or state or federal regulations; and

WHEREAS, the South Coast AQMD Governing Board has determined that Proposed Rule 2306 and Proposed Rule 316.2 do not impose the same requirements as any existing state or federal regulations, and Proposed Rule 2306 and Proposed Rule 316.2 are necessary and proper to execute the powers and duties granted to, and imposed upon, South Coast AQMD; and

WHEREAS, the South Coast AQMD Governing Board, in adopting Proposed Rule 2306 and Proposed Rule 316.2, references the following statutes which South Coast AQMD hereby implements, interprets, or makes specific: Federal Clean Air Act Sections 110(a)(5)(C) and 116; Health and Safety Code Sections 40440, 40716, 40717, and 40522.5; and

WHEREAS, Health and Safety Code Section 40727.2 requires the South Coast AQMD to prepare a written analysis of all existing state and federal air pollution control requirements, all existing and proposed South Coast AQMD rules and regulations, and all pollution control requirements and guidelines that apply to the same equipment or source type being regulated whenever it adopts, or amends a rule, and that the South Coast AQMD's comparative analysis of Proposed Rule 2306 and Proposed Rule 316.2 are included in the Final Staff Report; and

WHEREAS, the Public Hearing has been properly noticed in accordance with all provisions of Health and Safety Code Sections 40725 and 40440.5; and

WHEREAS, the South Coast AQMD Governing Board has held a Public Hearing in accordance with all provisions of state and federal law; and

WHEREAS, the South Coast AQMD Governing Board specifies the Planning, Rule Development, and Implementation Manager overseeing the rule development for Proposed Rule 2306 and Proposed Rule 316.2 as the custodian of the documents or other materials which constitute the record of proceedings upon which the adoption of Proposed Rule 2306 and Proposed Rule 316.2 is based, which are located at the South Coast Air Quality Management District, 21865 Copley Drive, Diamond Bar, California; and

NOW, THEREFORE, BE IT RESOLVED, that the South Coast AQMD Governing Board does hereby determine, pursuant to the authority granted by law, that: Proposed Rule 2306 qualifies as a later activity within the scope of the program approved earlier for the 2022 AQMP and 2016 AQMP per CEQA Guidelines 15168 (c), and the Final Program EIR for the 2022 AQMP and the Final Program EIR for the 2016 AQMP adequately describe the activity for the purposes of CEQA such that no new environmental document is required; and Proposed Rule 316.2 is statutorily exempt from CEQA pursuant to Public Resources Code Section 21080(b)(8) and CEQA Guidelines Section 15273. This information was presented to the South Coast AQMD Governing Board, whose members exercised their independent judgement and reviewed, considered, and approved the information therein prior to acting on Proposed Rule 2306 and Proposed Rule 316.2; and

BE IT FURTHER RESOLVED, that the South Coast AQMD Governing Board does hereby adopt, pursuant to the authority granted by law, Proposed Rule 2306 and Proposed Rule 316.2 as set forth in the attached, and incorporated herein by reference, and approve the accompanying Proposed Rule 2306 Calculation Methodology and Data Appendix as set forth in the attached, and incorporated herein by reference; and

BE IT FURTHER RESOLVED, that the South Coast AQMD Governing Board does hereby authorize the Executive Officer to make subsequent technical corrections, clarifications or updates to the approved Proposed Rule 2306 Calculation Methodology and Data Appendix that include but are not limited to addition of emission rates and other parameters related to newly adopted engine standards, and revised emission rates and other parameters in accordance with emission rates and other parameters used or revised by the California Air Resources Board or the United States Environmental Protection Agency for the same emission source category or sub-category; and

BE IT FURTHER RESOLVED, the Executive Officer is hereby directed to conduct public outreach to identify an appropriate approach to make information from Proposed Rule 2306 reports publicly available in a user-friendly format, and to report back to Mobile Source Committee following this outreach with a recommended approach that will demonstrate the effectiveness of the rule to the public and disclose information consistent with transparency obligations under the California Public Records Act; and

BE IT FURTHER RESOLVED, that the Executive Officer is hereby directed to report significant updates in writing to the South Coast AQMD Mobile Source Committee, and have an agendized status update to the Mobile Source Committee in March or April 2025, on the status and progress of United States Environmental Protection Agency actions in relation to the California In-Use Locomotive Regulation (CCR, Title 13, Sections 2478 through 2478.17), the California Advanced Clean Fleets Regulation, either as a whole (CCR, Title 13, Sections 2013 through 2013.4, 2014 through 2014.3, 2015 through 2015.6, and 2016) or in part for its Drayage Truck Requirements (CCR, Title 13, Sections 2014 through 2014.3), and the State Implementation Plan review of Proposed Rule 2306 or other actions bearing on the effective date of Proposed Rule 2306; and

BE IT FURTHER RESOLVED, the Executive Officer is hereby directed to conduct outreach to facilities subject to Proposed Rule 2306 when the specific effective date is known to inform them of Proposed Rule 2306 requirements and timelines, and of the fees for Proposed Rule 2306 reports and notifications as required by Proposed Rule 316.2 which is effective upon adoption; and

BE IT FURTHER RESOLVED, that the South Coast AQMD Governing Board requests that Proposed Rule 2306 and the accompanying Proposed Rule 2306 Calculation Methodology and Data Appendix be submitted for inclusion in the State Implementation Plan; and

BE IT FURTHER RESOLVED, that the Executive Officer is hereby directed to forward a copy of this Resolution, Proposed Rule 2306, and the accompanying Proposed Rule 2306 Calculation Methodology and Data Appendix to the California Air Resources Board for approval and subsequent submittal to the United States Environmental Protection Agency for inclusion into the State Implementation Plan.

DATE:_____ _____

CLERK OF THE BOARDS

ATTACHMENT F

(Adopted [Date of Rule Adoption])~~*Draft Rule Language*~~

[RULE INDEX TO BE ADDED AFTER RULE ADOPTION]~~*(Board Consideration August 2, 2024)*~~

PROPOSED RULE 2306 FREIGHT RAIL YARDS

(a) Purpose

The purpose of this rule is to reduce emissions of Nitrogen Oxides (NOx) associated with Freight Rail Yards and the mobile sources attracted to Freight Rail Yards in order to assist in meeting state and federal air quality standards for Ozone and Fine Particulate Matter, and to ensure that proportional or greater emission reductions occur in the South Coast AQMD jurisdiction from implementation of state regulations addressing Freight Rail Yard emission sources.

(b) Applicability

This rule applies to owners or operators of proposed, new, and existing Freight Rail Yards located within the South Coast AQMD jurisdiction, and any state or local government agency or any non-federal public agency or combination of public agencies such as a joint powers authority who enters into a Contractual Agreement with the owner or operator of such Freight Rail Yards.

(c) Definitions

(1) AGGREGATE EMISSION FACTOR (AEF) means the average rate of NOx emissions per unit of energy consumed across all Applicable Mobile Sources that are attracted to a Freight Rail Yard during a calendar year.

(2) APPLICABLE MOBILE SOURCES means the following mobile sources of emissions that may be operated on or through a Freight Rail Yard to transport or assist in transporting cargo or goods: Cargo Handling Equipment, Drayage Trucks, Line Haul Locomotives, Switch Locomotives, Transportation Refrigeration Units, and/or Other On-Site Support Equipment.

(3) BASE PERIOD (BP) means the period over the first two full calendar years immediately following the calendar year when the rule becomes effective, except that for a New Freight Rail Yard, "Base Period" means the first two full calendar years immediately following the calendar year when the New Freight Rail Yard begins Freight Rail Yard Operations.

(4) CARGO HANDLING EQUIPMENT (CHE) means any self-propelled vehicle or equipment primarily used onsite at a Freight Rail Yard to lift or move containerized

or non-containerized freight, ~~including~~ which may include empty containers and chassis, carried to or from the Freight Rail Yard by Drayage Truck, Locomotive, or another vehicle.

(5) CLASSIFICATION YARD means a Freight Rail Yard in which Railcars are classified, separated, grouped or moved with the purpose of transporting Railcars and their containerized or non-containerized freight, ~~including~~ which may include empty containers and chassis, to different destinations.

(6) CONTRACTUAL AGREEMENT means a legally enforceable agreement entered into by two or more parties to do, or refrain from doing, one or more actions specified in a written contract, memorandum of understanding, or other binding agreement in relation to the lease, construction, or operation of a Freight Rail Yard.

(7) DRAYAGE TRUCK means any in-use on-road vehicle with a gross vehicle weight rating greater than 26,000 pounds operating at and travelling to and from Freight Rail Yard property, for the purpose of loading, unloading, or transporting containerized and non-containerized freight, ~~including~~ which may include empty containers and chassis.

(8) FINE PARTICULATE MATTER (PM2.5) means particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers.

(9) FREIGHT RAIL YARD means any Rail Yard where Switching Activities occur or where containerized or non-containerized freight, ~~including~~ which may include empty containers and chassis, are loaded to or unloaded from Railcars for transportation to or from a location outside of the Freight Rail Yard by Locomotive(s) operated by the Freight Rail Yard Operator, including but not limited to Intermodal Rail Yards and Classification Yards.

(10) FREIGHT RAIL YARD OPERATIONS means operations associated with Freight Rail Yards, such as Switching Activities; loading, unloading, moving, and transferring of containerized or non-containerized freight, ~~including~~ which may include empty containers and chassis; fueling, maintenance, service, and repair of Locomotives and/or other Applicable Mobile Sources; and other similar operations conducted by a Freight Rail Yard Operator or an entity that is controlled by or is under common control with a Freight Rail Yard Operator.

(11) FREIGHT RAIL YARD OPERATOR means a Railroad that is, controls, or is under common control with the entity who conducts day-to-day business

operations at a Freight Rail Yard, either with its employees or through contracting out of services for all or parts of the Freight Rail Yard Operations.

(12) FREIGHT RAIL YARD OWNER means the legal, beneficial, and/or equitable owner or owners of part or whole of a Freight Rail Yard, which may or may not be a Railroad.

(13) FUEL TYPE means the fuel used to power a vehicle, including but not limited to electricity, hydrogen, natural gas, gasoline, or diesel fuel.

(14) INTERMODAL RAIL YARD means any Freight Rail Yard where freight transportation involves two or more different modes of transportation.

(15) LINE HAUL LOCOMOTIVE means a Locomotive that is powered by an engine with a maximum Rated Power (or combination of engines having a total Rated Power) of greater than 2,300 horsepower.

(16) LOCOMOTIVE means a self-propelled piece of on-track equipment designed for moving or propelling Railcars that are designed to carry containerized or non-containerized freight, ~~including~~ which may include empty containers and chassis, but which itself is not designed or intended to carry freight.

(17) LOCOMOTIVE ENGINE CERTIFICATION DATA means the duty cycle weighted emission test results after deterioration factor and all other applicable adjustments have been applied, used by the United States Environmental Protection Agency to certify Locomotives.

(18) MARINE TERMINAL means one or more structures used for the transmission, care, and convenience of cargo or goods in the interchange of same between land and ships or between ships. The structure(s) may comprise of one or more of the following: docks, berths, piers, aprons, wharves, moorings, rail tracks, truck lanes, pipelines, temporary storage spaces, and other structures that are designed for the operation or maintenance of vehicles and equipment used in transporting or assisting in transporting cargo or goods.

(19~~8~~) MILESTONE YEAR (MY) means any of the calendar years including the third calendar year immediately after the calendar year when the rule becomes effective and every third calendar year thereafter, except that for a New Freight Rail Yard, a "Milestone Year" means any of these calendar years that does not overlap with its Base Period.

(20~~1~~9) NEW FREIGHT RAIL YARD means any Freight Rail Yard beginning Freight Rail Yard Operations, or resuming Freight Rail Yard Operations following a Shutdown, on or after the date the rule becomes effective.

(21~~0~~) NITROGEN OXIDES (NOx) mean the sum of nitric oxides and nitrogen dioxides emitted, calculated as nitrogen dioxide, which are a precursor pollutant to the formation of Ozone and PM2.5.

(22~~1~~) OTHER ON-SITE SUPPORT EQUIPMENT (OSE) means any mobile source equipment that is assigned to a Freight Rail Yard and takes part in day-to-day Freight Rail Yard Operations that is not a CHE, Drayage Truck, Line Haul Locomotive, Switch Locomotive, or Transportation Refrigeration Unit.

(23~~2~~) OZONE means tropospheric or ground-level ozone which is formed in the atmosphere from photochemical reactions between NOx and volatile organic compounds in the presence of sunlight.

(24~~3~~) RAIL YARD means a facility, structure, installation, or real property within the South Coast AQMD jurisdiction that may consist of one or more contiguous properties, the whole or part of which is laid with a system of rail tracks, crossovers, and/or switches that may be connected or adjacent to but are not part of the main line, branch line, or other rail tracks used by Through Traffic, which are in actual physical contact or separated solely by a roadway or other right-of-way, are owned or operated by the same entity or by entities under common control, and where one or more Work Crews are assigned to conduct day-to-day business operations such as Freight Rail Yard Operations.

(25~~4~~) RAILCAR means a rail-mounted equipment also known as a "car" designed to carry freight. Railcars may include, but are not limited to, autoracks, boxcars, covered and open-top hoppers, coil cars, flatcars, gondolas, tank cars, intermodal cars, and well cars.

(26~~5~~) RAILCAR MOVER means an off-road vehicle fitted with rail couplers and capable of traveling on both roads and rail tracks.

(27~~6~~) RAILROAD means a commercial entity that operates Locomotives to transport containerized or non-containerized freight, ~~including~~ which may include empty containers and chassis.

(28~~7~~) RATED POWER means the maximum brake power point on the nominal power curve for a Locomotive configuration.

(2~~9~~8) REFERENCE SCENARIO means a scenario of Freight Rail Yard emissions in a Milestone Year absent the In-Use Locomotive Regulation and the Advanced Clean Fleets Regulation in the California Code of Regulations (CCR), and also absent this rule.

(302~~9~~) RESPONSIBLE OFFICIAL means:

(A) For a corporation:

(i) President, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or a person who performs similar policy-making functions for the corporation; or

(ii) Duly authorized representative provided the representative is responsible for the overall operational control of the Freight Rail Yard, and the Executive Officer has approved a request from the original Responsible Official to delegate this authority.

(B) For a partnership or sole proprietorship: general partner or proprietor, respectively.

(C) For a municipality, State, federal, or other public agency: a principal executive officer or ranking elected official.

(31~~0~~) SHUTDOWN means the cessation of all Freight Rail Yard Operations at a Freight Rail Yard for a full calendar year or longer.

(32~~1~~) SWITCH LOCOMOTIVE or SWITCHER means a Locomotive that is powered by an engine with a maximum Rated Power (or combination of engines having a total Rated Power) of 2,300 horsepower or less.

(33~~2~~) SWITCHING ACTIVITY means classification of Railcars according to cargo or destination; assembling of multiple Railcars into trains and/or adding, removing, or repositioning of a Locomotive or Locomotives for train movements; changing the position of Railcars for purposes of loading, unloading, or weighing; placing of Locomotives and Railcars for repair or storage; or moving of rail equipment in connection with work service. Switching Activities may be performed by a Switch Locomotive, a Line Haul Locomotive, or a Railcar Mover.

(3~~4~~3) THROUGH TRAFFIC means the continuous movement of a train that does not come to a complete stop at a Freight Rail Yard except for safety or emergency considerations.

(3~~5~~4) THROUGHPUT means the total number of visits by Railcars that move through a Freight Rail Yard over a set period of time. A Railcar entering a Freight Rail Yard and then leaving that yard counts as one visit.

(3~~6~~5) TRANSPORTATION REFRIGERATION UNIT (TRU) means any refrigeration system powered by an integrated power source and designed to control the environment of temperature sensitive products transported in trucks, trailers, containers, or Railcars, from which the TRU may be but is not necessarily detachable.

(3~~7~~6) TRUCK TRIP means the one-way trip a Drayage Truck makes to or from a Freight Rail Yard to deliver or pick up containerized or non-containerized freight, ~~including~~ which may include empty containers and chassis. A Drayage Truck entering a Freight Rail Yard and then leaving that yard counts as two trips.

(3~~8~~7) WORK CREW means two or more workers who are assigned as a team to perform a common task or multiple common tasks as part of the day-to-day business operations of their employer, or of an entity that contracts with their employer(s) for the latter to provide such services.

(3~~9~~8) ZERO EMISSION (ZE) CONFIGURATION means an operational mode or condition under which a Locomotive, vehicle, or equipment never emits any criteria pollutant (or precursor pollutant) or toxic pollutant from any onboard source of power at any power setting, including any propulsion power that is connected to and moves with the Locomotive, vehicle, or equipment when it is in motion, or under which a Locomotive, vehicle, or equipment relies solely on grid power when it is connected to the electric grid. A Locomotive, vehicle, or equipment may be but is not necessarily designed to always operate in ZE Configuration.

(40~~3~~9) ZERO EMISSION (ZE) INFRASTRUCTURE means infrastructure that provides the appropriate Fuel Type or power to support the operation of CHE, Drayage Trucks, Locomotives, TRU, or OSE in ZE Configuration.

(d) Requirements

(1) For each of its operated Freight Rail Yards, the Freight Rail Yard Operator shall meet or exceed:

(A) The NOx emission reductions target for each Milestone Year, as specified in Table 1 – Emission Reductions Targets for the corresponding calendar year; or

(B) The NOx emission reductions target based on emission reductions occurring during the corresponding Milestone Year from all Freight Rail Yards within the State of California operated by the same Freight Rail Yard Operator, provided that the Freight Rail Yard Operator:

(i) Has not been issued a citation, notice of violation, or any equivalent document by the California Air Resource Board (CARB) during or prior to the corresponding Milestone Year for noncompliance with the In-Use Locomotive Regulation or the Advanced Clean Fleets Regulation;

(ii) Submits Freight Rail Yard Operator's statewide data for the corresponding Milestone Year pursuant to subparagraph (f)(1)(H), as an attachment to the corresponding Milestone Compliance Report as specified in paragraph (f)(1); and

(iii) Calculates the NOx emission reductions target using Equation ~~A.~~1 and the methodology as specified in Rule 2306 Calculation Methodology and Data Appendix, using the Freight Rail Yard Operator's statewide data for the corresponding Milestone Year pursuant to subparagraph (f)(1)(H).

(2) The Freight Rail Yard Operator shall demonstrate compliance with the requirements of paragraph (d)(1) in the Milestone Compliance Report as specified in paragraph (f)(1), using Equation ~~A.~~2 and the methodology specified in Rule 2306 Calculation Methodology and Data Appendix.

(3) For any Freight Rail Yard with an annual average Throughput during a Milestone Year and its two preceding calendar years that is less than the annual average Throughput over the Base Period, the Freight Rail Yard Operator may elect to comply with the following in lieu of paragraph (d)(2):

(A) Demonstrate in the Milestone Compliance Report as specified in paragraph (f)(1), that the Aggregate Emission Factor for the corresponding Milestone Year as calculated and reported pursuant to subparagraph (f)(1)(E) are less than or equal to the annual average Aggregate Emission Factor as calculated and reported for the Base Period pursuant to subparagraph (e)(1)(E); and

(B) Demonstrate compliance with the requirements of paragraph (d)(1) in the Milestone Compliance Report as specified in paragraph (f)(1), using Equation ~~A.~~3 and the methodology specified in Rule 2306 Calculation Methodology and Data Appendix.

(4) The following reports shall be prepared in the manner specified by the Executive Officer, certified and signed by a Responsible Official of the Freight Rail Yard Owner and/or Freight Rail Yard Operator, as applicable, for the truthfulness, accuracy, and completeness of its submitted report, and submitted to the Executive Officer:

(A) ~~The~~ Initial Facility Information Report as specified in paragraph (e)(1) shall be:

(i) Submitted no later than 90 calendar days after the Base Period ends, or no later than 90 calendar days after a Freight Rail Yard Shutdown date as specified in subparagraph (g)(3)(F), if the Shutdown occurs during the Base Period; and

(ii) Prepared and submitted by the current Freight Rail Yard Operator, or if applicable, the former Freight Rail Yard Operator preceding the Shutdown, for each Freight Rail Yard;

(B) ~~The~~ Initial Zero Emission Infrastructure Report as specified in paragraph (e)(2) shall be:

(i) Submitted no later than 120 calendar days after the Base Period ends; and

(ii) Prepared and submitted by the Freight Rail Yard Owner and Freight Rail Yard Operator, either individually for each Freight Rail Yard or jointly for multiple Freight Rail Yards operated by the same Freight Rail Yard Operator;

(C) ~~The~~ Milestone Compliance Report as specified in paragraph (f)(1) shall be:

(i) Submitted no later than July 15 of the calendar year following a Milestone Year, or no later than 90 calendar days after a Freight Rail Yard Shutdown date as specified in subparagraph (g)(3)(F), if the Shutdown occurs during the Milestone Year; and

(ii) Prepared and submitted by the current Freight Rail Yard Operator, or if applicable, the former Freight Rail Yard Operator preceding the Shutdown, for each Freight Rail Yard; and

(D) ~~The~~ Zero Emission Infrastructure Status Update Report as specified in paragraph (f)(2) shall be:

(i) Submitted no later than October 15 of the calendar year following a Milestone Year; and

(ii) Prepared and submitted by the Freight Rail Yard Owner and Freight Rail Yard Operator, either individually for each Freight Rail Yard or jointly for multiple Freight Rail Yards operated by the same Freight Rail Yard Operator.

(5) The Freight Rail Yard Owner or Operator shall submit a request to the local electrical utility to upgrade the electrical service no later than 180 calendar days after the submittal of the Initial Zero Emission Infrastructure Report as specified in paragraph (e)(2) or the Zero Emission Infrastructure Status Update Report as specified in paragraph (f)(2), if the Freight Rail Yard Owner or Operator identifies in such reports the need to upgrade the electrical service provided to the Freight Rail Yard.

(6) In the event there is a change of Freight Rail Yard Operator, the new Freight Rail Yard Operator pursuant to paragraph (g)(1) shall obtain the following information and records:

(A) All required information pursuant to paragraphs (e)(1) and (e)(2) for the Base Period, and paragraphs (f)(1) and (f)(2) for the most recent Milestone Year before the date of change of operator (if applicable) and the next Milestone Year; and

(B) All records pursuant to subdivision (h).

(7) In the event there is a change of Freight Rail Yard Owner, the new Freight Rail Yard Owner pursuant to paragraph (g)(2) shall obtain the following information and records:

(A) All required information pursuant to paragraph (e)(2) for the Base Period, and paragraph (f)(2) for the most recent Milestone Year before the date of change of ownership (if applicable) and the next Milestone Year; and

(B) All records pursuant to subdivision (h).

(8) In the event there is a Freight Rail Yard Shutdown, the Freight Rail Yard Owner shall obtain the following information and records:

(A) All required information pursuant to paragraph (e)(2) for the Base Period, and paragraph (f)(2) for the most recent Milestone Year before the Shutdown date as specified in subparagraph (g)(3)(F) (if applicable) and the next Milestone Year; and

(B) All records pursuant to subdivision (h).

(e) Initial Reports

(1) Initial Facility Information Report

The Freight Rail Yard Operator required to submit an Initial Facility Information Report pursuant to paragraph (d)(4) and subparagraph (d)(4)(A) shall include in the report the following information about the Base Period:

(A) Freight Rail Yard information as specified in Table 2 – Freight Rail Yard Information;

(B) Applicable Mobile Sources information as specified in Table 3 – Applicable Mobile Sources Information for each Locomotive, Drayage Truck, TRU, and each unit of CHE and OSE operating at and travelling to and from the Freight Rail Yard;

(C) Total number of calendar days within a calendar year when Switching Activities occur at the Freight Rail Yard, for each calendar year of the Base Period, and the annual average over the Base Period;

(D) Annual Throughput of the Freight Rail Yard for each calendar year of the Base Period, and the annual average Throughput over the Base Period; and

(E) Annual Aggregate Emission Factors for each calendar year of the Base Period, and the annual average over the Base Period, along with detailed steps of the calculations using the methodology specified in Rule 2306 Calculation Methodology and Data Appendix.

(2) Initial Zero Emission Infrastructure Report

The Freight Rail Yard Owner and Freight Rail Yard Operator required to submit an Initial Zero Emission Infrastructure Report pursuant to paragraph (d)(4) and subparagraph (d)(4)(B) shall:

(A) Specify in the report any on-site and off-site ZE Infrastructure that has previously been designed, developed, or installed to support the Freight Rail Yard Owner's and/or the Freight Rail Yard Operator's compliance with the In-Use Locomotive Regulation, to support the implementation of the Advanced Clean Fleets Regulation, and/or any other ZE infrastructure requirements and initiatives;

(B) Specify in the report any future on-site and off-site ZE infrastructure that will be needed for the Freight Rail Yard Owner and/or the Freight Rail Yard Operator to fully comply with the In-Use Locomotive Regulation, and/or to support the implementation of the Advanced Clean Fleets Regulation, and the control measures for TRUs and CHE as specified in the 2022 State Strategy for the State Implementation Plan; and

(C) Include in the report the following information over the Base Period:

(i) Description of installed and operative ZE Infrastructure pursuant to subparagraph (e)(2)(A), including the information as specified in Table 4 – Information on Installed and Operative ZE Infrastructure;

(ii) Description of ongoing ZE Infrastructure currently under design and development, at time of report submittal, pursuant to subparagraph (e)(2)(A), including the information as specified in Table 5 – Information on ZE Infrastructure in Development; and

(iii) Description of the planning of future on-site and off-site ZE infrastructure, at time of report submittal, needed to meet expected energy demand from regulations and plans pursuant to subparagraph (e)(2)(B), including the information as specified in Table 6 – Information on Future ZE Infrastructure Being Planned.

(f) Milestone Year Reports

(1) Milestone Compliance Report

The Freight Rail Yard Operator required to submit a Milestone Compliance Report pursuant to paragraph (d)(4) and subparagraph (d)(4)(C) shall include in the report the following information:

(A) Any changes in Freight Rail Yard information compared to the Initial Facility Information Report previously submitted pursuant to subparagraph (e)(1)(A), or compared to the most recent Milestone Compliance Report pursuant to this subparagraph;

(B) Applicable Mobile Sources information as specified in Table 3, for each Locomotive and Drayage Truck, and if applicable pursuant to paragraph (d)(2), for each TRU and each unit of CHE and OSE operating at and travelling to and from the Freight Rail Yard during the corresponding Milestone Year;

(C) Total number of calendar days within a calendar year when Switching Activities occur at the Freight Rail Yard, for the corresponding Milestone Year and each of its two preceding calendar years, and the annual average over these three calendar years;

(D) Annual Throughput of the Freight Rail Yard for the corresponding Milestone Year and each of its two preceding calendar years, and the annual average over these three calendar years;

(E) Annual Aggregate Emission Factor for the corresponding Milestone Year, along with detailed steps of the calculations using the methodology specified in Rule 2306 Calculation Methodology and Data Appendix, if the Freight Rail Yard Operator elects to comply with the requirements in paragraph (d)(3) in lieu of paragraph (d)(2);

(F) Emission reductions target

(i) Emission reductions target elected by the Freight Rail Yard Operator for the corresponding Milestone Year pursuant to paragraph (d)(1); and

(ii) If the alternative emission reductions target is elected pursuant to subparagraph (d)(1)(B):

(A) Attestation of the Freight Rail Yard Operator's eligibility for electing the alternative target pursuant to clause (d)(1)(B)(i); and

(B) Detailed steps of the calculations pursuant to clause (d)(1)(B)(iii), to demonstrate the determination of the alternative emission reductions target;

(G) Demonstration of compliance with the requirements specified in paragraph (d)(1), by including detailed steps of the calculations pursuant to paragraph (d)(2), or paragraph (d)(3) if applicable, for the corresponding Milestone Year; and

(H) Attachment: Statewide Data

All applicable information as specified in Table 3 for each Locomotive and Drayage Truck operating at and travelling to and from any of the Freight Rail Yards within the State of California that are operated by the same Freight Rail Yard Operator during the corresponding Milestone Year, if the alternative emission reductions target is elected pursuant to subparagraph (d)(1)(B) and specified pursuant to subparagraph (f)(1)(F).

(2) Zero Emission Infrastructure Status Update Report

The Freight Rail Yard Owner ~~*or*~~ and Freight Rail Yard Operator required to submit a Zero Emission Infrastructure Status Update Report pursuant to paragraph (d)(4) and subparagraph (d)(4)(D) shall:

(A) Specify in the report any on-site and off-site ZE Infrastructure that has been designed, developed, or installed since submittal of the Initial Zero Emission Infrastructure Report or the most recent Zero Emission Infrastructure Status Update Report, whichever is later, to support the Freight Rail Yard Owner's and/or the Freight Rail Yard Operator's compliance with the In-Use Locomotive Regulation, to support the implementation of the Advanced Clean Fleets Regulation and/or any other ZE infrastructure requirements and initiatives;

(B) Specify in the report any updates to the future needs of on-site and off-site ZE infrastructure pursuant to subparagraph (e)(2)(B);

(D) Include in the report the following information for the Milestone Year:

(i) Description of ZE Infrastructure installed and operative after submittal of the Initial Zero Emission Infrastructure Report or the most recent Zero Emission Infrastructure Status Update Report, whichever is later, pursuant to subparagraph (f)(2)(A), including the information as specified in Table 4;

(ii) Description of new or ongoing ZE Infrastructure currently under design and development, at time of report submittal, pursuant to subparagraph (f)(2)(A), including the information as specified in Table 5; and

(iii) Description of any updates to the planning of future on-site and off-site ZE infrastructure, at time of report submittal, to meet expected energy demand from regulations and plans pursuant to subparagraph (f)(2)(B), including the information as specified in Table 6.

(g) Notifications

(1) Change of Freight Rail Yard Operator Notification

(A) No later than 30 calendar days before a change of operator, the owner or current operator of the Freight Rail Yard shall submit a notification to the Executive Officer including the following information:

(i) Current Name of the Freight Rail Yard;

(ii) Address of the Freight Rail Yard;

(iii) Current Freight Rail Yard Operator;

(iv) New Freight Rail Yard Operator;

(v) Date of change of operator; and

(vi) Any other anticipated changes in Freight Rail Yard information upon or after change of operator, compared to the Initial Facility Information Report pursuant to subparagraph (e)(1)(A), or compared to the most recent Milestone Compliance Report pursuant to subparagraph (f)(1)(A).

(B) No later than 30 calendar days after a change of operator, the new operator of the Freight Rail Yard shall submit a secondary notification to the Executive Officer including the following information:

(i) Whether the information submitted pursuant to subparagraph (g)(1)(A) remains accurate; and

(ii) Any necessary updates to the information submitted pursuant to subparagraph (g)(1)(A).

(2) Change of Freight Rail Yard Owner Notification

(A) No later than 30 calendar days before a change of ownership, the current owner or operator of the Freight Rail Yard shall submit ~~*to the Executive Officer*~~ a notification to the Executive Officer including the following information:

(i) Current Name of the Freight Rail Yard;

(ii) Address of the Freight Rail Yard;

(iii) Current Freight Rail Yard Owner;

(iv) New Freight Rail Yard Owner;

(v) Date of ownership change; and

(vi) Any other anticipated changes in Freight Rail Yard information upon or after change of ownership, compared to the Initial Facility Information Report pursuant to subparagraph (e)(1)(A), or compared to the most recent Milestone Compliance Report pursuant to subparagraph (f)(1)(A).

(B) No later than 30 calendar days after a change of owner, the new owner of the Freight Rail Yard shall submit a secondary notification to the Executive Officer including the following information:

(i) Whether the information submitted pursuant to subparagraph (g)(2)(A) remains accurate; and

(ii) Any necessary updates to the information submitted pursuant to subparagraph (g)(2)(A).

(3) Freight Rail Yard Shutdown Notification

No later than 30 calendar days before the Freight Rail Yard Shutdown date, the Freight Rail Yard Owner or Operator shall submit a notification to the Executive Officer including the following information:

(A) Name of the Freight Rail Yard;

(B) Address of the Freight Rail Yard;

(C) Current Freight Rail Yard Owner;

(D) Current Freight Rail Yard Operator;

(E) Reason for Shutdown;

(F) Date of Freight Rail Yard Shutdown; and

(G) Anticipated Date to resume Freight Rail Yard Operations, if applicable.

(4) Exceedance of Low Activity Exemption Threshold Notification

No later than January 31 of the calendar year after a Freight Rail Yard exceeds the annual Switching Activity threshold as specified in paragraph (j)(1), the Freight Rail Yard Operator shall submit a notification to the Executive Officer including the following information:

(A) Name of the Freight Rail Yard;

(B) Address of the Freight Rail Yard; and

(C) Total number of calendar days within the immediately preceding calendar year when Switching Activities occur at the Freight Rail Yard.

(5) Proposed Freight Rail Yard Construction, Conversion, or Expansion Notification

No later than 365 calendar days prior to the construction of or conversion into a New Freight Rail Yard or the expansion of an existing Freight Rail Yard, or as soon as practicable if such construction, conversion, or expansion occurs within 365 calendar days from the date the rule becomes effective, the Freight Rail Yard Owner shall submit a notification to the Executive Officer including the following information:

(A) Proposed project type, including construction of a New Freight Rail Yard, conversion of an existing Rail Yard into a New Freight Rail Yard, or expansion of an existing Freight Rail Yard;

(B) Name of the proposed project, if applicable;

(C) Location of the proposed project;

(D) Freight Rail Yard Owner;

(E) Anticipated Freight Rail Yard Operator; and

(F) Estimated date when the proposed project site will begin Freight Rail Yard Operations.

(h) Recordkeeping

The Freight Rail Yard Owner or Operator shall keep the records and documentations that support the accuracy and validity of all information reported and submitted to the Executive Officer pursuant to subdivisions (d) through (g), as applicable, for a minimum of seven years from the submittal deadline and make the records and documents available to the Executive Officer upon a written request.

(i) ~~*State or Local*~ Agency Responsibility

Any state or local government agency or any non-federal public agency or combination of public agencies such as a joint powers authority who enters, renews, or amends a Contractual Agreement, which is separately enforceable independent of this rule and the California Environmental Quality Act, shall include in such Contractual Agreement(s) provision(s) that have the effect of requiring that the applicable countersigned party or parties, unless exempt from some or all requirements of this rule pursuant to subdivision (j), must comply with the following requirements of this rule as applicable:

(1) Compliance with emissions reduction targets as specified in paragraphs (d)(1) through (d)(3);

(2) Timely and complete submittal of the following reports and notifications:

(A) Initial Facility Information Report as specified in subparagraph (d)(4)(A) and paragraph (e)(1);

(B) Initial Zero Emission Infrastructure Report as specified in subparagraph (d)(4)(B) and paragraph (e)(2);

(C) Milestone Compliance Report as specified in subparagraph (d)(4)(C) and paragraph (f)(1);

(D) Zero Emission Infrastructure Status Update Report as specified in subparagraph (d)(4)(D) and paragraph (f)(2);

(E) Change of Freight Rail Yard Operator Notification as specified in paragraph (g)(1);

(F) Change of Freight Rail Yard Owner Notification as specified in paragraph (g)(2);

(G) Freight Rail Yard Shutdown Notification as specified in paragraph (g)(3);

(H) Exceedance of Low Activity Exemption Threshold Notification as specified in paragraph (g)(4); and

(I) Proposed Freight Rail Yard Construction, Conversion, or Expansion Notification as specified in paragraph (g)(5);

(3) Recordkeeping as specified in subdivision (h);

(4) Request to the local electrical utility to upgrade the electrical service, if applicable, as specified in paragraph (d)(5); and

(5) Obtaining applicable information and records as specified in paragraphs (d)(6) through (d)(8) in the event of a change in Freight Rail Yard Operator, a change in Freight Rail Yard Owner, or a Freight Rail Yard Shutdown.

(j) Exemptions

(1) The Freight Rail Yard Owner or Operator is not subject to the requirements in paragraphs (d)(1) through (d)(3), subparagraphs (d)(4)(C) through (d)(4)(D), paragraph (d)(5), and subdivision (f) of this rule for any of its owned- or operated-Freight Rail Yards that is not an Intermodal Rail Yard and where Switching Activities occur no more than 30 calendar days per year within a Milestone Year and any of the two preceding calendar years.

(2) The City of Long Beach, the City of Los Angeles, and/or any third party under contractual operating agreement(s) with the City of Long Beach and/or the City of Los Angeles are not subject to the requirements of this rule for any of its owned- or operated-Freight Rail Yard that meets one of the following: ~~is not an Intermodal Rail Yard and where the primary Freight Rail Yard Operations are to move Railcars to and from marine terminal(s) located within the Long Beach Harbor District or the Los Angeles Harbor District.~~

(A) An Intermodal Rail Yard located on dock at a Marine Terminal that is wholly or partially located within the Long Beach Harbor District or the Los Angeles Harbor District (Harbor Districts); or

(B) A Freight Rail Yard that is not an Intermodal Rail Yard and where the Freight Rail Yard Operations are solely for the purpose of moving Railcars to and/or from Marine Terminal(s) that are wholly or partially located within the Harbor Districts.

(k) Effective Date

The provisions of this rule are effective on the latest of:

(1) The date the United States Environmental Protection Agency takes final action approving inclusion of the rule in the California State Implementation Plan;

(2) The date the United States Environmental Protection Agency grants an authorization under the Clean Air Act Section 209(e)(2) to the California In-Use Locomotive Regulation (CCR, Title 13, Sections 2478 through 2478.17); and

(3) The date the United States Environmental Protection Agency grants a waiver under the Clean Air Act Section 209(b) and/or an authorization under the Clean Air Act Section 209(e)(2) to the California Advanced Clean Fleets Regulation either as a whole (CCR, Title 13, Sections 2013 through 2013.4, 2014 through 2014.3, 2015 through 2015.6, and 2016), or in part for its Drayage Truck Requirements (CCR, Title 13, Sections 2014 through 2014.3).

(l) Severability

(1) If any provision of this rule is held by judicial order to be unlawful or otherwise invalid, such order shall not affect the operation or implementation of the remainder of this rule.

(2) If any provision of this rule is held by judicial order to be inapplicable to any person or circumstance, such order shall not affect the application of such provision to other persons or circumstances.

(3) If a federal court stays, invalidates, or delays, in whole or in part, federal approval of inclusion of this rule in the California State Implementation Plan, the provisions of this rule shall be enforceable only to the extent they are not stayed or invalidated.

Table 1 – NOx Emission Reductions Targets

Calendar Year	Percent Emission Reductions Targets (%)
2027	9.2
2028	13.6
2029	16.9
2030	56.5
2031	61.0
2032	61.7
2033	62.3
2034	62.2
2035	71.6
2036	76.3
2037	82.4
2038	81.8
2039	81.3
2040	80.7
2041	80.0
2042	79.0
2043	77.8
2044	76.4
2045	76.0
2046	75.6
2047	74.6
2048	74.9
2049	75.7
2050	76.5

Table 2 – Freight Rail Yard Information

Information Type	Information Description	
REQUIRED	(i)	Name of the Freight Rail Yard
	(ii)	Address of the Freight Rail Yard
	(iii)	Footprint of the Freight Rail Yard in square footage
	(iv)	Map of the Freight Rail Yard and the immediately surrounding public roadway and/or public right-of-way
	(v)	Freight Rail Yard Owner
	(vi)	Freight Rail Yard Operator
	(vii)	Duration of Contractual Agreement between Freight Rail Yard Owner and Freight Rail Yard Operator (if applicable)
	(viii)	Name and contact information for Responsible Official of the Freight Rail Yard Operator
	(ix)	Whether the Freight Rail Yard is an Intermodal Rail Yard

Table 3 – Applicable Mobile Sources Information

Information Type	Information Description	
Locomotive		
REQUIRED	(i)	Locomotive road number
	(ii)	Locomotive serial number
	(iii)	Engine tier
	(iv)	Engine power rating in horsepower
	(v)	Original engine build date
	(vi)	Latest remanufacture date
	(vii)	Total number of days within a calendar year operating at and travelling to and from the Freight Rail Yard
	(viii)	Annual usage per within the South Coast AQMD jurisdiction in megawatt-hours
	(ix)	Annual usage in ZE Configuration within the South Coast AQMD jurisdiction in megawatt-hours (if applicable)
	(x)	Annual fuel consumption by Fuel Type (if used to estimate annual usage)
	Information items (xi) through (xiii) in this table shall only be submitted for the purpose of statewide data reporting pursuant to subparagraph (f)(1)(H) in lieu of information items (vii) through (x) in this table.	
	(xi)	Annual usage in California in megawatt-hours
	(xii)	Annual usage in ZE Configuration in California in megawatt-hours (if applicable)
	(xiii)	Annual fuel consumption by Fuel Type (if used to estimate annual usage)
	(xiv)	Certification showing Locomotive Engine Certification Data value(s) for NOx (if used to demonstrate compliance pursuant to paragraph (d)(2) or subparagraph (d)(3)(B))

Table 3 – Applicable Mobile Sources Information (Cont.)

Information Type	Information Description	
Locomotive (Cont.)		
OPTIONAL	(xv)	Locomotive model number
	(xvi)	Engine serial number
	(xvii)	Engine family
	(xviii)	Engine manufacturer name
	(xix)	Date acquired
Drayage Truck		
REQUIRED	(xx)	Vehicle Identification Number
	(xxi)	License plate number and state of issuance
	(xxii)	Total number of unique entry date(s) per Freight Rail Yard
OPTIONAL	(xxiii)	Actual average vehicle miles traveled per Truck Trip
TRU		
REQUIRED*	(xxiv)	Serial number
	(xxv)	CARB identification number (IDN) (if applicable)
	(xxvi)	TRU type
	(xxvii)	Estimated annual operating hours within the South Coast AQMD jurisdiction associated with visit(s) to the Freight Rail Yard**
	(xxviii)	Estimated annual operating hours in ZE Configuration within the South Coast AQMD jurisdiction associated with visit(s) to the Freight Rail Yard (if applicable)**
	(xxix)	Total number of days within a calendar year operating at and travelling to and from the Freight Rail Yard
OPTIONAL	(xxx)	Maximum rated horsepower
	(xxxi)	Model year
	(xxxii)	Fuel type(s)

* *if applicable pursuant to* (e)(1) or (f)(1)

** *Using the estimation methodology provided in Rule 2306 Calculation Methodology and Data Appendix*

Table 3 – Applicable Mobile Sources Information (Cont.)

Information Type	Information Description
CHE and OSE	
REQUIRED*	(xxxiii) Equipment type (xxxiv) Make and model (xxxv) Engine tier (xxxvi) Fuel Type(s) (xxxvii) Maximum rated horsepower (xxxviii) Annual operating hours at the Freight Rail Yard *Annual operating hours shall be reported using the operational information pursuant to the following order of hierarchy, if available, consistently for Initial Facility Information Report and all Milestone Compliance Reports for the same unit of CHE or OSE.* (A) Annual operating hours recorded using a non-resettable hour-meter (B) Annual operating hours recorded in equipment maintenance records (C) Calculated annual operating hours using equipment operational data (including, but not limited to, fuel consumption, fuel type, equipment rated horsepower, equipment load factor) (xxxix) Annual operating hours in ZE Configuration at the Freight Rail Yard (if applicable)

* *if applicable pursuant to* (e)(1) or (f)(1)

Table 4 – Information on Installed and Operative ZE Infrastructure

	Information Description
(A)	List of installed and operative projects, including the project's individual components such as, but not limited to, fuel dispensers (stationary or mobile), fuel reformers, electrolyzers, fuel compressors, fuel transportation pipelines and related components, electric chargers, conduits, transformers, substations, and any on-site or near-site power generation and energy storage components
(B)	Description of each project, including but not limited to Fuel Type and maximum energy capacity
(C)	Date of complete installation (inclusive of any required inspection) for each project
(D)	Date of beginning operation for each project (if different than the date of completed installation)
(E)	Documentation from responsible party or parties certifying completion of installation for each project
(F)	Name(s) of energy provider(s), such as utilities and fuel suppliers
(G)	Name(s) of infrastructure operator(s), if different from energy provider(s)
(H)	Annual usage of each Fuel Type for the ZE Infrastructure that has been installed and operative to date

Table 5 – Information on ZE Infrastructure in Development

	Information Description
(A)	List of projects under design and development, including the project's individual components such as, but not limited to, fuel dispensers (stationary or mobile), fuel reformers, electrolyzers, fuel compressors, fuel transportation pipelines and related components, electric chargers, conduits, transformers, substations, and any on-site or near-site power generation and energy storage components
(B)	Description of each project, including but not limited to Fuel Type and maximum energy capacity
(C)	Name(s) of responsible party or parties for the design, planning, development, or installation of each project
(D)	Anticipated dates of installation milestones for each project
(E)	Documentation from the Freight Rail Yard Owner or Freight Rail Yard Operator to the local electrical utility for any request to upgrade the electrical service, as well as the response(s) from the utility estimating the amount of time it will take to provide the upgrade, if applicable and has not been previously submitted to Executive Officer
(F)	Most updated documentation from responsible party or parties of agreement for each project with an estimated date or date range of complete installation (inclusive of any required inspection) for Fuel Types other than electricity, if applicable and has not been previously submitted to Executive Officer

Table 6 – Information on Future ZE Infrastructure Being Planned

	Information Description
(A)	Current Freight Rail Yard energy consumption by Applicable Mobile Sources equipment category
(B)	Estimated range of percent energy consumption pursuant to information item (A) of this table, to be supplied by ZE infrastructure by Fuel Type
(C)	Initial assessment of the need to upgrade the electrical service provided to the Freight Rail Yard based on information item (B) of this table and any other supplemental information
(D)	Name(s) of responsible party or parties for future planning, design, or development of infrastructure, if available

Appendix – Rule 2306 Equations

Section 1: Alternative Milestone Year Emission Reductions Target

Freight Rail Yard Operator shall calculate the alternative Milestone Year emission reductions target pursuant to subparagraph (d)(1)(B), using the following equation:

$$ER_{Statewide}^{MY} = \left(1 - \frac{\sum_y CAFRYEm_y^{MY}}{\sum_y CAFRYEm_{RS,y}^{MY}}\right) \times 100 \qquad \textit{(Equation 1)}$$

Where:

$ER_{Statewide}^{MY}$ = Percent emission reductions achieved for all Freight Rail Yards within the State of California that are operated by the same Freight Rail Yard Operator compared to the Reference Scenario (*RS*) for Milestone Year *MY*

$CAFRYEm_y^{MY}$ = Sum of actual NOx emissions from all Locomotives and Drayage Trucks operating at and travelling to and from any Freight Rail Yard *y* within the State of California that is operated by the same Freight Rail Yard Operator in Milestone Year *MY*, as calculated using Rule 2306 Calculation Methodology and Data Appendix

$CAFRYEm_{RS,y}^{MY}$ = Sum of NOx emissions from all Locomotives and Drayage Trucks operating at and travelling to and from any Freight Rail Yard *y* within the State of California that is operated by the same Freight Rail Yard Operator in Milestone Year *MY* under Reference Scenario (*RS*), as calculated using Rule 2306 Calculation Methodology and Data Appendix

Section 2: Percent NOx Emission Reductions for Milestone Year

Freight Rail Yard Operator shall calculate the percent NOx emission reductions of the Freight Rail Yard for any Milestone Year pursuant to paragraph (d)(2), using the following equation:

$$ER_{Achieved}^{MY} = \left(1 - \frac{FRYEm^{MY} - OER^{MY}}{FRYEm_{RS}^{MY}}\right) \times 100 \qquad \textit{(Equation 2)}$$

Where:

$ER_{Achieved}^{MY}$ = Percent emission reductions achieved for the Freight Rail Yard for Milestone Year *MY*, compared to the Reference Scenario (*RS*)

$FRYEm^{MY}$ = Sum of actual NOx emissions from all Locomotives and Drayage Trucks operating at and travelling to and from the Freight Rail Yard in Milestone Year *MY*, as calculated using Rule 2306 Calculation Methodology and Data Appendix

$FRYEm_{RS}^{MY}$ = Sum of NOx emissions from all Locomotives and Drayage Trucks operating at and travelling to and from the Freight Rail Yard in Milestone Year *MY* under Reference Scenario (*RS*), as calculated using Rule 2306 Calculation Methodology and Data Appendix

OER^{MY} = Sum of actual NOx emission reductions from other Applicable Mobile Sources operating at and travelling to and from the Freight Rail Yard in Milestone Year *MY*, including TRUs, CHE, and OSE, compared to NOx emissions from the same equipment category in Milestone Year *MY* under Reference Scenario (*RS*), using the following equation:

$$OER^{MY} = (ETRU_{RS}^{MY} + ECHE_{RS}^{MY} + EOSE_{RS}^{MY}) - (ETRU^{MY} + ECHE^{MY} + EOSE^{MY})$$

(Equation 2.a)

Where:

$ETRU_{RS}^{MY}$ = Sum of Reference Scenario (*RS*) NOx emissions from all TRUs operating at and travelling to and from the Freight Rail Yard in Milestone Year *MY*, as calculated using Rule 2306 Calculation Methodology and Data Appendix

$ECHE_{RS}^{MY}$ = Sum of Reference Scenario (*RS*) NOx emissions from all CHE operating at and travelling to and from the Freight Rail Yard in Milestone Year *MY*, as calculated using Rule 2306 Calculation Methodology and Data Appendix

$EOSE_{RS}^{MY}$ = Sum of Reference Scenario (*RS*) NOx emissions from all OSE operating at and travelling to and from the Freight Rail Yard in Milestone Year *MY*, as calculated using Rule 2306 Calculation Methodology and Data Appendix

$ETRU^{MY}$ = Sum of actual NOx emissions from all TRUs operating at and travelling to and from the Freight Rail Yard in Milestone Year *MY*, as calculated using Rule 2306 Calculation Methodology and Data Appendix

$ECHE^{MY}$ = Sum of actual NOx emissions from all CHE operating at and travelling to and from the Freight Rail Yard in Milestone Year *MY*, as calculated using Rule 2306 Calculation Methodology and Data Appendix

$EOSE^{MY}$ = Sum of actual NOx emissions from all OSE operating at and travelling to and from the Freight Rail Yard in Milestone Year *MY*, as calculated using Rule 2306 Calculation Methodology and Data Appendix

Section 3: Percent NOx Emission Reductions Between a Milestone Year and the Base Period

Freight Rail Yard Operator shall calculate the percent NOx emission reductions of the Freight Rail Yard between a Milestone Year and the Base Period pursuant to paragraph (d)(3), using the following equation:

$$ER_{Achieved}^{MYBP} = \left(1 - \frac{FRYEm_{AMS}^{MY}}{FRYEm_{AMS}^{BP}}\right) \times 100 \qquad \textit{(Equation 3)}$$

Where:

$ER_{Achieved}^{MYBP}$ = Percent emission reductions achieved for the Freight Rail Yard for Milestone Year *MY*, compared to the Base Period (*BP*)

$FRYEm_{AMS}^{MY}$ = Sum of actual NOx emissions from Applicable Mobile Sources (*AMS*) operating at and travelling to and from the Freight Rail Yard in Milestone Year *MY*, as calculated using Rule 2306 Calculation Methodology and Data Appendix

$FRYEm_{AMS}^{BP}$ = Annual average of the respective sums of actual NOx emissions from Applicable Mobile Sources (*AMS*) operating at and travelling to and from the Freight Rail Yard in each calendar year of the Base Period (*BP*), as calculated using Rule 2306 Calculation Methodology and Data Appendix

ATTACHMENT G

(Adopted [Date of Rule Adoption])~~*Draft Rule Language*~~

[RULE INDEX TO BE ADDED AFTER RULE ADOPTION]~~*(Board Consideration August 2, 2024)*~~

PROPOSED RULE 316.2 FEES FOR RULE 2306

(a) Purpose

California Health and Safety Code Section 40522.5 provides authority for the South Coast AQMD to adopt a fee schedule for areawide or indirect sources of emissions which are regulated, but for which permits are not issued, to recover the costs of programs related to these sources. The purpose of this rule is to recover the South Coast AQMD's cost of implementing Rule 2306.

(b) Applicability

This rule applies to owners and operators of proposed, new, and existing Freight Rail Yards subject to Rule 2306 that submit an Initial Facility Information Report, Initial Zero Emission Infrastructure Report, Milestone Compliance Report, Zero Emission Infrastructure Status Update Report, Change of Freight Rail Yard Operator Notification, Change of Freight Rail Yard Owner Notification, Freight Rail Yard Shutdown Notification, Exceedance of Low Activity Exemption Threshold Notification, or Proposed Freight Rail Yard Construction, Conversion, or Expansion Notification.

(c) Definitions

(1) EXCEEDANCE OF LOW ACTIVITY EXEMPTION THRESHOLD NOTIFICATION is the notification submitted to the Executive Officer by the Freight Rail Yard Operator pursuant to Rule 2306 paragraph (g)(4).

(2) FREIGHT RAIL YARD is as defined in Rule 2306 paragraph (c)(9).

(3) FREIGHT RAIL YARD OPERATOR is as defined in Rule 2306 paragraph (c)(11).

(4) FREIGHT RAIL YARD OWNER is as defined in Rule 2306 paragraph (c)(12).

(5) FREIGHT RAIL YARD SHUTDOWN NOTIFICATION is the notification submitted to the Executive Officer by the Freight Rail Yard Owner or Operator pursuant to Rule 2306 paragraph (g)(3).

(6) INITIAL CHANGE OF FREIGHT RAIL YARD OPERATOR NOTIFICATION is the notification submitted to the Executive Officer by the Freight Rail Yard

Owner or current Freight Rail Yard Operator pursuant to Rule 2306 subparagraph (g)(1)(A).

(7) INITIAL CHANGE OF FREIGHT RAIL YARD OWNER NOTIFICATION is the notification submitted to the Executive Officer by the current Freight Rail Yard Owner or Freight Rail Yard Operator pursuant to Rule 2306 subparagraph (g)(2)(A).

(8) INITIAL FACILITY INFORMATION REPORT is the report submitted to the Executive Officer by the Freight Rail Yard Operator pursuant to Rule 2306 subparagraph (d)(4)(A) and paragraph (e)(1).

(9) INITIAL ZERO EMISSION INFRASTRUCTURE REPORT is the report submitted to the Executive Officer by the Freight Rail Yard Owner and Operator pursuant to Rule 2306 subparagraph (d)(4)(B) and paragraph (e)(2).

(10) MILESTONE COMPLIANCE REPORT is the Milestone Year report submitted to the Executive Officer by a Freight Rail Yard Operator demonstrating compliance with the percent emission reduction target pursuant to Rule 2306 subparagraph (d)(4)(C) and paragraph (f)(1).

(11) PROPOSED FREIGHT RAIL YARD CONSTRUCTION, CONVERSION, OR EXPANSION NOTIFICATION is the notification submitted to the Executive Officer by the owner of the proposed Freight Rail Yard project pursuant to Rule 2306 paragraph (g)(5).

(12) SECONDARY CHANGE OF FREIGHT RAIL YARD OPERATOR NOTIFICATION is the notification submitted to the Executive Officer by the new Freight Rail Yard Operator pursuant to Rule 2306 subparagraph (g)(1)(B).

(13) SECONDARY CHANGE OF FREIGHT RAIL YARD OWNER NOTIFICATION is the notification submitted to the Executive Officer by the new Freight Rail Yard Owner pursuant to Rule 2306 subparagraph (g)(2)(B).

(14) ZERO EMISSION INFRASTRUCTURE STATUS UPDATE REPORT is the report submitted to Executive Officer by the Freight Rail Yard Owner and Operator pursuant to Rule 2306 subparagraph (d)(4)(D) and paragraph (f)(2).

(d) Fees for Rule 2306 Reports and Notifications

(1) Freight Rail Yard Owners and Operators that submit reports or notifications required by Rule 2306 shall pay applicable fees pursuant to Table 1 for each

submitted report or notification, except for an Initial Zero Emission Infrastructure Report or a Zero Emission Infrastructure Status Update Report that is jointly submitted for multiple Freight Rail Yards.

(2) For a Freight Rail Yard Owner or Operator that submits a single Initial Zero Emission Infrastructure Report jointly for multiple Freight Rail Yards operated by the same Freight Rail Yard Operator pursuant to Rule 2306 clause (d)(4)(B)(ii), or a single Zero Emission Infrastructure Status Update Report jointly for multiple Freight Rail Yards operated by the same Freight Rail Yard Operator pursuant to Rule 2306 clause (d)(4)(D)(ii), the owner or operator shall pay applicable fees pursuant to Table 1 for each individual Freight Rail Yards covered by the joint report.

Table 1 – Fees for Rule 2306 Reports and Notifications

Reports	**Fees**
Initial Facility Information Report	$3,397.71
Initial Zero Emission Infrastructure Report	$1,520.07
Milestone Compliance Report	$11,728.26
Zero Emission Infrastructure Status Update Report	$1,520.07
Notifications	**Fees**
Initial Change of Freight Rail Yard Operator Notification	$78.32
Secondary Change of Freight Rail Yard Operator Notification	$52.21
Initial Change of Freight Rail Yard Owner Notification	$78.32
Secondary Change of Freight Rail Yard Owner Notification	$52.21
Freight Rail Yard Shutdown Notification	$130.53
Exceedance of Low Activity Exemption Threshold Notification	$130.53
Proposed Freight Rail Yard Construction, Conversion, or Expansion Notification	$130.53

(e) Payment Due Date

Payment of all applicable fees in subdivision (d) shall be due at the time that the applicable report must be submitted pursuant to Rule 2306 paragraph (d)(4), or at the time that the applicable notification must be submitted pursuant to Rule 2306 subdivision (g). The report or notification fee payment shall be considered to be timely received by the South Coast AQMD if the full fee payment is delivered, postmarked, or electronically paid on or before the payment due date. If the payment due date falls on a Saturday, Sunday, or a state holiday, the full fee payment may be delivered, postmarked, or electronically paid on the next business day following the Saturday, Sunday, or the state holiday with the same effect as if it had been delivered, postmarked, or electronically paid on the payment due date.

(f) Service Charge for Returned Check

Any Freight Rail Yard Owner or Operator who submits a check to the South Coast AQMD on insufficient funds or on instructions to stop payment on the check, absent an overcharge or other legal entitlement to withhold payment, shall be subject to a $25 service charge.

ATTACHMENT H

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Proposed Rule 2306 Calculation Methodology and Data Appendix

Proposed Rule 2306 – Freight Rail Yards
Proposed Rule 316.2 – Fees for Rule 2306

August 2024

Deputy Executive Officer
Planning, Rule Development, and Implementation
Sarah L. Rees, Ph.D.

Assistant Deputy Executive Officer
Planning, Rule Development, and Implementation
Ian MacMillan

Planning and Rules Manager
Planning, Rule Development, and Implementation
I. Elaine Shen, Ph.D.

AUTHORS:	Zoya Banan, Ph.D.	Acting Program Supervisor
	Cindy Guzman	Assistant Air Quality Specialist
	Daniel C. Hernandez	Assistant Air Quality Specialist
	Zorik Pirveysian	Integra Environmental Consulting Services, Inc
CONTRIBUTOR:	Shawn Wang	Program Supervisor
REVIEWED BY:	Barbara Baird	Chief Deputy Counsel
	Nicholas Dwyer	Senior Deputy District Counsel
	Sheri Hanizavareh	Principal Deputy District Counsel
	Brian Tomasovic	Assistant Chief Deputy Counsel

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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CARLOS RODRIGUEZ
Councilmember, Yorba Linda
Cities of Orange County

JOSÉ LUIS SOLACHE
Mayor, Lynwood
Cities of Los Angeles County/Western Region

EXECUTIVE OFFICER:

WAYNE NASTRI

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This document provides the methodology for calculating: 1) Actual Annual NOx Emissions for the Freight Rail Yard; 2) Annual Reference NOx Emissions for the Freight Rail Yard; and 3) Aggregate Emission Factor for the Freight Rail Yard, as required under Proposed Rule 2306 – Freight Rail Yards (PR 2306).

The data tables for input parameters referenced in emissions calculation equations in this methodology document are provided in ~~the~~ its Data Appendix ~~to Draft Proposed Rule 2306 Calculation Methodology (herein "Data Appendix")~~.

For all emission calculations described below, supporting documentation must be provided if actual operating parameters are used in lieu of default parameters (if provided in equations) for applicable mobile sources operating at and travelling through the freight rail yards.

1. Actual Annual NOx Emissions for a Freight Rail Yard

This section outlines the methodologies to calculate the actual NOx emissions for a freight rail yard for each milestone year from the applicable mobile sources, including locomotives, drayage trucks, CHE, TRU, and OSE, to be used in PR 2306 Equation 1, Equation 2, and Equation 3, as applicable.

A. Locomotives

This section provides the detailed methodology to calculate the actual annual NOx emissions for each milestone year from all locomotives operating at the freight rail yard(s), which are operated by the same freight rail yard operator, within the State of California or within South Coast AQMD.

The statewide actual annual NOx emissions from all locomotives operated by the same freight rail yard within the State of California are calculated based on the annual usage in megawatt-hours (MWhr) in non-zero-emissions (ZE) configuration for all locomotives operating at all freight rail yards in California operated by the same freight rail yard operator in conjunction with the corresponding average NOx emission factors by locomotive Tier level using the following equation:

$$CAEL_i = \left\{\sum_l \left[\left(CAMWhr_{l,i} - CAMWhr_{l,i}^{ze}\right) \times CF \times EF_l\right]\right\} \times U \qquad \textit{(Equation 1.A.1)}$$

Where:

$CAEL_i$ = Actual NOx emissions (in tons) from all Locomotives operated by the same Freight Rail Yard Operator within the State of California in year *i*

$CAMWhr_{l,i}$ = Annual usage (in megawatt-hours) of Locomotive *l* operated by the same Freight Rail Yard Operator within the State of California in year *i*

$CAMWhr_{l,i}^{ze}$ = Annual usage (in megawatt-hours) in ZE Configuration of Locomotive *l* operated by the same Freight Rail Yard Operator within the State of California in year *i*

CF = Conversion factor for megawatt to horsepower (1341.02)

EF_l = Average NOx emission factor for Locomotive *l* (in grams per brake horsepower-hour), as specified in Data Appendix, Table A-1

U = Unit conversion factor for grams to tons (1/907,180[1])

The average NOx emission factors for locomotives are based on EPA's average emission factors for line-haul and switcher locomotives by locomotive Tier level[2] and are provided in Data Appendix, Table A-1.

The actual annual NOx emissions for all locomotives operating at and travelling to and from a freight rail yard within South Coast AQMD is calculated based on the total annual usage in MWhr in non-ZE configuration for locomotives operating within South Coast AQMD, NOx emission factors for locomotives, and the number of days locomotives operated at and travelling to and from this freight rail yard compared to the total number of days that locomotives operated at and travelling to and from all freight rail yards by the same freight rail yard operator within South Coast AQMD using the following equation:

$$EL_i = \left\{\sum_l \left[\left(MWhr_{l,i} - MWhr_{l,i}^{ze}\right) \times CF \times EF_l \times \frac{DaysFRY_{l,i}}{\sum_y DaysALLFRY_{l,i,y}}\right]\right\} \times U$$

(Equation 1.A.2)

Where:

EL_i = Actual NOx emissions (in tons) from all Locomotives operating at and travelling to and from the Freight Rail Yard in year *i*

$MWhr_{l,i}$ = Annual usage (in megawatt-hours) by Locomotive *l* operating within the South Coast AQMD jurisdiction in year *i*

$MWhr_{l,i}^{ze}$ = Annual usage (in megawatt-hours) in *ZE* Configuration by Locomotive *l* operating within the South Coast AQMD jurisdiction in year *i*

[1] Tons to grams conversion: 453.59 grams/pound X 2000 pounds/ton = 907,180 grams/ton

[2] EPA's Emission Factors for Locomotives (Tables 1 and 2), EPA-420-F-09-025, April 2009

CF = Conversion factor for megawatt to horsepower (1341.02)

EF_l = NOx emission rate based on the duty cycle weighted emission test results as provided in Locomotive *l*'s Locomotive Engine Certification Data, or the average NOx emission factor for Locomotive *l* (in grams per brake horsepower-hour) as specified in Data Appendix, Table A-1

$DaysFRY_{l,i}$ = Total number of days Locomotive *l* operating at and travelling to and from the Freight Rail Yard in year *i*

$DaysALLFRY_{l,i,y}$ = Total number of days Locomotive *l* operating at and travelling to and from any Freight Rail Yard *y* within the South Coast AQMD jurisdiction in year *i*

U = Unit conversion factor for grams to tons (1/907,180)

The NOx emission factors for locomotives in this equation can be based on the locomotive engine certification data (i.e., duty cycle weighted emission test result), if available, or based on the EPA's average emission factors by locomotive Tier level provided in Data Appendix, Table A-1. The locomotive engine certification data must be provided as supporting documentation if used in emission calculation for any locomotive in this equation.

The total annual MWhr usage of locomotives may be directly obtained from locomotives megawatt-hour meters or calculated based on the locomotives fuel consumption in gallons using the following equation and conversion factors for line-haul and switcher locomotives provided in Data Appendix Table A-2.

$$MWhr_{l,i} = Fuel\ Consumption_{l,i} \times Conversion\ Factor_l \qquad \textit{(Equation 1.A.2.a)}$$

The conversion factors for line-haul and switcher locomotives in MWhr/gal are extracted from CARB's In-Use Locomotive Regulation.[3]

[3] CARB's In-Use Locomotive Regulation, Table 1; https://ww2.arb.ca.gov/rulemaking/2022/locomotive

B. Drayage Trucks

This section provides the detailed methodology to calculate the actual annual NOx emissions for each milestone year from all drayage trucks operating at and travelling to and from the freight rail yard(s) within the State of California or within South Coast AQMD based on the number of individual truck trips to the freight rail yard(s) within the applicable jurisdiction, miles traveled to and from the freight rail yard(s) using the actual mileage or a default mileage (39.9 miles per trip), and the corresponding composite NOx emission factors by truck model year provided in Data Appendix, Tables B-1 through B-4 using the following equation:

$$EDT_i = \sum_d \left[NT_{d,i} \times VMT_{d,i} \times EF_{d,i} \right] \times U \qquad \textit{(Equation 1.B.1)}$$

Where:

EDT_i = Actual NOx emissions (in tons) from all Drayage Truck operating at and travelling to and from the Freight Rail Yard within the applicable jurisdiction in year *i*

$NT_{d,i}$ = Number of Truck Trips by Drayage Truck *d* in year *i* to and from the Freight Rail Yard, calculated as total number of unique entry date(s) multiplied by 2

$VMT_{d,i}$ = Actual vehicle miles traveled by Drayage Truck *d* in year *i* to and from the Freight Rail Yard, or use default factor of 39.9 miles/trip

$EF_{d,i}$ = Composite emission factor for Drayage Truck *d* (in grams per mile by model year) in year *i*, as specified in Data Appendix, Tables B-1 through B-4, or 0 if Drayage Truck *d* operates in ZE Configuration

U = Unit conversion factor for grams to tons (1/907,180)

The composite NOx emission factors for drayage trucks by truck model year are derived from CARB's EMFAC2021 Model[4] for T7 Tractor Class 8 category by calendar year (EMFAC2021 Emissions Run for statewide or South Coast regions at aggregate speed), and they also reflect the impact of CARB's Heavy-Duty Inspection and Maintenance Regulation[5]. The default mileage of

[4] EMFAC2021: https://arb.ca.gov/emfac/

[5] CARB's Heavy-Duty Inspection and Maintenance Program: https://ww2.arb.ca.gov/our-work/programs/CTC

39.9 miles per round trip for drayage trucks visiting a freight rail yard is derived from 2016 Regional Transportation Plan documents.[6]

The model year and fuel type of the drayage trucks operating at and travelling to and from the freight rail yard can be directly tracked by the freight rail yard operator or obtained from the truck's vehicle identification number (VIN) tracked by the freight rail yard operator using publicly available tools such as from the National Highway Traffic Safety Administration (NHTSA) at: https://vpic.nhtsa.dot.gov/api/.

C. TRU

This section provides the detailed methodology to calculate the actual annual NOx emissions for each milestone year from all TRU operating at and travelling to and from a freight rail yard within South Coast AQMD. The actual annual NOx emissions for TRU operating at and travelling to and from the freight rail yard are calculated based on the maximum rated horsepower (hp), load factor, annual operating hours, fuel correction factor, and emission factor for each TRU using the following equation:

$$ETRU_i = \sum_r \left[HP_{r,i} \times LF_{r,i} \times (HR_{r,i} - HR_{r,i}^{ZE}) \times EF_{r,i} \times FCF_{r,i} \right] \times U$$

(Equation 1.C.1)

Where:

$ETRU_i$ = Actual NOx emissions (in tons) from all TRUs operating at and travelling to and from the Freight Rail Yard in year *i*

$HP_{r,i}$ = Maximum rated horsepower for TRU *r* operating at and travelling to and from the Freight Rail Yard in year *i*

$LF_{r,i}$ = Load factor for TRU *r* operating at and travelling to and from the Freight Rail Yard in year *i*, as specified in Data Appendix, Table C-1

$HR_{r,i}$ = Annual operating hours for TRU *r* operating at and travelling to and from the Freight Rail Yard in year *i*

$HR_{r,i}^{ZE}$ = Annual operating hours in ZE Configuration for TRU *r* operating at and travelling to and from the Freight Rail Yard in year *i*

$EF_{r,i}$ = Emission factor (in grams per brake horsepower-hour) for TRU *r* operating at and travelling to and from the Freight Rail Yard in year *i*, using Equation 1.C.1.a

[6] 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy https://scag.ca.gov/2016-rtpscs

$FCF_{r,i}$ = Fuel Correction Factor for TRU *r* operating at and travelling to and from the Freight Rail Yard in year *i*, as specified in Data Appendix, Table F-1

U = Unit conversion factor for grams to tons (1/907,180)

Load factors for various TRU types and horsepower categories are provided in Data Appendix, Table C-1 and are based on CARB's TRU documentation[7]. The fuel correction factors for TRU by fuel type are provided in Data Appendix, Table F-1 and are based CARB's Offroad documentation[8].

If hp data for TRU is not available, the default hp values provided in Data Appendix, Table C-4 may be used in Equation 1.C.1. The default hp values are based on CARB's TRU documentation[9].

The emission factor for each TRU is calculated based on the zero-hour emission factor ($EFzh$), deterioration rate (DR), and accumulated operating hours (reflecting equipment age and capped at 12,000 hours) for each TRU operating at the freight rail yard using the following equation:

$$EF_{r,i} = \left[EFzh_{r,i} + \left(DR_{r,i} \times AccumulatedHours_{r,i}\right)\right] \quad \textit{(Equation 1.C.1.a)}$$

Where:

$EFzh_{r,i}$ = Zero-hour emission factor (in gram per brake horsepower-hour) for TRU *r* operating at and traveling to and from the Freight Rail Yard in year *i*, pursuant to Data Appendix, Tables F-2 through F-10

$DR_{r,i}$ = Deterioration rate (in grams per break horsepower per squared-hour) for TRU *r* operating at and travelling to and from the Freight Rail Yard in year *i*, pursuant to Data Appendix, Tables F-2 through F-10

$AccumulatedHours_{r,i}$ = Total hours from the unit's non-resettable hour-meter, if available; otherwise, the average annual operating hours times the age of TRU *r* (capped at 12,000 hours) in year *i*

[7] CARB's TRU documentation (Table 10 in Appendix H); https://ww2.arb.ca.gov/sites/default/files/barcu/board/rulemaking/tru2021/apph.pdf

[8] 2017 OffRoad Diesel, Propane and Gasoline Emission Factors; https://ww2.arb.ca.gov/our-work/programs/msei/road-categories/road-diesel-models-and-documentation

[9] CARB's TRU documentation (Table 3 in Appendix H); https://ww2.arb.ca.gov/sites/default/files/barcu/board/rulemaking/tru2021/apph.pdf

The zero-hour emission factors and deterioration rates for each TRU type, fuel type, hp bin, and model year are provided in Data Appendix, Tables F-2 to F-10 and are based on CARB's OffRoad documentation[10]. The accumulated hours for each OSE can be determined based on the total hours from the unit's non-resettable hour-meter or calculated based on the average annual operating hours times the age of the unit. The accumulated hours are capped at 12,000 hours based on CARB's documentation[11]. If model year data is not available for each TRU, then a default age of 7 years can be used for all TRUs.[12]

The annual operating hours for each TRU must be based on the following order of hierarchy pending availability of operational data: 1) non-resettable hour-meters, 2) maintenance records, 3) fuel consumption data, or 4) default average operating hours for each TRU type provided in Data Appendix, Table C-2. adjusted for the TRU operating at and traveling to and from the freight rai yard. For each TRU, only one method for annual operating hours can be used for all milestone years to prevent potential variations between these methods affecting the actual annual emissions.

If the fuel consumption data for TRU operating at and traveling to and from the rail yard is available, the annual operating hours can be estimated using the following equation and fuel consumption conversion factors conversion factors in Data Appendix, Table F-11.

$$HR_{r,i} = Fuel\ Consumption_{r,i} \times Conversion\ Factor_{A2} \div \left(HP_{r,i} \times LF_{r,i}\right)$$

(Equation 1.C.1.b)

[10] 2017 OffRoad Diesel, Propane and Gasoline Emission Factors; https://ww2.arb.ca.gov/our-work/programs/msei/road-categories/road-diesel-models-and-documentation

[11] CARB 2011 CHE Documentation

https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-documentation-road

[12] Figure 6 from CARB's TRU Emissions Inventory shows that 7 years is a conservative default age assumption based on actual data. https://ww2.arb.ca.gov/sites/default/files/barcu/board/rulemaking/tru2021/apph.pdf

The fuel consumption conversion factors in Data Appendix, Table F-11 are derived from brake-specific fuel consumption rates from CARB's Offroad documentation[13] and density for each fuel type.

The total annual operating hours for TRU *r* operating and travelling to and from the rail yard can also be proportioned from the total operating hours for TRU *r* within the South Coast AQMD jurisdiction and the number of days TRU *r* operated at and travelled to and from this freight rail yard compared to the total number of days that TRU *r* operated at South Coast AQMD jurisdiction using Equation 1.C.1.c below.

$$HR_{r,i} = HrSC_{r,i} \times \frac{DaysFRY_{r,i}}{DaysALLSC_{r,i}} \qquad \textit{(Equation 1.C.1.c)}$$

Where:

$HrSC_{r,i}$ = Total number of hours TRU *r* operating within the South Coast AQMD jurisdiction in year *i*

$DaysFRY_{r,i}$ = Total number of days TRU *r* operating at and travelling to and from the Freight Rail Yard in year *i*

$DaysALLSC_{r,i}$ = Total number of days TRU *r* operating within the South Coast AQMD jurisdiction in year *i*

For TRU, the annual operating hours can also be calculated using Equation 1.C.1.d below.

$$HR_{r,i} = Time_{Onroad,r} + Time_{Onrail,r} + Time_{Onyard,r} \qquad \textit{(Equation 1.C.1.d)}$$

Where:

$Time_{Onroad,r}$ = 39.9 miles per trip ÷ 47 miles per hour (using default values from the Regional Transportation Plan)[14]. This parameter is 0 for railcar TRUs.

[13] 2017 OffRoad Diesel, Propane and Gasoline Emission Factors; https://ww2.arb.ca.gov/our-work/programs/msei/road-categories/road-diesel-models-and-documentation

[14] SCAG 2016 RTP and Regional Travel Demand Model Validation

$Time_{Onrail,r}$ = Distance via rail from rail yard to South Coast AQMD boundary (miles) ÷ annual average intermodal velocity (miles per hour)[15]

$Time_{Onyard,r}$ = Annual average terminal dwell time[16]

D. CHE

This section provides the detailed methodology to calculate the actual annual NOx emissions for each milestone year from all CHE operating at and travelling to and from a freight rail yard within South Coast AQMD. The actual annual NOx emissions for CHE operating at and travelling to and from the freight rail yard are calculated based on the maximum rated horsepower (hp), load factor, annual operating hours, fuel correction factor, and emission factors for each CHE using the following equation:

$$ECHE_i = \sum_c \left[HP_{c,i} \times LF_{c,i} \times (HR_{c,i} - HR_{c,i}^{ZE}) \times EF_{c,i} \times FCF_{c,i} \right] \times U$$

(Equation 1.D.1)

Where:

$ECHE_i$ = Actual NOx emissions (in tons) from all CHE operating at and traveling to and from the Freight Rail Yard in year *i*

$HP_{c,i}$ = Maximum rated horsepower for CHE *c* operating at and traveling to and from the Freight Rail Yard in year *i*

$LF_{c,i}$ = Load factor for CHE *c* operating at and traveling to and from the Freight Rail Yard in year *i*, as specified in Data Appendix, Table D-1

$HR_{c,i}$ = Annual operating hours for CHE *c* operating at and traveling to and from the Freight Rail Yard in year *i*

$HR_{c,i}^{ZE}$ = Annual operating hours in ZE Configuration for CHE *c* operating at and traveling to and from the Freight Rail Yard in year *i*

$EF_{c,i}$ = Emission factor (in grams per brake horsepower-hour) for CHE *c* operating at and traveling to and from the Freight Rail Yard in year *i*, using Equation 1.D.1.a

$FCF_{c,i}$ = Fuel Correction Factor for CHE *c* operating at and traveling to and from Freight Rail Yard *y* in year *i*, as specified in Data Appendix, Table F-1

[15] Available in reports to Surface Transportation Board here: https://www.stb.gov/reports-data/rail-service-data/

[16] Ibid

U = Unit conversion factor for grams to tons (1/907,180)

Load factors for various CHE types and horsepower categories and the fuel correction factors are provided in Data Appendix, Table D-1 and Table F-1, respectively and are based on CARB's OffRoad documentation[17].

The emission factor for each CHE is calculated based on the zero-hour emission factor, deterioration rate, and accumulated operating hours (reflecting equipment age and capped at 12,000 hours) for each CHE operating at the freight rail yard using the following equation:

$$EF_{c,i} = \left[EFzh_{c,i} + \left(DR_{c,i} \times AccumulatedHours_{c,i}\right)\right] \quad \textit{(Equation 1.D.1.a)}$$

Where:

$EFzh_{c,i}$ = Zero-hour emission factor (in gram per brake horsepower-hour) for CHE *c* operating at and traveling to and from the Freight Rail Yard in year *i*, pursuant to Data Appendix, Tables F-2 through F-10

$DR_{c,i}$ = Deterioration rate (in grams per break horsepower per squared-hour) for CHE *c* operating at and traveling to and from the Freight Rail Yard in year *i*, pursuant to Data Appendix, Tables F-2 through F-10

$AccumulatedHours_{c,i}$ = Total hours from the unit's non-resettable hour-meter, if available; otherwise, the average annual operating hours times the age of CHE *c* (capped at 12,000 hours) in year *i*

The zero-hour emission factors and deterioration rates for each CHE type, fuel type, hp bin, and model year are provided in Data Appendix, Tables F-2 to F-10 are based on CARB's OffRoad documentation[18]. The accumulated hours for each CHE can be determined based on the total hours from the unit's non-resettable hour-meter or calculated based on the average annual operating

[17] 2017 OffRoad Diesel, Propane and Gasoline Emission Factors; https://ww2.arb.ca.gov/our-work/programs/msei/road-categories/road-diesel-models-and-documentation

[18] 2017 OffRoad Diesel, Propane and Gasoline Emission Factors; https://ww2.arb.ca.gov/our-work/programs/msei/road-categories/road-diesel-models-and-documentation

hours times the age of the unit. The accumulated hours are capped at 12,000 hours based on CARB's documentation[19].

The annual operating hours for each CHE must be based on the following order of hierarchy pending availability of operational data: 1) non-resettable hour-meters, 2) maintenance records, or 3) fuel consumption data. If the fuel consumption data for CHE operating at and traveling to and from the rail yard is available, the annual operating hours can be estimated using the Equation 1.C.1.b and the fuel consumption conversion factors in Data Appendix, Table F-11. For each CHE, only one method for annual operating hours can be used for all milestone years to prevent potential variations between these methods affecting the actual annual emissions.

The fuel consumption conversion factors in Data Appendix, Table F-11 are derived from brake-specific fuel consumption rates from CARB's Offroad documentation[20] and density for each fuel type.

E. OSE

This section provides the detailed methodology to calculate the actual annual NOx emissions for each milestone year from all OSE operating at and travelling to and from a freight rail yard within South Coast AQMD. The actual annual NOx emissions for OSE operating at and travelling to and from the freight rail yard are calculated based on the maximum rated horsepower (hp), load factor, annual operating hours, fuel correction factor, and emission factor for each OSE using the following equation:

$$EOSE_i = \sum_o \left[HP_{o,i} \times LF_{o,i} \times (HR_{o,i} - HR_{o,i}^{ZE}) \times EF_{o,i} \times FCF_{o,i} \right] \times U$$

(Equation 1.E.1)

Where:

$EOSE_i$ = Actual NOx emissions (in tons) for all OSE operating at and traveling to and from the Freight Rail Yard in year *i*

[19] CARB 2011 CHE Documentation

https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-documentation-road

[20] 2017 OffRoad Diesel, Propane and Gasoline Emission Factors; https://ww2.arb.ca.gov/our-work/programs/msei/road-categories/road-diesel-models-and-documentation

$HP_{o,i}$ = Maximum rated horsepower for OSE *o* operating at and traveling to and from the Freight Rail Yard in year *i*

$LF_{o,i}$ = Load factor for OSE *o* operating at and traveling to and from the Freight Rail Yard in year *i*, as specified in Data Appendix, Table E-1

$HR_{o,i}$ = Annual operating hours for OSE *o* operating at and traveling to and from the Freight Rail Yard in year *i*

$HR_{o,i}^{ZE}$ = Annual operating hours in ZE Configuration for OSE *o* operating at and traveling to and from the Freight Rail Yard in year *i*

$EF_{o,i}$ = Emission factor (in grams per brake horsepower-hour) for OSE *o* operating at and traveling to and from the Freight Rail Yard in year *i*, using Equation 1.E.1.a

$FCF_{o,i}$ = Fuel Correction Factor for OSE *o* operating at and traveling to and from the Freight Rail Yard in year *i*, as specified in Data Appendix, Table F-1

U = Unit conversion factor for grams to tons (1/907,180)

Load factors for various OSE types and horsepower categories and the fuel correction factors are provided in Data Appendix, Table E-1 and Table F-1, respectively, and are based on CARB's OffRoad documentation[21].

The emission factor for each OSE is calculated based on the zero-hour emission factor, deterioration rate, and accumulated operating hours (reflecting equipment age and capped at 12,000 hours) for each OSE operating at the freight rail yard using the following equation:

$$EF_{o,i} = \left[EFzh_{o,i} + \left(DR_{o,i} \times AccumulatedHours_{o,i}\right)\right] \qquad \textit{(Equation 1.E.1.a)}$$

Where:

$EFzh_{o,i}$ = Zero-hour emission factor (in gram per brake horsepower-hour) for OSE *o* operating at and traveling to and from the Freight Rail Yard in year *i*, pursuant to Data Appendix, Tables F-2 through F-10

[21] 2017 OffRoad Diesel, Propane and Gasoline Emission Factors; https://ww2.arb.ca.gov/our-work/programs/msei/road-categories/road-diesel-models-and-documentation

$DR_{o,i}$ = Deterioration rate (in grams per break horsepower per squared-hour) for OSE *o* operating at and traveling to and from the Freight Rail Yard in year *i*, pursuant to Data Appendix Tables F-2 through F-10

$AccumulatedHours_{o,i}$ = Total hours from the unit's non-resettable hour-meter, if available; otherwise, the average annual operating hours times the age of OSE *o* (capped at 12,000 hours) in year *i*

The zero-hour emission factors and deterioration rates for each OSE type, fuel type, hp bin, and model year are provided in Data Appendix, Tables F-2 through F-10 are based on CARB's OffRoad documentation[22]. The accumulated hours for each OSE can be determined based on the total hours from the unit's non-resettable hour-meter or calculated based on the average annual operating hours times the age of the unit. The accumulated hours are capped at 12,000 hours based on CARB's documentation[23].

The annual operating hours for each OSE must be based on the following order of hierarchy pending availability of operational data: 1) non-resettable hour-meters, 2) maintenance records, or 3) fuel consumption data. If the fuel consumption data for OSE operating at and traveling to and from the rail yard is available, the annual operating hours can be estimated using the Equation 1.C.1.b and the fuel consumption conversion factors in Data Appendix, Table F-11. For each OSE, only one method for annual operating hours can be used for all milestone years to prevent potential variations between these methods affecting the actual annual emissions.

The fuel consumption conversion factors in Data Appendix, Table F-11 are derived from brake-specific fuel consumption rates from CARB's Offroad documentation[24] and density for each fuel type.

[22] 2017 OffRoad Diesel, Propane and Gasoline Emission Factors; https://ww2.arb.ca.gov/our-work/programs/msei/road-categories/road-diesel-models-and-documentation

[23] CARB 2011 CHE Documentation

https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-documentation-road

[24] 2017 OffRoad Diesel, Propane and Gasoline Emission Factors; https://ww2.arb.ca.gov/our-work/programs/msei/road-categories/road-diesel-models-and-documentation

2. Annual Reference NOx Emissions for a Freight Rail Yard

This section outlines the methodologies to calculate the annual reference scenario NOx emissions for each milestone year from applicable mobile sources including locomotives, drayage trucks, CHE, TRU, and OSE, to be used in PR 2306 Equation 1 and Equation 2, as applicable.

A. Locomotives

This section provides the detailed methodology to calculate the annual reference NOx emissions for each milestone year from locomotives operating at the freight rail yard(s) by the same freight rail yard operator within the State of California or within South Coast AQMD.

The statewide annual reference NOx emissions are calculated based on the annual usage in megawatt-hours (MWhr) in non-zero-emissions (ZE) configuration for all locomotives operating at all freight rail yards in California operated by the same freight rail yard operator in conjunction with the composite emission factors by locomotive type (line-haul or switcher) and by calendar year in Data Appendix, Table A-3 using the following equation:

$$CAEL_{i,RS} = \left[\sum_l \left(CAMWhr_{l,i} \times CF \times EF_{l,RS}\right)\right] \times U \qquad \textit{(Equation 2.A.1)}$$

Where:

$CAEL_{i,RS}$ = Reference Scenario (RS) NOx emissions (in tons) from all Locomotives operated by the same Freight Rail Yard Operator within the State of California in year *i*

$CAMWhr_{l,i}$ = Annual usage (in megawatt-hours) of Locomotive *l* operated by the same Freight Rail Yard Operator within the State of California in year *i*

CF = Conversion factor for megawatt to horsepower (1341.02)

$EF_{l,RS}$ = Composite NOx emission factor for Locomotive *l* (in grams per brake horsepower-hour) under Reference Scenario (RS), as specified in Data Appendix, Table A-3

U = Unit conversion factor for grams to tons (1/907,180)

The annual reference NOx emissions for all locomotives operating at and travelling to and from a freight rail yard within South Coast AQMD is calculated based on the annual usage in MWhr in non-ZE configuration for these locomotives in conjunction with the composite emission factors by locomotive type (line-haul or switcher) and by calendar year, and the number of days locomotives operated at this freight rail yard compared to the total number of days that locomotives operated

at all freight rail yards operated by the same operator within South Coast AQMD using the following equation:

$$EL_{i,RS} = \left[\sum_l \left(MWhr_{l,i} \times CF \times \frac{DaysFRY_{l,i}}{\sum_y DaysALLFRY_{l,i,y}}\right)\right] \times EF_{i,RS} \times U \qquad \textit{(Equation 2.A.2)}$$

Where:

$EL_{i,RS}$ = Reference Scenario (RS) NOx emissions (in tons) from all Locomotives operating at and travelling to and from the Freight Rail Yard in year *i*

$MWhr_{l,i}$ = Annual usage (in megawatt-hours) by Locomotive *l* operating within the South Coast AQMD jurisdiction in year *i*

CF = Conversion factor for megawatt to horsepower (1341.02)

$EF_{l,RS}$ = Composite NOx emission factor (in grams per brake horsepower-hour) under Reference Scenario (RS) in year *i*, as specified in Data Appendix, Table A-3

$DaysFRY_{l,i}$ = Total number of days Locomotive *l* operating at and travelling to and from the Freight Rail Yard in year *i*

$DaysALLFRY_{l,i,y}$ = Total number of days Locomotive *l* operating at and travelling to and from any Freight Rail Yard *y* within the South Coast AQMD jurisdiction in year *I*

U = Unit conversion factor for grams to tons (1/907,180)

The composite NOx emission factors by locomotive type (line-haul and switcher) and by calendar year are provided in Data Appendix, Table A-3 and are based on CARB's In-Use Locomotive Regulation.[25]

The total annual MWhr usage of locomotives may be directly obtained from locomotives megawatt-hour meters or calculated based on the locomotives fuel consumption in gallons using Equation 1.A.2.a. and conversion factors provided in Data Appendix, Table A-2 for line-haul and switcher locomotives.

[25] CARB's In-Use Locomotive Regulation; https://ww2.arb.ca.gov/rulemaking/2022/locomotive

B. Drayage Trucks

This section provides the detailed methodology to calculate the annual reference NOx emissions for each milestone year from all drayage trucks visiting freight rail yards within the State of California or within South Coast AQMD.

The annual reference NOx emissions from drayage trucks are calculated based on the number of individual truck trips to the freight rail yard(s) within the applicable jurisdiction, miles traveled to and from the freight rail yard(s) using the actual mileage or a default mileage and the corresponding composite NOx emission factors by calendar year using the following equation:

$$EDT_{i,RS} = \sum_d \left(NT_{d,i} \times VMT_{d,i}\right) \times EF_{i,RS} \times U \qquad \textit{(Equation 2.B.1)}$$

Where:

$EDT_{i,RS}$ = Reference Scenario NOx emissions (in tons) from all Drayage Truck operating at and travelling to and from the Freight Rail Yard within the applicable jurisdiction in year *i*

$NT_{d,i}$ = Number of Truck Trips by Drayage Truck *d* in year *i* to and from the Freight Rail Yard, calculated as total number of unique entry date(s) multiplied by 2

$VMT_{d,i}$ = Actual vehicle miles traveled by Drayage Truck *d* in year *i* to and from the Freight Rail Yard, or use default factor of 39.9 miles/trip

$EF_{i,RS}$ = Composite emission factor (in grams per mile by calendar year) in year *i* under Reference Scenario (RS), as specified in Data Appendix, Table B-5

U = Unit conversion factor for grams to tons (1/907,180)

The composite NOx emission factors (EF) for drayage trucks by calendar year are derived from CARB's EMFAC2021 Model[26] for T7 Tractor Class 8 category by calendar year (EMFAC2021 Emissions Run for statewide or South Coast region at aggregate model year and aggregate speed), and they also reflect the impact of CARB's Heavy-Duty Inspection and Maintenance Regulation[27].

[26] EMFAC2021: https://arb.ca.gov/emfac/

[27] CARB's Heavy-Duty Inspection and Maintenance Program: https://ww2.arb.ca.gov/our-work/programs/CTC

C. TRU

This section provides the detailed methodology to calculate the annual reference NOx emissions for each milestone year from all TRU operating at and travelling to and from a freight rail yard within South Coast AQMD. The annual reference NOx emissions for TRU operating at and travelling to and from the freight rail yard are calculated based on the annual operating hours for each TRU type (i.e., same equipment type, fuel, hp bin, model year) and the average emission factor for each TRU type using the following equation:

$$ETRU_i^{RS} = \sum_t \left[\left(\sum_{r \in t} HR_{r,i} \right) \times ER_{t,i}^{RS} \right] \quad \textit{(Equation 2.C.1)}$$

Where:

$ETRU_i^{RS}$= Reference Scenario NOx emissions (in tons) from all TRUs operating at and travelling to and from the Freight Rail Yard in year *i*

$HR_{r,i}$ = Annual operating hours for TRU *r* associated with TRU type *t* operating at and travelling to and from the Freight Rail Yard in year *i*

$ER_{t,i}^{RS}$ = NOx emissions rate of TRU type *t* (in grams per hour) in year *i* under Reference Scenario (RS), as specified in Data Appendix, Tables C-3

The annual operating hours and emission rates in the above equation are for each TRU type which is defined as TRU with the same equipment type, fuel type, hp, and model year (referred to TRU *r* type *t* in above equation).

The annual operating hours for each TRU must be based on the following order of hierarchy pending availability of operational data: 1) non-resettable hour-meters, 2) maintenance records, 3) fuel consumption data, or 4) default average operating hours for each TRU type from Data Appendix, Table C-2. If the fuel consumption data is available, the annual operating hours can be estimated using Equation 1.C.1.b, and the fuel consumption conversion factors in Data Appendix, Table F-11. Annual operating hours may also be calculated using Equation 1.C.1.c. or 1.C.1.d. If model year data is not available for each TRU, then a default age of 7 years can be used for all TRUs.[28]

[28] Figure 6 from CARB's TRU Emissions Inventory shows that 7 years is a conservative default age assumption based on actual data. https://ww2.arb.ca.gov/sites/default/files/barcu/board/rulemaking/tru2021/apph.pdf

For each TRU, the same method for annual operating hours used for calculating the actual annual NOx emissions should also be used for calculating the annual reference NOx emissions to prevent potential variations between these methods affecting annual reference emissions as well as for consistent comparison between the actual and reference emissions for the same milestone year.

D. CHE

This section provides the detailed methodology to calculate the annual reference NOx emissions for each milestone year from all CHE operating at and travelling to and from a freight rail yard within South Coast AQMD. The annual reference NOx emissions for CHE operating at and travelling to and from the freight rail yard are calculated based on the annual operating hours for each CHE type (i.e., same equipment type, fuel, hp bin, model year) and the average emission factors for each CHE type using the following equation:

$$ECHE_i^{RS} = \sum_t \left[\left(\sum_{c \in t} HR_{c,i} \right) \times ER_{t,i}^{RS} \right] \quad \textit{(Equation 2.D.1)}$$

Where:

$ECHE_i^{RS}$= Reference Scenario NOx emissions (in tons) from all CHE operating at and travelling to and from the Freight Rail Yard in year *i*

$HR_{c,i}$ = Annual operating hours for CHE *c* associated with CHE type *t* operating at and travelling to and from the Freight Rail Yard in year *i*

$ER_{t,i}^{RS}$ = NOx emissions rate of CHE type *t* (in grams per hour) in year *i* under Reference Scenario (RS), as specified in Data Appendix, Tables D-2 through D-4

The annual operating hours and emission rates in the above equation are for each CHE type which is defined as CHE with the same equipment type, fuel type, hp, and model year (referred to CHE *c* type *t* in above equation).

The annual operating hours for each CHE must be based on the following order of hierarchy pending availability of operational data: 1) non-resettable hour-meters, 2) maintenance records, or 3) fuel consumption data. If the fuel consumption data is available, the annual operating hours can be estimated using Equation 1.C.1.b, and the fuel consumption conversion factors in Data Appendix, Table F-11. For each CHE, the same method for annual operating hours used for calculating the actual annual NOx emissions should also be used for calculating the annual reference NOx emissions to prevent potential variations between these methods affecting annual

reference emissions as well as for consistent comparison between the actual and reference emissions for the same milestone year.

E. OSE

This section provides the detailed methodology to calculate the annual reference NOx emissions for each milestone year from all OSE operating at and travelling to and from a freight rail yard within South Coast AQMD. The annual reference NOx emissions for OSE at and travelling to and from the freight rail yard are calculated based on the annual operating hours for each OSE type (i.e., same equipment type, fuel, hp bin, model year) and the average emission factor for each OSE type using the following equation:

$$EOSE_i^{RS} = \sum_t \left[\left(\sum_{o \in t} HR_{o,i} \right) \times ER_{t,i}^{RS} \right] \quad \textit{(Equation 2.E.1)}$$

Where:

$EOSE_{i,RS}$ = Reference Scenario NOx emissions (in tons) from all OSE operating on the Freight Rail Yard in year *i*

$HR_{o,i}$ = Annual operating hours for OSE *o* associated with OSE type *t* operating at and travelling to and from the Freight Rail Yard in year *i*

$ER_{t,i}^{RS}$ = NOx emissions rate of OSE type *t* (in gram per hour) in year *i*, as specified in Data Appendix Tables E-2 and E-3

The annual operating hours and emission rates in the above equation are for each OSE type which is defined as OSE with the same equipment type, fuel type, hp, and model year (referred to OSE *o* type *t* in above equation).

The annual operating hours for each OSE must be based on the following order of hierarchy pending availability of operational data: 1) non-resettable hour-meters, 2) maintenance records, or 3) fuel consumption data. If the fuel consumption data is available, the annual operating hours can be estimated using Equation 1.C.1.b, and the fuel consumption conversion factors in Data Appendix, Table F-11. For each OSE, the same method for annual operating hours used for calculating the actual annual NOx emissions should also be used for calculating the annual reference NOx emissions to prevent potential variations between these methods affecting annual reference emissions as well as for consistent comparison between the actual and reference emissions for the same milestone year.

3. Aggregate Emission Factor for a Freight Rail Yard

This section outlines the methodology for the owner or operator of a freight rail yard within the South Coast AQMD jurisdiction to calculate the annual aggregate NOx emission factor (AEF) for the freight rail yard for the milestone year and the base period encompassing all applicable mobile sources including locomotives, drayage trucks, CHE, TRU, and OSE as part of the Initial Facility Information Report pursuant to subparagraph (e)(1)(E) and the Milestone Compliance Report pursuant to subparagraph (f)(1)(E) of this rule.

The annual AEF for each freight rail yard is expressed in grams per brake-horsepower-hour (g/hp-hr) for NOx emissions and is calculated based on the actual annual NOx emissions in tons and the energy consumed in hp-hr for the applicable mobile sources using the following equation:

$$AEF_i = \frac{(EL_i + EDT_i + ETRU_i + ECHE_i + EOSEi) \times V}{L_i + DT_i + TRU_i + CHE_i + OSE_i} \qquad \textit{(Equation 3)}$$

Where:

AEF_i = Aggregate Emission Factor in g/hp-hr in year *i*

EL_i = Actual NOx emissions (in tons) from all Locomotives operating at and travelling to and from the Freight Rail Yard in year *I*, as calculated by Equation 1.A.1

EDT_i = Actual NOx emissions (in tons) from all Drayage Trucks operating at and travelling to and from the Freight Rail Yard in year *i*, as calculated by Equation 1.B.1

$ETRU_i$ = Actual NOx emissions (in tons) for all TRUs operating at and travelling to and from the Freight Rail Yard in year *i*, as calculated by Equation 1.C.1

$ECHE_i$ = Actual NOx emissions (in tons) for all CHE operating at and travelling to and from the Freight Rail Yard in year *i*, as calculated by Equation 1.D.1

$EOSE_i$ = Actual NOx emissions (in tons) for all OSE operating at and travelling to and from the Freight Rail Yard in year *i*, as calculated by Equation 1.E.1

V = Unit conversion factor for tons to grams (907,180)

L_i = Total energy consumed (in hp-hr) by all Locomotives operating at and travelling to and from the Freight Rail Yard in year *i*

DT_i = Total energy consumed (in hp-hr) by all Drayage Trucks operating at and travelling to and from the Freight Rail Yard in year *i*

TRU_i = Total energy consumed (in hp-hr) by all TRU operating at and travelling to and from the Freight Rail Yard in year *i*

CHE_i = Total energy consumed (in hp-hr) by all CHE operating at and travelling to and from the Freight Rail Yard in year *i*

OSE_i = Total energy consumed (in hp-hr) by all OSE operating at and travelling to and from the Freight Rail Yard in year *i*

The actual NOx emissions in tons for each milestone year for the freight rail yard from the applicable mobile sources are calculated based on the detailed methodologies provided in Section 1 of this document and converted to grams using the unit conversion factor (907,180 grams per ton[29]).

A. Locomotives

The total annual energy consumed for locomotives at each freight rail yard is calculated based on the annual usage in MWhr for all locomotives operating at and travelling to and from the freight rail yard and the number of days locomotives operated at the freight rail yard compared to the total number of days that locomotives operated at all freight rail yards by the same freight rail yard operator within South Coast AQMD using the following equation:

$$L_i = \sum_l \left(MWhr_{l,i} \times \frac{DaysFRY_{l,i}}{\sum_y DaysALLFRY_{l,i,y}} \right) \times CF \qquad \textit{(Equation 3.A.1)}$$

Where:

$MWhr_{l,i}$ = Annual usage (in megawatt-hours) by Locomotive *l* operating within the South Coast AQMD jurisdiction in year *i*

$DaysFRY_{l,i}$ = Total number of days Locomotive *l* operating at and travelling to and from the Freight Rail Yard in year *i*

$DaysALLFRY_{l,i,y}$ = Total number of days Locomotive *l* operating at and travelling to and from any Freight Rail Yard *y* within the South Coast AQMD jurisdiction in year *i*

CF = Conversion factor for megawatt to horsepower (1341.02)

[29] Grams to tons conversion: 453.59 grams/pound X 2000 pounds/ton = 907,180 grams/ton

B. Drayage Trucks

The total annual energy consumed for drayage trucks visiting each freight rail yard is calculated based on the total number of individual truck trips to and from the freight rail yard, miles traveled to and from the freight rail yard using the actual mileage or default mileage, and a conversion factor (to convert miles to hp-hr) using the following equation:

$$DT_i = \sum_d (NT_{d,i} \times VMT_{d,i} \times CF) \qquad \textit{(Equation 3.B.1)}$$

Where:

$NT_{d,i}$ = Number of Truck Trips by Drayage Truck *d* in year *i* to and from the Freight Rail Yard, calculated as total number of unique entry date(s) multiplied by 2

$VMT_{d,i}$ = Actual vehicle miles traveled by Drayage Truck *d* in year *i* to and from the Freight Rail Yard, or use default factor of 39.9 miles/trip

CF = Conversion factor (2.9 hp-hr/mile for diesel trucks and 3.65 hp-hr/mile for CNG trucks) [30]

C. TRU

The total annual energy consumed for TRU for each freight rail yard is calculated based on the maximum rated horsepower (hp), load factor, and annual operating hours for TRUs operating at and travelling to and from the freight rail yard using the following equation:

$$TRU_i = \sum_r (HP_{r,i} \times LF_{r,i} \times HR_{r,i}) \qquad \textit{(Equation 3.C.1)}$$

Where:

$HP_{r,i}$ = Maximum rated horsepower for TRU *r* operating at and travelling to and from the Freight Rail Yard in year *i*

[30] Methods to Find the Cost-Effectiveness of Funding Air Quality Projects (for diesel trucks): https://ww2.arb.ca.gov/sites/default/files/2023-01/Cost%20Effectiveness%20Tables%202022_final.pdf, and In-Use Emissions Testing and Activity Profiles for On-Road Heavy-Duty Vehicles (for CNG trucks): https://www.energy.ca.gov/sites/default/files/2023-03/CEC-500-2023-002.pdf.

$LF_{r,i}$ = Load factor for TRU *r* operating at and travelling to and from the Freight Rail Yard in year *i*, as specified in Data Appendix, Table C-1

$HR_{r,i}$ = Annual operating hours for TRU *r* operating at and travelling to and from the Freight Rail Yard in year *i*

D. CHE

The hp, load factor and the annual operating hours for each TRU used in this equation must be the same as the ones used for calculating the actual NOx emissions based on the detailed methodologies specified in Section 1 of this document.

The total annual energy consumed for CHE for each freight rail yard is calculated based on the maximum rated horsepower (hp), load factor, and annual operating hours for CHE operating at the freight rail yard using the following equation:

$$CHE_i = \sum_c (HP_{c,i} \times LF_{c,i} \times HR_{c,i}) \qquad \textit{(Equation 3.D.1)}$$

Where:

$HP_{c,i}$ = Maximum rated horsepower for CHE *c* operating at and travelling to and from the Freight Rail Yard in year *i*

$LF_{c,i}$ = Load factor for CHE *c* operating at and travelling to and from the Freight Rail Yard in year *i*, as specified in Data Appendix, Table D-1

$HR_{c,i}$ = Annual operating hours for CHE *c* operating at and travelling to and from the Freight Rail Yard in year *i*

E. OSE

The hp, load factor and the annual operating hours for each CHE used in this equation must be the same as the ones used for calculating the actual NOx emissions based on the detailed methodologies specified in Section 1 of this document.

The total annual energy consumed for OSE for each freight rail yard is calculated based on the maximum rated horsepower (hp), load factor, and annual operating hours for OSE operating at the freight rail yard using the following equation:

$$OSEi = \sum_o (HP_{o,i} \times LF_{o,i} \times HR_{o,i}) \quad \textit{(Equation 3.E.1)}$$

Where:

$HP_{o,i}$ = Maximum rated horsepower for OSE *o* operating at and travelling to and from the Freight Rail Yard in year *i*

$LF_{o,i}$ = Load factor for OSE *o* operating at and travelling to and from the Freight Rail Yard in year *i*, as specified in Data Appendix, Table E-1

$HR_{o,i}$ = Annual operating hours for OSE *o* operating at and travelling to and from the Freight Rail Yard in year *i*

The hp, load factor and the annual operating hours for each OSE used in this equation must be the same as the ones used calculating the actual NOx emissions based on the detailed methodologies specified in Section 1 of this document.

DATA APPENDIX

TABLE A-1 – A-3

TABLE B-1 – B-5

TABLE C-1 – C-4

TABLE D-1 – D-4

TABLE E-1 – E-3

TABLE F-1 – F-11

Table A-1 : EPA Average NOx Emission Factors (g/bhp-hr)		
Tier Level	**Line Haul Locomotive**	**Switch Locomotive**
Pre- Tier 0	13	17.4
Tier 0	8.6	12.6
Tier 0+	7.2	10.6
Tier 1	6.7	9.9
Tier 1+		
Tier 2	4.95	7.3
Tier 2+		
Tier 3		4.5
Tier 4	1	1

Table A-2 : Locomotive Fuel Conversion Factors		
Locomotive Type	**Rated Horsepower**	**Conversion Factor (MWhr/gal)**
Line Haul	≥4000	0.0155
	2,301-3,999	0.0137
Switch	≤2300	0.0133

Table A-3 : Reference Scenario Composite NOx Emissions Factors (g/bhp-hr)		
Locomotive Type	**Line-Haul**	**Switchers**
2025	5.3	10.69
2026	5.26	10.69
2027	5.24	10.69
2028	5.21	10.69
2029	5.19	10.69
2030	5.17	10.08
2031	5.07	10.08
2032	4.93	10.08
2033	4.78	10.08
2034	4.56	10.08
2035	4.37	10.08
2036	4.02	10.08
2037	3.67	10.08
2038	3.43	10.08
2039	3.15	10.08
2040	2.93	10.08
2041	2.72	10.08
2042	2.51	10.08
2043	2.29	10.08
2044	2.07	10.08
2045	1.97	10.08
2046	1.87	10.08
2047	1.77	10.08
2048	1.68	10.08
2049	1.59	10.08
2050	1.5	10.08

Table B-1 : South Coast Composite NOx Emission Factor for T7 Tractor Class 8 (g/mi)																														
	Calendar Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
	Model Year																													
Diesel	1981	18.967	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1982	18.967	18.970	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1983	18.967	18.970	18.959	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1984	18.967	18.970	18.959	18.959	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1985	18.967	18.970	18.959	18.959	18.959	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1986	18.967	18.970	18.959	18.959	18.959	18.959	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1987	19.010	19.013	19.002	19.002	19.002	19.002	19.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1988	19.010	19.013	19.002	19.002	19.002	19.002	19.002	19.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1989	19.010	19.013	19.002	19.002	19.002	19.002	19.002	19.002	18.989	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1990	19.010	19.013	19.002	19.002	19.002	19.002	19.002	19.002	18.989	18.989	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1991	22.608	22.608	22.613	22.613	22.613	22.613	22.613	22.615	22.618	22.618	22.618	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1992	22.608	22.608	22.613	22.613	22.613	22.613	22.613	22.615	22.618	22.618	22.618	22.617	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1993	20.912	20.912	20.916	20.916	20.916	20.916	20.916	20.918	20.920	20.920	20.920	20.919	20.919	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1994	18.295	18.295	18.297	18.297	18.297	18.297	18.297	18.298	18.299	18.299	18.299	18.298	18.298	18.299	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1995	18.295	18.295	18.297	18.297	18.297	18.297	18.297	18.298	18.299	18.299	18.299	18.298	18.298	18.299	18.299	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1996	18.052	18.052	18.054	18.054	18.054	18.054	18.054	18.055	18.056	18.056	18.056	18.055	18.055	18.056	18.056	18.056	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1997	18.052	18.052	18.054	18.054	18.054	18.054	18.054	18.055	18.056	18.056	18.056	18.055	18.055	18.056	18.056	18.056	18.056	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1998	18.096	18.096	18.098	18.098	18.098	18.098	18.098	18.099	18.100	18.100	18.100	18.099	18.099	18.100	18.100	18.100	18.100	18.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1999	22.722	22.722	22.727	22.727	22.727	22.727	22.727	22.729	22.732	22.732	22.732	22.731	22.731	22.737	22.737	22.737	22.737	22.737	22.737	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2000	22.722	22.722	22.727	22.727	22.727	22.727	22.727	22.729	22.732	22.732	22.732	22.731	22.731	22.737	22.737	22.737	22.737	22.737	22.737	22.737	0.000	0.000	0.000	0.000	0.000	0.000
	2001	22.722	22.722	22.727	22.727	22.727	22.727	22.727	22.729	22.732	22.732	22.732	22.731	22.731	22.737	22.737	22.737	22.737	22.737	22.737	22.737	22.737	0.000	0.000	0.000	0.000	0.000
	2002	22.722	22.722	22.727	22.727	22.727	22.727	22.727	22.729	22.732	22.732	22.732	22.731	22.731	22.737	22.737	22.737	22.737	22.737	22.737	22.737	22.737	22.737	0.000	0.000	0.000	0.000
	2003	12.391	12.393	12.383	12.383	12.383	12.383	12.383	12.383	12.371	12.371	12.371	12.371	12.371	12.351	12.351	12.351	12.351	12.351	12.351	12.351	12.351	12.351	12.351	0.000	0.000	0.000
	2004	10.534	10.538	10.522	10.522	10.522	10.522	10.522	10.522	10.502	10.502	10.502	10.503	10.503	10.472	10.472	10.472	10.472	10.472	10.472	10.472	10.472	10.472	10.472	10.472	0.000	0.000
	2005	10.534	10.538	10.522	10.522	10.522	10.522	10.522	10.522	10.502	10.502	10.502	10.503	10.503	10.472	10.472	10.472	10.472	10.472	10.472	10.472	10.472	10.472	10.472	10.472	10.472	0.000
	2006	10.542	10.545	10.529	10.529	10.529	10.529	10.529	10.529	10.510	10.510	10.510	10.510	10.510	10.480	10.480	10.480	10.480	10.480	10.480	10.480	10.480	10.480	10.480	10.480	10.480	10.480
	2007	9.740	9.743	9.729	9.729	9.729	9.729	9.729	9.729	9.712	9.712	9.712	9.712	9.712	9.687	9.687	9.687	9.687	9.687	9.687	9.687	9.687	9.687	9.687	9.687	9.687	9.687
	2008	7.854	7.856	7.846	7.846	7.846	7.846	7.846	7.846	7.835	7.835	7.835	7.835	7.835	7.819	7.819	7.819	7.819	7.819	7.819	7.819	7.819	7.819	7.819	7.819	7.819	7.819
	2009	7.764	7.772	7.762	7.762	7.762	7.762	7.762	7.762	7.751	7.751	7.751	7.752	7.752	7.736	7.736	7.736	7.736	7.736	7.736	7.736	7.736	7.736	7.736	7.736	7.736	7.736
	2010	7.046	7.065	7.067	7.067	7.067	7.067	7.067	7.066	7.059	7.059	7.059	7.058	7.058	7.046	7.046	7.046	7.046	7.046	7.046	7.046	7.046	7.046	7.046	7.046	7.046	7.046
	2011	4.212	4.246	4.278	4.287	4.287	4.287	4.287	4.285	4.291	4.291	4.291	4.284	4.284	4.285	4.285	4.285	4.285	4.285	4.285	4.285	4.285	4.285	4.285	4.285	4.285	4.285
	2012	3.503	3.551	3.598	3.619	3.628	3.628	3.628	3.626	3.634	3.634	3.634	3.626	3.626	3.629	3.629	3.629	3.628	3.628	3.628	3.628	3.628	3.628	3.628	3.628	3.628	3.628
	2013	3.249	3.305	3.360	3.391	3.410	3.418	3.418	3.416	3.423	3.423	3.423	3.416	3.416	3.417	3.417	3.417	3.417	3.417	3.417	3.417	3.417	3.417	3.417	3.417	3.417	3.417
	2014	0.513	0.477	0.460	0.434	0.418	0.406	0.398	0.391	0.386	0.383	0.381	0.378	0.377	0.375	0.374	0.373	0.373	0.372	0.372	0.371	0.371	0.371	0.372	0.372	0.372	0.371

Table B-1 : South Coast Composite NOx Emission Factor for T7 Tractor Class 8 (g/mi) *(con.)*

	Calendar Year / Model Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Diesel	2015	0.514	0.478	0.462	0.436	0.421	0.410	0.401	0.394	0.388	0.384	0.382	0.379	0.378	0.375	0.375	0.374	0.373	0.372	0.372	0.371	0.371	0.371	0.371	0.372	0.372	0.371
	2016	0.514	0.480	0.465	0.439	0.424	0.413	0.405	0.398	0.392	0.387	0.384	0.381	0.379	0.376	0.375	0.374	0.373	0.373	0.372	0.372	0.372	0.372	0.372	0.372	0.372	0.372
	2017	0.515	0.482	0.467	0.441	0.427	0.417	0.409	0.403	0.396	0.390	0.386	0.383	0.381	0.377	0.376	0.375	0.374	0.373	0.372	0.372	0.372	0.372	0.372	0.372	0.372	0.372
	2018	0.515	0.484	0.470	0.444	0.430	0.420	0.413	0.407	0.401	0.395	0.390	0.386	0.383	0.379	0.378	0.376	0.375	0.374	0.373	0.372	0.372	0.372	0.372	0.372	0.372	0.372
	2019	0.516	0.487	0.473	0.447	0.433	0.424	0.417	0.411	0.405	0.400	0.395	0.390	0.386	0.381	0.379	0.377	0.376	0.374	0.373	0.373	0.373	0.372	0.372	0.372	0.372	0.372
	2020	0.516	0.489	0.476	0.450	0.436	0.427	0.421	0.415	0.409	0.404	0.400	0.394	0.390	0.384	0.381	0.379	0.377	0.375	0.374	0.373	0.373	0.373	0.373	0.373	0.372	0.372
	2021	0.516	0.491	0.480	0.452	0.439	0.431	0.424	0.419	0.413	0.408	0.404	0.399	0.395	0.388	0.384	0.381	0.379	0.377	0.375	0.374	0.373	0.373	0.373	0.373	0.373	0.372
	2022	0.517	0.494	0.483	0.455	0.443	0.434	0.428	0.422	0.417	0.413	0.409	0.404	0.400	0.393	0.388	0.384	0.381	0.378	0.376	0.375	0.374	0.374	0.373	0.373	0.373	0.372
	2023	0.513	0.494	0.484	0.456	0.444	0.436	0.430	0.424	0.419	0.415	0.411	0.407	0.403	0.397	0.392	0.386	0.382	0.379	0.376	0.375	0.374	0.373	0.372	0.372	0.372	0.371
	2024	0.510	0.497	0.488	0.459	0.447	0.440	0.434	0.428	0.423	0.419	0.415	0.411	0.407	0.402	0.397	0.392	0.386	0.382	0.379	0.376	0.375	0.374	0.373	0.373	0.372	0.371
	2025	0.470	0.446	0.444	0.420	0.418	0.420	0.419	0.416	0.410	0.406	0.402	0.398	0.395	0.390	0.386	0.381	0.376	0.371	0.367	0.364	0.362	0.360	0.359	0.359	0.358	0.358
	2026	0.463	0.462	0.445	0.414	0.413	0.417	0.419	0.419	0.415	0.411	0.406	0.402	0.399	0.394	0.390	0.386	0.382	0.376	0.371	0.367	0.364	0.362	0.361	0.360	0.359	0.359
	2027	0.000	0.464	0.463	0.409	0.409	0.413	0.418	0.419	0.419	0.416	0.411	0.406	0.403	0.398	0.395	0.391	0.387	0.382	0.377	0.372	0.368	0.365	0.363	0.361	0.360	0.360
	2028	0.000	0.000	0.356	0.338	0.349	0.364	0.379	0.392	0.399	0.404	0.403	0.398	0.394	0.390	0.387	0.384	0.380	0.377	0.372	0.367	0.362	0.358	0.355	0.353	0.352	0.351
	2029	0.000	0.000	0.000	0.358	0.339	0.351	0.365	0.380	0.393	0.401	0.405	0.403	0.399	0.394	0.391	0.388	0.385	0.382	0.378	0.373	0.368	0.363	0.359	0.356	0.354	0.353
	2030	0.000	0.000	0.000	0.000	0.360	0.341	0.352	0.367	0.382	0.395	0.403	0.406	0.405	0.399	0.395	0.392	0.389	0.386	0.383	0.379	0.374	0.369	0.364	0.360	0.357	0.355
	2031	0.000	0.000	0.000	0.000	0.000	0.362	0.342	0.353	0.368	0.384	0.397	0.404	0.407	0.405	0.400	0.396	0.394	0.391	0.388	0.384	0.380	0.375	0.370	0.365	0.361	0.358
	2032	0.000	0.000	0.000	0.000	0.000	0.000	0.345	0.323	0.334	0.352	0.371	0.387	0.397	0.400	0.400	0.396	0.392	0.389	0.386	0.383	0.380	0.376	0.371	0.366	0.361	0.357
	2033	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.344	0.323	0.334	0.352	0.370	0.387	0.395	0.400	0.400	0.396	0.392	0.389	0.386	0.383	0.380	0.376	0.371	0.366	0.361
	2034	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.344	0.323	0.334	0.351	0.370	0.385	0.395	0.400	0.400	0.396	0.392	0.389	0.386	0.383	0.380	0.376	0.371	0.365
	2035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.344	0.323	0.333	0.351	0.369	0.385	0.395	0.400	0.400	0.396	0.392	0.389	0.386	0.383	0.380	0.376	0.369
	2036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.344	0.322	0.333	0.350	0.369	0.385	0.395	0.400	0.400	0.396	0.392	0.389	0.386	0.383	0.380	0.372
	2037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.343	0.322	0.332	0.350	0.369	0.385	0.395	0.400	0.400	0.396	0.392	0.389	0.386	0.383	0.375
	2038	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.343	0.321	0.332	0.350	0.369	0.385	0.395	0.400	0.400	0.396	0.392	0.389	0.386	0.377
	2039	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.342	0.321	0.332	0.350	0.369	0.385	0.395	0.401	0.400	0.396	0.392	0.389	0.380
	2040	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.342	0.321	0.332	0.350	0.369	0.385	0.395	0.401	0.400	0.396	0.392	0.381
	2041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.342	0.321	0.332	0.350	0.369	0.385	0.395	0.401	0.400	0.396	0.383
	2042	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.342	0.321	0.332	0.350	0.369	0.385	0.395	0.401	0.400	0.386
	2043	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.342	0.321	0.332	0.350	0.369	0.385	0.395	0.401	0.389
	2044	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.342	0.321	0.332	0.350	0.369	0.385	0.395	0.388
	2045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.342	0.321	0.332	0.350	0.369	0.385	0.382
	2046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.342	0.321	0.332	0.350	0.369	0.371
	2047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.342	0.321	0.332	0.350	0.354
	2048	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.342	0.321	0.332	0.336
	2049	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.342	0.321	0.321
	2050	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.342	0.324

Table B-2 : South Coast Composite NOx Emission Factor for Natural Gas T7 Tractor Class 8 (g/mi)																												
	Calendar Year / Model Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Natural Gas	2009	0.547	0.548	0.545	0.545	0.545	0.545	0.545	0.545	0.542	0.542	0.542	0.542	0.542	0.538	0.538	0.538	0.538	0.538	0.538	0.538	0.538	0.538	0.538	0.538	0.538	0.538
	2010	0.547	0.548	0.545	0.545	0.545	0.545	0.545	0.545	0.542	0.542	0.542	0.542	0.542	0.538	0.538	0.538	0.538	0.538	0.538	0.538	0.538	0.538	0.538	0.538	0.538	0.538
	2011	0.546	0.547	0.544	0.544	0.544	0.544	0.544	0.544	0.541	0.541	0.541	0.541	0.541	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537
	2012	0.546	0.546	0.544	0.544	0.544	0.544	0.544	0.544	0.541	0.541	0.541	0.541	0.541	0.536	0.536	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537
	2013	0.546	0.546	0.544	0.544	0.544	0.544	0.544	0.544	0.541	0.541	0.541	0.541	0.541	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537
	2014	0.546	0.547	0.544	0.544	0.544	0.544	0.544	0.544	0.541	0.541	0.541	0.541	0.541	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537
	2015	0.545	0.546	0.544	0.543	0.543	0.543	0.543	0.543	0.541	0.541	0.541	0.541	0.541	0.536	0.536	0.536	0.536	0.536	0.536	0.536	0.536	0.536	0.536	0.536	0.536	0.536
	2016	0.546	0.547	0.544	0.544	0.544	0.544	0.544	0.544	0.541	0.541	0.541	0.541	0.541	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537	0.537
	2017	0.412	0.413	0.411	0.411	0.411	0.411	0.411	0.411	0.410	0.410	0.410	0.410	0.410	0.408	0.408	0.408	0.408	0.408	0.408	0.408	0.408	0.408	0.408	0.408	0.408	0.408
	2018	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2019	0.155	0.156	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2020	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2021	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2022	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2023	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2024	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2025	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2026	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2027	0.000	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2028	0.000	0.000	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2029	0.000	0.000	0.000	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2030	0.000	0.000	0.000	0.000	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2031	0.000	0.000	0.000	0.000	0.000	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2032	0.000	0.000	0.000	0.000	0.000	0.000	0.155	0.155	0.155	0.155	0.155	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2033	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.155	0.155	0.155	0.155	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2034	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.155	0.155	0.155	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.155	0.155	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.155	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.155	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2038	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.155	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2039	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2040	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2042	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2043	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2044	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.154	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.154	0.154	0.154	0.154	0.154	0.154	0.154
	2046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.154	0.154	0.154	0.154	0.154	0.154
	2047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.154	0.154	0.154	0.154	0.154
	2048	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.154	0.154	0.154	0.154
	2049	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.154	0.154	0.154
	2050	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.154	0.154

Table B-3 : Statewide Composite NOx Emission Factor for Diesel T7 Tractor Class 8 (g/mi)																														
	Calendar Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
	Model Year																													
Diesel	1981	19.283	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1982	19.285	19.285	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1983	19.286	19.285	19.282	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1984	19.285	19.285	19.281	19.280	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1985	19.284	19.284	19.280	19.280	19.279	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1986	19.286	19.285	19.282	19.281	19.280	19.280	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1987	19.329	19.329	19.325	19.325	19.324	19.324	19.323	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1988	19.333	19.333	19.329	19.328	19.327	19.327	19.327	19.326	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1989	19.333	19.333	19.329	19.328	19.328	19.327	19.327	19.327	19.323	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1990	19.335	19.335	19.331	19.330	19.329	19.329	19.329	19.328	19.325	19.325	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1991	22.971	22.970	22.971	22.970	22.969	22.969	22.969	22.969	22.970	22.970	22.970	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1992	22.975	22.973	22.974	22.973	22.972	22.972	22.972	22.972	22.972	22.972	22.972	22.972	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1993	21.291	21.289	21.289	21.288	21.288	21.287	21.287	21.287	21.287	21.287	21.287	21.287	21.287	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1994	18.693	18.692	18.691	18.690	18.689	18.689	18.688	18.688	18.689	18.688	18.688	18.688	18.688	18.688	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1995	18.698	18.696	18.695	18.694	18.693	18.693	18.692	18.692	18.692	18.692	18.692	18.692	18.692	18.692	18.692	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1996	18.459	18.457	18.456	18.455	18.454	18.454	18.453	18.453	18.453	18.453	18.453	18.453	18.453	18.453	18.453	18.453	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1997	18.463	18.461	18.460	18.459	18.458	18.457	18.457	18.457	18.457	18.457	18.456	18.456	18.456	18.456	18.456	18.456	18.456	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1998	18.513	18.511	18.510	18.509	18.508	18.507	18.507	18.507	18.506	18.506	18.506	18.506	18.506	18.506	18.506	18.506	18.506	18.506	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	1999	23.116	23.114	23.114	23.112	23.111	23.111	23.110	23.110	23.111	23.110	23.110	23.110	23.110	23.111	23.111	23.111	23.111	23.111	23.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2000	23.122	23.120	23.120	23.118	23.117	23.116	23.116	23.116	23.116	23.116	23.116	23.116	23.116	23.116	23.116	23.116	23.117	23.117	23.117	23.117	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2001	23.132	23.129	23.129	23.127	23.126	23.125	23.124	23.124	23.125	23.125	23.125	23.124	23.124	23.125	23.125	23.125	23.125	23.125	23.125	23.125	23.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2002	23.142	23.139	23.139	23.137	23.136	23.135	23.134	23.134	23.134	23.134	23.134	23.133	23.134	23.134	23.134	23.134	23.134	23.134	23.134	23.134	23.134	23.134	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2003	12.698	12.696	12.693	12.691	12.690	12.689	12.689	12.688	12.685	12.685	12.685	12.685	12.685	12.683	12.683	12.683	12.683	12.683	12.683	12.683	12.683	12.683	12.683	0.000	0.000	0.000	0.000	0.000	0.000
	2004	10.847	10.846	10.841	10.840	10.839	10.838	10.837	10.836	10.833	10.833	10.832	10.833	10.833	10.829	10.829	10.829	10.829	10.829	10.829	10.829	10.829	10.829	10.829	10.829	0.000	0.000	0.000	0.000	0.000
	2005	10.863	10.861	10.857	10.855	10.854	10.853	10.853	10.852	10.849	10.849	10.848	10.849	10.849	10.846	10.846	10.846	10.846	10.846	10.846	10.846	10.846	10.846	10.846	10.846	10.846	0.000	0.000	0.000	0.000
	2006	10.884	10.882	10.879	10.877	10.876	10.875	10.874	10.874	10.871	10.871	10.870	10.871	10.871	10.868	10.868	10.868	10.868	10.868	10.868	10.868	10.868	10.868	10.868	10.868	10.868	10.868	0.000	0.000	0.000
	2007	10.041	10.040	10.037	10.036	10.035	10.034	10.033	10.033	10.031	10.031	10.031	10.031	10.031	10.029	10.029	10.029	10.029	10.029	10.029	10.029	10.029	10.029	10.029	10.029	10.029	10.029	10.029	0.000	0.000
	2008	8.038	8.037	8.036	8.035	8.034	8.034	8.034	8.034	8.032	8.032	8.032	8.032	8.032	8.031	8.031	8.031	8.031	8.031	8.032	8.032	8.031	8.031	8.031	8.031	8.031	8.031	8.031	8.031	0.000
	2009	7.952	7.958	7.956	7.956	7.955	7.955	7.955	7.955	7.954	7.954	7.954	7.954	7.954	7.953	7.953	7.953	7.953	7.953	7.953	7.953	7.953	7.953	7.953	7.953	7.953	7.953	7.953	7.953	7.953
	2010	7.221	7.237	7.243	7.243	7.243	7.243	7.242	7.242	7.242	7.242	7.242	7.242	7.242	7.242	7.242	7.242	7.242	7.242	7.242	7.242	7.242	7.242	7.242	7.242	7.242	7.242	7.242	7.242	7.242
	2011	4.272	4.305	4.329	4.338	4.338	4.338	4.338	4.337	4.339	4.339	4.339	4.336	4.336	4.336	4.336	4.336	4.336	4.336	4.336	4.336	4.336	4.336	4.336	4.336	4.336	4.336	4.336	4.336	4.336
	2012	3.554	3.601	3.639	3.660	3.669	3.669	3.669	3.668	3.670	3.670	3.670	3.667	3.667	3.667	3.667	3.667	3.667	3.667	3.667	3.667	3.667	3.667	3.667	3.667	3.667	3.667	3.667	3.667	3.667
	2013	3.301	3.356	3.403	3.434	3.454	3.462	3.462	3.461	3.463	3.463	3.463	3.460	3.460	3.460	3.460	3.460	3.460	3.460	3.460	3.460	3.460	3.460	3.460	3.460	3.460	3.460	3.460	3.460	3.460
	2014	0.532	0.493	0.469	0.445	0.430	0.419	0.410	0.404	0.399	0.396	0.394	0.392	0.391	0.390	0.389	0.388	0.387	0.387	0.386	0.386	0.386	0.386	0.386	0.386	0.386	0.386	0.386	0.386	0.386

Table B-3 : Statewide Composite NOx Emission Factor for Diesel T7 Tractor Class 8 (g/mi) *(con.)*

	Calendar Year / Model Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Diesel	2015	0.532	0.495	0.471	0.447	0.433	0.423	0.414	0.407	0.401	0.397	0.395	0.393	0.392	0.390	0.389	0.388	0.387	0.387	0.386	0.386	0.386	0.386	0.386	0.386	0.386	0.386
	2016	0.531	0.496	0.472	0.449	0.435	0.425	0.418	0.411	0.404	0.399	0.396	0.394	0.392	0.390	0.389	0.388	0.387	0.386	0.386	0.385	0.385	0.386	0.386	0.386	0.386	0.385
	2017	0.533	0.499	0.476	0.453	0.439	0.430	0.423	0.416	0.410	0.404	0.400	0.397	0.394	0.392	0.391	0.390	0.389	0.388	0.387	0.387	0.387	0.387	0.387	0.387	0.387	0.386
	2018	0.533	0.501	0.479	0.456	0.443	0.434	0.427	0.420	0.414	0.409	0.404	0.399	0.397	0.394	0.392	0.391	0.389	0.388	0.387	0.387	0.387	0.387	0.387	0.387	0.387	0.386
	2019	0.534	0.503	0.481	0.458	0.446	0.437	0.431	0.425	0.419	0.414	0.409	0.404	0.400	0.396	0.394	0.392	0.390	0.389	0.388	0.387	0.387	0.387	0.387	0.387	0.387	0.386
	2020	0.534	0.505	0.484	0.461	0.449	0.440	0.434	0.428	0.423	0.418	0.413	0.408	0.403	0.399	0.396	0.393	0.391	0.390	0.388	0.388	0.387	0.387	0.387	0.387	0.387	0.386
	2021	0.534	0.508	0.487	0.464	0.452	0.444	0.438	0.432	0.427	0.422	0.418	0.413	0.408	0.403	0.399	0.396	0.393	0.391	0.389	0.388	0.388	0.387	0.387	0.387	0.387	0.386
	2022	0.535	0.511	0.491	0.467	0.456	0.448	0.442	0.436	0.431	0.426	0.423	0.418	0.414	0.408	0.403	0.399	0.395	0.393	0.391	0.389	0.389	0.388	0.388	0.387	0.387	0.387
	2023	0.530	0.510	0.491	0.468	0.457	0.450	0.444	0.438	0.433	0.429	0.425	0.421	0.417	0.412	0.407	0.401	0.397	0.393	0.391	0.389	0.388	0.387	0.387	0.386	0.386	0.385
	2024	0.527	0.513	0.495	0.471	0.461	0.454	0.448	0.442	0.437	0.433	0.429	0.425	0.421	0.417	0.412	0.406	0.401	0.396	0.393	0.391	0.389	0.388	0.387	0.387	0.386	0.386
	2025	0.486	0.461	0.448	0.431	0.431	0.433	0.432	0.429	0.424	0.419	0.416	0.412	0.409	0.405	0.401	0.396	0.390	0.385	0.381	0.378	0.375	0.374	0.373	0.372	0.372	0.371
	2026	0.479	0.477	0.447	0.425	0.426	0.431	0.433	0.432	0.429	0.424	0.420	0.416	0.413	0.409	0.405	0.401	0.396	0.391	0.385	0.381	0.378	0.376	0.374	0.373	0.373	0.372
	2027	0.000	0.479	0.457	0.420	0.422	0.427	0.431	0.433	0.432	0.430	0.425	0.420	0.417	0.413	0.410	0.406	0.402	0.397	0.391	0.386	0.382	0.378	0.376	0.375	0.374	0.373
	2028	0.000	0.000	0.368	0.349	0.361	0.376	0.391	0.404	0.413	0.417	0.416	0.412	0.408	0.404	0.401	0.398	0.395	0.391	0.386	0.380	0.375	0.371	0.368	0.366	0.365	0.364
	2029	0.000	0.000	0.000	0.370	0.350	0.362	0.377	0.393	0.406	0.414	0.419	0.417	0.413	0.409	0.406	0.403	0.400	0.396	0.392	0.387	0.382	0.376	0.372	0.369	0.367	0.366
	2030	0.000	0.000	0.000	0.000	0.372	0.352	0.363	0.379	0.394	0.408	0.416	0.420	0.419	0.414	0.410	0.407	0.404	0.401	0.397	0.393	0.388	0.383	0.378	0.374	0.370	0.369
	2031	0.000	0.000	0.000	0.000	0.000	0.374	0.353	0.365	0.381	0.397	0.410	0.418	0.422	0.420	0.416	0.411	0.409	0.405	0.402	0.399	0.395	0.390	0.384	0.379	0.375	0.372
	2032	0.000	0.000	0.000	0.000	0.000	0.000	0.356	0.333	0.345	0.364	0.383	0.400	0.411	0.416	0.415	0.411	0.406	0.404	0.401	0.397	0.394	0.390	0.385	0.380	0.374	0.370
	2033	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.356	0.333	0.345	0.364	0.383	0.400	0.410	0.416	0.415	0.411	0.406	0.404	0.401	0.397	0.394	0.390	0.385	0.380	0.374
	2034	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.355	0.333	0.345	0.363	0.383	0.400	0.410	0.416	0.415	0.411	0.406	0.404	0.401	0.397	0.394	0.390	0.385	0.379
	2035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.355	0.333	0.345	0.363	0.383	0.400	0.410	0.416	0.415	0.411	0.406	0.404	0.401	0.397	0.394	0.390	0.383
	2036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.355	0.333	0.345	0.363	0.383	0.400	0.410	0.415	0.415	0.411	0.406	0.404	0.401	0.397	0.394	0.386
	2037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.355	0.333	0.344	0.363	0.382	0.400	0.410	0.415	0.415	0.411	0.406	0.404	0.400	0.397	0.389
	2038	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.355	0.332	0.344	0.363	0.382	0.400	0.410	0.415	0.415	0.411	0.406	0.403	0.400	0.391
	2039	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.355	0.332	0.344	0.363	0.382	0.400	0.410	0.415	0.415	0.411	0.406	0.403	0.394
	2040	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.355	0.332	0.344	0.363	0.382	0.400	0.410	0.415	0.415	0.411	0.406	0.396
	2041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.355	0.332	0.344	0.363	0.382	0.400	0.410	0.415	0.415	0.410	0.397
	2042	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.355	0.332	0.344	0.363	0.382	0.399	0.410	0.415	0.415	0.400
	2043	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.355	0.332	0.344	0.363	0.382	0.399	0.410	0.415	0.403
	2044	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.354	0.332	0.344	0.363	0.382	0.399	0.410	0.402
	2045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.354	0.332	0.344	0.363	0.382	0.399	0.396
	2046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.354	0.332	0.344	0.363	0.382	0.384
	2047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.354	0.332	0.344	0.363	0.367
	2048	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.354	0.332	0.344	0.349
	2049	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.354	0.332	0.333
	2050	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.354	0.336

Table B-4 : Statewide Composite NOx Emission Factor for Natural Gas T7 Tractor Class 8 (g/mi)																													
	Calendar Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
	Model Year																										
Natural Gas	2009	0.579	0.579	0.578	0.578	0.578	0.578	0.578	0.578	0.577	0.577	0.577	0.577	0.577	0.576	0.576	0.576	0.576	0.576	0.576	0.576	0.576	0.576	0.576	0.576	0.576	0.576
	2010	0.571	0.572	0.571	0.571	0.571	0.571	0.571	0.571	0.570	0.570	0.570	0.570	0.570	0.569	0.569	0.569	0.569	0.569	0.569	0.569	0.569	0.569	0.569	0.569	0.569	0.569
	2011	0.577	0.577	0.576	0.576	0.576	0.576	0.576	0.576	0.575	0.575	0.575	0.575	0.575	0.574	0.574	0.574	0.574	0.574	0.574	0.574	0.574	0.574	0.574	0.574	0.574	0.574
	2012	0.574	0.574	0.573	0.573	0.573	0.573	0.573	0.573	0.572	0.572	0.572	0.572	0.572	0.571	0.571	0.571	0.571	0.571	0.571	0.571	0.571	0.571	0.571	0.571	0.571	0.571
	2013	0.570	0.570	0.569	0.569	0.569	0.569	0.569	0.569	0.568	0.568	0.568	0.568	0.568	0.567	0.567	0.568	0.568	0.568	0.568	0.568	0.568	0.568	0.568	0.568	0.568	0.568
	2014	0.573	0.573	0.573	0.572	0.572	0.572	0.572	0.572	0.571	0.571	0.571	0.572	0.572	0.571	0.571	0.571	0.571	0.571	0.571	0.571	0.571	0.571	0.571	0.571	0.571	0.571
	2015	0.573	0.573	0.572	0.572	0.572	0.572	0.572	0.572	0.571	0.571	0.571	0.571	0.571	0.570	0.570	0.570	0.570	0.570	0.570	0.570	0.570	0.570	0.570	0.570	0.570	0.570
	2016	0.596	0.596	0.596	0.596	0.596	0.596	0.596	0.596	0.596	0.596	0.596	0.596	0.596	0.596	0.596	0.596	0.596	0.596	0.596	0.596	0.596	0.596	0.596	0.596	0.596	0.596
	2017	0.423	0.423	0.423	0.423	0.423	0.423	0.423	0.423	0.422	0.422	0.422	0.422	0.422	0.421	0.421	0.421	0.421	0.421	0.421	0.421	0.421	0.421	0.421	0.421	0.421	0.421
	2018	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156
	2019	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156	0.156
	2020	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2021	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2022	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2023	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2024	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2025	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2026	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2027	0.000	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2028	0.000	0.000	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2029	0.000	0.000	0.000	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2030	0.000	0.000	0.000	0.000	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2031	0.000	0.000	0.000	0.000	0.000	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2032	0.000	0.000	0.000	0.000	0.000	0.000	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2033	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2034	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2038	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2039	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2040	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2042	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2043	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2044	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.158	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	2046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.158	0.158	0.158	0.158	0.158	0.158
	2047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.158	0.158	0.158	0.158	0.158
	2048	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.158	0.158	0.158	0.158
	2049	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.158	0.158	0.158
	2050	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.158	0.158

Table B-5 : Reference Composite NOx Emission Factors for T7 Tractor Class 8 (g/mi)		
Calendar Year	**South Coast**	**Statewide**
2025	0.868	0.902
2026	0.791	0.823
2027	0.728	0.749
2028	0.650	0.674
2029	0.593	0.617
2030	0.549	0.572
2031	0.514	0.536
2032	0.483	0.503
2033	0.454	0.473
2034	0.429	0.447
2035	0.407	0.425
2036	0.389	0.406
2037	0.375	0.391
2038	0.362	0.378
2039	0.352	0.367
2040	0.343	0.358
2041	0.335	0.350
2042	0.329	0.343
2043	0.323	0.337
2044	0.319	0.332
2045	0.315	0.328
2046	0.312	0.325
2047	0.310	0.322
2048	0.307	0.320
2049	0.306	0.318
2050	0.298	0.310

Table C-1 : TRU Load Factors				
Category	**Below 23 hp**	**Between 23 and 25 hp (All Years)**	**Over 25 hp (2012 and Older)**	**Over 25 hp (2013 and Newer)**
California TRU	0.56	0.46	0.46	0.38
Out-of-State TRU	-	0.46	0.46	0.38
California Gen sets	-	0.33	0.33	0.27
Out-of-State Gen set	-	0.33	0.33	0.27
Railcars	-	0.46	0.46	0.38

Table C-2 : Default Average Annual TRU Operating Hours												
Fuel Type	Calendar Year	Transport Refrigeration Unit - Instate Genset		Transport Refrigeration Unit - Instate Trailer		Transport Refrigeration Unit - Instate Truck	Transport Refrigeration Unit - Out-Of-State Genset		Transport Refrigeration Unit - Out-Of-State Trailer		Transport Refrigeration Unit - Railcar TRU	
		Horsepower Bin		Horsepower Bin		Horsepower Bin	Horsepower Bin		Horsepower Bin		Horsepower Bin	
		25	50	25	50	23	25	50	25	50	25	50
Diesel	2025	781.19	781.38	1781.78	1781.73	952.13	124.01	124.02	272.00	272.01	327.47	326.83
	2026	781.21	781.41	1793.21	1793.16	748.11	124.00	124.02	272.00	272.01	327.48	326.82
	2027	781.18	781.39	1767.42	1767.39	544.07	124.01	124.02	272.00	272.01	327.41	327.22
	2028	781.19	781.46	1793.44	1793.41	340.05	124.01	124.02	272.00	272.01	327.39	327.29
	2029	781.17	781.49	1776.92	1776.90	136.02	124.01	124.02	272.00	272.01	327.37	327.41
	2030	781.16	781.53	1804.93	1804.89	0.00	124.01	124.02	272.00	272.01	327.32	327.62
	2031	781.14	781.52	1795.47	1795.42	0.00	124.01	124.02	272.00	272.01	327.31	327.63
	2032	781.17	781.64	1800.37	1800.32	0.00	124.01	124.02	272.00	272.01	327.31	327.76
	2033	781.14	781.58	1790.92	1790.88	0.00	124.01	124.02	272.00	272.01	327.28	327.79
	2034	781.13	781.67	1787.39	1787.32	0.00	124.01	124.02	272.00	272.01	327.31	327.75
	2035	781.14	781.68	1789.20	1789.14	0.00	124.00	124.02	272.00	272.01	327.29	327.75
	2036	781.14	781.71	1781.17	1781.10	0.00	124.01	124.03	272.00	272.01	327.28	327.78
	2037	781.14	781.67	1790.61	1790.54	0.00	124.01	124.02	272.00	272.01	327.28	327.72
	2038	781.14	781.67	1786.56	1786.50	0.00	124.01	124.02	272.00	272.01	327.27	327.71
	2039	781.13	781.65	1794.40	1794.32	0.00	124.00	124.02	272.00	272.01	327.27	327.76
	2040	781.14	781.63	1791.74	1791.66	0.00	124.00	124.02	272.00	272.01	327.26	327.78
	2041	781.12	781.57	1792.26	1792.19	0.00	124.00	124.02	272.00	272.01	327.27	327.85
	2042	781.13	781.68	1788.37	1788.29	0.00	124.01	124.02	272.00	272.01	327.26	327.78
	2043	781.14	781.61	1786.98	1786.91	0.00	124.00	124.02	272.00	272.01	327.26	327.75
	2044	781.13	781.57	1787.61	1787.54	0.00	124.00	124.02	272.00	272.01	327.27	327.79
	2045	781.13	781.58	1786.05	1785.98	0.00	124.00	124.02	272.00	272.01	327.27	327.77
	2046	781.13	781.62	1789.33	1789.26	0.00	124.00	124.02	272.00	272.01	327.27	327.74
	2047	781.11	781.54	1789.09	1789.02	0.00	124.00	124.02	272.00	272.01	327.27	327.73
	2048	781.12	781.55	1791.50	1791.43	0.00	124.00	124.02	272.00	272.01	327.26	327.70
	2049	781.12	781.52	1790.67	1790.60	0.00	124.00	124.02	272.00	272.01	327.26	327.78
	2050	781.12	781.57	1790.07	1790.02	0.00	124.00	124.02	272.00	272.01	327.25	327.71

Table C-3 : TRU NOx Emissions Rate (g/hr)												
Fuel Type	Calendar Year	Transport Refrigeration Unit - Instate Genset		Transport Refrigeration Unit - Instate Trailer		Transport Refrigeration Unit - Instate Truck	Transport Refrigeration Unit - Out-Of-State Genset		Transport Refrigeration Unit - Out-Of-State Trailer		Transport Refrigeration Unit - Railcar TRU	
		Horsepower Bin		Horsepower Bin		Horsepower Bin	Horsepower Bin		Horsepower Bin		Horsepower Bin	
		25	50	25	50	23	25	50	25	50	25	50
Diesel	2025	30.00	29.73	36.30	37.08	28.62	29.98	33.00	37.08	36.81	41.78	38.07
	2026	30.00	28.34	36.44	35.80	31.02	29.97	31.19	37.17	36.73	41.79	37.85
	2027	29.97	27.27	36.94	35.56	34.83	29.97	29.81	36.52	36.02	41.79	37.97
	2028	29.98	26.70	36.35	34.59	35.29	29.97	28.51	35.95	34.72	41.78	37.95
	2029	29.98	26.61	36.19	33.78	35.29	29.97	27.07	36.23	33.53	41.78	37.94
	2030	29.97	26.57	36.29	33.87	0.00	29.97	26.60	36.35	32.68	41.79	37.90
	2031	29.97	26.41	36.67	32.75	0.00	29.97	26.20	37.21	32.14	41.79	37.87
	2032	29.98	26.20	36.94	32.58	0.00	29.98	26.00	37.69	31.70	41.79	37.86
	2033	29.98	26.03	35.53	32.51	0.00	29.98	25.95	37.12	31.42	41.79	37.92
	2034	29.96	25.89	36.36	33.37	0.00	29.98	25.92	37.52	31.20	41.77	37.94
	2035	29.97	25.81	36.14	32.38	0.00	29.97	25.93	37.27	31.01	41.78	38.01
	2036	29.98	25.77	36.95	33.09	0.00	29.97	25.92	36.75	31.82	41.78	38.07
	2037	29.98	25.73	36.60	32.41	0.00	29.98	25.91	36.55	32.57	41.77	38.13
	2038	29.97	25.72	36.17	33.91	0.00	29.97	25.88	36.33	33.31	41.77	38.11
	2039	29.98	25.77	35.89	33.23	0.00	29.97	25.87	36.41	34.97	41.79	38.09
	2040	29.98	25.77	36.44	32.97	0.00	29.97	25.86	36.76	35.64	41.79	38.09
	2041	29.98	25.76	36.73	33.67	0.00	29.97	25.86	36.52	35.38	41.78	38.05
	2042	29.98	25.81	36.52	35.00	0.00	29.98	25.86	36.27	36.04	41.77	38.05
	2043	29.97	25.81	36.28	34.63	0.00	29.97	25.86	36.02	35.79	41.78	38.04
	2044	29.98	25.79	36.52	34.76	0.00	29.97	25.86	36.32	35.54	41.77	38.04
	2045	29.98	25.80	36.25	35.53	0.00	29.98	25.86	36.06	36.14	41.79	38.06
	2046	29.97	25.77	35.95	35.00	0.00	29.98	25.86	36.34	35.86	41.78	38.06
	2047	29.97	25.75	35.89	35.12	0.00	29.97	25.87	36.08	35.58	41.78	38.08
	2048	29.97	25.75	36.07	35.25	0.00	29.97	25.86	36.58	35.30	41.78	38.07
	2049	29.97	25.74	36.01	34.71	0.00	29.97	25.86	37.06	35.04	41.78	38.08
	2050	29.97	25.74	35.97	34.16	0.00	29.98	25.84	37.26	34.79	41.79	38.06

Table C-4 : TRU Default Horsepower	
Category	**Average hp**
California TRU	25.3
Out-of-State TRU	29.2
California Gen sets	29.0
Out-of-State Gen set	29.0
Railcars	29.2

Table D-1 : CHE Load Factors	
Equipment Type	**Load Factor**
Compactor (Portable)	0.51
Container Handling Equipment	0.59
Crane	0.43
Electric Pallet Jack	0.50
Excavator	0.55
Forklift	0.30
Lift	0.51
Other	0.51
Rail Car Mover	0.51
RTG Crane	0.20
Skid-steer Loaders	0.55
STS Crane	0.43
Tractor	0.55
Tractors/Loaders/Backhoes	0.55
Truck	0.51
Yard Truck	0.39

Table D-2 : CHE NOx Emissions Rate (g/hr)																					
Fuel Type	Calendar Year	Cargo Handling Equipment - Port Container Handling Equipment				Cargo Handling Equipment - Port Crane				Cargo Handling Equipment - Port Excavator	Cargo Handling Equipment - Port Forklift						Cargo Handling Equipment - Port Lift			
		Horsepower Bin				Horsepower Bin				Horsepower Bin	Horsepower Bin						Horsepower Bin			
		175	300	600	9999	175	300	600	9999	75	50	75	100	175	300	600	50	75	100	175
Diesel	2025	59.24	315.58	272.97	1726.58	52.07	12.79	18.08	1059.66	188.25	48.67	66.26	80.39	81.45	105.58	155.40	132.97	112.87	119.45	48.57
	2026	59.24	315.55	244.57	1726.58	52.31	12.74	18.10	1070.98	188.25	48.71	66.37	80.40	73.55	105.69	155.41	133.00	112.87	118.94	49.18
	2027	59.24	242.90	222.50	1726.58	52.29	12.79	21.03	1080.58	188.25	48.66	66.39	79.13	73.34	105.74	155.40	132.99	113.57	74.07	49.06
	2028	59.24	187.35	216.36	1726.58	51.95	12.77	20.97	1080.58	108.06	48.62	63.56	79.90	69.67	53.94	153.95	81.00	111.89	73.76	49.16
	2029	59.24	38.51	191.06	1726.58	52.31	12.79	21.00	1080.58	125.09	48.50	64.16	80.40	59.55	51.55	90.87	93.34	102.64	74.09	49.16
	2030	59.24	39.51	187.50	1726.58	52.31	12.78	20.92	1080.58	125.09	48.64	63.45	80.40	59.51	51.55	91.35	93.35	98.88	64.75	49.17
	2031	59.24	39.53	190.29	1726.58	52.10	12.78	20.92	1080.58	125.09	39.00	63.89	80.41	57.07	51.56	89.97	77.10	107.12	64.37	45.62
	2032	59.24	39.50	184.11	1726.58	52.29	12.78	21.02	1080.58	109.54	39.05	62.66	80.40	54.47	28.59	90.67	77.23	105.74	64.61	45.62
	2033	59.24	30.17	164.12	1726.58	52.32	12.77	21.00	1080.58	125.09	38.88	63.57	80.41	48.75	20.78	90.95	80.95	106.26	55.77	45.78
	2034	59.24	30.29	97.53	1726.58	52.30	12.77	20.97	1080.58	125.09	48.69	62.62	80.40	40.41	13.57	51.14	80.99	106.28	46.17	45.74
	2035	59.24	26.51	80.67	1726.58	28.31	12.78	20.93	497.90	125.09	48.63	83.24	80.40	24.30	13.62	14.65	80.97	105.16	46.17	49.21
	2036	59.24	26.58	47.87	797.72	28.56	12.77	21.00	575.21	125.09	48.59	60.21	0.76	15.03	13.64	14.95	80.88	106.24	35.76	23.86
	2037	7.48	24.59	32.59	921.59	9.00	12.77	20.95	575.21	125.09	48.51	64.22	0.88	12.84	13.61	15.42	80.90	106.95	35.77	24.36
	2038	8.64	20.23	31.09	921.59	9.45	12.79	21.00	575.21	125.09	48.65	64.41	0.88	10.56	8.80	15.42	80.95	105.91	8.87	8.68
	2039	8.64	20.50	31.00	921.59	9.46	12.65	20.95	575.21	125.09	48.56	64.12	0.88	7.22	9.12	15.11	80.96	104.10	8.92	8.95
	2040	8.64	20.53	31.36	921.59	9.22	12.55	20.99	575.21	125.09	48.68	64.53	0.88	7.31	9.19	15.23	80.98	105.92	8.95	8.94
	2041	8.50	20.55	31.38	921.59	9.06	11.83	18.06	575.21	125.09	48.57	64.65	0.88	6.49	9.17	15.43	77.48	106.03	8.95	8.69
	2042	8.53	20.54	31.37	921.59	9.44	11.95	20.97	575.21	125.09	38.95	64.31	0.88	6.50	9.17	15.14	77.54	107.51	8.94	8.48
	2043	8.54	20.45	31.38	921.59	9.45	11.98	20.97	575.21	125.09	38.88	64.41	0.88	6.47	9.17	15.43	77.54	108.00	8.95	8.48
	2044	8.55	20.05	31.33	921.59	9.47	12.03	20.96	575.21	125.09	48.55	64.34	0.88	6.47	9.16	15.43	80.98	107.72	1.60	8.42
	2045	8.55	20.52	31.36	921.59	9.06	12.78	20.94	575.21	125.09	48.64	64.54	0.88	6.47	9.18	15.44	80.98	106.68	1.65	8.95
	2046	8.55	20.55	31.31	921.59	9.24	12.79	18.15	564.09	125.09	48.67	64.68	0.88	6.44	9.12	15.43	80.95	106.65	1.49	8.44
	2047	8.55	20.55	31.27	921.59	9.46	12.75	18.10	570.10	125.09	48.67	64.78	0.88	6.44	9.14	15.43	80.95	106.64	1.47	8.94
	2048	8.55	20.24	31.29	921.59	9.45	12.78	20.99	575.21	125.09	48.63	64.80	0.87	6.49	9.19	15.43	80.98	107.42	1.45	8.95
	2049	8.55	20.16	31.36	921.59	9.10	12.79	20.97	575.21	108.06	48.55	64.20	0.88	6.46	8.86	15.35	68.66	107.41	1.48	8.95
	2050	8.55	19.54	31.21	921.59	9.44	12.78	20.94	575.21	125.09	48.58	64.80	0.88	6.41	9.18	14.95	80.97	101.51	1.49	8.95

Table D-2 : CHE NOx Emissions Rate (g/hr) *(cont.)*																	
Fuel Type	**Calendar Year**	**Cargo Handling Equipment - Port Other**		**Cargo Handling Equipment - Port Rail Car Mover**		**Cargo Handling Equipment - Port RTG Crane**					**Cargo Handling Equipment - Port Skid Steer Loaders**	**Cargo Handling Equipment - Port Tractor**	**Cargo Handling Equipment - Port Tractors/Loaders/Backhoes**				
		Horsepower Bin		**Horsepower Bin**		**Horsepower Bin**					**Horsepower Bin**	**Horsepower Bin**	**Horsepower Bin**				
		25	**300**	**175**	**300**	**175**	**300**	**600**	**750**	**9999**	**75**	**75**	**50**	**75**	**175**	**300**	**600**
Diesel	2025	25.77	404.77	161.22	197.98	80.06	25.40	125.71	313.58	587.54	146.95	105.69	89.10	98.75	176.78	215.38	300.43
	2026	25.77	404.77	162.84	197.97	80.06	25.40	125.78	181.46	452.73	146.86	105.80	89.10	98.75	176.78	184.87	300.52
	2027	25.76	404.77	163.90	197.97	80.06	25.41	125.78	97.45	459.96	146.79	105.79	89.10	98.75	176.78	185.00	224.61
	2028	25.76	15.67	163.90	197.97	80.06	25.41	125.78	91.99	459.98	101.10	105.80	89.10	98.75	176.78	148.72	136.77
	2029	25.76	18.17	163.90	197.98	80.06	25.41	125.78	92.01	459.98	110.75	105.95	89.10	79.24	176.78	148.77	137.43
	2030	25.76	18.16	163.90	197.97	3.36	25.41	125.78	91.99	459.50	110.23	85.12	89.10	85.80	7.39	148.95	137.61
	2031	24.28	18.15	163.90	196.82	3.88	25.41	125.78	100.91	459.81	110.73	98.38	86.88	91.73	8.58	116.97	136.29
	2032	24.28	18.15	163.90	197.27	3.88	23.17	114.18	101.48	459.98	110.16	98.48	89.10	91.73	8.58	74.20	136.30
	2033	24.28	18.15	163.90	143.84	3.88	23.20	86.38	118.72	459.59	105.17	98.31	89.10	91.73	8.58	74.66	121.61
	2034	24.28	18.17	9.37	13.59	3.88	23.20	21.40	30.59	357.04	108.69	98.35	89.10	91.73	8.57	35.90	97.32
	2035	24.28	18.16	10.85	15.01	3.89	23.20	22.26	31.33	303.86	109.13	98.32	89.10	91.73	8.58	22.03	97.36
	2036	24.28	18.17	10.84	14.39	3.88	23.88	13.21	21.50	313.33	108.63	98.31	89.10	91.73	8.59	19.88	31.92
	2037	24.28	18.16	10.86	15.01	3.81	8.32	13.37	21.77	313.33	109.23	98.48	89.10	91.73	8.57	20.24	33.43
	2038	24.28	18.15	10.85	15.02	3.87	10.03	13.43	21.77	312.88	109.23	98.43	89.10	91.73	8.57	16.54	30.84
	2039	24.28	17.83	10.85	15.01	3.88	6.06	13.44	21.77	313.18	109.23	98.31	89.10	90.81	8.57	16.89	31.30
	2040	24.28	18.03	10.84	14.90	3.89	6.58	13.45	21.76	313.12	109.23	98.47	89.10	90.60	8.58	16.91	31.33
	2041	24.28	18.17	10.85	14.90	3.89	6.53	13.45	21.77	313.14	109.11	98.40	89.10	91.44	8.45	16.88	31.33
	2042	24.28	18.16	10.84	15.00	3.89	6.58	13.45	21.77	313.06	109.03	98.48	89.10	91.73	8.54	16.91	31.24
	2043	24.28	18.16	10.84	15.01	3.88	6.57	13.45	21.33	313.26	109.19	86.11	89.10	91.73	8.58	16.92	30.68
	2044	24.28	18.16	10.84	15.01	3.89	6.55	13.42	21.75	313.27	109.22	86.17	89.10	91.73	8.58	16.85	31.20
	2045	24.28	18.16	10.85	15.02	3.89	6.56	13.45	21.55	311.52	109.23	86.36	71.29	91.73	8.57	16.87	31.30
	2046	24.28	18.16	10.67	15.01	3.88	6.58	13.37	21.74	299.66	109.23	98.40	89.10	91.73	8.57	16.77	31.30
	2047	24.28	18.16	10.78	15.02	3.89	6.58	13.45	21.01	306.13	109.14	98.48	89.10	91.73	8.58	16.80	31.32
	2048	24.28	18.16	10.85	15.01	3.88	6.58	13.45	21.27	313.32	109.11	98.48	89.10	91.73	8.57	16.93	30.94
	2049	24.28	15.68	10.85	15.02	3.89	6.58	13.45	21.72	313.33	99.47	98.39	89.10	91.73	8.58	16.70	30.55
	2050	24.28	18.16	10.85	15.02	3.88	6.58	13.45	21.74	313.33	109.12	98.41	89.10	79.24	8.57	16.74	31.15

Table D-2 : CHE NOx Emissions Rate (g/hr) *(cont.)*																		
Fuel Type	**Calendar Year**	**Cargo Handling Equipment - Port Truck**							**Cargo Handling Equipment - Port Yard Truck**			**Cargo Handling Equipment - Rail Compactor (Portable)**	**Cargo Handling Equipment - Rail Container Handling Equipment**				**Cargo Handling Equipment - Rail Forklift**	
		Horsepower Bin							**Horsepower Bin**			**Horsepower Bin**	**Horsepower Bin**				**Horsepower Bin**	
		25	**50**	**75**	**100**	**175**	**300**	**600**	**175**	**300**	**600**	**600**	**175**	**300**	**600**	**750**	**100**	**175**
Diesel	2025	47.28	75.66	113.39	159.66	60.84	114.40	700.39	72.63	45.02	594.17	431.23	54.43	606.21	606.46	666.80	104.21	61.56
	2026	47.28	75.74	113.39	159.78	60.84	89.35	465.42	72.04	41.58	594.17	431.23	54.43	126.66	606.46	666.80	104.21	52.28
	2027	47.28	75.74	113.39	159.77	55.39	73.93	213.67	71.48	44.00	498.21	431.23	54.43	128.67	336.85	666.80	104.21	52.35
	2028	47.28	75.74	113.39	159.77	55.61	77.97	115.13	57.16	36.12	227.76	431.23	54.43	19.11	85.25	666.80	0.70	40.84
	2029	47.28	75.74	113.39	3.42	55.64	29.51	115.72	53.12	24.25	229.58	19.28	54.43	19.81	86.95	666.80	0.82	40.99
	2030	47.28	75.74	113.39	3.64	55.64	24.14	50.59	53.08	22.34	45.97	22.33	54.43	19.81	86.95	666.80	0.82	41.07
	2031	47.28	61.13	113.39	3.63	55.50	24.86	50.67	52.30	21.24	47.28	22.33	54.43	19.81	86.95	666.80	0.82	35.34
	2032	47.28	64.61	113.39	3.63	55.57	24.25	50.73	52.42	21.96	47.07	21.97	54.43	19.81	86.95	666.80	0.82	35.37
	2033	47.28	64.61	113.39	3.64	55.64	23.75	45.56	52.43	19.11	47.34	22.33	54.43	19.81	86.95	54.38	0.82	35.37
	2034	46.70	64.61	113.39	3.64	39.21	23.20	45.54	51.97	14.96	47.14	22.33	54.43	19.81	86.95	62.98	0.82	31.20
	2035	46.70	60.56	113.39	3.63	39.37	16.05	28.12	52.91	14.18	29.18	22.33	54.43	19.81	86.95	62.98	0.82	21.45
	2036	46.70	61.62	100.20	3.48	39.35	15.72	28.57	34.83	13.86	29.56	22.33	112.14	19.81	86.95	62.98	0.82	16.93
	2037	46.70	52.16	115.99	3.49	27.96	6.50	28.73	35.12	3.07	29.56	22.33	116.21	19.81	30.07	62.98	0.82	10.15
	2038	46.70	57.33	115.99	3.49	28.15	6.74	28.76	35.21	4.51	29.56	22.33	120.28	19.81	31.38	62.98	0.82	7.95
	2039	46.70	57.66	115.99	3.64	28.19	5.94	28.55	11.58	2.81	29.51	22.33	54.43	19.81	31.38	62.98	0.82	7.98
	2040	46.70	57.60	115.99	3.63	28.17	7.92	36.94	7.20	4.57	29.56	22.33	54.43	19.81	31.38	62.98	0.80	7.98
	2041	46.70	57.69	115.99	3.64	28.12	7.76	45.25	8.17	4.80	29.56	22.33	10.83	19.81	31.38	62.98	0.81	7.98
	2042	46.70	57.83	115.99	3.53	10.83	6.09	46.29	6.81	2.62	29.56	22.33	12.55	35.37	31.38	62.98	0.82	6.96
	2043	46.70	57.68	115.99	3.54	11.82	6.47	37.21	7.66	2.96	29.56	22.33	12.55	36.47	31.38	62.98	0.82	6.33
	2044	46.70	57.73	115.99	1.65	12.09	8.20	28.61	7.23	4.46	29.56	22.33	12.55	37.57	31.38	62.98	0.82	6.53
	2045	46.70	57.77	115.99	1.66	12.10	7.03	28.62	6.87	3.16	29.56	22.33	12.55	19.81	31.38	62.98	0.82	6.57
	2046	46.70	57.77	115.99	1.65	12.11	7.09	28.47	7.17	3.51	29.56	22.33	12.55	19.81	31.38	62.98	0.82	6.55
	2047	46.70	57.83	115.99	1.65	12.11	6.53	27.64	6.83	3.13	29.56	22.33	12.55	17.81	31.38	62.98	0.82	6.50
	2048	46.70	57.83	115.99	1.66	12.01	6.42	27.44	7.56	2.86	29.11	22.33	12.55	19.81	30.10	62.98	0.82	6.51
	2049	46.70	57.83	115.99	1.66	12.09	5.97	27.99	6.83	3.66	27.74	22.33	12.55	19.11	29.67	62.98	0.71	6.46
	2050	46.70	57.84	115.99	1.44	12.11	6.20	28.43	6.89	2.98	29.56	19.28	12.55	19.81	31.38	62.98	0.82	6.55

Table D-2 : CHE NOx Emissions Rate (g/hr) *(cont.)*								
Fuel Type	**Calendar Year**	**Cargo Handling Equipment - Rail Lift**		**Cargo Handling Equipment - Rail RTG Crane**		**Cargo Handling Equipment - Rail Truck**		**Cargo Handling Equipment - Rail Yard Truck**
		Horsepower Bin		**Horsepower Bin**		**Horsepower Bin**		**Horsepower Bin**
		25	**50**	**175**	**600**	**25**	**50**	**300**
Diesel	2025	46.79	133.21	80.06	88.06	47.10	97.58	28.69
	2026	46.92	133.14	80.06	87.19	47.10	97.58	27.48
	2027	46.75	133.04	80.06	87.19	47.10	97.58	35.11
	2028	46.86	64.75	80.06	84.33	47.10	97.58	28.98
	2029	46.95	64.84	80.06	79.12	47.10	47.60	28.90
	2030	46.75	80.85	3.35	79.16	47.10	59.49	27.42
	2031	46.93	80.84	3.88	79.16	47.10	59.49	12.96
	2032	46.83	81.08	3.88	68.49	47.10	59.49	19.91
	2033	46.72	81.04	3.88	27.76	47.10	59.49	5.45
	2034	46.87	80.98	3.88	22.53	46.86	59.49	5.61
	2035	46.74	80.90	3.88	17.01	46.86	59.49	4.23
	2036	46.72	81.07	3.88	13.48	46.70	59.49	5.28
	2037	46.69	80.96	3.88	10.28	46.70	59.49	1.75
	2038	46.64	66.18	8.32	9.66	46.70	59.49	4.35
	2039	46.58	66.27	3.88	9.72	46.70	59.49	2.42
	2040	46.75	66.35	3.88	11.16	46.70	59.49	2.95
	2041	46.66	81.00	3.88	15.26	46.70	59.49	3.17
	2042	46.80	81.01	3.88	10.36	46.70	59.49	1.68
	2043	46.70	81.02	3.88	10.71	46.70	150.72	3.21
	2044	46.61	81.02	3.88	10.55	46.70	158.08	3.26
	2045	46.75	81.03	3.88	10.38	46.70	165.45	3.19
	2046	46.65	81.04	3.88	10.21	46.70	59.49	3.33
	2047	46.79	81.05	3.88	9.72	46.70	59.49	3.15
	2048	46.70	81.05	3.88	9.72	46.70	59.49	3.27
	2049	46.60	64.80	3.88	9.70	46.70	59.49	3.64
	2050	46.74	64.99	3.88	9.68	46.70	47.60	2.05

Table D-3 : CHE NOx Emissions Rate (g/hr)								
Fuel Type	**Calendar Year**	**Cargo Handling Equipment - Port Forklift**			**Cargo Handling Equipment - Port Lift**		**Cargo Handling Equipment - Port Truck**	**Cargo Handling Equipment - Port Yard Truck**
		Horsepower Bin			**Horsepower Bin**		**Horsepower Bin**	**Horsepower Bin**
		50	**75**	**100**	**75**	**100**	**300**	**600**
Gasoline	2025	7.64	11.95	17.98	65.43	19.08	312.92	92.55
	2026	7.64	11.89	18.14	65.56	19.17	55.41	92.55
	2027	7.64	11.85	17.99	65.52	29.65	74.23	92.50
	2028	7.52	11.95	18.05	9.41	29.62	74.23	92.59
	2029	7.64	11.91	18.10	19.52	29.74	74.23	92.63
	2030	7.64	11.86	18.13	19.51	29.68	74.23	92.29
	2031	7.44	11.92	17.57	19.53	29.76	74.23	92.34
	2032	7.55	10.71	17.70	19.52	29.65	74.23	64.86
	2033	7.64	11.68	17.18	19.53	29.71	74.23	83.81
	2034	7.64	7.46	13.77	19.51	29.76	74.23	92.58
	2035	7.64	11.58	18.13	19.53	19.98	74.23	92.41
	2036	7.64	10.97	16.52	19.51	20.07	74.23	92.62
	2037	7.64	10.90	16.51	19.52	20.15	74.23	92.76
	2038	7.64	11.76	17.41	19.52	29.69	74.23	92.55
	2039	7.64	12.01	18.09	19.52	29.70	74.23	81.19
	2040	7.55	12.01	17.97	10.32	29.71	74.23	83.88
	2041	7.58	11.71	18.00	10.38	29.64	74.23	91.05
	2042	3.60	11.52	17.22	19.52	29.67	74.23	91.90
	2043	6.46	12.01	18.13	19.57	29.67	74.23	91.99
	2044	7.01	12.00	16.85	19.58	25.22	55.41	91.93
	2045	7.65	11.88	16.96	19.58	29.65	74.23	92.23
	2046	7.65	11.95	17.99	19.56	19.09	74.23	92.55
	2047	7.64	11.90	18.14	19.53	19.18	55.41	92.55
	2048	7.64	11.85	17.99	19.48	29.71	74.23	92.50
	2049	7.53	11.95	18.05	9.42	29.72	74.23	92.59
	2050	7.64	11.91	18.09	19.51	29.72	74.23	92.63

Table D-4 : CHE NOx Emissions Rate (g/hr)												
Fuel Type	Calendar Year	Cargo Handling Equipment - Port Forklift					Cargo Handling Equipment - Port Tractor	Cargo Handling Equipment - Port Truck			Cargo Handling Equipment - Port Yard Truck	
		Horsepower Bin					Horsepower Bin	Horsepower Bin			Horsepower Bin	
		50	75	100	175	300	175	50	75	175	175	300
Natural Gas	2025	7.14	13.89	21.32	37.29	71.40	42.55	115.17	10.46	52.43	60.40	75.48
	2026	7.14	13.94	22.15	24.20	71.40	42.55	9.87	16.25	36.34	60.38	81.00
	2027	7.14	11.94	22.20	29.76	71.40	42.55	9.93	16.24	54.38	40.78	81.08
	2028	7.14	12.12	21.08	25.23	71.40	42.55	9.93	16.23	54.43	60.38	54.48
	2029	5.18	10.36	20.85	26.75	18.61	42.55	9.93	16.25	54.40	60.39	49.10
	2030	5.18	10.53	21.27	27.68	21.34	41.05	9.92	16.25	52.48	42.77	58.73
	2031	5.18	10.65	20.95	28.12	45.96	42.12	9.87	16.24	52.47	51.87	57.70
	2032	5.18	10.95	20.83	27.59	45.96	42.55	9.88	16.24	54.43	51.93	52.88
	2033	5.18	10.78	21.32	27.27	45.96	42.55	9.93	16.24	54.41	51.89	57.11
	2034	5.18	10.57	15.83	27.86	45.96	42.55	9.93	9.82	54.38	50.04	57.44
	2035	5.18	10.72	18.20	28.15	45.96	42.55	9.93	9.87	54.39	51.92	57.66
	2036	5.18	10.14	20.17	26.07	45.96	42.55	9.93	16.24	51.25	51.88	57.96
	2037	5.18	10.75	20.80	28.23	45.96	42.55	9.92	16.24	54.34	51.90	57.88
	2038	5.18	10.92	21.32	27.85	43.22	42.55	9.97	16.26	54.35	51.89	57.85
	2039	5.18	10.76	21.06	28.22	45.96	42.55	9.91	16.24	51.26	51.89	57.83
	2040	5.18	10.82	20.83	28.13	45.96	42.55	9.93	16.24	54.39	51.91	57.79
	2041	5.17	10.85	21.19	21.01	45.96	42.55	9.93	16.25	31.47	45.32	57.88
	2042	5.18	10.50	20.48	26.83	45.96	17.47	9.91	16.25	50.05	45.35	57.91
	2043	5.17	10.60	20.97	27.99	45.96	37.04	9.96	16.25	54.38	51.89	58.03
	2044	5.17	9.58	19.95	26.57	45.96	42.55	9.94	10.36	54.44	30.15	57.88
	2045	5.18	9.86	21.35	27.85	45.96	42.55	9.90	10.40	46.97	51.93	57.89
	2046	5.18	10.76	20.54	22.27	45.96	42.55	9.93	10.45	52.41	51.91	52.25
	2047	5.18	10.77	21.37	20.52	45.96	42.55	9.88	16.27	36.32	51.90	57.42
	2048	5.18	10.71	21.42	27.22	45.96	42.55	9.95	16.26	54.38	32.25	57.93
	2049	5.18	10.89	20.70	25.01	45.96	42.55	9.90	16.23	54.41	51.91	44.03
	2050	5.17	10.36	20.84	26.78	18.60	42.55	9.95	16.19	54.40	51.90	47.87

Table E-1 : Other On-Site Support Equipment Load Factors	
Equipment Type	**Load Factor**
Other General Industrial Equipment	0.34
Other Material Handling Equipment	0.4
Sweepers/Scrubbers	0.46

Table E-2 : OSE NOx Emissions Rate (g/hr)									
Fuel Type	Calendar Year	Industrial - Misc - Other General Industrial Equipment							
		Horsepower Bin							
		50	75	100	175	300	600	750	9999
Diesel	2025	48.64	73.68	89.32	78.37	147.82	192.87	324.43	938.67
	2026	47.17	71.39	78.30	69.13	129.41	148.07	273.70	912.31
	2027	45.90	69.95	70.18	62.93	118.00	132.92	246.46	884.69
	2028	44.17	66.71	53.97	49.39	99.55	107.23	217.25	799.42
	2029	43.17	65.96	48.90	45.25	92.23	97.22	196.36	781.97
	2030	41.88	64.55	42.01	39.73	78.77	86.20	179.20	734.52
	2031	41.24	64.19	38.59	36.62	72.96	78.23	163.82	725.08
	2032	39.95	61.85	33.42	32.90	66.09	70.52	146.13	693.33
	2033	39.62	62.00	30.99	30.20	61.49	65.43	135.99	688.36
	2034	39.32	62.12	28.73	27.78	57.06	61.20	127.82	683.54
	2035	39.04	62.18	26.71	25.65	52.89	57.38	121.42	678.99
	2036	38.16	60.45	19.66	19.51	29.77	42.07	98.79	675.00
	2037	38.16	60.62	18.35	18.21	28.35	40.62	94.99	670.86
	2038	38.19	60.79	17.12	17.09	27.27	39.53	92.34	667.06
	2039	38.22	60.94	15.96	16.13	26.50	38.69	90.46	663.81
	2040	38.25	61.09	14.83	15.31	25.84	38.00	88.90	661.24
	2041	38.27	61.21	13.73	14.65	25.34	37.38	87.51	659.38
	2042	38.29	61.31	12.82	14.07	24.90	36.89	86.26	658.12
	2043	38.26	61.41	12.04	13.58	24.45	36.32	85.08	657.34
	2044	38.20	61.47	11.23	13.14	23.93	35.80	83.75	656.60
	2045	38.11	61.51	10.43	12.74	23.40	35.10	81.75	656.19
	2046	37.97	61.53	9.69	12.46	22.73	34.29	79.98	656.10
	2047	37.81	61.54	9.16	12.19	22.02	33.32	79.37	655.90
	2048	37.64	61.52	8.64	11.88	21.29	32.60	78.49	655.74
	2049	37.49	61.48	8.12	11.61	20.52	32.03	76.44	655.62
	2050	37.35	61.43	7.63	11.30	19.67	31.38	74.64	655.22

Table E-3 : OSE NOx Emissions Rate (g/hr)									
Fuel Type	Calendar Year	Industrial - Misc - Other General Industrial Equipment			Industrial - Misc - Other Material Handling Equipment		Industrial - Misc - Sweepers/Scrubbers		
		Horsepower Bin			Horsepower Bin		Horsepower Bin		
		50	100	175	50	100	50	100	175
Gasoline	2025	42.16	105.71	220.15	65.26	84.35	54.27	110.40	227.68
	2026	42.20	105.74	220.42	64.76	82.01	54.31	110.42	225.29
	2027	42.24	105.78	220.16	64.02	79.91	54.16	110.29	226.17
	2028	42.09	105.60	219.94	64.10	78.13	54.17	110.30	224.56
	2029	42.09	105.59	219.91	63.00	76.60	54.19	110.31	225.61
	2030	42.09	105.62	219.72	63.01	75.36	54.20	110.33	224.74
	2031	42.11	105.64	220.21	61.45	74.48	54.21	110.33	225.24
	2032	42.12	105.63	219.35	60.51	73.79	54.20	110.32	226.46
	2033	42.12	105.63	219.93	60.86	73.36	54.14	110.27	225.05
	2034	42.12	105.66	219.69	61.09	73.14	54.14	110.26	225.01
	2035	42.06	105.59	220.02	60.67	73.06	54.16	110.27	224.97
	2036	42.07	105.57	219.19	60.51	73.00	54.17	110.29	226.20
	2037	42.08	105.59	220.16	60.47	72.88	54.17	110.29	226.14
	2038	42.09	105.58	219.50	60.35	72.87	54.17	110.28	224.76
	2039	42.10	105.59	219.60	60.34	72.88	54.15	110.26	224.61
	2040	42.11	105.65	219.84	61.04	72.98	54.15	110.27	225.06
	2041	42.11	105.65	219.84	61.04	72.98	54.15	110.27	225.06
	2042	42.11	105.65	219.84	61.04	72.98	54.15	110.27	225.06
	2043	42.11	105.65	219.84	61.04	72.98	54.15	110.27	225.06
	2044	42.11	105.65	219.84	61.04	72.98	54.15	110.27	225.06
	2045	42.11	105.65	219.84	61.04	72.98	54.15	110.27	225.06
	2046	42.11	105.65	219.84	61.04	72.98	54.15	110.27	225.06
	2047	42.11	105.65	219.84	61.04	72.98	54.15	110.27	225.06
	2048	42.11	105.65	219.84	61.04	72.98	54.15	110.27	225.06
	2049	42.11	105.65	219.84	61.04	72.98	54.15	110.27	225.06
	2050	42.11	105.65	219.84	61.04	72.98	54.15	110.27	225.06

Table F-1 : NOx Fuel Correction Factor			
Diesel		Gasoline	
Model Year	NOx Fuel Correction Factor	Model Year	NOx Fuel Correction Factor
<2007	0.93	<1998	0.867
2007+	0.95	1998+	0.977

Table F-2 : NOx Zero Hour Emission Factors and Deterioration Rates CHE, TRU, and OSE with Engine Ratings Less Than or Equal to 25 Horsepower

Diesel			Gasoline			Propane		
Model Year	**EFzh (g/hphr)**	**DR (g/hphr/hr)**	**Model Year**	**EFzh (g/hphr)**	**DR (g/hphr/hr)**	**Model Year**	**EFzh (g/hphr)**	**DR (g/hphr/hr)**
1920-1999	7.000	0.0000000	1950-1994	3.480	0.0010900	1950-1994	1.770	0.0004410
2000	5.685	0.0000000	1995-2001	2.320	0.0000000	1995-1998	8.440	0.0004410
2001	5.614	0.0000000	2002-2008	2.680	0.0032100	1999-2050	2.700	0.0004410
2002-2003	5.422	0.0000000	2009-2050	1.710	0.0032400			
2004	5.389	0.0000000						
2005-2006	4.132	0.0000000						
2007	4.248	0.0000000						
2008	4.148	0.0000000						
2009	3.879	0.0000000						
2010	4.090	0.0000000						
2011-2012	3.832	0.0000000						
2013	3.903	0.0000000						
2014	3.866	0.0000000						
2015	3.879	0.0000000						
2016-2050	3.855	0.0000000						

Table F-3 : NOx Zero Hour Emission Factors and Deterioration Rates CHE, TRU, and OSE with Engine Ratings from 26-50 Horsepower								
Diesel			**Gasoline**			**Propane**		
Model Year	**EFzh (g/hphr)**	**DR (g/hphr/hr)**	**Model Year**	**EFzh (g/hphr)**	**DR (g/hphr/hr)**	**Model Year**	**EFzh (g/hphr)**	**DR (g/hphr/hr)**
1920-1987	7.000	0.0001050	1950-2000	8.010	0.0000406	1950-2000	13.000	0.0000662
1988-1998	7.000	0.0001055	2001	6.910	0.0001440	2001	10.400	0.0001560
1999	5.327	0.0000989	2002	5.520	0.0003080	2002	7.790	0.0002450
2000	5.283	0.0000980	2003	4.520	0.0004020	2003	5.190	0.0003350
2001	5.143	0.0000954	2004-2006	1.330	0.0004710	2004-2006	1.950	0.0002760
2002-2003	5.078	0.0000942	2007-2009	0.887	0.0001190	2007-2009	1.300	0.0000011
2004	4.462	0.0000816	2010-2050	0.266	0.0000250	2010-2050	0.390	0.0000002
2005	4.536	0.0000886						
2006	4.536	0.0000914						
2007	4.514	0.0000909						
2008	4.476	0.0000932						
2009	4.069	0.0000848						
2010	4.475	0.0000932						
2011-2012	4.534	0.0000945						
2013	3.122	0.0000650						
2014	3.271	0.0000681						
2015	3.116	0.0000649						
2016	3.162	0.0000659						
2017-2050	2.729	0.0000568						

Table F-4 : NOx Zero Hour Emission Factors and Deterioration Rates CHE, TRU, and OSE with Engine Ratings from 51-75 Horsepower

Diesel			Gasoline			Propane		
Model Year	EFzh (g/hphr)	DR (g/hphr/hr)	Model Year	EFzh (g/hphr)	DR (g/hphr/hr)	Model Year	EFzh (g/hphr)	DR (g/hphr/hr)
1920-1987	13.000	0.0003010	1950-2000	9.925	0.0000504	1950-2000	11.765	0.0000598
1988-1997	8.302	0.0001917	2001	8.245	0.0001540	2001	9.470	0.0001510
1998	8.302	0.0001925	2002	6.420	0.0002870	2002	7.175	0.0002420
1999	5.308	0.0001231	2003	4.790	0.0003850	2003	4.880	0.0003330
2000	5.399	0.0001252	2004-2006	1.555	0.0003390	2004-2006	1.765	0.0003130
2001	5.368	0.0001245	2007-2009	1.028	0.0000925	2007-2009	1.170	0.0000068
2002-2003	5.180	0.0001201	2010-2050	0.308	0.0000275	2010-2050	0.350	0.0000191
2004	4.653	0.0000850						
2005	4.552	0.0000732						
2006	4.552	0.0000677						
2007	4.077	0.0000606						
2008	2.968	0.0000390						
2009	2.965	0.0000390						
2010	2.937	0.0000386						
2011-2012	2.903	0.0000382						
2013	2.632	0.0000346						
2014	2.688	0.0000353						
2015	2.696	0.0000354						
2016	2.757	0.0000363						
2017-2050	2.757	0.0000362						

Table F-5 : NOx Zero Hour Emission Factors and Deterioration Rates CHE, TRU, and OSE with Engine Ratings from 76-100 Horsepower								
Diesel			Gasoline			Propane		
Model Year	EFzh (g/hphr)	DR (g/hphr/hr)	Model Year	EFzh (g/hphr)	DR (g/hphr/hr)	Model Year	EFzh (g/hphr)	DR (g/hphr/hr)
1920-1987	13	0.0003010	1950-2000	11.84	0.0000601	1950-2000	10.53	0.0000533
1988-1997	8.302	0.0001917	2001	9.58	0.0001630	2001	8.54	0.0001460
1998	8.302	0.0001925	2002	7.32	0.0002660	2002	6.56	0.0002390
1999	5.682	0.0001318	2003	5.060	0.0003680	2003	4.570	0.0003310
2000	5.593	0.0001297	2004-2006	1.780	0.0002070	2004-2006	1.580	0.0003500
2001	5.590	0.0001296	2007-2009	1.170	0.0000660	2007-2009	1.040	0.0000125
2002-2003	5.413	0.0001255	2010-2050	0.350	0.0000300	2010-2050	0.310	0.0000380
2004	4.494	0.0000821						
2005	4.553	0.0000733						
2006	4.553	0.0000677						
2007	3.738	0.0000556						
2008	2.997	0.0000394						
2009	2.844	0.0000374						
2010	2.817	0.0000370						
2011	2.786	0.0000366						
2012	2.786	0.0000367						
2013	2.563	0.0000338						
2014	2.491	0.0000328						
2015	2.722	0.0000359						
2016	2.365	0.0000312						
2017	1.836	0.0000242						
2018	1.652	0.0000218						
2019	1.467	0.0000193						
2020	1.283	0.0000169						
2021	1.099	0.0000145						
2022	0.914	0.0000121						
2023	0.730	0.0000096						
2024	0.546	0.0000072						
2025	0.361	0.0000048						
2026	0.177	0.0000023						
2027-2050	0.030	0.0000004						

Table F-6 : NOx Zero Hour Emission Factors and Deterioration Rates CHE, TRU, and OSE with Engine Ratings from 101-175 Horsepower								
Diesel			**Gasoline**			**Propane**		
Model Year	**EFzh (g/hphr)**	**DR (g/hphr/hr)**	**Model Year**	**EFzh (g/hphr)**	**DR (g/hphr/hr)**	**Model Year**	**EFzh (g/hphr)**	**DR (g/hphr/hr)**
1920-1987	11.000	0.0002540	1950-2000	12.94	0.0001270	1950-2000	10.51	0.0001040
1988-1996	9.607	0.0002222	2001	10.29	0.0001090	2001	8.53	0.0000908
1997-1998	5.892	0.0001366	2002	7.64	0.0000917	2002	6.54	0.0000777
1999	5.838	0.0001354	2003	4.980	0.0000740	2003	4.560	0.0000645
2000	5.772	0.0001339	2004-2006	1.940	0.0002780	2004-2006	1.580	0.0002640
2001	5.651	0.0001310	2007-2009	1.170	0.0000660	2007-2009	1.040	0.0000125
2002	5.440	0.0001262	2010-2050	0.350	0.0000300	2010-2050	0.310	0.0000380
2003	5.440	0.0000997						
2004	4.188	0.0000667						
2005-2006	3.966	0.0000577						
2007	2.856	0.0000373						
2008	2.760	0.0000360						
2009	2.659	0.0000347						
2010	2.992	0.0000391						
2011-2012	2.673	0.0000349						
2013	1.950	0.0000254						
2014	1.874	0.0000244						
2015	1.126	0.0000148						
2016	0.896	0.0000118						
2017	1.152	0.0000152						
2018	0.954	0.0000126						
2019	0.757	0.0000100						
2020	0.559	0.0000074						
2021	0.362	0.0000048						
2022	0.165	0.0000022						
2023-2050	0.129	0.0000017						

Table F-7 : NOx Zero Hour Emission Factors and Deterioration Rates CHE, TRU, and OSE with Engine Ratings from 176-300 Horsepower								
Diesel			**Gasoline**			**Propane**		
Model Year	**EFzh (g/hphr)**	**DR (g/hphr/hr)**	**Model Year**	**EFzh (g/hphr)**	**DR (g/hphr/hr)**	**Model Year**	**EFzh (g/hphr)**	**DR (g/hphr/hr)**
1920-1987	11.000	0.0002540	1950-2000	12.94	0.0001270	1950-2000	10.51	0.0001040
1988-1995	7.339	0.0001698	2001	10.29	0.0001090	2001	8.53	0.0000908
1996	5.788	0.0001343	2002	7.64	0.0000917	2002	6.54	0.0000777
1997-1998	5.739	0.0001331	2003	4.980	0.0000740	2003	4.560	0.0000645
1999	5.958	0.0001382	2004-2006	1.940	0.0002780	2004-2006	1.580	0.0002640
2000	5.907	0.0001370	2007-2009	1.170	0.0000660	2007-2009	1.040	0.0000125
2001	5.696	0.0001321	2010-2050	0.350	0.0000300	2010-2050	0.310	0.0000380
2002	5.527	0.0001282						
2003	5.527	0.0001000						
2004	4.373	0.0000690						
2005	4.078	0.0000589						
2006	4.078	0.0000589						
2007	2.697	0.0000350						
2008	2.583	0.0000335						
2009	2.579	0.0000335						
2010	2.673	0.0000347						
2011-2012	1.515	0.0000197						
2013	1.631	0.0000212						
2014	0.837	0.0000110						
2015	0.645	0.0000085						
2016	0.886	0.0000117						
2017	0.332	0.0000044						
2018-2050	0.121	0.0000016						

Table F-8 : NOx Zero Hour Emission Factors and Deterioration Rates CHE, TRU, and OSE with Engine Ratings from 301-600 Horsepower								
Diesel			**Gasoline**			**Propane**		
Model Year	**EFzh (g/hphr)**	**DR (g/hphr/hr)**	**Model Year**	**EFzh (g/hphr)**	**DR (g/hphr/hr)**	**Model Year**	**EFzh (g/hphr)**	**DR (g/hphr/hr)**
1920-1987	11.000	0.0001830	1950-2000	12.94	0.0001270	1950-2000	10.51	0.0001040
1988-1995	7.339	0.0001222	2001	10.29	0.0001090	2001	8.53	0.0000908
1996	5.832	0.0000970	2002	7.64	0.0000917	2002	6.54	0.0000777
1997-1998	5.906	0.0000983	2003	4.980	0.0000740	2003	4.560	0.0000645
1999	5.743	0.0000956	2004-2006	1.940	0.0002780	2004-2006	1.580	0.0002640
2000	5.668	0.0000943	2007-2009	1.170	0.0000660	2007-2009	1.040	0.0000125
2001	5.449	0.0000808	2010-2050	0.350	0.0000300	2010-2050	0.310	0.0000380
2002	5.276	0.0000739						
2003	5.276	0.0000714						
2004	4.161	0.0000563						
2005	4.041	0.0000535						
2006	4.041	0.0000525						
2007	2.807	0.0000364						
2008	2.567	0.0000333						
2009	2.542	0.0000330						
2010	2.550	0.0000331						
2011-2012	1.234	0.0000161						
2013	1.497	0.0000195						
2014	0.973	0.0000128						
2015	0.813	0.0000107						
2016	0.904	0.0000119						
2017	0.231	0.0000031						
2018-2050	0.133	0.0000017						

Table F-9 : NOx Zero Hour Emission Factors and Deterioration Rates CHE, TRU, and OSE with Engine Ratings from 601-750 Horsepower

Diesel			Gasoline			Propane		
Model Year	EFzh (g/hphr)	DR (g/hphr/hr)	Model Year	EFzh (g/hphr)	DR (g/hphr/hr)	Model Year	EFzh (g/hphr)	DR (g/hphr/hr)
1920-1987	11.000	0.0001830	1950-2000	12.94	0.0001270	1950-2000	10.51	0.0001040
1988-1996	7.339	0.0001222	2001	10.29	0.0001090	2001	8.53	0.0000908
1997-1998	6.264	0.0001042	2002	7.64	0.0000917	2002	6.54	0.0000777
1999	6.199	0.0001032	2003	4.980	0.0000740	2003	4.560	0.0000645
2000	5.688	0.0000946	2004-2006	1.940	0.0002780	2004-2006	1.580	0.0002640
2001	5.651	0.0000940	2007-2009	1.170	0.0000660	2007-2009	1.040	0.0000125
2002	5.461	0.0000810	2010-2050	0.350	0.0000300	2010-2050	0.310	0.0000380
2003	5.461	0.0000765						
2004	3.951	0.0000535						
2005	3.904	0.0000529						
2006	3.904	0.0000507						
2007	2.598	0.0000337						
2008	2.747	0.0000357						
2009	2.692	0.0000349						
2010	2.610	0.0000339						
2011-2012	1.641	0.0000214						
2013	1.881	0.0000245						
2014	1.099	0.0000145						
2015	0.986	0.0000130						
2016	1.496	0.0000197						
2017	0.706	0.0000093						
2018	0.486	0.0000064						
2019	0.267	0.0000035						
2020-2050	0.155	0.0000020						

Table F-10 : NOx Zero Hour Emission Factors and Deterioration Rates CHE, TRU, and OSE with Engine Ratings Greater Than 750 Horsepower								
Diesel			**Gasoline**			**Propane**		
Model Year	**EFzh (g/hphr)**	**DR (g/hphr/hr)**	**Model Year**	**EFzh (g/hphr)**	**DR (g/hphr/hr)**	**Model Year**	**EFzh (g/hphr)**	**DR (g/hphr/hr)**
1920-1987	11.000	0.0001830	1950-2000	12.94	0.0001270	1950-2000	10.51	0.0001040
1988-1999	7.339	0.0001222	2001	10.29	0.0001090	2001	8.53	0.0000908
2000	5.725	0.0000953	2002	7.64	0.0000917	2002	6.54	0.0000777
2001	5.928	0.0000986	2003	4.980	0.0000740	2003	4.560	0.0000645
2002-2003	5.793	0.0000964	2004-2006	1.940	0.0002780	2004-2006	1.580	0.0002640
2004	5.948	0.0000990	2007-2009	1.170	0.0000660	2007-2009	1.040	0.0000125
2005	5.842	0.0000972	2010-2050	0.350	0.0000300	2010-2050	0.310	0.0000380
2006	5.842	0.0000866						
2007	3.533	0.0000495						
2008	3.346	0.0000453						
2009	3.559	0.0000482						
2010	3.699	0.0000480						
2011-2012	3.342	0.0000433						
2013	3.185	0.0000413						
2014	3.048	0.0000395						
2015	3.040	0.0000394						
2016	2.967	0.0000385						
2017	1.944	0.0000252						
2018	1.697	0.0000220						
2019-2050	1.623	0.0000210						

Table F-11 : Brake-Specific Fuel Consumption Rate				
		CARB	**Density**	**Conversion Factor**
Fuel Type	**HP Range**	BSFC (lb/hp-hr)	(lb/gal)	(hp-hr/gal)
Diesel	Up to 100 hp	0.408	7	17.2
Diesel	>100 hp	0.367	7	19.1
Gasoline	All	0.484	6	12.4
Propane	All	0.406	4.2	10.3

ATTACHMENT I

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Staff Report

Proposed Rule 2306 – Freight Rail Yards
Proposed Rule 316.2 – Fees for Rule 2306

August 2024

Deputy Executive Officer
Planning, Rule Development, and Implementation
Sarah L. Rees, Ph.D.

Assistant Deputy Executive Officer
Planning, Rule Development, and Implementation
Ian MacMillan

Planning and Rules Manager
Planning, Rule Development, and Implementation
I. Elaine Shen, Ph.D.

AUTHORS:	Zoya Banan, Ph.D.	Acting Program Supervisor
	Cindy Guzman	Assistant Air Quality Specialist
	Daniel C. Hernandez	Assistant Air Quality Specialist
	Dylan Plautz	Air Quality Specialist
	Shawn Wang	Program Supervisor
	Jessica Wei	Assistant Air Quality Specialist
CONTRIBUTORS:	Jivar Afshar	Air Quality Specialist
	Derek Ehrnschwender	Industrial Economics, Inc.
	Charlene Nguyen, Ph.D.	Program Supervisor
	Kevin Ni	Program Supervisor
	Daniel Penoyer	Air Quality Specialist
	Zorik Pirveysian	Integra Environmental Consulting Services, Inc
	Jason Price	Industrial Economics, Inc.
	Xian-Liang (Tony) Tian, Ph.D.	Program Supervisor
REVIEWED BY:	Barbara Baird	Chief Deputy Counsel
	Nicholas Dwyer	Senior Deputy District Counsel
	Sheri Hanizavareh	Principal Deputy District Counsel
	Barbara Radlein	Planning and Rules Manager
	Brian Tomasovic	Assistant Chief Deputy Counsel

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD

Chair: VANESSA DELGADO
Senator (Ret.)
Senate Rules Committee Appointee

Vice Chair: MICHAEL A. CACCIOTTI
Councilmember, South Pasadena
Cities of Los Angeles County/Eastern Region

MEMBERS:

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County of Orange

CURT HAGMAN
Supervisor, Fourth District
County of San Bernardino

GIDEON KRACOV
Governor's Appointee

PATRICIA LOCK DAWSON
Mayor, Riverside
Cities of Riverside County Representative

LARRY MCCALLON
Mayor Pro Tem, Highland
Cities of San Bernardino County

HOLLY J. MITCHELL
Supervisor, Second District
County of Los Angeles

VERONICA PADILLA-CAMPOS
Speaker of the Assembly Appointee

V. MANUEL PEREZ
Supervisor, Fourth District
County of Riverside

NITHYA RAMAN
Councilmember, Fourth District
City of Los Angeles Representative

CARLOS RODRIGUEZ
Councilmember, Yorba Linda
Cities of Orange County

JOSÉ LUIS SOLACHE
Mayor, Lynwood
Cities of Los Angeles County/Western Region

EXECUTIVE OFFICER:
WAYNE NASTRI

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EXECUTIVE SUMMARY

The 2016 and 2022 Air Quality Management Plans (AQMP) included a suite of facility-based mobile source measures to collectively reduce emissions of nitrogen oxides (NOx) from the goods movement sector, to assist in meeting state and federal air quality standards for ozone and fine particulate matter. NOx is the key pollutant that must be controlled in order to meet federal air quality standards, and over 80 percent of the NOx in our area is from mobile sources. In May 2018, the South Coast Air Quality Management District (South Coast AQMD) Governing Board directed staff to initiate rulemaking to address one of the 2016 AQMP facility-based mobile source measures, namely Control Measure MOB-02: Emission Reductions at Rail Yards and Intermodal Facilities. Consistent with that direction and the subsequent adoption of similar facility-based measures in the 2022 AQMP, staff proceeded with rulemaking for Proposed Rule 2306 and PR 316.2 to address emissions from both new and existing freight rail yards. In the meantime, additional rules to implement other facility-based measures have been adopted or initiated, including Rule 2305 – Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program, which was adopted in 2021 and has been implemented ever since, and Proposed Rule 2304 – Commercial Marine Ports – Container Terminals, which is currently in rule development. All three rulemakings are designed to be part of an overall effort to facilitate and further emission reductions from key freight transportation hubs and are supplemented by concurrent incentive programs and other non-regulatory measures.

PR 2306 establishes emission reductions and zero emission infrastructure reporting requirements for owners and operators of new and existing freight rail yards. These emission reductions will help to attain both California and National Ambient Air Quality Standards (CAAQS and NAAQS, respectively), as well as air quality priorities outlined in the corresponding AB 617 Community Emissions Reduction Plans (CERPs). When implemented, PR 2306 will provide additional health benefits to the local communities surrounding new and existing freight rail yards that operate within the South Coast AQMD jurisdiction. PR 316.2 establishes fees to be paid by freight rail yard owners or operators subject to PR 2306 to recover the South Coast AQMD's reasonable regulatory costs associated with PR 2306 implementation and compliance, such as costs associated with review of reports and notifications and the associated auditing, inspection, and enforcement activities.

Specifically, PR 2306 seeks to reduce NOx emissions associated with freight rail yard operations by requiring operators of freight rail yards to meet or exceed emission reductions targets. The proposed rule will ensure that emission reductions at each freight rail yard within the South Coast AQMD jurisdiction will be achieved at levels that are proportional or more-than-proportional to reductions throughout California from implementation of recently adopted statewide regulations affecting freight rail yard emission sources. Additional emission reductions may be achieved in South Coast AQMD if implementation of statewide regulations alone does not result in compliance with PR 2306. Additionally, any ~~state or local government~~ non-federal public agency contracting with the owner or operator of a freight rail yard in relation to its lease, construction, or operation will be required to include requirements for rule compliance in the new, renewed, or amended contract.

PR 2306 and PR 316.2 were developed through a public process including 13 Working Group Meetings and several Community Meetings. The Working Group is composed of affected facilities, environmental and community representatives, public agencies, consultants, equipment vendors, and other interested parties.

CHAPTER 1 : BACKGROUND

INTRODUCTION
RULEMAKING BACKGROUND
PUBLIC PROCESS
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INTRODUCTION

Proposed Rule 2306 – Freight Rail Yard Rule (PR 2306) and Proposed Rule 316.2 – Fees for Rule 2306 (PR 316.2) are part of the suite of Facility Based Mobile Source Measures (FBMSMs) aimed at collectively addressing emissions related to the goods movement. NOx is the key pollutant that must be controlled to meet both ozone and fine particulate matter (PM2.5) standards in our region. Over 80 percent of the NOx emissions in the South Coast Air Basin (Basin) are from mobile sources, and nearly half of these come from mobile sources associated with goods movement.[1] South Coast AQMD continues to address emissions associated with the goods movement sector through the development of PR 2306, as well as the adopted Rule 2305 – Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program and Proposed Rule 2304 – Commercial Marine Ports - Container Terminals, which are indirect source rules designed to be part of an overall effort to facilitate and further emission reductions from key mobile sources associated with warehouses and ports, respectively.

Environmental Justice (EJ) communities in the South Coast AQMD region are disproportionately impacted by various types of pollution and experience health, social, and economic inequities. These communities are often located near multiple air pollution sources including mobile sources and commercial and industrial facilities, such as freight rail yards. Communities adjacent to freight rail yards are exposed to higher levels of emissions from the associated mobile sources and activities. These emissions not only contain NOx, but also PM2.5. Short-term exposure to PM2.5 is well known to worsen pre-existing heart and lung conditions, while long term exposure can be linked to premature mortality especially among those with chronic heart or lung disease. Like PM2.5, ozone is known to cause airway and lung irritation, and is associated with increased asthma cases, as well as decreased lung capacity, especially among children and the elderly. Exposure to air toxics emitted from heavy-duty diesel engines used in freight transportation further worsens the health risk for residents in the EJ communities.

PR 2306 and PR 316.2 are applicable to owners and operators of freight rail yards located in the South Coast AQMD jurisdiction. Freight rail yards are rail yards where switching activities occur or where cargos, either in containers or not, are loaded onto or unloaded from railcars for transportation to or from a rail yard. Emissions associated with freight rail yards are emitted from locomotives, drayage trucks, cargo handling equipment (CHE), and miscellaneous off-road equipment like transportation refrigeration units (TRUs).

PR 2306 requires operators of freight rail yards to reduce NOx emissions associated with freight rail yard operations by meeting or exceeding specific emission reductions targets. The proposed targets will ensure that emission reductions at each freight rail yard within the South Coast AQMD jurisdiction will be achieved at levels that are proportional or more-than-proportional to implementation of recently adopted statewide regulations throughout California. The key statewide regulations relative to PR 2306 addressing freight rail yard emission sources are California Air Resources Board's (CARB) In-Use Locomotive and Advanced Clean Fleets (ACF) regulations, both adopted in 2023. Emission reductions targets are expected to be achieved through reductions from one or more freight rail yard emission sources, including locomotives and drayage trucks subject to these two CARB regulations, as well as from all other mobile sources associated

[1] Southern California Association of Governments. Transportation System Goods Movement: https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_goods-movement.pdf?1606001690

with freight rail yards to transport or assist in transporting cargo or goods. Additional emission reductions may be achieved in South Coast AQMD if implementation of statewide regulations alone does not result in compliance with PR 2306. Owners and operators of freight yards would also pay fees as established by PR 316.2 to reimburse South Coast AQMD for reasonable administrative costs associated with implementation of PR 2306.

RULEMAKING BACKGROUND

In 2006, South Coast AQMD adopted Regulation XXXV – Railroad and Railroad Operations to address emissions from rail yards and locomotives, seeking to control emissions generated from locomotive idling and requiring operators of rail yards to develop emissions inventories and conduct health risk assessments. This regulation was enjoined by a federal district court and that decision was upheld on appeal. As a result of this litigation, Regulation XXXV cannot be implemented.

The South Coast AQMD develops Air Quality Management Plans (AQMPs) to show how the region will attain ambient air quality standards. In the 2016 AQMP, the South Coast AQMD committed to assist the California Air Resources Board (CARB) and U.S. Environmental Protection Agency (U.S. EPA) in developing the "Further Deployment of Cleaner Technologies" control measures (Further Deployment Measures), based on a combination of incentive funding and development of new regulations. These measures are aimed at achieving the substantial NOx emission reductions needed to meet ozone and PM2.5 standards in our region. This process initiated the development of local FBMSMs. Control measure MOB-02: Emission Reductions at Rail Yards and Intermodal Facilities, is one of these FBMSMs.

The 2016 AQMP described a year-long process for staff to evaluate potential emissions reduction strategies for the FBMSMs and report back to the Governing Board on the most promising approach. South Coast AQMD staff convened a working group to explore potential voluntary and regulatory approaches for both new and existing rail yards consistent with what was outlined in the 2016 AQMP for control measure MOB-02. After considering the results of that year-long process, in May 2018, the South Coast AQMD Governing Board directed staff to initiate rulemaking for new and existing rail yards.

The 2022 AQMP reflects a continued effort on implementation of Further Deployment Measures for control measure MOB-02 as well as CARB's 2022 State Strategy for the State Implementation Plan (2022 SIP Strategy). After staff explored both regulatory and voluntary approaches, rulemaking for PR 2306 was reinitiated to include both new and existing freight rail yards.

Air Quality Management Plan

South Coast AQMD is the regional air quality regulatory agency for all of Orange County, and large portions of Los Angeles, Riverside, and San Bernardino counties. It is responsible for developing and enforcing air pollution control rules and regulations and implementing strategies to attain ambient air quality standards for the Basin and the Riverside County portions of both the Salton Sea Air Basin (SSAB) and the Mojave Desert Air Basin (MDAB). The federal Clean Air Act (CAA) requires the submission of State Implementation Plans (SIP) for nonattainment areas that do not meet the federal NAAQS. Additionally, the California Clean Air Act (CCAA) imposes further requirements on meeting state ambient air quality standards for criteria pollutants. The South Coast AQMD's ozone levels are the highest in the nation, and the region is currently classified as being in extreme nonattainment status for the federal NAAQS ozone standards.

Per the Health and Safety Code, South Coast AQMD is required to adopt plans to demonstrate how the region will meet both federal and state ambient air quality standards for South Coast AQMD's jurisdiction.[7] The AQMP is a blueprint for meeting federal and state air quality standards in South Coast AQMD's jurisdiction. On December 2, 2022, South Coast AQMD's Governing Board adopted the 2022 AQMP.[8] Based on analysis in the 2022 AQMP the total NOx emissions in the Basin must be further reduced by approximately 124 tons per day (tpd) beyond reductions from in-place regulations in 2037 - an additional 67 percent reduction in NOx beyond baseline 2037 levels in order to meet the 2015 8-hour ozone standard by the 2037 deadline. Based on the information in Figure 1-1, approximately 80 percent of NOx emissions in 2037 will be from mobile sources.

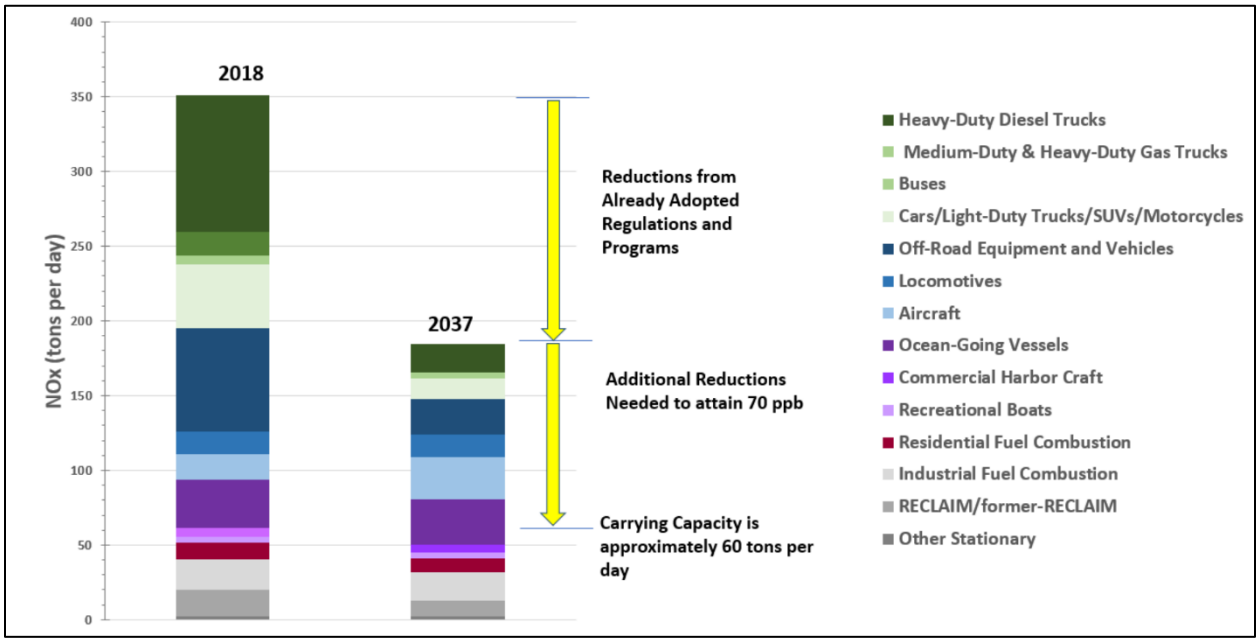


Figure 1-1. Baseline NOx Emissions and Reductions Needed to Achieve Federal 8-Hour Ozone NAAQS in the Basin

The control strategy in the 2022 AQMP includes many stationary and mobile source measures that will be carried out by the South Coast AQMD and CARB (Figure 1-2). To attain the federal ozone and PM2.5 NAAQS, the 2022 AQMP relies on reducing regional NOx emissions as a primary strategy as NOx is a precursor to the formation of both ozone and PM2.5 but also includes measures to reduce directly emitted PM2.5.

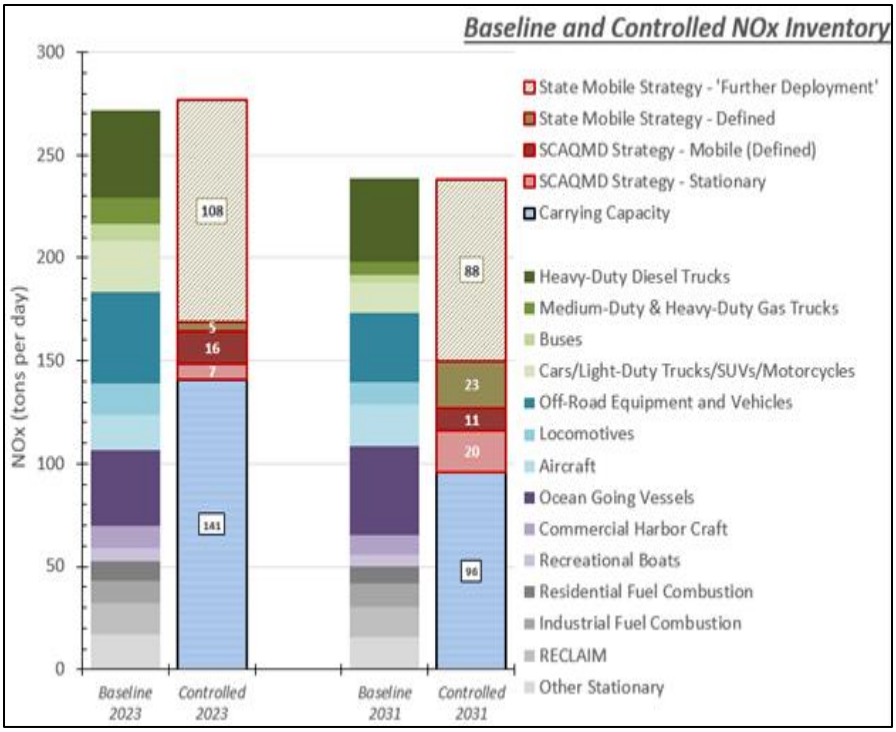


Figure 1-2. Summary of Approach to Reducing NOx Emissions by Major Source Category

Assembly Bill 617 Community Emission Reduction Plans

The South Coast AQMD Governing Board has approved several other plans since adoption of the 2016 AQMP that would also benefit from adoption of PR 2306. These include Community Emission Reduction Plans (CERPs) prepared pursuant to Assembly Bill (AB) 617. These plans provide a strategic framework to lower air pollution emissions and exposure, targeting the top air quality concerns for each community.

Assembly Bill (AB) 617 is a program established to address the disproportionate burden of air pollution on EJ communities, by providing funding and enabling selected communities to shape the actions to reduce emissions. South Coast AQMD currently has six designated communities where CERPs have been developed to prioritize these actions. Rail yard emissions are an area of concern and an air quality priority in CERPs for the following AB 617 communities: San Bernardino/Muscoy (SBM), Wilmington/Carson/West Long Beach (WCWLB), East Los Angeles/ Boyle Heights/West Commerce (ELABHWC), and Southeast Los Angeles (SELA). These AB 617 communities identify specific measures needed to reduce emissions from rail yards.

AB 617 CERP Actions

PR 2306 and PR 316.2 address a portion of the actions outlined in the CERPs for SBM, WCWLB, ELABHWC, and SELA. Some of the actions outlined in these CERPs include working with CARB to reduce air pollution at rail yards, replace diesel fueled equipment with cleaner technologies, and development of an indirect source rule for rail yards. The development of PR 2306 and PR 316.2 is an ongoing effort from staff to develop a rule that addresses FBMSMs pertaining to emissions from both new and existing rail yards in the 2022 AQMP, and simultaneously meet the action

items listed in the applicable CERPs. Staff also works with various outside regulatory air quality agencies, such as CARB, to develop the concepts and requirements of agency rules and regulations and continues to work on regulations to further meet the actions in AB 617 CERPs located within South Coast AQMD.

Previous South Coast AQMD Efforts

Regulation XXXV

South Coast AQMD has established three rules under Regulation XXXV on railroads and related operations, including Rule 3501 with requirements for recordkeeping of idling events to support quantification of emissions, Rule 3502 mandates minimizing unnecessary locomotive idling, and Rule 3503 with requirements to prepare emissions inventories, health risk assessments, and public notification for railroads and rail yards. However, as previously discussed. these rules cannot be enforced because they have been enjoined by the federal court.

Railroad MOU

Another effort made by South Coast AQMD to address rail yard emissions was a potential railroad memorandum of understanding (MOU). The MOU was pursued starting mid-2023 between South Coast AQMD, Union Pacific Railroad, and Burlington Northern Santa Fe Railroad. The proposed agreement between the railroads and South Coast AQMD aimed to reduce air quality impacts from existing and new rail yards by reducing emissions from locomotives applicable to the agreement, yard trucks, and rubber-tired gantry cranes. It also considered elements that included zero emission infrastructure plans and technology demonstrations. The parties did not come to an agreement and staff efforts resumed to rule development in November 2023.

PUBLIC PROCESS

PR 2306 and PR 316.2 were developed through a public process that included a series of Working Group meetings. Since the adoption of the 2016 AQMP, followed by the South Coast AQMD Governing Board's vote~~d~~ in May 2018 that~~o~~ directed staff to initiate rulemaking ~~in May 2018~~, staff ~~began the rule development process and~~ has provided ~~conducted~~ five updates to the Governing Board, sixteen updates to the Mobile Source Committee (including three on the latest rule proposal), six Community Workshops, and thirteen Working Group meetings to date. The Working Group is composed of affected facilities, environmental and community representatives, public agencies, consultants, equipment vendors, and interested parties. The purpose of the Working Group meetings was to provide all stakeholders an opportunity to discuss details of the proposed rules, and for staff to listen to stakeholder con_cerns with the objective of building consensus and resolving any issues. Table 1-1 summarizes the public meetings held throughout the development of PR 2306 and PR 316.2 and provides a summary of the key topics discussed at each of the meetings.

Table 1-1. Overview of Public Process Activities

Date	Meeting Title	Highlights
Earlier rule development focused on existing rail yards		
June 1, 2017	Working Group Meeting	• Working group process and metrics • Overview of emission sources at rail yards • Measures to improve air quality
October ~~1~~4, 2017	Working Group Meeting	• Framework on how Facility Based Mobile Source Measures are developed • Emissions inventory at rail yards and intermodal facilities • Emission reductions opportunities
January 18, 2018	Working Group Meeting	• Background on previous Facility Based Mobile Source Measure activities • List of opportunities and strategies for emission reductions
Staff visits to UP (Commerce and Colton) and BNSF (Hobart and San Bernardino) rail yards in Fall 2018		
November 20, 2019 December 11, 2019	Community Workshops	• Regulatory background from CARB and South Coast AQMD • CARB statewide rail yard emission reductions concepts • South Coast AQMD rail yard emission reductions concepts
Rule development pivoted to new intermodal rail yards		
July 30, 2021	Working Group Meeting	• Background and regulatory commitments • Overview of two new proposed intermodal facilities in the South Coast Basin • Environmental justice concerns • Need for 2306 and overview of rule development process moving forward
September 30, 2021	Working Group Meeting	• Summary of previous working group meeting • Initiation of discussions with technology providers involving zero emission and near-zero emission technologies • Presentation by representatives from BNSF
December 8, 2021	Working Group Meeting	• Response to the comment letter received from BNSF on September 15, 2021 • Presentations from the following technology providers: BYD, Shuttlewagon, Volvo, KLW

Date	Meeting Title	Highlights
April 12, 2022	Working Group Meeting	• Overview of health effects by Dr. Nichole Quick • Summary of comment letters from BNSF, environmental groups, and the community • Indirect source rule concept development applicable for new rail yards • CARB's proposed regulatory actions for locomotives and drayage trucks
June 7, 2022	Working Group Meeting	• Updates on staff activities since previous working group meeting • Technology and infrastructure considerations • Overview of intermodal facility operations • Opportunities for emission reductions at new intermodal facilities
August 10, 2022	Working Group Meeting	• Proposed rule development • Determining emissions inventory for new facilities
October 19, 2022		Staff visit to the Intermodal Container Transfer Facility (ICTF) operated by UP
November 15, 2022	Working Group Meeting	• Recent staff meetings and discussion with stakeholders • Development of emission inventory methodologies • Key goals and initial rule concepts
January 28, 2023		Released First Draft Preliminary Rule Language
February 1, 2023	Working Group Meeting	• Status update of rule development schedule • Overview of rule concepts and requirements
March 25, 2023 April 11, 2023 April 12, 2023	Community Workshops	• Overview of health effects • Background for indirect source rules involving ports and rail yards • Affected communities surrounding proposed intermodal facilities • Identified applicable emission sources located at ports and rail yard and the three factors to develop and deploy zero emission technology • Preliminary rule concepts for PR 2306
May 23, 2023		Staff visit to the Pacific Harbor Line at the San Pedro Bay Ports
Rule development temporarily paused to explore a potential railroad MOU		
One consultation meeting and four community meetings		
Rule development resumed for new and existing freight rail yards		

Date	Meeting Title	Highlights
January 17, 2024	Working Group Meeting	• Background and rule applicability • Preliminary overview of rule concepts • Outline of initial rule design
January 19, 2024		Mobile Source Committee
March 26, 2024		Staff follow-up visit to the Pacific Harbor Line at the San Pedro Bay Ports
April 12, 2024		Released Second Draft Preliminary Rule Language
April 17, 2024	Working Group Meeting	• Summaries of previous working group meeting and feedback received from community stakeholders on initial rule concepts presented • Updated overview of rule concepts and requirements
April 19, 2024		Mobile Source Committee
May 17, 2024		Released Preliminary Draft Language and Preliminary Draft Staff Report
June 4, 2024	Public Workshop	• Presented preliminary draft proposed rule language for PR 2306 and PR 316.2
June 5, 2024	Community Workshop	• Provided overview of rule development and key rule components • Gathered stakeholder feedback concerning top air quality concerns surrounding freight rail yards, additional facilities of concern, and reporting programs
June 7, 2024		Set Hearing
June 21, 2024		Mobile Source Committee
July 2, 2024		~~Releasing~~ Released Draft Rule Language and Draft Staff Report
August 2, 2024 ~~*(tentative)*~~		Public Hearing

LEGAL AUTHORITY

The South Coast AQMD may adopt PR 2306 through the authority to "adopt and enforce rules and regulations to achieve the state and federal ambient air quality standards in all areas affected by emission sources under [South Coast AQMD's] jurisdiction." (Health and Safety Code Section 40001; *see also* section 40702.) Generally, CARB has primary authority over emissions from motor vehicles, and the South Coast AQMD has primary authority over all sources in the Basin, except motor vehicles. (Health and Safety Code Section 40000.) This includes locomotives and other nonroad mobile sources. Health and Safety Code section 40716 also recognizes that air districts may adopt and implement regulations that control emissions from indirect and areawide sources in order to meet state ambient air quality standards. (*See also* Health and Safety Code Section 40440(b)(3) (directing South Coast AQMD to regulate indirect source emissions in areas

where there are high-level localized levels of pollutants and new sources which will have a significant impact on air quality).)

The key pollutant of interest for PR 2306 is NOx (a key precursor pollutant for ozone and PM2.5). The South Coast AQMD is in nonattainment status of the CAAQS for both ozone and PM2.5. For both ozone and PM2.5, the currently applicable 8-Hour CAAQS and 8-hour NAAQS are set at equivalent levels. As a result, the South Coast AQMD relies on the same measures to meet both federal and state ozone and PM2.5 standards.

In addition, the Clean Air Act recognizes state's authority to include "as part of an applicable [state] implementation plan, an indirect source review program which the State chooses to adopt and submit as part of its plan." (Clean Air Act (CAA) § 110(a)(5)(A)(i); 42 U.S.C. § 7410(a)(5)(A)(i).) An indirect source is defined as "a facility, building, structure, installation, real property, road, or highway which attracts, or may attract, mobile sources of pollution." (CAA § 110(a)(5)(C); 42 U.S.C. § 7410(a)(5)(C).) Rail yards come within the CAA's definition of indirect sources. *See Ctr. for Cmty. Action & Env't Just. v. BNSF R. Co.* (9th Cir. 2014) 764 F.3d 1019. Also, the Clean Air Act acknowledges that states and their subdivisions have the right to "adopt or enforce any standard or limitation respecting emissions of air pollutants" and also "any requirement respecting control or abatement of air pollution" so long as it is not less stringent than a federal requirement. (CAA § 116; 42 U.S.C. § 7416.)

The South Coast AQMD Governing Board approved the 2016 AQMP in March of 2017. The 2016 AQMP was subsequently approved by CARB and included in SIP; the ozone-related portion of the AQMP was approved by U.S. EPA in 2019.[2] The 2016 AQMP included MOB-02, a facility-based mobile source control measure to reduce mobile source emissions associated with rail yards and intermodal facilities. By approving MOB-02 into the 2016 AQMP, South Coast AQMD and CARB have committed to, and U.S. EPA has authorized, the development of an indirect source rule to achieve emission reductions from mobile sources attributable to activities associated with rail yards and intermodal facilities, in order to assist attaining the federal ozone NAAQS in 2023 and 2031. While MOB-02 was adopted as part of the NOx emissions reduction strategy for ozone, the 2016 AQMP also recognized that the "NOx strategy will assist in meeting the annual PM2.5 standard as "expeditiously as practicable" before the attainment year of 2025." (2016 AQMP, pp. 4-52.)

Initially, the South Coast AQMD Governing Board authorized a one-year public process to identify if MOB-02 could be achieved through voluntary or regulatory measures, and then ultimately determined, in May of 2018, that staff should pursue a regulatory approach while also considering potential voluntary measures. Through November 2023 significant resources were expended exploring potential voluntary measures; however, none were agreed upon after extended discussions with stakeholders.

[2] The 2016 AQMP demonstrated attainment of the 1979 1-hour ozone NAAQS, the 1997 and 2008 8-hour ozone NAAQS, as well as the 2006 24-hour PM2.5 NAAQS and the 2012 annual PM2.5 NAAQS. However, the U.S. EPA did not act on the annual PM2.5 plan for several years, and recently asked for an updated attainment demonstration that considers newly available near-road monitoring data. As a result, South Coast AQMD withdrew the annual PM2.5 plan and will submit a revised plan in Spring 2024.

A California Attorney General Opinion (CA AG Opinion) from 1993 determined that a district could adopt a regulation to,

> "… require the developer of an indirect source to submit the plans to the district for review and comment prior to the issuance of a permit for construction by a city or county. A district may also require the owner of an indirect source to adopt reasonable post-construction measures to mitigate particular indirect effects of the facility's operation."

The opinion acknowledged a district may adopt a regulation requiring new and existing indirect sources to submit plans to the district to mitigate mobile indirect source emissions from both construction and operations that are attributed to the source. However, the scope of the district's indirect source authority is not limited to the review of plans and the implementation of reasonable post-construction measures. Health and Safety Code section 40716 broadly authorizes the implementation of measures that "reduce or mitigate" emissions from indirect sources. The only state law limitation on such regulation is a prohibition on requiring permits for an indirect source. See 76 Ops. Cal. Atty. Gen. 11 (Mar. 11, 1993). The Clean Air Act does not limit the scope of an indirect source rule adopted by a state, as confirmed by the CA AG Opinion and Health and Safety Code section 40716.

Following the 2016 AQMP, the 2022 AQMP continues to include rail yard-related, facility-based mobile source measures, specifically MOB-02A – Emission Reductions at New Rail Yards and Intermodal Facilities and MOB-02B – Emission Reductions at Existing Rail Yards and Intermodal Facilities, to further outline emission reductions strategies. Through a public process, PR 2306 will seek to reduce emissions associated with freight rail yards and implement MOB-02A and MOB-2B of the 2022 AQMP. PR 2306 will focus on reducing overall emissions from all rail yard-related mobile sources, whether from line haul locomotives, switch locomotives, drayage trucks, transportation refrigeration units, cargo handling equipment, and other on-site support equipment. PR 2306 will also require information to be reported periodically on any installed, ongoing, or planned infrastructure development used to support zero emission technologies for applicable mobile source attracted to freight rail yards.

Implementation of PR 2306 will also meet the requirement for districts in extreme nonattainment to consider all feasible measures that have been implemented in other areas in order to meet state standards. (Health and Safety Code Section 40920.5(c)) While the term "feasible" is not defined in the Health and Safety Code, it is defined in other state laws as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors." (Public Resources Code, § 21061.1)

There are several examples of indirect source rules that have already been adopted in California. For example, South Coast AQMD Rule 2305 – Warehouse Indirect Source Rule, which requires operators of warehouses greater than or equal to 100,000 square feet to reduce emissions through a menu of emission-abating or mitigation options, and South Coast AQMD Rule 2202, which requires employers of 250 or more employees to reduce mobile source emissions generated by employee commutes. Rule 2305 was recently upheld against multiple legal challenges. *Cal. Trucking Ass'n v. S. Coast Air Quality Mgt. Dist.* (C.D. Cal. Dec. 14, 2023) No. LACV2106341JAKMRWX, 2023 WL 9622548. In addition, the San Joaquin Valley Unified Air Pollution Control District adopted Rule 9510, which requires new development projects that meet certain specifications to reduce emissions of PM 10 and NOx. As other California air districts have

already adopted and implemented indirect source rules, policies, and/or the collection of reduction fees, this type of measure has been shown in a variety of areas to be "feasible." Of course, feasibility is ultimately a rule-specific consideration. Staff has considered feasibility in drafting PR 2306 and PR 316.2. Furthermore, the authority for air districts to set emission reductions targets from indirect sources was earlier upheld in state and federal courts. *See Cal. Bldg. Indus. Assoc. v. San Joaquin Air Pollution Control District*, 178 Cal.App.4th 120 (2009); *NAHB v. San Joaquin Valley UAPCD*, 627 F.3d 730 (9th Cir. 2010).

Health and Safety Code section 40717 further requires districts to "adopt, implement, and enforce transportation control measures for the attainment of state or federal ambient air quality standards." The section defines transportation control measures as "any strategy to reduce vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing motor vehicle emissions." (Health and Safety Code Section 40717 (g).) PR 2306 will facilitate the reductions of motor vehicle emissions associated with freight rail yards by including emission reductions from drayage trucks servicing the freight rail yards in the multiple options for freight rail yards to comply with the proposed emission reductions targets.

In addition to the above provisions, the South Coast AQMD may adopt rules or regulations that require "the owner or the operator of any air pollution emission source to take such action as the state board or the district may determine to be reasonable for the determination of the amount of such emission from such source." (Health and Safety Code Section 41511.) Specifically, under Health and Safety Code Section 40701(g), the South Coast AQMD is authorized to collect information regarding a source, "except a noncommercial vehicular source," including requiring an operator to provide "(1) a description of the source, and (2) disclosure of the data necessary to estimate the emissions of pollutants for which ambient air quality standards have been adopted, or their precursor pollutants." These sections of the Health and Safety Code therefore authorize the South Coast AQMD to require owners and operators of freight rail yards to provide information that may be used to quantify emissions based on activity associated with the operation of an applicable freight rail yard.

Programs reducing emissions of precursors to ozone and PM2.5 for purposes of achieving and maintaining the NAAQS or CAAQS may also have concurrent benefits in reducing emissions of air toxics. The district may adopt rules to reduce emissions from sources that may affect public health. One of the duties imposed upon the district is the duty to enforce Health and Safety Code section 41700. That section provides:

> "Except as otherwise provided in section 41705, no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property."

Accordingly, the South Coast AQMD may adopt regulations to prevent the potential health impacts from toxic air contaminants, including diesel PM, as well as to reduce the emissions of criteria air pollutants. The California Supreme Court has upheld the districts' authority to regulate air toxic emissions from sources within their jurisdiction. (*Western Oil & Gas Assoc. v. Monterey Bay Unified Air Pollution Control Dist.* (1989) 49 Cal.3d 408.)

The South Coast AQMD's earlier rules limiting rail idling and related measures were enjoined by the federal courts on the ground that they were preempted by the federal Interstate Commerce Commission Termination Act (ICCTA). In brief, the Court of Appeal held that ICCTA preempts state laws that "may reasonably be said to have the effect of managing or governing rail transportation." Ass'n. of Am. R.R.s v. South Coast Air Quality Mgt. Dist., 622 F. 3d 1094, 1097 (9th Cir. 2010) ("AAR"). But laws may escape preemption if they are "laws of general applicability that do not unreasonably interfere with interstate commerce." AAR, p. 1097. PR 2306 can be characterized as a rule of general applicability even though it applies only to freight rail yards where it is part of a suite of rules that seek to reduce emissions from various indirect sources including aspects of the goods movement system. The Third Circuit has held that regulations governing loading of solid waste onto railcars were not necessarily discriminatory even though they applied only to the rail industry. New York Susquehanna & Western Railway Corp. v. Jackson, 500 F. 3d 238, 256 (3d Cir. 2007). The court held that determining any discriminatory effect required "compar[ing] the substance of the…regulation" to regulation of the same subject matter applicable to other industries. Id.; see also Adrian & Blissfield v. Vill. of Blissfield, 550 F.3d 533, 541-42 (6th Cir. 2008) (regulation that addresses "a general state concern" is not discriminatory). PR 2306 is one of a series of control measures applicable to the freight industry including warehouses, rail yards, marine ports, and airports (implemented through an MOU). It is therefore properly considered a rule of general applicability.

Moreover, once a rule is approved by the U.S. EPA into the state implementation plan, a different test applies. The Ninth Circuit held that "…to the extent that state and local agencies promulgate U.S. EPA-approved statewide plans under federal environmental laws (such as 'statewide implementation plans' under the Clean Air Act), ICCTA generally does not preempt those regulations, because it is possible to harmonize ICCTA with those federally-recognized regulations." AAR, p. 1098. This is because "if an apparent conflict exists between ICCTA and a federal law, then the courts must strive to harmonize the two laws, giving effect to both laws if possible." AAR, p. 1097.

However, until approved by the U.S. EPA into the state implementation plan, District rules "do not have the force and effect of federal law, even if they might in the future." AAR, p. 1098. Therefore, the rules in that case were not entitled to harmonization. In contrast, PR 2306 provides that it becomes effective only upon approval by the U.S. EPA into the state implementation plan and after it also grants the requested authorization and/or waiver for CARB's ACF Regulation and authorization for CARB's In-Use Locomotive Regulation. Therefore, PR 2306 will have the force and effect of federal law if adopted and approved into the state implementation plan, and must be harmonized with ICCTA, and generally will not be preempted. AAR, p. 1098.

PR 316.2 establishes fees for filing specified reports as required by PR 2306. South Coast AQMD staff will need to audit the reports filed and perform investigations and inspections as needed to verify the accuracy and completeness of these reports. Also, as required, staff will need to engage in enforcement actions to ensure compliance with the provisions of Proposed Rule 2306. The fees set in PR 316.2 are based on staff estimates of the time needed for various staff members to administer and enforce PR 2306. These estimates provide the expected number of hours for each job classification multiplied by the burdened hourly rate for each position. The burdened hourly rate includes salary and benefits for that position, plus a proportionate share (based on an allocation per FTE) of district operational expenses such as costs for the building, utilities, insurance, etc. Similarly, PR 316.2 also establishes fees for specified notifications to be submitted occasionally

as required by PR 2306. These fees reflect the time and effort by the South Coast AQMD staff to administratively process the notifications, update internal records of any notified changes to the freight rail yards subject to PR 2306 for enforcement purposes, and to conduct any necessary inspections.

The state Health and Safety Code provides for the recovery of costs of regulation from indirect sources, such as the freight rail yards in this case. State law does not include a definition of "indirect source" but there is a definition in federal law as a "facility, building, structure, installation, real property, road, or highway which attracts, or may attract, mobile sources of pollution." Clean Air Act Section 110(a)(5)(C). Freight rail yards are facilities that attract several types of mobile sources and thus are "indirect sources." State law provides that "the south coast district may adopt, by regulation, a schedule of fees to be assessed on areawide or indirect sources of emissions which are regulated, but for which permits are not issued, by the south coast district to recover the costs of district programs related to those sources." Health & Safety Code Section 40522.5.

District regulatory fees such as these are exempt from the requirements of Proposition 26 (2010) which generally classifies most charges by local governments as "taxes", which are subject to specific requirements for adoption by popular vote. Exception 3 provides for local government fees "for the reasonable regulatory costs to a local government for issuing licenses and permits, performing investigations, inspections, and audits, enforcing agricultural marketing orders, and the administrative enforcement and adjudication thereof." These fees will be used for investigations, inspections, auditing, and enforcement and are therefore exempt from Proposition 26.

CHAPTER 2 : FREIGHT RAIL YARD EMISSIONS AND AIR QUALITY NEEDS

INTRODUCTION

FREIGHT RAIL YARD EMISSION SOURCES AND EMISSION REDUCTIONS STRATEGIES

CURRENT STATE REGULATIONS ADDRESSING FREIGHT RAIL YARD EMISSION SOURCES

ZERO EMISSION INFRASTRUCTURE NEEDS

PUBLIC HEALTH AND AIR QUALITY NEEDS

BASELINE EMISSIONS INVENTORY OF FREIGHT RAIL YARD

INTRODUCTION

PR 2306 will reduce emissions from the goods movement sector by requiring freight rail yard operators to take actions that will achieve emission reductions from associated operations. PR 2306 would require freight rail yards to seek pathways to reduce emissions from associated sources, including locomotives, drayage trucks, CHE, and sources such as TRUs. One method to achieve such emission reductions might be to turn over lower tier engines with higher exhaust emissions to the cleanest available technologies within South Coast AQMD consistent with turnover that is expected statewide from CARB regulations. Other compliance methods could be used in accordance with the methods allowed by CARB regulations including the In-Use Locomotive Regulation and the ACF Regulation. No single regulation or rule could achieve federal air quality standards on its own, including PR 2306. This proposed rule is designed to enhance emission reductions from other programs in the South Coast AQMD jurisdiction and is part of the collection of actions needed to meet air quality standards.

FREIGHT RAIL YARD EMISSION SOURCES AND EMISSION REDUCTIONS STRATEGIES

The on-road and off-road mobile emission sources at freight rail yards covered under PR 2306 include: 1) locomotives powering inbound and outbound trains, 2) heavy-duty trucks delivering or picking up cargo (full or empty containers) to and from rail yards, 3) ~~transport refrigeration units (~~TRU~~)~~ on containers, trailers, railcars, and trucks, 4) ~~cargo handling equipment (~~CHE~~)~~ used for moving and handling cargo within the rail yard, and 5) ~~other on-site support equipment (~~OSE~~)~~. These sources account for the majority of emissions from freight rail yards.

Emission standards for diesel-powered off-road engines are set by U.S. EPA using a tier-based ranking system on exhaust emissions ranging from Tier 0 to Tier 4.[3] Currently, Tier 4 engines are ranked as the cleanest available technology for off-road engines, and have generally been available since 2015.[4] For some applications, zero emissions off-road vehicles are also becoming commercially available, and their availability is anticipated to increase through time. For on-road engines, CARB has set the cleanest engine standard in its Low NOx Omnibus regulation and has also established zero emission standards in its Advanced Clean Trucks Regulation and introduced requirements of zero emission fleets in the subsequent ACF Regulation.[5]

Emission reductions strategies across mobile sources tend to be consistent, although the plausible implementation of these strategies differ across categories. The emission reductions strategies include turnover to a cleaner fleet and the minimization of idling emissions. Minimization of idling emissions typically occurs in one of two ways, either through an operational change that would lower the time a mobile source would need to spend idling, or Zero Emissions Auxiliary Engine technology through which a source can idle without emissions.

Emission reductions can also potentially be achieved from mobile sources through a shift from one type of mobile source to another. For example, shifting passenger travel from single occupancy

[3] U.S. EPA. Emission Standards Reference Guide for On-road and Nonroad Vehicles and Engines: https://www.epa.gov/emission-standards-reference-guide

[4] CARB is also developing a new engine standard, Tier 5, for off-road engines. If adopted by CARB, this regulation would require authorization from EPA: https://ww2.arb.ca.gov/our-work/programs/tier5

[5] CARB. Heavy Duty Low NOx Omnibus: https://ww2.arb.ca.gov/our-work/programs/heavy-duty-low-nox, CARB. Advanced Clean Trucks Regulation: https://ww2.arb.ca.gov/rulemaking/2019/advancedcleantrucks

cars with internal combustion engines to zero emission light rail transit can reduce emissions. However, not all mode shifts necessarily reduce emissions. For example, CARB has shown that current truck regulations in California will reduce NOx and PM2.5 emissions so much that transporting goods will be less polluting using trucks than trains.[6] This result could change depending on how quickly trucks or locomotives are turned over to clean technologies.

A. Locomotives

Inbound and outbound trains servicing freight rail yards are powered by several diesel "line haul" locomotives for long-haul or regional transport of cargo to and from freight rail yards. Typically, an inbound or outbound freight train is powered by three or four line haul locomotives, each rated to an average of 4,000 horsepower (hp). Line haul locomotives are also sometimes used at rail yards for on-site movements of railcars in breaking down arriving trains and assembling departing trains.

Switch locomotives are locomotives that generally operate within the freight rail yard boundary and are used for assembling and dis-assembling trains, maintenance, removing empty cars, and other operational needs. These locomotives are powered by smaller diesel engines, each rated to an average of 2,000 hp. Switch locomotives are also available as "Genset" (short for generator sets) locomotives in which typically two or three off-road diesel engines are connected in series to power the switch locomotive.

In diesel-powered locomotives, the engine's output power generated from diesel fuel combustion is converted to electrical energy in an alternator or generator which is then transmitted to electric motors directly connected to the locomotive drive wheels for propulsion. Locomotives operate at discrete power settings or notches which include eight power notches (ranged at settings 1 to 8), corresponding to different speeds, as well as idle and dynamic brake notch settings.

New and remanufactured locomotives are required to certify to the applicable U.S. EPA emission standards. Locomotives are generally identified by Tier levels, including Tier 0, Tier 0+, Tier 1, Tier 1+, Tier 2, Tier 2+, Tier 3, and Tier 4. The U.S. EPA's first set of locomotive emission standards in 1998 applied to newly manufactured and remanufactured locomotives which were originally manufactured in 1973 and later. Tier 0, Tier 1, and Tier 2 emission standards applied to locomotives originally manufactured from 1973 to 2001, 2002 to 2004, and 2005 and later, respectively. In 2008, U.S. EPA adopted more stringent emission standards (Tier 3 and Tier 4) for locomotives as well as more stringent remanufacturing standards for Tier 0, Tier 1, and Tier 2 locomotives (identified by plus signs). Tier 4 locomotives meet the most stringent emission standards which went into effect for locomotives originally manufactured in 2015 and later. There are also few remaining pre-Tier 0 locomotives still in operation which were manufactured prior to 1973 and are not subject to the U.S. EPA's emissions standards.

Locomotive emissions associated with a freight rail yard are calculated based on the difference between activity level in non-zero emission and zero emission configurations, the corresponding emissions factors for locomotives based on locomotive type and Tier levels, and total number of operation days that the locomotive moves through a freight rail yard. For each inbound and outbound train servicing a freight rail yard, the locomotive emissions will depend on the number

[6] CARB. Truck vs. Train Emissions Analysis: https://ww2.arb.ca.gov/resources/fact-sheets/truck-vs-train-emissions-analysis

of line haul locomotives powering the train, locomotives activity level, make-up of train locomotives (tier levels), and associated emission factors.

The primary source of emissions attracted to freight rail yards are those associated with locomotives, which can have a long useful life. As a locomotive ages, the emission of criteria pollutants tends to worsen. In addition, an owner or operator may be averse to turn an older locomotive over into a newer cleaner model due to high upfront costs. Many owners/operators opt instead to remanufacture the engine of the locomotive, which tends to be cheaper. CARB's In-Use Locomotive Regulation includes a "Spending Account" through which the operation of older, dirtier locomotives would be required to pay more charges into an account that can be used by locomotive owners/operators to purchase newer, cleaner locomotives. Besides fleet turnover, minimizing idling and cleaning idling operations are other ways in which locomotives may lower emissions. Engines tend to be at their least efficient operational state when idling, so even when no work is being done, the engine may be generating more emissions per unit of fuel compared to in-transit operations. For this reason, owner/operators may consider zero emission engines specifically for idling time and/or standardized operating procedures to lower the times in which a locomotive may be idling. With respect to turning over to zero emission capable locomotives, they are just beginning to emerge commercially for switcher operations or in combination with diesel line haul locomotives to make a hybrid consist, and recently, hybrid hydrogen fuel cell/battery technology was used to power passenger locomotives.[7] Zero emission technology is anticipated to continue to develop, with multiple ongoing projects.[8]

B. Drayage Trucks

Drayage truck activity associated with the freight rail yard includes trucks carrying full or empty containers and other cargo in and out of freight rail yards or traveling to and from the freight rail yard without a trailer (i.e., to drop off or pick up cargo). The off-site drayage truck emissions are associated with trucks traveling through public roads transporting cargo from off-site points of origin to the freight rail yard and from the freight rail yard to the destination points. The on-site drayage truck emissions are associated with truck idling and truck traveling within the rail yard boundary. The annual emissions for drayage trucks operating at a freight rail yard are calculated based on number of truck trips, miles traveled by the truck, and the emission factor from CARB's EMFAC2021 model. These emission factors are adjusted for CARB's Heavy-Duty Inspection and Maintenance Program and ACF regulations that are not reflected in EMFAC2021. To ensure that drayage trucks have a timely transition to zero emission alternatives, CARB adopted a "useful life" mechanism into their ACF Regulation, so that a truck is not allowed to enter intermodal rail yards

[7] Examples:
Progress Rail – A Caterpillar Company. EMD® Joule Battery Electric Locomotives: https://www.progressrail.com/en/Segments/RollingStock/Locomotives/FreightLocomotives/EMDJoule.html;
Wabtec Corporation. Battery-Electric Locomotive Technology: https://www.wabteccorp.com/locomotive/alternative-fuel-locomotives/FLXdrive;
CARB. Technology Feasibility Assessment for the Proposed In-Use Locomotive Regulation: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appf.pdf; and San Bernardino County Transportation Authority: https://www.gosbcta.com/project/zero-emission-multiple-unit-zemu/.

[8] For example, in 2023, the California State Transportation Agency (CalSTA) awarded grants to the South Coast AQMD for zero emission fuel cell locomotives and infrastructure, and to the Port of Long Beach to implement zero emission battery electric locomotives for port operations: https://calsta.ca.gov/-/media/calsta-media/documents/pfip-awards-summary-narrative-7-6-23-a11y.pdf.

or ports upon surpassing a certain mileage threshold or model year age. Zero emission trucks that can perform drayage service are now commercially available.[9]

C. Transportation Refrigeration Units

Transportation refrigeration units ~~(TRU)~~ are diesel-powered refrigeration units that are installed on trucks, trailers, containers, and railcars operating at freight rail yards. Emissions for a TRU are calculated based on its activity data and operating parameters (i.e., number and type of TRU, engine size, model year, operating hours, and engine load), and corresponding emission factors from CARB's OFFROAD 2021 model (i.e., emission factors, deterioration rates, load factors, fuel correction factors). TRUs differ from other mobile source categories in the sense that they perform relatively consistent operations. Therefore, operational changes are not anticipated to be an effective strategy to reduce emissions. Instead, cleaner TRUs would need to be introduced, including zero emissions technologies (e.g., for TRUs that plug in while parked) or TRUs that could meet a cleaner engine standard. CARB is actively developing a new engine standard for non-truck TRUs that are most common at freight rail yards and is evaluating emerging zero emission TRU technologies.[10]

D. Cargo Handling Equipment

Cargo handling equipment ~~(CHE)~~ refers to the on-site off-road self-propelled vehicle or equipment that is used for lifting or moving containers or bulk or liquid cargo at a freight rail yard; however, some yard trucks may be equipped with on-road engines and may travel short distance offsite. CHE equipment includes, but is not limited to, yard trucks (hostlers), forklifts, gantry cranes, top handlers, side handlers, reach stackers, aerial lifts, loaders, and other container/material handling equipment being used at freight rail yards. CHE can be equipped with diesel, gasoline, or natural gas engines or have zero emission configurations (e.g., electric/battery, hydrogen fuel cell). Diesel CHE are identified by Tier levels (Tier 0 to Tier 4) corresponding to the U.S. EPA's emission standards for new non-road diesel-powered equipment. CARB's 2005 CHE regulation established requirements for in-use and newly purchased diesel-powered CHE at ports and freight rail yards and was fully implemented by 2017. CARB has also adopted new engine emission standards and fleet requirements for large spark-ignited CHE (e.g., gasoline, propane) which have also been fully implemented.

The emissions for CHE operating at freight rail yards are calculated based on the equipment activity data (e.g., count and type of equipment, engine size, model year, annual operating hours, and fuel type) and the corresponding input parameters from CARB's OFFROAD 2021 (i.e., emission factors, deterioration rates, load factors, and fuel correction factors).

Since CHE is a broad category of equipment, some CHE categories already have commercially available zero emission alternatives (e.g., yard trucks, some container lifts)[11], or zero emission

[9] Examples: Global Commercial Vehicle Drive to Zero. Zero-Emission Technology Inventory: https://globaldrivetozero.org/tools/zeti/; California HVIP Clean Truck and Bus Incentives. Tractor: https://californiahvip.org/vehicle-category/heavy-duty/?type=300.

[10] CARB. Zero-Emission Truck TRU Technologies: https://ww2.arb.ca.gov/our-work/programs/transport-refrigeration-unit/compliance-information/zero-emission-truck-tru.

[11] Examples: BYD 8Y Terminal Tractor: https://en.byd.com/truck/terminal-tractor/; Orange EV. Husk-e® Purpose-Built for Port & Rail: https://orangeev.com/huske/; Taylor Machine Works, Inc. Electric Lifts: https://taylorforklifts.com/products/electric-lift-truck.

hybrid options (e.g., rubber-tired gantries).[12] However zero emission technology for some categories is still developing.[13]

E. Other On-Site Support Equipment

Other on-site support equipment ~~(OSE)~~ refers to any other on-site off-road self-propelled vehicle or equipment other than CHE operating at a freight rail yard. OSE include, but are not limited to, railcar movers, and railcar wheel change machines, used at freight rail yards. OSE can be equipped with diesel, gasoline, or natural gas engines or have zero emission configurations (e.g., electric/battery, hydrogen fuel cell). Like diesel CHE, diesel OSE are identified by Tier levels (Tier 0 to Tier 4) corresponding to the U.S. EPA's emission standards for new non-road diesel-powered equipment. Off-road OSE powered by spark-ignition engines (e.g., fueled by propane, gasoline, etc.) are regulated by CARB's Large Spark Ignition regulation, which has already been fully implemented.[14] Off-road OSE powered by diesel engines would be covered by CARB's In-Use Off-Road Diesel regulation that was recently amended.[15]

The annual emissions for OSE operating at freight rail yards are calculated similar to annual emissions for CHE, and based on the equipment activity data (i.e., count and type of equipment, engine size, model year, annual operating hours, fuel type) and the corresponding input parameters from CARB's OFFROAD 2021 (i.e., emission factors, deterioration rates, load factors, fuel correction factors). Similar to CHE, some zero emission technologies are starting to become available for some OSE types (e.g., railcar movers, track maintenance equipment).[16]

Current State Regulations Addressing Freight Rail Yard Emission Sources

There have been various efforts in the past to regulate emission sources that may also be associated with freight rail yard, as illustrated in Figure 2-1. State measures and regulations for drayage trucks, CHE, and TRUs have progressively aimed for a gradual transition to zero emission vehicle fleets and equipment. Development of regulations for drayage trucks began in 2007 which aimed to reduce emissions from drayage trucks used for cargo transportation to and from California intermodal rail yards and ports. These regulatory efforts started with the Statewide Drayage Truck Regulation (2007) which sought to meet or exceed the federal heavy-duty diesel-fueled engine

[12] Examples: MI-JACK Products. EcoCrane: https://mi-jack.com/ecocrane-battery-hybrid-system/; KoneCranes. Rubber-Tired Gantry Cranes: https://www.konecranes.com/en-us/port-equipment-services/container-handling-equipment/rubber-tired-gantry-cranes.

[13] While marine port terminals are not subject to PR 2306, some of the CHE operating at ports can be used at freight rail yards. The most recent technology assessment from the Ports of Los Angeles and Long Beach is here: https://cleanairactionplan.org/download/239/cargo-handling-equipment/5192/2021-cargo-handling-equipment-feasibility-assessment-report-final.pdf

[14] CARB. Large Spark-Ignition Regulation: https://ww2.arb.ca.gov/our-work/programs/truckstop-resources/road-zone/large-spark-ignition-regulation

[15] CARB. In-Use Off-Road Diesel-Fueled Fleets Regulation: https://ww2.arb.ca.gov/our-work/programs/use-road-diesel-fueled-fleets-regulation

[16] Examples: California Core. Railcar Movers and Freight Locomotives: https://californiacore.org/equipment-category/railcar-movers-switchers/?type=110; Jessie Lund, Justin Slosky, Jacob Whitson, Ross McLane. Technology and Market Assessment of Zero-Emission Off-Road Equipment: https://calstart.org/wp-content/uploads/2022/10/off_road_report_october_2022.pdf.

standards[17], followed by CARB's recent ACF Regulation (2023) to ultimately reach 100 percent zero emission for all drayage trucks by 2035. CHE and TRU SIP measures have been established, and regulations have also been adopted and later amended in order to make standards more stringent over time and ultimately facilitate the transition of CHE and TRU to cleaner fleets.

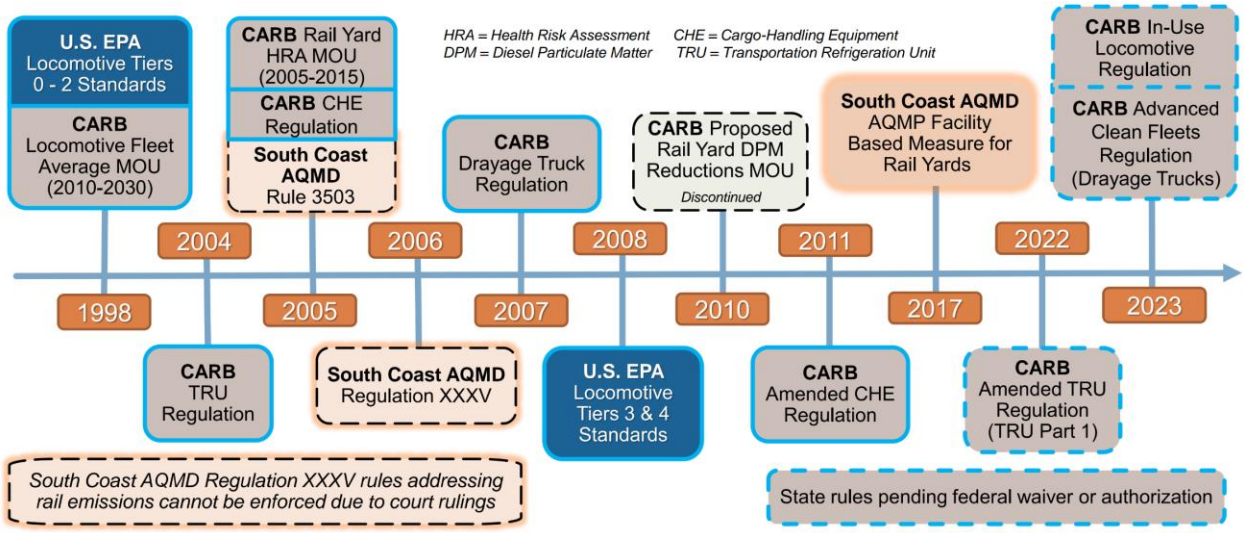


Figure 2-1. Regulatory History for Control of Emissions from Freight Rail Yards

Lately state goals have focused on the need to accelerate the adoption of lower emission technologies, in particular zero emission vehicles (ZEVs) and locomotives capable of operating in zero emission configuration. Two notable examples include CARB's recently adopted In-Use Locomotive Regulation and ACF Regulation. PR_2306 is designed with these two rules in mind and aims to guarantee local emission reductions in freight rail yards at levels that are at least proportional to statewide emission reductions from implementing these state regulations. In addition to the recently adopted state regulations, CARB's 2020 Mobile Source Strategy (MSS),[18] the 2022 State SIP Strategy,[19] and an executive order from the governor aim to accelerate the adoption of zero emission technologies.[20] CARB's MSS is an integrated planning effort designed to meet state goals for criteria pollutants, greenhouse gases, and toxics. One of the key conclusions from this analysis is that a significant portion of the existing mobile source fleet (trucks, cars, off-road equipment, etc.) will need to convert to zero emission technologies quickly to meet multiple state goals, including attainment of federal air quality standards. The 2022 State SIP Strategy further describes mobile source control measures that will be needed to meet federal air quality standards. While some strategies like the In-Use Locomotive and ACF regulations have been

[17] CARB. Regulation to Control Emissions from In-Use On-Road Diesel-Fueled Heavy-Duty Drayage Trucks: https://ww2.arb.ca.gov/sites/default/files/classic/msprog/onroad/porttruck/draftreg.pdf

[18] CARB. 2020 Mobile Source Strategy: https://ww2.arb.ca.gov/resources/documents/2020-mobile-source-strategy

[19] CARB. 2022 State Strategy for the State Implementation Plan (2022 State SIP Strategy): https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy

[20] State of California. Executive Order N-79-20: https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf

adopted by CARB, other strategies are still undefined and rely on as-yet unspecified "accelerated turnover to zero emission technologies" for specific emissions sources, including some associated with freight rail yards such as railcar TRUs and CHE. Further, in September 2020, the governor of California signed an executive order directing state agencies to pursue zero emission goals for mobile sources. This includes a goal of a 100 percent zero emission truck fleet by 2045, a 100 percent zero emission drayage truck fleet (e.g., trucks that visit ports and rail yards) by 2035, and 100 percent zero emission off-road equipment operations by 2035.

Locomotives

The In-Use Locomotive Regulation was adopted by CARB in April 2023, with the final version approved through the Office of Administrative Law in October 2023.[21] This rule aims to reduce rail emissions in California by establishing a spending account for each locomotive operator as well as placing useful life limits on in-use locomotives. The spending account would require each locomotive operator to deposit funds annually based on the NOx and PM levels of the locomotive engines being operated in California. Between the years 2026 and 2029, funds in the spending account may only be used to purchase locomotives that meet Tier 4 emission standards or cleaner. From the year 2030 and beyond, the spending account funds may only be used to purchase zero emission capable locomotives. Funds may also be used for zero emission railcar movers, zero emission infrastructure, and pilot and demonstration projects. Beginning January 1, 2030, only locomotives less than 23 years of age may operate within the state unless operated in zero emission configuration or meeting the cleanest federal emission standards. Also starting on January 1, 2030, all new passenger, switch, and industrial locomotives with original engine build dates of 2030 or later must operate in zero emission configuration in California. Another operational requirement begins January 1, 2035, which will require all line haul locomotives with an engine build date of 2035 or later to operate in zero emission configuration when operating within the state. Lastly, the rule imposes an idling limit of 30 minutes, unless exempted, for locomotives equipped with automatic shutoff devices. There are no specific requirements in the In-Use Locomotive Regulation that apply to South Coast AQMD. As of the date of this report, the U.S. EPA has not approved the authorization request for this regulation, and CARB is not enforcing it.

There are a variety of additional flexibilities built into the In-Use Locomotive Regulation besides those described above. These include an Alternative Compliance Plan option which allows locomotive operators to reduce emissions through other strategies than described above, an Alternative Fleet Milestone Option which allows locomotive operators to reduce emissions by committing to alternative operational milestones, and Compliance Extensions for situations like delays in infrastructure installation. The result of these flexibilities is that the exact level of emission reductions in South Coast AQMD is uncertain. Locomotive operators can comply in a variety of ways, with differing results in emission reductions.

The In-Use Locomotive Regulation is the first state-level regulatory action in the U.S. Prior state efforts in reducing rail emissions relied on contractual agreements with railroads. The 1998 MOU focuses on locomotive fleet-wide average emission to meet Tier 2 emission levels or better for the Basin from 2010 through 2030. This agreement remains in effect today (see Box 2-1 for the 2020

[21] CARB. In-Use Locomotive Regulation: https://ww2.arb.ca.gov/rulemaking/2022/locomotive

Box 2-1. Locomotive Fleet Composition and Average Emission Rates

While individual Class 1 railroads operate across multiple states, the emissions profiles are not uniform. Emission levels vary by railroad and geographically. As shown in the table below, in 2020 the nationwide average locomotive tier level for all seven Class 1 railroads differs from the tier level reported by both UP and BNSF in the South Coast Air Basin.

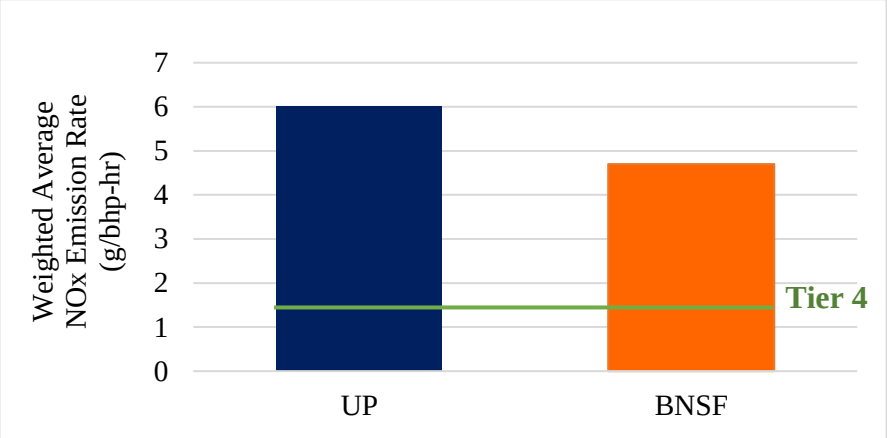
Class 1 Railroad Locomotive Fleet Composition by Tier Level for 2020

Locomotive Tier	Nationwide	South Coast Air Basin*	
	All Class 1 Railroads	UP	BNSF
Not Classified	2%	0%	6%
Tier 0/0+	19%	13%	1%
Tier 1/1+	27%	34%	25%
Tier 2/2+	28%	29%	35%
Tier 3	18%	19%	26%
Tier 4	7%	5%	6%
Total Count of Locomotives	***16,787***	***4,602***	***4,927***

* May not sum due to rounding

Further, even within the South Coast Air Basin, the fleet average emission rates can vary significantly between UP and BNSF. However, both railroad fleets' average emission rates were 3-5 times higher than the cleanest federal Tier 4 standard of 1.3 g/bhp-hr.

Average Locomotive Emission Rate in South Coast Air Basin in 2020



Data Sources:
CARB. Reports from 1998 Locomotive NOx Fleet Average Emissions Agreement in the South Coast Air Basin (1998 MOU) https://ww2.arb.ca.gov/resources/documents/rail-emission-reduction-agreements
U.S. EPA. 2020 National Emissions Inventory Locomotive Methodology (using information from Association of American Railroads) https://gaftp.epa.gov/air/nei/2020/doc/supporting_data/nonpoint/Rail/2020_NEI_Rail_062722.pdf

compliance summary).[22] The 2005 Statewide Railyard Agreement was completed in 2015 and included a statewide idle reduction program, maximized the use of ultra-low sulfur diesel fuel,

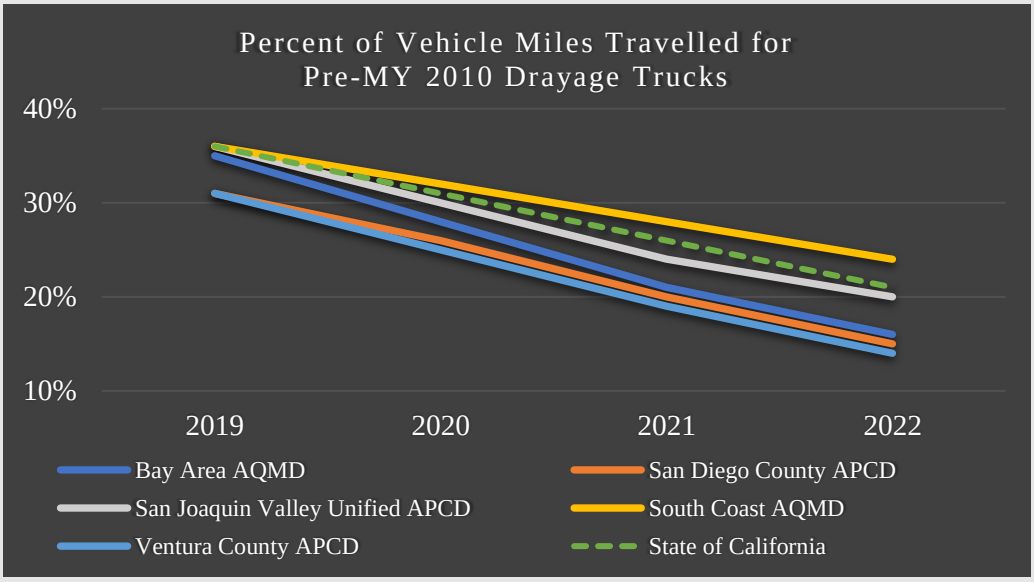
established a statewide visible emissions reduction and repair program, as well as the preparation of emission inventories and health risk assessments for 17 major rail yards across the state.

Drayage Trucks

CARB adopted its ACF Regulation in April 2023, and the final version of the rule was approved by the Office of Administrative Law in October 2023.[23] This regulation phases in zero emission vehicle requirements for state and local government fleets, drayage trucks, and high priority and federal fleets. The regulation also requires medium-duty and heavy-duty vehicle sales in California to become fully zero emission (i.e., 100 percent) starting in 2036. The ACF Regulation establishes the requirement for all drayage trucks to be registered in CARB's reporting system. Legacy trucks, which are non-zero emission drayage trucks with a 2010 or newer engine model year, that are registered prior to 2024 will be able to remain in service until the engine age exceeds 13 years or its mileage exceeds 800,000 miles with a maximum of 18 years from the truck engine certification

Box 2-2. Uneven Outcome from Statewide Truck and Bus Regulation Implementation

CARB's Truck and Bus Regulation required virtually all trucks to transition to model year (MY) 2010 and newer engine technology by 2023, including for drayage trucks. The MY 2010 or newer trucks use the selective catalytic reduction (SCR) technology which significantly lower NOx emissions when compared to earlier model years. The turnover of the state's truck fleet did not necessarily happen evenly across the state. Data retrieved through CARB's EMFAC2021 model shows a higher proportion of vehicle miles travelled by older drayage trucks in South Coast AQMD relative to various other air districts and the rest of the state in the leadup to the complete pre-MY 2010 truck phase-out in 2023. South Coast AQMD experienced a slower decrease in the activity of older drayage trucks (pre-MY 2010) relative to other air districts. There was no requirement to ensure that drayage trucks were turned over to MY 2010 or newer equally across the state in CARB's Truck and Bus Regulation, or in any other program at the time.



[22] CARB. Rail Emission Reduction Agreements: https://ww2.arb.ca.gov/resources/documents/rail-emission-reduction-agreements

[23] CARB. Proposed Advanced Clean Fleets Regulation: https://ww2.arb.ca.gov/rulemaking/2022/acf2022

date, whichever is later. Also beginning January 1, 2024, any truck added to drayage service must be zero emission. Additionally, the ACF Regulation requires all drayage trucks entering seaports and intermodal rail yards to be zero emission by 2035. As of the date of this report, the U.S. EPA has not approved the waiver and authorization requests from CARB for ACF, and CARB is not enforcing it.

Similar to the flexibilities described above for the In-Use Locomotive Regulation, the drayage component of ACF includes flexibilities for drayage fleet owners. This includes compliance extensions such as for infrastructure delays, or vehicle delivery delays. Further, the state drayage registry includes more than 140,000 trucks, however less than 34,000 are being used at ports and rail yards.[24] This excess number of drayage trucks provides flexibility in conducting drayage operations with non-zero emissions trucks, even while drayage operators remain compliant with CARB's regulation. ACF also does not include any specific requirements for drayage operations in South Coast AQMD. Box 2-2 provides an example of how past implementation of statewide regulation has led to an uneven outcome across the state.

Transportation Refrigeration Units

CARB's 2022 revisions to the Airborne Toxic Control Measures (ATCM) for In-Use Diesel-Fueled Transport Refrigeration Units (Part 1 regulation) set forth zero emission mandates for truck TRUs, with a stipulation that by December 31, 2029, all truck TRUs in California must operate with zero level of emissions. Truck TRUs typically do not visit freight rail yards. Additionally, starting in 2023, newer model trailer, container, and railcar TRUs, along with TRU generator sets, are required to adhere to a PM emission standard of 0.02 grams per brake horsepower-hour. As of the date of this report, the U.S. EPA has not approved the authorization request from CARB for the TRU Part 1 Regulation, and CARB is not enforcing it.

The 2022 State SIP strategy included a control measure to introduce zero emission requirements for non-truck TRUs, such as trailer TRUs, domestic container TRUs, railcar TRUs, and TRU generator sets. To implement this strategy, CARB has recently initiated rulemaking for the Part 2 amendments to the TRU ATCM.[25]

Cargo Handling Equipment

CARB's current CHE Regulation was adopted in 2005 and was fully implemented in 2017. The 2022 State SIP Strategy for CHE will establish requirements for transitioning CHE to zero emission. Under this strategy, all yard trucks and forklifts are expected to be zero emission by 2030; rubber-tired gantry cranes will be zero emission by 2032; and 90% of other CHE would be zero emission by 2036. As of the date of this report, rulemaking has not been initiated for this strategy.

Zero Emissions Infrastructure Needs

As described in the previous section, many recently adopted and upcoming regulations from CARB make significant strides towards deploying zero emissions mobile sources across many

[24] CARB. Advanced Clean Fleets Regulation – Drayage Truck Requirements: https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-fleets-regulation-drayage-truck-requirements https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-fleets-regulation-drayage-truck-requirements#:~:text=As%20of%20December%202022%2C%20there,out%20of%20state%20drayage%20trucks

[25] See: https://ww2.arb.ca.gov/our-work/programs/transport-refrigeration-unit/tru-meetings-workshops.

sectors. One of the key challenges that is emerging with deploying zero emissions equipment and vehicles is the need to develop charging and fueling infrastructure. The scale of this challenge is illustrated when looking at what is occurring for on-road vehicles. Based on analysis by the state Energy Commission, by 2030 the state will need about 115,000 chargers by 2030 and more than 260,000 chargers by 2035 just to support medium and heavy duty on-road vehicles.[26] When including light-duty vehicles, the need jumps to more than 2.1 million chargers. In comparison, today there are only about 94,000 chargers across the state.[27]

This type of comprehensive analysis has not been completed yet for off-road vehicles; however, the scale of the challenge is expected to be similar. As an example, if in the future a freight rail yard were to charge 150 pieces of electric CHE at the same time using 100 kW chargers, they would need 15 MW of power at that site. If they were to add in charging for 5 switch locomotives at 1 MW each, the need could jump to 20 MW. Existing freight rail yards typically do not have this much power available on their local circuit and may only currently use about 1 MW. The state Energy Commission has developed web-based mapping tool (EDGE) to evaluate the local electrical grid capacity at the neighborhood level.[28] This EDGE tool reveals that the local grid capacity varies widely between freight rail yards. In one case for two freight rail yards near each other that are operated by two different railroads, the area around one rail yard only has less than 0.1 MW of available circuit capacity, while the area around the nearby rail yard has about 6 MW of available circuit capacity. In both cases, significant upgrades would be needed to the surrounding grid to supply the 20 MW of power in the example described above. More comprehensively, the Energy Commission determined that 89% of areas throughout the state do not have enough capacity for a single 10 MW upgrade using existing infrastructure.[29]

Electric utilities have stated that early planning is critical to develop this infrastructure for a site, and large projects can take more than five years to build out, although the specifics of any one particular site will vary. Hydrogen fueling infrastructure for mobile source fueling is not expected to be built through utility infrastructure, so the timelines may be somewhat less than for electrical upgrades. Regardless of fuel type, the scale of infrastructure development necessitates comprehensive planning to ensure the infrastructure is available when zero emission vehicles are first delivered for use.

Both owners and operators of freight rail yards are expected to have a role in planning for zero emissions infrastructure buildout given their shared interest in the physical layout and improvement of a facility. A general template for zero emissions planning for all freight rail yards is not expected to be a reasonable solution as specific site details are critical to developing a zero-emissions infrastructure plan. Details include evaluating how many locomotives, as well as pieces of CHE, OSE, and TRUs would need to be fueled or charged, at what rate, at which locations onsite, whether energy storage will also be included to provide redundancy and/or price moderation, what types of chargers or fueling dispensers will be used, etc.

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[26] California Energy Commission. AB 2127 Report: https://efiling.energy.ca.gov/GetDocument.aspx?tn=254869

[27] California Energy Commission . Integrated Energy Policy Report: https://efiling.energy.ca.gov/GetDocument.aspx?tn=254463

[28] California Energy Commission EDGE tool: https://experience.arcgis.com/experience/6aaadc11586447aaaeab2a473947ad07

[29] California Energy Commission. AB 2127 report: https://efiling.energy.ca.gov/GetDocument.aspx?tn=254869

There are no existing requirements for freight rail yard owners or operators to develop comprehensive zero emissions infrastructure plans under any existing regulation or legislation, nor are they required to submit applications on any specific timelines to local utilities to begin the needed grid upgrades. This grid planning is also critical not just for their location, but for the surrounding land uses too, especially given the local circuit constraints described above. Freight rail yards are commonly located in industrial areas, and many of these other businesses will also need to upgrade their electrical service in response to state mandates for zero emissions equipment, vehicles, and potentially building space and water heating. The zero emissions infrastructure needs of a freight rail yard may be substantial relative to its neighbors; absent this analysis or visibility into such analysis, local utilities will not have a comprehensive picture of what an area needs and may not be able to efficiently provide upgrades to everyone.

By including requirements to report on the utilization of any installed and operative zero emission infrastructure, as well as zero emission infrastructure projects under design and development, the reported information will further help inform the planning of future zero-emission energy needs and the infrastructure to supply the energy.

PUBLIC HEALTH AND AIR QUALITY NEEDS

Criteria pollutants, such as ozone and PM2.5 (inclusive of directly emitted diesel particulate matter which is an air toxic), are not only harmful to the environment but also to human health. Regulating NOx emissions, a precursor to ozone and secondarily-formed PM2.5, will lessen the health impacts imposed on affected communities. Certain groups of people, like outdoor workers, children, older adults, and those suffering from lung diseases or certain nutritional deficiencies are most vulnerable to ozone health effects.[30] Short term exposure to ozone can cause breathing problems, reduced lung capacity, increased infection risk, lung inflammation, and immune system changes. Elevated ozone levels are linked to worsened asthma and chronic obstructive pulmonary disease (COPD), respiratory infections, increased school absences, hospital visits, and higher mortality rates. Recent evidence suggests ozone may also affect metabolism, and there is some indication of effects on the cardiovascular and nervous systems, reproduction and development, and mortality, although these findings are less certain.

Studies have found connections between high levels of particulate matter and higher mortality rates, respiratory infections, asthma attacks, COPD exacerbations, and hospital admissions.[31] PM2.5 levels are also associated with cardiovascular and respiratory disease mortality, hospital visits for respiratory issues, school absences, decreased lung function in children, and increased asthma medication use. Long-term exposure to particulate matter is linked to stunted lung function growth in children, increase cardiovascular disease risk, and higher lung cancer mortality rates. The U.S. EPA's recent review confirms that both short-term and long-term exposure to PM2.5 increases cardiovascular risk and mortality.[32] There is also emerging evidence of metabolic, nervous system, and reproductive effects from exposure to PM2.5.

The International Agency for Research on Cancer classified diesel particulate matter as likely carcinogenic to humans in 1989, and in 2012, they confirmed it as causing lung cancer. Similarly,

[30] South Coast AQMD. 2022 Air Quality Management Plan: https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/final-2022-aqmp.pdf
[31] *Ibid.*
[32] U.S. EPA. Integrated Science Assessment (ISA) for Particulate Matter: https://www.epa.gov/isa/integrated-science-assessment-isa-particulate-matter

in 1998 CARB identified diesel particulate matter as a toxic air contaminant that causes cancer and other health effects. South Coast AQMD studies on air toxics, including the Multiple Air Toxics Exposure Study (MATES) V, also identified diesel particulate matter as the largest contributor to overall air toxics cancer risk.[33]

The Basin has some of the worst air quality in the nation with highest levels of ozone and among the highest levels of PM2.5 in the country that exceed federal air quality standards.[34] Attaining air quality standards yields monetized health benefits that are estimated to be about $134.3 billion in present value cumulatively up to the year 2037.[35] Mobile sources associated with goods movement make up about 52 percent of all NOx emissions in the Basin.[36] Trucks are currently the largest source of NOx emissions in the Basin and also one of the largest sources for emissions associated with freight rail yards. The existing state and local regulations may not be sufficient to achieve air quality attainment by either 2031 or 2037 attainment dates in the Basin. Even newly proposed regulations from CARB and U.S. EPA are not guaranteed to meet these air quality standards without the support of additional actions at local scale.

PR 2306 also supports statewide efforts to increase the number of zero emission vehicles and equipment. There are many actions occurring across the State of California to increase the use of zero emission technologies to satisfy many goals, including meeting federal and state air quality standards, reducing toxics and greenhouse gas emissions, encouraging manufacturing of zero emission vehicles and equipment in the state, and reducing dependence on fossil fuels.[37] Air districts are authorized to contribute to such efforts through development of local regulations, such as South Coast AQMD's PR 2306. PR 2306 provides a mechanism to require owners and operators of freight rail yards to report on the planning, development, and utilization of supporting zero emission infrastructure for the anticipated deployment of zero emission vehicles and equipment to comply with or support the implementation of state regulations, and to also meet the broader federal and state decarbonization and zero emission goals. PR2306 is further necessary to ensure that state actions to require cleaner vehicles and equipment will be implemented in the South Coast AQMD region.

[33] South Coast AQMD. MATES V Study: https://www.aqmd.gov/docs/default-source/planning/mates-v/mates-v-final-report-9-24-21.pdf

[34] American Lung Association. Report Card: California: https://www.lung.org/research/sota/city-rankings/states/california

[35] South Coast AQMD. 2022 Air Quality Management Plan – Socioeconomic Report: http://www.aqmd.gov/docs/default-source/clean-air-plans/socioeconomic-analysis/final/aqmp-2022-socioeconomic-report-main-final.pdf

[36] Southern California Association of Governments. Goods Movement Technical Report: https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_goods-movement.pdf?1606001690

[37] Examples: Office of Governor Edmund G. Brown Jr. 2018 ZEV Action Plan Priorities Update: https://static.business.ca.gov/wp-content/uploads/2019/12/2018-ZEV-Action-Plan-Priorities-Update.pdf, State of California. Executive Order N-79-20: https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf, Office of Governor Edmund G. Brown Jr. Executive Order B-16-2012: https://www.ca.gov/archive/gov39/2012/03/23/news17472/index.html, Office of Governor Edmund G. Brown Jr. Governor Brown Takes Action to Increase Zero-Emission Vehicles, Fund New Climate Investments: https://www.ca.gov/archive/gov39/2018/01/26/governor-brown-takes-action-to-increase-zero-emission-vehicles-fund-new-climate-investments/index.html, State of California Executive Department. Executive Order B-55-18 to Achieve Carbon Neutrality: https://www.ca.gov/archive/gov39/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf

BASELINE EMISSIONS INVENTORY OF FREIGHT RAIL YARD

Emission sources at freight rail yards are predominately from diesel powered vehicles and equipment that contribute to NOx emissions and impact the regional ozone and air quality of communities surrounding rail yard and communities along rail corridors. Mobile sources that are attracted to freight rail yards include locomotives, drayage trucks, CHE, TRUs, and OSE. Locomotives are known to be the largest contributors to the NOx emissions associated with freight rail yards. South Coast AQMD staff conducted a baseline emission inventory analysis on applicable freight rail yard emission sources using available data from CARB, including the EMFAC and OFFROAD models as well as data directly obtained from CARB staff. Based on the projected baseline emissions inventory, which do not include the recently adopted state regulations including the In-Use Locomotive Regulation and the ACF Regulation, locomotives account for 84 percent of NOx emissions associated with freight rail yard operations in the South Coast AQMD region in 2024. Drayage trucks come second, accounting for 12 percent in 2024. Other sources of emissions including CHE, TRU, and OSE account for 4 percent in 2024.

Figure 2-2 shows the share of associated mobile sources to freight rail yards based on the projected baseline NOx emissions in 2024 and 2037. Notable changes for the 2037 projected baseline emissions of freight rail yard sources in the South Coast AQMD region include that drayage truck NOx emissions are anticipated to lower to less than half of their projected emissions level in 2024, but locomotive NOx emissions are anticipated to remain almost unchanged, therefore ending up making a larger share out of Basin emissions associated with freight rail yards in 2037.

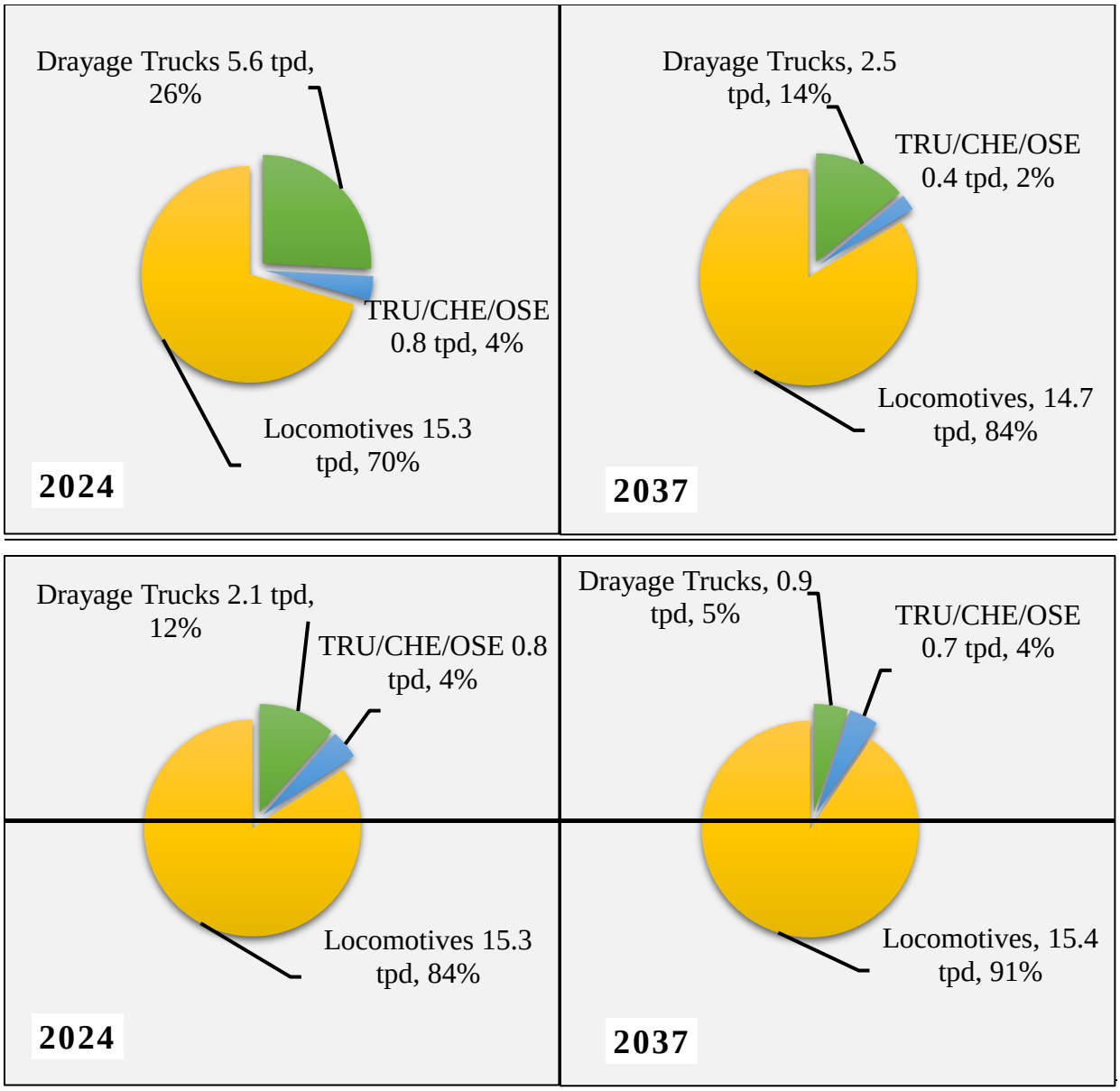


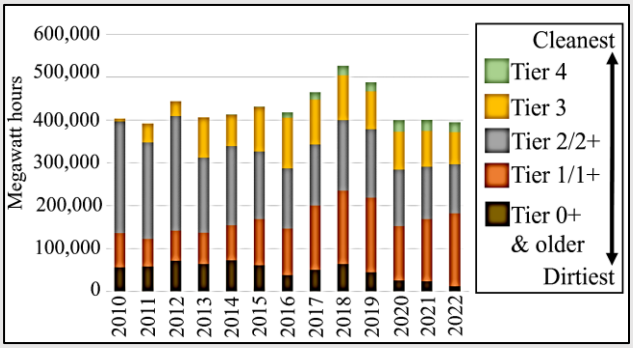
Figure 2-2. South Coast Freight Rail Yard Projected Baseline NOx Emissions in 2024 (Left) and 2037 (Right) by Source Category

The baseline inventory for locomotives is derived from CARB's OFFROAD 2021, using data from 2025 to 2050. CHE pulled from OFFROAD 2021 are those that include "Rail" in their category name. TRU pulled include Instate genset, Out-of-State Genset, and Railcar TRU. Based on CARB's line haul locomotive emission inventory,[38] switcher activity in the Basin accounts for 58 percent of statewide switcher activity and line haul locomotive activity within the Basin accounts for 17 percent of statewide line haul activity. These estimates were used to convert statewide NOx emissions baselines from CARB into a reasonable estimate for specifically the Basin. Box 2-3 provides a more detailed discussion on the locomotives deployed to the Basin for the past decade or so, based on the same historical data the baseline locomotive emission projections rely upon.

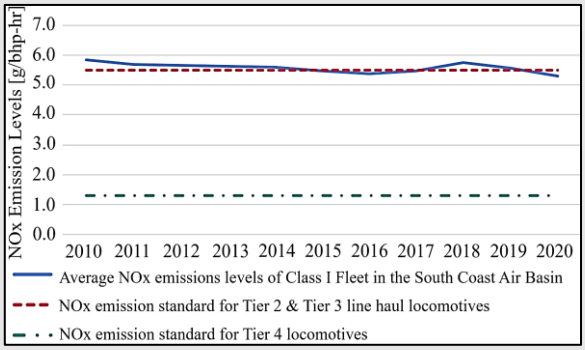
Box 2-3. More Work Done by Dirtier Freight Locomotives Today Than a Decade Ago

Class 1 locomotives deployed to the South Coast AQMD region belong to the nationwide fleets operated by the Union Pacific Railroad and the BNSF Railway, respectively. At the beginning of 2022, UP reported a total of 7,476 owned or leased locomotives in service nationwide, among which 4,554 units had been deployed to the Basin throughout the year; similarly, BNSF reported a total of 5,344 units deployed to the Basin, out of its fleet of 7,548 owned or leased locomotives nationwide.[a,b] Most of locomotives deployed to the Basin are line haul locomotives traveling in and out of the Basin or used for regional switching operations; yet, only about 17 percent of statewide line haul locomotive activities occur in the South Coast AQMD region based on CARB's estimate. Besides lack of investment by Class 1 railroads in newer, cleaner locomotives,[b] the non-captive nature of the Class 1 locomotive fleets is one key factor leading to the South Coast AQMD region seeing significantly more work done (in megawatt-hours) in recent years by the dirtiest locomotives (Tier 1/1+ or dirtier) when compared to a decade ago. (See the left plot below, with the orange and brown bars depicting work done by Tier 1/1+ or dirtier locomotives.)

Despite increasingly more stringent federal locomotive standards, the Basin has not seen cleaner freight locomotive operations in aggregate (see the right plot below, with the solid blue line depicting the annual fleet average NOx emission levels of Class 1 locomotive fleets). Considering the non-captive nature of the locomotive fleet in combination of the design of statewide regulations, proportional implementation of CARB's In-Use Locomotive Regulation may not necessarily occur in South Coast AQMD, as similarly observed for the implementation of CARB's Truck and Bus Regulation (see Box 2-2).



Class 1 Locomotive Fleet Activity by Engine Tier for South Coast Air Basin (2010-2022)[a]



Class 1 Locomotive Fleet Average NOx Emission Levels in the South Coast Air Basin (2010-2020)[c]

[a] CARB Rail Emission Reduction Agreements: https://ww2.arb.ca.gov/resources/documents/rail-emission-reduction-agreements.
[b] Surface Transportation Board. Annual R-1 Reports Submitted by Class 1 Railroads: https://www.stb.gov/reports-data/economic-data/annual-report-financial-data/.
[c] CARB In-Use Locomotive Regulation Initial Statement of Reasons (Figure 14): https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/isor.pdf

For drayage trucks baseline inventory, staff worked directly with CARB staff since the EMFAC 2021 model does not include rail drayage specific emissions category. CARB staff provided statewide emissions projection data[39] reflecting business as usual rail drayage emissions as well as rail drayage emissions with implementation of ACF. Rail drayage emissions are subsets of the statewide drayage emission inventory available in EMFAC 2021, including T7 POLA Class 8 (Ports of Los Angeles and Long Beach), T7 POAK Class 8 (Port of Oakland), T7 Other Ports Class 8 as well as a subset of T7 Tractor Class 8 inventory reflecting rail specific activity. These emissions projections also reflect the statewide Heavy-Duty Vehicle Inspection and Maintenance regulation for drayage trucks. Additional details on the rail drayage emission inventory will be discussed in Chapter 3 of this report.

[38] CARB. 2021 Line-Haul Locomotive Emission Inventory: https://ww2.arb.ca.gov/sites/default/files/2021-02/2021_line_haul_locomotive_emission_inventory_final.pdf

[39] Data obtained from CARB staff via email correspondence from March 1, 2024.

CHAPTER 3 : SUMMARY OF PROPOSALS

INTRODUCTION

PROPOSED RULE 2306

PROPOSED RULE 316.2

INTRODUCTION

PR 2306 works with other state and local regulations, incentive programs, and policies to enhance their effect (e.g., clean air goals and zero emission vehicle goals). PR 2306 also acts as a facilitating measure to achieve emission reductions from these other efforts. Regional reductions in NOx and PM emissions will assist in meeting federal and state air quality standards, and concurrent reductions in diesel particulate matter will also reduce air quality impacts to communities living close to freight rail yards. PR 2306 includes requirements for the operators of regulated freight rail yard to meet an emission reductions target and a corresponding facility-wide emissions reduction based on projected locomotive and truck activity. PR 2306 also requires submittal of an initial facility information report, initial zero emission infrastructure report, milestone compliance report, zero emission infrastructure status update report, as applicable, and includes recordkeeping requirements for supporting documents and data to demonstrate compliance with the proposed rule. Figure 3-1 shows the rule structure for PR 2306 as organized by subdivision and its attachments.

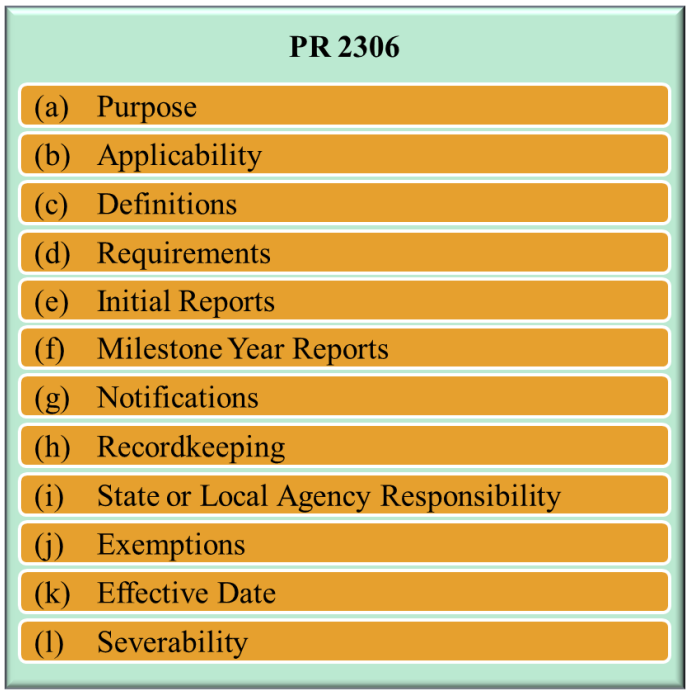


Figure 3-1. Rule Structure – PR 2306

PR 316.2 is the companion rule to PR 2306 and establishes the administrative fees that owners and operators subject to PR 2306 must pay to support South Coast AQMD compliance and implementation activities. PR 316.2 includes provisions to specify due fees for each PR 2306 report and notification, payment due dates, and charges for the returned payments made by checks. Figure 3-2 shows the rule structure for PR 316.2.

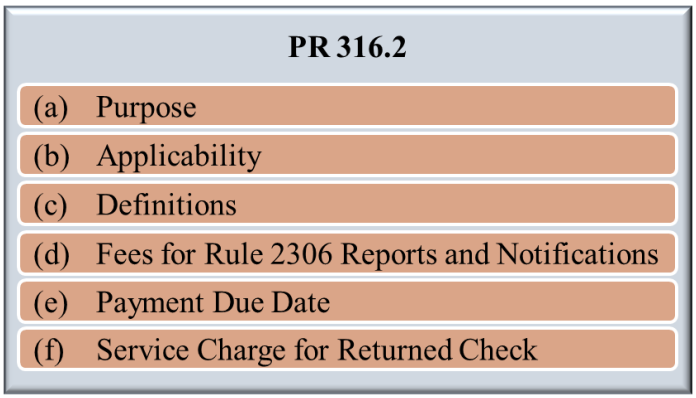


Figure 3-2. Rule Structure – PR 316.2

PROPOSED RULE 2306

Subdivision (a) – Purpose

The purpose of the proposed rule is to reduce local and regional emissions of NOx associated with freight rail yards and the mobile sources attracted to freight rail yards to assist in meeting applicable state and federal air quality standards in the South Coast AQMD jurisdiction. Actions required by PR 2306 serve as a local implementation of CARB's In-Use Locomotive Regulation and ACF Regulation, to ensure local emission reductions and associated benefits are realized within South Coast AQMD.

Subdivision (b) – Applicability

PR 2306 applies to the owner or operator of any new or existing freight rail yard, or a freight rail yard proposed to be established in the future within the South Coast AQMD jurisdiction. Additionally, any ~~state or local government~~ non-federal public agency who enters into a contractual agreement with these freight rail yards would be subject to PR 2306.

Subdivision (c) – Definitions

This subdivision includes definitions for specific terms related to freight rail yards and the corresponding mobile source activities. Some definitions are based on existing South Coast AQMD rules and regulations. Please refer to PR 2306 subdivision (c) for each specific definition.

Proposed Definitions

Below is the list of all proposed definitions under PR 2306:

- Aggregate Emission Factor (AEF)
- Applicable Mobile Sources
- Base Period (BP)
- Cargo Handling Equipment (CHE)
- Classification Yard
- Contractual Agreement
- Drayage Trucks
- Fine Particulate Matter (PM2.5)
- Freight Rail Yard
- Freight Rail Yard Operations

- Freight Rail Yard Operator
- Freight Rail Yard Owner
- Fuel Type
- Intermodal Rail Yard
- Line Haul Locomotive
- Locomotive
- Locomotive Engine Certification Data[40]
- Marine Terminal
- Milestone Year (MY)
- New Freight Rail Yard
- Nitrogen Oxides (NOx)
- Other On-site Support Equipment (OSE)
- Ozone
- Rail Yard
- Railcar
- Railcar Mover
- Railroad
- Rated Power
- Reference Scenario
- Responsible Official
- Shutdown
- Switch Locomotive or Switcher
- Switching Activity
- Through Traffic
- Throughput
- Transport Refrigeration Unit (TRU)
- Truck Trip
- Work Crew
- Zero Emission (ZE) Configuration
- Zero Emission (ZE) Infrastructure

Key Definitions

This section provides an overview and explanation of the key definitions for the terms used in PR 2306.

Paragraph (c)(1) – Aggregate Emission Factor (AEF)

AEF is the average rate of NOx emissions per unit of energy consumed across mobile sources attracted to a specific freight rail yard. It is used by facilities to qualify for the alternative compliance pathway by demonstrating that on average equipment used to conduct freight rail yard activities is no dirtier than during base period. Calculation of this factor is outlined in the document

[40] U.S. EPA 40 CFR Part 1033 - Control of Emissions from Locomotives: https://www.ecfr.gov/current/title-40/part-1033

in PR 2306 package titled as ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix.

Paragraph (c)(2) – Applicable Mobile Sources

Mobile sources of NOx emissions that may be operated at and travel to and from a freight rail yard, including CHE, drayage trucks, line haul locomotives, switch locomotives, TRU, and OSE. This definition does not include mobile sources such as employee vehicles, waste collection trucks, or mail delivery vehicles. Any NOx emissions from these non-applicable mobile sources are expected to be de minimis compared to NOx emissions from applicable mobile sources; moreover, these sources are not integral to day-to-day operations and have little interaction with freight rail yard operations in transporting or assisting in transporting cargo or goods.

Paragraph (c)(3) – Base Period (BP)

Base period for an existing freight rail yard is defined as the first two full calendar years following the end of calendar year when the rule becomes effective. Base period for a new freight rail yard includes the first two full calendar years from the start of operations at such freight rail yard. Facility operations during the base period provide a benchmark to track and compare changes in facility emissions, throughput, and fleet composition over time.

Paragraph (c)(6) – Contractual Agreement

Legally enforceable agreement between two or more parties to establish specified actions that may or may not be taken by either side of the agreement. For the purpose of PR 2306, a contractual agreement can be a written agreement, memorandum of understanding, or other binding agreement related to freight rail yards and their lease, construction, and/or operations. PR 2306 applies to any ~~state or local government~~ non-federal public agency that enters into such contractual agreement with a freight yard owner or operator.

Paragraph (c)(9) – Freight Rail Yard

Any rail yard where switching activities occur or where cargo, which may include empty containers and chassis, are loaded or unloaded from railcars for the transportation to or from a location outside of the rail yard by locomotives operated by the rail yard operator. This includes but is not limited to intermodal rail yards and classification yards. By definition, if a rail yard operator does not operate any locomotive or operates locomotive(s) only within the rail yard property, the facility is not considered a freight rail yard for the purpose of PR 2306. For example, cargo transportation to or from industrial and on-dock rail facilities are typically carried out by locomotives operated by a contracted railroad or a third-party, and not by the facility operator. Moreover, for any locomotive that is operated by such facility operator within the rail yard property, the emission reductions from complying with the In-Use Locomotive Regulation will certainly occur at such rail yard with or without PR 2306, given the captive nature of such locomotive.

A group of rail properties or facilities that are co-located within the vicinity of each other and support the freight rail yard operations and activities by the same operator may be considered as components of one freight rail yard (please refer to the definition of "Rail Yard" for specificities). For any freight rail yard that goes through an expansion of boundaries or operations, which may result in an increase in level of activities, the proposed definition will be applicable to cover such changes and the percent emission reductions targets will apply to any increased level of emissions related to these changes.

Paragraph (c)(10) – Freight Rail Yard Operations

This includes all operations associated with freight rail yards that might be conducted by the operator, its contractor, a subsidiary of the operator, or a sibling company of the operator. These operations include but are not limited to switching activities, movement of cargo, fueling and maintenance repairs, and other operations by a freight rail yard operator.

Paragraph (c)(11) – Freight Rail Yard Operator

A freight rail yard operator is a railroad that is the entity, controls the entity, or is under common control with the entity who conducts day-to-day business operations. Such entity might use their own employees and/or hire contractor(s) to conduct day-to-day freight rail yard operations.

Paragraph (c)(12) – Freight Rail Yard Owner

The legal, beneficial, and/or equitable owner or group of owners of a freight rail yard. Among the known freight rail yards that are potentially subject to the rule (see Table 4-1 for the list), the freight rail yard operator often also owns the freight rail yard.

Paragraph (c)(14) – Intermodal Rail Yard

Any freight rail yard where cargo transportation involves two or more different modes of transportation. Operations at the intermodal rail yards that are potentially subject to the rule often involve loading, unloading, moving, and transferring cargo between railcars and trucks.

Paragraph (c)(19) – Milestone Year (MY)

Milestone year refers to every three calendar years starting after the calendar year that PR 2306 becomes effective. For example, if the rule becomes effective in 2027, the first milestone year would occur in 2030, the second milestone year would be 2033, the next milestone year would occur in 2036, and so on.

Paragraph (c)(20) – New Freight Rail Yard

New freight rail yard is any freight rail yard that begins operations or resumes operations after stopping operations for a year or longer, on or after the date that the rule becomes effective.

Paragraph (c)(24) – Rail Yard

Rail yard consists of one or more physical properties, such as a facility, structure, installation, or real property where railroad operations and associated railroad activities occur. For a rail yard that includes several properties, such properties may be in physical contact with each other, or separated by a roadway or other right-of-way, but are not a part of the main lines, branch lines, or other rail tracks that are used by the passing trains. An individual rail yard is owned or operated by the same entity or by entities under common control. A rail yard has one or more Work Crews assigned to conduct all day-to-day business operations associated with freight rail yards.

Paragraph (c)(29) – Reference Scenario

Reference scenario refers to a scenario to estimate emissions of a freight rail yard in any milestone year without the implementation of ACF Regulation, In-Use Locomotive Regulation, and PR 2306.

Paragraph (c)(33) – Switching Activity

One of the key characteristics of a freight rail yard is to perform switching activities. Switching activity refers to activities performed by a switch locomotive, a line haul locomotive, or a railcar mover to perform operations at the freight rail yard. These activities include classifying railcars based on cargo or destination, assembling railcars for train movement, repositioning railcars, placing locomotives and railcars in storage or to be repaired, or moving rail equipment for work service. The frequency of which switching activities occur is a factor to determine overall activity within a freight rail yard.

Paragraph (c)(34) – Through Traffic

Through traffic under PR 2306 is defined as continuous movement of a train that passes through and does not come to a complete stop at a freight rail yard (except for safety or emergency considerations). Rail tracks used by through traffic are not considered as part of a freight rail yard, and emissions associated with through traffic are not included as freight rail yard emissions for the purpose of PR 2306.

Paragraph (c)(35) – Throughput

Freight rail yard throughput is defined as the total number of visits made per railcar to a freight rail yard over a specific period of time. A railcar entering a freight rail yard and then leaving that yard counts as one visit.

Paragraph (c)(39) – Zero Emission (ZE) Configuration

Zero emission configuration is an operational mode for locomotives, drayage trucks, TRU, CHE, and OSE with no direct release of emissions of criteria pollutants, precursor pollutants to a criteria pollutant, or toxic air contaminants during all points of operation from any onboard source of power at any power setting. The power sources of any locomotive, vehicle, or equipment may include propulsion power and grid power. Under zero emission configuration, the corresponding locomotive, vehicle, or equipment may utilize an alternative fuel source, such as hydrogen fuel cell or battery-electric, instead of an applicable traditional fossil fuel to provide power.

Paragraph (c)(40) – Zero Emission (ZE) Infrastructure

Zero emission infrastructure refers to any currently operating, planned, developing, and future on-site or off-site infrastructure that provides the appropriate fuel type or power needed at a freight rail yard for operations of CHE, drayage trucks, locomotives, TRU, or OSE in zero emission configuration in support of freight rail yard compliance with PR 2306. Applicable facilities shall periodically report on the status and progress of zero emission infrastructure development as outlined in subdivisions (e) and (f).

Subdivision (d) – Requirements

Subdivision (d) establishes key requirements for freight rail yards subject to PR 2306, including, but not limited to, compliance with established emission reductions targets, compliance reporting requirements, and reporting on any implementation and development of zero emission infrastructure to ensure sufficient capacity for zero emission technology.

Paragraph (d)(1) – Emission Reductions Targets

Paragraph (d)(1) includes the requirements for freight rail yard operators to meet or exceed the emission reductions targets for each milestone year for each of the freight rail yards they operate.

Subparagraph (d)(1)(A) – Percent NOx Emission Reductions Targets

The operator is required to comply with emission reductions targets as specified in PR 2306 Table 1 – Emission Reductions Targets (PR 2306 Table 1). These percentage emission reductions targets are calculated using statewide baseline emissions for freight locomotives and drayage trucks, excluding the impact of CARB's In-Use Locomotive and ACF regulations, compared to the total anticipated emissions from these same emissions sources after the projected implementation of these two CARB regulations. These percent emission reductions are based on anticipated compliance scenarios presented in CARB regulatory documentation and used in PR 2306 Table 1.

Staff derived data for the emission reductions that are projected to be a direct consequence of In-Use Locomotive Regulation from the In-Use Locomotive Regulation Appendix G Table 5. Locomotive Fleet turnover projections for the In-Use Locomotive Regulation are listed in Table 3-1 for line haul locomotives and Table 3-2 for switch locomotives, which are based on percent of total work done (in MWhr).[41]

[41] Figure 7 in Appendix G of CARB's 2022 In-Use Locomotive Emission Inventory: Regulation Proposal and Scenarios. Available at: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appg.pdf

Table 3-1. Statewide Line Haul Locomotive Fleet Composition Projections

Calendar Year	Share of Statewide Line Haul Locomotive Fleet by Engine Tier (%)									
	PRE-TIER 0	TIER 0	TIER 0+	TIER 1	TIER 1+	TIER 2	TIER 2+	TIER 3	TIER 4	ZE*
2027	0.0	1.0	2.1	0.0	27.5	1.7	31.3	19.9	16.4	-
2028	0.0	0.7	1.7	0.0	26.0	1.5	30.2	19.4	20.4	-
2029	0.0	0.5	1.7	0.0	24.5	1.2	28.9	18.9	24.3	-
2030	-	-	-	-	-	0.2	13.6	21.4	64.8	-
2031	-	-	-	-	-	0.1	7.0	21.9	71.0	-
2032	-	-	-	-	-	0.0	4.7	22.1	73.2	-
2033	-	-	-	-	-	0.0	2.3	22.3	75.4	-
2034	-	-	-	-	-	-	-	22.8	77.2	-
2035	-	-	-	-	-	-	-	12.6	75.5	11.9
2036	-	-	-	-	-	-	-	6.6	73.9	19.5
2037	-	-	-	-	-	-	-	-	72.3	27.7
2038	-	-	-	-	-	-	-	-	70.5	29.5
2039	-	-	-	-	-	-	-	-	67.0	33.0
2040	-	-	-	-	-	-	-	-	64.8	35.2
2041	-	-	-	-	-	-	-	-	63.0	37.0
2042	-	-	-	-	-	-	-	-	61.5	38.5
2043	-	-	-	-	-	-	-	-	59.9	40.1
2044	-	-	-	-	-	-	-	-	58.4	41.6
2045	-	-	-	-	-	-	-	-	57.0	43.0
2046	-	-	-	-	-	-	-	-	55.5	44.5
2047	-	-	-	-	-	-	-	-	55.2	44.8
2048	-	-	-	-	-	-	-	-	52.0	48.0
2049	-	-	-	-	-	-	-	-	48.3	51.7
2050	-	-	-	-	-	-	-	-	44.6	55.4

(Rounded to the first decimal place)

* As defined in the CARB In-Use Locomotive Regulation, ZE locomotives includes ZE capable Locomotives which are demonstrated to operate only in ZE configuration while in California, and ZE locomotives which always operates in a ZE configuration. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/fro2.pdf

Table 3-2. Statewide Switch Locomotive Fleet Composition Projections

Calendar Year	Percent of Statewide Switch Locomotive Fleet by Engine Tier (%)										
	PRE-TIER 0	TIER 0	TIER 0+	TIER 1	TIER 1+	TIER 2	TIER 2+	TIER 3	TIER 4	TIER 5	ZE*
2027	-	20.1	49.2	-	-	13.8	-	2.9	14.0	-	-
2028	-	15.1	49.2	-	-	13.8	-	2.9	19.0	-	-
2029	-	10.4	49.2	-	-	13.8	-	2.9	23.7	-	-
2030	-	-	-	-	-	13.3	-	2.9	23.7	-	60.1
2031	-	-	-	-	-	-	-	2.5	23.7	-	73.8
2032	-	-	-	-	-	-	-	2.3	23.7	-	73.9
2033	-	-	-	-	-	-	-	2.2	23.7	-	74.1
2034	-	-	-	-	-	-	-	2.0	23.7	-	74.3
2035	-	-	-	-	-	-	-	1.8	23.7	-	74.4
2036	-	-	-	-	-	-	-	1.7	23.7	-	74.6
2037	-	-	-	-	-	-	-	1.3	23.7	-	74.9
2038	-	-	-	-	-	-	-	-	23.7	-	76.3
2039	-	-	-	-	-	-	-	-	23.7	-	76.3
2040	-	-	-	-	-	-	-	-	21.6	-	78.4
2041	-	-	-	-	-	-	-	-	21.6	-	78.4
2042	-	-	-	-	-	-	-	-	21.6	-	78.4
2043	-	-	-	-	-	-	-	-	21.6	-	78.4
2044	-	-	-	-	-	-	-	-	21.6	-	78.4
2045	-	-	-	-	-	-	-	-	21.6	-	78.4
2046	-	-	-	-	-	-	-	-	21.6	-	78.4
2047	-	-	-	-	-	-	-	-	21.6	-	78.4
2048	-	-	-	-	-	-	-	-	21.6	-	78.4
2049	-	-	-	-	-	-	-	-	20.3	-	79.7
2050	-	-	-	-	-	-	-	-	14.9	-	85.1

(Rounded to the first decimal place)

* As defined in the CARB In-Use Locomotive Regulation, ZE locomotives includes ZE capable Locomotives which are demonstrated to operate only in ZE configuration while in California, and ZE locomotives which always operates in a ZE configuration. https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/fro2.pdf

For drayage trucks baseline inventory, staff worked directly with CARB staff to refine emissions inventory for rail yard drayage from the EMFAC 2021 model (note: the same truck may perform drayage operations associated with both rail yards and ports). CARB provided rail yard specific data for NOx, PM2.5, PM10, and CO emissions from T7 Other Port Class 8, T7 POAK Class 8, T7 POLA Class 8, and Rail Drayage trucks across the state. The data provided by CARB also included both emissions projections and population/fleet turnover assumptions under the ACF Regulation. See Table 3-3 for more detail.

Table 3-3. Statewide Drayage Truck Fleet Composition Projections Under the CARB ACF Regulation

Calendar Year	Share of Statewide Drayage Truck Fleet by Fuel Type (%)*		
	Electricity	Diesel	Natural Gas
2027	28.2	71.1	0.7
2028	39.2	60.1	0.7
2029	50.0	49.4	0.6
2030	64.4	35.0	0.5
2031	76.6	22.9	0.4
2032	86.0	13.5	0.4
2033	88.9	10.8	0.4
2034	92.3	7.5	0.2
2035 and after	100.0	0.0	0.0

* Rounded to the first decimal place

Staff summed the baseline NOx emissions from both locomotives and drayage trucks for each calendar year (i.e., emissions before implementation of In-Use Locomotive and ACF regulations), and separately for the projected NOx emissions for locomotives and trucks after implementation of CARB regulations. The difference between baseline and projected emissions provides an estimate of the statewide projected NOx emission reductions from both In-Use Locomotive and ACF regulations each year. The default emission reductions targets specified in PR 2306 Table 1 are the percent reductions of total statewide projected NOx emissions with state regulations, compared to the total statewide baseline NOx emissions, from both locomotives and drayage trucks for each calendar year. Table 3-4 replicates PR 2306 Table 1 and lists emission reductions targets for any milestone year up to 2050 to be achieved by any freight rail yard that is applicable to PR 2306.

Table 3-4. PR 2306 Emission Reductions Targets

Calendar Year	Percent Emission Reductions Targets (%)
2027	9.2
2028	13.6
2029	16.9
2030	56.5
2031	61.0
2032	61.7
2033	62.3
2034	62.2
2035	71.6
2036	76.3
2037	82.4
2038	81.8
2039	81.3
2040	80.7
2041	80.0
2042	79.0
2043	77.8
2044	76.4
2045	76.0
2046	75.6
2047	74.6
2048	74.9
2049	75.7
2050	76.5

Table 3-5 includes the anticipated emission reductions within South Coast AQMD from PR 2306, in conjunction with implementation of the In-Use Locomotive and ACF regulations. As discussed earlier in Chapter 2, the two CARB regulations do not necessarily ensure uniform implementation across the state, so South Coast AQMD may not necessarily see the level of emission reductions that would result from proportional implementation of these rules. By setting emission reductions targets at the proportional level to CARB regulations, PR 2306 will ensure proportional or more-than-proportional emission reductions occur at each freight rail yard within the South Coast AQMD region. The "Total Baseline Emissions" values are estimated NOx emissions in South Coast AQMD without PR 2306, In-Use Locomotive, and ACF regulations. The "Total Controlled Emissions" are the projected NOx emissions in South Coast AQMD following the implementation

of PR 2306, In-Use Locomotive and ACF regulations. Values listed under "Emission Reductions" are the difference between "Total Baseline Emissions" and "Total Controlled Emissions" values, which shows the anticipated NOx emission reductions from implementation of PR 2306, In-Use Locomotive and ACF regulations.

Table 3-5. Anticipated NOx Emission Reductions (tpd)*

Year	Total Baseline Emissions	Total Controlled Emissions	Emission Reductions
2027	20.920.1	19.018.3	1.8
2028	20.920.1	18.117.4	2.7
2029	21.020.3	17.616.9	3.4
2030	21.020.2	9.58.8	11.4
2031	20.920.2	8.67.9	12.3
2032	20.720.0	8.37.7	12.3
2033	20.319.8	7.97.5	12.3
2034	19.919.4	7.87.3	12.1
2035	19.519.0	5.95.4	13.6
2036	18.618.2	4.84.3	13.9
2037	17.717.2	3.53.0	14.2
2038	17.116.7	3.53.0	13.6
2039	16.416.0	3.43.0	13.0
2040	15.915.4	3.43.0	12.5
2041	15.415.0	3.53.0	12.0
2042	14.914.5	3.53.0	11.4
2043	14.413.9	3.63.1	10.8
2044	13.813.3	3.63.1	10.2
2045	13.613.1	3.73.2	10.0
2046	13.513.0	3.73.2	9.8
2047	13.312.8	3.73.3	9.6
2048	13.212.7	3.73.2	9.5
2049	13.012.5	3.53.0	9.5
2050	12.812.3	3.42.9	9.4

* Rounded to the first decimal place

To estimate NOx emission reductions from freight locomotives, staff reviewed CARB's 2021 statewide locomotives emission inventory.[42] CARB estimates that 58 percent of statewide switch

[42] CARB. 2021 Line-Haul Locomotive Emission Inventory: https://ww2.arb.ca.gov/sites/default/files/2021-02/2021_line_haul_locomotive_emission_inventory_final.pdf

locomotives activity and 17 percent of statewide line haul locomotives activity take place within South Coast AQMD. Both CARB's OFFROAD 2021 and Appendix G of In-Use Locomotive Regulation separate their emissions calculations between switch and line haul locomotives.

To estimate NOx emission reductions from drayage trucks, staff reached out to CARB staff to refine rail yard specific emission inventory used in Appendix F of the ACF Regulation.[43] Data obtained from CARB staff reflected business-as-usual rail drayage emissions as well as rail drayage emissions with implementation of ACF Regulation. Rail drayage emissions are subsets of the statewide truck emission inventory available in EMFAC 2021, including T7 POLA Class 8, T7 POAK Class 8, T7 Other Ports Class 8 as well as a subset of T7 Tractor Class 8 inventory reflecting rail specific activity. CARB staff did not have disaggregated data for rail activity specific to South Coast AQMD jurisdiction. To apportion ACF emission reductions from South Coast AQMD, staff made the following assumptions: 1) T7 POLA Class 8 represents the majority of port drayage activity in South Coast AQMD; 2) T7 POAK Class 8 and T7 Other Ports Class 8 make up the majority of drayage activity outside of South Coast AQMD; and 3) Rail specific drayage inventory are proportionate to drayage activities of the aforementioned port inventories. Staff applied a fraction based on the proportions of the various port drayage inventories to the statewide rail drayage inventories for each calendar year to determine South Coast AQMD reductions from the ACF Regulation.

Figure 3-3 presents the Basin-wide NOx baseline emissions forecast (shown in grey bars), which reflects NOx emissions without the implementation of PR 2306, In-Use Locomotive and ACF regulations, along with the anticipated controlled emissions forecast for drayage trucks and locomotives reflecting the implementation of said regulations (shown in blue bars). It can be seen from the following figure that the NOx emissions are anticipated to decrease much faster and at a much larger magnitude compared to the baseline scenario. Steady emission reductions can be seen throughout the analyzed implementation period up to year 2050, with noticeable drops between the years 2029 to 2030 and 2034 to 2035. The drop between years 2029 and 2030 can be attributed to the CARB In-Use Locomotive Regulation requiring all switch locomotives to operate only in ZE configuration when in California, and the projected shift of in-use line haul locomotives to Tier 4 emission control technologies due to the implementation of a 23-year useful life limit. The second noticeable drop between the years 2034 to 2035 can be attributed to the implementation of ZE operation requirements for line haul locomotives from the In-Use Locomotive Regulation and full implementation of the ACF Regulation. Implementation of PR 2306 will ensure emission reductions of proportionate scale will be achieved at levels equivalent to proportional implementation of the two statewide regulations for all freight rail yards within the South Coast AQMD region.

[43] CARB. Advanced Clean Fleets Regulation – Emissions Inventory and Results (Appendix F): https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/appf.pdf

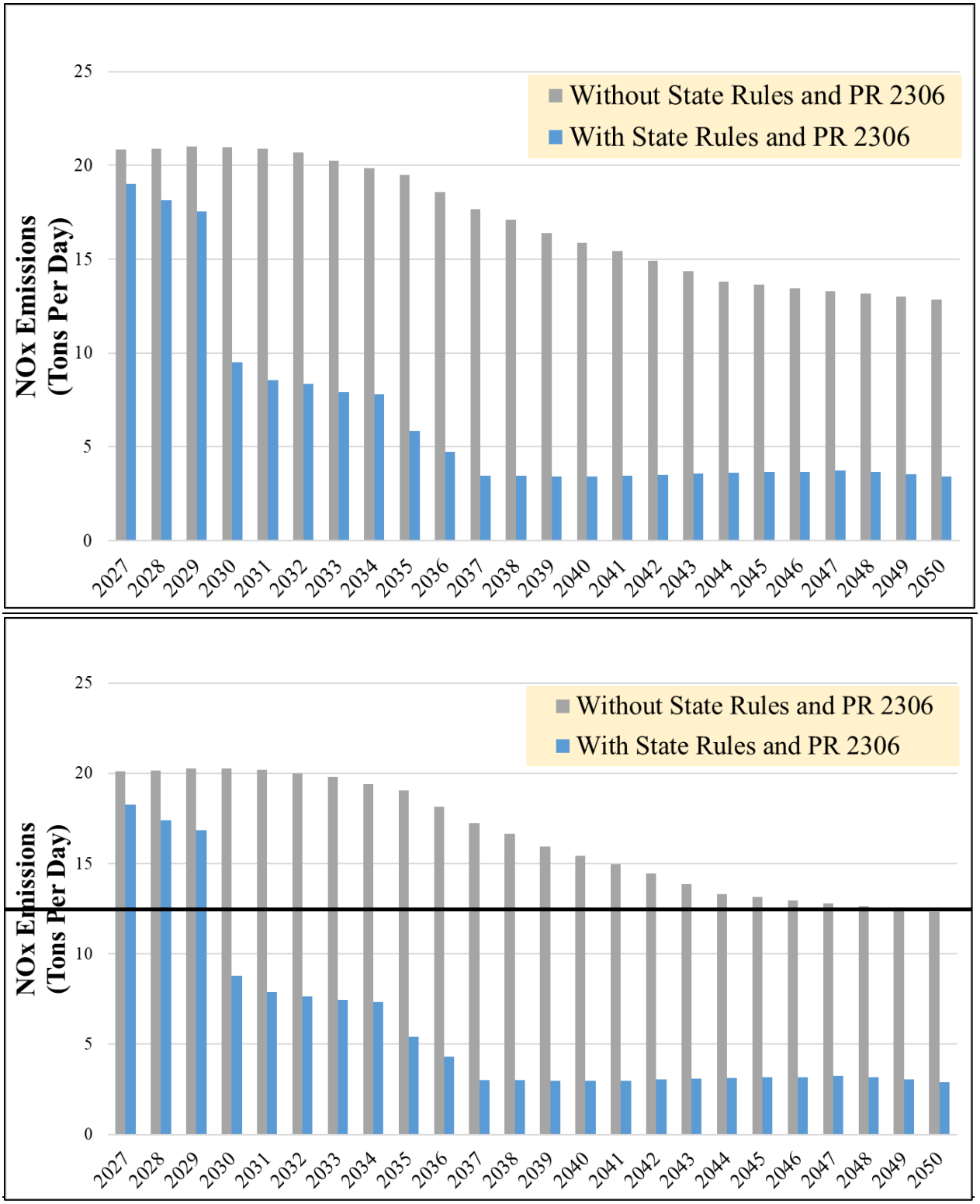


Figure 3-3. Basin-Wide NOx Emissions Forecast for Freight Rail Yard Emission Sources

Subparagraph (d)(1)(B) – Alternative Emission Reductions Targets

A freight rail yard operator may use an alternative path to determine the applicable emission reductions targets to be met in lieu of the default emission reductions targets to demonstrate compliance with PR 2306. The alternative emission reductions targets present a pathway for freight rail yard operators in South Coast AQMD to comply with PR 2306 and remain consistent with compliance activities used with the In-Use Locomotive and ACF regulations. The alternative emission reductions targets specified in subparagraph (d)(1)(B) must be calculated for a single freight rail yard operator based on the operator's actual emissions from all of their freight rail yards within the State of California in comparison to a reference scenario that captures emissions from all of their freight rail yards without including the impacts from implementation of CARB's regulations and PR 2306.

ACF and the In-Use Locomotive regulations allow flexibility for regulated entities. They may identify ways to comply with those regulations without achieving the same level of emissions reductions as is shown in Figure 3-3. The flexibility in compliance used for CARB regulations would potentially result in less emission reductions than Table 1 in PR 2306. Therefore, freight rail yards must show that the emission reductions actually achieved are proportional or more-than-proportional to what occurred on a statewide level. If emission reductions are less than default assumptions, it is critical that South Coast AQMD (as the area with worst ozone, and the most AB 617 communities) receives its fair share of emission reductions. This alternative secures, at minimum, that statewide emission reductions that are being achieved under CARB regulations also occur proportionally within South Coast AQMD.

Use of alternative emission reductions targets for compliance demonstration is only available to a freight rail yard operator who has not been issued any sort of non-compliance document related to CARB's In-Use Locomotive or ACF regulations during or prior to the reporting milestone year and also submits statewide data for all its freight rail yards in a corresponding Milestone Compliance Report. Calculation of the alternative emission reductions target for the freight rail yard using the statewide data submitted will need to be done and submitted according to the methodology in the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix for a milestone year.

Paragraph (d)(2) – Compliance with Applicable Emission Reductions Targets

Paragraph (d)(2) states the requirement for the operator of a freight rail yard to demonstrate compliance with the applicable emission reductions targets for each milestone year as set in paragraph (d)(1) using Equation 2 in PR 2306 Appendix and the corresponding methodology specified in the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix.

PR 2306 provides opportunity to obtain emission reductions from not only locomotives and drayage trucks, as seen through In-Use Locomotive and ACF regulations, but also from other mobile emission sources that are associated with freight rail yards. All compliance options in PR 2306 include an accounting of emission reductions from sources other than locomotives and drayage trucks, such as CHE, TRUs, and OSE, to achieve emission reductions targets. The additional opportunities to obtain emission reductions from CHE, TRUs, and OSE have the potential to achieve early and additional emission reductions before the implementation of CHE and TRU control measures included in the 2022 State SIP Strategy.

Figure 3-4 presents an overview of the alternative compliance pathway for PR 2306. This pathway requires operators to demonstrate that applicable emission reductions targets for each milestone year are achieved from one or more applicable mobile sources, including not only locomotives and drayage trucks, but also other mobile sources attracted to freight rail yards, such as CHE and TRU. As shown in Figure 3-4, any changes in emissions from sources other than locomotives and drayage trucks will be used to adjust the level of "*Actual Emissions*" associated with locomotives and drayage trucks. The adjusted "*Actual Emissions*" are then compared to the "*Reference Scenario Emissions*" from locomotives and drayage trucks to determine whether the percent emission target has been met or exceeded. Figure 3-4 is for illustration purpose only and does not represent an actual freight rail yard.

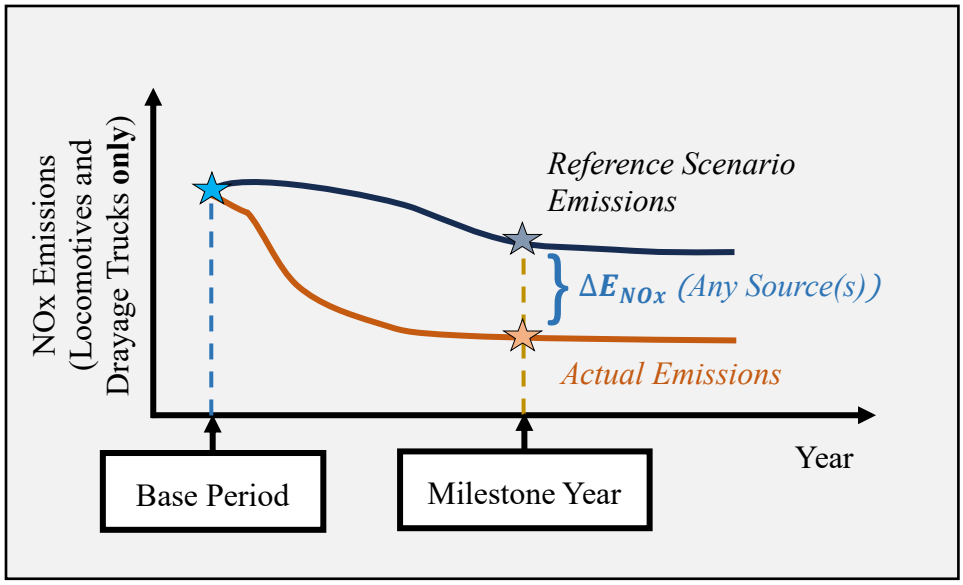


Figure 3-4. Illustrative Example of Facility Compliance with Emission Reductions Targets

Paragraph (d)(3) – Freight Rail Yards with Reduced Throughput from Base Period

In order to account for a potential situation where throughput at a freight rail yard declines through time (for example, due to a national economic recession or any persistent change in operational needs), an additional option is included in the rule, as calculated based on Equation 3 in PR 2306 Appendix and its corresponding methodologies specified in the ~~Draft~~ Proposed Rule 2306 Calculation Methodology~~ies~~ and Data Appendix. Paragraph (d)(3) is only for freight rail yards with a reduced throughput during the subject milestone year and the two preceding calendar years when compared to the annual average throughput over the base period. As an illustrative example, for a 2027 milestone year, the annual average throughput for that year as well as for years 2026 and 2025 would need to be lower than the freight rail yard's reported annual average throughput during the base period as submitted in the Initial Facility Information Report. Also, a freight rail yard operator will only be able to use this option provided that the applicable mobile sources that are being used at or visit the freight rail yard do not become dirtier over the course of years following the date PR 2306 becomes effective. Therefore, to qualify for this compliance pathway, a freight rail yard operator must demonstrate that a freight rail yard's aggregate emission factor for the milestone year is less than or equal to the average emission factor reported for its base

period, using the corresponding methodology specified in the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix.

For a freight rail yard that qualifies for this compliance pathway, PR 2306 requires that total NOx emissions from all applicable mobile sources be compared to total NOx emissions reported by the freight rail yard operator for the base period (first two years following the date PR 2306 becomes effective), rather than comparing to a reference scenario (as established for the other two compliance pathways) to allow for incorporation of emission reductions that occurred due to the decrease in the freight rail yard's throughput. However, any emission reductions between the base period and the milestone year that are not due to reduced throughput can be obtained from any freight rail yard source(s) just as for other compliance pathways. Figure 3-5 provides an illustrative example of such a freight rail yard (this plot does not represent an actual freight rail yard). If this alternative compliance pathway is elected, a freight rail yard operator must use Equation 3 in PR 2306 Appendix and the corresponding methodology specified in the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix to demonstrate in the Milestone Compliance Report its compliance with the applicable emission reductions target as established by PR 2306 paragraph (d)(1).

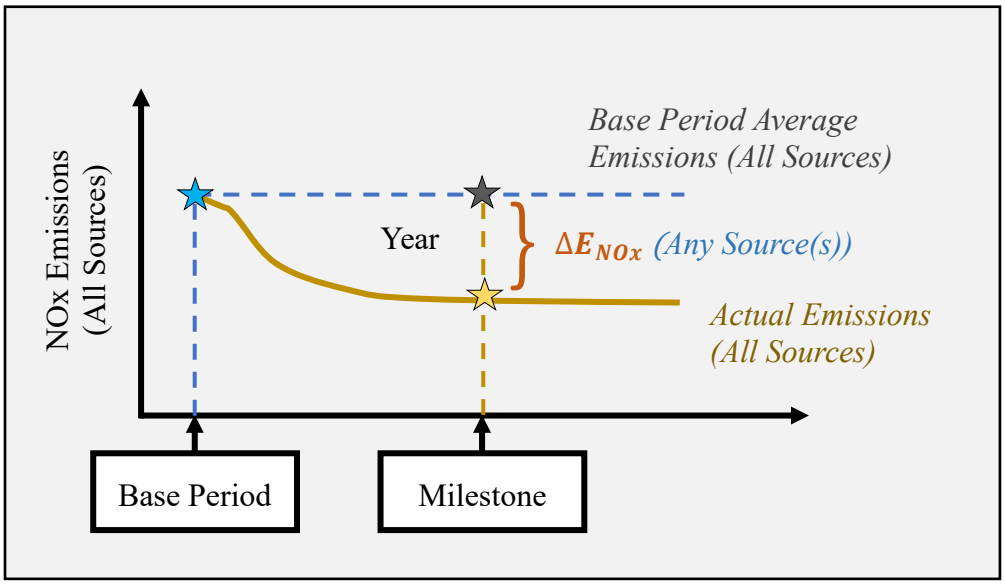


Figure 3-5. Illustrative Example of Facility Compliance Through Optional Compliance Pathway Under Reduced Throughput

Paragraph (d)(4) – Submittal Requirements for Compliance Reports

Paragraph (d)(4) outlines the submittal requirements for the four reports that any freight rail yard owner and/or operator is required to submit to the Executive Officer to comply with PR 2306. All reports are required to be signed by a responsible official of the owner or operator of the freight rail yard to confirm its accuracy and completeness.

Subparagraph (d)(4)(A) – Initial Facility Information Report

The current freight rail yard operator is required to prepare an Initial Facility Information Report and submit the report to the Executive Officer no later than 90 calendar days after the end of the

freight rail yard's base period. For a freight rail yard that is going to shut down during the base period, the former operator preceding the shutdown will have 90 calendar days after the shutdown date to submit this report to the Executive Officer.

Subparagraph (d)(4)(B) – Initial Zero Emission Infrastructure Report

The current freight rail yard owner and operator are required to prepare an Initial Zero Emission Infrastructure Report and submit the report to Executive Officer no later than 120 calendar days after the end of the freight rail yard's base period. The submission of these reports is contingent on the end of the base period so that both new and existing freight rail yards have enough time to gather meaningful data to serve as the base period to demonstrate progress and compliance in their future periodic reports. Unlike the Initial Facility Information Report and Milestone Compliance Report, this report can be submitted for each freight rail yard individually or jointly with other freight rail yards operated by the same operator. The owner and operator are not required to submit this report for any freight rail yard that is exempt pursuant to subdivision (j).

Subparagraph (d)(4)(C) – Milestone Compliance Report

The current or former freight rail yard operator, as applicable, is required to prepare periodic triennial Milestone Compliance Report that is due by no later than July 15th of the calendar year following each milestone year or 90 calendar days after the freight rail yard's shutdown date for a freight rail yard that is going to shut down during the subject milestone year.

Subparagraph (d)(4)(D) – Zero Emission Infrastructure Status Update Report

The current freight rail yard owner and operator are required to prepare periodic triennial Zero Emission Infrastructure Status Update Report that is due by October 15th of the calendar year following each milestone year. Infrastructure development is a process that is dependent on multiple variables, such as outside entities and technology availability; therefore, periodic reporting is more beneficial than annual reporting. This report can be submitted for each freight rail yard individually or jointly with other freight rail yards operated by the same operator to account for freight rail yards that may share zero emission infrastructure. The owner and operator are not required to submit this report for any freight rail yard that is exempt pursuant to subdivision (j).

Paragraph (d)(5) – Need for Electrical Service Upgrade

If the freight rail yard owner or operator states in the submitted Initial Zero Emission Infrastructure Report or Zero Emission Infrastructure Status Update Report that there is a need to upgrade the electrical service being provided to the freight rail yard, the freight rail yard owner or operator is required to submit a request to the local electrical utility to upgrade the electrical service no later than 180 calendar days after the freight rail yard owner or operator submits either of such reports.

Paragraph (d)(6) – Other Requirements Upon Change of Freight Rail Yard Operator

In case of any change to the freight rail yard operator, the new operator is required to obtain all information submitted by the former operator to Executive Officer as part of Initial Facility Information Report and Initial Zero Emission Infrastructure Report as well as most recent Compliance Milestone Report and Zero Emission Infrastructure Status Update Report (if any). The new operator is also required to obtain all information required to be submitted to Executive Officer as part of the next upcoming Compliance Milestone Report and Zero Emission Infrastructure Status Update Report as well as all recorded documents as stated in subdivision (h).

Paragraph (d)(7) – Other Requirements Upon Change of Freight Rail Yard Owner

In case of any change to the freight rail yard owner, the new owner is required to obtain all information submitted to Executive Officer as part of Initial Zero Emission Infrastructure Report as well as most recent Zero Emission Infrastructure Status Update Report (if any). The new owner is also required to obtain all information required to be submitted to Executive Officer as part of the next upcoming Zero Emission Infrastructure Status Update Report as well as all recorded documents as stated in subdivision (h).

Paragraph (d)(8) – Other Requirements Upon Freight Rail Yard Shutdown

In case of a freight rail yard shutdown, the freight rail yard owner is required to obtain all information submitted to Executive Officer as part of Initial Zero Emission Infrastructure Report as well as most recent Zero Emission Infrastructure Status Update Report (if any). The owner is also required to obtain all information required to be submitted to Executive Officer as part of the next potential upcoming Zero Emission Infrastructure Status Update Report as well as all recorded documents as stated in subdivision (h).

Subdivision (e) – Initial Reports

Paragraph (e)(1) – Initial Facility Information Report

The Initial Facility Information Report provides an initial overview of the freight rail yard. The report includes a freight rail yard's operational data required to determine emissions during the base period and to gather information that is used in calculating NOx percent emission reductions for a freight rail yard with reduced throughputs. The freight rail yard operator is required to submit all freight rail yard specific information, as specified in PR 2306 Table 2 – Freight Rail Yard Information (PR 2306 Table 2), in a manner that is truthful, accurate, and complete. All information as specified in PR 2306 Table 2 is "required" to be included in this report.

The freight rail yard operator will also need to submit information, that is either optional or required, for applicable mobile sources that are operating at and/or travelling to and from the freight rail yard as listed in PR 2306 Table 3 – Applicable Mobile Sources Information (PR 2306 Table 3). The required information is used in calculations in Equations 1 through 3 in PR 2306 Appendix and the corresponding methodologies in the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix. Optional information that a freight rail yard operator may submit for locomotives include information that is required in In-Use Locomotive Regulation but not for compliance with PR 2306, while optional information that may be submitted for drayage trucks and TRUs is for data that is in lieu of using default values in calculations in the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix. Also, the following information is required to be included in this report in the unit of *per year for each calendar year* of the freight rail yard's base period, and as *an average over the two years period* of freight rail yard's base period:

- Number of days in a calendar year when switching activities have occurred
- Freight rail yard's annual throughput
- Aggregate emission factor as calculated using methodology in the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix, including the detailed steps of the calculation.

Paragraph (e)(2) – Initial Zero Emission Infrastructure Report

Initial Zero Emission Infrastructure Report serves as an initial overview of currently operating, planned, developing, and future on-site or off-site zero emission infrastructure in support of freight rail yard compliance with In-Use Locomotive Regulation, ACF Regulation, and/or any other ZE infrastructure requirements and initiatives, such as control measures for TRU and CHE as specified in the 2022 State Strategy for the SIP.

The freight rail yard owner and operator are required to submit zero emission infrastructure information for on-site or off-site, partially or fully complete and operative zero emission infrastructure, and include updates in designs, plans, or permitting for future projects, as listed in PR 2306 Table 4 – Information on Installed and Operative ZE Infrastructure (PR 2306 Table 4), zero emission infrastructure development as listed in PR 2306 Table 5 – Information on ZE Infrastructure in Development (PR 2306 Table 5), and information on any future zero emission infrastructure planned based on PR 2306 Table 6 – Information on Future ZE Infrastructure Being Planned (PR2306 Table 6). The report seeks to understand the potential, capacity, and progress of zero emission infrastructure that is intended to power applicable zero emission mobile sources associated with freight rail yards within South Coast AQMD.

Subdivision (f) – Milestone Year Reports

Paragraph (f)(1) – Milestone Compliance Report

Milestone Compliance Report is due for submittal every three years with the purpose for freight rail yard operators to demonstrate compliance with PR 2306 for each and every milestone year. Freight rail yard operator is required to include any changes in facility information compared to the previously submitted Initial Facility Information Report or any updated information that was submitted upon necessity as part of the most recent Milestone Compliance Report. The freight rail yard operator is required to submit specific information for applicable mobile sources operating at and travelling to and from the freight rail yard, as outlined in PR 2306 Table 3, for each milestone year, and may include optional information as specified in this table. Such information is used in the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix for demonstration of compliance with the applicable percent emission reductions target for each milestone year. Optional information that may be submitted and is relevant to the calculations in the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix is data that is used in place of default values provided for drayage trucks and TRUs. The freight rail yard operator also must submit the following information in the unit of *per year* for every milestone year and each of the two preceding calendar years, and as *an average over the three years*:

- Total number of days within a calendar year when switching activities took place at the freight rail yard
- Freight rail yard's annual throughput.

The freight rail yard operator is required to calculate the annual aggregated emission factor for any milestone year in which the freight rail yard experienced reduced throughput compared to baseline period if the operator elected to comply with paragraph (d)(3) in lieu of paragraph (d)(2).

The freight rail yard operator must declare in each Milestone Compliance Report their elected compliance pathway and include the attestation of eligibility (if applicable). The freight rail yard operator may use a different compliance pathway each milestone year. Detailed calculations pursuant to the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix must also

be submitted for calculations of percent emission reductions targets (if appliable) and calculations that demonstrate compliance with the chosen compliance pathway and percent emission reductions target.

The freight rail yard operator who elects to comply with the applicable alternative emission reductions target must submit statewide data and information, as outlined in PR 2306 Table 3, for drayage trucks and locomotives that operate at and travel to and from any of the freight rail yards operated by the same operator in California for the subject milestone year.

Paragraph (f)(2) – Zero Emission Infrastructure Status Update Report

Zero Emission Infrastructure Status Update Reports serve as updates on zero emission infrastructure that supports compliance with In-Use Locomotive Regulation, implementation of ACF Regulation, or any other zero emission infrastructure to present any changes since submission of Initial Zero Emission Infrastructure Report or the previously submitted Zero Emission Infrastructure Status Update report, whichever is later at time of report submittal. The freight rail yard owner and operator are required to include in this report: 1) information pertaining to installed and operative on-site or off-site zero emission infrastructure (as specified in PR 2306 Table 4); 2) updates on new or ongoing on-site or off-site zero emission infrastructure projects currently under development (as specified in PR 2306 Table 5); and 3) updates on planning of future on-site and off-site zero emission infrastructure that are needed in the implementation and compliance of CARB's regulations, as well as the control measures for TRUs and CHE as specified in the 2022 State Strategy for the SIP (as specified in PR 2306 Table 6).

Subdivision (g) – Notifications

Subdivision (g) proposes five different notifications to be submitted to the Executive Officer in compliance with PR 2306. These are: Change of Freight Rail Yard Operator Notification, Change of Freight Rail Yard Owner Notification, Freight Rail Yard Shutdown Notification, Exceedance of Low Activity Exemption Threshold Notification, and Proposed Freight Rail Yard Construction, Conversion, or Expansion Notification.

Paragraph (g)(1) – Change of Freight Rail Yard Operator Notification

The owner or current operator of the freight rail yard is required to submit a Change of Freight Rail Yard Operator Notification to the Executive Officer upon the change of operator at least 30 calendar days prior to the change date and includes specified information. Such information includes, but is not limited to, all anticipated changes from initial reports or the most recent Milestone Compliance Report (if applicable). A secondary notification is required to be submitted by the new freight rail yard operator to the Executive Officer within 30 calendar days after the change occurred to confirm the validity of the information submitted by the owner or previous operator in the initial notification. This notification helps to ensure that the proper party is under legal obligation for PR 2306.

Paragraph (g)(2) – Change of Freight Rail Yard Owner Notification

The current owner or operator of the freight rail yard is required to submit a Change of Freight Rail Yard Owner Notification upon the change of owner at least 30 calendar days prior to the change date and includes specified information. Such information includes, but is not limited to, all anticipated changes from initial reports or the most recent Milestone Compliance Report (if applicable). A secondary notification is required to be submitted by the new freight rail yard owner to the Executive Officer within 30 calendar days after the change of owner occurred to confirm

the validity of the information submitted by the previous owner in the initial notification. This notification, like the Change of Freight Rail Yard Operator Notification, helps to ensure that the proper party is under legal obligation for PR 2306.

Paragraph (g)(3) –Freight Rail Yard Shutdown Notification

At least 30 calendar days before the date a freight rail yard is scheduled to shut down, the current owner or operator must submit a Freight Rail Yard Shutdown Notification to the Executive Officer with information on the freight rail yard name and address, date of the freight rail yard shutdown, reason for cessation of operation, and any anticipated date for the freight rail yard to resume operations, if applicable. This notification ensures that South Coast AQMD is aware of when a freight rail yard ceases operation and therefore, may no longer be obligated to comply with PR 2306.

Paragraph (g)(4) – Exceedance of Low Activity Exemption Threshold Notification

The operator of a freight rail yard, previously exempt from compliance with specific provisions of PR 2306 due to meeting specified "low activity exemption" criteria, that exceeds the annual switching activity threshold specified in PR 2306 paragraph (j)(1) in any calendar year must submit an Exceedance of Low Activity Exemption Threshold Notification to the Executive Officer no later than January 31st of the following calendar year. The operator is required to include specific information including, but not limited to, the number of days the freight rail yard performed switching activities during the previous calendar year. This notification was developed with the intention of ensuring that any freight rail yard that had previously been exempted from specific provisions of the rule, complies with the rule once it no longer meets applicable criteria to qualify for such an exemption.

Paragraph (g)(5) – Proposed Freight Rail Yard Construction, Conversion, or Expansion Notification

The Proposed Freight Rail Yard Construction, Conversion, or Expansion Notification must be submitted to the Executive Officer no later than 365 calendar days prior to construction, conversion of a facility to a new freight rail yard, or expansion of an existing freight rail yard. Though, the notification must be submitted as soon as possible if the proposed freight rail yard occurs within 365 calendar days from the rule's effective date. As part of the notification, the owner must submit the proposed project type and name, location, freight rail yard owner, anticipated freight rail yard operator, and the estimated date when the freight rail yard will begin operations. This notification ensures that South Coast AQMD is aware of a new freight rail yard that will be subject to PR2306.

Subdivision (h) – Recordkeeping

Subdivision (h) requires all records and supplementary documents that may support the accuracy and validity of information required to be submitted in compliance with PR 2306 to be kept by the owner or operator of the freight rail yard for a minimum of seven years from submittal deadline. Records and documentations are to be made available to the Executive Officer upon written request if they are needed in the process of reviewing submitted reports and notifications.

Subdivision (i) – ~~**State or Local**~~ Agency Responsibility

Subdivision (i) provides another layer of enforceability through contractual agreements that may be made between a freight rail yard owner/operator and ~~state or local government~~ non-federal public agencies in relation to the lease, operation, or construction of the freight rail yard. This

subdivision requires the inclusion of provision(s) that have the effect of requiring the contracted freight rail yard owner or operator to comply with PR 2306. The provision(s) may incorporate the entirety of PR 2306, the specific requirements as listed in this subdivision, or contain a more generic language that require the contracted freight rail yard owner or operator to comply with all applicable regulations and rules, inclusive of South Coast AQMD rules.

Subdivision (j) – Exemptions

Paragraph (j)(1)

A freight rail yard owner or operator would be exempt from PR 2306 requirements specified under this paragraph due to low activity level at a freight rail yard that is not an intermodal rail yard and switching activities occur no more than 30 calendar days per year during any milestone year and each of the two calendar years preceding that milestone year. This exemption does not apply across the entire length of rule implementation, but only for years that this criterion is met. It is possible for a freight rail yard to be exempt from the mentioned provisions when reporting is due for a specific milestone year but be subject to them for the next milestone year. The owner or operator of a freight rail yard that meets the criteria of this exemption is not exempt from the mentioned provisions and requirements for any other freight trail yard that they own and/or operate that does not meet such criteria.

Paragraph (j)(2)

Certain freight rail yards that are owned or operated by City of Long Beach or City of Los Angeles through their respective harbor departments, as well as if operated by a third party under contractual operating agreement with these cities through their harbor departments, will not be subject to PR 2306 if the freight rail yard meets specific criteria. The exempted port-owned/operated freight rail yards include any intermodal rail yard located on dock at a marine terminal within the Los Angeles or Long Beach Harbor Districts.[44,45] Additionally, any other port-owned/operated freight rail yard that is not an intermodal rail yard and whose operations are limited to moving railcars to and/or from marine terminals located within the Los Angeles or Long Beach Harbor Districts is also exempt from compliance with PR 2306. Emissions associated with these exempted freight rail operations will be addressed in the implementation of the Facility Based Mobile Source Measure for marine ports.

Subdivision (k) – Effective Date

PR 2306 will become effective following the latest out of the following dates:

- The date U.S. EPA approves PR 2306 to be included as part of the California SIP
- The date U.S. EPA grants an authorization to CARB In-Use Locomotive Regulation
- The date U.S. EPA grants an authorization or waiver for CARB ACF Regulation (such that at least the Drayage Truck Requirement is authorized)

[44] The Los Angeles Harbor District is defined in the City of Los Angeles Charter and Administrative Code, Section 651(a): https://codelibrary.amlegal.com/codes/los_angeles/latest/laac/0-0-0-3202. Information on the tidelands and submerged lands granted by the State of California to the City of Los Angeles can be found at: https://www.slc.ca.gov/granted-public-trust-lands/grantees/city-and-port-of-los-angeles/.

[45] Information on the tidelands and submerged lands granted by the State of California to the City of Long Beach can be found at: https://www.slc.ca.gov/granted-public-trust-lands/grantees/city-of-long-beach/.

Subdivision (l) – Severability

Paragraph (l)(1)

If a court holds portions of PR 2306 as invalid or unenforceable, the other provisions of the rule remain fully applicable and enforceable.

Paragraph (l)(2)

Inapplicability of a provision to specific party or circumstance does not preclude other party(s) and circumstance(s) from that provision.

Paragraph (l)(3)

If a federal ~~a~~ court rules to reject or delay the inclusion of PR 2306 (whether in part or as a whole) in the California SIP, the extent of rule enforceability under state law will be consistent with rule enforceability under federal law as recognized by U.S. EPA.

Appendix – PR 2306 Equations

This appendix outlines the methodologies to calculate the percent reduction of NOx emissions for freight rail yards to demonstrate compliance with PR 2306. Specifically, the following subsections describe the methodologies for percent emission reductions calculations for: 1) Alternative Milestone Year Reduction Target; 2) Percent NOx Emission Reductions for Any Given Milestone Year, and 3) Percent NOx Emission Reductions Between a Milestone Year and the base period.

Section 1 – Alternative Milestone Year Emission Reductions Target

This section provides the methodology to calculate the alternative milestone year emission reductions target for a freight rail yard, using Equation 1 in PR 2306 Appendix and its corresponding methodology in the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix, as an alternative to PR 2306 Table 1. The alternative NOx emission reductions target for each milestone year is based on the statewide emission reductions achieved from all locomotives (line haul and switcher) and drayage trucks operating at all freight raid yards, operated by the same freight rail yard operator, within the State of California. This alternative statewide emission reductions target is calculated based on the actual NOx emissions from locomotives and drayage trucks using the methodologies specified in Section 1 ~~in~~ of the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix, and the reference scenario NOx emissions from locomotives and drayage trucks using the methodologies specified in Section 2 ~~in~~ of the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix. Calculation of the alternative emission reductions target for the freight rail yard using the statewide data submitted will need to be done and submitted using Equation 1 in PR 2306 Appendix and the corresponding methodology in the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix.

Section 2 – Percent NOx Emission Reductions for Any Given Milestone Year

This section provides the methodology to calculate the percent emission reductions achieved for a freight rail yard within South Coast AQMD for any milestone year using Equation 2 in PR 2306 Appendix and its corresponding methodology in the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix for compliance reporting purposes. The NOx emission reductions achieved for the freight rail yard for each milestone year is calculated based on the actual emissions and the reference scenario emissions from locomotives and drayage trucks operating at and travelling to and from the freight rail yard using the methodologies specified in

Sections 1 and 2 ~~in~~ of the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix, respectively. Under this methodology, emission reductions achieved from CHE, TRU, and OSE operating at and/or traveling to and from the freight rail yard can be applied in meeting the applicable targets based on the methodologies specified in Sections 1 and 2 ~~in~~ of the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix. The emission reductions from CHE, TRU, and OSE are calculated based on the difference between the actual emissions from these categories and the reference scenario emissions reflecting baseline emissions for each milestone year. The estimated emission reductions from sources other than locomotives and drayage trucks will be then used to adjust the level of "actual emissions" associated with locomotives and drayage trucks. The adjusted "actual emissions" are then compared to the "reference scenario emissions" from locomotives and drayage trucks to determine whether the percent emission target has been met or exceeded.

Section 3 – Percent NOx Emission Reductions Between a Milestone Year and the Base Period

This section provides the methodology to calculate the percent emission reductions achieved for a freight rail yard within South Coast AQMD for which the annual throughput in the milestone year is lower than the throughput in the base period using Equation 3 in PR 2306 Appendix and its corresponding methodology in the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix. For the existing freight rail yards, the base period refers to the first two calendar years following the calendar year when PR 2306 becomes effective. For new freight rail yards, the base period refers to the first two calendar years following the calendar year when the freight rail yard begins its operations. The freight rail yard with a lower throughput compared to the base period can opt to calculate its NOx emission reductions achieved for the milestone year using this methodology in lieu of using the methodology for Equation 2 in PR 2306 Appendix which allows for incorporation of emission reductions that occurred due to the decrease in the freight rail yard's throughput. To be eligible for this compliance pathway, freight rail yard operators are also required to demonstrate that the aggregate emission factor (AEF), described in Section 3 ~~in~~ of the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix, for the freight rail yard in the milestone year is lower than the AEF in the base period to determine whether dirtier equipment dirtier than base period has been used. The NOx emission reductions achieved under this methodology are calculated based on the actual NOx emissions for the milestone year and the actual NOx emissions over the base period (average of two years) from all applicable mobile sources operating at and travelling to and from the freight rail yard (locomotives, trucks, CHE, TRU, OSE) using the methodologies specified in Section 1 ~~in~~ of the ~~Draft~~ Proposed Rule 2306 Calculation Methodology and Data Appendix. Any emission reductions between the base period and the milestone year that are not due to reduced throughput can be obtained from any freight rail yard source(s) just as for other compliance pathways.

PROPOSED RULE 316.2

Subdivision (a) – Purpose

The purpose of the PR 316.2 is to act as a companion rule PR 2306 and establishes the administrative fees to recover South Coast AQMD's reasonable costs associated with ensuring compliance with PR 2306.

The proposed purpose is as follows:

> *Health and Safety Code Section 40522.5 provides authority for the South Coast Air Quality Management District to adopt a fee schedule for areawide or indirect sources of emissions which are regulated, but for which permits are not issued, to recover the costs of programs related to these sources. The purpose of this rule is to recover the South Coast AQMD's cost of implementing Rule 2306.*

Subdivision (b) – Applicability

Freight rail yard owners and operators subject to reporting and notification requirements of PR 2306 will also be subject to the respective fees of PR 316.2. As the fees of PR 316.2 are tied to specific reports and notifications, freight rail yard owners and operators may be required to pay multiple fees under PR 316.2 in any one year, then potentially not be subject to fees in the following year if they are not required to submit any of the applicable reports or notifications.

The proposed applicability is as follows:

> *This rule applies to owners and operators of proposed, new, and existing Freight Rail Yards subject to Rule 2306 that submit an Initial Facility Information Report, Initial Zero Emission Infrastructure Report, Milestone Compliance Report, Zero Emission Infrastructure Status Update Report, Change of Freight Rail Yard Operator Notification, Change of Freight Rail Yard Owner Notification, Freight Rail Yard Shutdown Notification, Exceedance of Low Activity Exemption Threshold Notification, or Proposed Freight Rail Yard Construction, Conversion, or Expansion Notification.*

Subdivision (c) – Definitions

PR 316.2 includes definitions of specific terms related to the railroad industry and aspects of implementing PR 2306. Most definitions refer to definitions within PR 2306. Please refer to PR 316.2 subdivision(c) for each specific definition.

Proposed Definitions:

- Exceedance of Low Activity Exemption Threshold Notification
- Freight Rail Yard
- Freight Rail Yard Operator
- Freight Rail Yard Owner
- Freight Rail Yard Shutdown Notification
- Initial Change of Freight Rail Yard Operator Notification
- Initial Change of Freight Rail Yard Owner Notification
- Initial Facility Information Report
- Initial Zero Emission Infrastructure Report
- Milestone Compliance Report

- Proposed Freight Rail Yard Construction, Conversion, or Expansion Notification
- Secondary Change of Freight Rail Yard Operator Notification
- Secondary Change of Freight Rail Yard Owner Notification
- Zero Infrastructure Status Update Report

Key Definitions:

This section provides an overview and explanation of the key definitions for the terms used in PR 316.2.

Paragraph (c)(1) – Exceedance of Low Activity Exemption Threshold Notification

Notification submitted by the freight rail yard operator to the Executive Officer no later than January 31 of the calendar year after a freight rail yard exceeds the annual switching activity threshold. Notification requirements are specified in PR 2306.

Paragraph (c)(5) – Freight Rail Yard Shutdown Notification

Notification submitted by freight rail yard owner or operator to the Executive Officer no later than 30 calendar days before the freight rail yard shutdown date. Notification requirements are specified in PR 2306.

Paragraph (c)(6) – Initial Change of Freight Rail Yard Operator Notification

Notification submitted by the freight rail yard owner or current operator to the Executive Officer no later than 30 calendar days before a change of operator. Notification requirements are specified in PR 2306.

Paragraph (c)(7) – Initial Change of Freight Rail Yard Owner Notification

Notification submitted by the freight rail yard owner or operator to the Executive Officer no later than 30 calendar days before a change of ownership. Notification requirements are specified in PR 2306.

Paragraph (c)(8) – Initial Facility Information Report

Report prepared and submitted by the freight rail yard operator for each freight rail yard to include information about facility and applicable mobile sources during the base period. Reporting information requirements are specified in PR 2306.

Paragraph (c)(9) – Initial Zero Emission Infrastructure Report

Report prepared and submitted by the freight rail yard owner and operator for freight rail yard(s) with information regarding zero emission infrastructure during the base period. Reporting information requirements are specified in PR 2306.

Paragraph (c)(10) – Milestone Compliance Report

Report prepared and submitted by the freight rail yard operator for every milestone year to demonstrate compliance with PR 2306 and includes information about any changes in facility information compared to the Initial Facility Information Report or the last submitted Milestone Compliance Report as well as information about applicable mobile sources and activity at the freight rail yard during the subject milestone year and its two preceding years. Reporting information requirements are specified in PR 2306.

Paragraph (c)(11) – Proposed Freight Rail Yard Construction, Conversion, or Expansion Notification

Notification submitted by the owner of the proposed freight rail yard project to the Executive Officer if there is construction or conversion of a new freight rail yard or expansion of an existing freight rail yard. Notification requirements are specified in PR 2306.

Paragraph (c)(12) – Secondary Change of Freight Rail Yard Operator Notification

A secondary notification submitted by the new freight rail yard operator to the Executive Officer no later than 30 calendar days after a change of operator. Notification requirements are specified in PR 2306.

Paragraph (c)(13) – Secondary Change of Freight Rail Yard Owner Notification

A secondary notification submitted by the new freight rail yard owner to the Executive Officer no later than 30 calendar days after a change of ownership. Notification requirements are specified in PR 2306.

Paragraph (c)(14) – Zero Infrastructure Status Update Report

Report prepared and submitted by the freight rail yard owner and operator for every milestone year to report any updates and new information regarding zero emission infrastructure between the milestone year and the Initial Zero Emission Infrastructure Report or the previous Zero Emission Infrastructure Status Update report, whichever is later. Reporting information requirements are specified in PR 2306.

Subdivision (d) – Fees for Rule 2306 Reports and Notifications

Fees established in this subdivision are set at a flat rate that is equal to the level of effort required by South Coast AQMD staff to review and process submitted documents (i.e., report or notification) for which the fees are being paid. Related tasks to be conducted by South Coast AQMD staff include, but are not limited to, processing and reviewing submitted reports or notifications, auditing emission calculations, and inspecting facilities. Applicable fees must be paid at the time that the report must be submitted pursuant to PR 2306.

Subdivision (e) – Payment Due Date

Payment of all applicable fees in subdivision (d) are due at the time of applicable report or notification submittal pursuant to PR 2306.

Report and notification fee payments shall be considered timely received when the full payment is delivered, postmarked, or electronically paid on or before the payment due date. If the payment due date falls on a Saturday, Sunday, or a state holiday, the full fee payment may be delivered, postmarked, or electronically paid on the next business day following the Saturday, Sunday, or the state holiday with the same effect as if it had been delivered, postmarked, or electronically paid on the payment due date. Requirements for payments in this subdivision are consistent with other South Coast AQMD fee programs in Rule 301.

Subdivision (f) – Service Charge for Returned Check

Freight rail yard owner or operators shall incur a $25 service charge fee for any checks submitted on insufficient funds or on instructions to stop payment on the check.

CHAPTER 4 : IMPACT ASSESSMENT

INTRODUCTION

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COMPARATIVE ANALYSIS

INTRODUCTION

PR 2306 will reduce regional emissions of NOx that are associated with the operation of freight rail yards. The proposed rule requires freight rail yard operators to meet or exceed established emission reductions targets. Compliance with PR 2306 includes requirements for reporting and recordkeeping for the specified base period and milestone years by the rule, as well as occasional notifications of specified events. Freight rail yards will also be required to provide informational updates on the development of zero emission infrastructure components. This chapter provides an overview of potential impacts associated with implementation of PR 2306 and PR 316.2. Throughout this chapter, the impacts are analyzed based on the assumption that PR 2306 would become effective in 2024, with 2027 being the first milestone year for freight rail yards to report and demonstrate emission reductions.

AFFECTED FACILITIES

The owners and operators of freight rail yards within the South Coast AQMD jurisdiction are subject to PR 2306 and PR 316.2. These freight rail yards are typically owned and operated by Class I freight railroads (North American Industry Classification System (NAICS) Code: 482111), namely Union Pacific (UP) Railroad and Burlington Northern Santa Fe (BNSF) Railway. In some instances, however, the freight rail yard owner is a state or local government agency (NAICS: 92). One such example is the Intermodal Container Transfer Facility (ICTF), which is owned by the ICTF Joint Powers Authority, and leased to and operated by UP.

Some freight rail yards, specifically intermodal rail yards, receive inbound trains and trucks delivering freight (e.g., containers, bulk cargo, autos, etc.) from port terminals, warehouses, distribution centers, industrial facilities, etc. The freight from inbound trains on railcars and from trucks are unloaded from one mode of transportation, loaded to another mode of transportation, and then transported from the freight rail yard by outbound trains and trucks to their next destinations. Other freight rail yards, such as classification yards, are primarily used for switching operations where railcars are classified, separated, grouped, or moved with the purpose of transporting freight on railcars to different destinations. In addition to handling freight, other activities at freight rail yards can include locomotive fueling, locomotive engine testing, rail service, and various locomotives, container, and rail yard equipment maintenance activities.

Table 4-1 lists 25 known freight rail yards that will be potentially affected by PR 2306 and PR 316.2 and their operators, and Figure 4-1 shows the approximate locations of these freight rail yards. They include Commerce Eastern, Hobart, Kaiser, La Mirada, Malabar, Pico Rivera, San Bernardino, Sheila, and Watson which are operated by BNSF, and 4th Street, Anaheim, Arlington, City of Industry, Dolores, East Los Angeles, ICTF, Inland Empire, LATC, Los Nietos, Mira Loma, Montclair, Montebello, Santa Fe Springs, and West Colton, which are operated by UP. However, this is not an exhaustive list of all freight rail yards potentially subject to PR 2306 and PR 316.2. There are possibly additional freight rail yards that could be potentially affected by the proposed rules, even though they are likely smaller in terms of footprint and/or activity levels. For the purpose of conducting the impact assessment detailed in this chapter, the analysis will be based on the aforementioned 25 freight rail yards.

Table 4-1. Potentially Affected Freight Rail Yards

Freight Rail Yard	Components	Location	Operator
4th Street	4th Street Yard	Los Angeles, CA 90033	Union Pacific
Anaheim	Anaheim Yard	Anaheim, CA 92802	Union Pacific
Arlington	Arlington Yard	Riverside, CA 92504	Union Pacific
City of Industry	City of Industry Intermodal Terminal	17225 Arenth Avenue, City of Industry, CA 91748	Union Pacific
Commerce Eastern	Commerce Intermodal Facility	5600 E. 26th St. Commerce, CA 90040	BNSF
Dolores	Dolores Support Yard	2442 E Carson St Long Beach CA, 90810	Union Pacific
East Los Angeles	East Los Angeles/Commerce	4341 East Washington Blvd., City of Commerce, CA 90023	Union Pacific
Hobart	Hobart (Los Angeles) Rail Yard	4000 Sheila St, Commerce, CA 90023	BNSF
ICTF	ICTF	2401 E. Sepulveda Blvd., Long Beach, CA 90810	Union Pacific
	ICTF Support Yard	Alongside Alameda Corridor	
Inland Empire	Inland Empire Intermodal Terminal	17550 Slover Avenue, Fontana, CA 92316	Union Pacific
Kaiser	Kaiser Terminal	8793 Depot Rd #8701, Fontana, CA 92335	BNSF
La Mirada	La Mirada Yard	14503 Macaw St, La Mirada, CA 90638	BNSF
LATC	Los Angeles Transportation Center	599 North Mission Road, Los Angeles, CA 90033	Union Pacific
Los Nietos	Los Nietos Yard	Los Nietos Rd, Santa Fe Springs, CA 90670	Union Pacific
Malabar	Malabar Yard	Vernon, CA 90058	BNSF
Mead	Mead Yard	801 N. Pennington Ave. Wilmington, CA 90744	Union Pacific
Mira Loma	Mira Loma	4500 Etiwanda Ave. Mira Loma, CA 91752	Union Pacific
Montclair	Montclair Yard	Ontario, CA 91762	Union Pacific
Montebello	Montebello Yard	329 Van Norman Rd, Montebello, CA 90640	Union Pacific
Pico Rivera	Pico Rivera Yard	7599 Rosemead Blvd #7425, Pico Rivera, CA 90660	BNSF

Freight Rail Yard	Components	Location	Operator
San Bernardino	San Bernardino Automotive Facility	1685 Santa Fe Way, San Bernardino, CA 92410	BNSF
	San Bernardino Intermodal Facility	1535 W 4th St, San Bernardino, CA 92410	BNSF
Santa Fe Springs	Santa Fe Springs Bulk Materials Transfer Terminal	8636 Sorensen Ave. Santa Fe Springs, CA 90670	Union Pacific / Savage
Sheila	Sheila Mechanical Yard	6300 Sheila St, Commerce, CA 90040	BNSF
Watson	Watson Yard	1302 E Lomita Blvd, Wilmington, CA 90744	BNSF
West Colton	West Colton Roundhouse	19700 Slover Ave, Bloomington, CA 92316	Union Pacific
	West Colton Intermodal	19100 Slover Avenue Bloomington, California	
	West Colton Yard	2000 Sycamore Ave, Bloomington, CA 92316	

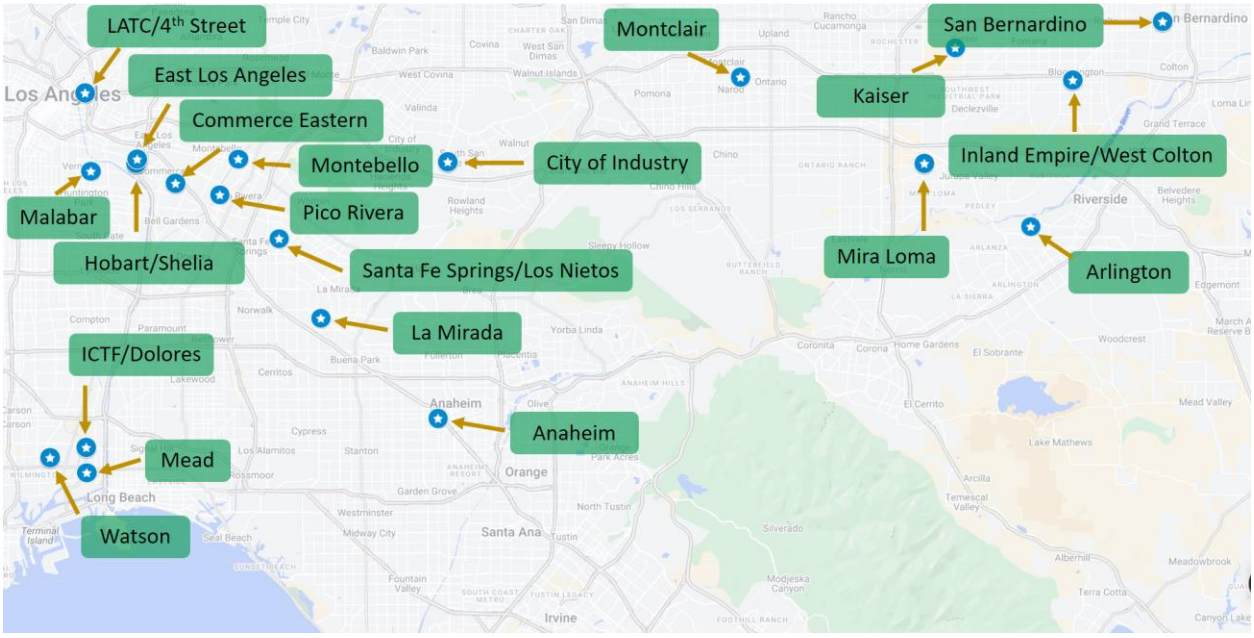

Figure 4-1. Map of Potentially Affected Freight Rail Yards

COST IMPACTS

PR 2306 Compliance Cost Analysis

This section provides an analysis of compliance costs associated with anticipated implementation of PR 2306. Because PR 2306 is designed to achieve emission reductions at levels that are proportional or more-than-proportional to implementation of statewide regulations within the South Coast AQMD relative to the state as a whole, and to be consistent with these state regulations, the potential adoption and subsequent implementation of PR 2306 are expected to result in similar costs already analyzed by CARB for the state regulations[46,47] proportioned to the South Coast AQMD region. Beyond these costs, only nominal incremental costs are anticipated for freight rail yards to meet or exceed the proposed emission reductions targets, since most of the costs will be incurred anyway due to the implementation of the CARB regulations. However, for informational purposes, this section presents an analysis of costs based on the scenario of CARB regulations being proportionally implemented within South Coast AQMD. Additional costs associated with reporting and notification requirements of PR 2306 are outlined later in this section.

To estimate the South Coast AQMD region-specific portion of compliance costs from statewide regulations, the statewide cost estimates presented in CARB's In-Use Locomotive and ACF regulations cost analyses are scaled according to the South Coast AQMD region's estimated share of expected NOx

Box 4-1. Cost-Effectiveness of Reducing NOx Emissions from Freight Rail Yard Sources

South Coast AQMD routinely conducts cost-effectiveness analyses regarding proposed rules and regulations that result in the reduction of criteria pollutants. The analysis is generally used to compare and rank control measures or alternative means of emissions control in relation to the costs to achieve the projected emission reductions. A systematic cost-effectiveness analysis was conducted for the 2022 AQMP control measures in the associated Socioeconomic Report, including for several CARB measures affecting freight rail yard sources.[a]

The differences in the history of regulatory actions for locomotives in comparison to drayage trucks, CHE, and TRUs contribute to the result of this analysis showing the locomotive measure being more cost-effective than measures affecting other freight rail yard sources. Since the mid-2000s, CARB has adopted and amended in-use requirements or more-stringent-than-federally-required standards for these other sources; as a result, they have incurred compliance costs along the way to become cleaner over time, resulting in higher incremental costs per ton of NOx reductions.

In comparison, CARB's In-Use Locomotive Regulation is the first state regulatory action in its kind to address locomotive emissions. Today, only 5 percent of locomotives operated in the Basin meet the cleanest federal standard of Tier 4, with over 40 percent being Tier 1/1+ or dirtier.[b] As estimated in the 2022 AQMP, the cost of reducing one ton of NOx from locomotives ranges between $30,000 and $50,000 (varying by cost-effectiveness analysis method), which is considerably lower than values estimated for measures affecting other freight rail yard sources using the same methods.

[a] See: https://www.aqmd.gov/docs/default-source/clean-air-plans/socioeconomic-analysis/final/aqmp-2022-socioeconomic-report-main-final.pdf (p. 2-14).

[b] See the latest (2022) compliance data summaries under CARB's 1998 MOU: https://ww2.arb.ca.gov/resources/documents/rail-emission-reduction-agreements.

[46] CARB. Proposed In-Use Locomotive Regulation Standardized Regulatory Impact Assessment (SRIA): https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appb.pdf.

[47] CARB. Public Hearing to Consider the Proposed Advanced Clean Fleets Regulation, Staff Report: Initial Statement of Reasons: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/isor2.pdf.

reductions relative to the statewide total (see Table 4-2). These calculations are performed separately for locomotives and drayage trucks, using scaling factors specific to each of these equipment types. Although the emission reductions targets set in PR 2306 are based on relative (percent) statewide emission reductions from state regulations addressing emissions from locomotives and drayage trucks, PR 2306 provides compliance flexibility that allows emission reductions related to TRUs, CHE, and OSE to contribute to a freight rail yard's compliance with PR 2306. Given emission reductions from TRUs, CHE, and/or OSE are an added option that may be, but not necessarily needs to be, elected by freight rail yards, it can be reasonably assumed that this option would be elected only if it is less costly. Therefore, to be conservative, this analysis focuses on quantifying the South Coast AQMD portion of compliance costs estimated for CARB's In-Use Locomotive and ACF regulations. Moreover, as discussed in Box 4-1, it was estimated for the 2022 AQMP control measures that, in general, it would be on average more costly to reduce one ton of NOx from TRUs and CHE than from locomotives.

It should be emphasized that the percent emission reductions targets specified in Table 1 of PR 2306 are derived based on CARB's projected statewide NOx reductions (as shown in the "Statewide" columns in Table 4-2) relative to the projected statewide baseline emissions. The statewide costs quantified in CARB's analyses are for the same projected statewide NOx reductions used as the basis for Table 1 targets. Although PR 2306 also allows freight rail yard operators to elect to comply with alternative emission reductions targets; given the optional nature, it can be reasonably assumed that the alternative targets would not be elected if they are more costly to comply with. Therefore, this analysis focuses on analyzing the costs associated with PR 2306 Table 1 emission reductions targets.

Table 4-2 shows that the total NOx reductions within the South Coast AQMD jurisdiction that can be achieved by complying with PR 2306 Table 1 targets are generally less than one-third of total NOx reductions projected statewide from implementing the In-Use Locomotive Regulation. Therefore, even if the railroads (which are subject to PR 2306 emission reductions targets due to their role in operating the freight rail yards) choose to comply with PR 2306 solely with emission reductions from locomotives and not from other source categories, the total costs would still represent less than one-third of the statewide costs for them to comply with the In-Use Locomotive Regulation. If emission reductions are also achieved from other emission sources associated with freight rail yard operations (e.g., from drayage trucks due to ACF requirements on truck operators), the total costs directly incurred by the freight rail yard operators will be even lower.

According to CARB's Standardized Regulatory Impact Assessment for the In-Use Locomotive Regulation, the projected statewide costs, expressed in an average amortized annual total, represent "1.2 percent of [UP and BNSF railroads'] annual revenue" (p. 90). Moreover, the majority of the total projected statewide costs will come from the purchase costs of Tier 4 and cleaner locomotives which will result in direct NOx reductions, and these purchase costs were "determined through interviews with railroads and OEMs and corroborated using CARB incentive program data and industry feasibility studies" (p. 67).

Table 4-2. South Coast AQMD Region's Estimated Share of NOx Reductions Relative to the Statewide Total

Calendar Year	Projected NOx Reductions from Freight Locomotives (tpd)*		Projected NOx Reductions from Drayage Trucks (tpd)*		South Coast Share from Freight Locomotive Reductions Statewide	South Coast Share from Drayage Truck Reductions Statewide
	Statewide	South Coast	Statewide	South Coast		
2027	6.16	0.26	1.84	1.59	4.2%	86.5%
2028	9.18	0.40	2.78	2.34	4.4%	84.1%
2029	12.24	0.97	2.89	2.46	7.9%	85.1%
2030	47.87	8.74	3.15	2.70	18.3%	85.5%
2031	51.88	9.46	3.37	2.87	18.2%	85.0%
2032	51.99	9.37	3.52	2.97	18.0%	84.3%
2033	52.09	9.46	3.45	2.87	18.2%	83.3%
2034	50.76	9.26	3.41	2.80	18.2%	82.0%
2035	57.61	10.80	3.54	2.83	18.7%	80.0%
2036	58.35	11.21	3.32	2.64	19.2%	79.4%
2037	59.33	11.71	3.14	2.48	19.7%	78.9%
2038	56.63	11.29	2.98	2.33	19.9%	78.3%
2039	53.25	10.76	2.85	2.22	20.2%	77.8%
2040	50.51	10.32	2.75	2.13	20.4%	77.4%
2041	47.85	9.90	2.68	2.06	20.7%	76.8%
2042	44.95	9.42	2.62	2.00	20.9%	76.3%
2043	41.56	8.85	2.58	1.95	21.3%	75.6%
2044	38.16	8.26	2.54	1.91	21.6%	74.9%
2045	37.08	8.12	2.51	1.87	21.9%	74.2%
2046	36.01	7.96	2.49	1.83	22.1%	73.4%
2047	34.71	7.76	2.47	1.80	22.4%	72.6%
2048	34.03	7.72	2.46	1.76	22.7%	71.9%
2049	33.52	7.72	2.45	1.75	23.0%	71.2%
2050	33.04	7.74	2.40	1.70	23.4%	70.9%

* Rounded to the second decimal place

Overall, the scaling-based approach used in this cost analysis estimates the proportional share of net costs for the South Coast AQMD regional economy, considering the costs that will be incurred by railroads, as well as drayage truck operators, from complying with the state regulations for locomotives and drayage trucks. It is applied to the relevant cost categories identified in the CARB analyses. These categories are capital, operations, maintenance, and on-site infrastructure costs/cost savings for both locomotives and drayage trucks, as well as salvage and resale revenue cost savings for locomotives and midlife cost savings for drayage trucks. California's Low Carbon Fuel Standard (LCFS) revenue for drayage trucks is also included since these revenues partially offset the costs of compliance for regulated entities, though such revenues represent a net-zero

transfer rather than an economy-wide cost savings. Cost categories from the CARB analyses that are excluded from this analysis include estimated impacts on taxes, insurance, and opportunity costs associated with the spending account feature of the In-Use Locomotive Regulation. Taxes and insurance are both transfers, and the spending account is not an element of PR 2306.

While on-site charging and refueling infrastructure costs from CARB are included as a cost category in this proportional analysis, PR 2306 does not compel freight rail yard owners and operators to invest in on-site or off-site infrastructure; rather, PR 2306 requires informational reporting on zero emission infrastructure planning and development, and the utilization of any such infrastructure that is installed and operative. CARB assumes on-site infrastructure costs are a relevant component of the regulated equipment technology upgrades and includes such costs in its cost estimates for In-Use Locomotive and ACF regulatory analyses. Assuming the implementation of PR 2306 will represent compliance with both state regulations proportionately within the South Coast AQMD region, the costs associated with on-site charging and refueling infrastructure are also included in the estimation of proportional costs in this analysis.

The statewide compliance costs estimated by CARB for In-Use Locomotive and ACF regulations reflect the full range of locomotives and trucks affected by these rulemakings, some of which are not relevant to freight rail yards (such as passenger locomotives or trucks not used for drayage activities). The scaling-based approach applied in the present analysis assumes that the costs per ton of NOx reduced for the locomotives and trucks regulated by the CARB statewide regulations are applicable to the equipment categories within the scope of PR 2306. Due to the similarities in equipment across different applications (e.g., the same trucks can be used for drayage and other freight transportation services), this approach is reasonable for estimating the portion of statewide costs associated with the South Coast AQMD region.

As additional context for the scaling approach applied here, unit cost inputs used by CARB for its state-level analyses for the In-Use Locomotive and ACF (drayage trucks) rulemakings are presented in Tables 4-3 through 4-5.[48] CARB uses these inputs, as well as detailed information on current fleet inventories and operations, to estimate compliance costs associated with implementation of the state regulations. CARB also makes assumptions regarding the technologies that will replace existing vehicles, based on the equipment duty cycle. For locomotives, line haul freight (and passenger) locomotives are assumed to be replaced with zero emission hydrogen fuel cell locomotives, while switch locomotives are assumed to be replaced with battery electric locomotives.[49] For drayage trucks, CARB assumes a mix of battery electric and fuel cell vehicles, adopting an assumption that all drayage trucks are Class 8 day cabs.

[48] The economic analyses for the In-Use Locomotive and ACF rulemakings do not present estimates of the annual operations cost per equipment type, though they do present their assumptions regarding the future prices of diesel, electricity, and hydrogen. Table 4-3 presents these price projections.

[49] CARB In-Use Locomotive SRIA, p. 67.

Table 4-3. Unit Capital Costs for Locomotive and Drayage Trucks Used in CARB Analyses (2023$ per Unit of Equipment)

Equipment Type	Technology/Fuel Type		
	Electric	Hydrogen	Diesel
Locomotives:			
Line Haul Locomotives	$7,347,572 [2]	$6,171,960 [1]	$3,644,396 [1]
Road Switch Locomotives	$3,997,079 [1]	$3,850,128 [2]	$3,174,151 [1]
Yard Switch Locomotives	$3,644,396 [1]	$3,850,128 [2]	$2,539,321 [1]
Drayage Trucks:			
Class 8 Day Cab Tractors	$182,623 [3]	$193,322 [3]	$168,760 [3]

Sources:

1. California Air Resources Board. (2022). Proposed In-Use Locomotive Regulation Standardized Regulatory Impact Assessment (SRIA). Page 68. Available at: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appb.pdf.
2. California Air Resources Board. (2021). Preliminary Cost Document for In-Use Locomotive Regulation. Pages 9-10. Available at: https://ww2.arb.ca.gov/sites/default/files/2021-03/3.16.21%20Locomotive%20Reg%20-%20Preliminary%20Cost%20Document_Final.pdf.
3. California Air Resources Board. (2022). Public Hearing to Consider the Proposed Advanced Clean Fleets Regulation, Staff Report: Initial Statement of Reasons. Page 179. Prices forecasted for the 2030 model year. Available at: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/isor2.pdf.

Note:

These values represent capital costs for each equipment type and do not include the cost of any on-site supporting charging or refueling infrastructure. Discussion of these infrastructure costs are included on page 77 of the 2022 In-Use Locomotive SRIA and page 182 of the 2022 ACF Initial Statement of Reasons documents cited above.

Table 4-4. Annual Maintenance Costs for Locomotive and Drayage Trucks Used in CARB Analyses (2023$ per Unit of Equipment per year)

Equipment Type	Technology/Fuel Type		
	Electric	Hydrogen	Diesel
Locomotives:			
Locomotives	$83,586 [1]	$92,873 [1]	$92,873 [1]
Drayage Trucks:			
Class 8 Day Cab Tractors	$8,801 [2]	$8,801 [2]	$14,644 [2]

Sources:

1. California Air Resources Board. (2022). Proposed In-Use Locomotive Regulation Standardized Regulatory Impact Assessment (SRIA). p. 70. Available at: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appb.pdf.
2. California Air Resources Board. (2022). Public Hearing to Consider the Proposed Advanced Clean Fleets Regulation, Staff Report: Initial Statement of Reasons. pp. 191-192. Available at: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/isor2.pdf.

Note:

In addition to routine annual maintenance, locomotives and drayage trucks also undergo midlife/overhaul maintenance. This includes engine rebuilds for diesel equipment, battery replacements for electric equipment, and fuel cell stack refurbishments for hydrogen equipment. The frequency of midlife/overhaul activities depends on the equipment and technology type (e.g., line haul locomotives require overhaul every 6 years while switch locomotives require overhaul every 14 years). For line haul locomotives, a single overhaul can range from approximately $58,000 (diesel) to $60,000 (hydrogen) in 2023$. Overhaul costs are lower for switch locomotives, ranging from approximately $12,000 (diesel) to $21,000 (electric). For drayage trucks, CARB does not present specific costs for midlife activities but does provide guidance on their calculations (e.g., the cost of a fuel cell stack refurbishment is approximately one third the cost of a new fuel cell stack).

Table 4-5. Electricity, Hydrogen, and Diesel Price Projections from CARB's In-Use Locomotive Analysis (Operating Costs, 2023$ per Diesel Gallon Equivalent)

Year	Electricity (DGE) [1]	Hydrogen (DGE) [1]	Diesel (DGE) [1]
2025	$8.71	$20.68	$4.76
2030	$9.58	$16.48	$4.95
2050	$9.14	$6.53	$5.57

Source:
[1] California Air Resources Board. (2022). Proposed In-Use Locomotive Regulation Standardized Regulatory Impact Assessment (SRIA). pp. 75-76. Available at: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appb.pdf

Note: For comparison across fuel types, the prices for electricity and hydrogen are converted from kilowatt-hour (kWh) and kilogram (kg) to diesel gallon equivalents (DGE) using conversion factors of 37.0 kWh per DGE and 1.11 kg per DGE derived from U.S. DOE's Alternative Fuels Data Center (Available at: https://afdc.energy.gov/fuels/properties?fuels=HY,ELEC). CARB's Advanced Clean Fleets analysis also provides fuel economy estimates for drayage trucks. Applying the same conversion factors, electric drayage trucks are estimated to get 22.2 miles/DGE, hydrogen drayage trucks are estimated to get 12.9 miles/DGE, and diesel drayage trucks are estimated to get 7 miles/DGE. Equivalent information is not provided for locomotives.

The combined implementation of PR 2306 with statewide regulations will result in new demand for alternative fuels within the Basin, namely electricity and hydrogen. The existing utility supply and distribution systems may require capacity upgrades to accommodate this new demand. Such improvements would represent off-site infrastructure improvements, such as grid upgrades that may include electricity generation resources, transmission capacity, and distribution system capacity (e.g., additional substations and/or circuits), as well as hydrogen fuel production, storage, and distribution systems. CARB does not consider off-site infrastructure improvements in its analysis of costs for the In-Use Locomotive and ACF rulemakings. While off-site infrastructure upgrades may be necessary to support vehicle technology changes, many of these investments are required under the baseline pursuant to separate California regulations, as noted by CARB.[50, 51] Clearly assigning system-wide improvements to specific rules is difficult, due to the overlapping nature of concurrent efforts, as well as the shared nature of the energy supply grid across many user groups.[52,53,54] Accordingly, the only infrastructure costs quantified in this proportional

[50] See discussion of SB 350 and other utility actions on page 52 of CARB's In-Use Locomotive SRIA.

[51] CARB provides cost estimates for some off-site infrastructure improvements in its SB 671 Clean Freight Corridor Efficiency Assessment: Senate Bill 671 Clean Freight Corridor Efficiency Assessment | California Transportation Commission

[52] "2035 Report 2.0: Distribution Grid Cost Impacts Driven by Transportation Electrification," (2021). Energy + Environmental Economics.

[53] "2035 Report 2.0: Transportation." 2021. Goldman School of Public Policy, University of California Berkeley.

[54] "Electric Vehicles at Scale – Phase II: Distribution System Analysis" (2022). Pacific Northwest National Laboratory

analysis are the share of CARB's statewide estimates for on-site infrastructure costs relevant to PR 2306.

Estimated Costs for Proportional Implementation of Statewide Regulations

As shown in Table 4-6, the South Coast AQMD region-specific portion of statewide costs across all years analyzed (2027-2050) is approximately $2.27 billion in undiscounted 2023 dollars.[55] This is comprised of $2.87 billion associated with locomotives and -$596 million (i.e., a $596 million savings) related to drayage trucks, inclusive of fuel cost-savings and LCFS credits as discussed above.[56] As a share of statewide In-Use Locomotive and ACF regulations compliance costs for the same timeframe and cost categories used in this analysis, the scaled cost estimates for the South Coast AQMD region are 18.4% for locomotives and 4.0% for drayage trucks. Note that these are not incremental costs resulting from the implementation of PR 2306, but rather the share of costs expected to accrue in the South Coast AQMD jurisdiction as a result of the combined implementation of PR 2306 with statewide regulations. The incremental costs attributable solely to PR 2306 are expected to be nominal and are discussed later in this section.

Table 4-6. Total Present Value and Annualized Compliance Costs Over the 2027-2050 Period (2023$)

	Present Value Cost	Annualized Cost
Undiscounted	$2,270,000,000	$94,600,000
1% Discount Rate/Real Interest Rate	$2,040,000,000	$95,200,000
4% Discount Rate/Real Interest Rate	$1,620,000,000	$102,000,000

Tables 4-7 and 4-8 present the distribution of undiscounted statewide compliance costs apportioned to the South Coast AQMD region across the various cost categories, for locomotives and drayage trucks respectively. For locomotives, the most significant costs are for the capital (procuring new locomotives) and operating (changes in fuel costs) categories, while new maintenance and infrastructure costs represent a smaller contribution to costs. Increased salvage and resale revenues represent a small cost-savings. For drayage trucks, new investments in infrastructure represent the largest single cost, while additional capital and midlife costs present a smaller cost contribution. These new costs are nearly entirely offset by new operating (fuel) and maintenance cost-savings. When revenue under LCSF is included, total costs become negative, or cost-savings.

[55] All statewide costs from CARB's In-Use Locomotive and ACF regulations analyses were inflated to 2023 dollars (using the Bureau of Economic Analysis Implicit Price Deflator for Gross Domestic Product) before being scaled.

[56] While this cost analysis estimates costs and cost-savings incurred up to 2050, the 2022 AQMP cost-effectiveness analysis referenced in Box 4-1 included costs and cost-savings up to 2037, therefore with a shorter time period for net operating and maintenance cost-savings as well as LCFS revenue to accrue.

Table 4-7. Undiscounted Costs Attributable to Locomotives Over the 2027-2050 Period (2023$)

Cost Category	Cost
Capital Cost	$1,900,000,000
Infrastructure Cost	$145,000,000
Operating Cost	$699,000,000
Maintenance Cost	$189,000,000
Salvage Revenue	-$6,520,000
Resale Revenue	-$61,300,000
Total	**$2,870,000,000**
Note: Totals may not sum due to rounding.	

Table 4-8. Undiscounted Costs Attributable to Drayage Trucks Over the 2027-2050 Period (2023$)

Cost Category	Cost
Capital Cost	$495,000,000
Infrastructure Cost	$1,980,000,000
Operating Cost	-$1,550,000,000
Maintenance Cost	-$851,000,000
Midlife Costs	$42,000,000
Total Without LCFS Revenues	**$119,000,000**
LCFS Revenue	-$715,000,000
Total With LCFS Revenues	**-$596,000,000**
Note: Totals presented without and with LSFS revenues because these revenues represent a transfer. Totals may not sum due to rounding.	

As mentioned earlier, the emission reductions targets in PR 2306 are set levels equivalent to achieving emission reductions within South Coast AQMD from proportional implementation of state regulations addressing emissions from locomotives and trucks. However, emission reductions related to TRUs, CHE, and OSE may be used to contribute to a freight rail yard's compliance with PR 2306. For context, Tables 4-9 and 4-10 include information on unit costs applicable to these additional equipment categories, for both zero emission electric and conventional diesel options.

Table 4-9. Unit Capital Costs for CHE and TRU (2023$ per Unit of Equipment)

Equipment Type	Technology/Fuel Type	
	Electric	Diesel
Cargo Handling Equipment:		
Yard Trucks	$355,016 [1]	$110,942 [1]
Forklifts	$84,214 [2]	$50,321 [2]
RTG Cranes	$1,996,964 [1]	$1,331,309 [1]
Top Handlers	N/A [6]	$703,614 [3]
Straddle Carriers	$1,248,103 [4]	$1,382,099 [3]
Transportation Refrigeration Units:		
Transportation Refrigeration Units	$88,754 [5]	$32,617 [5]

Sources:

1. San Pedro Bay Ports. (2021). Clean Air Action Plan 2021 Update: Feasibility Assessment for Cargo Handling Equipment. pp. 84-85. Available at: https://cleanairactionplan.org/wpfd_file/2021-cargo-handling-equipment-feasibility-assessment-report-final/.
2. California Air Resources Board. (2023). Proposed Zero Emission Forklift Regulation SRIA. p. 64. Available at: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2024/zeforklifts/appb2.pdf.
3. California Air Resources Board. (2015). Draft Technology Assessment: Mobile Cargo Handling Equipment. Pages II-6 - II-7. Available at: https://ww2.arb.ca.gov/sites/default/files/classic/msprog/tech/techreport/che_tech_report.pdf.
4. State of New Jersey. (2020) Volkswagen Settlement Application Port Newark Container Terminal Straddle Carrier Replacement Program. p. 7. Available at: https://www.nj.gov/dep/vw/proposals/phase2/PNCT.pdf.
5. California Air Resources Board. (2022) 2022 Technology Assessment: Non-Truck Transport Refrigeration Units (TRU). pp. 36-37. Available at: https://ww2.arb.ca.gov/sites/default/files/2022-10/CARB%202022%20TRU%20Technology%20Assessment%2010-14-22.pdf.
6. Costs for electric top handlers do not appear to be publicly available, as the technology has only recently been commercialized. On June 25, 2024, the Port of Los Angeles deployed the first commercially available battery-powered electric top handlers. More information on this project is available at: https://www.portoflosangeles.org/references/2024-news-releases/news_062524_yti_ze_tophandlers.

Table 4-10. Annual Maintenance Costs for CHE and TRU (2023$ per Unit of Equipment per Year)

Equipment Type	Technology/Fuel Type	
	Electric	Diesel
Cargo Handling Equipment:		
Yard Trucks	$31,056 [1]	$44,380 [1]
Forklifts	$3,629 [2]	$5,392 [2]
RTG Cranes	$70,717 [1]	$94,289 [1]
Top Handlers	N/A [7]	$6,437 [3]
Straddle Carriers	$134,284 [4]	$148,701 [5]
Transportation Refrigeration Units:		
Transportation Refrigeration Units	$1,109 [6]	$2,108 [6]

Sources:

1. San Pedro Bay Ports. (2021). Clean Air Action Plan 2021 Update: Feasibility Assessment for Cargo Handling Equipment. pp. 84-85. Available at: https://cleanairactionplan.org/wpfd_file/2021-cargo-handling-equipment-feasibility-assessment-report-final/.
2. California Air Resources Board. (2023). Proposed Zero Emission Forklift Regulation SRIA. Pages 62, 67. Available at: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2024/zeforklifts/appb2.pdf.
3. U.S. Environmental Protection Agency. (2022). Assessment of Fuel Cell Technologies at Ports. p. 5-8. Available at: https://nepis.epa.gov/Exe/ZyPDF.cgi/P1015AQX.PDF?Dockey=P1015AQX.PDF.
4. State of New Jersey. (2020) Volkswagen Settlement Application Port Newark Container Terminal Straddle Carrier Replacement Program. p. 7. Available at: https://www.nj.gov/dep/vw/proposals/phase2/PNCT.pdf; Average ratio between capital and maintenance costs for other CHE (10.8%).
5. California Air Resources Board. (2015). Draft Technology Assessment: Mobile Cargo Handling Equipment. Pages II-6 - II-7. Available at: https://ww2.arb.ca.gov/sites/default/files/classic/msprog/tech/techreport/che_tech_report.pdf; Average ratio between capital and maintenance costs for other CHE (10.8%).
6. California Air Resources Board. (2022) 2022 Technology Assessment: Non-Truck Transport Refrigeration Units (TRU). pp. 17, 36-37. Available at: https://ww2.arb.ca.gov/sites/default/files/2022-10/CARB%202022%20TRU%20Technology%20Assessment%2010-14-22.pdf
7. Costs for electric top handlers do not appear to be publicly available, as the technology has only recently been commercialized. On June 25, 2024 the Port of Los Angeles deployed the first commercially available battery-powered electric top handlers. More information on this project is available at: https://www.portoflosangeles.org/references/2024-news-releases/news_062524_yti_ze_tophandlers.

This analysis estimates the proportional share of statewide compliance costs based on the scenario of proportional implementation within South Coast AQMD. To provide further context on potential costs associated with systematic infrastructure development beyond on-site installation, prior reports have also addressed zero emission technology implementation and the potential associated costs, both nationally and in California. For example, the 2022 Port of Long Beach Port Master Plan provides information on the Port's goals for transitioning to cleaner operations,

including through the use of zero emission technology.[57] The 2023 Zero Emission Planning and Grid Assessment for the Port of Los Angeles assesses the feasibility of electrifying CHE and provides an economic analysis of different electrification scenarios.[58] With regard to drayage trucks, a 2024 study performed by Roland Berger entitled "Forecasting a Realistic Electricity Infrastructure Buildout for Medium- & Heavy-Duty Battery Electric Vehicles" estimates that electrifying all medium- and heavy-duty vehicles across the United States would require $622 billion of investment in chargers, site infrastructure, and utility service costs.[59] The study also estimates that California would need to invest over $25 billion for distribution grid upgrades alone.[60] However, as mentioned earlier, it is challenging to quantify and assign systemic infrastructure costs to regulatory actions, requirements, and other initiatives introduced concurrently by multiple entities.

HEALTH BENEFITS

The Basin is home to roughly two-thirds of California's EJ communities.[61] The combined implementation of statewide regulations and PR 2306 would ensure that the public health benefits sought from statewide regulations accrue within South Coast AQMD and to the EJ communities which are disproportionately impacted by pollution. This health benefits analysis relies upon a streamlined approach to estimate human health benefits of the combined implementation of PR 2306, CARB's In-Use Locomotive Regulation, and CARB's ACF Regulation using estimates of incidence-per-ton (IPT) and benefits-per-ton (BPT) of emissions reduced derived from the health benefits assessment in the 2022 AQMP Final Socioeconomic Report.[62] The IPT and BPT method provides robust, reasonable estimates of the magnitude of health benefits and is consistent with previously employed approaches by South Coast AQMD, as well as by U.S. EPA and CARB.[63,64,65] The 2022 AQMP Socioeconomic Impact Report estimates health benefits in 2032 and 2037 based on: 1) modeled concentrations of ambient ozone and PM2.5 reductions at a 4-km grid scale across the Basin; and 2) the U.S. EPA's Environmental Benefits Mapping and Analysis

[57] Port of Long Beach. Revised Draft Port Master Plan: https://polb.com/port-info/mission-vision/#master-plan-update

[58] Electric Power Research Institute (EPRI). Zero Emission Planning and Grid Assessment for the Port of Los Angeles.

[59] Roland Berger. Forecasting a Realistic Electricity Infrastructure Buildout for Medium- & Heavy-Duty Battery Electric Vehicles: https://www.nada.org/media/9801/download?inline

[60] *Ibid.*

[61] California Office Of Environmental Health Hazard Assessment. SB 525 Disadvantaged Communities: https://oehha.ca.gov/calenviroscreen/sb535

[62] South Coast AQMD. Socioeconomic Analysis: http://www.aqmd.gov/home/air-quality/air-quality-management-plans/air-quality-mgt-plan/socioeconomic-analysis

[63] IPT and BPT estimates were used in the 2021 Socioeconomic Impact Assessment for PR 1109.1 et al.: https://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1109.1/1109-1-draft-socioeconomic-impact-assessment-090721-merged.pdf

[64] U.S. EPA. Technical Support Document: Estimating the Benefit per Ton of Reducing PM2.5 Precursors from 17 Sectors: https://www.epa.gov/sites/default/files/2018-02/documents/sourceapportionmentbpttsd_2018.pdf

[65] CARB. Estimated the Community Level Health Benefits from Air Pollution Control Programs: https://ww2.arb.ca.gov/resources/documents/estimating-community-level-health-benefits-air-pollution-control-programs#:~:text=CARB%20uses%20a%20California%20specific,available%20on%20the%20CARB%20website

Program – Community Edition (BenMAP-CE) model. The 2022 AQMP benefits result mostly from projected reductions of NOx under the ozone control measures as NOx is the key pollutant for the region's ozone attainment challenges. This analysis utilizes the projected 2022 AQMP emissions reductions and associated health benefits to generate average IPT and BPT estimates. These estimated IPT and BPT factors were then used to generate estimates of the quantity and monetized value of health benefits resulting from anticipated emission reductions from PR 2306, in conjunction with state regulations.

Box 4-2. Consequences of NAAQS Nonattainment

The federal Clean Air Act (CAA) requires submission of a SIP for nonattainment areas that do not meet the federal NAAQS. South Coast AQMD is in extreme nonattainment for ozone and serious nonattainment for PM2.5. The ozone control measures in the 2016 AQMP were approved by the U.S. EPA for inclusion in the California SIP and included a suite of facility-based mobile source measures mainly to reduce mobile source emissions from freight transportation. PR 2306 will implement the federally approved SIP measure to address freight emissions associated with rail yards.

Severe consequences can result from nonattainment of NAAQS, particularly the continued harm to public health and EJ communities. Failures in CAA planning requirements can also trigger federal sanctions and introduce economic uncertainties for the region. The first sanction will increase the air permitting offset ratio from the current ratio of 1.2-to-1 to a ratio of 2-to-1, which is expected to make air permitting substantially more difficult in our region. The second sanction is loss of federal highway funding, potentially to the magnitude of $35.7 billion by 2045.[a]

Additionally, CAA Section 185 requires major stationary sources of NOx and/or volatile organic compounds (both ozone precursors) that are located in extreme or severe ozone nonattainment areas to either reduce their emissions by 20 percent from a baseline amount or pay a nonattainment fee. The annual average cost of complying with nonattainment fee requirements is estimated at an undiscounted total of more than $250 million between 2025 and 2035, affecting over 300 facilities across many industries in our region.[b] Given that 80 percent of the region's NOx emissions come from mobile sources, the costs of nonattainment fees will most likely continue to accrue if significant emission reductions from mobile sources do not occur to help bring the region into attainment.

[a] See Connect SoCal 2020 (https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal-plan_0.pdf?1606001176, p. 105) and South Coast AQMD v. Michael S. Regan (https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/2-23cv02646_docketentry_04-07-2023_1.pdf).

[b] Final Socioeconomic Impact Assessment for Proposed Rule 317.1 – Clean Air Act Nonattainment Fees for 8-Hour Ozone Standards: http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2024/2024-jun7-024.pdf.

IPT and BPT estimates for both PM2.5-specific and ozone-specific benefits are developed by dividing the 2022 AQMP health benefits results by the total AQMP emissions reductions of NOx, a key PM2.5 and ozone precursor. The PM2.5-related health benefits associated with the 2022 AQMP reflect reductions in NOx and, to a lesser degree, directly emitted fine particles (see Table 3-1 in the 2022 AQMP Socioeconomic Report). For this analysis, all PM2.5-related benefits from the 2022 AQMP are attributed to reductions in NOx as NOx reductions are the primary driver of PM2.5 reductions in the 2022 AQMP.

The IPT and BPT factors generated from the 2022 AQMP are applicable to the emissions reductions anticipated from PR 2306 in conjunction with the state regulations, which affect mobile sources at rail yard operations, since a majority (85%) of the 2022 AQMP NOx emissions reductions are attributed to on-road and off-road mobile sources. As such, the 2022 AQMP IPT

and BPT factors are representative of the anticipated health benefits associated with NOx reductions from PR 2306 and statewide regulations.

This reduced-form approach relies upon an estimate of the average health impact for each ton of pollutant emissions (and/or its precursors) reduced. This average estimate is based on the benefits derived from the 2022 AQMP air quality modeling, which accounts for potential nonlinearities between NOx emissions and ozone concentrations in the Basin. Thus, although a variable marginal impact of emissions on benefits is not employed, the average IPT and BPT of the 2022 AQMP implementation implicitly reflects the impacts of nonlinear air quality chemistry on the overall expected health benefits. Additional methodological assumptions include:

- Changes in incidence are proportional to ambient PM2.5 or ozone concentrations.
- Changes in primary pollutant concentrations are proportional to changes in directly emitted NOx.
- The IPT and BPT values are specific to the year (2032 and 2037) being evaluated.
- For years prior to 2032, IPT and BPT values are not calculated. Instead, health benefits grow linearly from zero benefits in 2026 to the estimated 2032 total benefits (based upon 2032 IPT and BPT values).
- For intermediate years between 2032 and 2037, IPT and BPT values grow linearly.
- For years beyond 2037, 2037 IPT and BPT values are projected through 2050 based on either future population growth (IPT and cost-of-illness based BPT estimates), or both future population growth and income growth (willingness-to-pay based BPT estimates).

This analysis assesses public health benefits for which epidemiological studies have demonstrated an association between increases in ambient air pollution exposure and increases in illness and other health effects (morbidity endpoints) or increases in death rates from various causes (mortality endpoints) (U.S. EPA, 2019; U.S. EPA, 2020). The health endpoints quantified in this report are the same health endpoints quantified in the 2022 AQMP Socioeconomic Report. Additional details concerning the selection of quantified health effects and the generation of health benefits results are available in Chapter 3 and Appendices 3-A and 3-B of the 2022 AQMP Final Socioeconomic Report.[66]

Average NOx reductions in South Coast AQMD projected from the combined implementation of PR 2306 and statewide regulations are summarized in Table 4-11. PR 2306 is projected to reduce NOx emissions by an average of 10.5 tpd over the 2027 – 2050 period.

[66] South Coast AQMD. 2022 Final Socioeconomic Report – Appendices: http://www.aqmd.gov/docs/default-source/clean-air-plans/socioeconomic-analysis/final/aqmp-2022-socioeconomic-report-appendices-final.pdf

Table 4-11. Projected NOx Emission Reductions (tpd)

	Annual Average (2027 – 2050)
Baseline Emissions	16.5
Controlled Emissions under PR 2306 and State Rules	6.0
Emission Reductions	**10.5**

The estimated IPT factors were used in conjunction with projected annual emission reductions to estimate the health benefits presented in Table 4-12 for each health endpoint by pollutant. In total, it is estimated that 7,000 premature deaths will be avoided from 2027 through 2050 due to improved air quality, and that the number of hospital admissions from all endpoints considered (asthma, cardiovascular, respiratory, Alzheimer's disease, Parkinson's disease, and ischemic stroke) would decrease by about 1,766 per year. Many EJ communities are located near the sources of pollution addressed by PR 2306 and statewide regulations and will realize a substantial portion of these estimated health benefits as a result.

Table 4-12. Health Effect Estimates*

Health Effect	Annual Average 2027-2050	Total 2027-2050
Premature Deaths Avoided, All Cause		
Long-Term Ozone Exposure[1]	69	1,600
Long-Term PM2.5 Exposure	230	5,400
Reduced Morbidity Incidence		
Long-Term Ozone Exposure		
Asthma, New Onset	890	21,000
Short-Term Ozone Exposure[1]		
Asthma Symptoms (Chest Tightness, Cough, Shortness of Breath, and Wheeze)	160,000	3,900,000
Emergency Room Visits (ED), Asthma	59	1,400
ED Visits, All Respiratory Minus Asthma	140	3,300
Hospital Admissions (HA), Asthma	1,700	40,000
Minor Restricted Activity Days	65,000	1,600,000
School Loss Days, All Cause	19,000	460,000
Long-Term PM2.5 Exposure		
Asthma, New Onset	330	7,900
HA, Alzheimer's Disease	23	560
HA, Parkinson's Disease	9.7	230
Incidence, Hay Fever/Rhinitis	1,600	38,000
Incidence, Lung Cancer (non-fatal)	19	450
Short-Term PM2.5 Exposure		
Acute Myocardial Infarction, Nonfatal	3.4	81
Asthma Symptoms, Albuterol use	55,000	1,300,000
ED Visits, Asthma	12	280
ED Visits, All Cardiac Outcomes	25	600
ED Visits, All Respiratory Minus Asthma	57	1,400
Emergency Hospitalizations (EHA), Asthma	0.6	14
HA, All Cardiac Outcomes	8.5	200
HA, All Respiratory	24	570
Incidence, Ischemic Stroke	13	320
Incidence, Out-of-Hospital Cardiac Arrest	2.2	54
Minor Restricted Activity Days[2]	75,000	1,800,000
Work Loss Days[2]	13,000	310,000

* Each health effect represents the point estimate of a statistical distribution of potential outcomes (rounded to two significant figures).

[1] Health effects of ozone exposure are quantified for the summer planning period only (i.e., May 1 to September 30). There are potentially more premature mortalities and morbidity conditions avoided outside the ozone peak season.

[2] Expressed in person-days. Minor Restricted Activity Days (MRAD) refer to days when some normal activities are avoided due to illness.

Table 4-13 presents the quantifiable and monetized value of public health benefits, which are estimated to be $5 billion annually on average. About 97 percent of these benefits are attributable to avoided premature mortalities. In contrast, the proportional implementation of state regulations required by PAR 2306 is estimated to cost $102 million annually as reported in Table 4-6, or roughly two percent of the annual monetized health benefits. The estimates are based on a value of statistical life (VSL) of $12.4 million[67] and the assumption that the willingness-to-pay (WTP) for mortality risk reductions will increase as per-capita income grows; specifically, a one percent increase in income was assumed to raise VSL by 1.1 percent (i.e., an income elasticity of 1.1).[68] These values correspond to a present value of quantified benefits of $65 billion at a four percent discount rate, or $100 billion at a one percent discount rate, cumulatively from 2027-2050. The values in Table 4-13 are presented in 2023 U.S. dollars and reflect projected income levels.

Table 4-13. Monetized Public Health Benefits (Billions of 2023 Dollars)[1,2]

	Total (2027-2050)	Annual Average (2027-2050)	Present Value[3] (2027-2050)
Mortality-related benefits	**$117**	**$4.9**	**$63**
Long-Term Ozone Exposure	$27	$1.1	$15
Long-Term PM2.5 Exposure	$89	$3.7	$48
Morbidity-related benefits	**$3.6**	**$0.15**	**$2.0**
Grand Total	**$120**	**$5.0**	**$65**

Note:
1) Numbers may not sum due to rounding (rounded to two significant figures).
2) The monetized public health benefits reported in this table were estimated for the four-county region, which includes areas that are located outside the Basin. However, staff estimated that mortality-related benefits accrued to the areas within the Basin would account for 99 percent of the total. In other words, the difference is minimal between quantifying public health benefits for the Basin and for the four-county region.
3) Present Value is discounted to year 2024 using a 4% Discount Rate.

SOCIOECONOMIC IMPACT ASSESSMENT

On March 17, 1989, the South Coast AQMD Governing Board adopted a resolution which requires an analysis of the economic impacts associated with adopting and amending rules and regulations. In addition, Health and Safety Code Sections 40440.8 and 40728.5 require a socioeconomic impact assessment for proposed and amended rules resulting in significant impacts to air quality or emission limitations. Thus, this Socioeconomic Impact Assessment has been prepared in accordance with Health and Safety Code and the South Coast AQMD Governing Board

[67] All VSL values presented here are in 2023 dollars and 2013 income levels, health benefits results estimated from the VSL and converted into IPT and BPT values for this analysis were converted to 2032 and 2037 income levels using published CA Wages & Salaries for consistency with the 2022 AQMP Final Socioeconomic Report.

[68] Industrial Economics and Lisa Robinson. Review of Mortality Risk Reduction Valuation Estimates for 2016 Socioeconomic Assessment: https://www.aqmd.gov/docs/default-source/clean-air-plans/socioeconomic-analysis/iecmemos_november2016/scmortalityvaluation_112816.pdf

requirements. The industries and businesses affected, potential costs of proportional implementation of state regulations in South Coast AQMD, and anticipated public health benefits are discussed in the previous sections of this chapter, while the impacts on small businesses, range of probable costs attributable specifically to PR 2306, and macroeconomic impacts are discussed in the following.

Small Business Analysis

The South Coast AQMD defines a "small business" in Rule 102 – Definition of Terms for purposes of fees as one which employs 10 or fewer persons and which earns less than $500,000 in gross annual receipts. The South Coast AQMD also defines "small business" for the purpose of qualifying for access to services from the South Coast AQMD's Small Business Assistance Office (SBAO) as a business with an annual receipt of $5 million or less, or with 100 or fewer employees. In addition to the South Coast AQMD's definitions of a small business, the federal Small Business Administration (SBA) and the federal 1990 Clean Air Act Amendments (1990 CAAA) also provide definitions of a small business.

The 1990 CAAA classifies a business as a "small business stationary source" if it: 1) employs 100 or fewer employees; 2) does not emit more than 10 tons per year of either VOC or NOx; and 3) is a small business as defined by SBA. The SBA definitions of small businesses have revenue or employee count thresholds that may vary according to designated six-digit NAICS codes. For example, for the industry of Line-haul Railroads (NAICS 482111), the threshold for a small business is 1,500 employees.

None of the affected facilities listed in Table 4-1 would qualify as small businesses under the various definitions used by South Coast AQMD. Both UP and BNSF earned over $20 billion in revenue and employed more than 30,000 people in 2023, according to publicly available securities filings, and government entities would not be considered small businesses.

PR 2306 Compliance Costs

PR 2306 includes reporting and notification requirements which will impose nominal incremental costs relative to CARB's statewide regulations. Table 4-14 outlines the expected labor hours and costs to produce the reports required by PR 2306 assuming that regulated entities will contract for the development of the reports at a rate of $150 per hour.

Table 4-14. Reporting Costs Associated with PR 2306 (2023$)

Reporting Item	Frequency	Labor Hours Per Item	Total Cost Per Item	Total Cost Per Facility, 2027-2050
Initial Facility Information Report	One-time	30	$4,500	$4,500
Initial Zero Emission Infrastructure Report	One-time	20	$3,000	$3,000
Milestone Compliance Report	Every three years	200	$30,000	$240,000
Zero Emission Infrastructure Status Update Report	Every three years	15	$2,250	$18,000
Various Notifications	Triggered by specific events	1	$150	N/A
Note: The number of notifications triggered by specific events is unforecastable, so the total costs from 2027-2050 are not estimated.				

As shown in Table 4-15, the total reporting costs associated with PR 2306 across all years analyzed (2027-2050) are approximately $6,637,500 in undiscounted 2023 dollars. On an annual basis, these reporting costs are approximately $255,290 in undiscounted 2023 dollars. Discounted reporting costs are presented in Table 4-15 as well.

Table 4-15. Reporting Costs Associated with PR 2306: Total Present Value and Annualized Reporting Costs Over the 2027-2050 Period For All Facilities (2023$)

	Present Value Cost	Average Annual Cost
Undiscounted	$6,637,500	$255,290
1% Discount Rate/Real Interest Rate	$5,778,470	$259,640
4% Discount Rate/Real Interest Rate	$3,953,230	$272,880

PR 316.2 Compliance Costs

PR 316.2 establishes the administrative fees to be paid by freight rail yard owners or operators subject to PR 2306 to recover reasonable costs incurred by South Coast AQMD for implementation of PR 2306. Estimates indicate that there are 25 freight rail yards expected to initially submit Initial Facility Information Reports and Initial Zero Emission Infrastructure Reports pursuant to the schedule specified in PR 2306. Additionally, the aforementioned freight rail yards are also required to submit Milestone Compliance Reports and Zero Emission Infrastructure Update Reports consistent with PR 2306 milestone years.

Staff expect to receive 25 Initial Facility Information Reports and 25 Initial Zero Emission Infrastructure Reports for review and approval following the initial base period. Additionally, staff expect to receive 25 Milestone Compliance Reports and 25 Zero Emission Infrastructure Status Update Reports for each milestone year subsequent to the base period. Additional notification requirements in PR 2306 include Change of Freight Rail Yard Owner/Operator, Freight Rail Yard Shutdown, Exceedance of Low Activity Exemption Threshold, and Proposed Freight Rail Yard Construction, Conversion, or Expansion. It is speculative to predict the total number of new

facilities which could potentially be subject to PR 2306 in the future; however, that does not preclude additional facilities from becoming subject to PR 2306 after the rule's potential adoption.

The total cost for South Coast AQMD to administer and enforce the reporting and notifications associated with PR 2306 was determined as a function of the burdened hourly rates for staff multiplied by the total staff time required to process each type of reports and notifications required by PR 2306. The burdened hourly rate includes salary and benefits for that position, plus a proportionate share (based on an allocation per FTE) of South Coast AQMD operational expenses such as costs for the building, utilities, insurance, etc. Staff time associated with reviewing submitted notifications and reports are based on past experiences with similar reporting audits conducted for existing rules and regulations with similar scale for stationary sources, such as those included in Rule 1109.1 (Petroleum Refineries and Related Operations), as well as indirect sources, such as those included in Rule 2305 (WAIRE Program).[69]

Table 4-16 shows the estimated average time required by staff to review each report as well as associated burdened rates for each position and total costs for each report. Evaluation of review times for reports are based on estimated hours South Coast AQMD staff will need to audit the reports filed and perform investigations and inspections as needed to verify the accuracy and completeness of these reports. Staff will need to verify an affected freight rail yard continuous compliance with the applicable requirements in PR 2306 and initiate enforcement action(s) upon freight rail yard's failure to demonstrate or maintain compliance with the provisions of PR 2306.

Table 4-16. Fees and Review Time Estimates for PR 316.2 Reports

Staff	Burdened Hourly Rate	Initial Facility Information Report	Initial Zero Emission Infrastructure Report	Milestone Compliance Report	Zero Emission Infrastructure Status Update Report
Planning & Rules Manager	$149.71	1.0 hrs	0.5 hrs	6.0 hrs	0.5 hrs
Program Supervisor	$135.56	6.0 hrs	1.0 hrs	20.0 hrs	1.0 hrs
Air Quality Specialist	$118.42	12.0 hrs	2.5 hrs	60.0 hrs	2.5 hrs
Air Quality Inspector II	$101.36	10.0 hrs	10.0 hrs	10.0 hrs	10.0 hrs
Total Cost per Report*		**$3,397.71**	**$1,520.07**	**$11,728.26**	**$1,520.07**

* Similar to other South Coast AQMD fees in Regulation III, costs are expected to increase over time, adjusted for increased staff costs and overhead costs due to inflation. All fees in PR 316 will therefore be adjusted periodically consistent with all other Regulation III fees pursuant to Rule 320.

[69] Supplemental Information for PR 316.2 Fee Rates can be found on https://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules/rule-2306

Table 4-17 shows the estimated average time required by staff to review each notification as well as associated burdened rates for each position and total costs for each notification. Notifications associated with PR 2306 are expected to require less information and staff time compared to the required reports. Review times for notifications are based on estimated hours for staff to process notifications, update internal records of notified changes, and conduct any necessary inspections.

Table 4-17. Fees and Review Time Estimates for PR 316.2 Notifications

Staff	Burdened Hourly Rate	Change of Freight Rail Yard Operator		Change of Freight Rail Yard Owner		Freight Rail Yard Shutdown	Exceedance of Low Activity Exemption Threshold	Proposed Freight Rail Yard Construction, Conversion, or Expansion Notification
		Initial	*Secondary*	*Initial*	*Secondary*			
Planning & Rules Manager	$149.71	0.15 hrs	0.10 hrs	0.15 hrs	0.10 hrs	0.25 hrs	0.25 hrs	0.25 hrs
Program Supervisor	$135.56	0.15 hrs	0.10 hrs	0.15 hrs	0.10 hrs	0.25 hrs	0.25 hrs	0.25 hrs
Air Quality Specialist	$118.42	0.30 hrs	0.20 hrs	0.30 hrs	0.20 hrs	0.50 hrs	0.50 hrs	0.50 hrs
Total Staff Costs per Notification[70]		**$78.32**	**$52.21**	**$78.32**	**$52.21**	**$130.53**	**$130.53**	**$130.53**

The average annual cost of reporting fees for all facilities affected by PR 316.2 is estimated to be $106,640 over the forecast period. This Socioeconomic Impact Assessment does not estimate the total cost of fees for notifications, as they are likely to be infrequent and the timing of these events is unforecastable.

Macroeconomic Impacts

South Coast AQMD typically uses the Regional Economic Models, Inc Policy Insight Plus (REMI PI+) model to estimate the impacts of proposed rules on the regional economy. However, when the estimated average annual cost of a proposed rule is less than one million current U.S. dollars, South Coast AQMD will not use the REMI model because the resulting impacts are expected to be minimal and the REMI job impact forecast becomes less precise as compliance costs decline. Implementation of PR 2306 is expected to result in annual average costs of $255,290 for reporting and $106,640 for fees associated with PR 316.2. As a result, this Socioeconomic Impact Assessment does not utilize the REMI model to estimate macroeconomic impacts.

For informational purposes, this section instead presents an assessment of the macroeconomic impacts in the South Coast AQMD jurisdiction based on CARB's In-Use Locomotive Regulation. This Socioeconomic Impact Assessment relies on the assumption that the local share of statewide

[70] CARB. Proposed In-Use Locomotive Regulation Standardized Regulatory Impact Assessment (SRIA): https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appb.pdf

job impacts presented in the Standardized Regulatory Impact Assessment (SRIA) of the In-Use Locomotive Regulation is proportional to the share of locomotive emissions reductions in the South Coast AQMD jurisdiction presented in Table 4-2.[71] Note that the estimated job impacts represent the share of statewide job impacts resulting from the In-Use Locomotive Regulation that are likely to accrue in South Coast AQMD region, rather than incremental job impacts resulting from the implementation of PR 2306. Table 4-18 displays the statewide job impacts estimated by CARB in selected years resulting from the In-Use Locomotive Regulation and the estimated share of job impacts expected to accrue in the South Coast AQMD jurisdiction. A similar analysis based on CARB's ACF regulation is not included, as the ACF regulation also impacts drayage operations at seaports, state and local government fleet vehicles, and other vehicles which are outside the scope of PR 2306.

Table 4-18. South Coast AQMD-specific Share of Statewide In-Use Locomotive Job Impacts

In-Use Locomotive Regulation	2030	2035	2040	2045	2050
Statewide Change in Jobs	-6,991	-13,101	-14,543	-7,509	-3,760
Share in South Coast AQMD	18.3%	18.7%	20.4%	21.9%	23.4%
Local Change in Jobs Relative to Baseline	-1,279	-2,450	-2,967	-1,644	-880

CALIFORNIA ENVIRONMENTAL QUALITY ACT

Pursuant to the California Environmental Quality Act (CEQA) and South Coast AQMD's certified regulatory program (Public Resources Code Section 21080.5, CEQA Guidelines Section 15251 (1) and South Coast AQMD Rule 110), South Coast AQMD as lead agency, reviewed PR 2306 and determined that: 1) PR 2306 implements three control measures that were previously adopted in the 2022 AQMP and the 2016 AQMP; 2) the Final Program Environmental Impact Report (EIR) for the 2022 AQMP and the Final Program EIR for the 2016 AQMP evaluated the control measures which are being relied upon for PR 2306, and analyzed their potential environmental impacts; 3) no subsequent EIR would be required per CEQA Guidelines Section 15168 (c)(2) because there are no new or modified physical changes that would result from implementing PR 2306 which were not previously analyzed in the Final Program EIR for the 2022 AQMP and the Final Program EIR for the 2016 AQMP; and 4) the Final Program EIR for the 2022 AQMP and the Final Program EIR for the 2016 AQMP can be relied on for CEQA compliance. Thus, PR 2306 qualifies as a later activity within the scope of the programs approved earlier in the 2022 AQMP and the 2016 AQMP per CEQA Guidelines 15168 (c), and the Final Program EIR for the 2022 AQMP and the Final Program EIR for the 2016 AQMP adequately describe and analyze the activities associated with implementing PR 2306 for the purposes of CEQA such that no new environmental document is required. The analysis supporting this conclusion can be found in Appendix A of the Final Staff Report. ~~is a later activity within the scope of the programs approved earlier in the 2022 Air Quality~~

[71] CARB. Proposed In-Use Locomotive Regulation Standardized Regulatory Impact Assessment (SRIA): https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appb.pdf

~~Management Plan (AQMP) and 2016 AQMP per CEQA Guidelines Section 15168(c)(2), and the Final Program Environmental Impact Report (EIR) for the 2022 AQMP and the Final Program EIR for the 2016 AQMP adequately describe the activities associated with implementing PR 2306 such that no new environmental document will be required. The analysis supporting this conclusion is provided in Appendix A of this Staff Report, which was released for public review and comment at least 30 days prior to the South Coast AQMD Governing Board Hearing for PR 2306 and PR 316.2, which is anticipated to be heard on August 2, 2024 (subject to change).~~

In addition, pursuant to CEQA Guidelines Sections 15002(k) and 15061, PR 316.2 involves charges by public agencies for the purpose of meeting operating expenses which are statutorily exempt from CEQA pursuant to CEQA Guidelines Section 15273. A Notice of Exemption ~~will~~has been prepared for PR 316.2 pursuant to CEQA Guidelines Section 15062, and if PR 316.2 is approved, the Notice of Exemption will be filed for posting with the State Clearinghouse of the Governor's Office of Planning and Research, and with the county clerks of Los Angeles, Orange, Riverside and San Bernardino counties.

DRAFT FINDINGS UNDER HEALTH AND SAFETY CODE SECTION 40727

Health and Safety Code Section 40727 requires that prior to adopting, amending, or repealing a rule or regulation, the South Coast AQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the staff report.

Necessity

PR 2306 is needed to protect public health by reducing local and regional emissions of NOx associated with freight rail yards and the mobile sources attracted to freight rail yards. By reducing these emissions, PR 2306 will also assist in meeting state and federal air quality standards for ozone and PM2.5. NOx is a precursor to the formation of ozone and PM2.5. PR 316.2 is needed to recover South Coast AQMD costs of implementing PR 2306.

Authority

Authority for the South Coast AQMD Governing Board to adopt PR 2306 and PR 316.2 may be found in Health and Safety Code Sections 39002, 39650 through 39669, 40000, 40001, 40440, 40441, 40522.5, 40701, 40702, 40716, 40717, 40725 through 40728, 40910, 40920.5, 41508, 41511, and 41700 of the Health and Safety Code.

Clarity

PR 2306 and PR 316.2 are written or displayed so that their meaning can be easily understood by the persons directly affected by them.

Consistency

PR 2306 and PR 316.2 are in harmony with and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations.

Non-Duplication

PR 2306 and PR 316.2 will not impose the same requirements as any existing state or federal regulations. Proportional or more-than-proportional emission reductions in the South Coast AQMD relative to statewide average emission reductions are not guaranteed from implementation of state regulations alone. PR 2306 is designed to ensure these necessary emission reductions occur

within the South Coast AQMD. The proposed rules are necessary and proper to execute the powers and duties granted to, and imposed upon, the South Coast AQMD.

Reference

In adopting these rules, the following statutes which the South Coast AQMD hereby implements, interprets, or makes specific are referenced: Clean Air Act Sections 110(a)(5)(C); 116; Health & Safety Code Sections 40440, 40716, 40717, and 40522.5.

COMPARATIVE ANALYSIS

Health and Safety Code Section 40727.2 requires South Coast AQMD to perform a comparative written analysis when adopting or amending a rule or regulation that imposes a new or more stringent emission limit or monitoring, reporting, or recordkeeping requirement. The comparative analysis is relative to existing federal requirements, existing or proposed South Coast AQMD rules and air pollution control requirements and guidelines which are applicable to the same sources as identified in the proposed rule or regulation. PR 2306 regulates NOx emissions from freight rail yards as indirect sources that attract mobile sources of emissions, and PR 316.2 is the companion fee rule for PR 2306. Under Health and Safety Code Section 40727.2(g), PR 316.2 does not in itself require a comparative analysis but is included for completeness. PR 2306 and PR 316.2 are summarized in Table 4-19.

Table 4-19. PR 2306 and PR 316.2

Rules	Rule Elements		
	Applicability	**Requirements**	**Reporting, Notification, and Recordkeeping**
PR 2306	- Owners or operators of proposed, new, and existing freight rail yards located within the South Coast AQMD jurisdiction - Any ~~state or local government~~ non-federal public agency who enters into a contractual agreement with the owner or operator of such freight rail yards in relation to the freight rail yard lease, construction, or operation	- Freight rail yards must meet or exceed facility emission reductions targets for milestone years, with emission reductions from one or more freight rail yard sources of emissions using one of multiple compliance pathways - Requirement for submission of a request to the local electrical utility if there is a need to upgrade the electrical service - Requirement for the new owner or operator of a freight rail yard to obtain previously	- Initial and milestone compliance reports to include necessary information and data to demonstrate compliance with PR 2306 - Initial and milestone zero emission infrastructure reports on planning, development, and utilization of zero emission infrastructure - Submit a notification on changes in freight rail yard owner or operator - Submit a notification on freight rail yard shutdown including the potential date

Rules	Rule Elements		
	Applicability	**Requirements**	**Reporting, Notification, and Recordkeeping**
		reported information and data	- Submit a notification upon exceeding the switching activity threshold as established by PR 2306 for operator of a freight rail yard that is previously qualified for low activity exemption - Submit a notification prior to construction of or conversion into a New Freight Rail Yard or the expansion of an existing Freight Rail Yard - Recordkeeping to support compliance information submitted per initial and milestone reports
PR 316.2	Owners and operators of proposed, new, and existing freight rail yards subject to PR 2306 reporting and notification requirements	Freight rail yard owners and operators that submit reports or notifications required by rule 2306 must submit applicable fees, due by the report/notification submittal due date	N/A

PR 2306 is part of a suite of AQMP Facility Based Mobile Source Measures aimed at collectively addressing freight emissions. South Coast AQMD adopted Rule 2305 in 2021 to address emission associated with warehouses and is in active rulemaking on marine ports (PR 2304); however, no draft rule language for PR 2304 has been released as of the date of this report, and the proposed rule concept is still in development. At the same time, there are several air quality regulations at the state and federal level that focus on emissions from the mobile sources associated with freight rail yards. These can broadly be placed into three categories. First are regulations that aim to reduce emissions through the engine standards for new vehicles (Table 4-20). Second are regulations that aim to replace older vehicles with newer vehicles with cleaner technologies through fleet rules (Table 4-21). Third are regulations that focus on air quality impacts from facilities that attract mobile sources (Table 4-22). A comparative analysis of other regulations that focus on emissions from the mobile sources associated with freight rail yards is presented in Tables 4-20 to 4-22.

Table 4-20. Engine Standards

Rules	Rule Elements		
	Applicability	**Requirements**	**Reporting, Notification, and Recordkeeping**
U.S. EPA Phase 3 Heavy-Duty Fuel Efficiency and Greenhouse Gas (GHG) Standards[72]	Manufacturers, sellers, or importers of heavy-duty vocational vehicles and tractors	- CO_2 emission standards for applicable vehicles, with revised standards for model year 2027 and new standards for model year 2028 to 2032 - Require warranty for components of ZEVs including batteries - Require battery health monitors	- Report emissions test data and results, technical vehicle data, and end-of-year sales information - Manufacturers must keep records of reported information
U.S. EPA Control of Emissions from Locomotives[73]	Manufacturers of new locomotives and locomotives with a new engine	Sets emission standards for new locomotives and locomotive engines, including certification requirements	- Manufacturers must report total number of locomotives and exempted locomotives produced during the model year - Manufacturers must keep records of compliance, emission data, and maintenance instructions or explanations

[72] U.S. EPA. Greenhouse Gas Emissions Standards for Heavy-Duty Vehicles – Phase 3: https://www.govinfo.gov/content/pkg/FR-2024-04-22/pdf/2024-06809.pdf

[73] Code of Federal Regulations. Part 1033 – Control of Emissions from Locomotives: https://www.ecfr.gov/current/title-40/chapter-I/subchapter-U/part-1033

Rules	Rule Elements		
	Applicability	**Requirements**	**Reporting, Notification, and Recordkeeping**
CARB Tractor-Trailer GHG Regulation[74]	Owners of long box-type trailers and heavy-duty tractors that pull them	Applicable tractors and trailers must either use U.S. EPA "SmartWay" certified tractors and trailers, or be retrofitted with SmartWay verified technologies	- Report applicable owners - Maintain records of compliance
U.S. EPA Non-Road Diesel Engines and Fuel Standards[75]	Entities that produce or import non-road diesel engines, or produce, import, distribute, or sell fuel for non-road diesel engines	- Set emission standards for non-road diesel engines. Phase-in less polluting engine standards - Requirement for new test procedures and engine certifications and labeling	- Registration of fuel providers and distributors - Reporting by engine and equipment manufacturers - Reporting by engine and equipment manufacturers - Notification by equipment manufacturers prior to use of the Tier 4 transition provisions - Recordkeeping by engine and equipment manufacturers
U.S. EPA Non-Road Large Spark Ignition Engines Standards[76]	Manufacturers of non-road large-spark ignition engines	- Emission standards for large non-road spark ignition engines	- Defect Reporting for non-compliant units - Periodic Reporting

[74] CARB. Final Regulation Order for Phase 2 Greenhouse Gas Regulations and Tractor-Trailer GHG Regulations: https://ww3.arb.ca.gov/regact/2018/phase2/finalatta.pdf?_ga=2.205908496.2040751625.1614668703-251503538.1597351373

[75] U.S. EPA. Control of Emissions of Air Pollution from Nonroad Diesel Engines and Fuel: https://www.govinfo.gov/content/pkg/FR-2004-06-29/pdf/04-11293.pdf

[76] U.S. EPA. Control of Emissions from Nonroad Large Spark-Ignition Engines, and Recreational Engines (Marine and Land-Based): https://www.govinfo.gov/content/pkg/FR-2002-11-08/pdf/02-23801.pdf

Rules	Rule Elements		
	Applicability	**Requirements**	**Reporting, Notification, and Recordkeeping**
CARB Optional Reduced NOx Emission Standards for On-Road Heavy-duty Engines[77]	Manufacturers of on-road heavy-duty engines	- Sets optional low NOx emission standards	- Manufacturer reporting on certification data
CARB Heavy Duty Low NOx Omnibus Rule[78]	Manufacturers of heavy-duty vehicle engines	- Lowered NOx emission standards to 0.05 g/bhp-hr for 2024-2026, 0.02 g/bhp-hr starting in 2027 - Revised testing, certification, and warranty requirements	- Manufacturer reporting on certification data

[77] CARB. Optional Low NOx Certified Heavy-Duty Engines: https://ww2.arb.ca.gov/sites/default/files/classic//msprog/onroad/optionnox/optional_low_nox_certified_hd_engines.pdf

[78] CARB. Heavy-Duty Engine and Vehicle Omnibus Regulation: https://ww2.arb.ca.gov/rulemaking/2023/hdomnibus2023, https://ww2.arb.ca.gov/rulemaking/2020/hdomnibuslownox

Table 4-21. Fleet Rules

Rules	Rule Elements		
	Applicability	**Requirements**	**Reporting, Notification, and Recordkeeping**
CARB Advanced Clean Trucks Regulation[79]	Truck manufacturers of medium- and heavy-duty trucks. Large fleets with a gross vehicle weight rating (GVWR) greater than 8500 lbs	Truck manufacturer sales mandate for medium- and heavy-duty trucks	- Large entities and truck fleets report how fleets are operated, and the number of contractors used to run the fleets - Manufacturers maintain records and report on ZE vehicles sales and crediting in the regulation
CARB Advanced Clean Fleets Regulation – Drayage Requirements[80]	Owners and operators of on-road heavy-duty drayage trucks that operate at California seaports and intermodal rail yards	- Transition to zero emission trucks starting in 2024 with full implementation by 2035 - All drayage trucks operating at a California seaport or intermodal rail yard must be registered with CARB, with all registered drayage trucks being required to be zero emission beginning in 2035	- Reporting of drayage truck activity and vehicle information - Drayage truck registration through CARB's online registration system - Rail yards and seaports must collect and report information about drayage trucks coming to their facilities

[79] CARB. Advanced Clean Trucks: https://ww2.arb.ca.gov/rulemaking/2019/advancedcleantrucks

[80] CARB. Advanced Clean Fleets: https://ww2.arb.ca.gov/rulemaking/2022/acf2022

Rules	Rule Elements		
	Applicability	**Requirements**	**Reporting, Notification, and Recordkeeping**
CARB In Use Locomotive Regulation[81]	Freight line, switch, industrial, historic, and passenger locomotives	Requirements for operators to: - Pay into a spending account based on their emission outputs - Prohibits use of non-zero emissions locomotives beyond 23 years of age based on engine build dates starting in 2030 - Limit locomotive idling to 30-minutes - Operate line haul locomotives in a zero emission configuration beginning in 2035 for locomotives with an original engine build date of 2035 or newer - Operate switch locomotives in a zero emission configuration beginning in 2030 for locomotives with	- Reporting of activity, emissions levels, and idling data annually - Locomotive data required to be submitted to CARB

[81] CARB. In-Use Locomotive Regulation: https://ww2.arb.ca.gov/rulemaking/2022/locomotive

Rules	Rule Elements		
	Applicability	**Requirements**	**Reporting, Notification, and Recordkeeping**
		an original engine build date of 2030 or newer	
CARB Heavy-Duty Inspection and Maintenance Program[82]	Owners and freight contractors of non-gasoline heavy-duty vehicles, vehicle testing businesses, and freight facilities (including intermodal rail yards)	Inspection and maintenance programs for vehicle lifetime	- Record retention for a minimum of five years - Opacity, on-board testing reporting required
CARB Truck and Bus Regulation[83]	Fleets with diesel-fueled vehicles with a gross vehicle weight rating (GVWR) greater than 14,000 lbs	- Requires the installation of verified PM diesel emission control strategy (DECS) on heavy-duty vehicles - Replace engine to meet 2010 emission standards by 2023	Fleet compliance recordkeeping and reporting required, with some fleets exempted
CARB Transport Refrigeration Unit (TRU) Air Toxics Control Measure (ATCM)[84]	- Owners and operators of diesel-fueled engines used to refrigerate perishable goods.	All truck TRUs in California zero emission by 2030. Starting in 2023, newer model trailer, container,	- Report Electronic Telematics System Data quarterly. First only 2024+ models but all Trailer and

[82] CARB. Clean Truck Check (HD I/M): https://ww2.arb.ca.gov/our-work/programs/heavy-duty-inspection-and-maintenance-program

[83] CARB. Truck and Bus Regulation: https://ww2.arb.ca.gov/sites/default/files/classic/msprog/onrdiesel/documents/tbfinalreg.pdf

[84] CARB. TRU ATCM: https://ww2.arb.ca.gov/rulemaking/2021/tru2021

Rules	Rule Elements		
	Applicability	**Requirements**	**Reporting, Notification, and Recordkeeping**
	TRU generator sets that provide onboard electric power refrigeration systems - Applicable facility (e.g. intermodal rail yard) owners and operators	and railcar TRUs, along with TRU gensets, 0.02 grams per brake horsepower-hour PM standard requirement. For intermodal rail yards: - Owners or operators must register their facility with CARB - Ensure compliance of TRUs operating onsite beginning December 31, 2023	Gen set TRUs by 2028 - Maintain records for 3 years - Report all TRU activity at facility that operates inside the facility fence line or property boundary - Report average total number of hours per week for outbound and inbound TRU or TRU gen set engines operating while at the facility - Report facility information, such as address and contact information for facility - Report number of refrigerated trailers that are used at the facility for cold storage, total annual number of hours of TRU engine operation, and total annual numbers of hours of operation using electric standby associated with these refrigerated trailers

Rules	Rule Elements		
	Applicability	**Requirements**	**Reporting, Notification, and Recordkeeping**
CARB In-Use Off-Road Diesel Regulation[85]	Existing (in-use) off-road diesel-fueled vehicles not subject to CARB's CHE Regulation	- Engine performance requirements to reduce NOx, diesel PM, and other criteria pollutant. Limit idling time - Restricts purchase of new vehicles based on engine emission standards	- Owners of off-road diesel fleets report fleet information, annually update fleet information - Recordkeeping required for reports submitted
CARB Large Spark Ignition (LSI) Rule[86]	Fleet operators of LSI engines vehicles	Hydrocarbon and NOx emission standards, using fleet average	- Recordkeeping requirements and labeling of LSI equipment
Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards (CHE Regulation)[87]	Owners, operators, and vendors for CHE being operated at ports and intermodal rail yards in the State of California	Opacity monitoring, cleanest available technology requirements for In-Use equipment. Engine standard requirements for new equipment.	- Annual Compliance Reporting - Reporting for out-of-use equipment - Records on owner and operator contact information - Opacity testing - Equipment information

[85] CARB. In-Use Off-Road Diesel-Fueled Fleets Regulation: https://ww2.arb.ca.gov/our-work/programs/use-road-diesel-fueled-fleets-regulation/rulemaking-documents

[86] CARB. Large Spark-Ignition (LSI) Engine Fleet Requirements Regulation: https://ww2.arb.ca.gov/sites/default/files/classic/msprog/offroad/orspark/largesparkappa-clean.pdf

[87] CARB. CHE Regulation: https://ww2.arb.ca.gov/our-work/programs/cargo-handling-equipment/che-regulatory-documents

Table 4-22. Facility-Based Rules and Other Types of Rules

Rules	Rule Elements		
	Applicability	**Requirements**	**Reporting, Notification, and Recordkeeping**
South Coast AQMD Rule 2202 - On-Road Motor Vehicle Mitigation Options (Employee Commute Reduction)[88]	Employers with 250 or more employees	- Implement an emission reduction program related to employee commutes to meet a worksite specific emission reduction target - Multiple compliance options include: implementing an Employee Commute Reduction Program (ECRP), implementing emission reduction strategies (ERS), and participating in the Air Quality Investment Plan (AQIP)	- ECRP plan submission - Notify on rule applicability to worksite - Recordkeeping requirements for all information submitted for rule compliance

[88] South Coast AQMD. Rule 2022 – On-Road Motor Vehicle Mitigation Options: https://www.aqmd.gov/docs/default-source/rule-book/reg-xxii/rule-2202.pdf

Rules	Rule Elements		
	Applicability	**Requirements**	**Reporting, Notification, and Recordkeeping**
South Coast AQMD Rule 2305 - Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program[89]	Owners and operators of warehouses located in the South Coast AQMD jurisdiction with greater than or equal to 100,000 square feet of indoor floor space in a single building	Warehouse operators are required to earn WAIRE Points annually, either by completing actions off the WAIRE Menu, a Custom WAIRE plan, or paying a mitigation fee based on truck trips	- Periodic reports on warehouse statistics and its operations - Notify when a warehouse facility owner has the ability to use at least 50,000 sq. ft. of a warehouse no greater than or equal to 100,000 sq. ft used for warehouse activities or when a warehouse has been renovated where the total warehouse space used for warehouse activities has changed - Recordkeeping requirements for all information submitted for rule compliance

[89] South Coast AQMD. Rule 2305 – Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program: https://www.aqmd.gov/docs/default-source/planning/fbmsm-docs/pr-2305_4-7-21_clean.pdf

REFERENCES

American Lung Association. State of the Air Report Card: California. Accessed on June 26, 2024: https://www.lung.org/research/sota/city-rankings/states/california

BYD 8Y Terminal Tractor. Accessed on June 26, 2024: https://en.byd.com/truck/terminal-tractor/

California Air Resources Board. 2020 Mobile Source Strategy. October 2021. on June 26, 2024: https://ww2.arb.ca.gov/resources/documents/2020-mobile-source-strategy

California Air Resources Board. 2021 Line-Haul Locomotive Emission Inventory. February 2021. Accessed on June 26, 2024: https://ww2.arb.ca.gov/sites/default/files/2021-02/2021_line_haul_locomotive_emission_inventory_final.pdf

California Air Resources Board. 2022 State Strategy for the State Implementation Plan (2022 State SIP Strategy). Accessed on June 26, 2024: https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy

California Air Resources Board. 2022 Technology Assessment: Non-Truck Transport Refrigeration Units (TRU). October 2022. Accessed on June 26, 2024: https://ww2.arb.ca.gov/sites/default/files/2022-10/CARB%202022%20TRU%20Technology%20Assessment%2010-14-22.pdf

California Air Resources Board. Advanced Clean Fleets Regulation – Drayage Truck Requirements. September 2023. Accessed on June 26, 2024: https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-fleets-regulation-drayage-truck-requirements

California Air Resources Board. Advanced Clean Fleets Regulation – Emissions Inventory and Results (Appendix F). August 2022. Accessed on June 26, 2024: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/appf.pdf

California Air Resources Board. Advanced Clean Trucks. Accessed on June 26, 2024: https://ww2.arb.ca.gov/rulemaking/2019/advancedcleantrucks

California Air Resources Board. Cargo Handling Equipment Regulation. Accessed on July 2, 2024: https://ww2.arb.ca.gov/our-work/programs/cargo-handling-equipment/che-regulatory-documents

California Air Resources Board. Clean Truck Check (HD I/M). Accessed on June 26, 2024: https://ww2.arb.ca.gov/our-work/programs/heavy-duty-inspection-and-maintenance-program

California Air Resources Board. Draft Technology Assessment: Mobile Cargo Handling Equipment. November 2015. Accessed on June 26, 2024: https://ww2.arb.ca.gov/sites/default/files/classic/msprog/tech/techreport/che_tech_report.pdf

California Air Resources Board. Estimated the Community Level Health Benefits from Air Pollution Control Programs. March 2024. Accessed on June 26, 2024: https://ww2.arb.ca.gov/resources/documents/estimating-community-level-health-benefits-air-pollution-control-

programs#:~:text=CARB%20uses%20a%20California%20specific,available%20on%20the%20CARB%20website

California Air Resources Board. Final Regulation Order for Phase 2 Greenhouse Gas Regulations and Tractor-Trailer GHG Regulations. February 2019. Accessed on June 26, 2024: https://ww3.arb.ca.gov/regact/2018/phase2/finalatta.pdf?_ga=2.205908496.2040751625.1614668703-251503538.1597351373

California Air Resources Board. Heavy Duty Low NOx Omnibus. Accessed on June 26, 2024: https://ww2.arb.ca.gov/our-work/programs/heavy-duty-low-nox

California Air Resources Board. In-Use Locomotive Emission Inventory: Regulation Proposal and Scenarios (Appendix G). August 2022. Accessed on June 26, 2024: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appg.pdf

California Air Resources Board. In-Use Locomotive Regulation. September 2023. Accessed on June 26, 2024: https://ww2.arb.ca.gov/rulemaking/2022/locomotive

California Air Resources Board. In-Use Locomotive Regulation Initial Statement of Reasons November 2022. Accessed on July 1, 2024: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/isor.pdf

California Air Resources Board. In-Use Off-Road Diesel-Fueled Fleets Regulation. Accessed on June 26, 2024: https://ww2.arb.ca.gov/our-work/programs/use-road-diesel-fueled-fleets-regulation

California Air Resources Board. Large Spark-Ignition Regulation. Accessed on June 26, 2024: https://ww2.arb.ca.gov/our-work/programs/truckstop-resources/road-zone/large-spark-ignition-regulation

California Air Resources Board. LCTI: The Commercialization of POLB Off-Road Technology "C-Port" Demonstration. Accessed on June 26, 2024: https://ww2.arb.ca.gov/lcti-commercialization-polb-road-technology-c-port-demonstration

California Air Resources Board. Optional Low NOx Certified Heavy-Duty Engines. Accessed on June 26, 2024: https://ww2.arb.ca.gov/sites/default/files/classic//msprog/onroad/optionnox/optional_low_nox_certified_hd_engines.pdf

California Air Resources Board. Preliminary Cost Document for In-Use Locomotive Regulation. March 2021. Accessed on June 26, 2024: https://ww2.arb.ca.gov/sites/default/files/2021-03/3.16.21%20Locomotive%20Reg%20-%20Preliminary%20Cost%20Document_Final.pdf

California Air Resources Board. Potential Amendments to the Off-Road New Diesel Engine Emission Standards: Tier 5 Criteria Pollutants and CO2 Standards. Accessed on June 26, 2024: https://ww2.arb.ca.gov/our-work/programs/tier5

California Air Resources Board. Proposed Advanced Clean Fleets Regulation. August 2022. Accessed on June 26, 2024: https://ww2.arb.ca.gov/rulemaking/2022/acf2022

California Air Resources Board. Proposed In-Use Locomotive Regulation Standardized Regulatory Impact Assessment (SRIA). May 2022. Accessed on June 26, 2024: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appb.pdf.

California Air Resources Board. Proposed Zero Emission Forklift Regulation SRIA. April 2023. Accessed on June 26, 2024: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2024/zeforklifts/appb2.pdf

California Air Resources Board. Public Hearing to Consider the Proposed Advanced Clean Fleets Regulation, Staff Report: Initial Statement of Reasons. August 2022. Accessed on June 26, 2024: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/isor2.pdf.

California Air Resources Board. Rail Emission Reduction Agreements. Accessed on June 26, 2024: https://ww2.arb.ca.gov/resources/documents/rail-emission-reduction-agreements

California Air Resources Board. Regulation to Control Emissions from In-Use On-Road Diesel-Fueled Heavy-Duty Drayage Trucks. July 2007. Accessed on June 26, 2024: https://ww2.arb.ca.gov/sites/default/files/classic/msprog/onroad/porttruck/draftreg.pdf

California Air Resources Board. Technology Feasibility Assessment for the Proposed In-Use Locomotive Regulation. 2022. Accessed on June 26, 2024: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appf.pdf

California Air Resources Board. Truck vs. Train Emissions Analysis. Accessed on June 26, 2024: https://ww2.arb.ca.gov/resources/fact-sheets/truck-vs-train-emissions-analysis

California Air Resources Board. Zero-Emission Truck TRU Technologies. Accessed on June 26, 2024: https://ww2.arb.ca.gov/our-work/programs/transport-refrigeration-unit/compliance-information/zero-emission-truck-tru

California Core. Railcar Movers and Freight Locomotives. Accessed on June 26, 2024: https://californiacore.org/equipment-category/railcar-movers-switchers/?type=110

California Energy Commission. AB 2127 Report. February 2024. Accessed on June 26, 2024: https://efiling.energy.ca.gov/GetDocument.aspx?tn=254869

California Energy Commission. EVSE Deployment and Grid Evaluation Tool. July 2021. Accessed on June 26, 2024: https://experience.arcgis.com/experience/6aaadc11586447aaaeab2a473947ad07

California Energy Commission. Integrated Energy Policy Report. February 2024. Accessed on June 26, 2024: https://efiling.energy.ca.gov/GetDocument.aspx?tn=254463

California HVIP Clean Truck and Bus Incentives. Tractor. Accessed on June 26, 2024: https://californiahvip.org/vehicle-category/heavy-duty/?type=300

California Office Of Environmental Health Hazard Assessment. SB 525 Disadvantaged Communities. Accessed on June 27, 2024: https://oehha.ca.gov/calenviroscreen/sb535

Code of Federal Regulations. Part 1033 – Control of Emissions from Locomotives. June 2008. Accessed on June 26, 2024: https://www.ecfr.gov/current/title-40/chapter-I/subchapter-U/part-1033

Electric Power Research Institute (EPRI). Zero Emission Planning and Grid Assessment for the Port of Los Angeles. June 2023. Accessed on June 26, 2024: https://www.epri.com/research/programs/105741/results/3002025783

Energy + Environmental Economics. 2035 Report 2.0: Distribution Grid Cost Impacts Driven by Transportation Electrification. June 2021. Accessed on June 26, 2024: https://www.ethree.com/wp-content/uploads/2021/06/GridLab_2035-Transportation-Dist-Cost.pdf

Global Commercial Vehicle Drive to Zero. Zero-Emission Technology Inventory (ZETI). Accessed on June 26, 2024: https://globaldrivetozero.org/tools/zeti/

Goldman School of Public Policy, University of California Berkeley. 2035 Report 2.0: Transportation. May 2020. Accessed on June 26, 2024: https://www.2035report.com/transportation/wp-content/uploads/2020/05/2035Report2.0-1.pdf?hsCtaTracking=544e8e73-752a-40ee-b3a5-90e28d5f2e18%7C81c0077a-d01d-45b9-a338-fcaef78a20e7

Industrial Economics and Lisa Robinson. Review of Mortality Risk Reduction Valuation Estimates for 2016 Socioeconomic Assessment. November 2016. Accessed on June 27, 2024: https://www.aqmd.gov/docs/default-source/clean-air-plans/socioeconomic-analysis/iecmemos_november2016/scmortalityvaluation_112816.pdf

Jessie Lund, Justin Slosky, Jacob Whitson, Ross McLane. Technology and Market Assessment of Zero-Emission Off-Road Equipment. October 2022. Accessed on June 26, 2024: https://calstart.org/wp-content/uploads/2022/10/off_road_report_october_2022.pdf

KoneCranes. Rubber-Tired Gantry Cranes. Accessed on June 26, 2024: https://www.konecranes.com/en-us/port-equipment-services/container-handling-equipment/rubber-tired-gantry-cranes

MI-JACK Products. EcoCrane. Accessed on June 26, 2024: https://mi-jack.com/ecocrane-battery-hybrid-system/

Office of Governor Edmund G. Brown Jr. Executive Order B-16-2012. March 2012. Accessed on June 26, 2024: https://www.ca.gov/archive/gov39/2012/03/23/news17472/index.html

Office of Governor Edmund G. Brown Jr. Governor Brown Takes Action to Increase Zero-Emission Vehicles, Fund New Climate Investments. January 2018. Accessed on June 26, 2024: https://www.ca.gov/archive/gov39/2018/01/26/governor-brown-takes-action-to-increase-zero-emission-vehicles-fund-new-climate-investments/index.html

Office of Governor Edmund G. Brown Jr. 2018 ZEV Action Plan Priorities Update. September 2018. Accessed on June 26, 2024: https://static.business.ca.gov/wp-content/uploads/2019/12/2018-ZEV-Action-Plan-Priorities-Update.pdf

Orange EV. Husk-e® Purpose-Built for Port & Rail. Accessed on June 26, 2024: https://orangeev.com/huske/

Pacific Northwest National Laboratory. Electric Vehicles at Scale – Phase II: Distribution System Analysis. September 2022. Accessed on June 26, 2024: https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-32460.pdf

Port of Long Beach. Revised Draft Port Master Plan. January 2022. Accessed on June 26, 2024: https://polb.com/port-info/mission-vision/#master-plan-update

Progress Rail – A Caterpillar Company. EMD® Joule Battery Electric Locomotives. Accessed on June 26, 2024: https://www.progressrail.com/en/Segments/RollingStock/Locomotives/FreightLocomotives/EMDJoule.html

Roland Berger. Forecasting a Realistic Electricity Infrastructure Buildout for Medium- & Heavy-Duty Battery Electric Vehicles. March 2024. Accessed on June 26, 2024: https://www.nada.org/media/9801/download?inline.

San Pedro Bay Ports. Clean Air Action Plan 2021 Update: Feasibility Assessment for Cargo Handling Equipment. 2022. Accessed on June 26, 2024: https://cleanairactionplan.org/download/239/cargo-handling-equipment/5192/2021-cargo-handling-equipment-feasibility-assessment-report-final.pdf

South Coast AQMD. 2022 Air Quality Management Plan. December 2022. Accessed on June 26, 2024: https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2022-air-quality-management-plan/final-2022-aqmp/final-2022-aqmp.pdf

South Coast AQMD. 2022 Air Quality Management Plan – Socioeconomic Report. December 2022. Accessed on June 26, 2024: http://www.aqmd.gov/docs/default-source/clean-air-plans/socioeconomic-analysis/final/aqmp-2022-socioeconomic-report-main-final.pdf

South Coast AQMD. 2022 Final Socioeconomic Report: Appendices. December 2022. Accessed on June 26, 2024: http://www.aqmd.gov/docs/default-source/clean-air-plans/socioeconomic-analysis/final/aqmp-2022-socioeconomic-report-appendices-final.pdf

South Coast AQMD. Draft Socioeconomic Impact Assessment for Proposed Rule 1109.1 – Emissions of Oxides of Nitrogen from Petroleum, Refineries and Related Operations, Proposed Rule 429.1 – Startup and Shutdown Provisions at Petroleum Refineries and Related Operations, Proposed Amended Rule 1304 – Exemptions, Proposed Amended Rule 2005 – New Source Review for RECLAIM. September 2021. Accessed on June 26, 2024: https://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1109.1/1109-1-draft-socioeconomic-impact-assessment-090721-merged.pdf

South Coast AQMD. MATES Air Toxics Exposure Study V. August 2021. Accessed on June 26, 2024: https://www.aqmd.gov/docs/default-source/planning/mates-v/mates-v-final-report-9-24-21.pdf

South Coast AQMD. Proposed Rule 2306 – Freight Rail Yards. June 2024. Accessed on June 26, 2024: https://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules/rule-2306

South Coast AQMD. Rule 2202 – On-Road Motor Vehicle Mitigation Options. August 2023. Accessed on July 2, 2024: https://www.aqmd.gov/docs/default-source/rule-book/reg-xxii/rule-2202.pdf

South Coast AQMD. Rule 2305 – Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program. April 2021. Accessed on July 2, 2024:

https://www.aqmd.gov/docs/default-source/planning/fbmsm-docs/pr-2305_4-7-21_clean.pdf

South Coast AQMD. Socioeconomic Analysis. March 2017. Accessed on June 26, 2024: http://www.aqmd.gov/home/air-quality/air-quality-management-plans/air-quality-mgt-plan/socioeconomic-analysis

Southern California Association of Governments. Transportation System Goods Movement. September 2020. Accessed on June 26, 2024: https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_goods-movement.pdf?1606001690

State of California. Executive Order N-79-20. September 2020. Accessed on June 26, 2024: https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf

State of California Executive Department. Executive Order B-55-18 to Achieve Carbon Neutrality. September 2018. Accessed on June 26, 2024: https://www.ca.gov/archive/gov39/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf

State of New Jersey. 2020 Volkswagen Settlement Application Port Newark Container Terminal Straddle Carrier Replacement Program. July 2020. Accessed on June 26, 2024: https://www.nj.gov/dep/vw/proposals/phase2/PNCT.pdf

Surface Transportation Board. Annual R-1 Reports Submitted by Class 1 Railroads. Accessed on July 1, 2024: https://www.stb.gov/reports-data/economic-data/annual-report-financial-data

Taylor Machine Works, Inc.. Electric Lifts. Accessed on June 26, 2024: https://taylorforklifts.com/products/electric-lift-truck

United States Environmental Protection Agency. 2020 National Emissions Inventory Locomotive Methodology. June 2022. Accessed on July 1, 2024: https://gaftp.epa.gov/air/nei/2020/doc/supporting_data/nonpoint/Rail/2020_NEI_Rail_062722.pdf

United States Environmental Protection Agency. Control of Emissions from Nonroad Large Spark-Ignition Engines, and Recreational Engines (Marine and Land-Based). November 2002. Accessed on June 26, 2024: https://www.govinfo.gov/content/pkg/FR-2002-11-08/pdf/02-23801.pdf

United States Environmental Protection Agency. Control of Emissions of Air Pollution from Nonroad Diesel Engines and Fuel. June 2004. Accessed on June 26, 2024: https://www.govinfo.gov/content/pkg/FR-2004-06-29/pdf/04-11293.pdf

United States Environmental Protection Agency. Emission Standards Reference Guide for On-road and Nonroad Vehicles and Engines. Accessed on June 26, 2024: https://www.epa.gov/emission-standards-reference-guide

United States Environmental Protection Agency. U.S. EPA. Greenhouse Gas Emissions Standards for Heavy-Duty Vehicles – Phase 3. April 2024. Accessed on June 26, 2024: https://www.govinfo.gov/content/pkg/FR-2024-04-22/pdf/2024-06809.pdf

United States Environmental Protection Agency. Integrated Science Assessment (ISA) for Particulate Matter. December 2019. Accessed on June 26, 2024: https://www.epa.gov/isa/integrated-science-assessment-isa-particulate-matter

United States Environmental Protection Agency. Technical Support Document: Estimating the Benefit per Ton of Reducing PM2.5 Precursors from 17 Sectors. February 2018. Accessed on June 26, 2024: https://www.epa.gov/sites/default/files/2018-02/documents/sourceapportionmentbpttsd_2018.pdf

Wabtec Corporation. Battery-Electric Locomotive Technology. Accessed on June 26, 2024: https://www.wabteccorp.com/locomotive/alternative-fuel-locomotives/FLXdrive

APPENDIX A : DETAILED CALIFORNIA ENVIRONMENTAL QUALITY ACT ANALYSIS

INTRODUCTION

SUMMARY OF ENVIRONMENTAL IMPACTS ASSOCIATED WITH PR 2306

ENVIRONMENTAL TOPIC AREAS WITH POTENTIALLY SIGNIFICANT IMPACTS

ENVIRONMENTAL TOPIC AREAS WITH LESS THAN SIGNIFICANT OR NO IMPACTS

CONCLUSION

REFERENCES

INTRODUCTION

The California Environmental Quality Act (CEQA) is comprised of Public Resources Code Section 21000 et seq. and the CEQA Guidelines which are codified at Title 14 California Code of Regulations, Section 15000 et seq. CEQA requires the evaluation of all potential adverse environmental impacts of proposed projects, and the identification and implementation of methods to reduce or avoid significant adverse environmental impacts of these projects, if feasible. [Public Resources Code Section 21061.1 and CEQA Guidelines Section 15364 define feasible]. The purpose of the CEQA process is to inform decision makers, public agencies, and interested parties of potential adverse environmental impacts that could result from implementing a proposed project and to identify feasible mitigation measures or alternatives, when an impact is significant.

The concept of regulating emissions from freight rail yards emerged from development of the 2016 AQMP,[90] describing a year-long process during which time potential emission reduction strategies for a suite of facility-based mobile source measures were evaluated and after which a report of the most promising approach was provided to the South Coast AQMD Governing Board. South Coast AQMD staff convened a working group which explored potential voluntary and regulatory approaches for both new and existing freight rail yards consistent with what was outlined in the 2016 AQMP for Control Measure MOB-02 – Emission Reductions at Rail Yards and Intermodal Facilities. This control measure specified the following criteria: "identified actions can be voluntary or can be regulations or other enforceable mechanisms promulgated by a local, state, or federal agency. Voluntary actions include, but are not limited to, greater deployment of zero and near-zero emission technologies, greater use of renewable fuels that may have the potential to reduce criteria pollutant emissions, and strategies that result in improved operational efficiencies with criteria pollutant and greenhouse gas emission reduction benefits." In May 2018, the Governing Board directed staff to initiate rulemaking for new and existing freight rail yards. Staff met with stakeholders and held working group meetings, and in the midst of this process, the 2022 AQMP[91] was adopted.

The development of the 2022 AQMP contained facility-based mobile source measures similar to Control Measure MOB-02 from the 2016 AQMP and continued to explore potential ways to regulate emissions from freight rail yards through: 1) proposing the development of "Further Deployment of Cleaner Technologies" control measures (Further Deployment Measures) to assist the California Air Resources Board (CARB) and U.S. Environmental Protection Agency (U.S. EPA); 2) bifurcating Control Measure MOB-02 – Emission Reductions at Rail Yards and Intermodal Facilities of the 2016 AQMP, into two control measures: MOB-02A – Emission Reductions at New Rail Yards and Intermodal Facilities and MOB-02B – Emission Reductions at Existing Rail Yards and Intermodal Facilities; and 3) relying on the CARB 2022 State Strategy for the State Implementation Plan (2022 SIP Strategy). Control Measures MOB-02A and MOB-02B of the 2022 AQMP expanded upon the Control Measure MOB-02 of the 2016 AQMP by seeking to reduce NOx and PM emissions related to on-road heavy-duty vehicles, off-road equipment, and locomotives at freight rail yards and intermodal facilities. Specifically, Control Measure MOB-2A focused on achieving emission reductions at new freight rail yards and intermodal facilities,

[90] South Coast AQMD, 2016 Air Quality Management Plan, March 2017. https://www.aqmd.gov/home/air-quality/air-quality-management-plans/final-2016-aqmp

[91] South Coast AQMD, 2022 Air Quality Management Plan, December 2022. https://www.aqmd.gov/home/air-quality/air-quality-management-plans/air-quality-mgt-plan

whereas Control Measure MOB-2B focused on achieving emission reductions at existing freight rail yards and intermodal facilities.

After exploring both regulatory and voluntary approaches, rule development of PR 2306 and PR 316.2 are designed to address emissions from both new and existing freight rail yards. Specifically, PR 2306 is designed to implement Control Measure MOB-02 of 2016 AQMP, and Control Measures MOB-02A and MOB-02B of the 2022 AQMP and will ensure that emission reductions will be achieved within the South Coast AQMD jurisdiction at levels that are proportional or more-than-proportional to reductions throughout California from implementation of recently adopted statewide regulations affecting freight rail yard emission sources. Emission reductions targets in PR 2306 are expected to be achieved through reductions from one or more freight rail yard emission sources, including locomotives and drayage trucks subject to these two CARB regulations, as well as from all other mobile sources associated with freight rail yards to transport or assist in transporting cargo or goods. Additional emission reductions may be achieved in South Coast AQMD if implementation of statewide regulations alone does not result in compliance with PR 2306.

PR 2306 affects 25 freight rail yards, and the on-road and off-road mobile emission sources covered under PR 2306 include: 1) locomotives powering inbound and outbound trains; 2) heavy-duty trucks delivering or picking up cargo (full or empty containers) to and from freight rail yards; 3) cargo handling equipment (CHE) used for moving and handling cargo within freight rail yards; 4) transport refrigeration units (TRU) on containers, trailers, railcars, and trucks; and 5) other supporting equipment (OSE). These mobile sources account for the majority of emissions from freight rail yards.

PR 2306 includes requirements for owners and operators of freight rail yards to submit four types of reports: 1) an Initial Facility Information Report which includes a freight rail yard's operational data that is required to determine emissions during the base period and to gather information that is used in calculating NOx percent emission reductions for a freight rail yard with reduced throughputs; 2) an Initial Zero Emission Infrastructure Report to provide an overview of currently operating, planned, developing, and future on-site or off-site zero emission infrastructure in support of freight rail yard compliance with In-Use Locomotive Regulation, Advanced Clean Fleets (ACF) regulation, and/or any other zero emission infrastructure requirements and initiatives; 3) Milestone Compliance Reports every three years for freight rail yard operators to demonstrate compliance with PR 2306 for each and every milestone year; and 4) Zero Emission Infrastructure Status Update Reports which include information pertaining to installed and operating on-site or off-site zero emission infrastructure (as specified in PR 2306 Table 4), updates on new or ongoing on-site or off-site zero emission infrastructure projects currently under development (as specified in PR 2306 Table 5), and updates on planning of future on-site and off-site zero emission infrastructure that are needed to implement and comply with CARB's regulations, as well as the control measures for TRUs and CHE as specified in the 2022 State Strategy for the SIP (as specified in PR 2306 Table 6). Regarding zero emissions planning for all freight rail yards, specific site details are critical for developing a zero emissions infrastructure plan. For example, details need to include evaluating how many locomotives, as well as pieces of CHE, OSE, and TRUs, would need to be fueled or charged, at what rate, at which locations onsite, whether energy storage will also be included to provide redundancy and/or price moderation, what types of chargers or fueling dispensers will be used, etc.

At the time the 2022 AQMP and 2016 AQMP were developed, each plan was considered a "project" as defined by CEQA Guidelines Section 15378 and South Coast AQMD was the lead agency under CEQA because it was the "public agency that has the principal responsibility for carrying out or approving a project that may have a significant effect upon the environment." [Public Resources Code Section 21067]. Further, since the South Coast AQMD Governing Board had the primary responsibility for approving the entirety of both projects, South Coast AQMD was the most appropriate public agency to act as lead agency for the projects. [CEQA Guidelines Section 15051(b)].

The 2022 AQMP and 2016 AQMP each: 1) had environmental impacts which were evaluated in a Final Program Environmental Impact Report (Program EIR); and 2) were discretionary actions which were individually considered and approved by the South Coast AQMD Governing Board.

Therefore, PR 2306, is integrally related to the 2022 AQMP and the 2016 AQMP for which two previous environmental analyses have been prepared: 1) the Final Program EIR for 2022 AQMP which was certified by the South Coast AQMD Governing Board on December 2, 2022[92]; and 2) the Final Program EIR for 2016 AQMP which was certified by the South Coast AQMD Governing Board on March 3, 2017.[93]

The Final Program EIRs for the 2022 AQMP and 2016 AQMP identified potentially significant impacts, and mitigation measures were adopted for each plan. Further, since mitigation measures were adopted for the 2022 AQMP and 2016 AQMP; Mitigation, Monitoring, and Reporting Plans, pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines 15097 were also required and adopted.

Further, because the Final Program EIRs for both AQMPs concluded that implementation of these two projects would have potentially significant and unavoidable adverse impacts on the environment, Findings were made pursuant to CEQA Guidelines Section 15091, and Statements of Overriding Considerations pursuant to CEQA Guidelines Section 15093 were adopted.

The 2022 AQMP, along with the December 2022 Final Program EIR for the 2022 AQMP (State Clearinghouse No. 2022050287) and its corresponding Findings, Statement of Overriding Considerations, and Mitigation, Monitoring, and Reporting Plan, and the 2016 AQMP along with the March 2017 Final Program EIR for the 2016 AQMP (State Clearinghouse No. 2016071006) and its corresponding with Findings, Statement of Overriding Considerations, and Mitigation, Monitoring, and Reporting Plan, upon which this analysis of PR 2306 relies, are incorporated by reference pursuant to CEQA Guidelines Section 15150 and are available from the South Coast AQMD's website at:

[92] South Coast AQMD, Final Program Environmental Impact Report for the 2022 Air Quality Management Plan, December 2022. https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2022/2022-aqmp-final-peir.pdf

[93] South Coast AQMD, Final Program Environmental Impact Report for the 2016 Air Quality Management Plan, March 2017. https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2016/2016aqmpfpeir.pdf

December 2022 Final Program EIR for the 2022 AQMP

Master webpage

https://www.aqmd.gov/home/research/documents-reports/lead-agency-scaqmd-projects/south-coast-aqmd-projects---year-2022

December 2022 Final Program EIR for the 2022 AQMP (including Appendices)

https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2022/2022-aqmp-final-peir.pdf

Findings, Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Plan

https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2022/2022-aqmp-attachment1toresolution.pdf

2022 AQMP

https://www.aqmd.gov/home/air-quality/air-quality-management-plans/air-quality-mgt-plan

March 2017 Final Program EIR for the 2016 AQMP

Master webpage

http://www.aqmd.gov/home/research/documents-reports/lead-agency-scaqmdprojects/scaqmd-projects---year-2017

March 2017 Final Program EIR for the 2016 AQMP (without Appendices)
https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2016/2016aqmpfpeir.pdf

Appendices A through C

https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2016/2016aqmpfpeir_appendicesac.pdf

Appendices D through E

https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2016/2016aqmpfpeir_appendicesde.pdf

Findings, Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Plan

https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2017/att2toresolutionfor-2016aqmp.pdf

2016 AQMP

https://www.aqmd.gov/home/air-quality/air-quality-management-plans/final-2016-aqmp

Copies of these documents may also be obtained from:

Derrick Alatorre, Deputy Executive Officer/Public Advisor
South Coast AQMD 21865 Copley Drive, Diamond Bar, CA 91765
Phone: (909) 396-2432
Email: publicadvisor@aqmd.gov

For both of these projects, a Program EIR was considered to be the appropriate document for each AQMP pursuant to CEQA Guidelines Section 15168(a)(3) because each AQMP constituted a series of actions that can be characterized as one large project in connection with the issuance of rules, regulations, plans, or other general criteria required to govern the conduct of a continuing program. In addition, the use of a Program EIR had the following advantages by:

- Providing an occasion for a more exhaustive consideration of effects and alternatives than would be practical in an EIR on an individual action;
- Ensuring a consideration of cumulative impacts that might be slighted in a case-by-case analysis;
- Avoiding duplicative reconsideration of basic policy considerations;
- Allowing consideration of broad policy alternatives and program-wide mitigation measures at an early time when the Lead Agency has greater flexibility to deal with basic problems of cumulative impacts; and
- Allowing its use with a later activity if the later activity is within the scope of the project analyzed in the Program EIR without requiring further environmental documents.

While PR 2306 is a new rule, it memorializes and implements previously adopted control measures from the 2022 AQMP and the 2016 AQMP without introducing new requirements with new environmental impacts beyond what was previously analyzed in the Final Program EIRs for the 2022 AQMP and 2016 AQMP. In addition, PR 2306 is intended to supplement the local implementation of CARB's In-Use Locomotive and ACF regulations, within South Coast AQMD by requiring all freight rail yards to meet set emission reductions targets for milestone years.

CARB's In-Use Locomotive Regulation is designed to reduce toxic air contaminants, criteria pollutants, and GHG emissions from in-use locomotives (e.g., all switch, passenger, industrial, and freight line haul locomotives) operated in California. Specifically, CARB's In-Use Locomotive Regulation requires locomotive operators to: 1) set aside money for cleaner locomotives and technology development; 2) incentivize early zero emission operation in disadvantaged communities; 3) starting in 2030, require locomotives operating in California to be less than 23 years old to phase out the oldest and dirtiest locomotives (locomotives aged 23 years or older may operate in California if they meet the cleanest U.S. EPA standards (in earlier years) and operate only in zero-emission configuration (in later years); 4) establish zero emission operational requirements for locomotives operating in 2030 and later; 5) require a 30-minute idling limit; and 6) require air district-specific reporting of California locomotive activity. On April 27, 2023, CARB certified a Final Environmental Analysis for the In-Use Locomotive Regulation (State Clearinghouse No. 2022090408)[94] which analyzed the environmental impacts associated with implementing this regulation.

[94] CARB, 2023. Final Environmental Analysis for the Proposed In-Use Locomotive Regulation, April 14, 2023.

CARB's ACF Regulation requires certain fleets, including drayage trucks, to deploy medium- and heavy-duty zero emission vehicles starting in 2024 and establishes a clear end date to new medium and heavy-duty vehicle internal combustion engine vehicle sales in 2036. On August 28, 2023, CARB certified a Final Environmental Analysis for the ACF Regulation (State Clearinghouse No. 2021030340).[95]

So as to not repeat or duplicate the environmental analyses previously conducted in CARB's CEQA documents for these two adopted regulations, to which PR 2306 is supplement, this Appendix incorporates by reference in accordance with CEQA Guidelines Section 15150 the following documents which are a matter of public record and are available to the public from CARB's website:

CARB's In-Use Locomotive Regulation

Master webpage
https://ww2.arb.ca.gov/rulemaking/2022/locomotive

Final Regulation Order
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/fro.pdf

Final Environmental Analysis for the Proposed In-Use Locomotive Regulation, certified April 27, 2023, State Clearinghouse No. 2021030340
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/locomotive_final_ea.docx

Attachment A: Environmental and Regulatory Setting
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appda.pdf

Attachment B: Summary of Environmental Impacts and Mitigation Measures
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appdb.pdf

Findings and Statement of Overriding Considerations
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/locomotive_findings.pdf

CARB's Advanced Clean Fleets Regulation

Master webpage:
https://ww2.arb.ca.gov/rulemaking/2022/acf2022

Final Regulation Order: State and Local Government Agency Fleet Requirements
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/ac/acffro11.pdf

Final Regulation Order: High Priority and Federal Fleet Requirements
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/ac/acffro21.pdf

Final Regulation Order: Drayage Truck Requirements
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/ac/acffrod31.pdf

[95] CARB, 2023. Final Environmental Analysis for the Proposed Advanced Clean Fleets Regulation, April 23, 2023.

Final Regulation Order: 2036 100 Percent Medium- and Heavy-Duty Zero-Emission Vehicle Sales Requirements
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/ac/acffro41.pdf

Final Environmental Analysis for the Proposed Advanced Clean Fleets Regulation, certified August 28, 2023, State Clearinghouse No. 2021030340
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/acffinalea.docx

Attachment A: Environmental and Regulatory Setting
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/appda.pdf

Attachment B: Summary of Impacts Table
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/appdb.pdf

Findings and Statement of Overriding Considerations
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/acffindings.pdf

CEQA Guidelines Section 15187 requires South Coast AQMD to perform an environmental analysis when proposing to adopt a new rule or regulation requiring the installation of air pollution control equipment, or establishing a performance standard, which is the case with PR 2306. CEQA Guidelines 15187(c) requires the environmental analysis to include at least the following information:

- An analysis of reasonably foreseeable environmental impacts of the methods of compliance;
- An analysis of reasonably foreseeable mitigation measures relating to those environmental impacts; and
- An analysis of reasonably foreseeable alternative means of compliance with the rule or regulation, which would avoid or eliminate the identified environmental impacts.

In analyzing the potential environmental impacts of PR 2306 as required by CEQA Guidelines Section 15187, South Coast AQMD finds that, pursuant to CEQA Guidelines Section 15162 that PR 2306 does not contain new information of substantial importance which was not known and could not have been known at the time of certification of: 1) Final Program EIR for the 2022 AQMP; and 2) the Final Program EIR for the 2016 AQMP. [CEQA Guidelines Section 15162(a)(3)]. Therefore, a Subsequent EIR is not required.

As such, this Appendix satisfies the environmental analysis requirement in CEQA Guidelines Section 15187 by examining whether PR 2306 qualifies as a later activity within the scope of the previous analyses conducted in the certified Final Program EIRs for the 2022 AQMP and the 2016 AQMP pursuant to CEQA Guidelines 15168(c) – Use with Later Activities. Specifically, this Appendix: 1) compares the proposed later activity of PR 2306 with the previously approved programs, Control Measures MOB-02A and MOB-02B which were adopted in the 2022 AQMP and Control Measure MOB-02 which was adopted in the 2016 AQMP; 2) summarizes the environmental impacts analyzed in the Final Program EIRs for the 2022 AQMP and 2016 AQMP for Control Measures MOB-02A, MOB-02B, and MOB-02; 3) identifies the differences, if any, between the analyses of environmental impacts in the Final Program EIRs for 2022 AQMP and 2016 AQMP for the applicable control measures and PR 2306 and, as needed, identifies any other

impact areas which may require further analysis; and 4) considers the evidence and determines whether: a) PR 2306 is a later activity within the scope of the programs approved earlier for the 2022 AQMP and 2016 AQMP; and b) the Final Program EIRs for the 2022 AQMP and the 2016 AQMP adequately describe the later activity of PR 2306 for the purposes of CEQA such that no new environmental document is~~will be~~ required.

As a companion rule to PR 2306, PR 316.2 establishes fees to be paid by freight rail yard owners or operators subject to PR 2306 to recover South Coast AQMD's reasonable regulatory costs associated with PR 2306 implementation and compliance, such as costs associated with review of reports and notifications and the associated auditing, inspection, and enforcement activities. Thus, PR 316.2, which involves charges established by a public agency (South Coast AQMD) for the purpose of meeting operating expenses, is statutorily exempt from CEQA pursuant to CEQA Guidelines Section 15273 and is not discussed further in this Appendix. A Notice of Exemption will be prepared pursuant to CEQA Guidelines Section 15062, and if the PR 316.2 is approved, the Notice of Exemption will be filed with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino counties, and with the State Clearinghouse of the Governor's Office of Planning and Research.

SUMMARY OF ENVIRONMENTAL IMPACTS ASSOCIATED WITH PR 2306

The CEQA Guidelines require environmental documents to identify significant environmental effects that may result from a proposed project. [CEQA Guidelines Section 15126.2(a)]. Direct and indirect significant effects of a project on the environment should be identified and described, with consideration given to both short- and long-term impacts. The discussion of environmental impacts may include, but is not limited to, the resources involved; physical changes; alterations of ecological systems; health and safety impacts caused by physical changes; and other aspects of the resources involved including water, scenic quality, and public services. If significant adverse environmental impacts are identified, the CEQA Guidelines require a discussion of measures that could either avoid or substantially reduce any adverse environmental impacts to the greatest extent feasible. [CEQA Guidelines Section 15126.4].

The categories of environmental impacts to be studied in a CEQA document are established by CEQA (Public Resources Code Section 21000 et seq.) and the CEQA Guidelines (codified in Title 14 California Code of Regulations Section 15000 et seq). Under the CEQA Guidelines Appendix G: Environmental Checklist Form, there are 20 environmental topic areas categories in which potential adverse impacts from a project are evaluated. The South Coast AQMD, as lead agency, has taken into consideration the environmental checklist questions in Appendix G, but has reorganized the contents to consolidate the environmental topic areas to avoid repetition. For example, South Coast AQMD's customized the environmental checklist by: 1) combining the topics of "air quality" and "greenhouse gas emissions" into one section; 2) combining the topics of "cultural resources" and "tribal cultural resources" into one section; 3) separating the "hazards and hazardous materials" topic into two sections: "hazards and hazardous materials" and "solid and hazardous waste;" and 4) distributing the questions from the topic of "utilities/service systems" into other more specific environmental areas such as "energy," "hydrology and water quality," and "solid and hazardous waste." For each environmental topic area, per CEQA Guidelines Section 15064.7(a), "[a] threshold of significance is an identifiable quantitative, qualitative, or performance level of a particular environmental effect, noncompliance with which means the

effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant." The South Coast AQMD has developed unique thresholds of significance for the determination of significance in accordance with CEQA Guidelines Section 15064.7(b).

The CEQA Guidelines also include provisions for the preparation of Program EIRs in connection with the issuance of plans, such as the 2022 AQMP and 2016 AQMP, to govern the conduct of a continuing program, including adoptions of broad policy programs as distinguished from those prepared for specific types of projects such as land use projects, for example. [CEQA Guidelines Section 15168]. A Program EIR also allows for the consideration of broad policy alternatives and program-wide mitigation measures at an early time when an agency has greater flexibility to deal with basic problems or cumulative impacts. [CEQA Guidelines Section 15168 (b)(4)]. Lastly, a Program EIR also plays an important role in establishing a structure within which a CEQA review of future related actions can be effectively conducted. A Program EIR, by design, provides the basis for future environmental analyses and will allow future project specific CEQA documents, if necessary, to focus solely on the new effects or detailed environmental issues not previously considered. If an agency finds that no new effects could occur, or no new mitigation measures would be required, the agency can approve the activity as being within the scope of the project covered by the Program EIR and no new environmental document would be required. [CEQA Guidelines Section 15168(c)(2)].

The Final Program EIR for the 2016 AQMP analyzed the impacts of the 2016 AQMP project on 18 environmental topic areas: aesthetics, agriculture and forestry resources, air quality and greenhouse gas emissions, biological resources, cultural resources, energy, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, solid and hazardous waste, transportation and traffic, and mandatory findings of significance. In 2019, the CEQA Guidelines were amended to add the environmental topic areas of tribal cultural resources and wildfires, and the transportation analysis was changed from Level of Service (LOS) to Vehicle Miles Traveled (VMT) with a corresponding update to the name of the environmental topic area from "transportation and traffic" to "transportation." Thus, the Final Program EIR for the 2022 AQMP analyzed the impacts of implementing the various control measures in the 2022 AQMP on 19 environmental topic areas: aesthetics, agriculture and forestry resources, air quality and greenhouse gas emissions, biological resources, cultural and tribal cultural resources, energy, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, solid and hazardous waste, transportation, wildfire, and mandatory findings of significance.

The Final Program EIR for the 2022 AQMP concluded that the implementation of all of the control measures in the 2022 AQMP would result in potentially significant impacts for the following environmental topic areas: air quality and greenhouse gas (GHG) emissions, energy, hazards and hazardous materials, hydrology and water quality, noise, and solid and hazardous waste. All other environmental topic areas were either concluded to have less than significant impacts or no impact. Mitigation measures to minimize significant impacts from implementation of the 2022 AQMP

were adopted in the Mitigation, Monitoring, and Reporting Plan which can be found in Attachment 1 to the Governing Board Resolution for the Final Program EIR for the 2022 AQMP.[96]

The Final Program EIR for the 2016 AQMP concluded that the implementation of all of the control measures in the 2016 AQMP would result in potentially significant impacts for the following environmental topic areas: aesthetics, air quality and greenhouse gas emissions, energy, hazards and hazardous materials, hydrology and water quality, noise, solid and hazardous waste, and transportation and traffic. All other environmental topic areas were either concluded to have less than significant impacts or no impact. Mitigation measures to minimize significant impacts from implementation of the 2016 AQMP were adopted in the Mitigation, Monitoring, and Reporting Plan which can be found in Attachment 2 to the Governing Board Resolution for the Final Program EIR for the 2016 AQMP.[97]

Table A-1 summarizes Control Measures MOB-02A and MOB-02B of the 2022 AQMP and Control Measure MOB-02 of the 2016 AQMP upon which PR 2306 relies, their effect of implementation and nature of potential impact(s), and which of the environmental topic areas are potentially adversely impacted by their implementation. It should be noted that Control Measures MOB-02A and MOB-02B were concluded in the Final Program EIR for the 2022 AQMP to have potential adverse impacts related to the environmental topic areas of air quality and GHG, energy, hazards and hazardous materials, noise, and solid and hazardous waste, but no potential adverse impacts to the environmental topic area of hydrology and water quality. However, for other control measures in the 2022 AQMP, the Final Program EIR for the 2022 AQMP concluded that there would be potential adverse impacts to hydrology and water quality. Control Measure MOB-02 of the 2016 AQMP considered potential adverse impacts to surface and ground water quality from accidental spills of alternative fuels or additives, and potential illegal disposal of batteries from electric vehicles and hybrids while Control Measures MOB-2A and MOB-2B of the 2022 AQMP did not. Control Measure MOB-02 was concluded in the Final Program EIR for the 2016 AQMP to have potential adverse impacts related to the environmental topic areas of air quality and GHG, energy, hazards and hazardous materials, hydrology and water quality, noise, and solid and hazardous waste, but no potential adverse impacts to the environmental topic areas of aesthetics and transportation and traffic. Implementing other control measures in the 2016 AQMP was concluded in the Final Program EIR for the 2016 AQMP to have potential adverse impacts to aesthetics and transportation and traffic as a result of implementing other control measures.

Tables A-2 and A-3 summarize the analyses in the Final Program EIRs for the 2022 AQMP and 2016 AQMP associated with Control Measures MOB-02A, MOB-02B, and MOB-02: physical changes expected, environmental topic areas affected according to level of significance impact, and the applicable mitigation measures.

Table A-4 summarizes the physical changes expected, environmental topic areas affected, and the applicable mitigation measures associated with implementation of PR 2306 and compares the

[96] South Coast AQMD, Attachment 1 to the Governing Board Resolution for the Final Program Environmental Impact Report for the 2022 Air Quality Management Plan, December 2022. https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2022/2022-aqmp-attachment1toresolution.pdf

[97] South Coast AQMD, Attachment 2 to the Governing Board Resolution for the Final Program Environmental Impact Report for the 2016 Air Quality Management Plan, March 2017. https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2017/att2toresolutionfor-2016aqmp.pdf

similarities to those analyzed for Control Measures MOB-02A, MOB-02B, and MOB-02 in the Final Program EIRs for the 2022 AQMP and 2016 AQMP.

Table A- 1. Environmental Topic Areas with Potential Adverse Impacts from Rail Yard Control Measures

			Potential Adverse Impact(s)					
Control Measure Number	**Title**	**Effect of Implementation and Nature of Potential Impact(s)**	**Air Quality/ GHG**	**Energy**	**Hazards/ Hazardous Materials**	**Hydrology/ Water Quality**	**Noise**	**Solid/ Hazardous Waste**
MOB-02A in 2022 AQMP	Emission Reductions at New Rail Yards and Intermodal Facilities	Infrastructure development required to achieve emission reductions at new rail yards and intermodal facilities from on-road heavy-duty vehicles, off-road equipment, and locomotives may cause impacts to: 1) air quality and GHGs from construction activities and the combustion of alternative fuels; 2) energy due to increased demand for electricity (for vehicles, rail, and equipment) and natural gas; 3) hazards and hazardous materials associated with engine replacements; 4) noise during construction; and 5) solid and hazardous waste associated with engine replacements.	X	X	X		X	X
MOB-02B in 2022 AQMP	Emission Reductions at Existing Rail Yards and Intermodal Facilities	Infrastructure development required to achieve emission reductions at existing rail yards and intermodal facilities from on-road heavy-duty vehicles, off-road equipment, and locomotives may cause impacts to: 1) air quality and GHGs from construction activities and the combustion of alternative fuels; 2) energy due to increased demand for electricity (for vehicles, rail, and equipment) and natural gas; 3) hazards and hazardous materials associated with engine replacements; 4) noise during construction; and 5) solid and hazardous waste associated with engine replacements.	X	X	X		X	X
MOB-02 in 2016 AQMP	Emission Reductions at Rail Yards and Intermodal Facilities	Constructing infrastructure to provide support for new cleaner equipment or vehicles, and accelerating the penetration of zero and near–zero emission locomotives can result in air and energy (electrical/natural gas demand) impacts. Hazard impacts can result from the use of alternative fuels and fuel additive. Water (surface and ground) impacts can result from accidental spills. Waste impacts can result from battery disposal and turnover of older equipment.	X	X	X	X	X	X

Table A-2. Analysis of Control Measures MOB-02A and MOB-02B in the Final Program EIR for the 2022 AQMP

	Physical Changes Expected From MOB-02A and MOB-02B	Environmental Topic Areas with Potentially Significant Impacts	Adopted Mitigation Measures	Environmental Topic Areas with Less than Significant Impacts	Environmental Topic Areas with No Impacts
Construction	Construction and installation of charging and alternative fueling infrastructure for electricity and the storage and dispensing of alternative fuels for use in on-road heavy-duty vehicles, off-road equipment, and locomotives.	- Air Quality - Noise - Solid and Hazardous Waste	- Air Quality and GHG: AQ-1 to AQ-26 - Noise: NS-1 to NS-14 - Solid and Hazardous Waste: - SHW-1 to SHW-3	- GHG	Aesthetics, Agriculture and Forestry Resources, Biological Resources, Cultural and Tribal Cultural Resources, Energy, Geology and Soils, Hydrology and Water Quality, Land Use and Planning, Mineral Resources, Population and Housing, Public Services, Recreation, Transportation, Wildfire
Operation	Increased demand for electricity and natural gas, and increased production and use of alternative fuels.	- Energy - Hazards and Hazardous Materials	- Energy: - E-1 to E-12		
	Potential acceleration in the purchase of zero emission or low NOx emitting equipment and vehicles that would replace older equipment and vehicles, thereby increasing the scrapping of equipment and vehicles faster than would normally occur could result in physical changes.	- Solid and Hazardous Waste	- Solid and Hazardous Waste: - SHW-1 to SHW-3	- Air Quality and GHG	

Table A-3. Analysis of Control Measure MOB-02 in the Final Program EIR for the 2016 AQMP

Physical Changes Expected From MOB-02		Environmental Topic Areas with Potentially Significant Impacts	Adopted Mitigation Measures	Environmental Topic Areas with Less than Significant Impacts	Environmental Topic Areas with No Impacts
Construction	Construction of infrastructure to provide support for new cleaner equipment or vehicles.	- Air Quality - Noise - Solid and Hazardous Waste	- Air Quality: AQ-1 to AQ-23 - Noise: - NS-1 to NS-17	- GHG	Aesthetics, Agriculture and Forestry Resources, Biological Resources, Cultural and Tribal Cultural Resources, Energy, Geology and Soils, Land Use and Planning, Mineral Resources, Population and Housing, Public Services, Recreation, Transportation, Wildfire
Operation	Increased demand for electricity and natural gas, and increased production and use of alternative fuels and fuel additives.	- Energy	- Energy: - E-1 to E-7	- Air Quality and GHG - Hazards and Hazardous Materials - Hydrology and Water Quality	
	Potential acceleration in the purchase of zero emission or low NOx emitting equipment and vehicles that would replace older equipment and vehicles, thereby increasing the scrapping of equipment and vehicles faster than would normally occur could result in physical changes.	- Solid and Hazardous Waste	- None	- Hydrology and Water Quality	

Table A-4. Comparison of Environmental Impacts between MOB-02A, MOB-02B, MOB-02, and PR 2306

Physical Change Expected from PR 2306		Similarity to Environmental Topic Areas with Potentially Significant Impacts	Applicability of Adopted Mitigation Measures	Similarity to Environmental Topic Areas with Less than Significant Impacts	Similarity to Environmental Topic Areas with No Impacts
Construction	Construction and installation of charging and alternative fueling infrastructure for electricity and the storage and dispensing of alternative fuels (e.g., hydrogen) for use in on-road heavy-duty vehicles, off-road equipment, and locomotives.	- Air Quality - Noise - Solid and Hazardous Waste *Implementation of PR 2306 is expected to result in the same potentially significant impacts as anticipated for construction and installation of charging and alternative fueling infrastructure from Control Measures MOB-02A and MOB-02B of the 2022 AQMP and Control Measure MOB-02 of the 2016 AQMP.*	**Air Quality and GHG:** AQ-1 to AQ-26 of the Final Program EIR for the 2022 AQMP; and AQ-1 to AQ-23 of the Final Program EIR for the 2016 AQMP **Noise:** NS-1 to NS-14 of the Final Program EIR for the 2022 AQMP; and NS-1 to NS-17 of the Final Program EIR for the 2016 AQMP **Solid and Hazardous Waste:** SHW-1 to SHW-3 of the Final Program EIR for the 2022 AQMP *The mitigation measures minimizing impacts on construction and installation of charging and alternative fueling infrastructure from Control Measures MOB-02A and MOB-02B of the 2022 AQMP and Control Measure MOB-02 of the 2016 AQMP are expected to apply to PR 2306.*	- GHG *Implementation of PR 2306 is expected to result in the same less than significant impacts as anticipated for construction and installation of charging and alternative fueling infrastructure from Control Measures MOB-02A and MOB-02B of the 2022 AQMP and Control Measure MOB-02 of the 2016 AQMP.*	- Aesthetics - Agriculture and Forestry Resources - Biological Resources - Cultural and Tribal Cultural Resources - Energy - Geology and Soils - Hazards and Hazardous Materials - Hydrology and Water Quality - Land Use and Planning - Mineral Resources - Population and Housing - Public Services - Recreation - Transportation - Wildfire *Same as for construction and installation of charging and alternative fueling infrastructure from Control Measures MOB-02A and MOB-02B of the 2022 AQMP and Control Measure MOB-02 of the 2016 AQMP.*

Table A-4. Comparison of Environmental Impacts between MOB-02A, MOB-02B, MOB-02, and PR 2306 (continued)

Physical Change Expected from PR 2306		Similarity to Environmental Topic Areas with Potentially Significant Impacts	Applicability of Adopted Mitigation Measures	Similarity to Environmental Topic Areas with Less than Significant Impacts	Similarity to Environmental Topic Areas with No Impacts
Operation	Increased demand for electricity and natural gas, and increased production and use of alternative fuels (e.g., hydrogen).	- Energy - Hazards and Hazardous Materials *Implementation of PR 2306 is expected to result in the same potentially significant impacts anticipated for increased demand for electricity, natural gas, and alternative fuels from Control Measures MOB-02A and MOB-02B of the 2022 AQMP and Control Measure MOB-02 of the 2016 AQMP.*	**Energy:** E-1 to E-12 of the Final Program EIR for the 2022 AQMP; and E-1 to E-7 of the Final Program EIR for the 2016 AQMP *The mitigation measures minimizing impacts on increased demand for electricity, natural gas, and alternative fuels from Control Measures MOB-02A and MOB-02B of the 2022 AQMP and Control Measure MOB-02 of the 2016 AQMP are expected to apply to PR 2306.*	- Air Quality and GHG - Hydrology and Water Quality *Implementation of PR 2306 is expected to result in the same less than significant impacts anticipated for increased demand for electricity, natural gas, and alternative fuels from Control Measures MOB-02A and MOB-02B of the 2022 AQMP and Control Measure MOB-02 of the 2016 AQMP.*	- Aesthetics - Agriculture and Forestry Resources - Biological Resources - Cultural and Tribal Cultural Resources - Geology and Soils - Land Use and Planning - Mineral Resources - Noise - Population and Housing - Public Services - Recreation - Solid and Hazardous Waste - Transportation - Wildfire *Same as for increased demand for electricity, natural gas, and alternative fuels from Control Measures MOB-02A and MOB-02B of the 2022 AQMP and Control Measure MOB-02 of the 2016 AQMP.*

Table A-4. Comparison of Environmental Impacts between MOB-02A, MOB-02B, MOB-02, and PR 2306 (concluded)

Physical Change Expected from PR 2306		Similarity to Environmental Topic Areas with Potentially Significant Impacts	Applicability of Adopted Mitigation Measures	Similarity to Environmental Topic Areas with Less than Significant Impacts	Similarity to Environmental Topic Areas with No Impacts
Operation	Potential acceleration in the purchase of zero emission or low NOx emitting equipment and vehicles that would replace older equipment and vehicles, thereby increasing the scrapping of equipment and vehicles faster than would normally occur could result in physical changes.	- Solid and Hazardous Waste *Implementation of PR 2306 is expected to result in the same potentially significant impacts anticipated for the potential acceleration in scrapping of equipment and vehicles from Control Measures MOB-02A and MOB-02B of the 2022 AQMP and Control Measure MOB-02 of the 2016 AQMP.*	**Solid and Hazardous Waste:** SHW-1 to SHW-3 of the Final Program EIR for the 2022 AQMP *The mitigation measures minimizing impacts on the potential acceleration in scrapping of equipment and vehicles from Control Measures MOB-02A and MOB-02B of the 2022 AQMP and Control Measure MOB-02 of the 2016 AQMP are expected to apply to PR 2306.*	- Hydrology and Water Quality *Implementation of PR 2306 is expected to result in the same less than significant impacts anticipated for the potential acceleration in scrapping of equipment and vehicles from Control Measures MOB-02A and MOB-02B of the 2022 AQMP and Control Measure MOB-02 of the 2016 AQMP.*	- Aesthetics - Agriculture and Forestry Resources - Air Quality and GHG - Biological Resources - Cultural and Tribal Cultural Resources - Energy - Geology and Soils - Hazards and Hazardous Materials - Land Use and Planning - Mineral Resources - Noise - Population and Housing - Public Services - Recreation - Transportation - Wildfire *Same as for the potential acceleration in scrapping of equipment and vehicles from Control Measures MOB-02A and MOB-02B of the 2022 AQMP and Control Measure MOB-02 of the 2016 AQMP.*

PR 2306 implements Control Measures MOB-02A and MOB-02B of the 2022 AQMP, and Control Measure MOB-02 of 2016 AQMP, and will require operators of freight rail yards in South Coast AQMD to reduce their facility emissions at levels that are proportional or more-than-proportional to statewide implementation of CARB's In-Use Locomotive and ACF regulations, part of CARB's 2022 SIP Strategy. While PR 2306 does not explicitly mandate zero emission infrastructure, its implementation will generate increased demand for electricity and alternative fuels to support freight rail yard operations in the South Coast Air Basin (Basin). Consequently, existing utility supply and distribution systems may require capacity upgrades to meet this demand. These enhancements would constitute off-site infrastructure improvements, encompassing electricity generation resources, transmission capacity, and distribution system capacity (such as additional substations and circuits), along with hydrogen fuel production, storage, and distribution systems.

PR 2306 does not require a specific pathway to be followed to reach the facility emission reduction milestones, but its implementation, in conjunction with CARB regulations affecting freight rail yard sources of emissions, will likely accelerate the purchase of zero emission capable or low NOx emitting equipment and vehicles that would replace older equipment and vehicles and thus, increase the scrapping of equipment and vehicles faster than would normally occur. All of these impacts associated with these infrastructure improvements and acceleration of cleaner technologies were previously analyzed in the Final EIRs for the 2022 AQMP and the 2016 AQMP. The precise level of zero emissions infrastructure through time that would be associated with PR 2306 is unknown. Under PR 2306 subparagraph (d)(1)(B), freight rail yard operators can demonstrate they meet facility-wide emission reduction targets that align with how they complied with CARB's In-Use Locomotive and Advanced Clean Fleets regulations. Both of those regulations allow substantial flexibility, and compliance at a facility level under PR 2306 may be possible with little to no implementation of zero emissions technology for many years (e.g., through reliance on widespread deployment of Tier 4 diesel engines rather than converting to zero emissions). Further, the type of zero emissions infrastructure may vary (e.g., fast or slow charging electrification, fast or slow fueling of hydrogen, etc.). It is speculative to determine how these impacts will occur with any more precision than what has been already analyzed in the Final Program EIRs for the 2022 AQMP and 2016 AQMP.

In addition, the owners/operators of the freight rail yards that will be subject to PR 2306 have not provided any site-specific details regarding any additional potential modifications and associated environmental impacts that could potentially occur at individual freight rail yard locations to comply with PR 2306 beyond what has been previously forecasted and analyzed in accordance with CEQA Guidelines Section 15144 in the Final Program EIRs for the 2022 AQMP and 2016 AQMP. Predicting what facilities would do without firm evidence based on facts to support the analysis would require speculation or conjecture that is inappropriate and prohibited by CEQA. [CEQA Guidelines Section 15145]. When project-level details and corresponding environmental information is not available and a particular impact is too speculative for evaluation, as is the case with individual freight rail yards that will be subject to PR 2306, no additional analysis is required for potential modifications that may occur at individual sites which are speculative. [CEQA Guidelines Section 15145]. Thus, the previous analyses of the environmental impacts for Control Measures MOB-02A and MOB-02B of the 2022 AQMP in its Final Program EIR, and Control Measure MOB-02 of 2016 AQMP in its Final Program EIR cover the breadth of impacts that are expected to result from PR 2306 such that no additional environmental impacts need to be evaluated.

The analyses in the Final Program EIRs for the 2022 AQMP and 2016 AQMP determined that implementation of Control Measures MOB-02A, MOB-02B, and MOB-02 has the potential to generate significant adverse impacts to air quality from construction, energy, hazards and hazardous materials, noise, and solid and hazardous waste; less than significant impacts to operational air quality and GHG, and hydrology and water quality; and no impacts to all other environmental topic areas.

ENVIRONMENTAL TOPIC AREAS WITH POTENTIALLY SIGNIFICANT IMPACTS

The Final Program EIR for the 2022 AQMP concluded that the implementation of all of the control measures in the 2022 AQMP would result in potentially significant impacts for the following environmental topic areas: air quality and greenhouse gas (GHG) emissions, energy, hazards and hazardous materials, hydrology and water quality, noise, and solid and hazardous waste. Specific to the implementation of Control Measures MOB-02A and MOB-02B, the Final Program EIR for the 2022 AQMP analyzed and concluded potentially significant impacts to the environmental topic areas of air quality from construction, energy, hazards and hazardous materials, noise, and solid and hazardous waste.

The Final Program EIR for the 2016 AQMP concluded that the implementation of all of the control measures in the 2016 AQMP would result in potentially significant impacts for the following environmental topic areas: aesthetics, air quality and greenhouse gas emissions, energy, hazards and hazardous materials, hydrology and water quality, noise, solid and hazardous waste, and transportation and traffic. Specific to the implementation of Control Measures MOB-02, the Final Program EIR for the 2016 AQMP analyzed and concluded potentially significant impacts to the environmental topic area of air quality from construction, energy, noise, and solid and hazardous waste.

Since PR 2306 implements control measures MOB-02A and MOB-02B of 2022 AQMP and Control Measure MOB-02 of 2016 AQMP without adding new or modifying the previously analyzed impacts for each environmental topic area, the overall conclusion of potentially significant impacts in the Final Program EIR for the 2022 AQMP and the Final Program EIR for the 2016 AQMP will remain unchanged if PR 2306 is implemented.

The following section summarizes the analyses of potentially significant impacts from the implementing Control Measures MOB-02A and MOB-02B of the 2022 AQMP and Control Measure MOB-02 of the 2016 AQMP, upon which PR 2306 relies, for the topics of air quality from construction, energy, hazards and hazardous materials, noise, and solid and hazardous waste. The significance criteria, potential impacts, applicable mitigation measures, and cumulative impacts will be discussed for each environmental topic area.

Air Quality from Construction

Implementing control measures from both the 2022 AQMP and 2016 AQMP is expected to decrease operational emissions of criteria pollutants over the long-term, resulting in a benefit to air quality. However, in order to realize this benefit, various types of construction activities will be necessary to implement most control measures including Control Measures MOB-02A and MOB-02B of the 2022 AQMP and Control Measure MOB-02 of the 2016 AQMP. However, construction is generally characterized as a temporary, short-term activity which will contribute to adverse air quality impacts. Potentially significant impacts to air quality from construction will be discussed in this section, while less than significant impacts to air quality from operation and

greenhouse gas (GHG) emissions will be discussed in a later section entitled "Environmental Topic Areas with Less than Significant or No Impacts." The Final Program EIR for the 2022 AQMP considered and evaluated the construction and installation of infrastructure to support use of additional electricity and alternative fuels from Control Measures MOB-02A and MOB-02B. Similarly, the Final Program EIR for the 2016 AQMP evaluated construction impacts from Control Measure MOB-02 along with a suite of other control measures associated with installing infrastructure to provide support for new cleaner equipment or vehicles. The Final Program EIR for 2016 AQMP analyzed the potential air quality impacts from constructing infrastructure to provide support for new cleaner equipment or vehicles by focusing on the following key components: 1) development of baseline and future regional emission inventories for all quantifiable emissions sources in the Basin, as detailed in 2016 AQMP Appendix IV-A[98], which form the basis for understanding the magnitude of emissions associated with various construction phases; 2) assumption that all off-road equipment used in construction activities, including grading, paving, and the installation of air pollution control devices, contribute to construction emissions; 3) quantification of estimated emission from construction activities for each phase, including emissions from on-road vehicles transporting workers, vendors, and materials to and from construction sites; 4) comparison of estimated emissions from construction activities to established thresholds set by the South Coast AQMD to determine whether emissions are considered significant and could potentially lead to adverse localized air quality impacts; and 5) recognition that while emissions from individual construction projects at specific facilities may not exceed significance thresholds, concurrent, overlapping construction activities across multiple sites could exceed the significance thresholds. Based on the analysis, the Final Program EIR for the 2016 AQMP concluded significant construction air quality impacts and as such, identified and adopted mitigation measures to reduce construction emissions. These mitigation measures were designed to minimize the adverse environmental impacts while supporting the AQMP's goal of achieving and maintaining compliance with the national and state ambient air quality standards across the region.

Significance Criteria

A threshold of significance is an identifiable quantitative, qualitative, or performance level of a particular environmental effect. Proposed projects that do not exceed the significance threshold for the effect under evaluation normally will be determined to be less than significant. Exceeding any significance threshold means the effect will normally be determined to be significant by the lead agency. [CEQA Guidelines Sections 15064(a) and (b)(2); Section 15064.7(a)].

To determine whether air quality and GHG emissions impacts from the 2022 AQMP and the 2016 AQMP were significant, the Final Program EIRs for the 2022 AQMP and 2016 AQMP estimated the potential emissions of criteria pollutants, toxic air contaminants, and GHGs and compared those estimates to the significance criteria in Table A-5.

[98] South Coast AQMD, Appendix IV-A for the 2016 Air Quality Management Plan; https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/appendix-iv-a.pdf

Table A-5. South Coast AQMD Air Quality Significance Thresholds

Mass Daily Thresholds[a]		
Pollutant	**Construction**	**Operation**
NOx	100 lb/day	55 lb/day
VOC	75 lb/day	55 lb/day
PM10	150 lb/day	150 lb/day
PM2.5	55 lb/day	55 lb/day
SOx	150 lb/day	150 lb/day
CO	550 lb/day	550 lb/day
Lead	3 lb/day	3 lb/day
Toxic Air Contaminants, Odor, and GHG Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden ≥ 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic and Acute Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to South Coast AQMD Rule 402	
GHG	10,000 MT/yr CO_2eq for industrial facilities	
Ambient Air Quality for Criteria Pollutants[b]		
NO2 1-hour average annual arithmetic mean	South Coast AQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM10 24-hour average annual average	10.4 µg/m^3 (construction)[c] and 2.5 µg/m^3 (operation) 1.0 µg/m3	
PM2.5 24-hour average	10.4 µg/m^3 (construction)[c] and 2.5 µg/m^3 (operation)	
SO2 1-hour average 24-hour average	0.25 ppm (state) and 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)	
Sulfate 24-hour average	25 µg/m^3 (state)	
CO 1-hour average 8-hour average	South Coast AQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
Lead 30-day average Rolling 3-month average	1.5 µg/m^3 (state) 0.15 µg/m^3 (federal)	

a) Source: South Coast AQMD CEQA Handbook (South Coast AQMD, 1993)
b) Ambient air quality thresholds for criteria pollutants based on South Coast AQMD Rule 1303, Table A-2 unless otherwise stated.
c) Ambient air quality threshold based on South Coast AQMD Rule 403.
KEY: lb/day = pounds per day ppm = parts per million µg/m3 = microgram per cubic meter ≥ = greater than or equal to
MT/yr CO2eq = metric tons per year of CO2 equivalent > = greater than
Revision: March 2023

Air Quality Impacts from Construction[99]

The Final Program EIR for the 2022 AQMP considered that implementation of Control Measures MOB-02A and MOB-02B requires construction of infrastructure for fuel/energy producing facilities to be able to supply electricity, hydrogen, and natural gas for alternative-fueled off- and on-road vehicles and equipment (see Final Program EIR for the 2022 AQMP, Table 4.2-3). While the scope of what it would take to build the additional electricity generating equipment and alternative fuels production equipment at either existing or new facilities is unknown, emissions from major construction activities associated with capital improvement projects are typically greater and for a longer period of time than construction emissions resulting from the installation of air pollution control equipment. To illustrate potential overlapping construction activities on a peak day, the Final Program EIR for the 2022 AQMP presented a compilation of the estimated construction emissions typical of equipment replacement in residential and commercial settings, air pollution control equipment installations, with construction emission estimates for producing renewable or alternative fuels. While individually, most components of the construction activities would not have emissions exceeding the South Coast AQMD's air quality significance thresholds, it is foreseeable and likely that on any given day, construction activities associated with one or more new or existing air pollution control devices overlapping with other types of construction activities associated with producing alternative fuels in order to comply with the 2022 AQMP could occur at more than one facility. Based on the size of any single project, or if more than one facility were concurrently constructed on any given day, the emissions would exceed the South Coast AQMD's air quality significance thresholds. Therefore, construction emissions were considered potentially significant.

Because the construction air quality impacts from implementing the 2022 AQMP were concluded to be significant, feasible mitigation measures AQ-1 to AQ-26 for reducing impacts related to construction were adopted in the Final Program EIR for the 2022 AQMP, and these mitigation measures apply to Control Measures MOB-02A and MOB-02B, upon which PR 2306 relies (see pages 4.2-22 to 4.2-24 of the Final Program EIR for the 2022 AQMP). Even after mitigation measures AQ-1 to AQ-26 were applied, the Final Program EIR for the 2022 AQMP concluded that construction air quality impacts would remain significant.

The Final Program EIR for the 2016 AQMP considered that implementation of Control Measure MOB-02 had the potential to generate construction emission impacts from constructing infrastructure to provide support for new cleaner equipment or vehicles. The Final Program EIR for the 2016 AQMP analyzed a typical construction scenario of an air pollution control device at an existing facility which consisted of the following phases and associated on-road and off-road construction equipment:

- Grading/Site Preparation: Rubber Tired Dozers, Tractors/Loaders/Backhoes, Construction Workers' Vehicles, and Medium Duty Trucks
- Paving: Pavers, Cement/Mortar Mixers, Rollers, Construction Workers' Vehicles, and Medium Duty Trucks

[99] See Section 4.2.5.1 Criteria Pollutants – Construction Activities of the Final Program EIR for the 2022 AQMP and Section 4.1.6.1 Criteria Pollutants – Construction Activities of the Final Program EIR for the 2016 AQMP

- Installing/Constructing Air Pollution Control Device(s): Cranes, Forklifts, Tractors/Loaders/Backhoes, Construction Workers' Vehicles, and Medium Duty Trucks

Construction emissions were estimated for these various construction phases associated with the installation of air pollution control devices. In addition, criteria pollutant emissions were calculated for all on-road vehicles transporting workers, vendors, and material removal and delivery. The analysis assumed that each phase must be entirely completed before the next phase can commence such that there would be no overlap of construction phases for the construction of the new control devices. Table A-6, which is Table 4.1-3 Typical Peak Daily Construction Emissions for Control Devices in the Basin (lbs/day) from the Final Program EIR for the 2016 AQMP, summarizes the construction emissions that would be expected to occur as a result of installing one air pollution control device at one facility. Although the construction emissions at each individual facility might not exceed the South Coast AQMD's air quality significance thresholds, it was foreseeable and likely that on any given day, construction of one or more control devices in order to comply with the 2016 AQMP could occur at more than one facility. Based on the results in Table A-6, if more than four facilities or more than four control devices were concurrently constructed on any given day, the emissions would exceed the South Coast AQMD air quality significance thresholds. Therefore, construction emissions were considered significant.

Table A-6. Typical Peak Daily Construction Emissions for Control Devices in the Basin (lbs/day)

Source Category	VOC	NOx	CO	SOx	PM10	PM2.5
Grading/Site Preparation	2.7	25	11	0.0	3.9	1.6
Paving	0.2	12	8	0.01	0.7	0.7
Device Installation	3.4	30	15	0.0	1.4	1.3
Maximum Emissions (1 Facility)	3.4	30	15	0.01	3.9	1.6
Maximum Emissions (4 Facilities)	13.6	120	60	0.04	15.6	6.4
South Coast AQMD Air Quality Significance Thresholds	75	100	550	150	150	55
Significant? (YES/NO)	NO	YES	NO	NO	NO	NO

Because the analysis Final Program EIR for the 2016 AQMP concluded that the construction air quality were significant, feasible mitigation measures AQ-1 to AQ-23 for reducing impacts related to construction were adopted, and these mitigation measures are applicable to Control Measure MOB-02, upon which PR 2306 relies (see pp. 4.1-54 to 4.1-56 of the Final Program EIR for the 2016 AQMP). Even after mitigation measures AQ-1 to AQ-23 were applied, the Final Program EIR for the 2016 AQMP concluded that construction air quality impacts would remain significant.

Mitigation Measures Adopted in the Final Program EIRs for the 2022 AQMP and 2016 AQMP for Construction Air Quality[100]

Mitigation measures AQ-1 to AQ-26 of the Final Program EIR for the 2022 AQMP and mitigation measures AQ-1 to AQ-23 of the Final Program EIR for the 2016 AQMP are presented side-by-

[100] See Section 4.2.5.1 Criteria Pollutants – Construction Activities of the Final Program EIR for the 2022 AQMP and Section 4.7.1 Mitigation Measures of the Final Program EIR for the 2016 AQMP

side in Table A-7. Because the analysis conducted in the Final Program EIR for the 2022 AQMP reflects the most recent best practices, owners and operators of equipment required to mitigate air quality impacts from construction are recommended to utilize the mitigation measures of the Final Program EIR for the 2022 AQMP in the event of a conflict between mitigation measures that would apply in a given situation.

Table A-7. Mitigation Measures Adopted in the Final Program EIRs for the 2022 AQMP and 2016 AQMP for Construction Air Quality

2022 AQMP	2016 AQMP
AQ-1 Develop a Construction Emission Management Plan to minimize emissions from vehicles including, but not limited to: consolidating truck deliveries so as to minimize the number of trucks on a peak day; scheduling deliveries to avoid peak hour traffic conditions; describing truck routing; describing deliveries including logging delivery times; describing entry/exit points; identifying locations of parking; identifying construction schedule; and prohibiting truck idling in excess of five consecutive minutes or another time-frame as allowed by the California Code of Regulations, Title 13 Section 2485 – CARB's Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling. The Construction Emission Management Plan shall be submitted to South Coast AQMD – PRDI/CEQA for approval prior to the start of construction. At a minimum, the Construction Emission Management Plan would include the following types of mitigation measures and Best Management Practices. **AQ-2** Tune and maintain all construction equipment to be in compliance with the manufacturer's recommended maintenance schedule and specifications that optimize emissions without nullifying engine warranties. All maintenance records for each equipment and their construction contractor(s) shall be made available for inspection and remain onsite for a period of at least two years from completion of construction.	**AQ-1** During construction, require the use of 2010 and newer diesel haul trucks (e.g., material delivery trucks and soil import/export). If the Lead Agency determines that 2010 model year or newer diesel trucks cannot be obtained, the Lead Agency shall instead require the use of trucks that meet EPA 2007 model year NOx emissions requirements. **AQ-2** Require all on-site construction equipment to meet the following: - All off-road diesel-powered construction equipment greater than 50 hp shall meet the Tier 4 emission standards, where available. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations. - A copy of each unit's certified tier specification, BACT documentation, and CARB or SCAQMD operating permit shall be provided at the time of mobilization of each applicable unit of equipment. - Encourage construction contractors to apply for SCAQMD "SOON" funding incentives. The "SOON" program provides funds to accelerate the cleanup of off-road diesel vehicles, such as heavy-duty construction equipment. More information on this program can be found at the following website:

Table A-7. Mitigation Measures Adopted in the Final Program EIRs for the 2022 AQMP and 2016 AQMP for Construction Air Quality

2022 AQMP	2016 AQMP
AQ-3 Survey and document the construction areas and identify all construction areas that are served by electricity. Onsite electricity, rather than temporary power generators, shall be used in all construction areas that are demonstrated to be served by electricity. This documentation shall be provided as part of the Construction Emissions Management Plan. **AQ-4** Require the use of electric or alternative-fueled (i.e., renewable combustion fuels and hydrogen) construction equipment, if available, including but not limited to, concrete/industrial saws, pumps, aerial lifts, material hoist, air compressors, forklifts, excavator, wheel loader, and soil compactors. **AQ-5** Require all off-road diesel-powered construction equipment rated greater than 50 hp to meet Tier-4 off-road emission standards at a minimum. In addition, if not already supplied with a factory-equipped diesel particulate filter, all construction equipment shall be outfitted with Best Available Control Technology (BACT) devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations. Construction equipment shall incorporate, where feasible, emissions-reducing technology such as hybrid drives and specific fuel economy standards. In the event that any equipment required under this mitigation measure is not available, the project	http://www.aqmd.gov/tao/Implementation/SOONProgram.htm. **AQ-3** Prohibit vehicles and construction equipment from idling longer than five minutes at the construction site by including these restrictions in the construction company contract(s) and by posting signs on-site, unless the exceptions in the CARB regulations which pertain to idling requirements are applicable. **AQ-4** All on-road heavy-duty diesel trucks or equipment with a gross vehicle weight rating (GVWR) of 19,500 pounds or greater shall comply with EPA 2007 on-road emission standards for PM and NOx (0.01 gram per brake horsepower – hour (g/bhp-hr) and at least 0.2 g/bhp-hr, respectively). **AQ-5** Maintain construction equipment tuned up and with two to four-degree retard diesel engine timing or tuned to manufacturer's recommended specifications that optimize emissions without nullifying engine warranties. **AQ-6** The project proponent shall survey and document the proposed project's construction areas and identify all construction areas that are served by electricity. Onsite electricity, rather than temporary power generators, shall be used in all construction areas that are demonstrated to be served by electricity. **AQ-7** Provide temporary traffic controls such as a flag person, during all phases of significant construction activity to maintain smooth traffic flow.

Table A-7. Mitigation Measures Adopted in the Final Program EIRs for the 2022 AQMP and 2016 AQMP for Construction Air Quality

2022 AQMP	2016 AQMP
proponent shall provide documentation in the Construction Emissions Management Plan or associated subsequent status reports as information becomes available. **AQ-6** Require the use of zero-emission (ZE) or near-zero emission (NZE) on-road haul trucks such as heavy-duty trucks with natural gas engines that meet CARB'S adopted optional NO_X emissions standard. **AQ-7** Provide electric vehicle (EV) charging stations or at a minimum, provide the electrical infrastructure and electrical panels which shall be appropriately sized. Electrical hookups should be provided for trucks to plug in any onboard auxiliary equipment. **AQ-8** Provide temporary traffic controls such as a flag person, during all phases of significant construction activity to maintain smooth traffic flow, where necessary. **AQ-9** Provide dedicated turn lanes for the movement of construction trucks and equipment on- and off-site, where applicable. **AQ-10** Clearly identify truck routes with trailblazer signs to guide and ensure that the route shall avoid congested streets and sensitive land uses (e.g., residences, schools, day care centers, etc.), where applicable.	**AQ-8** Provide dedicated turn lanes for the movement of construction trucks and equipment on- and off-site. **AQ-9** Re-route construction trucks away from congested streets or sensitive receptor areas. **AQ-10** Improve traffic flow by signal synchronization. **AQ-11** Reduce traffic speeds on all unpaved roads to 15 mph or less. **AQ-12** Prohibit truck idling in excess of five minutes, on- and off-site. **AQ-13** Schedule construction activities that affect traffic flow on the arterial system to off-peak hours to the extent practicable. **AQ-14** Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 mph. **AQ-15** Suspend all construction activities that generate air pollutant emissions during first stage Smog alerts. **AQ-16** Configure construction parking to minimize traffic interference. **AQ-17** Use alternative clean fueled off-road equipment or give extra points in the bidding process for contractors committing to use such equipment. **AQ-18** Require covering of all trucks hauling dirt, sand, soil, or other loose materials.

Table A-7. Mitigation Measures Adopted in the Final Program EIRs for the 2022 AQMP and 2016 AQMP for Construction Air Quality

2022 AQMP	2016 AQMP
AQ-11 Improve traffic flow by signal synchronization, where applicable and ensure that check-in point for trucks is inside the project site. **AQ-12** Ensure that vehicle traffic inside the project site is as far away as feasible from sensitive receptors. **AQ-13** Restrict overnight truck parking in sensitive land uses by providing overnight truck parking inside the project site. **AQ-14** Design the project such that truck entrances and exits are not facing sensitive receptors and trucks will not travel past sensitive land uses to enter or leave the project site. **AQ-15** Reduce traffic speeds on all unpaved roads to 15 miles per hour (mph) or less. **AQ-16** Prohibit truck idling in excess of five minutes, on- and off-site. **AQ-17** Schedule construction activities that affect traffic flow on the arterial system to off-peak hours to the extent practicable. **AQ-18** Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 mph. **AQ-19** Suspend use of all construction activities that generate air pollutant emissions during first stage smog alerts. **AQ-20** Configure construction parking to minimize traffic interference.	**AQ-19** Install wheel washers where vehicles enter and exit the construction site onto paved roads or wash off trucks and any equipment leaving the site for each trip. **AQ-20** Apply non-toxic soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more). **AQ-21** Replace ground cover in disturbed areas as quickly as possible to minimize dust. **AQ-22** Pave road and road shoulders. **AQ-23** Sweep streets at the end of the day with SCAQMD Rule 1186 and 1186.1 compliant sweepers if visible soil is carried

Table A-7. Mitigation Measures Adopted in the Final Program EIRs for the 2022 AQMP and 2016 AQMP for Construction Air Quality

2022 AQMP	2016 AQMP
AQ-21 Require covering of all trucks hauling dirt, sand, soil, or other loose materials. **AQ-22** Install wheel washers where vehicles enter and exit the construction site onto paved roads or wash off trucks and any equipment leaving the site for each trip. **AQ-23** Apply non-toxic soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for ten days or more). **AQ-24** Replace ground cover in disturbed areas as quickly as possible to minimize dust. **AQ-25** Pave road and road shoulders, where applicable. **AQ-26** Sweep streets at the end of the day with sweepers compliant with South Coast AQMD Rules 1186 and 1186.1 if visible soil is carried onto adjacent public paved roads (recommend water sweepers that utilize reclaimed water).	

Cumulative Impacts[101]

The Final Program EIR for the 2022 AQMP concluded that implementation of the 2022 AQMP control measures could result in significant adverse air quality impacts during construction because it is foreseeable and likely that on any given day, construction activities associated with one or more new or existing air pollution control devices overlapping with other types of construction activities associated with producing alternative fuels in order to comply with the 2022 AQMP could occur at more than one facility, and based on the size of any single project, or if more than one facility were concurrently constructed on any given day, the emissions would exceed the South Coast AQMD's air quality significance thresholds. When combined with past, present, and reasonably foreseeable activities, in particular with transportation projects projected in the Southern California Association of Governments (SCAG) Connect SoCal Plan[102] and the CARB 2022 State SIP Strategy[103], the 2022 AQMP would contribute to cumulatively considerable impacts to air quality related to criteria pollutant emissions during construction, a significant, unavoidable cumulative impact. No additional mitigation measures to reduce the significant cumulative impacts to air quality from construction were identified. Cumulative impacts to air quality from construction for past, present, and reasonably foreseeable future projects would remain significant and unavoidable.

The Final Program EIR for 2016 AQMP concluded that implementation of the 2016 AQMP control measures would result in significant adverse air quality impacts during construction because it is foreseeable and likely that on any given day, construction of one or more control devices in order to comply with the 2016 AQMP could occur at more than one facility, and if more than four facilities or more than four control devices were concurrently constructed on any given day, the emissions would exceed the South Coast AQMD's air quality significance thresholds. The 2016 AQMP control measures would result in significant adverse air quality impacts during construction and, when combined with past, present, and reasonably foreseeable activities, and in particular with transportation projects projected in the 2016 Regional Transportation Plan/ Sustainable Communities Strategy (2016 RTP/SCS)[104], would contribute to cumulatively considerable impacts to air quality impacts during construction identified in the 2016 RTP/SCS, therefore resulting in a significant cumulative impact. No additional mitigation measures to reduce the significant cumulative impacts to air quality impacts during construction were identified. Cumulative impacts to air quality impacts during construction from implementation of the 2016 AQMP would remain significant and unavoidable.

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[101] See Section 4.2.7 Cumulative Air Quality and GHG Emissions Impacts and Mitigation Measures of the Final Program EIR for the 2022 AQMP and Section 5.4.1 Cumulative Impacts of the Final Program EIR for the 2016 AQMP

[102] Southern California Association of Governments, Connect SoCal (2020–2045 Regional Transportation Plan/Sustainable Communities Strategy), May 2020. https://scag.ca.gov/read-plan-adopted-final-connect-socal-2020

[103] California Air Resources Board, 2022 State Strategy for the State Implementation Plan (2022 State SIP Strategy), 6. https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy

[104] SCAG, The 2016-2040 Regional Transportation Plan/ Sustainable Communities Strategy, April 2016, https://scag.ca.gov/sites/main/files/file-attachments/f2016rtpscs.pdf.

Summary of Construction Air Quality Analyses

Table A-8 presents a summary of the construction air quality analyses conducted in the Final Program EIRs for the 2022 AQMP and 2016 AQMP.

Table A-8. Summary of Air Quality from Construction Analyses in the Final Program EIRs for the 2022 AQMP and 2016 AQMP

Significance Criteria	Potentially Significant Impacts	Adopted Mitigation Measures	Cumulative Impacts
Air Quality impacts are significant if any of the following conditions occur: • A project and/or projects that exceed(s) significance threshold identified by the lead agency. - *Air Quality impacts are considered significant under specific conditions.* - *Significance is determined by exceeding identified quantitative, qualitative, or performance thresholds for environmental effects.* - *Projects that have emissions less than these thresholds are typically deemed less than significant.* - *The evaluation of air quality and GHG emissions impact compares estimated emissions to air quality significance thresholds in Table A-5.*	Implementation of Control Measures MOB-02A and MOB-02B of 2022 AQMP and Control Measure MOB-02 of 2016 AQMP would cause potentially significant air quality impacts from: • Construction of infrastructure for zero-emission technologies and electricity, and support for new cleaner equipment or vehicles, • Increase in electricity demand due to increased usage of zero-emission technologies installed at the rail yards, • Installation of air pollution devices at the rail yards, and • Increase in natural gas demand to produce electricity	• AQ-1 to AQ-26 of the Final Program EIR for the 2022 AQMP; and • AQ-1 to AQ-23 of the Final Program EIR for the 2016 AQMP	Cumulative impacts to air quality for past, present, and reasonably foreseeable future projects would remain significant and unavoidable for criteria pollutant emissions during construction.

Energy

Both the Final Program EIR for the 2022 AQMP and the Final Program EIR for the 2016 AQMP identified the following physical changes associated with implementation of Control Measures MOB-02A and MOB-02B of 2022 AQMP and Control Measure MOB-02 of 2016 AQMP, upon which PR 2306 relies, to cause potential adverse energy impacts: 1) increase in electricity demand due to increased usage of zero-emission technologies, 2) increase in natural gas demand to produce electricity, and 3) increased production and use of alternative fuels (e.g. hydrogen).

Significance Criteria

Energy impacts are significant if any of the following conditions occur:

- The project conflicts with adopted energy conservation plans or standards.
- The project results in substantial depletion of existing energy resource supplies.
- An increase in demand for utilities impacts the current capacities of the electric and natural gas utilities.
- The project uses non-renewable energy resources in a wasteful and/or inefficient manner.

Energy Impacts from Electricity Demand[105]

The Final Program EIR for the 2022 AQMP analyzed potential increases in electricity demand according to the types of sources, and Control Measures MOB-02A and MOB-02B, which seek to identify actions that will result in additional emission reductions at rail yards and intermodal facilities, were grouped with other mobile sources. Table A-9 is a subset of Table 4.3-3 Potential Electricity Use for Mobile Sources Relying on Incentive Programs, from the Final Program EIR for the 2022 AQMP, and illustrates that the vehicles affected by Control Measures MOB-02A and MOB-02B contribute to an estimated increase of Basin-wide annual electricity use by approximately 160.5 gigawatt-hours (GWh) per year.

Table A-9. Potential Electricity Use for Mobile Sources Relying on Incentive Programs Related to Control Measures MOB-02A and MOB-02B

Mobile Source Sector	Project Type	Affected Population	Electricity Rate	Potential Electricity Use (GWh/year)
Heavy-Duty Vehicles	Replacement	8,214	1 kWh/mile at 16,600 miles/year	136.4
Off-Road Construction	Repower	656	1 kWh/mile at 16,600 miles/year	10.9
Off-Road Construction	Replacement	365	1 kWh/mile at 16,600 miles/year	6.1
Other Off-Road and CHE	Replacement	428	1 kWh/mile at 16,600 miles/year	7.1
Total				**160.5**

Key: kWh = kilowatt-hour; GWh = gigawatt-hour

The Final Program EIR for the 2022 AQMP considered Basin-wide electricity use as a basis for analyzing the potential energy impacts due to electricity demand. Statewide electricity consumption was more than 279,000 GWh in 2020, with approximately 118,200 GWh (42 percent) in the South Coast Air Basin. [California Energy Commission (CEC), 2021]. CEC estimated an

[105] See Section 4.3.3.2 Electricity of the Final Program EIR for the 2022 AQMP and Section 4.2.4.1 Electricity of the Final Program EIR for the 2016 AQMP

increase in electricity demand of about 1.6 percent annually through 2035. [CEC, 2021]. By applying that growth rate, the total electricity use in California would be approximately 354,000 GWh by 2035. Approximately 150,000 GWh (42 percent) of that would be within the South Coast Air Basin (assuming the percentage attributed to the South Coast Air Basin remains the same). The 2022 AQMP control measures would then increase the electricity demand by an additional estimated 13,429 GWh (approximately 11 percent over 2020 consumption and nine percent over the CEC projected growth) and this amount does not take into account the electricity that may be needed to operate additional air pollution control equipment or to convert combustion equipment to fully electric. Thus, the overall potential increase in electricity demand could be higher.

In order for utilities to be able to provide sufficient electricity to meet future demands, the use of additional energy storage systems (e.g., battery arrays) is also a key component for being able to store electricity at the time when resources are available (e.g., when the sun shines and the wind blows), and to use that stored electricity at a later time. Further, the analysis in the Final Program EIR for the 2022 AQMP conservatively assumed that all sources affected by a control measure with the potential to increase demand for electricity, would use electricity rather than other forms of energy. In addition, any increase in electricity demand would likely result in a concurrent reduction in demand for other types of fuels, particularly petroleum fuels. Because the control measures in the 2022 AQMP were developed with the goal of attaining the federal ozone standard, the successful implementation of some of the control measures relied on the use of electricity in order to reduce NOx emissions, an overall air quality benefit for the region. Therefore, the 2022 AQMP was expected to result in a substantial depletion of existing energy (specifically electricity) resource supplies.

Even with energy conservation programs in effect in California, additional electricity would be needed, and power plants would be required to supply the projected increase in electricity demand and general population growth. While increased demand for electricity would occur due to general population growth, additional increases in electricity demand beyond general population growth would be expected if all of the control measures in the 2022 AQMP were implemented. The implementation of all the control measures was expected to result in an overall increase of greater than the approximately 11 percent of the existing electricity use for residential, commercial, and mobile sources. This increase, along with the increases in electricity associated with other state programs and mandates, was expected to exceed the electrical generating capacity of the system. Thus, the electricity demand impacts from implementing the 2022 AQMP were concluded in the Final Program EIR to be significant.

Because the energy impacts from implementing the 2022 AQMP were expected to be significant for electricity demand, feasible mitigation measures E-1 to E-12 for reducing impacts related to potential electricity demand were adopted the Final Program EIR for the 2022 AQMP (see pp. 4.3-21 to 4.3-22 of the Final Program EIR for the 2022 AQMP). Even after mitigation measures E-1 to E-12 were applied, electricity demand impacts would remain significant.

The Final Program EIR for the 2016 AQMP similarly anticipated that the mobile source control measures in the 2016 AQMP would increase the electricity demand in the Basin, and the analysis relied on Basin-wide electricity use to evaluate the potential energy impacts from electricity demand. The anticipated shift of cars, trucks, off-road vehicles, and marine vessels from gasoline and diesel fuels to electricity was projected to create an additional electrical load demand.

At the time of developing the 2016 AQMP, the estimated baseline electricity use in 2014 (the baseline year relied upon for the analysis) in Los Angeles, Orange, Riverside, and San Bernardino counties was about 120,960 GWh [CEC, 2016h, see Table 3.3-1 of the Final Program EIR for the 2016 AQMP] The Final Program EIR for the 2016 AQMP concluded that the amount of electricity that would be needed to charge vehicles represented a relatively small portion of the overall electricity used (about 1 percent) in the four counties. At the time, the CEC estimated an increase in electricity demand of about 1 to 1.3 percent per year through 2026 [CEC, 2016k]. Based on that growth rate, the total projected electricity use was projected to be approximately 135,475 to 140,000 GWh by 2024 and approximately 141,532 to 147,692 GWh by 2031. As explained earlier in this section, a similar analysis and calculations which relied on more recent baseline data and growth factors were conducted in the Final Program EIR for the 2022 AQMP and those estimates supersede the estimates contained in the Final Program EIR for the 2016 AQMP.

Relative to the existing electricity use and the projected future peak electricity demand, implementation of all the control measures was expected to result in an overall increase of 7.86 percent of the existing electricity use by 2024 and 12.7 percent of the existing electricity use by 2031. While these projected increases were expected to be within the electric generating capacity of the region at the time the analysis of the 2016 AQMP was conducted, an increase in electricity of one percent or greater is considered to exceed the South Coast AQMD's energy significance threshold. Further, there was potential for electrical requirements for other control measures for which the electrical demand could not be estimated at the time of the 2016 AQMP. Thus, the energy impacts resulting from potential increases in electricity demand as part of implementing the 2016 AQMP were concluded to be significant.

The peak daily demands for increased electricity associated with further electrification of mobile sources and the energy impacts could be minimized by charging electric vehicles or other equipment at night when the electricity demand is low. Further, the analysis assumed that all sources affected by a control measure with the potential to increase the demand for electricity and would use electricity rather than substituting other types of energy. In addition, any increase in electricity demand would likely result in a concurrent reduction in demand for other types of fuels, particularly petroleum-based fuels. The 2016 AQMP was not expected to result in the use of large amounts of fuel or energy resources or result in the use of fuel or energy resources in a wasteful manner. However, the 2016 AQMP included incentives to shift from using diesel and gasoline fuels to increasing the electrification of stationary and mobile sources. Depending on the location and the amount of energy needed, the electricity portions of existing energy conservation plans that have been adopted by facilities would need to be updated. Therefore, the 2016 AQMP was determined to potentially conflict with existing adopted energy conservation plans. Because the 2016 AQMP could result in a substantial increase in electricity demand at a level greater than one percent of the existing electricity use in the Basin, the projected increases to electricity demand were concluded to be potentially significant.

Because the electricity demand impacts from implementing the 2016 AQMP were concluded to be significant, feasible mitigation measures E-1 to E-7 for reducing these impacts were adopted in the Final Program EIR for the 2016 AQMP (see page 4.2-24 of the Final Program EIR for the 2016 AQMP). Even after mitigation measures E-1 to E-7 were applied, the electricity demand impacts would remain significant.

Energy Impacts from Natural Gas Demand[106]

Control measures in the 2022 AQMP were expected to result in an increase in demand for natural gas primarily associated with the production of electricity in the short term. While the electrical grid needs to generate electricity that is comprised of 100 percent renewable energy by 2045 per Senate Bill 100 (SB 100, De León)[107] (and short-term natural gas usage for the production of electricity will cease), additional sources of electricity would be required in order to meet the 2035 goals of the 2022 AQMP.

There are critical interdependencies between electricity and the natural gas system reliability in California. Natural gas-fired electricity generation has been an integral part of the electricity system, providing baseload power. It has also served as the backstop during drought conditions that reduce the availability of hydroelectric power generation. The role of natural gas-fired electricity generation in the electricity system is shifting with the addition of large amounts of renewable generation, primarily solar and wind. The large influx of renewable energy on the grid has reduced natural gas produced electricity from 53 percent of total electric generation in 2010 to 48 percent in 2020. Renewables have displaced a portion of daytime generation previously provided by natural gas, but the intermittency of solar and wind resources necessitates flexible resources that can quickly come on-line when the sun sets, or winds stop blowing. [CEC, 2021].

Some of the control measures in the 2022 AQMP may result in an increase in the use of natural gas in medium- and heavy-duty on road vehicles. Expanded use of alternative fuels in medium-duty and heavy-duty trucks using more efficient, advanced natural gas engine technologies would be expected to reduce the use of diesel fuel. Natural gas-fired medium- and heavy-duty vehicles are an attractive option to diesel-fueled vehicles because they emit fewer criteria pollutants and toxic components without emitting diesel PM.

Ultimately, as natural gas is and continues to be generally widely available, natural gas supplies are not expected to be limited as a result of implementing the 2022 AQMP. The combined increase in natural gas demand needed for producing electricity and hydrogen and for fueling vehicles could be somewhat offset over the long-term by a decrease in demand for natural gas appliances in commercial and residential setting. However, over the short-term, the natural gas demand is expected to increase. Based upon these considerations, significant adverse energy impacts relating to natural gas demand were expected from implementing the 2022 AQMP.

Because the natural gas demand impacts from implementing the 2022 AQMP were concluded to be significant, feasible mitigation measures E-8 to E-9 for reducing these impacts were adopted in the Final Program EIR for the 2022 AQMP (see page 4.3-26 of the Final Program EIR for the 2022 AQMP). Even after mitigation measures E-8 and E-9 were applied, natural gas demand impacts would remain significant.

The Final Program EIR for the 2016 AQMP similarly projected that the control measures in the 2016 AQMP would increase the natural gas demand in the Basin. Specifically, the mobile source control measures were seen has having the potential for encouraging the use of natural gas as a fuel to offset the use of petroleum fuels while the projected increased demand for electricity would

[106] See Section 4.3.3.3 Natural Gas of the Final Program EIR for the 2022 AQMP and Section 4.2.4.2 Natural Gas of the Final Program EIR for the 2016 AQMP

[107] Senate Bill 100, https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB100.

also require additional natural gas since most of the power plants in California generate electricity from equipment that uses natural gas. However, the Final Program EIR for the 2016 AQMP noted that natural gas supplies were abundant as a result of technological innovations, and the natural gas outlook, which in 2007 predicted that 700 trillion cubic feet of natural gas would be economically recoverable, was increased to nearly 1,400 trillion cubic feet of natural gas, a 100 percent increase [CEC, 2013]. Therefore, the Final Program EIR for the 2016 AQMP concluded that implementation of the 2016 AQMP would have a less than significant impact to energy from natural gas demand. Because the natural gas demand impacts were concluded to be less than significant, mitigation measures were not required or adopted.

Energy Impacts from Hydrogen Demand[108]

Both the Final Program EIRs for the 2022 AQMP and 2016 AQMP considered a Basin-wide shift from conventional petroleum fuels to alternative fuels: electricity, natural gas, biodiesel and renewable diesel, ethanol and ethanol blends, hydrogen, propane, methanol, and renewable energy. While PR 2306 does not specify or require particular alternative fuels to be used, electricity and hydrogen are expected to be the primary choices for zero emission options. The topic of electricity was previously discussed in this Appendix, so the following section summarizes the analysis conducted in the Final Program EIRs for the 2022 AQMP and 2016 AQMP relative to hydrogen.

There is growing interest and financial support for the use of hydrogen-powered fuel cells to power cars, trucks, homes, and businesses. As opposed to alternative fuel vehicles which burn fuel in a combustion engine to produce usable energy, a hydrogen fuel cell electric vehicle (FCEV) relies on an electrochemical reaction between hydrogen (from the fuel tank) and oxygen to produce useful electrical energy along with water and heat as waste products. Current hydrogen vehicles in California consist of demonstration fuel cell passenger cars, internal combustion engine passenger cars, fuel cell buses, and hybrid fuel cell buses. Despite continuing improvements in performance and fuel cell system durability, challenges remain for broad commercialization of FCEV technology. These include system integration and optimization, and access to and price of hydrogen fuel (a big hurdle to the use of fuel cell vehicle adoption). [CEC, 2021].

The deployment of both FCEVs and the associated hydrogen fueling infrastructure is mainly for commercial applications in California, with a growing commercial deployment. As such, hydrogen fueling for transportation vehicles is not widely offered for retail sale. Executive Order B-48-18 requires the development of 200 hydrogen stations in California by 2025.[109] At the time the 2022 AQMP was developed, there were 55 public and private hydrogen fueling stations operating in the United States and only 10 of these offered public fueling. There were 23 hydrogen fueling stations operating in California, with nine accessible to the public. However, there are ongoing CEC-funded projects which increased the total number of publicly available hydrogen stations in California to 54 which will help support the deployment of FCEVs in urban retail markets. CEC expects that hydrogen infrastructure will first be deployed in a few select urban markets, and then phased into a wider set of strategic urban areas before it is expanded into a nationwide network. [CEC, 2021c]. The California Fuel Cell Partnership provides an on-line hydrogen fuel station map

[108] See Section 4.3.3.5.4 Hydrogen of the Final Program EIR for the 2022 AQMP and Section 4.2.4.4.3 Hydrogen of the Final Program EIR for the 2016 AQMP

[109] Executive Order B-48-18, https://www.library.ca.gov/wp-content/uploads/GovernmentPublications/executive-order-proclamation/39-B-48-18.pdf

(https://cafcp.org/stationmap) which shows the status of fueling locations as open, off-line, under construction, in-process for permitting, or planned. Data from the CEC's website currently show that 30 publicly available hydrogen fueling stations are open in the South Coast Air Basin with 18 in Los Angeles County, 11 in Orange County, one in Riverside County and none in San Bernardino County.[110] However, data pertaining to the amount of hydrogen available at each location is not available. Hydrogen suppliers are expected to include major oil companies that currently provide gasoline fuel to retail stations, many of which also operate hydrogen plants to produce hydrogen as a transportation fuel. However, existing hydrogen plants currently operate at full capacity, largely to produce petroleum fuels. Therefore, additional hydrogen would need to be produced to support the use of hydrogen as an alternative fuel.

One goal of the 2022 AQMP was to shift from conventional petroleum fuels to low NOx or zero emission technologies, including hydrogen. The 2022 AQMP does not mandate hydrogen fuel use by fleet operators, and further technology demonstration and deployment of hydrogen vehicles larger than passenger cars (i.e., medium- and heavy-duty vehicles) is still needed. The hybrid and electric vehicle technologies and deployment are much further developed than the hydrogen fuel cell vehicles for industrial and commercial uses (i.e., heavy-duty truck uses). Therefore, early advancement of light-duty FCEVs along with the further development of heavy-duty FCEVs is expected to increase hydrogen demand for mobile sources. Little excess capacity is available to meet the increase in hydrogen demand and additional production facilities will be necessary. Thus, the increased demand for hydrogen fuel was concluded to have significant impacts.

Because the hydrogen demand impacts from implementing the 2022 AQMP were concluded to be significant, the Final Program EIR for the 2022 AQMP adopted feasible mitigation measures E-10 to E-12 for reducing energy impacts related to hydrogen demand (see page 4.3-33 of the Final Program EIR for the 2022 AQMP). Even after mitigation measures E-10 to E-12 are applied, the hydrogen demand impacts would remain significant.

The Final Program EIR for the 2016 AQMP similarly analyzed the growing interest and support for the use of hydrogen-powered fuel cells. However, at the time of adoption of the 2016 AQMP, the development and market deployment of hybrid and electric vehicles was much further along than for hydrogen fuel cell vehicles such that projected hydrogen demand was not expected to require additional hydrogen capacity. Therefore, the Final Program EIR for the 2016 AQMP concluded that implementation of the 2016 AQMP would have less than significant energy impacts relative to hydrogen demand. Since the hydrogen demand impacts were concluded to be less than significant, mitigation measures were not required or adopted.

Mitigation Measures Adopted in the Final Program EIRs for the 2022 AQMP and 2016 AQMP for Energy Impacts[111]

Mitigation measures E-1 to E-12 of the Final Program EIR for the 2022 AQMP and mitigation measures E-1 to E-7 of the Final Program EIR for the 2016 AQMP are presented side-by-side in Table A-10. Because the analysis conducted for the Final Program EIR for the 2022 AQMP reflects

[110] CEC, Hydrogen Refueling Stations in California, https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics-collection/hydrogen, data last updated May 23, 2024, website accessed June 27. 2024.

[111] See Section 4.3.3 Potential Energy Impacts and Mitigation Measures of the Final Program EIR for the 2022 AQMP and Section 4.2.5 Mitigation Measures of the Final Program EIR for the 2016 AQMP

the most recent best practices, owners and operators of equipment required to mitigate energy impacts are recommended to utilize the mitigation measures of the Final Program EIR for the 2022 AQMP in the event of a conflict between mitigation measures that would apply in a given situation.

Table A-10. Mitigation Measures Adopted in the Final Program EIRs for the 2022 AQMP and 2016 AQMP for Energy

2022 AQMP	2016 AQMP
E-1 Project sponsors should pursue incentives to encourage the use of energy efficient equipment and vehicles and promote energy conservation during electricity generation.	**E-1** Project sponsors should pursue incentives to encourage the use of energy efficient equipment and vehicles and promote energy conservation.
E-2 Utilities should increase capacity of existing transmission lines to meet forecast demand that supports sustainable growth where feasible and appropriate in coordination with local planning agencies.	**E-2** Utilities should increase the capacity of existing transmission lines to meet forecast demand that supports sustainable growth, where feasible and appropriate, in coordination with local planning agencies.
E-3 Project sponsors should submit projected electricity calculations to the local electricity provider for any project anticipated to require substantial electricity consumption. Any infrastructure improvements necessary should be completed according to the specifications of the electricity provider.	**E-3** Project sponsors should submit projected electricity calculations to the local electricity provider for any project anticipated to require substantial electricity consumption. Any infrastructure improvements necessary should be completed according to the specifications of the electricity provider.
E-4 Project sponsors should include energy analyses in environmental documentation with the goal of conserving energy through the wise and efficient use of energy.	**E-4** Project sponsors should include energy analyses in environmental documentation (e.g., CEQA document) with the goal of conserving energy through the wise and efficient use of energy.
E-5 Project sponsors should evaluate the potential for reducing peak energy demand by encouraging charging of electrical vehicles and other mobile sources during off-peak hours.	**E-5** Project sponsors should evaluate the potential for reducing peak energy demand by encouraging the charging of electrical vehicles and other mobile sources during off-peak hours.

Table A-10. Mitigation Measures Adopted in the Final Program EIRs for the 2022 AQMP and 2016 AQMP for Energy

2022 AQMP	2016 AQMP
E-6 Project sponsors should evaluate the potential for reducing peak energy demand by encouraging the use of catenary or way-side electrical systems developed for transportation systems to operate during off-peak hours. **E-7** Project sponsors should evaluate the potential for reducing peak energy demand by encouraging the use of electrified stationary sources during off-peak hours. **E-8** Projects that require a substantial increase in natural gas demand should consider the use of renewable gas, where available and feasible, including biofuel landfill gas and gas produced from renewable fuels projects. **E-9** Project sponsors should submit projected natural gas demand use to the local natural gas provider for any project anticipated to require substantial natural gas consumption. Any infrastructure improvements necessary should be completed according to the specifications of the natural gas provider. **E-10** Project sponsors should pursue incentives to encourage the use of energy efficient equipment and vehicles, and promote energy conservation associated with hydrogen production.	**E-6** Project sponsors should evaluate the potential for reducing peak energy demand by encouraging the use of catenary or way-side electrical systems developed for transportation systems to operate during off-peak hours. **E-7** Project sponsors should evaluate the potential for reducing peak energy demand by encouraging the use of electrified stationary sources during off-peak hours (e.g., cargo handling equipment).

Table A-10. Mitigation Measures Adopted in the Final Program EIRs for the 2022 AQMP and 2016 AQMP for Energy

2022 AQMP	2016 AQMP
E-11 Project sponsors should site new facilities in areas where infrastructure exists to reduce the amount of energy necessary to build new hydrogen production facilities. **E-12** Project sponsors should pursue hydrogen production and delivery through the most energy efficient, least environmentally impactful methods, where feasible.	

Cumulative Impacts[112]

The Final Program EIR for the 2022 AQMP concluded that implementation of the 2022 AQMP could result in significant adverse electricity consumption impacts because the potential electricity usage increase would exceed baseline electricity consumption by an estimated 11 percent. Significant impacts were also concluded for natural gas and hydrogen demand. When combined with the Connect SoCal Plan, the SIP strategies, state policies, and other past, present, and reasonably foreseeable activities, the analysis in the Final Program EIR concluded that implementation of the 2022 AQMP control measures would result in a significant increase in electricity, natural gas, and hydrogen demand which may not currently be available, and would contribute to cumulatively considerable impacts. No additional mitigation measures to reduce the significant cumulative impacts to energy were identified. Cumulative impacts to energy demand for past, present, and reasonably foreseeable future projects would remain significant and unavoidable for electricity, natural gas, and hydrogen demand.

The Final Program EIR for 2016 AQMP concluded that implementation of the 2016 AQMP control measures would result in significant adverse electricity consumption impacts because the potential electricity usage increase would exceed baseline electricity consumption by 7.8 to 12.7 percent. No significant impacts on natural gas supplies and petroleum fuels associated with the 2016 AQMP were identified because of the anticipated reduction in future demand and wide availability of natural gas. No significant impacts on hydrogen were identified because hydrogen demand was not expected to require additional hydrogen capacity. The 2016 AQMP control measures would result in significant adverse energy demand impacts and, when combined with past, present, and reasonably foreseeable activities, and in particular with transportation projects projected in the 2016 RTP/SCS, would contribute to cumulatively considerable impacts to energy identified in the 2016 RTP/SCS, therefore resulting in a significant cumulative impact. No additional mitigation measures to reduce the significant cumulative impacts to energy were identified. Cumulative impacts to energy from implementation of the 2016 AQMP would remain significant and unavoidable.

Summary of Energy Analyses

Table A-11 presents a summary of the energy analyses conducted in the 2022 AQMP and 2016 AQMP.

[112] See Section 4.3.5 Cumulative Energy Impacts and Mitigation Measures of the Final Program EIR for the 2022 AQMP and Section 5.7.1 Cumulative Impacts of the Final Program EIR for the 2016 AQMP

Table A-11. Summary of Energy Analyses in the Final Program EIRs for the 2022 AQMP and 2016 AQMP

Significance Criteria	Potentially Significant Impacts	Mitigation Measures	Cumulative Impacts
Energy impacts are significant if any of the following conditions occur: • The project conflicts with adopted energy conservation plans or standards. • The project results in substantial depletion of existing energy resource supplies. • An increase in demand for utilities impacts the current capacities of the electric and natural gas utilities. • The project uses non-renewable energy resources in a wasteful and/or inefficient manner.	Implementation of Control Measures MOB-02A and MOB-02B from the 2022 AQMP would cause potentially significant energy impacts from: • Increase in electricity demand due to increased usage of zero-emission technologies installed at rail yards, • Increase in hydrogen demand in mobile sources, and • Increase in natural gas demand to produce electricity Implementation of Control Measure MOB-02 from the 2016 AQMP would cause potentially significant energy impacts from: • Increase in electricity demand due to increased usage of zero-emission technologies installed at rail yards, • Increase in alternative fuels and fuel additives demand, and • Increase in natural gas demand to produce electricity	E-1 to E-12 of the Final Program EIR for the 2022 AQMP and E-1 to E-7 of the Final Program EIR for the 2016 AQMP	Cumulative impacts to energy demand for past, present, and reasonably foreseeable future projects would remain significant and unavoidable for electricity, hydrogen, and natural gas demand.

Hazards and Hazardous Materials

Both the Final Program EIR for the 2022 AQMP and the Final Program EIR for the 2016 AQMP identified the increased use of alternative fuels to be a potentially significant hazards and hazardous materials impact associated with implementation of Control Measures MOB-02A and MOB-02B from the 2022 AQMP and Control Measure MOB-02 from the 2016 AQMP, upon which PR 2306 relies. The Final Program EIR for the 2022 AQMP also identified and analyzed potentially significant hazards and hazardous materials impacts associated with production of hydrogen. While PR 2306 does not specify or require particular alternative fuels to be used, batteries (electricity) and hydrogen are expected to be the primary choices for zero emission options. The following discussion will summarize the analysis conducted for the use of batteries in electric vehicles and hydrogen in the Final Program EIRs for the 2022 AQMP and 2016 AQMP.

Significance Criteria

Hazards and hazardous materials impacts are significant if any of the following conditions occur:

- Non-compliance with any applicable design code or regulation.
- Non-conformance to National Fire Protection Association standards.
- Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment, or fire protection.
- Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.

Hazards and Hazardous Materials Impacts from Use of Batteries in Electric Vehicles[113]

The control measures in the 2022 AQMP focus on maximizing the implementation of zero emission and low NOx technologies which are expected to include electrification of mobile sources (light-duty vehicles, medium-duty vehicles, and heavy-duty vehicles). Electric and hybrid vehicles (hybrids) both use electricity as part of their fuel system. Electric vehicles rely purely on electric power stored in batteries. Hybrids also use batteries as part of their fuel supply; however, hybrids supplement their electric demand by using gasoline engines to generate either mechanical or electric power on demand. Since gasoline is a conventional fuel, any difference in hazards associated with hybrid and electric vehicles would be from the batteries.

Battery technologies in electric vehicles have primarily included nickel-metal hydride (NiMH) and lithium ion (Li-ion). Electric vehicles require high-energy batteries (i.e., batteries that store significant quantities of energy, retain it efficiently, and discharge it at a high rate). Li-ion batteries are the most commonly used batteries in electric vehicles because of their high energy density which allows them to store large amounts of energy, low self-discharge rate which allows them to retain a charge, and excellent electrochemical potential which allows high-power discharge). [NTSB, 2020]. Li-ion batteries are also lighter in weight than other battery types used in electric vehicles.

NiMH batteries can generate hydrogen gas if overcharged, which can lead to explosions without proper venting. In 1996, the International Center for Technology Assessment (ICTA) conducted a

[113] See Section 4.4.3.2.1 Electric and Hybrid Vehicles of the Final Program EIR for the 2022 AQMP and Section 4.3.4.2.7 Electric/Hybrid of the Final Program EIR for the 2016 AQMP

comprehensive review of the safety concerns associated with the use of electric vehicles. The ICTA found that risk of hydrogen emissions during stressful conditions has been virtually eliminated by the use of seals and proper valve regulation. By following the National Electric Codes (NECs) and the Society of Automotive Engineers (SAE) recommended safety practices and guidelines for the operation and maintenance of electric vehicles and hybrids, any hydrogen gas risk during battery recharging would be eliminated. [ICTA, 1996].

Fires in electric vehicles powered by high-voltage Li-ion pose a risk of electric shock in the event of a damaged Li-ion battery. A further risk is that damaged cells in the battery can experience uncontrolled increases in temperature and pressure (thermal runaway), which can lead to hazards such as battery reignition and fire. The risks of electric shock and battery reignition/fire arise from the stranded energy that remains in a damaged battery and the fires can generate large amounts of acrid smoke. [NTSB, 2020].

In response to fires in electric vehicles, the National Transportation Safety Board (NTSB) performed an investigation on the fire hazards associated with Li-ion batteries in electric vehicles and concluded the following:

1. Manufacturers' emergency response guides provide sufficient vehicle-specific information for disconnecting an electric vehicle's high-voltage system when the high-voltage disconnects are accessible and undamaged by crash forces.
2. Crash damage and resulting fires may prevent first responders from accessing the high-voltage disconnects in electric vehicles.
3. The instructions in most manufacturers' emergency response guides for fighting high-voltage Li-ion battery fires lack vehicle-specific details on suppressing the fires.
4. Thermal runaway and multiple battery reignitions after initial fire suppression are safety risks in high-voltage Li-ion battery fires.
5. The energy remaining in a damaged high-voltage Li-ion battery (stranded energy) poses a risk of electric shock and creates the potential for thermal runaway that can result in battery reignition and fire.
6. High-voltage Li-ion batteries in electric vehicles, when damaged by crash forces or internal battery failure, present special challenges to first and second responders because of insufficient information from manufacturers on procedures for mitigating the risks of stranded energy.
7. Storing an electric vehicle with a damaged high-voltage Li-ion battery inside the recommended 50-foot radius clear area may be infeasible at tow or storage yards.
8. Electric vehicle manufacturers should use the International Organization for Standardization standard 17840 template to present emergency response information.
9. Action by the National Highway Traffic Safety Administration (NHTSA) to incorporate scoring relative to the availability of a manufacturer's emergency response guide and its adherence to the International Organization for Standardization standard 17840 and SAE International recommended practice J2990 into the U.S. New Car Assessment Program, would be an incentive for manufacturers of vehicles sold in the United States with high-voltage Li-ion battery systems to comply with those standards.

10. Although exiting standards address damage sustained by high-voltage Li-ion battery systems in survivable crashes, they do not address high-speed, high-severity crashes resulting in damage to high-voltage Li-ion batteries and the associated stranded energy.

Based on their findings, the NTSB made the following recommendations:

1. The NHTSA when determining a vehicle's U.S. New Car Assessment Program score, should factor in the availability of a manufacturer's emergency response guide and its adherence to the International Organization for Standardization standard 17840 and SAE International recommended practice J2990.
2. The NHTSA should convene a coalition of stakeholders to continue research on ways to mitigate or deenergize the stranded energy in high-voltage Li-ion batteries and to reduce the hazards associated with thermal runaway resulting from high-speed, high severity crashes.
3. Electric vehicle manufacturers should model the emergency response guides on International Organization for Standardization standard 17840 (as included in SAE International recommended practice J2990) and incorporate vehicle-specific information on: 1) fighting high-voltage Li-ion battery fires; 2) mitigating thermal runaway and the risk of high-voltage Li-ion battery reignition; 3) mitigating the risks associated with stranded energy in high-voltage Li-ion batteries, both during the initial emergency response and before moving a damaged electric vehicle from the scene; and 4) safely storing an electric vehicle that has a damaged high-voltage Li-ion battery.
4. The National Fire Protection Association (NFPA), the International Association of Fire Chiefs, the International Association of Fire Fighters, the National Alternative Fuels Training Consortium, the National Volunteer Fire Council, and the Towing and Recovery Association of America should inform members about the circumstances of the fire risks described in this report and provide guidance to emergency personnel who respond to high-voltage Li-ion battery fires in electric vehicles.

While electric cars may have fire risks, a recent study shows that they are less likely to cause a vehicle fire than either gas-powered or hybrid vehicles. Data from the NTSB was used to track the number of car fires, and it was compared to sales data from the Bureau of Transportation Statistics. The data showed that for every 100,000 vehicles sold, hybrid-powered vehicles (which use gasoline) were involved in about 3,475 fires and conventional gasoline-powered vehicles were involved in approximately 1,530 fires while electric vehicles were involved in approximately 25 fires. Gasoline-powered vehicles and hybrid vehicles rely on combustion, in whole or in part, respectively, to function, while the electric cars rely on 100 percent electricity. [AutoinsuranceEZ, 2022]. Based on the results from the study, electric vehicles were concluded to not be inherently more dangerous than conventional gasoline-fueled or hybrid vehicles, but electric vehicle fires tend to be more difficult than gasoline fires to extinguish. [AutoinsuranceEZ, 2022].

The likelihood to overheat or ignite is increased if the batteries are poorly packaged, damaged, or exposed to a fire or a heat source. However, when packaged and handled properly, Li-ion batteries

pose a minimal threat to the environment.[114] [DOT, 2014]. As noted in the aforementioned study, internal combustion engines also can result in fires and other hazards; therefore, switching to battery power would not likely result in an increased fire risk. Therefore, the Final Program EIR for the 2022 AQMP concluded that implementation of the 2022 AQMP would have a less than significant impact to hazards and hazardous materials from use of electric vehicles and batteries. Because impacts were concluded to be less than significant, mitigation measures were not required or adopted.

The Final Program EIR for the 2016 AQMP similarly analyzed NiMH and Li-ion as the most common battery technologies used in modern EVs and hybrids. The Final Program EIR noted that there had been in a shift away from nickel metal hydride batteries in EV's to lithium-ion batteries [UN, 2010]. NHTSA performed an investigation on the fire hazards associated with Li-ion batteries in EVs, and concluded that EVs do not pose a greater risk of fire than gasoline-powered vehicles. When Li-ion batteries are being charged, they can generate hydrogen gas that is explosive in certain concentrations, but this hazard exists with lead-acid batteries as well as other types of batteries so the hazards associated with charging Li-ion batteries are expected to be similar to the hazards associated with lead-acid batteries. Overall, the fire hazards associated with an electric vehicle were expected to be less than a conventional vehicle because there would be no leak or spills of petroleum fuel (gas or diesel) that is flammable in the event of an accident. All electrical propulsion vehicles must comply with Federal Motor Vehicle Safety Standard (FMVSS) 305, which specifies performance requirements for limiting electrolyte spillage, retaining propulsion batteries, and electrically isolating the chassis from the high-voltage system during a crash event. FMVSS assures that accidents involving an EV or hybrid would cause no more electrical hazard than a gasoline- or diesel-powered vehicle. Therefore, the Final Program EIR for the 2016 AQMP concluded that implementation of the 2016 AQMP would have a less than significant impact to hazards and hazardous materials from use of electric vehicles and batteries. Because impacts were concluded to be less than significant, mitigation measures were not required or adopted.

Hazards and Hazardous Materials Impacts from Use of Hydrogen[115]

The physical hazards associated with bulk liquid transport and storage are similar to liquified natural gas (LNG), as they are both cryogenic liquids. The physical hazards associated with distributing hydrogen via pipeline and steam reformer hydrogen stations are similar to CNG as they are both compressed gases. In general, the fire hazards associated with hydrogen spills or leaks are higher than conventional fuels due to the wide flammability range and low ignition energy of hydrogen. However, hydrogen tanks are fabricated according to more rigorous standards than conventional fuel tanks, which helps reduce the likelihood of spills or leaks. The main additional hazard associated with the use of hydrogen versus conventional fuels is the difficulty in being able to recognize a hydrogen fire when it is happening. Hydrogen burns with a pale blue flame that is almost invisible during daylight hours making hydrogen fires are almost impossible to see with the naked eye. Hydrogen fires have low radiant heat, so it may be difficult to sense the presence of a flame until you are very close to it. Thus, the potential of a large fire stemming from

[114] Department of Transportation, Pipeline and Hazardous Materials Safety Administration, 2014. 49 CFR Parts 171, 172, 173, et al., Hazardous Materials: Transportation of Lithium Batteries, Federal Register Volume 79, Issue 151 (79 FR pp. 46011-46032).

[115] See Section 4.4.3.2.2 Hydrogen of the Final Program EIR for the 2022 AQMP and Section 4.3.4.2.6 Hydrogen of the Final Program EIR for the 2016 AQMP

a release of hydrogen in the case of an accident (e.g., a tanker truck accident) could pose challenges for fire-fighting personnel. Although hydrogen fires do not produce smoke themselves, burning of nearby combustible materials can result in smoke which help visual clues to a fire. Normally hydrogen fires are not extinguished until the supply of hydrogen has been shut off or exhausted since there is a danger of re-ignition and explosion. Firefighting personnel are trained in the characteristics of hydrogen fires and proper procedures for dealing with them. For the same fire hazard reasons, another potentially significant hazard is the release of hydrogen in an enclosed space (e.g., garage or vehicle maintenance facility).

Compared with diesel fuel and gasoline, the following can be stated about hydrogen:

- Diesel fuel and gasoline are toxic to the skin and lungs while hydrogen is non-toxic and non-reactive, so if released, it does not present a health hazard to humans.
- Diesel fuel and gasoline vapors are heavier than air (for specific gravity of air = 1, diesel fuel is >4.0, gasoline is 3.4) while hydrogen is 14 times lighter than air. If released, hydrogen will quickly rise dissipate into the atmosphere greatly reducing the risk of ignition at ground level.
- Hydrogen has an extremely low ignition energy requirement; about 20 microjoules can ignite hydrogen/air, which is about 10 times less than what is required to ignite a gasoline/air mixture. Gasoline can be explosive at oxygen concentrations between one and three percent while hydrogen can be explosive with oxygen concentrations between 18 and 59 percent. This means that gasoline has greater risk for explosion than hydrogen for any given environment with oxygen. [PNL, 2004].
- Hydrogen has a lower radiant heat when compared to gasoline, meaning the air around the hydrogen flame is not as hot as around a gasoline flame. Therefore, the risk of hydrogen secondary fires is lower.
- Hydrogen is clear, odorless, and tasteless. It burns with an extremely hot, but nonluminous flame which is difficult to see during the day. The flame of burning hydrogen has few warning properties.
- Hydrogen has an unusually large flammability range and can form ignitable mixtures between four and 75 percent by volume in air. Given confinement and good mixing, hydrogen can be detonated over the range of 18 to 59 percent by volume in air.

Based upon the preceding information, hazards associated with hydrogen are approximately equivalent or less when compared to conventional fuels. In addition, fire hazards associated with hydrogen when compared to fires involving conventional fuels are equivalent but will require different firefighting protocols due to the nature of hydrogen. Therefore, both the Final Program EIR for the 2022 AQMP and the Final Program EIR for the 2016 AQMP concluded that no significant increase in hazards would be expected from using hydrogen in mobile sources when compared to conventional fuels. Because impacts were concluded to be less than significant, mitigation measures were not required or adopted.

Use of alternative fuels requires additional knowledge and training of owners/operators of fueling stations regarding maintaining and operating alternative fuel refueling stations and emergency responders. Further, as use of alternative fuels increases within the South Coast AQMD's jurisdiction, use of conventional fuels such as gasoline and diesel will decline. As a result,

explosion and flammability hazards associated with conventional fuels will also decline. In addition, hazards and hazardous clean-up associated with accidental releases of conventional fuels, especially diesel, will be reduced as the use of alternative fuels increases. For the storage and dispensing of alternative fuels, compliance with existing regulations and recommended safety procedures will ensure that any potential hazards impacts associated with alternative clean-fuels are expected to be the same or less than those of conventional fuels. Accordingly, the Final Program EIRs for the 2022 AQMP and 2016 AQMP concluded that the hazards impacts from the increased use of alternative fuels would be similar to or less than hazards associated with conventional fuels, and that no significant increase in hazards would be expected from using alternative fuels in mobile sources when compared to conventional fuels. Because impacts were concluded to be less than significant, mitigation measures were not required or adopted.

Hazards and Hazardous Materials Impacts from Production of Hydrogen[116]

The Final Program EIR for the 2022 AQMP analyzed risk associated with hydrogen production. More than 95 percent of U.S.-produced hydrogen is made in central plants via a steam methane reforming process using natural gas, refinery fuel gas, coal, and water electrolysis. In the early stages, expanded hydrogen production will likely rely on natural gas feedstock, as this approach offers a low-cost pathway to producing hydrogen. Over time, hydrogen fuel production could evolve from this natural gas dominance to a more diversified production mix, such as a lower-carbon production mix that includes natural gas reformation with carbon capture and storage, coal with carbon capture and storage (for hydrogen production outside of California), biofuels, waste resources, nuclear (for hydrogen production outside of California), and water electrolysis using renewable electric power. This shift is anticipated because it is expected that there will be a significant push to de-carbonize transportation fuels. Hydrogen may also be produced from renewable energy resources and waste streams using low-carbon-emitting processes (e.g., biomass gasification, water electrolysis using renewable electricity, and reformation of renewable natural gas)[117]. [CEC, 2021].

A recent hazard analysis was conducted for a proposed new hydrogen plant at a renewable fuels facility in Southern California. The results of the analysis indicated that the worst-case hazard zones associated with an upset of the hydrogen plant and related pipelines were related to a torch fire and would create hazards to surrounding areas within approximately 90 feet of the fire. The rupture of a related natural gas pipeline that would feed the hydrogen plant was also identified as a potential torch fire risk which could create hazards to surrounding areas within approximately 183 feet of a release. Since the construction of any new hydrogen plants would be expected to be constructed within existing industrial facilities that would likely have at least 90 feet to the closest off-site receptor, less than significant impacts would be expected relative to risk associated with hydrogen production. Existing natural gas pipelines provide service to most existing facilities, but the construction of new natural gas pipelines could be significant if located offsite of a facility where a new hydrogen production facility may be located, as the precise location of new natural

[116] See Section 4.4.3.2.2 Hydrogen of the Final Program EIR for the 2022 AQMP and Section 4.3.4.2.6 Hydrogen of the Final Program EIR for the 2016 AQMP

[117] CEC, 2021. Final 2021 Integrated Energy Policy Report, Volume II, Ensuring Reliability in a Changing Climate. CEC-101-2021-001-V2 February, 2022. https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2021-integrated-energy-policy-report

gas pipelines cannot be forecasted. Natural gas pipelines are located throughout urban areas, including within residential areas and adjacent to sensitive receptors.

New natural gas pipelines are subject to a number of regulatory requirements, including the following:

- Hydrostatic testing to 125 percent of the operating pressure is required by the state Fire Marshal prior to operation of a pipeline. Additional periodic testing is required for pipelines, with the frequency of testing based on pipeline age, use of cathodic protection, and release history;
- New pipelines are required to accommodate instrumented internal inspection devices (commonly referred to as "smart pigs"). "Smart pigs" detect where corrosion or other damage has affected the wall thickness or shape. Additionally, to ensure the pipeline is operating properly and the total volume of material shipped is received, monitoring of operations during transfer of material is required and may include pressure indicators along the pipeline route, as well as flow meters at both the shipping and receiving ends of the pipeline;
- Cathodic protection is required for new pipelines. Cathodic protection is a technique used to control the corrosion of a metal surface by making it the cathode of an electrochemical cell. Avoiding corrosion protects the integrity of the pipeline and minimizes that potential for releases; therefore, installation of cathodic protection helps to prevent pipeline releases;
- Federal regulations require the installation and maintenance of line marker posts so that the pipeline is easily identifiable. In addition, annual inspections are required to look for corrosion and other issues;
- Pipelines are registered with the USA North 811 underground service alert system. Contractors contact this organization prior to beginning excavation activities. The organization notifies the owners of underground facilities in the area of the proposed construction activities. The owners and contractors can then discuss the proposed construction activities. Owners typically mark the exact location of the pipelines and communicate the locations to the contractors. Participation in the USA system minimizes the potential for damage and meets the requirements of the operator's damage prevention program pursuant to 49 CFR Part 192 requirements;
- 49 CFR Part 192, Subpart N, requires minimum training requirements for operators of pipeline facilities. These requirements assure that individuals working on the pipeline would have appropriate training and experience;
- The operation of pipelines is required to have an Emergency Response Plan that identifies specific measures that would be implemented in the event of upset conditions. The Emergency Response Plan identifies responsible parties for the incident command and supporting agencies and organizations; and
- New natural gas pipeline may require the installation of safety blowdown equipment at one location along the designated route. The blowdown equipment will allow for the controlled release and dispersion of gas in the pipeline in the event of an upset condition. Blowdown equipment is part of the PHMSA requirements.

These extensive state and federal requirements on new (and existing) natural gas pipelines, are expected to be implemented and enforced. Implementation of these extensive requirements is expected to minimize the severity of potential hazard impacts of natural gas pipeline releases should they occur. As such, no mitigation measures were identified or adopted in the Final Program EIR for the 2022 AQMP that would be capable of reducing impacts beyond the existing state and federal requirements in place for this environmental topic area. The operational impacts associated with the new natural gas pipeline would remain significant as a release could potentially impact receptors, including residences, and would be a new or intensified hazard. Therefore, the Final Program EIR for the 2022 AQMP concluded that hazards associated with the potential increase in transmission of natural gas via pipeline to service hydrogen plants would be potentially significant.

At the time of writing the Final Program EIR for the 2016 AQMP, additional hydrogen production was not expected to be required to meet the projected hydrogen demand. Therefore, hazards and hazardous materials impacts from hydrogen production as a result of implementing control measures such as MOB-02 were not identified.

Regarding Mitigation Measures for Hazards and Hazardous Materials Impacts in the Final Program EIR for the 2022 AQMP[118]

The Final Program EIR for the 2022 AQMP concluded that production of hydrogen would result in potentially significant hazards and hazardous materials impacts. More specifically, based on the results of a recent hazards analysis, construction of new natural gas pipelines to service hydrogen production facilities may be a potential torch fire risk which could create hazards to surrounding areas within approximately 183 feet of a release. Because there are extensive state and federal requirements on new and existing natural gas pipelines, and implementation of these requirements are expected to minimize the severity of potential hazard impacts of natural gas pipeline releases should they occur, no mitigation measures were identified or adopted in the Final Program EIR for the 2022 AQMP that would be capable of reducing impacts beyond the existing state and federal requirements in place for this environmental topic area.

Cumulative Impacts[119]

The Final Program EIR for the 2022 AQMP concluded that implementation of Control Measures MOB-02A and MOB-02B could result in significant adverse hazards and hazardous materials impacts from the construction of new natural gas pipelines to service hydrogen plants. No mitigation measures were identified for construction of a new natural gas pipeline. When combined with the Connect SoCal Plan, the SIP strategies, state policies, and other past, present, and reasonably foreseeable activities, the 2022 AQMP would result in significant hazards and hazardous materials impacts, and would contribute to cumulatively considerable impacts. No additional mitigation measures to reduce the significant cumulative impacts to hazards and hazardous materials were identified. Therefore, the Final Program EIR concluded that cumulative impacts to hazards and hazardous materials for past, present, and reasonably foreseeable future projects would remain significant and unavoidable.

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[118] See Section 4.4.5 Cumulative Hazards and Hazardous Materials Impacts and Mitigation Measures of the Final Program EIR for the 2022 AQMP

[119] See Section 4.4.5.3 Summary of Cumulative Hazards and Hazardous Materials Impacts of the Final Program EIR for the 2022 AQMP and Section 5.9.1 Cumulative Impacts of the Final Program EIR for the 2016 AQMP

The Final Program EIR for 2016 AQMP concluded that implementation of Control Measure MOB-02 would not result in significant adverse hazards and hazardous materials impacts. Other 2016 AQMP control measures, however, would result in significant adverse hazards and hazardous materials impacts and, when combined with past, present, and reasonably foreseeable activities, and in particular with transportation projects projected in the 2016 RTP/SCS, would contribute to cumulatively considerable impacts to hazards and hazardous materials identified in the 2016 RTP/SCS, therefore resulting in a significant cumulative impact. No additional mitigation measures to reduce the significant cumulative impacts to hazards and hazardous materials were identified. Cumulative impacts to hazards and hazardous materials from implementation of the 2016 AQMP would remain significant and unavoidable.

Summary of Hazards and Hazardous Materials Analyses

Table A-12 presents a summary of the hazards and hazardous materials analyses conducted in the 2022 AQMP and 2016 AQMP.

Table A-12. Summary of Hazards and Hazardous Materials Analyses in the Final Program EIRs for the 2022 AQMP and 2016 AQMP

Significance Criteria	Potentially Significant Impacts	Mitigation Measures	Cumulative Impacts
Hazards and hazardous materials impacts are significant if any of the following conditions occur: • Non-compliance with any applicable design code or regulation. • Non-conformance to National Fire Protection Association standards. • Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment, or fire protection. • Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.	Implementation of Control Measures MOB-02A and MOB-02B in the 2022 AQMP would cause potentially significant hazards and hazardous materials impacts from: • Increased production and use of alternative fuels (e.g., hydrogen). No potentially significant hazards and hazardous impacts were identified for Control Measure MOB-02 from the 2016 AQMP.	No hazards and hazardous materials mitigation measures were adopted for Control Measures MOB-02A and MOB-02B in the Final Program EIR for the 2022 AQMP. No hazards and hazardous materials mitigation measures were adopted for Control Measures MOB-02 in the Final Program EIR for the 2016 AQMP.	Cumulative impacts to hazards and hazardous demand for past, present, and reasonably foreseeable future projects would remain significant and unavoidable for construction of new natural gas pipelines to service hydrogen plants.

Noise

Various types of construction activities will be necessary to implement most control measures including Control Measures MOB-02A and MOB-02B of the 2022 AQMP and Control Measure MOB-02 of the 2016 AQMP. The Final Program EIR for the 2022 AQMP evaluated the construction and installation of infrastructure to support the use of additional electricity and alternative fuels from Control Measures MOB-02A and MOB-02B. The Final Program EIR for the 2016 AQMP evaluated construction of infrastructure to provide support for new cleaner equipment or vehicles.

Significance Criteria

Noise impacts are significant if any of the following conditions occur:

- Construction noise levels exceed the local noise ordinances or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three decibels (dBA) at the site boundary. Construction noise levels will be considered significant if they exceed federal Occupational Safety and Health Administration (OSHA) noise standards for workers.
- The proposed project operational noise levels exceed any of the local noise ordinances at the site boundary or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three dBA at the site boundary.

Noise Impacts from Construction[120]

The Final Program EIR for the 2022 AQMP considered that implementation of Control Measures MOB-02A and MOB-02B would require installing charging and alternative fueling infrastructure for the storage and dispensing of alternative fuels for use in on-road heavy-duty vehicles, off-road equipment, and locomotives operating at new rail yards and intermodal facilities; and deploying the cleanest locomotives, switchers, on-road heavy-duty trucks, cargo-handling equipment, transportation refrigeration units available (see Final Program EIR for the 2022 AQMP, Table 4.6-1). Control Measures MOB-02A and MOB-02B could also require the installation roadway infrastructure within or adjacent to existing roadways, streets, freeways, and/or transportation corridors. For the purpose of evaluating potential noise impacts for these control measures, the analysis in the Final Program EIR for the 2022 AQMP assumed that no new rail or truck traffic routes would be constructed, but that some of the existing routes/corridors could be modified to include roadway infrastructure.

Similarly, the Final Program EIR for the 2016 AQMP considered potential noise impacts associated with Control Measure MOB-02 could include installation of roadway infrastructure (wayside power and catenary lines or other similar technologies), and installation of battery charging or fueling infrastructure. For purposes of evaluating potential noise impacts, it was assumed that no new industrial facilities or corridors would be constructed, but rather some of the existing facilities and corridors would be modified to include installation of new equipment and roadway infrastructure; and no new rail or truck traffic routes would be constructed, but rather

[120] See Section 4.6.3.1 Noise Associated with Construction Activities of the Final Program EIR for the 2022 AQMP and Section 4.5.4.1 Construction Activities of the Final Program EIR for the 2016 AQMP

some of these existing routes/corridors would be modified to include catenary overhead electrical lines or magnetic lines.

The existing rail and truck routes/corridors likely to be modified are located primarily in commercial and industrial zones within the Southern California area. Examples of these areas include, but are not limited to, industrial areas in and around container transfer facilities (rail and truck) near the Terminal Island Freeway, along the Alameda Corridor, as well inland rail yards near downtown Los Angeles.

The potential noise impact of construction activities would vary depending on the existing noise levels in the environment and the location of sensitive receptors (e.g., residences, hotels, hospitals, etc.) with respect to construction activities. Because no specific projects were proposed, the noise impacts were determined to be speculative. Potential modifications were assumed to occur at facilities typically located in appropriately zoned industrial or commercial areas, so construction noise impacts at stationary sources on sensitive receptors were concluded to be less than significant. The construction of roadway infrastructure would result in additional construction noise sources near transportation corridors, and it is not uncommon for residences and other sensitive receptors to be located within several hundred feet of the existing roadways, so noise levels associated with construction activities could increase three dBA or greater and generate potentially significant noise impacts, although temporary. Vibration from construction activities could exceed the 72 vibration decibels (VdB) threshold for structures and sensitive receptors within 200 feet of construction activities if certain types of construction equipment are used and so was considered potentially significant in both the Final Program EIR for the 2022 AQMP and the Final Program EIR for the 2016 AQMP. (See Table A-13 which is Table 4.6-5 Representative Construction Equipment Vibration Impacts, from the Final Program EIR for the 2022 AQMP. Table 4.6-5 from the Final Program EIR for the 2022 AQMP presents updated vibration data for the same equipment compared to Table 4.5-4 from the Final Program EIR for the 2016 AQMP.)

Table A-13. Representative Construction Equipment Vibration Impacts

Equipment	Peak Particle Velocity (PPV) at 25 ft (inches/sec)[(1)]	Velocity Level (Lv) at 25 ft (VdB) [(1)]	PPV at 200 ft (inches/sec)[(2)]	Lv at 200 ft (VdB) [(3)]
Impact Pile Driver (typical)	0.644	104	0.0285	77
Vibratory Roller	0.210	94	0.0093	67
Large Bulldozers	0.089	87	0.0039	60
Loaded Trucks	0.076	86	0.0034	59
Jackhammer	0.035	79	0.0015	52
Small Bulldozer	0.003	58	0.0001	31

(1) Source: FTA, 2018. Data reflects typical vibration levels
(2) Source: FTA, 2018. Eq. 7-2. (3)Source: FTA, 2018. Eq. 7-3.

Because the noise impacts from implementing the 2022 AQMP were concluded to be significant for noise and vibration impacts during construction activities, feasible mitigation measures NS-1 to NS-14 for reducing impacts related to noise and vibration were adopted in the Final Program EIR for the 2022 AQMP (see pages 4.6-12 to 4.6-14 of the Final Program EIR for the 2022 AQMP). Even after mitigation measures NS-1 to NS-14 were applied, the Final Program EIR for the 2022 AQMP concluded that the overall noise and vibration impacts during construction activities would remain significant.

Similarly, because the noise impacts from implementing the 2016 AQMP were concluded to be significant for noise and vibration impacts during construction activities, feasible mitigation measures NS-1 to NS-17 for reducing impacts related to noise and vibration were adopted in the Final Program EIR for the 2016 AQMP (see pages 4.5-11 to 4.5-12 of the Final Program EIR for the 2016 AQMP). Even after mitigation measures NS-1 to NS-17 were applied, the Final Program EIR for the 2016 AQMP concluded that the overall noise and vibration impacts during construction activities would remain significant.

Mitigation Measures Adopted in the Final Program EIRs for the 2022 AQMP and 2016 AQMP for Noise and Vibration Impacts During Construction[121]

Mitigation measures NS-1 to NS-14 of the Final Program EIR for the 2022 AQMP and mitigation measures NS-1 to NS-17 of the Final Program EIR for the 2016 AQMP are presented side-by-side in Table A-14. Because the analysis conducted in the Final Program EIR for the 2022 AQMP reflects the most recent best practices, owners and operators of equipment required to mitigate noise and vibration impacts from construction are recommended to utilize the mitigation measures of the Final Program EIR for the 2022 AQMP in the event of a conflict between mitigation measures that would apply in a given situation.

[121] See Section 4.6.3.1 Noise Associated with Construction Activities of the Final Program EIR for the 2022 AQMP and Section 4.5.5 Mitigation Measures of the Final Program EIR for the 2016 AQMP

Table A-14. Mitigation Measures Adopted in the Final Program EIRs for the 2022 AQMP and 2016 AQMP for Noise

2022 AQMP	2016 AQMP
NS-1 Install temporary noise barriers to protect sensitive receptors from excessive noise levels during construction. **NS-2** Schedule construction activities consistent within the allowable hours pursuant to the applicable general plan noise element or noise ordinance. For construction activities located near sensitive receptors, ensure noise-generating construction activities (including truck deliveries, pile driving, and blasting) are limited to the least noise-sensitive times of day (e.g., weekdays during the daytime hours). Where construction activities are authorized to occur outside of the limits established by the noise element of the general plan or noise ordinance, notify affected sensitive receptors and all parties who will experience noise levels in excess of the allowable limits for the specified land use, of the anticipated level of exceedance and duration of exceedance; and provide a list of protective measures that can be undertaken by the individual, including temporary relocation or use of hearing protective devices. **NS-3** Prohibit idling of construction equipment for extended periods of time in the vicinity of sensitive receptors. **NS-4** Post procedures and phone numbers at the construction site for notifying the Lead Agency staff, local Police Department, and construction contractor (during regular construction hours and off-	**NS-1** Install temporary noise barriers during construction. **NS-2** Use noise barriers to protect sensitive receptors from excessive noise levels during construction. **NS-3** Schedule construction activities consistent with the allowable hours pursuant to applicable general plan noise element or noise ordinance. Ensure noise-generating construction activities (including truck deliveries, pile driving, and blasting) are limited to the least noise-sensitive times of day (e.g., weekdays during the daytime hours) for projects near sensitive receptors. Where construction activities are authorized outside the limits established by the noise element of the general plan or noise ordinance, notify affected sensitive noise receptors and all parties who will experience noise levels in access of the allowable limits for the specified land use, of the level of exceedance and duration of exceedance; and provide a list of protective measures that can be undertaken by the individual, including temporary relocation or use of hearing protective devices. **NS-4** Limit speed and/or hours of operation of rail and transit systems during the selected periods of time to reduce duration and frequency of conflict with adopted limits on noise levels. **NS-5** Post procedures and phone numbers at the construction site for notifying the Lead Agency staff, local Police Department, and construction contractor (during regular construction hours and off-

Table A-14. Mitigation Measures Adopted in the Final Program EIRs for the 2022 AQMP and 2016 AQMP for Noise

2022 AQMP	2016 AQMP
hours), along with permitted construction days and hours, complaint procedures, and who to notify in the event of a problem. **NS-5** Notify neighbors and occupants within 300 feet of the project construction area at least 30 days in advance of anticipated times when noise levels are expected to exceed limits established in the noise element of the general plan or noise ordinance. **NS-6** Hold a preconstruction meeting with job inspectors and the general contractor/onsite project manager to confirm that noise measures and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed. **NS-7** Designate an on-site construction complaint and enforcement manager for the project. **NS-8** Ensure that construction equipment is properly maintained per manufacturers' specifications and fitted with the best available noise suppression devices (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds silencers, wraps). All intake and exhaust ports on power equipment shall be muffled or shielded. **NS-9** Use hydraulically or electrically powered tools (e.g., jack hammers, pavement breakers, and rock drills) for project construction to avoid noise associated with compressed air exhaust	hours), along with permitted construction days and hours, complaint procedures, and who to notify in the event of a problem. **NS-6** Notify neighbors and occupants within 300 feet of the project construction area at least 30 days in advance of anticipated times when noise levels are expected to exceed limits established in the noise element of the general plan or noise ordinance. **NS-7** Hold a preconstruction meeting with the job inspectors and the general contractor/onsite project manager to confirm that noise measures and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed. **NS-8** Designate an on-site construction complaint and enforcement manager for the project. **NS-9** Ensure that construction equipment are properly maintained per manufacturers' specifications and fitted with the best available noise suppression devices (e.g., mufflers, silencers, wraps). All intake and exhaust ports on power equipment shall be muffled or shielded. **NS-10** Ensure that impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction are hydraulically or electrically powered to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust can and should be used. External jackets on the tools themselves can and should be used, if

Table A-14. Mitigation Measures Adopted in the Final Program EIRs for the 2022 AQMP and 2016 AQMP for Noise

2022 AQMP	2016 AQMP
from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust should be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves should be used, if such jackets are commercially available, and this could achieve a further reduction of 5 dBA. Quieter procedures should be used, such as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures. **NS-10** Locate fixed/stationary equipment (such as generators, compressors, rock crushers, and cement mixers) as far as possible from noise-sensitive receptors. **NS-11** Consider using flashing lights instead of audible back-up alarms on mobile equipment. **NS-12** For construction activities that require pile driving or other techniques that result in excessive noise or vibration, such as blasting, develop site-specific noise/vibration attenuation measures under the supervision of a qualified acoustical consultant. **NS-13** For construction activities at locations that require pile driving due to geological conditions, utilize quiet pile driving techniques such as predrilling the piles to the maximum feasible depth, where feasible. Predrilling pile holes will reduce the number	such jackets are commercially available and this could achieve a reduction of 5 dBA. Quieter procedures can and should be used, such as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures. **NS-11** Ensure that construction equipment is not idling for an extended time in the vicinity of noise-sensitive receptors. **NS-12** Locate fixed/stationary equipment (such as generators, compressors, rock crushers, and cement mixers) as far as possible from noise-sensitive receptors. **NS-13** Consider using flashing lights instead of audible back-up alarms on mobile equipment. **NS-14** For projects that require pile driving or other construction techniques that result in excessive vibration, such as blasting, determine the potential vibration impacts to the structural integrity of the adjacent buildings within 50 feet of pile driving locations. **NS-15** For projects that require pile driving or other construction techniques that result in excessive vibration, such as blasting, determine the threshold levels of vibration and cracking that could damage adjacent historic or other structure, and design means and construction methods to not exceed the thresholds. **NS-16** For projects where pile driving would be necessary for construction due to geological conditions, utilize quiet pile driving techniques such as predrilling the piles to the maximum feasible

Table A-14. Mitigation Measures Adopted in the Final Program EIRs for the 2022 AQMP and 2016 AQMP for Noise

2022 AQMP	2016 AQMP
of blows required to completely seat the pile and will concentrate the pile driving activity closer to the ground where pile driving noise can be shielded more effectively by a noise barrier/curtain. **NS-14** Monitor the effectiveness of noise reduction measures by taking noise measurements and installing adaptive mitigation measures to achieve the standards for ambient noise levels established by the noise element of the general plan or noise ordinance.	depth, where feasible. Predrilling pile holes will reduce the number of blows required to completely seat the pile and will concentrate the pile driving activity closer to the ground where pile driving noise can be shielded more effectively by a noise barrier/curtain. **NS-17** For projects where pile driving would be necessary for construction due to geological conditions, utilize quiet pile driving techniques such as the use of more than one pile driver to shorten the total pile driving duration.

Cumulative Impacts[122]

Both the Final Program EIR for the 2022 AQMP and the Final Program EIR for the 2016 AQMP concluded that implementation of their respective AQMP control measures could result in significant adverse noise and vibration impacts during construction because vibration from construction activities could exceed the 72 vibration decibels (VdB) threshold for structures and sensitive receptors within 200 feet of construction activities if certain types of construction equipment were used.

When combined with the Connect SoCal Plan, the SIP strategies, state policies, and other past, present, and reasonably foreseeable activities, the 2022 AQMP would result in a significant increase to noise and vibration impacts during construction, and would contribute to cumulatively considerable impacts. No additional mitigation measures to reduce the significant cumulative impacts to noise and vibration during construction have been identified. Cumulative impacts to noise and vibration during construction for past, present, and reasonably foreseeable future projects would remain significant and unavoidable for noise and vibration.

The 2016 AQMP control measures would result in significant adverse noise and vibration impacts during construction and, when combined with past, present, and reasonably foreseeable activities, and in particular with transportation projects projected in the 2016 RTP/SCS, would contribute to cumulatively considerable impacts to noise impacts identified in the 2016 RTP/SCS, therefore resulting in a significant cumulative impact. No additional mitigation measures to reduce the significant cumulative impacts to noise were identified. Cumulative impacts to noise and vibration from implementation of the 2016 AQMP would remain significant and unavoidable.

Summary of Noise Analyses

Table A-15 presents a summary of the noise analyses conducted in the 2022 AQMP and 2016 AQMP.

[122] See Section 4.6.5 Cumulative Noise Impacts and Mitigation Measures of the Final Program EIR for the 2022 AQMP and Section 5.13.1 Cumulative Impacts of the Final Program EIR for the 2016 AQMP

Table A-15. Summary of Noise Analyses in the Final Program EIRs for the 2022 AQMP and 2016 AQMP

Significance Criteria	Potentially Significant Impacts	Mitigation Measures	Cumulative Impacts
Noise impacts are significant if any of the following conditions occur: • Construction noise levels exceed the local noise ordinances or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three decibels (dBA) at the site boundary. Construction noise levels will be considered significant if they exceed federal Occupational Safety and Health Administration (OSHA) noise standards for workers. • The proposed project operational noise levels exceed any of the local noise ordinances at the site boundary or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three dBA at the site boundary.	Implementation of Control Measures MOB-02A and MOB-02B from the 2022 AQMP and Control Measure MOB-02 from the 2016 AQMP would cause potentially significant noise impacts from: • Construction of roadway infrastructure	NS-1 to NS-14 of the Final Program EIR for the 2022 AQMP and NS-1 to NS-17 of the Final Program EIR for the 2016 AQMP	Cumulative impacts to noise and vibration impacts for past, present, and reasonably foreseeable future projects would remain significant and unavoidable during construction activities.

Solid and Hazardous Waste

The Final Program EIR for the 2022 AQMP identified and analyzed potentially significant solid and hazardous waste impacts associated with disposal of spent diesel particulate filters. Both the Final Program EIR for the 2022 AQMP and the Final Program EIR for the 2016 AQMP identified construction activities for infrastructure development, and replacement and early retirement of vehicles and equipment to be potentially significant solid and hazardous waste impacts associated with implementation of PR 2306.

Significance Criteria

Solid and hazardous waste impacts are significant if the generation and disposal of hazardous and non-hazardous waste exceeds the capacity of designated landfills.

Table A-16 summarizes the landfill capacity in South Coast AQMD jurisdiction, and is Table 3.7-2 Number of Class III Landfills Located within the South Coast AQMD's Jurisdiction and Related Landfill Capacity, from the Final Program EIR for the 2022 AQMP.

Table A-16. Number of Class III Landfills Located within the South Coast AQMD's Jurisdiction and Related Landfill Capacity

County	Number of Landfills	Permitted Capacity (tons per day)
Los Angeles	10	38,249
Orange	3	23,500
Riverside(1)	6	22,314
San Bernardino(1)	9	16,269
Total	**28**	**100,332**

Source: CalRecycle Solid Waste Information System *SWIS) Search. Available at: https://www2.calrecycle.ca.gov/SolidWaste/

(1) Data presented is for the entire county and not limited to the portion of the county within the South Coast AQMD jurisdiction.

Solid and Hazardous Waste Impacts from Disposal of Spent Diesel Particulate Filters[123]

Implementation of Control Measures MOB-02A and MOB-02B could result in the use of diesel particulate filters (DPFs) to reduce diesel particulate matter, a toxic, from on-road heavy-duty vehicles, off-road construction equipment, and low-emitting engines on cargo handling equipment and locomotives. A DPF is an exhaust aftertreatment device that traps diesel particulate matter as ash which is a by-product of combustion engines that use diesel fuel. In order to reduce emissions from diesel engines, a DPF captures and stores exhaust soot, which must be periodically burned off to regenerate the filter media. The lifespan of a DPF varies based on the application and type of engine but can last from five to ten years or 10,000 or more hours of operation. During the regenerative process, no solid waste is generated. However, during the periodic cleaning of the DPF, the process involves manually removing the filter element from the housing and placing it

[123] See Section 4.7.3.2.2 Diesel Particulate Filters of the Final Program EIR for the 2022 AQMP and Section 4.6.4.2.2 Particulate Traps, Filters, and Precipitators of the Final Program EIR for the 2016 AQMP

in a cleaning station designed for this purpose. The ash is collected in the cleaning station and sent for disposal as solid waste. DPF ash is not specifically listed in the Federal Code of Regulations as a hazardous material, but there may be metallic oxides in the ash which are hazardous to the environment and public health. Waste generators that operate DPF cleaning stations can either dispose of the DPF ash as hazardous waste or can have the waste tested using the Toxicity Characteristic Leaching Procedure (TCLP) which is a process that replicates the leaching process that would naturally occur when waste is buried in a municipal landfill. If the leachate contains any of the regulated contaminants at concentrations that are equal to or greater than the regulatory levels, then the DPF ash is considered hazardous waste.

Diesel repair shops currently operate cleaning stations so any additional soot and ash removed from additional DPFs deployed as a result of implementing the control measures will be collected and disposed of in accordance with existing practices and applicable regulations for hazardous waste disposal. At the end of its useful life, a DPF has monetary value and is typically sent for recycling to recover the catalyst and the metal housing is sent to a scrap metal recycler, so solid waste is not expected from the disposal of DPFs. While the quantity of equipment that would utilize DPFs as result of implementing the control measures is unknown, the quantity of collected particulate matter typically recovered from one DPF during its cleaning is expected to be small such that the amount of additional DPF ash that would need to be disposed of in either local landfills or hazardous waste landfills, depending on the chemical characteristics of the DPF ash, would also be relatively small. Nonetheless, an increase in the use of DPFs may result in an incremental increase in solid waste requiring disposal in landfills over what would be produced if the 2022 AQMP were not adopted.

If based on the outcome of the TCLP process that the DPF ash collected during the filter cleaning process is not hazardous, then it could be disposed of as solid waste at a number of landfills located within South Coast AQMD's jurisdiction. The current permitted capacity of the landfills in Los Angeles, Orange, Riverside, and San Bernardino counties is about 100,332 tons per day (see Table A-16) and has sufficient capacity to handle the small increase in soot and ash collected during the DPF cleaning process. There are no hazardous waste landfills within the South Coast AQMD's jurisdiction. If the DPF ash is determined to be hazardous, the waste can be transported to permitted facilities located within and outside of California. There are two hazardous waste landfills in California: Clean Harbors landfill located in Buttonwillow and CWMI Kettleman Hills landfill in Kings County. The permitted capacity of Clean Harbors is in excess of 13 million cubic yards of waste material and the permitted capacity of CWMI Kettleman Hills is over 33 million cubic yards. Therefore, these two hazardous materials landfills would have sufficient capacity to handle the small amounts of waste that could be generated by ash collected from DPFs employed on equipment as part of implementing the control measures. Therefore, the Final Program EIR for the 2022 AQMP concluded that use of DPFs would generate less than significant levels of solid and hazardous waste in the form DPF ash which would need to be disposed of in either a municipal or hazardous waste landfill.

Solid and Hazardous Waste Impacts from Construction for Infrastructure Development[124]

Control Measures MOB-02A and MOB-02B were expected to involve construction associated with the electrification of existing sources and the replacement of existing equipment. This construction could generate solid waste due to demolition and site preparation, grading, and excavating. Specifically, demolition activities could generate demolition waste while site preparation, grading, and excavating could uncover contaminated soils since the facilities affected by the control measures are located in existing industrial or commercial areas. Excavated soil, if found to be contaminated, would need to be characterized, treated, and disposed of offsite in accordance with applicable regulations. Where appropriate, the soil can be recycled for reuse if it is considered or classified as non-hazardous waste, or it can be disposed of at a landfill that accepts non-hazardous waste. Otherwise, the material will need to be disposed of at a hazardous waste facility.

Due to the uncertainty of the future capacity of the landfills within South Coast AQMD's jurisdiction and the broad scope of equipment that could undergo modifications or replacement, the Final Program EIR for the 2022 AQMP concluded the solid and hazardous waste impacts from construction to be potentially significant and mitigation measures were required. Since the project-specific mitigation for solid and hazardous waste impacts are the same for waste generated during construction and operation, the mitigation measures follow the discussion of operational impacts.

Similarly, implementation of 2016 AQMP control measures such as MOB-02 would result in construction which would generate waste attributable to the removal of soil, construction debris from demolition, etc., and some of this waste could be characterized as hazardous waste. The Final Program EIR for the 2016 AQMP determined that it would be speculative to estimate the amount of construction waste that would be generated if the 2016 AQMP was implemented, since the extent and timing of individual projects was not known. Therefore, the solid and hazardous waste impacts from construction were concluded to be significant.

Solid and Hazardous Waste Impacts from Replacement and Early Retirement of Vehicles and Equipment[125]

Implementation of Control Measures MOB-02A, MOB-02B, and MOB-02 that encourage the early retirement of older vehicles and other mobile sources, and the replacement with newer equipment or newer vehicles (including electric or alternative fuel vehicles) could result in an increase in waste generated from spent batteries and non-salvageable material. AQMP mobile source pollution control measures would incentivize penetration of fuel cell and electric vehicles into the market. The potential quantities of retired vehicles are summarized by category in Tables A-17 and A-18 which compile information from Table 4.7-2 Potential Vehicle Retirements By Mobile Source Sector, from the Final Program EIR for the 2022 AQMP, and Table 4.6-2 Control Measures and Potential Vehicle Retirement Quantities, from the Final Program EIR for the 2016 AQMP, respectively.

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[124] See Section 4.7.3.1 Solid and Hazardous Waste Associated with Construction Activities of the Final Program EIR for the 2022 AQMP and Section 4.6.4.4 Construction Waste of the Final Program EIR for the 2016 AQMP

[125] See Section 4.7.3.1.2 Solid Waste Impacts During Construction Due to Early Retirement of Equipment of the Final Program EIR for the 2022 AQMP and Section 4.6.4.3 Retirement of Equipment of the Final Program EIR for the 2016 AQMP

Table A-17. Potential Vehicle Retirements By Mobile Source Sector

Mobile Source Sector	Number of Potential Vehicle Retirements
Heavy-Duty Vehicles	8,214
Off-Road Construction	1,021
Other Off-Road and CHE	428
TRU	224
Locomotives	125
Total:	10,012

Source: 2022 AQMP Table 4-23. Based on active projects with emission reductions in 2037 using the maximum project life allowed per 2017 Carl Moyer Guidelines.

Table A-18. Control Measures and Potential Vehicle Retirement Quantities

CONTROL MEASURE NO.	CONTROL MEASURE DESCRIPTION	ESTIMATED NUMBER OF VEHICLES	
		2023	2031
MOB-01, MOB-02, MOB-03, MOB-04, OFFS-01, OFFS-04, OFFS-06	Accelerate the Penetration of Zero Emission TRUs, Forklifts, and Ground Support Equipment	50,000	100,00

The most common battery currently used in gasoline- and diesel-powered vehicles is the lead-acid battery found in conventional automobiles and trucks. These batteries are disposed of through the established lead recycling industry. However, zero emission vehicles operate with battery types that are different than the lead-acid battery; the most common type of battery used in electric vehicles is comprised of lithium ion technology (Li-ion). The increased operation of electric vehicles associated with the implementation of the AQMP mobile source measures may actually result in a reduction of the amount of solid and hazardous waste generated in the South Coast AQMD's jurisdiction, as Li-ion batteries have a much longer life span than conventional lead-acid batteries. The recycling of batteries is also required under law. Further, some manufacturers pay for used electric vehicle batteries. The value, size, and length of life of Li-ion batteries are such that recycling is expected to be more predominant than with lead acid batteries. Therefore, the use of electric vehicles is not expected to result in an increase in the illegal or improper disposal of electric batteries. Further, batteries associated with electric cars are required to be diverted from landfills. Therefore, no significant increase in the disposal of solid or hazardous waste is expected due to increased use of electric vehicles.

The primary solid waste impact from retiring more vehicles as part of implementing the control measures is the accelerated replacement and disposal of equipment and parts earlier than the end of their useful life. It is important to note that control measures do not mandate that older vehicle, engines, or other equipment be scrapped. The control measures allow for a number of different control methods to achieve the desired emission reductions, and the most cost-effective methods would be expected to be implemented. Control measures such as MOB-02A and MOB-02B that would foster a transition to putting new equipment into service will also generally result in the concurrent retirement of the older equipment. Alternatively, some measures may encourage the

advanced deployment of cleaner technologies without waiting for an equipment's end of useful life which will result in an air quality benefit. Scrap metal from vehicle replacements is expected to be recycled; however, some amount of waste-scrapped vehicles and parts may be sent to landfills for disposal. Although recycling and diversion activities will reduce the amount of waste entering landfills, it is difficult to quantify the waste that will be generated from the early retirement of equipment or the salvageable amount that would be recycled.

The Final Program EIR for the 2022 AQMP concluded early retirement of equipment to have significant solid and hazardous waste impacts since available landfill space is limited to approximately 100,000 tons per day and only four of the solid waste landfills within the South Coast AQMD's jurisdiction have capacity past 2039.

The Final Program EIR for the 2016 AQMP similarly concluded early retirement of equipment to have significant solid and hazardous waste impacts because, although equipment that may be retired before the end of its useful life may be reused in areas outside the Basin and equipment with no remaining useful life is expected to be recycled for metal content, there would be a high volume of vehicle and equipment to retire in a short timeframe and uncertainty of their outcome.

Construction waste from infrastructure development and operational waste from the early retirement of equipment were identified as generating potentially significant solid and hazardous waste impacts. Feasible mitigation measures SHW-1 to SHW-3 for reducing impacts related to solid and hazardous waste were adopted in the Final Program EIR for the 2022 AQMP. Even after mitigation measures SHW-1 to SHW-3 were applied, the Final Program EIR for the 2022 AQMP concluded that the solid and hazardous waste impacts would remain significant (see pages 4.7-24 to 4.7-25 of the Final Program EIR for the 2022 AQMP). The Final Program EIR for the 2016 AQMP, however, did not identify mitigation measures feasible of reducing solid and hazardous waste impacts.

Mitigation Measures Adopted in the Final Program EIR for the 2022 AQMP for Solid and Hazardous Waste[126]

SHW-1 During the planning, design, and project-level CEQA review process for individual development projects, lead agencies shall coordinate with waste management agencies and the appropriate local and regional jurisdictions to facilitate the development of measures and to encourage diversion of solid waste such as recycling and composting programs, as needed. This includes discouraging siting of new landfills unless all other waste reduction and prevention actions have been fully explored to minimize impacts to neighborhoods.

SHW-2 The lead agency should coordinate with waste management agencies, and the appropriate local and regional jurisdictions, to develop measures to facilitate and encourage diversion of solid waste such as recycling and composting programs.

SHW-3 In accordance with CEQA Guidelines Sections 15091(a)(2) and 15126.4(a)(1)(B), a Lead Agency for a project should consider mitigation measures to reduce the generation of solid waste, as applicable and feasible. These may include the integration of green building measures consistent with CALGreen (California

[126] See Section 4.7.3.2.5 Wood and Greenwaste of the Final Program EIR for the 2022 AQMP

Building Code Title 24) into project design including, but not limited to the following:

1) Reuse and minimization of construction and demolition (C&D) debris and diversion of C&D waste from landfills to recycling facilities.
2) Include a waste management plan that promotes maximum C&D diversion.
3) Pursue source reduction through: a) the use of materials that are more durable and easier to repair and maintain; b) design to generate less scrap material through dimensional planning; c) increased recycled content; d) the use of reclaimed materials; and e) the use of structural materials in a dual role as finish material (e.g., stained concrete flooring, unfinished ceilings, etc.).
4) Reuse existing structure and shell in renovation projects.
5) Develop indoor recycling program and space.
6) Discourage the siting of new landfills unless all other waste reduction and prevention actions have been fully explored. If landfill siting or expansion is necessary, site landfills with an adequate landfill-owned, undeveloped land buffer to minimize the potential adverse impacts of the landfill in neighboring communities.
7) Discourage exporting locally generated waste outside of the southern California region during the construction and implementation of a project. Encourage disposal within the county where the waste originates as much as possible. Promote green technologies for long-distance transport of waste (e.g., clean engines and clean locomotives or electric rail for waste-by-rail disposal systems) and consistency with South Coast AQMD and Connect SoCal policies can and should be required.
8) Encourage waste reduction goals and practices and look for opportunities for voluntary actions to exceed the 80 percent waste diversion target.
9) Encourage the development of local markets for waste prevention, reduction, and recycling practices by supporting recycled content and green procurement policies, as well as other waste prevention, reduction and recycling practices.
10) Develop ordinances that promote waste prevention and recycling activities such as requiring waste prevention and recycling efforts at all large events and venues, implementing recycled content procurement programs, and developing opportunities to divert food waste away from landfills and toward food banks and composting facilities.
11) Develop and site composting, recycling, and conversion technology facilities that have minimum environmental and health impacts.
12) Integrate reuse and recycling into residential industrial, institutional and commercial projects.
13) Provide education and publicity about reducing waste and available recycling services.

14) Implement or expand city or county-wide recycling and composting programs for residents and businesses. This could include extending the types of recycling services offered (e.g., to include food and green waste recycling) and providing public education and publicity about recycling services.

Cumulative Impacts[127]

The Final Program EIR for the 2022 AQMP concluded that implementation of the 2022 AQMP could result in significant adverse solid and hazardous waste impacts due to the uncertainty of the future capacity of the landfills within South Coast AQMD's jurisdiction to address waste from construction of infrastructure and early retirement of vehicles and equipment. When combined with the Connect SoCal Plan, the SIP strategies, state policies, and other past, present, and reasonably foreseeable activities, the 2022 AQMP would result in a significant increase in solid and hazardous waste, and would contribute to cumulatively considerable impacts. No additional mitigation measures to reduce the significant cumulative impacts to solid and hazardous waste have been identified. Cumulative impacts to solid and hazardous waste for past, present, and reasonably foreseeable future projects would remain significant and unavoidable for solid and hazardous waste.

The Final Program EIR for 2016 AQMP concluded that implementation of Control Measure MOB-02 would result in significant adverse solid and hazardous waste impacts due to a high volume of vehicle and equipment being retired in a short timeframe and uncertainty of their outcome. Other 2016 AQMP control measures would also result in significant adverse solid and hazardous waste impacts due to construction. The 2016 AQMP control measures would result in significant adverse solid and hazardous waste impacts and, when combined with past, present, and reasonably foreseeable activities, and in particular with transportation projects projected in the 2016 RTP/SCS, would contribute to cumulatively considerable impacts to solid and hazardous waste identified in the 2016 RTP/SCS, therefore resulting in a significant cumulative impact. No additional mitigation measures to reduce the significant cumulative impacts to solid and hazardous waste were identified. Cumulative impacts to solid and hazardous waste from implementation of the 2016 AQMP would remain significant and unavoidable.

Summary of Solid and Hazardous Waste Analyses

Table A-19 presents a summary of the solid and hazardous waste analyses conducted in the 2022 AQMP and 2016 AQMP.

[127] See Section 4.7.5 Cumulative Solid and Hazardous Waste Impacts and Mitigation Measures of the Final Program EIR for the 2022 AQMP and Section 5.17.1 Cumulative Impacts of the Final Program EIR for the 2016 AQMP

Table A-19. Summary of Solid and Hazardous Waste Analysis in the Final Program EIRs for the 2022 AQMP and 2016 AQMP

Significance Criteria	Potentially Significant Impacts	Mitigation Measures	Cumulative Impacts
Solid and hazardous waste impacts are significant if any of the following conditions occur: • If the generation and disposal of hazardous and non-hazardous waste exceeds the capacity of designated landfills.	Implementation of Control Measures MOB-02A and MOB-02B from the 2022 AQMP and Control Measure MOB-02 from the 2016 AQMP would cause potentially significant solid and hazardous waste impacts from: • Construction waste for infrastructure development, and • Operational waste from the early retirement of equipment	SHW-1 to SHW-3 of the Final Program EIR for the 2022 AQMP No mitigation measures related to solid and hazardous waste impacts were identified and adopted in the Final Program EIR for the 2016 AQMP.	Cumulative impacts to solid and hazardous waste impacts for past, present, and reasonably foreseeable future projects would remain significant and unavoidable because of potential increases in waste produced during construction and operation activities.

ENVIRONMENTAL TOPIC AREAS WITH LESS THAN SIGNIFICANT OR NO IMPACTS

Since PR 2306 implements Control Measures MOB-02A, MOB-02B, and MOB-02 of the 2022 AQMP and 2016 AQMP without adding new impacts or modifying the previously analyzed impacts for each environmental topic area, the overall conclusions of less than significant or no impacts in the Final Program EIR for the 2022 AQMP and Final Program EIR for the 2016 AQMP will remain unchanged if PR 2306 is adopted.

Because the environmental topic areas of air quality and greenhouse gas emissions from operation and hydrology and water quality were identified as having potential adverse impacts, the following discussion first summarizes the analysis of less than significant impacts for the environmental topic areas of air quality and greenhouse gas emissions from operation, and hydrology and water quality before summarizing the analysis of other environmental topic areas having no significant adverse impacts.

Air Quality and Greenhouse Gas Emissions

The Final Program EIR for the 2022 AQMP and Final Program EIR for the 2016 AQMP concluded that implementation of control measures, such as MOB-02A, MOB-02B, and MOB-02, would generate potentially significant air quality impacts during construction, less than significant operational air quality impacts, and potentially significant short-term increases in GHG emissions that would be offset and eventually result in a long-term net reduction in GHG emissions.

Air Quality Impacts from Operation[128]

The Final Program EIR for the 2022 AQMP contemplated that implementation of Control Measures MOB-02A and MOB-02B of 2022 AQMP has the potential to promote the transition to zero emission technologies, and this transition is expected to require additional electricity; increase the demand for alternative fuels production (e.g., hydrogen or renewable fuels), and the potential air quality impacts from production facilities; and accelerate the purchase of zero emission or low NOx emitting equipment and vehicles that would replace older equipment and vehicles, thereby increasing the scrapping of equipment and vehicles faster than would normally occur.

Implementing Control Measures MOB-02A and MOB-02B was expected to result in electricity demand increase by developing infrastructure to provide electricity at rail yards, and intermodal facilities for electrified vehicles and equipment; deploying cleaner technologies including the electrification of equipment currently powered by diesel fuel; and incentivizing the retirement and replacement of older vehicles and equipment with electric vehicles and equipment. While the Final Program EIR for 2022 AQMP identified the potential electricity usage associated with approximately half the mobile source control measures, specific data pertaining to the number of units that may be deployed was not available. Thus, a net increase in electricity usage as well as the air quality impacts associated with the potential increase in electrified mobile sources was not quantified. Nonetheless, gasoline and diesel fuel use and their corresponding combustion emissions were expected to decrease as the demand for electricity increases, displaced by combustion emissions from natural gas, which is the primary fuel used for generating electricity within South Coast AQMD's jurisdiction. SB 100 requires that the electrical infrastructure needed to support the increased deployment of electric vehicles and other electrified equipment would

[128] See Section 4.2.5.2 Criteria Pollutants – Operational Activities of the Final Program EIR for the 2022 AQMP and Section 4.1.6.2 Criteria Pollutants – Operational Activities of the Final Program EIR for the 2016 AQMP

need to have 100 percent renewable electricity generation by 2045. As mobile sources transition from combustion to electrified technology, the amount of emissions from combusting diesel and gasoline is expected to decline over time. However, the combustion emissions from natural gas utilized in electricity-producing equipment will increase over the short-term until the SB 100 goals of producing electricity from 100 percent renewables are achieved.

Implementing Control Measures MOB-02A and MOB-02B was expected to increase the demand for alternative fuels including renewable transportation fuels (e.g., renewable diesel) and hydrogen. The Final Program EIR for the 2022 AQMP referenced several renewable fuels projects that were recently approved in California, and implementation of the control measures were anticipated to cause an increase in the demand for renewable fuels such that additional renewable fuels projects (e.g., hydrogen production facilities) may be needed. Due to the difficulty and length of time involved with siting and permitting new industrial facilities in general, the development of new facilities dedicated to producing alternative fuels is less likely to occur. Instead, existing industrial facilities are more likely to propose modifications in order to produce renewable fuels. Renewable fuels production requires energy input to reconfigure the molecules of the renewable feedstocks into transportation fuels, and the energy input is currently provided by large combustion sources (i.e., heaters or furnaces). In addition, renewable fuels production requires hydrogen as part of the reaction. Based on the CEQA analyses conducted for such projects, conversion of petroleum refinery equipment to be able to produce renewable fuels has the potential to decrease emissions facility-wide provided that hydrogen production facilities are already in place. However, when existing hydrogen production facilities are not available or cannot produce sufficient supplies of hydrogen needed to produce renewable fuel, a new hydrogen plant may be required which may cause significant adverse air quality impacts.

Implementing Control Measures MOB-02A and MOB-02B was expected to accelerate the purchase of zero emission or low NOx emitting equipment and vehicles that would replace older equipment and vehicles, thereby increasing the scrapping of equipment and vehicles faster than would normally occur. The actual quantity of equipment and vehicles that may be scrapped as a result of implementing these control measures rather than being moved for use elsewhere outside of South Coast AQMD's jurisdiction was not known. In addition, the available capacity of scrapping facilities to be able to handle and process the increased amount of equipment and vehicles to be scrapped was unknown. During the development of Rule 1610 – Old-Vehicle Scrapping, emissions associated with vehicle scrapping were estimated to be 0.088 pound of PM10 emissions per vehicle scrapped. [South Coast AQMD, 1992]. According to an internet search conducted on August 15, 2022, there were eight auto recycling facilities operating within South Coast AQMD's jurisdiction.[129] Assuming that six vehicles can be crushed per hour (Martin, 2013) and each facility operates 10 hours per day, a total 480 vehicles can be crushed per day (8 facilities x 6 cars/hour x 10 hours/day = 480 cars/day). Therefore, vehicle scrapping has the potential to generate 42 pounds of PM10 per day, which is less than the South Coast AQMD's operational significance threshold of 150 pounds per day. Applying the CARB's CEIDARS profile 900 ratio

[129] State of California Auto Dismantlers Association, 2022, Members Direct Search, https://scada1.org/find-member, August 12, 2022.

for unspecified sources of 0.6 pound of PM2.5 per pound of PM10[130,131], a corresponding 25 pounds per day of PM2.5 emissions can be expected, and this is less than the PM2.5 significance threshold of 55 pounds per day.

Thus, operational activities resulting from implementation of control measures such as MOB-02A and MOB-02B in the 2022 AQMP were expected to generate less than significant criteria pollutant air quality impacts. Since no significant air quality impacts relating to operational activities were identified, no mitigation measures were necessary or required.

The Final Program EIR for the 2016 AQMP contemplated that implementation of Control Measure MOB-02 has the potential to accelerate the replacement of locomotive engines in freight service or employ add-on devices to meet the lower emission standard; increase the use of alternative fuels such as biodiesel, LNG, CNG, ethanol, and hydrogen; and reduce mobile source emissions, in particular, emissions of diesel particulate matter (DPM) from engine exhaust.

Implementing Control Measure MOB-02 would potentially accelerate the replacement of locomotive engines in freight service or employ add-on devices to meet the lower emission standard. As such, control measure MOB-02 may generate air quality impacts from add-on devices. Locomotives are typically refurbished, and a new engine installed so no scrapping of the locomotives are expected. Add-on devices, such as particulate filters have an increase in fuel use associated with the decrease in fuel economy associated with the type of add-on device, which the Final Program EIR for 2016 AQMP estimated to be less than one percent. Therefore, there was a potential for an increase in emissions from the increase in fuel use. However, the number of locomotives to be equipped with add-on devices versus replaced was not known. Therefore, quantification of the air quality impacts would be speculative.

Implementing Control Measure MOB-02 has the potential to increase the use of alternative fuels such as biodiesel, LNG, CNG, ethanol, and hydrogen. The availability of the producers of alternative fuels to meet the increase in demand has the potential for an increase in emissions associated with the increased production. Production of the alternative fuels such as LNG and CNG require little processing with less emissions than the production of refined petroleum products such as gasoline, diesel, and jet fuel. While biodiesel and ethanol production do require more processing than LNG and CNG, the production processes are less complicated than petroleum refining. Biodiesel is made from a catalytic chemical process similar to one or two processes in a typical refinery, which will have many units available to produce refined products from crude oil. Ethanol is produced by fermentation. Biodiesel and ethanol can be made from renewable sources such as vegetable oils, sugar cane, corn, and animal fats. Therefore, the production of alternative fuels, especially biofuels, typically generates less air emissions than a petroleum refinery would when producing similar gasoline or gasoline equivalent amounts. Any increase in emissions attributable to an increased production of alternative fuels would be offset

[130] CARB's California Emissions Inventory Data Analysis and Reporting System (CEIDARS) is a database management system developed to track statewide criteria pollutant and air toxic emissions; https://ww2.arb.ca.gov/criteria-pollutant-emissioninventory-data.

[131] South Coast AQMD, 2006. Final Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, Table A. http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/particulate-matter-(pm)-2.5-significance-thresholds-and-calculation-methodology/final_pm2_5methodology.pdf.

by reduced levels of petroleum fuel production and transportation of crude oil primarily from overseas and possibly by rail, as diesel and gasoline demand decreases.

Implementing Control Measure MOB-02 would reduce mobile source emissions, in particular, emissions of diesel particulate matter (DPM) from engine exhaust, which is a known carcinogen, as well as toxic components of gasoline such as benzene and 1,3-butadiene. This mobile source control measure would result in replacing existing vehicles or equipment with more efficient vehicles or equipment, zero emission electric vehicles or equipment, or alternative fueled vehicles or equipment. Combustion emissions of alternative fuels have trace amounts of methanol and aldehyde, but, generally, are considered to be cleaner and less toxic than diesel or gasoline fueled vehicles. Emissions from power generating equipment may include trace amounts of benzene, aldehydes, metals, and polynuclear aromatic hydrocarbons. However, if the process being electrified was previously powered by direct combustion of fossil fuels, then electrification was expected to result in an overall decrease in toxic emissions.

Thus, operational activities resulting from implementation of control measures such as MOB-02 in the 2016 AQMP were expected to generate less than significant criteria pollutant air quality impacts. Since no significant air quality impacts relating to operational activities were identified, no mitigation measures were necessary or required.

Greenhouse Gas Emissions Impacts[132]

The Final Program EIR for the 2022 AQMP contemplated that implementation of Control Measures MOB-02A and MOB-02B would cause an increase in GHGs due to construction activities. Both the Final Program EIR for the 2022 AQMP and Final Program EIR for the 2016 AQMP contemplated that the rail yard control measures would cause an increase in GHGs due to increased electricity usage, but also a decrease in GHGs due to the conversion from conventional fuels to alternative fuels.

Implementing Control Measures MOB-02A and MOB-02B may involve construction activities which may emit GHGs. South Coast AQMD policy regarding GHG emissions from construction is to amortize construction emissions over a 30-year timeframe and add the result to operational emissions. The magnitude of construction GHG emissions will vary greatly depending on the project. Installation of electrical infrastructure projects (e.g., charging stations) typically does not require large amounts of construction equipment as they are installed in parking lots of existing facilities. Minimal trenching and foundation work is necessary, and these actions typically require the most construction equipment. On the other hand, alternative fuels production facilities would be much larger projects involving more, and larger capacity construction equipment which may rely on diesel or gasoline to operate. The combined GHG construction emissions from all projects requiring construction as a result of implementing the control measures in the 2022 AQMP, would represent a relatively small portion of the total GHG emission impacts, especially considering that the operational GHG emissions will be substantially reduced relative to the existing setting and will likely offset any increases in construction GHGs.

Of the total fuel consumed in Los Angeles, Orange, Riverside and San Bernardino counties, transportation sources account for over 50 percent of fuel use and these sources are also the main

[132] See Section 4.2.5.5 Greenhouse Gas Emissions of the Final Program EIR for the 2022 AQMP and Section 4.1.6.4 Greenhouse Gas Emissions of the Final Program EIR for the 2016 AQMP

contributors to NOx emissions. Within the transportation sector, diesel-powered sources emit the majority of NOx. With regards to mobile source control measures, accelerating the replacement of conventional vehicles with electric vehicles or alternative fueled vehicles into fleets regulated by the South Coast AQMD may produce emissions from increased electricity generation meanwhile the zero emission vehicles will not emit anything and the alternative fueled vehicles will emit fewer criteria pollutants, fewer toxics, and fewer GHGs. As such, the net effect of replacing gasoline and diesel mobile sources is expected to have greater overall GHG emission reduction benefits because the GHG emissions produced from generating the electricity needed to power one electric vehicle are fewer than the GHG emissions from one gasoline or diesel vehicle.

As mentioned in the Energy section, the Final Program EIR for the 2022 AQMP estimated that, compared to the 2018 baseline for electricity demand, implementation of the 2022 AQMP control measures is expected to increase electricity use by 13,429 GWh, approximately an 11 percent increase, by 2037 which will produce approximately 2.76 million metric tons (MMT) of GHG emissions.[133] The Final Program EIR for the 2016 AQMP estimated that, compared to the 2014 baseline, energy demand from 2016 AQMP control measures was expected to increase by 10,227 GWh, a 7.8 percent increase, by the year 2023 and produce 3.4907 million metric tons (MMT) of GHG emissions. Similarly, compared to the 2014 baseline, energy demand from 2016 AQMP control measures is expected to increase by 18,029 GWh, a 12.7 percent increase, by the year 2031 and produce 6.1496 MMT of GHG emissions.

The Final Program EIR for the 2022 AQMP estimated that implementing 2022 AQMP mobile source control measures has the potential to reduce total annual petroleum-based fuel use by approximately 1.5 billion gallons in milestone year 2030 and by approximately 1.8 billion gallons in milestone year 2037. Using a CO2 emission factor of 8.10 kilograms per gallon (kg/gal) for gasoline and a CO2 emission factor of 10.19 kg/gal for diesel, GHG emission reductions can be calculated for both gasoline and diesel in each milestone year. Similarly, at the time of developing the 2016 AQMP, the Final Program EIR for the 2016 AQMP estimated that implementing 2016 AQMP mobile source control measures has the potential to reduce total annual petroleum fuel use by approximately 530 million gallons in milestone year 2023. By milestone year 2031, total annual petroleum fuel use was expected to reduce by approximately 870 million gallons. Tables A-20 and A-21, which are Table 4.2-16 Estimated GHG Emissions Impacts from 2022 AQMP Control Measures, from the Final Program EIR for the 2022 AQMP and Table 4.1-6 Estimated GHG Emission Impacts from 2016 AQMP Control Measures, from the Final Program EIR for the 2016 AQMP, show that the net effect of implementing the AQMP control measures while concurrently reducing petroleum-based fuel use in mobile sources is expected to result in an overall reduction of GHG emissions.

Table A-20. Estimated GHG Emissions Impacts from 2022 AQMP Control Measures

Description	2037 CO2eq Emissions (MMT)
Increased Electricity Use	**2.18**
Change in Gasoline Use	**-2.23**
Change in Diesel Use	**-15.57**
Net Change in Emissions	**-15.62**

[133] 2020 eGRID data of 453 lb/MWh for SCE, U.S. EPA, 2022, https://epa.gov/egrid/download-data.

Table A-21. Estimated GHG Emission Impacts from 2016 AQMP Control Measures

Description	2023 CO_{2eq} Emissions[(a)] (million metric tons)	2031 CO_{2eq} Emissions[(a)] (million metric tons)
Increased Electricity[(b)]	3.4907	6.1496
Change in Gasoline Use	-2.9766	-3.1238
Change in Diesel Use	-4.2970	-3.4305
Net Change in Emissions	-3.7829	-0.4047

(a) Source: Emission factors are from CARB, et al., 2010.
(b) Electricity generation is weighted by population in the LADWP and SCE service areas.
Negative numbers represent emission reductions.

Converting gasoline- and diesel-fired sources to electrified equipment reliant on electricity that is primarily generated by natural gas and renewable sources is expected to result in an overall decrease of GHG emissions. The electricity needed to power zero-emission equipment is expected to be provided by public utility companies. Most existing power generating facilities are subject to Assembly Bill 32 and will be required to reduce their GHG emissions. Moreover, any future power generating stations that may be built in response to meeting the future electricity demand would be subject to stringent emission control requirements, including those for GHG emissions. Therefore, after taking into consideration the short-term increases in GHG emissions which will be offset by substantial reductions of GHG emissions from the decreased use of gasoline and diesel fuels combined with the overarching goal of transitioning to electricity sourced with 100 percent renewables by 2045 as required by Senate Bill 100 (SB 100, De León) the additional electricity that may be needed to implement the 2022 AQMP control measures has been determined to generate less than significant GHG emission impacts.

Implementing 2022 AQMP control measures also have the potential to increase the use of alternative fuels. Alternative fuels generally generate fewer or equivalent GHG emissions compared to gasoline and diesel when combusted. When comparing the overall benefit between various types of alternative fuels, the production methods used to generate the fuels must be considered (sometimes referred to as well-to-wheel energy and emission impacts). A comparison of various production methods showed that using hydrogen as a fuel reduces more GHG emissions when compared to reformulated gasoline, except when the hydrogen is produced by electrolysis using grid-supplied electricity, in which case the comparison is dependent on the renewable to non-renewable mix of the electricity generation.22F[134] While alternative fuel and hydrogen production facilities may increase GHG emissions, the overall GHG reductions associated with the use of the transportation fuels produced were expected to be greater than the GHG emissions from producing the fuels.

Implementing Control Measures such as MOB-02A and MOB-02B is expected to have GHG emissions associated with construction over the short-term; however, construction GHG emissions are amortized over 30 years and are much less than the overall potential operational emissions reductions of GHGs over the long-term. GHG emissions from the generation and use of additional electricity and alternative fuels, were not expected to be significant because there would be

[134] Alternative Fuels Data Center, 2022. Fuel Cell Electric Vehicle Emissions, https://afdc.energy.gov/vehicles/emissions_hydrogen.html, accessed August 17, 2022.

concurrent decreases in the use of diesel- and gasoline-fueled equipment over time as more electric and alternative fuel vehicles are deployed. Finally, electricity generation is required to transition to 100 percent renewables by 2045 as required by SB 100. Thus, implementation of Control Measure MOB-02A, MOB-02B, and MOB-02 was expected to result in potentially significant GHG operational emissions over the short-term and less than significant GHG emission impacts over the long-term. Since less than significant greenhouse gas impacts overall were identified, no mitigation measures were necessary or required.

Relative to cumulative impacts, the Final Program EIR for the 2022 AQMP and Final Program EIR for the 2016 AQMP concluded that implementation of the 2022 AQMP, when combined with past, present, and reasonably foreseeable activities, would contribute to impacts to air quality during construction, but would not contribute to cumulatively considerable impacts to air quality during operation or GHG emissions. There are no new impacts which would change the previous conclusions of the Final Program EIR for the 2022 AQMP and Final Program EIR for the 2016 AQMP regarding cumulatively considerable impacts to air quality. Further, no new mitigation measures would be required. Therefore, the cumulative impacts to air quality would remain significant and unavoidable.

Hydrology and Water Quality

The Notice of Preparation/Initial Study for the 2022 AQMP concluded that implementation of Control Measures MOB-02A and MOB-02B would have no potential adverse impacts related to hydrology and water quality; therefore, it was not further analyzed in the Final Program EIR for the 2022 AQMP. However, the Final Program EIR for the 2016 AQMP concluded that implementation of Control Measure MOB-02 would cause less than significant impacts to surface and ground water quality from accidental spills of alternative fuels or additives, and potential illegal disposal of batteries from electric vehicles and hybrids. Thus, the following summary will focus only on the hydrology and water quality impacts identified in the Final Program EIR for the 2016 AQMP for Control Measure MOB-02.

Significance Criteria

Hydrology and water quality impacts are significant if any of the following conditions occur:

Water Demand

- The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use more than 262,820 gallons per day of potable water.
- The project increases demand for total water by more than five million gallons per day.

Water Quality

- The project will cause degradation or depletion of ground water resources substantially affecting current or future uses.
- The project will cause the degradation of surface water substantially affecting current or future uses.
- The project will result in a violation of National Pollutant Discharge Elimination System (NPDES) permit requirements.
- The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the project.

- The project results in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.
- The project results in alterations to the course or flow of floodwaters.

Hydrology and Water Quality Impacts from Accidental Spills of Alternative Fuels or Additives[135]

The Final Program EIR for the 2016 AQMP identified that implementation of Control Measure MOB-02 could result in the increased penetration of electric vehicle vehicles but may also result in the increased use of alternative fuels (e.g., biodiesel fuels, compressed natural gas, liquefied natural gas, and hydrogen). In general, alternative fuels are expected to be less toxic than conventional fuels and follow a similar path as the low sulfur diesel. Biodiesel is a fuel derived from biological sources such as vegetable oils or animal fats. Biodiesel can be used pure or blended with conventional diesel. Because the biodiesel typically comes from vegetable oils or animal fats, it is generally less toxic and more biodegradable than conventional diesel, so the water quality impacts from a spill of biodiesel would be less than a spill of conventional diesel. The most common blended biodiesel is B20, which is 20 percent biodiesel and 80 percent conventional diesel. Therefore, the potential water quality impacts from the transport and storage of biodiesel and biodiesel blends were not expected to be substantially different than the transport and storage of conventional diesel.

The other types of alternative fuels that may be used as part of implementing Control Measure MOB-02 in the 2016 AQMP include compressed natural gas, liquefied natural gas, and hydrogen. Because all of these fuels exist as a gas at standard temperatures and pressures, a leak of any of these fuels would result in an airborne release, and not a release that could adversely affect water quality. There are a number of rules and regulations currently in place that are designed to minimize the potential impacts from underground leaking storage tanks and spills from fueling activities, including requirements for the construction of the storage tanks, requirements for double containment, and installation of leak detection systems. These regulations would also apply to any leaks of alternative fuels from storage tanks. Thus, the use of alternative fuels was not expected to result in any greater adverse water quality impacts than the current use of conventional fuels like diesel or gasoline.

Moreover, the Final Program EIR for 2016 AQMP identified the possibility of accidental spills from implementation of Control Measure MOB-02. A spill at any of the affected facilities could occur under upset conditions such as an earthquake. Spills could also occur from corrosion of containers, piping and process equipment, and leaks from seals or gaskets at pumps and flanges. A major earthquake would be a potential cause of a large spill. Other causes could include human or mechanical error. Construction of the vessels, and foundations in accordance with the California Building Code requirements helps structures to resist major earthquakes without collapse but may result in some structural and non-structural damage following a major earthquake. As required by U.S. EPA's spill prevention control and countermeasure regulations, all of the affected facilities are required to have emergency spill containment equipment and would implement spill control measures in the event of an earthquake. Storage tanks typically have secondary containment such

[135] See Section 4.5.3.2 Water Quality Impacts of the Final Program EIR for the 2022 AQMP and Section 4.4.4.2.2 Accidental Spills of the Final Program EIR for the 2016 AQMP

as a berm, which would be capable of containing 110 percent of the contents of the storage tanks onsite. Therefore, should a rupture occur, the contents of the tank would be collected within the containment system and pumped to an appropriate storage tank. Spills at affected industrial or commercial facilities would be collected within containment structures. Large spills outside of containment areas at affected facilities that could occur when transferring the material from a transport truck to a storage tank are expected to be captured by the process water system where they could be collected and controlled. Spilled material would be collected and pumped to an appropriate tank or sent off-site if the materials cannot be used on-site. The existing rules and requirements that limit the extent or prevent spills are expected to minimize impacts on water quality to less than significant levels. For this reason, accidental spills were not expected to create significant water quality impacts.

Hydrology and Water Quality Impacts from Illegal Disposal of Batteries[136]

Implementation of Control Measure MOB-02 of the 2016 AQMP could contribute to an increased use of electric vehicles and other mobile sources. Since some batteries contain toxic materials, water quality impacts are possible if the batteries are disposed of in an unsafe manner, such as by illegal dumping or by disposal in a landfill. As interest in the use of electric vehicles has increased over the years, battery technologies have been developing and improving. Most battery technologies employ materials that are recyclable, since regulatory requirements and market forces encourage recycling. California laws create incentives and requirements for disposal of recycling of batteries as follows.

- Under CARB regulations, to certify either a new ZEV or retrofit an existing ZEV, automakers must complete CARB's certification application, which must include a battery disposal plan. Thus, current regulations require ZEV manufacturers to take account for the full life-cycle of car batteries and to plan for safe disposal or recycling of battery materials. For example, Toyota has offered $200 per battery to minimize illegal disposal of batteries.
- California and federal law require the recycling of lead-acid batteries (California Health & Safety Code Section 25215). Spent lead-acid batteries being reclaimed are regulated under 22 CCR Section 66266.80 and 66266.81, and 40 CFR part 266, Subpart G.
- California law requires state agencies to purchase car batteries made from recycled material (Public Resources Code Section 42440).
- California passed the Household Universal Waste Rule in February 2006, which prohibits the landfill disposal household wastes such as batteries, electronic devices, and fluorescent light bulbs by anyone.

Existing battery recovery and recycling programs have limited the disposal of batteries in landfills. For example, the recycling of lead-acid and nickel-cadmium batteries is already a well-established activity. One secondary lead smelter (facilities that recycle lead-bearing materials) is currently located within the Basin. The secondary lead smelter receives spent lead-acid batteries and other lead bearing material and processes them to recover lead and polypropylene (from the battery casings). Acid is collected and recycled as a neutralizing agent in the wastewater treatment system. Other facilities available for battery recycling are located outside of the Basin. Further penetration

[136] See Section 4.4.4.2.4 Electric Vehicles of the Final Program EIR for the 2016 AQMP

of partial-zero and zero emission mobile sources in the Basin is expected to result in a reduction in the use of lead-acid batteries and a subsequent reduction in the lead-acid batteries that need to be recycled, after the vehicle/equipment is scrapped or has left the Basin.

Li-ion batteries are more common in electric vehicles and becoming more popular in hybrids. Because Li-ion batteries have a potential for after-automotive use, destructive recycling can be postponed for years even after an EV or hybrid battery can no longer hold and discharge sufficient electricity to power a car's motor. The battery pack can still carry a tremendous amount of energy. Battery manufacturers project that the battery packs will still be able to operate at about 80 percent of capacity the time they must be retired from automotive use [Edmunds, 2014]. Auto companies are partnering with battery, recycling, and electronics firms to figure out and develop post-automotive markets and applications for Li-ion battery packs [Green Car Reports, 2014]. With the opportunity for other uses, Li-ion battery recycling may not be as necessary as recycling of lead-acid batteries.

The illegal disposal of batteries from EVs and hybrids has the potential to result in significant water quality impacts by allowing toxic or hazardous metals or acids to leach into surface or ground waters. However, because battery recycling is required by law and because they have value, the illegal or improper disposal of batteries is expected to be uncommon. For example, because some manufacturers pay for used EV/hybrid batteries, the value, size, and length of life of NiMH and Li-ion batteries are such that recycling is expected to be more predominate than with lead acid batteries. Therefore, the use of EVs and hybrids are not expected to result in an increase in the illegal or improper disposal of batteries because these types of batteries are required to be recycled and thus, reducing the potential water quality impacts cause by illegal disposal. Based on the foregoing analysis, less than significant adverse water quality impacts are expected from the increased use of EV and hybrid vehicles and no new mitigation measures would be required.

Relative to cumulative impacts, the Final Program EIR for the 2016 AQMP concluded that implementation of the 2016 AQMP would not contribute to cumulatively considerable impacts to water quality but would contribute to cumulatively considerable impacts to water demand. However, since implementation of Control Measure MOB-02 and therefore PR 2306 is not expected to have impact to water demand, there are no new impacts which would change the previous conclusions of the Final Program EIR for the 2016 AQMP regarding cumulatively considerable impacts to hydrology and water quality. Further, no new mitigation measures would be required. Therefore, the cumulative impacts to hydrology and water quality would remain significant and unavoidable.

Other Environmental Topic Areas

The 2022 AQMP and 2016 AQMP were designed to reduce emissions from existing emission sources and promote the use of the cleanest technology available. The 2022 AQMP and 2016 AQMP would accelerate the replacement of high-emitting mobile sources with low NOx and zero-emission mobile sources; encourage the use of lower-emitting alternative fuels; affect stationary sources at existing commercial/industrial facilities and residential developments; develop incentives to remove/replace higher emitting equipment; establish greater control of industrial stationary sources; control indirect sources of emissions; improve energy efficiency; improve emission leak detection and maintenance procedures; and establish educational and outreach programs. The analysis provided in the Final Program EIR for 2022 AQMP concluded that the following environmental topic areas would have no potential adverse impacts due to

implementation of Control Measures MOB-02A and MOB-02B: aesthetics, agriculture and forestry resources, biological resources, cultural and tribal cultural resources, geology and soils, hydrology and water quality, land use and planning, mineral resources, population and housing, public services, recreation, transportation, and wildfire. Since no impacts were identified, no mitigation measures were necessary or required for these environmental topic areas.

Similarly, the analysis provided in the Final Program EIR for 2016 AQMP concluded that the following environmental topic areas would have no potential impacts due to implementation of Control Measure MOB-02: aesthetics, agriculture and forestry resources, biological resources, cultural and tribal cultural resources, geology and soils, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, and wildfire. Since no impacts were identified, no mitigation measures were necessary or required for these environmental topic areas. Since PR 2306 implements Control Measures MOB-02A, MOB-02B, and MOB-02 without adding new or modifying the previously analyzed impacts for each environmental topic area, the overall conclusions of no impacts for these environmental topic areas in the Final Program EIRs for the 2022 AQMP and 2016 AQMP will remain unchanged if PR 2306 is implemented.

The following summaries provide the background regarding the no potential adverse impacts conclusions of each aforementioned environmental topic area.

Aesthetics[137]: For both the 2022 AQMP and 2016 AQMP, the majority of control measures implemented within South Coast AQMD's jurisdiction would typically affect industrial, institutional, or commercial facilities located in appropriately zoned areas (e.g., industrial and commercial areas) that are not usually associated with scenic resources. Further, modifications would typically occur within the confines of the affected facilities, or because of the nature of the business (e.g., commercial or industrial), can easily blend in with the facilities with little or no noticeable effect on adjacent areas. Also improved air quality would provide benefits to scenic vistas and resources throughout South Coast AQMD's jurisdiction. Mobile source control measures were designed to accelerate the replacement of high emitting on-road and off-road mobile sources with lower-emitting mobile sources. Accelerating the penetration of lower-emitting mobile sources into market would not be expected to adversely affect scenic resources because these strategies do not require construction or disturbance to such resources.

The Final Program EIR for the 2022 AQMP indicated that Control Measures MOB-02A and MOB-02B could potentially encourage the use of overhead power lines (catenary lines) to provide electricity. The areas affected by the zero emission and low NOx control measures that could result in the installation of catenary lines are expected to be located in commercial, industrial areas, and along existing truck and rail transportation corridors. The truck and rail corridors likely to be involved are primarily associated with rail yards and intermodal facilities in industrial zones within Southern California, and container transfer facilities near the Terminal Island Freeway, along the Alameda Corridor, as well as inland rail yards near downtown Los Angeles. The roadway eligible for state scenic highway designation, nearest to either of the ports, the cargo transfer facilities serving the ports, along the Alameda Corridor, or the downtown rail yards, would be Route 1 (Pacific Coast Highway at State Route 19 – Lakewood Boulevard, in Long Beach) in the

[137] See Section 4.8.1 Aesthetics of the Final Program EIR for the 2022 AQMP and Section 4.8 Aesthetics of the Final Program EIR for the 2016 AQMP

southernmost portion of Los Angeles County. There are approximately five miles between the cargo transfer facilities serving the ports, to the intersection of State Route 19 and Route 1 (the point at which the roadway becomes eligible for designation as a state scenic highway). The potential locations for catenary overhead power lines (near the ports' facilities, transportation corridors and rail yards) would not be visible to Route 1 at State Route 19 due to the numerous existing structures and topography between the two locations or any other scenic highways. There are no officially designated scenic highways or highways eligible for state scenic highway designation in areas affected by construction of zero emission or low NOx equipment associated with Control Measures MOB-02A and MOB-02B; therefore, construction impacts on aesthetics were considered to be less than significant.

The Final Program EIRs for the 2022 AQMP and 2016 AQMP concluded that implementation of Control Measures MOB-02A, MOB-02B and MOB-02, was not expected to create additional demand for new lighting or exposed combustion sources (e.g., flares) that could create glare, adversely affecting day or nighttime views in any areas. Facilities affected by the control measures typically make modifications to light sources within property borders, so any new light sources would typically be inside a building or not noticeable because of the presence of existing outdoor light sources. Based on these considerations, less than significant aesthetic impacts were expected due to the implementation of the 2022 AQMP and 2016 AQMP.

Agriculture and Forestry Resources[138]: The Final Program EIRs for the 2022 AQMP and 2016 AQMP concluded that implementation of Control Measures MOB-02A, MOB-02B, and MOB-02, was not expected to generate any new construction of buildings or other structures that would require conversion of farmland to non-agricultural use, conflict with zoning for agricultural uses, or a Williamson Act contract. Further, the analysis concluded that implementing the 2022 AQMP and 2016 AQMP would typically affect existing facilities that are located in appropriately zoned areas. Should any new facilities be constructed and operated, their planning would occur for reasons other than implementation of the 2022 AQMP and the 2016 AQMP. New facilities and improvements to existing facilities would continue to be subject to project-level review, including review of agricultural impacts under CEQA by the applicable local land use authority. Therefore, implementation of the 2022 AQMP and 2016 AQMP would not affect Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, or conflict with a Williamson Act contract, if implemented. Physical changes associated with the 2022 AQMP and 2016 AQMP were expected to occur at previously developed sites and would not require construction to occur in undeveloped areas where agricultural and forest resources are more likely to exist. The 2022 AQMP and 2016 AQMP, including control measures related to mobile sources, would have no direct or indirect effects on agricultural or forest land resources because their focus is on achieving emission reductions by increasing the penetration of zero and low NOx technologies into market. The 2022 AQMP and 2016 AQMP could provide benefits to agricultural and forest land resources by improving air quality in the region, thus reducing the adverse oxidation impacts of ozone on plants and animals. Based on these considerations, no agriculture and forestry resources impacts were expected due to the implementation of the of the 2022 AQMP and 2016 AQMP.

[138] See Section 4.8.2 Agriculture and Forestry Resources of the Final Program EIR for the 2022 AQMP and Section 4.9.1 Agriculture and Forestry Resources of the Final Program EIR for the 2016 AQMP

Biological Resources: Implementation of the 2022 AQMP and 2016 AQMP control measures, including MOB-02A, MOB-02B, and MOB-02, was not expected to result in habitat modification, adversely affect any riparian habitat, or interfere with the movement of any native resident or migratory fish or wildlife species. Facilities affected by the 2022 AQMP and 2016 AQMP control measures have already been disturbed and typically do not contain open space, water features, or natural vegetation. Sites might contain landscaping that consists of ornamental trees, vegetation, and turf. The sites of the affected facilities that would be subject to the control measures were not expected to support riparian habitat, federally protected wetlands, or migratory corridors because they are existing, developed, and established industrial and commercial facilities. Additionally, special status plants, animals, or natural communities identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service were not expected to be found on or in close proximity to the affected facilities. Construction projects that impact affected species were not reasonably foreseeable as part of implementation of the 2022 AQMP and 2016 AQMP. Any new development potentially affecting biological resources would not be as a result of the 2022 AQMP and 2016 AQMP control measures and approval of those projects, including evaluation of their environmental impacts, would occur regardless of the 2022 AQMP and 2016 AQMP and would be subject to project-level CEQA review. Based upon these considerations, no biological resources impacts are expected from implementing the 2022 AQMP and 2016 AQMP.

Cultural and Tribal Cultural Resources[139]: Commercial and industrial areas are generally not located in historic districts. For this reason, the Final Program EIRs for the 2022 AQMP and 2016 AQMP concluded that the implementation of Control Measures MOB-02A, MOB-02B, and MOB-02 would not be expected to cause a substantial adverse change in the significance of a historical resource. The South Coast AQMD also provided a formal notice of the Notice of Preparation/Initial Study (NOP/IS) prepared for the 2022 AQMP and 2016 AQMP to all California Native American Tribes (Tribes) that requested to be on the Native American Heritage Commission's (NAHC) notification list per Public Resources Code Section 21080.3.1(b)(1). The NAHC notification list provides a 30-day period during which a Tribe may respond to the formal notice, in writing, requesting consultation on a proposed project. No Tribes requested consultation during the 30-day comment period of each NOP/IS. The provisions of CEQA, Public Resources Code Section 21080.3.1 et seq. (also known as AB 52), require meaningful consultation with California Native American Tribes on potential impacts to tribal cultural resources, as defined in Public Resources Code Section 21074. Tribal cultural resources are sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either eligible or listed in the California Register of Historical Resources or local register of historical resources. As part of the AB 52 process, Native American tribes must submit a written request to the relevant lead agency if it wishes to be notified of projects that require CEQA public noticing and are within its traditionally and culturally affiliated geographical area. Construction resulting from implementation of the control measures would need to obtain city or county planning department approvals prior to commencement of any construction activities, and would be subject to project-level review, including separate tribal consultation pursuant to AB 52, as applicable, to address site-specific requests identified by the tribes. Therefore, impacts to tribal

[139] See Section 4.8.4 Cultural and Tribal Cultural Resources of the Final Program EIR for the 2022 AQMP and Section 4.9.3 Cultural Resources of the Final Program EIR for the 2016 AQMP

cultural resources were considered to be less than significant, and the 2022 AQMP and 2016 AQMP were not expected to cause any impacts to significant historic cultural resources.

Geology and Soils[140]: The 2022 AQMP and 2016 AQMP, including Control Measures MOB-02A, MOB-02B, and MOB-02, would not directly or indirectly expose people or structures to earthquake faults, seismic shaking, seismic-related ground failure including liquefaction, lateral spreading, landslides, mudslides, or substantial soil erosion. Affected facilities or modifications to affected facilities, including the construction of new electricity or hydrogen infrastructure, would be required to comply with relevant California Building Code requirements in effect at the time of initial construction or modification of a structure. Projects that occur as a result of the 2022 AQMP and 2016 AQMP are largely expected to occur at commercial and industrial areas, and have a small construction footprint. Construction activities would be subject to local, regional, and state codes and requirements for erosion control and grading during construction. Projects would be subject to the National Pollution Discharge Elimination System (NPDES) permitting regulations, including the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) as applicable. Construction contractors would be required to prepare and implement a SWPPP and associated Best Management Practices (BMPs) in compliance with the Construction General Permit (CGP) during grading and construction of any site that disturbs more than one acre of land. Adherence to the BMPs in the SWPPP and adherence with local, regional, and state codes and requirements for erosion control and grading during construction would reduce, prevent, or minimize soil erosion from grading and construction activities. Therefore, soil erosion impacts were concluded to be less than significant.

Paleontological resources, commonly known as fossils, are the recognizable physical remains or evidence of past life forms found on earth in past geological periods — and can include bones, shells, leaves, tracks, burrows, and impressions. Ground-disturbing activities such as grading or excavation have the potential to unearth paleontological resources. Most facilities affected by 2022 AQMP and 2016 AQMP control measures would be located on previously disturbed industrial and commercial sites where there is little likelihood of identifiable artifacts. It is possible, however, that cultural or archaeological resources or human remains may nevertheless be discovered. New installations of air pollution control equipment or infrastructure for zero-emission and low-NOx equipment are unlikely to require substantial soil excavation and would be located on already disturbed and developed industrial land uses. Further, projects implemented as a result of the 2022 AQMP and 2016 AQMP would be subject to project-level review, including review of both geological and paleontological impacts under CEQA, as applicable. Therefore, the Final Program EIRs for the 2022 AQMP and 2016 AQMP concluded that implementation of all of the control measures, including Control Measures MOB-02A, MOB-02B, and MOB-02, would not be expected to destroy a unique paleontological resource or site or unique geological feature, or result directly or indirectly in other significant adverse geology or soils impacts. Therefore, geology and soils impacts were concluded to be less than significant.

[140] See Section 4.8.5 Geology and Soils of the Final Program EIR for the 2022 AQMP and Section 4.9.4 Geology and Soils of the Final Program EIR for the 2016 AQMP

***Land Use and Planning*[141]:** Since the 2022 AQMP and 2016 AQMP do not require construction of major new land use developments in any areas within South Coast AQMD's jurisdiction, none of the control measures, including Control Measures MOB-02A, MOB-02B, and MOB-02, were expected to physically divide any established communities within South Coast AQMD's jurisdiction. Potential land use impacts associated with the 2022 AQMP and 2016 AQMP could come from the construction of support systems (e.g., catenary overhead electrical lines or magnetic infrastructure related to operation of zero- and low-NOx transport systems). For purposes of evaluating potential land use impacts, the analysis assumed that no new rail or truck traffic routes would be constructed, but rather that existing truck and rail routes and corridors would be modified. The truck and rail corridors likely to be involved are primarily associated with rail yards and intermodal facilities in industrial zones within the Southern California area. Since only existing transportation routes would likely be modified (e.g., electric lines installed) and no new transportation routes were anticipated, no land use conflicts, or inconsistencies with any general plan, specific plan, local coastal program, or zoning ordinance were expected. Activities that result from implementing the various 2022 AQMP and 2016 AQMP control measures would be subject to project-level review that would assess consistency with adopted land use regulations, including review of impacts to land use and planning under CEQA, as applicable. Any proposed modification to an existing rail or truck traffic route/corridor would require a separate CEQA evaluation. No land use impacts were identified because any activities undertaken to implement the 2022 AQMP and 2016 AQMP control measures would be expected to comply with, and not interfere with, applicable land use plans, policies, or regulations of an agency with jurisdiction over the project, including, but not limited to the general plans, specific plans, local coastal programs or zoning ordinances.

***Mineral Resources*[142]:** There were no provisions in the 2022 AQMP and 2016 AQMP that would result in the loss of availability of a known mineral resource of value to the region and the residents of the state, or of a locally-important mineral resource recovery site delineated in a local general plan, specific plan, or other land use plan. The 2022 AQMP and 2016 AQMP provide incentives for the penetration of low-NOx and zero-emission technologies into market which are not expected to result in an increase in the use of mineral resources. The Final Program EIRs for the 2022 AQMP and 2016 AQMP concluded that there would be no impacts on the use of important minerals. Therefore, no new demand for mineral resources was expected to occur and no mineral resources impacts from implementing the 2022 AQMP and 2016 AQMP were anticipated.

***Population and Housing*[143]:** The Final Program EIRs for the 2022 AQMP and 2016 AQMP concluded that implementing the control measures would not generate any significant effects, either direct or indirect, on the population or population distribution of people living in the South Coast AQMD's jurisdiction as no additional workers were anticipated to be required in order to implement the 2022 AQMP and 2016 AQMP. Consistent with past experience, it was expected that the existing labor pool within the southern California area would accommodate the labor

[141] See Section 4.8.6 Land Use Planning of the Final Program EIR for the 2022 AQMP and Section 4.9.5 Land Use Planning of the Final Program EIR for the 2016 AQMP

[142] See Section 4.8.7 Mineral Resources of the Final Program EIR for the 2022 AQMP and Section 4.9.6 Mineral Resources of the Final Program EIR for the 2016 AQMP

[143] See Section 4.8.8 Population and Housing of the Final Program EIR for the 2022 AQMP and Section 4.9.7 Population and Housing of the Final Program EIR for the 2016 AQMP

requirements for any modifications requiring construction at affected facilities. Additionally, the 2022 AQMP and 2016 AQMP, including Control Measures MOB-02A, MOB-02B, and MOB-02, contain no provisions that would cause displacement of substantial numbers of people or housing necessitating construction of replacement housing elsewhere. Accordingly, no population and housing impacts were expected from implementing Control Measures MOB-02A, MOB-02B, and MOB-02.

Public Services[144]***:*** Fire protection and emergency medical services would be provided to affected facilities and residential developments by local county and city fire departments. Although the implementation of the Control Measures MOB-02A and MOB-02B from the 2022 AQMP, and Control Measure MOB-02 from the 2016 AQMP would require the use of alternative fuels (e.g., hydrogen), the alternative fuels would displace gasoline and diesel fuels and if a fire occurs, the same fire protection and emergency medical services would be needed. As first responders to emergency situations, fire departments are trained to respond to a variety of situations related to hazardous materials. Large industrial facilities (e.g., electric generating plants and refineries) have on-site fire response personnel and the local fire departments provide assistance to the on-site personnel. Therefore, no increase in calls for fire protection, and emergency medical service would be expected from implementation of the control measures. All activities undertaken as a result of implementing the 2022 AQMP and 2016 AQMP, including Control Measures MOB-02A, MOB-02B, and MOB-02, would be required to comply with fire-related safety features in accordance with the applicable provisions of the adopted California Fire Code, any county or city ordinances, and standards regarding fire prevention and suppression measures related to water improvement plans, fire hydrants, fire access, and water availability. Based on the preceding discussion, implementation of the 2022 AQMP and 2016 AQMP would not adversely affect the ability of local fire protection to provide adequate service. As such, these impacts were concluded to be less than significant. Implementation of the 2022 AQMP and 2016 AQMP would also not result in an increase in calls for police protection. Implementation of the 2022 AQMP and 2016 AQMP are expected to occur at existing facilities or promote transition to cleaner emitting equipment at new developments but would not facilitate the construction of new development. At existing industrial facilities, on-site security is typical and would be expected to continue with the same demand for police department support as is currently needed. Furthermore, implementation of the 2022 AQMP and 2016 AQMP would not induce population growth either directly or indirectly. Therefore, with no increase in local population, there would be no additional demand for new or expanded schools, parks, and libraries and no other adverse population or housing impacts were expected. Implementation of the 2022 AQMP and 2016 AQMP would generate less than significant impacts to public services.

Recreation[145]: Demand for parks and recreational facilities in an area is usually determined by the area's population. As explained earlier in the Population and Housing section of this Appendix, implementation of the 2022 AQMP and 2016 AQMP does not require or include the development of new homes, which would lead to an increase in population and thereby, the need for additional park and recreation facilities. Therefore, the implementation of the 2022 AQMP and 2016 AQMP,

[144] See Section 4.8.9 Public Services of the Final Program EIR for the 2022 AQMP and Section 4.9.8 Public Services of the Final Program EIR for the 2016 AQMP

[145] See Section 4.8.10 Recreation of the Final Program EIR for the 2022 AQMP and Section 4.9.9 Recreation of the Final Program EIR for the 2016 AQMP

including Control Measures MOB-02A, MOB-02B, and MOB-02, would not increase the use of existing neighborhood and regional parks or other recreational facilities, nor would it require construction of new or expanded parks or recreational facilities. No impacts to park and recreational facilities would occur.

Transportation[146]: Implementation of the 2022 AQMP and 2016 AQMP, including Control Measures MOB-02A, MOB-02B, and MOB-02, were not expected to substantially alter vehicle mileage or transportation routes. The 2022 AQMP relied upon transportation and related Transportation Control Measure (TCMs) developed by Southern California Association of Governments (SCAG) and included in the SCAG Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)[147]. Therefore, the 2022 AQMP would not conflict with a program plan, ordinance, or policy addressing the transportation circulation system, including transit, roadway, bicycle, and pedestrian facilities. Implementation of the 2022 AQMP has the potential to result in an increase in transportation related to construction of new or modified air pollution control equipment. Construction trips and vehicle miles traveled (VMT) are associated with contractors and vendors delivering and installing equipment at affected facilities. Construction activity impacts are temporary in nature and will vary depending on the number and location of facilities, and the size of the construction workforce needed. The Technical Advisory on Evaluating Transportation Impacts in CEQA to comply with CEQA Guidelines Section 15064.3 focuses on permanent, new employee VMT. [State of California, Governor's Office of Planning and Research, 2018]. Because of the temporary nature of construction activities, any increase in VMT related to construction activities would occur on a short-term basis at each location. In general, temporary construction-related increases in VMT are not considered to be a transportation impact or inconsistent with the requirements in CEQA Guidelines Section 15064.3, as they do not have a permanent impact on regional VMT. Additionally, discretionary projects at affected facilities could be subject to project-level review under CEQA. Therefore, temporary effects of construction-related vehicles would not conflict with the state's GHG reduction and associated VMT goals for the transportation sector. CEQA Guidelines Section 15064.3(a) clarifies that the primary consideration in evaluating a project's transportation impacts for CEQA purposes is the amount and distance that a project might cause people to drive. This captures two measures of transportation impacts: number of automobile trips generated and VMT. Additional permanent employees were not expected to be required to operate equipment that may require additional air pollution control equipment, due to implementation of the 2022 AQMP. As discussed previously in the Population and Housing section of this Appendix, implementation of the 2022 AQMP and 2016 AQMP were not expected to generate additional employee or population increases. Therefore, no increase in vehicle trips or VMT was expected. Therefore, the Final Program EIR for the 2022 AQMP concluded that less than significant impacts were expected from implementing the 2022 AQMP, including Control Measures MOB-02A and MOB-02B.

Similarly, the Notice of Preparation/Initial Study for the 2016 AQMP concluded that implementation of Control Measure MOB-02 would not result in potential adverse transportation

[146] See Section 4.8.11 Transportation of the Final Program EIR for the 2022 AQMP and Section 4.7 Transportation and Traffic of the Final Program EIR for the 2016 AQMP

[147] Southern California Association of Governments, Connect SoCal (2020–2045 Regional Transportation Plan/Sustainable Communities Strategy), May 2020. https://scag.ca.gov/read-plan-adopted-final-connect-socal-2020

and traffic impacts, but other control measures would generate direct or indirect adverse impacts based on the anticipated methods of control. Therefore, the Final Program EIR for the 2016 AQMP did not further evaluate transportation and traffic impacts from implementing Control Measure MOB-02 (see Table 4.7-1 Control Measures with Potential Transportation and Traffic Impacts, in the Final Program EIR for the 2016 AQMP). Less than significant impacts from the implementation of Control Measure MOB-02 could be expected to occur.

Wildfire[148]: The analysis in the Final Program EIR for the 2022 AQMP determined that activities that result from implementing the 2022 AQMP, including Control Measures MOB-02A and MOB-02B, would not block or otherwise interfere with the use of evacuation routes; nor would they interfere with operations of emergency response agencies or with coordination and cooperation between such agencies. Therefore, the analysis concluded that there would be no impacts on emergency activities. Implementation of these control measures were found to: affect existing commercial/industrial facilities; accelerate the replacement of high-emitting mobile sources with low NOx and zero emission mobile sources; control indirect sources of emissions; and develop incentives to remove/replace higher emitting equipment. However, since commercial and industrial areas are not typically located near wildland or forested areas, the analysis concluded that implementation of these control measures would not be expected to increase the risk of wildland fires. For this reason, the analysis in the Final Program EIR for the 2022 AQMP concluded that implementation of Control Measures MOB-02A and MOB-02B would have no impact to wildfires.

Relative to the analysis of the topic of wildfire in the Final Program EIR for the 2016 AQMP, it is important to note that the environmental topic area of wildfire was added to the Environmental Checklist in the CEQA Guidelines in 2019. Previous to this change in the CEQA Guidelines, the topic of the topic of fire hazards, including fires on wildlands, was analyzed in the biological resources and hazards and hazardous materials sections, as was the case for the Final Program EIR for the 2016 AQMP. Specifically, the Notice of Preparation/Initial Study for the 2016 AQMP, which is an appendix within the Final Program EIR for the 2016 AQMP, concluded that there would be no impact to the wildfire-related environmental checklist questions under the topics of biological resources and the hazards and hazardous materials.

Conclusion for Other Environmental Topic Areas: In summary, relative to cumulative impacts, the Final Program EIRs for the 2022 AQMP and 2016 AQMP concluded that implementation of Control Measures MOB-02A, MOB-02B, and MOB-02, when combined with past, present, and reasonably foreseeable activities, would not contribute to cumulative considerable impacts to the following environmental topic areas: aesthetics, agriculture and forestry resources, biological resources, cultural and tribal cultural resources, geology and soils, land use and planning, mineral resources, population and housing, public services, recreation, transportation, and wildfire.

Since implementation of Control Measures MOB-02A and MOB-02B of the 2022 AQMP and Control Measure MOB-02 of 2016 AQMP, upon which PR 2306 relies, is not expected to have potential adverse impacts on any of the aforementioned environmental topic areas, there are no new impacts which would change the previous conclusions of the Final Program EIRs for the 2022 AQMP and 2016 AQMP regarding cumulatively considerable impacts. Further, no new mitigation

[148] See Section 4.8.12 Wildfire of the Final Program EIR for the 2022 AQMP

measures would be required. Therefore, there are no cumulative impacts to the environmental topic areas of aesthetics, agriculture and forestry resources, biological resources, cultural and tribal cultural resources, geology and soils, land use and planning, mineral resources, population and housing, public services, recreation, transportation, and wildfire.

CONCLUSION

PR 2306 implements Control Measures MOB-02A and MOB-02B that were previously adopted in the 2022 AQMP and Control Measure MOB-02 that was previously adopted in the 2016 AQMP. Control Measures MOB-02A and MOB-02B of the 2022 AQMP and Control Measure MOB-02 of the 2016 AQMP were previously analyzed in the Final Program EIRs for the 2022 AQMP and 2016 AQMP, respectively, and implementation of PR 2306 is not expected to result in new or modified physical changes or impacts that were not previously analyzed in the Final Program EIRs for the 2022 AQMP and 2016 AQMP specific to Control Measures MOB-02A, MOB-02B, and MOB-02.

The Final Program EIR for the 2022 AQMP concluded that implementation of the 2022 AQMP would result in potentially significant impacts to the environmental topic areas of air quality and greenhouse gas emissions, energy, hazards and hazardous materials, hydrology and water quality, noise, and solid and hazardous waste. Implementation of Control Measures MOB-02A and MOB-02B would have potentially significant impacts to: 1) air quality from construction because emissions on a peak day could exceed South Coast AQMD's significance thresholds; 2) energy because Basin-wide electricity usage would exceed baseline electricity consumption by more than one percent, natural gas demand is expected to increase in the short-term, and little excess hydrogen capacity is available to meet the increased demand such that additional hydrogen production facilities will be required; 3) hazards and hazardous materials because construction of new natural gas pipelines to service hydrogen production facilities may be a potential torch fire risk to receptors; 4) noise because vibration from construction activities could exceed the 72 vibration decibels (VdB) threshold for structures and sensitive receptors within 200 feet of construction activities if certain types of construction equipment were used; and 5) solid and hazardous waste due to the uncertainty of the future capacity of the landfills within South Coast AQMD's jurisdiction to address waste from construction of infrastructure and early retirement of vehicles and equipment. Implementation of Control Measures MOB-02A and MOB-02B would have less than significant impacts to air quality from operation and greenhouse gas emissions, and no impact to hydrology and water quality.

For environmental topic areas which were concluded in the Final EIR for the 2022 AQMP to have potentially significant impacts, mitigation measures were adopted. Nonetheless, no environmental topic area identified as having a potentially significant impact in the Final Program EIR for the 2022 AQMP was concluded to be capable of being mitigated to less than significant levels. When combined with the Connect SoCal Plan, the SIP strategies, state policies, and other past, present, and reasonably foreseeable activities, implementation of the 2022 AQMP would result in significant environmental impacts. No additional feasible mitigation measures to reduce the significant cumulative impacts were identified, and cumulative impacts to the environmental topic areas of air quality and greenhouse gas emissions, energy, hazards and hazardous materials, hydrology and water quality, noise, and solid and hazardous waste remained significant and unavoidable.

The Final Program EIR for 2016 AQMP concluded that implementation of the 2016 AQMP would result in potentially significant impacts to the environmental topic areas of aesthetics, air quality and greenhouse gas emissions, energy, hazards and hazardous materials, hydrology and water quality, noise, solid and hazardous waste, and transportation and traffic. Implementation of Control Measure MOB-02 would have potentially significant impacts to: 1) energy because Basin-wide electricity usage would exceed baseline electricity consumption by more than one percent; and 2) solid and hazardous waste due to a high volume of vehicle and equipment being retired in a short timeframe and uncertainty of their outcome. Implementation of Control Measure MOB-02 would have less than significant impacts to the environmental topic areas of air quality and greenhouse gas emissions, hazards and hazardous materials, and hydrology and water quality; and no impact to aesthetics, noise, and transportation and traffic.

As explained in the "Summary of Environmental Impact Analysis from the Final Program EIRs for the 2022 AQMP and the 2016 AQMP," mitigation measures were adopted for certain environmental topic areas which had conclusions of potentially significant impacts. Nonetheless, no environmental topic area identified as having a potentially significant impact was capable of being mitigated to less than significant levels. When combined with the other past, present, and reasonably foreseeable activities, in particular the transportation projects projected in the 2016 RTP/SCS, implementation of the 2016 AQMP would result in significant environmental impacts. No additional mitigation measures to reduce the significant cumulative impacts were identified, and cumulative impacts to the environmental topic areas of aesthetics, air quality and GHG emissions, energy, hazards and hazardous materials, hydrology and water quality, noise, solid and hazardous waste, and transportation and traffic remained significant and unavoidable.

The aforementioned impacts analyzed in the Final Program EIR for the 2022 AQMP and the Final Program EIR for the 2016 AQMP are the same as what would occur if PR 2306 is implemented.

Therefore, the environmental impacts associated with implementing PR 2306 are within the scope of what was previously analyzed in the Final Program EIR for the 2022 AQMP for Control Measures MOB-02A and MOB-02B, and Final Program EIR for the 2016 AQMP for Control Measure MOB-02. Thus, no new Initial Study would need to be prepared leading to either an EIR or a Negative Declaration pursuant to CEQA Guidelines Section 15168(c)(2). PR 2306 does not introduce new information which will cause new significant effects or substantially worsen or make more severe significant effects that were previously analyzed in the Final Program EIRs for the 2022 AQMP and 2016 AQMP. There is no change to the mitigation measures or alternatives previously considered in the Final Program EIRs for the 2022 AQMP and 2016 AQMP. Thus, in accordance with CEQA Guidelines Section 15168(c)(2), a subsequent EIR would not be required pursuant to Public Resources Code Section 21166 and CEQA Guidelines Section 15162.

Based on the preceding analysis, pursuant to CEQA Guidelines Section 15168(c)(2), PR 2306 is considered a later activity within the scope of the 2022 AQMP and 2016 AQMP which were analyzed in the Final Program EIRs for the 2022 AQMP and 2016 AQMP. The mitigation measures developed in the Final Program EIRs for the 2022 AQMP and 2016 AQMP for the previously adopted Control Measures MOB-02A, MOB-02B and MOB-02 in the 2022 AQMP and 2016 AQMP upon which PR 2306 relies are also applicable to the implementation of PR 2306 and will remain in effect. [CEQA Guidelines Section 15168(c)(3)].

Therefore, PR 2306 is considered a later activity within the scope of the Final Program EIRs for the 2022 AQMP and 2016 AQMP and the Final Program EIRs for the 2022 AQMP and 2016

AQMP adequately describe the later activity for the purposes of CEQA such that no new environmental document is~~will be~~ required.

REFERENCES

The 2022 AQMP, along with the December 2022 Final Program EIR for the 2022 AQMP (State Clearinghouse No. 2022050287) and its corresponding Findings, Statement of Overriding Considerations, and Mitigation, Monitoring, and Reporting Plan, and the 2016 AQMP along with the March 2017 Final Program EIR for the 2016 AQMP (State Clearinghouse No. 2016071006) and its corresponding with Findings, Statement of Overriding Considerations, and Mitigation, Monitoring, and Reporting Plan, upon which this analysis of PR 2306 relies, are incorporated by reference pursuant to CEQA Guidelines Section 15150 and are available from the South Coast AQMD's website at:

December 2022 Final Program EIR for the 2022 AQMP

Master webpage

https://www.aqmd.gov/home/research/documents-reports/lead-agency-scaqmd-projects/south-coast-aqmd-projects---year-2022

December 2022 Final Program EIR for the 2022 AQMP (including Appendices)

https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2022/2022-aqmp-final-peir.pdf

Findings, Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Plan

https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2022/2022-aqmp-attachment1toresolution.pdf

2022 AQMP

https://www.aqmd.gov/home/air-quality/air-quality-management-plans/air-quality-mgt-plan

March 2017 Final Program EIR for the 2016 AQMP

Master webpage

http://www.aqmd.gov/home/research/documents-reports/lead-agency-scaqmdprojects/scaqmd-projects---year-2017

March 2017 Final Program EIR for the 2016 AQMP (without Appendices)
https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2016/2016aqmpfpeir.pdf

Appendices A through C

https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2016/2016aqmpfpeir_appendicesac.pdf

Appendices D through E

https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2016/2016aqmpfpeir_appendicesde.pdf

Findings, Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Plan

https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2017/att2toresolutionfor-2016aqmp.pdf

2016 AQMP

https://www.aqmd.gov/home/air-quality/air-quality-management-plans/final-2016-aqmp

This Appendix incorporates by reference in accordance with CEQA Guidelines Section 15150 the following documents which are a matter of public record and are available to the public from CARB's website:

CARB's In-Use Locomotive Regulation

Master webpage
https://ww2.arb.ca.gov/rulemaking/2022/locomotive

Final Regulation Order
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/fro.pdf

Final Environmental Analysis for the Proposed In-Use Locomotive Regulation, certified April 27, 2023, State Clearinghouse No. 2021030340
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/locomotive_final_ea.docx

Attachment A: Environmental and Regulatory Setting
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appda.pdf

Attachment B: Summary of Environmental Impacts and Mitigation Measures
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appdb.pdf

Findings and Statement of Overriding Considerations
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/locomotive_findings.pdf

CARB's Advanced Clean Fleets Regulation

Master webpage:
https://ww2.arb.ca.gov/rulemaking/2022/acf2022

Final Regulation Order: State and Local Government Agency Fleet Requirements
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/ac/acffro11.pdf

Final Regulation Order: High Priority and Federal Fleet Requirements
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/ac/acffro21.pdf

Final Regulation Order: Drayage Truck Requirements
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/ac/acffrod31.pdf

Final Regulation Order: 2036 100 Percent Medium- and Heavy-Duty Zero-Emission Vehicle Sales Requirements
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/ac/acffro41.pdf

Final Environmental Analysis for the Proposed Advanced Clean Fleets Regulation, certified August 28, 2023, State Clearinghouse No. 2021030340
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/acffinalea.docx

Attachment A: Environmental and Regulatory Setting
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/appda.pdf

Attachment B: Summary of Impacts Table
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/appdb.pdf

Findings and Statement of Overriding Considerations
https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/acffindings.pdf

Introduction

1. South Coast AQMD, 2022 Air Quality Management Plan, December 2022. https://www.aqmd.gov/home/air-quality/air-quality-management-plans/air-quality-mgt-plan
2. South Coast AQMD, 2016 Air Quality Management Plan, March 2017. https://www.aqmd.gov/home/air-quality/air-quality-management-plans/final-2016-aqmp
3. South Coast AQMD, Final Program Environmental Impact Report for the 2022 Air Quality Management Plan, December 2022. https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2022/2022-aqmp-final-peir.pdf
4. South Coast AQMD, Final Program Environmental Impact Report for the 2016 Air Quality Management Plan, March 2017. https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2016/2016aqmpfpeir.pdf

Summary of Environmental Impacts Associated with PR 2306

5. South Coast AQMD, Attachment 1 to the Governing Board Resolution for the Final Program Environmental Impact Report for the 2022 Air Quality Management Plan, December 2022. https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2022/2022-aqmp-attachment1toresolution.pdf
6. South Coast AQMD, Attachment 2 to the Governing Board Resolution for the Final Program Environmental Impact Report for the 2016 Air Quality Management Plan, March 2017. https://www.aqmd.gov/docs/default-source/ceqa/documents/aqmd-projects/2017/att2toresolutionfor-2016aqmp.pdf

Environmental Impact Area with Potentially Significant Impacts

7. South Coast AQMD, Appendix IV-A for the 2016 Air Quality Management Plan: https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/appendix-iv-a.pdf
8. Southern California Association of Governments, Connect SoCal (2020–2045 Regional Transportation Plan/Sustainable Communities Strategy), May 2020. https://scag.ca.gov/read-plan-adopted-final-connect-socal-2020
9. California Air Resources Board, 2022 State Strategy for the State Implementation Plan (2022 State SIP Strategy), September 2022. https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy

10. SCAG, The 2016-2040 Regional Transportation Plan/ Sustainable Communities Strategy, April 2016, https://scag.ca.gov/sites/main/files/file-attachments/f2016rtpscs.pdf
11. CEC, 2021. Final 2021 Integrated Energy Policy Report, Volume II, Ensuring Reliability in a Changing Climate. CEC-101-2021-001-V2 February, 2022. https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2021 integrated-energy-policy-report
12. CEC, 2016h. Electricity Consumption by County. Energy Consumption Database System. Accessed June 18, 2024. http://ecdms.energy.ca.gov/elecbycounty.aspx
13. CEC, 2016k. California Energy Commission – Tracking Progress, Plug-in Electric Vehicles. Accessed August 10, 2016. http://www.energy.ca.gov/renewables/tracking_progress/documents/electric_vehicle.pdf
14. Senate Bill 100, https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB100
15. CEC, 2013. 2013 Integrated Energy Policy Report, August 2014. Accessed November 17, 2015.
16. Executive Order B-48-18, https://www.library.ca.gov/wp-content/uploads/GovernmentPublications/executive-order-proclamation/39-B-48-18.pdf
17. CEC, 2021c. Alternative Refueling Infrastructure. Prepared for the California Energy Commission. Prepared by the National Renewable Energy Laboratory. CEC-600-2021-0044, December 2021. Available at: https://www.energy.ca.gov/sites/default/files/2021-12/CEC-600-2021-044.pdf
18. CEC, Hydrogen Refueling Stations in California, https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics-collection/hydrogen, data last updated May 23, 2024, website accessed June 27. 2024
19. NTSB 2020. Safety Risks to Emergency Responders from Lithium-Ion Battery Fires in Electric Vehicles, November 12,2020. ~~https://www.ntsb.gov/safety/safetystudies/Documents/SR2001.pdf.http://www.energy.ca.gov/2013publications/CEC-100-2013-001/CEC-100-2013-001-~~
20. International Center for Technology Assessment (ICTA), 1996. The Environmental Impacts and Safety of Electric Vehicles, ICTA Report Series – Report No. 2.
21. AutoinsuranceEZ, 2022. Gas vs. Electric Car Fires, 2022 Findings. June 27, 2022. https://www.autoinsuranceez.com/gas-vs-electric-car-fires/ Accessed June 18, 2024.
22. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, 2014. 49 CFR Parts 171, 172, 173, et al., Hazardous Materials: Transportation of Lithium Batteries, Federal Register Volume 79, Issue 151 (79 FR pp. 46011-46032).
23. U.N. Trade Statistics. 2010. Lithium-Ion Batteries for Electric Vehicles: The U.S. Value Chain, October 2010. http://unstats.un.org/unsd/trade/s_geneva2011/refdocs/RDs/Lithium-Ion%20Batteries%20(Gereffi%20-%20May%202010).pdf

24. Pacific Northwest National Laboratory (PNL), 2004. Hydrogen and Fuel Cell Permitting Guide, Module 2, Accessed August 14, 2016. http://www.pnl.gov/fuelcells/docs/permit-guides/module2_final.pdf

Environmental Impact Area with Less Than Significant or No Impacts

25. South Coast AQMD, 1992, Draft Staff Report and Environmental Assessment (EA) for Proposed Rule 1610: Old Car Scrapping. SCAQMD No. 921113KN, November 20, 1992.
26. State of California Auto Dismantlers Association, 2022, Members Direct Search, https://scada1.org/find-member, August 12, 2022.
27. CARB's California Emissions Inventory Data Analysis and Reporting System (CEIDARS) is a database management system developed to track statewide criteria pollutant and air toxic emissions; https://ww2.arb.ca.gov/criteria-pollutant-emissioninventory-data
28. South Coast AQMD, 2006. Final Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, Table A. http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/particulate-matter-(pm)-2.5-significance-thresholds-and-calculation methodology/final_pm2_5methodology.pdf
29. 2020 eGRID data of 453 lb/MWh for SCE, U.S. EPA, 2022, https://epa.gov/egrid/download-data
30. Alternative Fuels Data Center, 2022. Fuel Cell Electric Vehicle Emissions, https://afdc.energy.gov/vehicles/emissions_hydrogen.html, accessed August 17, 2022.
31. Edmunds, 2014. What Happens to EV and Hybrid Batteries? Going Green with Battery Recycling. John O'Deil. Updated August 24, 2014. http://www.edmunds.com/fuel-economy/what-happens-to-ev-and-hybrid-batteries.html
32. Green Car Reports, 2014. Electric-Car Batteries: What Happens to Them After Coming Out of the Car? By John Voelcker, August 12, 2014. Accessed August 17, 2016 at: http://www.greencarreports.com/news/1093810_electric-car-batteries-what-happens-to-them-after-coming-out-of-the-car ~~Environmental Impact Area with No Impacts~~
33. State of California, Governor's Office of Planning and Research (OPR), Technical Advisory on Evaluating Transportation Impacts in CEQA, December 2018. https://opr.ca.gov/docs/20180416-743_Technical_Advisory_4.16.18.pdf

APPENDIX B : COMMENTS AND RESPONSES

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INTRODUCTION

Implementation of the AQMP Facility Based Mobile Source Measures, and subsequently PR 2306 development, began in 2017. Over the span of this time, staff has continued to solicit public input and feedback by engaging with various stakeholders including communities impacted by freight rail yard emissions, potentially affected businesses and industries, environmental organizations, trade associations, public agencies, and others. All stakeholder feedback from this public process has informed this rule development effort and helped shape the current version of the proposed rules. This appendix includes responses to the comments received after the release of preliminary draft rule package for PR 2306 and PR 316.2 (on May 17, 2024), either through written comment letters submitted using mail services or electronic mail, or expressed verbally or in writing during the Public Workshop for PR 2306 and PR 316.2 which was held on June 4, 2024.

PUBLIC WORKSHOP COMMENTS

Staff held a Public Workshop (PW) on June 4, 2024, to provide an overview of PR 2306 and PR 316.2 using a virtual webinar platform. Verbal comments transcribed from the PW recording and written comments provided in the questions and answers (Q&A) box on the virtual platform, can be found below, along with staff responses.

Comment PW-1 from an anonymous attendee

Will the Barstow BNSF Railyard or Barstow International Gateway be directly impacted by the implementation of PR 2306?

Staff Response to Comment PW-1

PR 2306 and PR 316.2 apply to freight rail yards within the South Coast AQMD jurisdiction. Barstow BNSF Railyard and the proposed Barstow International Gateway will not be directly impacted by the proposed rules because they are located outside of the South Coast AQMD jurisdiction. Those rail yards are therefore not subject to PR 2306 and PR 316.2.

Comment PW-2 from Brianna Egan with Californians for Electric Rail

Thank you for your work on this rule and for engaging with community members and stakeholders. As a member of Californians for Electric Rail, I want to share our support for regulations that facilitate a clean energy transition for freight railyards and locomotives. Specifically, we feel that freight rail electrification with overhead catenary wires (gold standard technology for zero emissions freight rail around the world) will be a key to reducing pollution in frontline communities. https://calelectricrail.org/. Is the South Coast AQMD providing guidance on technology for zero emissions infrastructure for freight operators? I'd like to see rail electrification projects (and not hydrogen fueling) be a primary focus of the zero emissions plans.

Staff Response to Comment PW-2

PR 2306 is fuel- and technology-neutral with respect to the type(s) of fuel planned to be used to support zero emission infrastructure and the specific type(s) of technology used to reduce freight rail yard emissions.

Comment PW-3 from Bobby Jo Chavarria with Sierra Club

3-a) I really appreciate the work that has been put into establishing this rule and including some of the concerns that Sierra Club members have had. With the new facilities we would like to see a zero-emission requirement at the beginning of when the reporting period starts or as soon as the facility is operational.

3-b) We want to make sure that we raise robust public awareness on the reporting mechanisms for the applicable facilities since we are relying heavily on self-reporting and communities have more awareness on the operational changes of these facilities.

3-c) We appreciate the infrastructure component that requires the facilities to take a look at what it will take to transition to zero emission or cleaner equipment. Additionally, it would make sense to work with individuals who are already planning out the infrastructure and to make sure there is partnership and technical advice that can be given. A sub-committee working on that component can ensure the transition much quicker than what the rule is requiring.

3-d) What is the estimate on how often there are owner or operator changes in the rail yards that we have in the district?

3-e) Nobody wants full exemptions. There is plenty of distinction on which operations are subject to the rule and it is very clear. This parsing of words makes it clear as to why an ISR is required for ports and rail yards. Otherwise, no action would ever be taken. Clean up your act, ports!

Staff Response to Comment PW-3

3-a) PR 2306 requires both new and existing freight rail yards to reduce emissions at levels that are proportional or more-than-proportional to implementation of statewide regulations throughout California. While the statewide regulations require zero emission operation for certain freight rail yard emission sources, ~~technological feasibility~~ it has not yet been required for other sources such as railcar TRUs. PR 2306 is consistent with statewide rules, which do not establish requirements for new facilities that is different than for existing facilities. Moreover, CAA Section 209 preempts South Coast AQMD from adopting emission standards for mobile sources. It is likely that a requirement for zero emissions at new freight rail yards would be challenged as an emission standard.

3-b) As part of potential rule implementation, staff is committed to working with the communities in providing accessible information to the public based on rule compliance reporting, absent any business confidentiality limitations. Staff also conducted a survey poll during the Community Workshop held on June 5, 2024, as a preliminary effort to solicit feedback on existing information reporting tools or platforms for staff to consider as it develops a public information portal.

3-c) Staff appreciates the comment and suggestion for how to further facilitate zero emission infrastructure development outside of PR 2306. This type of coordination would be appropriate during rule implementation if PR 2306 is adopted.

3-d) Staff expects any change of freight rail yard ownership or operator to happen rarely, based on past observations.

3-e) Staff acknowledges the concern regarding emissions associated with ports-related rail activities. PR 2306 is part of the AQMP Facility Based Mobile Source Measures that will collectively address freight emissions in South Coast AQMD. A similar rulemaking effort is underway for ports under Proposed Rule 2304.

Comment PW-4 from Morgan Caswell with Port of Long Beach

I'm providing comment today on behalf of the Port of Long Beach.

Thank you staff for the presentation. Port staff read the draft proposed regulation text dated May 17, 2024. Our primary concern is that the regulatory language is very difficult to navigate including the proposed exemption language that is specific to the cities of Long Beach and Los Angeles. The language appears to be ambiguous. It uses verbiage such as "primary" to describe the predominant function of a rail yard. How will South Coast AQMD staff evaluate the primary use of a rail yard? We also want to express concern that the definition of an "intermodal rail yard" seems very broad and could unintentionally lead to inclusion of port rail yard facilities. We appreciate that South Coast AQMD is trying to ensure that the same rail activity is not covered under two different regulations, as it would lead to many logistical challenges for responsible parties. The request is for South Coast AQMD to revise the definitions and exemption language to be clearer as to which activity is covered under PR 2306 and which is not.

Staff Response to Comment PW-4

Please refer to staff responses to Comment Letters #6 and #7 that were subsequently submitted by the Port of Long Beach and the Port of Los Angeles, respectively, which provided further elaboration on this comment.

Comment PW-5 from Moses Huerta

I am a resident from the City of Paramount. I'd like clarity on the exemption portion of the rule language. My community, we are downstream from some of the heavy activities. I want to know what would be the exemption of 30 days or less of switching activities if I am seeing rail being processed a few times a week? How many trips? If you could help me understand this. As of right now, I see rail cars being switched over and we have idling. What would be the trips per week? What is the base for this exemption? Is it a certain number of trips, or the type of movement?

Staff Response to Comment PW-5

The low activity exemption in PR 2306 is meant for infrequently used sites that may be set up for temporary operational needs and do not operate year-round. The exemption does not apply to intermodal rail yards. For any other site to qualify for the exemption, the site cannot have switching activities occurring more than 30 calendar days per calendar year (please refer to Chapter 3 of this report for more details). Under PR 2306, a rail yard is also defined as a facility where one or more work crews are assigned to conduct day-to-day business operations. Staff welcomes any suggestions for this exemption, including any alternative metric for the exemption threshold.

Comment PW-6 from Thomas Jelenic with Pacific Merchant Shipping Association (PMSA)

I want to follow up on the exemption question as well. The current discussion does not seem consistent with some of the discussions I have had with staff regarding the exemption. If the exemption would only cover who is actively regulated and not the activity, so, if you had a cut of locomotive with a cut of trains leave the port, go to Hobart, under the proposed rule, the Hobart facility would be responsible for that activity, and it is also possible for the terminal operator in a future port rule would also be responsible for that same activity even though the rail yard at the

port is not a regulated facility under this rule, but the marine terminal would be under a future port rule. Is that understanding correct? Would a marine terminal operator under a port rule not be responsible for the rail activity and the locomotive that departs their facility? My concern is during the presentation and the commenting session after the presentation, it is being described as a full exemption under this rule. When I read the proposed language, it is not a full exemption, but the activity could be captured under both rules [PR 2306 and a potential future port rule]. The exemption language in PR 2306 does not exclude the activity of locomotives that travel between regulated facilities and port terminal; it does not exclude such activity from this rule or a future ports rule. So, there is a potential for that activity, for locomotives moving between ports and non-port rail yards being captured under both rules. Currently, this activity is not excluded, correct? If it is not, characterizing this as a full exemption is ambiguous and misleading. The rule language needs to be refined and the distinction between activity and facility in the rule and how it applies needs to be made much clearer.

Staff Response to Comment PW-6

Please refer to staff response to Comment Letter #5 that was subsequently submitted by PMSA and provided further elaboration on this comment.

Comment PW-7 from Theral Golden with West Long Beach Association

I would like clarification on the 2-year window baseline. What is the goal? Is it attainment? The goal is not clear to me.

Staff Response to Comment PW-7

PR 2306 is designed to assist with achieving regional attainment goals, consistent with the purpose of the 2016 and 2022 Air Quality Management Plans and all of the Facility-Based Mobile Source Measures. PR 2306 defines the base period as two full calendar years either after PR 2306 becomes effective or after a new freight rail yard begins operation (please refer to Chapter 3 of this report for more details). Inclusion of base period in PR 2306 is for the operators of subject freight rail yards to provide information that supports demonstration of compliance with emission reductions requirements, and to also help track facility emissions as well as any changes and progress on zero emission infrastructure planning, development, and utilization.

Comment PW-8 from Andrea Vidaurre with The People's Collective for Environmental Justice

8-a) What are the penalties for the railyards if they do not reduce their emissions every year? Will the penalties be monetary? Or are there other levels of accountability?

8-b) Will all data be accessible to the public about the emissions at the different railyards? How soon will that be up?

Staff Response to Comment PW-8

8-a) PR 2306 will function similarly to other South Coast AQMD rules with regards to penalties for violation of the rule or any specific rule provision. Moreover, upon approval into state implementation plan of any rule, the enforcement provisions of Federal Clean Air Act become effective as well. The term “penalties” typically refers to “civil penalties” under the Health and

Safety Code and the Federal Clean Air Act. Health and Safety Code Section 42400 sets forth the framework for monetary penalties.

8-b) Please refer to staff response to Comment PW-3-b.

Comment PW-9 from an anonymous attendee

Will zero-emission efforts at railyards include plans for systems-wide support and self-sufficiency regarding electrification in order to avoid shifting strain to broadscale energy infrastructure?

Staff Response to Comment PW-9

Please refer to staff response to Comment PW-2 in terms of fuel neutrality of PR 2306. The proposed rule requires the owner and operator of a freight rail yard to report on zero emission infrastructure planning, development, and utilization. They are also required to report on the assessment of any need to upgrade the electrical grid serving their facility. If there is a potential need for such an upgrade to the electrical system, the owner and operator will be required to submit a request to the local electrical utility to initiate the process in a timely manner. The specific design and requirements that the zero emissions infrastructure will need to meet, including whether to include what is suggested in this comment, will be determined by the rail yard owner and operator.

Comment PW-10 from Mark Abramowitz with Community Environmental Services

10-a) Why is the implementation date tied to federal approval? Aren't the emission reductions required to meet state ozone standards?

10-b) Could you indicate what enforcement mechanisms are being planned, and under what timeframes? So far, the District has not taken any enforcement actions with respect to the non-compliant airport MOUs. Enforcement provisions and protocols upfront would go a long way towards ensuring that a similar situation does not occur for this rule.

10-c) I am concerned that this rule may not yield any emission reductions if CARB's estimated reductions for South Coast under the locomotive rule do occur, there is going to be a whole class of potentially reducible emission sources that are not going to be touched. I think that will be inconsistent with the AQMP, which talks about both rules being in existence and there are emission reductions associated with both of state rules for South Coast as well as for a separate South Coast rule. If all the emission reductions that we are anticipating in the CARB rule, we will be missing all the reductions that are in the AQMP. There is a state requirement that the district reduce all emissions to the extent feasible and to do it as soon as possible. I urge the district staff to look at the overall goals of the rule and not just tie it to state requirements.

Staff Response to Comment PW-10

10-a) The Effective Date provision of PR 2306 takes into account potential federal preemption considerations, which are discussed in detail in Chapter 1 *Legal Authority* section of this report. PR 2306 will assist in attaining both state and federal standards for ozone and fine particular matter.

10-b) Please refer to staff response to Comment PW-8-a for PR 2306 enforcement mechanisms. Enforcement of the Airport MOU is not analogous to enforcement of a rule. The specific

mechanisms for enforcing the Airport MOUs is fully contained in the MOU language itself, and that process is being followed as appropriate. For more information about South Coast AQMD's enforcement program, the commenter is referred to our enforcement webpage here: https://www.aqmd.gov/nav/about/authority/enforcement. In short, rule enforcement is governed by state and federal law, which differs from the Airport MOUs. If adopted, PR 2306 and PR 316.2 would be enforced similar to all other South Coast AQMD rules, including audits, inspections, with follow-up notices to comply or notices of violation as appropriate, followed by resolution of those notices, which may include monetary penalties.

10-c) PR 2306 is designed to ensure emission reductions occur at freight rail yards within the South Coast AQMD at levels that are at least commensurate with proportional implementation of recently adopted statewide regulations affecting locomotives and drayage trucks. There are no requirements in CARB's applicable regulations that would ensure the necessary emission reductions occur in South Coast AQMD, thus strengthening the State Implementation Plan. It is possible that additional emission reductions would be achieved in South Coast AQMD under PR 2306 than would occur with only existing state regulations. For example, absent PR 2306, emission reductions may occur under CARB's In-Use Locomotive and Advanced Clean Fleets regulations preferentially outside of South Coast AQMD. This same activity could potentially occur with PR 2306, however rail yard operators would need to achieve additional emission reductions equal to the shortfall from other emission sources beyond CARB regulations for those categories, such as from Transportation Refrigeration Units or Cargo Handling Equipment. For whichever option is chosen by rail yard operators, the necessary emission reductions in South Coast AQMD would be more certain with PR 2306 than without it. Further, as stated in the 2016 and 2022 AQMPs, the Facility Based Mobile Source Measures, including MOB-02 for rail yards, are meant to facilitate the state's "Further Deployment of Cleaner Technologies" strategy as part of the State Implementation Plan (SIP). No quantified emission reductions have been associated with these Facility-Based Measures in the AQMPs as it was too speculative to determine at that time. The proposed approach for PR 2306 and PR 316.2 is consistent with the feasibility and timing requirements under state law. ~~when considering all technical, legal~~

Comment PW-11 from an anonymous attendee

Does being "fuel neutral" take into account greenhouse gas emissions created by producing hydrogen from fossil fuels (as is almost all commercial hydrogen is produced in the world today)? For renewably generated hydrogen using electrolysis, is water and electricity consumption accounted for by South Coast AQMD?

Staff Response to Comment PW-11

Such impacts were analyzed in the Final Program Environmental Impact Reports for the 2016 and 2022 AQMPs. Please refer to Appendix A – Detailed California Environmental Quality Act Analysis for more details.

Comment PW-12 from an anonymous attendee

I've heard that CARB's Advanced Clean Fleets Regulation is being challenged in court. If the ACF Regulation (or the In-Use Locomotive Regulation) gets overturned, will PR2306 still go into effect?

Staff Response to Comment PW-12

If adopted, PR 2306 will go into effect only after the requested authorization/waiver are granted by U.S. EPA to the CARB In-Use Locomotive Regulation and ACF Regulation (as a whole or in part for the Drayage Truck requirements). It is currently speculative to predict any impact on PR 2306 resulting from any potential, unspecified court rulings relative to the litigation challenges to the two CARB regulations, which may or may not pertain to PR 2306.

Comment PW-13 from Al Sattler

13-a) The presentation showed projected between 2029 and 2030 that NOx would suddenly decrease by about half. Why would that be?

13-b) With respect to the grid infrastructure update, utilities presumably would be adding it to their rate base that they could be charging their rate payors. Would that be all rate payors within the entire utility base, or would it be specifically targeted to those projects?

13-c) I would urge all locomotives and railyards and other infrastructure in the rail yards be electrified or perhaps hydrogen fuel celled.

Staff Response to Comment PW-13

13-a) The projected emission reductions are based on CARB's Regulatory Impact Assessments and the assumption that statewide emission reductions would occur proportionally in South Coast AQMD. Several fleet turnover projections in CARB's analysis contribute to the significant drop in NOx emissions around 2029-2030. First, CARB's In-Use Locomotive Regulation will prohibit locomotives that are 23 years old or older from operating in California beginning in 2030, unless they meet the cleanest federal locomotive standard or operate in zero emission configuration. It is therefore projected that many locomotives operating in California will be Tier 4 by then, and switch locomotives built in 2030 or later will be additionally required to operate in zero-emission configuration.[149] Significant turnover of the drayage truck fleet to zero emission is also projected by 2030 given that the ACF regulation requires 100 percent zero-emission drayage trucks by 2035.[150] This projection is consistent with, and based on, statewide projections for CARB rules. The emission reductions in this graph are also associated with Table 1 of PR 2306. If freight rail yard operators comply with PR 2306 under the option in subparagraph (d)(1)(B) of the rule, then the emission reductions may be less than what is shown in the graph, though would still be at least proportional to statewide reductions.

[149]Standardized Regulatory Impact Assessment for the In-Use Locomotive Regulation: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appb.pdf

[150]Standard Regulatory Impact Assessment Submitted to Department of Finance – Advanced Clean Fleets Regulation: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/appc.pdf

13-b) How costs in association with electrical grid upgrades would be apportioned is not established by South Coast AQMD or PR 2306. These rates are under the purview of utilities regulators such as the California Public Utilities Commission or local publicly owned utilities such as Los Angeles Department of Water and Power.

13-c) Thank you for your comment. Please refer to staff responses to Comment PW-2 and Comment PW-9.

Comment PW-14 from a representative of East Yard Communities for Environmental Justice

Can you clarify the proposed railyard compliance through "reduced throughput" option? It poses concerns to our communities for any potential loopholes from industry.

Staff Response to Comment PW-14

Any freight rail yard, whether they have reduced throughput or not, is required to meet or exceed emission reductions targets under PR 2306. In addition to the primary pathway to demonstrate compliance as specified in paragraph (d)(2) of PR 2306, a freight rail yard with a reduced throughput may elect to demonstrate compliance differently. This alternative compliance pathway is included in recognition of the emission reductions achieved at the qualified freight rail yard due to the decrease in throughput, which may be due to economic or operational reasons. However, it does not imply that emission reductions due to reduced throughput alone are necessarily sufficient for rule compliance, as the proposed rule still requires the facility to demonstrate their facility-wide emissions from all applicable mobile sources (including locomotives, drayage trucks, and CHE, TRUs, and all other sources) meet or exceed the applicable emission reductions targets. Therefore, staff do not perceive any potential loopholes under this compliance pathway. Please refer to Chapter 3, *PR 2306 Paragraph (d)(3)*, of this report for more details.

Comment PW-15 from an anonymous attendee

How much additional emission reductions is this rule expected to bring separately from state rules?

Staff Response to Comment PW-15

Please refer to staff response to Comment PW-10-c.

Comment PW-16 from Paola Vargas with East Yard Communities for Environmental Justice

To confirm, CHE and TRU will be unregulated in this rule? For example, if a freight rail yard complies with the rule with locomotives and drayage trucks, then there wouldn't be a mechanism for CHE and TRU emissions to be addressed. If compliance of the railyard doesn't include CHE and TRUs (since it is not a guarantee), will/can there be measures or mechanisms to ensure emission reductions are still coming from these sources, since they are also sources of NOx in our communities? I express concern and encourage staff to push for a mechanism to address emissions from those equipment categories due to our ozone nonattainment levels. There is concern in our communities that this is something falling short in the rule.

Staff Response to Comment PW-16

PR 2306 regulates freight rail yards by requiring freight rail yard operators to demonstrate sufficient NOx reductions from mobile sources attracted to their facilities. The freight rail yard operator may demonstrate compliance with PR 2306 with emission reductions from one or more mobile sources of emissions associated with its facility operations, including locomotives, drayage trucks, CHE, TRU, and other applicable mobile sources. The operator may include in its compliance demonstration emission reductions from any combination of the listed sources as long as the emission reductions targets are met or exceeded for its facility. There is no single regulation that can address all of the emission reduction requirements from goods movement facilities covered under the Facility-Based Mobile Source Measures in the 2016 and 2022 AQMPs. Additional measures will be needed to address other emission sources associated with rail yards. PR 2306 is designed to ensure that South Coast AQMD receives emission reduction benefits from statewide regulations, as part of a broader framework to reduce emissions from goods movement sources.

Comment PW-17 from Trish Clary with Union Pacific

I am trying to understand in a scenario where a truck TRU would go from a warehouse to a port. Who is counting what emissions? Which rule is the emissions being counted towards? It feels like there is double, potentially triple counting of those emissions. To confirm, in a scenario like this, all three facilities, the warehouse, port, and rail yard, would have to report the emissions and South Coast AQMD staff would figure out where the duplication is occurring?

Staff Response to Comment PW-17

PR 2306 requires a freight rail yard operator to demonstrate compliance with the proposed rule requirements by including any activities that are associated with that specific freight rail yard. Freight rail yard operators are not responsible for determining any potential ‘double counting’ as mentioned in the comment. The only activity a freight rail yard operator will need to track will be what is required under PR 2306 as described in the Proposed Rule 2306 Calculation Methodology and Data Appendix, and they are not responsible for other facilities covered by other rules. The requirement from other rules applicable to other facilities (e.g., warehouses, ports) may differ substantially from PR 2306. For example, warehouses are not required to track TRU activity under Rule 2305. Also, any potential requirements for port facilities under PR 2304 have not yet been established as no draft rule language has been released or adopted by the South Coast AQMD Board. To the extent that any ‘double counting’ may occur across multiple regulations, staff from South Coast AQMD will evaluate and address this prior to submitting SIP credit planning requirements to U.S. EPA. This analysis is not the responsibility of a freight rail yard owner or operator under PR 2306.

Comment PW-18 from an anonymous attendee

Similarly, as a resident of Carson who has dealt with the smog/sulfur from nearby factories, I urge for more restrictions and real consequences on the polluting ports.

Staff Response to Comment PW-18:

Staff is concurrently pursuing rulemaking for PR 2304 – Commercial Marine Ports – Container Terminals to seek emission reductions from port operations.

COMMENT LETTERS

Comment Letter #1 from Earthjustice et al.

June 6, 2024

Chair Delgado & Members of the Board
Governing Board
South Coast Air Quality Management District (South Coast AQMD)
21865 Copley Drive
Diamond Bar, CA 91765
Email: cob@aqmd.gov

RE: Agenda Item 2B: Set Hearing for Proposed Rule 2306 (Freight Railyard Rule)

Dear Chair Delgado and Members of the Governing Board:

On behalf of the undersigned organizations, we write regarding Proposed Rule 2306. After years of waiting, an indirect source rule proposal for railyards is finally coming to the Governing Board. As the years have ticked, waiting for action by the South Coast AQMD, many people have fallen ill and even died from the rail industry's pollution. The South Coast AQMD must adopt a rail indirect source rule in August and strengthen it to provide better health protections to overburdened communities that need clean air.

Several organizations submitted a letter on May 8, 2024 (see attached) asking for strengthening the rule. The South Coast AQMD should heed these recommendations and strengthen the regulation. Given the air pollution crisis and the fact that the South Coast Air Basin is on the brink of facing federal sanctions under the Clean Air Act, now is not the time to retreat from passing the strongest possible rule to curb rail pollution.

Comment 1-1

Moreover, there is great urgency to act. Rail-adjacent communities live in a consistent and persistent localized air pollution crisis. The rail industry's weak track record of caring about communities demonstrates it has no intention or plan to clean up its act. Instead, it reverts to fighting life-saving regulations. This is precisely the situation where we need our government agencies to lead in passing strong regulatory medicine to cut through the industry's lethargy and lack of urgency.

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We need you to act firmly and swiftly to provide the relief communities near railyards desperately need and deserve. We look forward to continuing to engage with the Board and staff to ensure we have the strongest protections for breathers in the South Coast Air Basin.

Comment 1-1 Con't

Sincerely,

Fernando Gaytan
Yasmine Agelidis
Earthjustice

Ana Gonzalez
Center for Community Action and Environmental Justice

Dori Chandler
Coalition for Clean Air

Ivette Torres
People's Collective for Environmental Justice

Kathleen Woodfield
San Pedro Peninsula Homeowners Coalition

Bobbi Jo Cavarria
Sierra Club

Kathy Ramirez
Denny Zane
Move LA

Sylvia Betancourt
Long Beach Alliance for Children with Asthma

May 8, 2024

VIA ELECTRONIC MAIL

Ian MacMillan
Assistant Deputy Executive Officer
Email: imacmillan@aqmd.gov

Elaine Shen
Planning and Rules Manager
Email: eshen@aqmd.gov

South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

Re: Proposed Rule 2306 - Freight Railyards Indirect Source Rule Draft Language

Dear Mr. MacMillan and Dr. Shen:

The undersigned organizations write to comment on the latest draft rule for the Freight Railyard Indirect Source Review (ISR) Rule, Proposed Rule (PR) 2306. While the rule offers a framework for a strong ISR, we remain concerned that the current draft lacks the rigor needed to meet the region's non-attainment and public health needs.

We offer these comments in the hope that staff will strengthen PR 2306 before it is finalized and brought to a vote in August.

Comment 1-2

I. Summary of Recommendations to Improve the Rule

As further explained in this letter, PR 2306 must be strengthened in the following specific ways:

1. The District must use its authority over stationary sources to develop more aggressive, *facility-wide*, emission reduction targets —not limited to just locomotives and trucks governed by state rules.
2. PR 2306 should eliminate unnecessary regulatory off-ramps for railyard facilities claiming reduced throughput.

3. PR 2306's infrastructure component should require commitments supporting broadscale, facility-wide, transitions to zero-emissions, not just for locomotives and trucks.
4. PR 2306 should require new rail yard facilities to start at zero-emissions operations.
5. PR 2306 should empower environmental justice communities with information access and a role in making decisions on how to best address the impact of offending facilities.

Comment 1-2 Con't

The following sections provide our reasoning for these requests to improve the draft language.

II. The Railyard ISR Must Set Facility-Wide Emissions Reduction Targets that Address All Health-Harming and Polluting Mobile Sources at Railyard Facilities,

The Railyard ISR must set emissions reduction targets for railyard facilities as a whole to address the impact that entire railyard facilities have on local public health and regional nonattainment of federal and state standards. By setting emission reduction targets on the stationary source, the Railyard ISR will account for all sources of air pollution from railyards rather than arbitrarily limiting these targets to locomotives and trucks.

As currently drafted, the Rule would allow already heavily polluting railyards to merely do what they will already be mandated to do statewide and nothing else. Yet the SCAQMD has the legal authority to use the ISR to protect public health and control air pollution from stationary sources like railyards.[1] The Ninth Circuit has interpreted this authority as requiring emissions reductions that are "site-based" rather than "engine" or "vehicle-based."[2] Utilizing this authority, PR 2306 should use a **site-based** approach to set emission-reduction targets looking at all emissions the facility draws to the region, not just locomotives and trucks.

Comment 1-3

Railyards are major hubs of activity and significant sources of nitrogen oxides (NOx), particulate matter (PM), and other pollutants contributing to the region's poor air quality. Several polluting mobile sources operate at these facilities, including trains, trucks, transportation refrigeration units (TRUs), and cargo handling equipment — each contributing to overall emissions (see Table

[1] 42 U.S.C.§7410(a)(5)(D).
[2] Nat'l Ass'n of Home Builders v. San Joaquin Valley Unified Air Pollution Control Dist., 627 F.3d 730, 737 (9th Cir. 2010)

5-1 below showing railyard DMP emissions by source type known in 2005).

TABLE 5-1 RAILYARD DPM EMISSIONS BY SOURCE TYPE (TONS/YEAR) AND PERCENT CONTRIBUTION, 2005

Railyard	Locomotives		Cargo-Handling Equipment		On-Road Trucks		Off-Road Trucks and Stationary Sources		Total
BNSF San Bernardino[38]	10.6	48%	3.7	17%	4.4	20%	0.75	3%	22.0
UP Colton[39]	16.3	99%	NA	NA	0.2	1%	0.05	0.3%	16.5
UP City of Industry[40]	5.9	54%	2.8	26%	2.0	18%	0.3	3%	10.9
UP ICTF/ Dolores[41]	9.8	41%	4.4	19%	7.5	32%	2.0	8%	23.7
UP Commerce[42]	4.9	40%	4.8	40%	2.0	17%	0.4	3%	12.1
UP LATC[43]	3.2	44%	2.7	37%	1.0	14%	0.50	7%	7.3
UP Mira Loma[44]	4.4	90%	NA	NA	0.2	4%	0.2	4%	4.9
BNSF Hobart[45]	5.9	25%	4.2	18%	10.1	42%	3.7	15.5%	23.9
BNSF Watson[46]	1.9	100%	NA	NA	<0.01	<1%	0.04	<1%	1.9

Comment 1-3 Con't

The vast majority of this technology is currently powered by diesel or the combustion of other fossil fuels, which is exacerbating local poor air quality and contributing to the toxic stew that neighboring communities are forced to breathe.

PR 2306 should use the latest inventory of emissions by source type to discern the appropriate facility-wide emission-reduction targets. The Air District has clear authority to reduce emissions from stationary sources. The Railyard ISR should address facility-wide emissions, and in doing so, it will also ensure a more comprehensive approach to protecting communities from the health harms of railyards.

III. The Railyard ISR Should Not Offer Regulatory Off-Ramps for Any Facility.

The suggested compliance exception for reduced throughput facilities contradicts the ISR's original intent and should be removed. The District has no justification for providing this concession to heavily polluting industries, particularly when the South Coast must decrease emissions by an astounding 67 percent above current regulations and air plans to comply with the existing 70 part per billion federal ozone standard. Allowing regulatory carve-outs for any facility also undermines the shared objectives of SCAQMD, CARB, and AB 617 communities by enabling polluting facilities to maintain the status quo while avoiding any action that would help them transition to zero emissions.

Comment 1-4

As staff are aware, railyard facilities in our region have already wreaked havoc on local air quality and harmed the health of thousands living in overburdened neighboring communities. The pollution caused by railyards is a clear environmental justice issue that the District should prioritize resolving. Reduced throughput at a railyard should not result in disproportionately impacted communities being exposed to a steady stream of pollution. No facility should have the option to continue polluting without taking action to clean up their operations.

At the beginning of the rulemaking process, the staff identified the threefold purpose of the rule as follows: 1) to minimize public health impacts on surrounding environmental justice communities; 2) to ensure that projects do not interfere with federal air quality standards; and 3) to ensure that projects meet federal conformity requirements.[3] Now that PR 2306 will cover both new and existing railyards, the rule offers the opportunity to more comprehensively address their public health impacts and impediments to NAAQS (National Ambient Air Quality Standard) attainment. Whether a railyard has seen a shift in activity to other facilities is irrelevant as achieving these goals will require comprehensive actions to reduce pollution at every railyard, not just a subset. If a facility experiences a slowdown in operations, it should still be required to participate in coordinated infrastructure planning and take steps towards a zero-emissions transition to further reduce existing pollution and prevent future spikes as throughput returns.

Comment 1-4 Con't

It is also unclear how the District will measure the average annual throughput for a facility to qualify for the reduced throughput option, as the draft language does not specify a metric. The only suggestion is that a facility can demonstrate reduced throughput in a milestone year preceded by two calendar years of lower throughout compared to the base period.[4] This compliance exemption could potentially apply to some of the heaviest polluting railyards and could perpetuate existing harm and undermine the District's commitments to environmental justice and public health. There is no justification for this exemption, and it should be eliminated.

IV. The Railyard ISR Should Require Facilities to Build Electric Charging Infrastructure to Support Facility-wide Transition to Zero-Emissions.

We are pleased to see that the draft language includes an infrastructure component to support the deployment of zero-emissions technology at railyard facilities. However, the current draft misses an opportunity to catalyze a broad-scale transition to zero-emission infrastructure by only focusing on compliance with the CARB's In-Use Locomotive and ACF rules. We urge the staff to broaden the scope of this component to include infrastructure planning and commitments that can facilitate a transition of the stationary sources to zero emissions.

Comment 1-5

[3] South Coast Air Quality Management District presentation, *Proposed Rule 2306- Indirect Source Rule for New Intermodal Facilities*, (July 30, 2021), slide 24; https://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/pr-2306/pr2306_wgm_1_final.pdf?sfvrsn=10

[4] PR2306 2024 Draft Language (as of April 12, 2024), p.6; https://www.aqmd.gov/docs/default-source/planning/fbmsm-docs/pr2306-draft-rule-language-clean-final.pdf?sfvrsn=6

To ensure a complete shift towards zero-emissions, a facility-wide approach to infrastructure planning is necessary. It is not just locomotives and trucks that need to be considered, as other components of railyard operations like cargo handling equipment and TRU's must also be electrified. Therefore, to address pollution sources from an entire railyard facility, we recommend that in addition to stronger emissions-reduction targets, infrastructure requirements should also focus on a facility-wide approach.

The Railyard ISR is a powerful tool that can help accelerate the development of electric charging infrastructure to move towards zero emissions. We have already seen how effective this approach can be with the District's Warehouse ISR rule, which has successfully led to infrastructure planning and the creation of custom plans, including the development of zero-emission vehicle charging stations. The Railyard ISR needs a similar approach, but not one that is arbitrarily limited to just two technology categories. By broadening the scope of infrastructure planning to cover entire railyards, the rule can better serve its purpose of delivering the cleanest technology at these facilities, as required by the 2022 Air Quality Management Plan[5], by making it mandatory to have the necessary infrastructure to support it.

Comment 1-5 Con't

To ensure that the rule is robust enough to meet the various demands of the South Coast, it should mandate operators to provide precise timelines for when they request utilities to support infrastructure installation and provide evidence that these requests were submitted. This level of detailed planning will ensure that facilities are taking the necessary steps to fulfill commitments made towards ensuring compliance.

V. All New Railyards Should be Zero-Emissions From Day One.

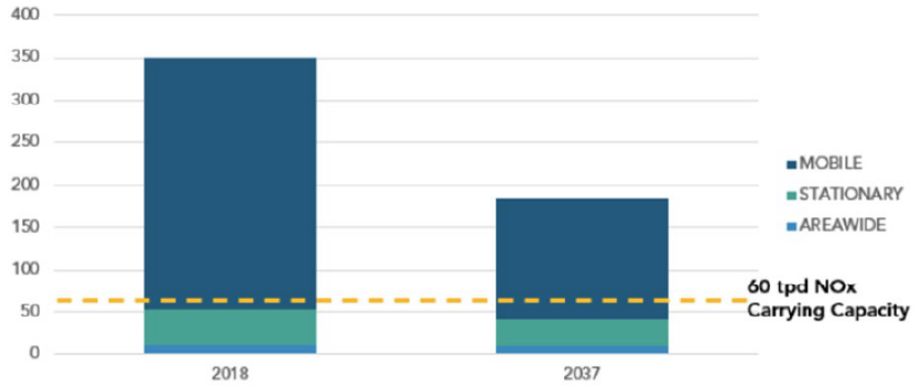
For PR 2306 to be effective, any new railyard built in the District must be zero-emissions from the start. As stated earlier, the South Coast needs to comply with federal mandates to meet the current 70 part per billion ozone standard. To achieve this, the Air District needs to reduce emissions by 67 percent more than the current regulations adopted and approved in previous air plans. The chart below shows the challenge faced by the South Coast in providing clean air to its residents. The gold dotted line represents the range of emissions reductions that must be achieved by 2037 to meet clean air standards in the South Coast Air Basin.

Comment 1-6

According to the 2022 State Implementation Plan, even after adopting several regulations, the South Coast would still have 196 tons per day of NOx emissions in its air. To meet the federally mandated air quality standards, California estimates that it needs to reduce 124 tons per day of NOx emissions, bringing it down to a carrying capacity of 60 tons per day. This reduction is necessary to ensure a healthy environment with clean air.

[5] South Coast Air Quality Management District, 2022 Air Quality Management Plan, p.4-25.

Figure 9 – South Coast Air Basin NOx Emissions under Current Control Program (emissions out to 100 nautical miles)[9]



Comment 1-6 Con't

The South Coast Air Basin is in dire need to reduce emissions. Therefore, no new railyards should be allowed to add to this pollution. It is imperative that any new railyards operate with zero emissions from the beginning. Anything less would only make the federal compliance challenge even more massive, and burden communities with even more pollution.

It is entirely possible to require new railyards to begin operations with zero-emissions locomotives. Recent analysis by the California Air Resources Board (CARB) has shown that the use of zero-emissions trains along routes with steep inclines in the Port of Los Angeles to Barstow region is not only feasible, but in some cases, even more advantageous due to the reduced number of locomotives required to complete the journey.[6] Studies have also demonstrated that electric rail can offer billions of dollars in cost savings due to the reduced cost of electricity compared to diesel.[7] The Biden Administration has also recognized the advantages of zero-emissions (ZE) locomotives, leading to the release of the first-ever national goal for a zero-emissions freight sector and the National Blueprint for Transportation Decarbonization, which recommends the broad electrification of U.S. rail.[8] New railyards in the South Coast region should be equipped with the necessary infrastructure for ZE operations to accommodate this technology.

[6] California Air Resources Board Locomotive Authorization Request to U.S. Environmental Protection Agency (April 22, 2024), Docket ID No. EPA–HQ–OAR–2023–0574, Exhibit A- ZE Locomotive Feasibility Analysis Port of LA to Barstow Report; available at: https://www.regulations.gov/comment/EPA-HQ-OAR-2023-0574-0153.
[7] Popovich, N.D., Rajagopal, D., Tasar, E. et al. Economic, environmental and grid-resilience benefits of converting diesel trains to battery-electric. Nat Energy 6, 1017–1025 (2021). https://doi.org/10.1038/s41560-021-00915-5.
[8] Office of Energy Efficiency & Renewable Energy, *The National Blueprint for Transportation Decarbonization: A Joint Strategy to Transform Transportation,* https://www.energy.gov/sites/default/files/2023-01/the-us-national-blueprint-for-transportation-decarbonization.pdf.

It is therefore counterproductive to have a two-year lag time for new railyards to demonstrate zero-emissions infrastructure planning and reporting. Instead, new railyards should be required to report on infrastructure planning at the inception, as soon as the owner has notified the District of the potential new facility for the region.

Comment 1-6 Con't

VI. Reporting Should be Publicly Available, and Environmental Justice Communities Should Help Decide How Harms Are Addressed.

The District should share all reports and recordkeeping documents with the public to ensure transparency and accountability. If these documents contain private or proprietary information, the entity seeking to protect the information should provide evidence to support their claim. Entities claiming privacy can redact only the information necessary to protect their interests and make the remaining information public to ensure transparency and accountability.

Public access to monitoring and reporting data will make the Rule enforcement more effective by expanding opportunities to identify non-compliance. The current draft lacks a streamlined mechanism for the public to stay informed about changes in ownership and operation, construction of new facilities, initial reporting on facility operations and infrastructure plans, and milestone reporting on emissions reduction targets. Currently, recordkeeping data to verify reports is only available at the District's Executive Officer's request. Staff should change this in the final draft to ensure public access.

Comment 1-7

Freight-impacted communities have demanded a Railyard ISR for a decade to address the harmful emissions from railyards. Community Emission Reduction Plans ("CERPs") for four AB 617 communities identify the Railyard ISR, the expansion of zero-emissions infrastructure, and expanded fenceline monitoring and reporting as critical mechanisms to address the acute localized dangers these facilities pose. There is no reason to prevent the public from accessing key reports and recordkeeping data.

Finally, the District should use fines for non-compliance or failure to meet targets to create community-advised funds. The Rule should incorporate a program that allows impacted communities to have a say in how the District uses these funds to support the deployment of zero-emissions solutions and to address a railyard's impact on public health.

Comment 1-8

***

We look forward to continuing to work with staff to further strengthen this important life-saving rule. Thank you for considering our comments and recommendations.

Comment 1-8 Con't

Thank you,

Yasmine Agelidis
Fernando Gaytan
Earthjustice
707 Wilshire Blvd., Suite 4300
Los Angeles, CA 90017
(213) 766-1060
yagelidis@earthjustice.org
fgaytan@earthjustice.org

Ana Gonzalez
Center for Community Action and Environmental Justice (CCAEJ)
3840 Sunnyhill Drive
Jurupa Valley, CA 92509
ana.g@ccaej.org

Dori Chandler
Coalition for Clean Air (CCA)
617 West Seventh Street, Suite #300
Los Angeles, CA 90017
dori@ccair.org

Taylor Thomas
East Yard Communities for Environmental Justice (EYCEJ)
2317 South Atlantic Blvd.
Commerce, CA 90040
Taylor.eycej@gmail.com

Alison Hahm
Natural Resources Defense Council (NRDC)
1314 Second Street
Santa Monica, CA 90401
ahahm@nrdc.org

Cristhian Tapia-Delgado
Pacific Environment
473 Pine Street, Third Floor
San Francisco, CA 94104
ctapia@pacificenvironment.org

[*Additional Signatories Continued on Next Page*]

Ivette Torres
People's Collective for Environmental Justice (PC4EJ)
22400 Barton Rd., #21 – 296
Grand Terrace, CA 92313
ivette@pc4ej.org

Peter M. Warren
San Pedro & Peninsula Homeowners Coalition (SPPHC)
P.O. Box 1106
San Pedro, CA 90733
pmwarren@cox.net

Yassi Kavezade
Sierra Club
714 W. Olympic Blvd., Suite 1000
Los Angeles, CA 90015
yassi.kavezade@sierraclub.org

Staff Responses to Comment Letter #1:

Response to Comment 1-1

Staff appreciates the organizations' participation in rulemaking and providing comments and feedback throughout the process, as well as assisting staff in engaging with environmental justice (EJ) communities near freight rail yards in the Basin.

Response to Comment 1-2

Please refer to staff responses, below, to Comment 1-3 through Comment 1-8.

Response to Comment 1-3

PR 2306 will assist in attaining both state and federal standards for ozone and fine particular matter. The NOx emission reduction targets included in PR 2306 will mandate any freight rail yard subject to the proposed rule to reduce mobile source emissions associated with its operation as an indirect source, in accordance with South Coast AQMD's authority pursuant to Health and Safety Code Section 40716 (see detailed discussion in Chapter 1 *Legal Authority* section of this report). Compliance with PR 2306 is not limited to emission reductions from specific mobile sources, but from any "applicable mobile source(s)" as defined in the rule and includes all mobile sources that may be operated on or through a freight rail yard to transport or assist in transporting cargo or goods such as cargo handling equipment, drayage trucks, line haul locomotives, switch locomotives, transportation refrigeration units, and/or other on-site support equipment.

On the other hand, PR 2306 emission reduction targets are set at levels to ensure that proportional or more-than-proportional emission reductions will be achieved at facility-level in the South Coast AQMD region relative to emission reductions from implementation of statewide regulations throughout California - specifically the In-Use Locomotive and Advanced Clean Fleets regulations recently adopted by CARB. Although significant emission reductions are projected statewide, CARB regulations will not necessarily result in similar outcomes of emission reductions across the state as compared to each region's "business-as-usual" emissions, i.e., emissions without the recently adopted statewide regulations. With PR 2306, freight rail yard operators must consider how statewide compliance with CARB regulations would interplay with compliance with PR 2306. If statewide compliance with CARB regulations alone would already result in proportional or more-than-proportional emission reductions for a freight rail yard in the South Coast AQMD region, no further action would need to be taken by the operator of such freight rail yard. However, if statewide compliance with CARB regulations alone would result in less-than-proportional emission reductions for a freight rail yard in the South Coast AQMD region, its operator must then obtain and demonstrate additional emission reductions from any or any combination of "applicable mobile source(s)" in order to also comply with PR 2306.

In summary, PR 2306 will, at minimum, ensure that proportional emission reductions occur at levels commensurate with implementation of CARB regulations for freight rail yards within the South Coast AQMD. Compliance with PR 2306 could potentially result in further emission reductions from any mobile sources associated with freight rail yard operations, particularly in the event that statewide compliance with CARB regulations alone does not achieve proportional or greater emission reductions at the applicable freight rail yards as mandated by PR 2306. Please

also refer to staff response to Public Workshop Comment PW-10-c on emission reduction potential.

Response to Comment 1-4

Staff appreciates the comment. There is no exemption in PR 2306 for freight rail yards with reduced throughput. In actuality, freight rail yards with reduced throughput are required to meet or exceed the emission reduction targets, as with other freight rail yards. Please refer to staff response to Public Workshop Comment PW-14 for more details. Moreover, the same reporting requirements on zero emission infrastructure planning, development, and utilization are also applicable to all freight rail yards, whether with reduced throughput or not.

With respect to the concern regarding shifting activities to a different freight rail yard to undermine the effectiveness of the proposed rule, even if the shifting of activities does occur, compliance with the emission reductions target requirements will mean that more emission reductions will be required to be achieved at the other freight rail yard(s) with increased level of throughput and activities. Also, the purpose of the rule has evolved during the rulemaking process. The purpose is stated explicitly in PR 2306 as: *"*The purpose of this rule is to reduce emissions of Nitrogen Oxides (NOx) associated with Freight Rail Yards and the mobile sources attracted to Freight Rail Yards in order to assist in meeting state and federal air quality standards for Ozone and Fine Particulate Matter, and to ensure that proportional or greater emission reductions occur in the South Coast AQMD jurisdiction from implementation of state regulations addressing Freight Rail Yard emission sources."

Finally, PR 2306 defines throughput as "the total number of visits by Railcars that move through a Freight Rail Yard over a set period of time," and "[a] Railcar entering a Freight Rail Yard and then leaving that yard counts as one visit." In order to qualify for the reduced throughput compliance pathway, the operator must first satisfy conditions specified in PR 2306, including demonstrating that their facility's average throughput over a period of three years (milestone year and its two preceding years) has indeed declined from the base period.

Response to Comment 1-5

Staff appreciates the feedback and have added an additional requirement in the preliminary draft rule language related to electrical service upgrade requests based on such feedback. Please also refer to staff responses to Public Workshop Comments PW-2, PW-9, and PW-11 with respect to fuel neutrality for zero emission infrastructure reporting requirements of PR 2306.

PR 2306 requires freight rail yard owners and operators to specify within their initial and milestone infrastructure reports the on- and off-site zero emission infrastructure that will be needed to comply with or support the implementation of state regulations such as In-Use Locomotive and Advanced Clean Fleets, any other zero emission infrastructure requirements and initiatives, as well as control measures for TRUs and CHE in the 2022 State Strategy for the State Implementation Plan. South Coast AQMD recognizes the challenges for zero emission infrastructure development and will continue to explore all possible avenues to help address these challenges.

Response to Comment 1-6

Staff appreciates the recognition expressed in the comment about the magnitude of attainment challenges faced by the South Coast AQMD region, and the need to significantly reduce emissions to protect public health. Additionally, prolonged nonattainment could result in potential federal sanctions, which will negatively impact our region's highway infrastructure funding and the overall economy (please refer to Chapter 4 of this report for more details). Staff also agrees that the region's air quality challenges demand all feasible actions to be taken, and that actions need to be taken by federal, state, and local agencies utilizing our respective authorities. PR 2306 is developed by carefully considering South Coast AQMD's legal authority (please refer to Chapter 1 *Legal Authority* section of this report), and it is designed as part of the suite of AQMP Facility Based Mobile Source Measures aimed at collectively addressing emissions related to freight transportation.

Please refer to staff responses to Public Workshop Comments PW-3-a and PW-16, respectively, relative to technological feasibility for all freight rail yard sources of emissions and limitations for South Coast AQMD to regulate specific mobile sources. South Coast AQMD continues to work with technology developers and other stakeholders in the demonstration and deployment of various zero-emission mobile-source technologies.

Finally, as with other freight rail yards, the owner and operator of a new freight rail yard are required to submit an initial report not only on any planning, but also on any development and utilization of zero emission infrastructure during the base period (i.e., the first two full calendar years after the new freight rail yard begins operation). Any subsequent updates are also required to be reported for each milestone year.

Response to Comment 1-7

Please refer to staff response to Public Workshop Comment PW-3-b. Development of specific approaches to release information to the public from PR 2306 will be developed during rule implementation if the rule is adopted and put into effect.

With regards to any business confidential information submitted as part of PR 2306 compliance reporting, South Coast AQMD will follow the agency's *Guidelines for Implementing the California Public Records Act* in processing information that is potentially confidential. The guidelines document is available at: https://www.aqmd.gov/docs/default-source/default-document-library/Guidelines/pra-guidelines.pdf.

Response to Comment 1-8

With regards to penalties for rule violation, please refer to staff response to Public Workshop Comment PW-8-a. The use of any future potential monetary penalty payments from a violation of PR 2306 or 316.2 (if the proposed rules are adopted and become effective) will be subject to Governing Board approval.

Comment Letter #2 from the California Air Resources Board

CALIFORNIA AIR RESOURCES BOARD

Gavin Newsom, Governor
Yana Garcia, CalEPA Secretary
Liane M. Randolph, Chair

June 17, 2024

Ian MacMillan, Assistant Deputy Executive Officer
C/O Cindy Guzman De La Rocha
Planning, Rule Development, and Implementation
South Coast AQMD
21865 Copley Drive
Diamond Bar, California 91765
Submitted via: RailyardISR@aqmd.gov

RE: Comments of the California Air Resources Board Regarding Proposed Rule 2306 by the South Coast Air Quality Management District

Dear Assistant Deputy Executive Officer MacMillan:

The California Air Resources Board (CARB) recognizes the need for the South Coast Air Quality Management District (District) to achieve oxides of nitrogen (NOx) emission reductions from locomotives and other rail yard sources. The District is in extreme non-attainment for ozone and needs NOx reductions for the State Implementation Plan. Five out of six of the current Community Emission Reduction Plans in the District's most impacted areas state that reducing emissions from either rail yards or locomotives is a priority for the communities.

CARB staff are currently reviewing Proposed Rule 2306 – Freight Rail Yards (Proposed Rule) and will work with the District to address questions as they arise. CARB's review will include identification of emission reductions that will be surplus to CARB regulations, potential impacts to other areas of the State, and potential changes in operator behavior created by the Proposed Rule. Comment 2-1

CARB appreciates the opportunity to comment on the Proposed Rule to the District. We look forward to continuing to work with you in creating an enforceable Rule.

Sincerely,

Heather Arias, Chief, Transportation and Toxics Division

cc: Steven S. Cliff, Ph.D., Executive Officer, California Air Resources Board
Edie Chang, Deputy Executive Officer, Planning, Freight and Toxics

arb.ca.gov 1001 I Street • P.O. Box 2815 • Sacramento, California 95812 helpline@arb.ca.gov

Staff Response to Comment Letter #2:

Response to Comment 2-1

Staff appreciates continued partnerships with CARB, including but not limited to CARB's feedback on PR 2306, in addressing South Coast AQMD's attainment needs and mitigation of the impacts of rail yard emissions on South Coast AQMD's EJ communities. With respect to emission reductions surplus of CARB regulations, please refer to staff's response to Public Workshop Comment PW-10-c. With respect to potential impacts of PR 2306 to other areas of the state, please refer to staff responses to Public Workshop Comments PW-1 and PW-10-c. Staff welcomes opportunities for further discussion on these responses, any further comment related to operator behavior, and any additional topics of interest.

Comment Letter #3 from the Association of American Railroads and the American Short Line and Regional Railroad Association

ASSOCIATION OF AMERICAN RAILROADS

American Short Line and Regional Railroad Association

June 18, 2024

Sent via Electronic Mail Only

Mr. Ian McMillan
Assistant Deputy, Executive Officer
South Coast Air Resource Board
imacmillan@aqmd.gov

Dear Mr. McMillan:

This month the South Coast Air Quality Management District ("SCAQMD") held a public workshop on June 4, 2024, to discuss Proposed Rules 2306 and 316.2 ("Proposed Rules"), and proposed the draft regulatory package. *See* https://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/pr-2306/pdsr_pr2306-public-release-final.pdf?sfvrsn=2/. SCAQMD relies on authority granted to it under AB 617, governing Community Emissions Reduction Plans ("CERPs"), in promulgating this regulation. The Proposed Rules apply to owners and operators of proposed, new, and existing freight rail yards within the air district, and also propose fees associated with the implementation of PR 2306.

Comment 3-1

Although staff have requested public comment on the Proposed Rules by June 18, 2024, the draft documentation lacks adequate detail and supporting information to enable meaningful comment. As a result, today we provide limited comments focusing on the adequacy of the California Environmental Quality Act ("CEQA") analysis as applied to PR 2306. We look forward to reviewing and commenting on the formal and complete regulatory package when publicly available.

The 2016 and 2022 ACMPs Fail to Meet the Standards Required By CEQA.

CEQA requires the preparation of an environmental impact report ("EIR") in order "to identify the significant effects on the environment of a project, to identify alternatives to the project, and to indicate the manner in which those significant effects can be mitigated or avoided." Cal. Pub. Res. Code ("PRC"), § 21002.1; *see also* 14 Cal. Code Regs. ("CEQA Guidelines") §§ 15000-15387. The primary purpose of CEQA is to require state agencies to consider and disclose to the public the environmental implications of their actions, to foster an informed and transparent public decision-making process. For the reasons explained below, the 2016 and 2022 Air Quality Management Plans ("the AQMPs"), on which SCAQMD relies to establish compliance with CEQA, fail to adequately evaluate the impacts of the Proposed Rule. This is hardly surprising since the AQMPs were prepared years before the Proposed Rules were finalized.

Comment 3-2

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While CEQA sometimes allows an agency to rely on a Programmatic EIR ("PEIR") to satisfy its statutorily mandated environmental review obligations, those situations are limited. Notably, it is the substance and details of PEIRs that dictate overall compliance with CEQA. *See, e.g., Citizens for a Sustainable Treasure Island v. San Francisco*, 227 Cal. App. 4th 1036 (2014).

In its draft Staff Report ("Draft Report"), SCAQMD asserts that "PR 2306 is a later activity within the scope of the programs approved earlier in the 2022 [] AQMP and 2016 AQMP[.]" *See* Draft Staff Report at 4-17. The Draft Report further states that the prior AQMPs "adequately describe the activities associated with implementing PR 2306 such that no new environmental document will be required." *Id.* While the supporting analysis for this conclusion is not yet available, we write to express our position that it is inappropriate for SCAQMD to rely on the prior AQMPs in support of PR 2306.

Comment 3-2 Con't

The fundamental purpose of an EIR is "to provide public agencies and the public in general with detailed information about the effect which a proposed project is likely to have on the environment." PRC § 21061. To that end, the EIR "shall include a *detailed statement* setting forth . . . [a]ll significant effects on the environment of the proposed project." PRC § 21100, subd. (b)(1) (emphasis added).

The AQMPs rely heavily on the introduction and expansion of infrastructure to meet the specified air quality goals and NOx emissions reduction targets. However, there is no ACMP PIER Electrical Section (4.3) regarding how much new electricity would be needed for mobile and other sources operating within freight railyards. Also, the electricity that may be needed for the indirect sources that operate within the SCAQMD and that would be attracted or travelled to individual freight railyards (e.g., trains that are electrified via catenary that travel from the SCAQMD borders to the individual FRYs) was not considered.

Comment 3-3

In addition, the SCAQMD staff has estimated the PR 2306 NOx emissions reductions – on average annually – at about nine (9) tons per day between rule implementation (approximately 2027) through 2050. The 2022 AQMP PEIR (November 2022) was unable to estimate the potential emission reductions and indicated that was yet to be determined. But a PEIR must clearly and separately identify potential impacts and mitigation measures. Those mitigation measures must be "discussed separately and the reasons for choosing one over the others should be stated." *Sacramento Old City Assn. v. City Council*, 229 Cal. App. 3d 1011, 1027 (1991). SCAQMD has failed to undertake that analysis here with respect to railyards.

Comment 3-4

Finally, the 2022 AQMP PEIR Electrical Section (4.3) assesses future electricity needs, broadly indicating there would be an increase in electricity demand beyond then-current estimated growth projections. The Electrical Section of the Draft Report in support of the Proposed Rules estimates the specific increases in electrical demand for the Ports of Los Angeles and Long Beach to be approximately 100 MW to 300 MW. But it failed to account for freight railyards and the indirect sources they attract within the SCAQMD. Even absent these sources, the Draft Report concludes that the potential increase in electricity usage quantified would exceed baseline electricity consumption at the Ports by up to 11 percent. Further, even

Comment 3-5

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after mitigation measures are applied, electricity demand impacts would remain significant. However, no mitigation associated with this increase is discussed in detail. This analysis fails to fulfill SCAQMD's obligations under CEQA.

Comment 3-5 Con't

For the reasons identified above, we ask that SCQAMD staff reconsider its determination that a detailed and complete CEQA is unnecessary for the Proposed Rule and allow the public and regulated entities – including railroads – to consider and comment on a complete EIR, as the statute requires.

Respectfully,

Kathryn D. Kirmayer
Theresa L. Romanosky
Association of American Railroads
425 Third Street, SW
Washington, D.C. 20024

Allen Doyel
BNSF Railway Company
2500 Lou Menk Drive
Ft. Worth, TX 76131

Rami Hanash
Union Pacific Railroad Co.
1400 Douglas St.
Omaha, NE 68179

Sarah Yurasko
American Short Line and Regional Railroad Association
50 F Street NW, Suite 500
Washington, D.C. 20001

CC Ms. Zoya Banan
Acting Program Supervisor
South Coast Air Quality Management District
zbanan@aqmd.gov

Ms. Elaine Shen
Planning and Rules Manager
South Coast Air Quality Management District
eshen@aqmd.gov

425 3rd Street SW, Suite 1000 I Washington, DC 20024 I P (202) 639-2100 I www.aar.org

Ms. Barbara Radlein
Panning and Rules Manager
South Coast Air Quality Management District
bradlein@aqmd.gov

Ms. Daniel C. Hernandez
Assistant Air Quality Specialist
South Coast Air Quality Management District

Ms. Cindy Guzman De La Rocha
Assistant Air Quality Specialist
South Coast Air Quality Management District

Mr. Kevin Ni
Program Supervisor
South Coast Air Quality Management District
kni@aqmd.gov

Ms. Jivar Afshar
Air Quality Specialist
South Coast Air Quality Management District
jafshar@aqmd.gov

Staff Response to Comment Letter #3:

Response to Comment 3-1

Staff appreciates the stakeholder's input and feedback on the Preliminary Draft Staff Report for PR 2306 and PR 316.2. The commenter's claim that PR 2306 is reliant upon authority granted to South Coast AQMD under AB 617 is incorrect. The commenter is referred to the Chapter 1 *Legal Authority* section of this report for a description of South Coast AQMD authority related to PRs 2306 and 316.2. The commenter also claims that the draft documentation lacks adequate detail and supporting information to enable meaningful comment, but does not specify what kind of information is lacking. This comment is vague and unsubstantiated. The preliminary draft staff report included a background of the rule, the rationale for regulating the affected industry or sources in the manner proposed by the rule, the potential impacts of the proposed rule on the affected industry or sources, potential emission reductions expected from the rule, a description of control technologies and alternatives, draft findings of necessity, authority, clarity, consistency, and non-duplication, as well as references relied upon for the analysis. The full preliminary draft rule language was also made available, along with a detailed Calculation Methodology, an associated data appendix for the Calculation Methodology, and supplementary information on fee rates proposed in PR 316.2

The Preliminary Draft Staff Report also described South Coast AQMD's intent and approach to the California Environmental Quality Act (CEQA) analysis for the proposed rules. A detailed environmental analysis has been prepared and is now available for review in this Staff Report, Appendix A – Detailed CEQA Analysis.

Response to Comment 3-2

PR 2306 is a new rule which is designed to memorialize and implement Control Measures MOB-02A and MOB-02B which were previously adopted in the 2022 AQMP and Control Measure MOB-02 which was previously adopted in the 2016 AQMP. The environmental impacts of the 2022 AQMP and all of its control measures, including Control Measures MOB-02A and MOB-02B, were evaluated in a Final Program Environmental Impact Report (EIR) which was certified by the South Coast AQMD Governing Board on December 2, 2022. Similarly, the environmental impacts of the 2016 AQMP and all of its control measures, including Control Measure MOB-02, were evaluated in a Final Program EIR which was certified by the South Coast AQMD Governing Board on March 3, 2017.

CEQA Guidelines Section 15187 requires South Coast AQMD to perform an environmental analysis when proposing to adopt a new rule or regulation requiring the installation of air pollution control equipment, or establishing a performance standard, which is the case with PR 2306. CEQA Guidelines 15187(c) requires the environmental analysis to include at least the following information:

- An analysis of reasonably foreseeable environmental impacts of the methods of compliance;
- An analysis of reasonably foreseeable mitigation measures relating to those environmental impacts; and

• An analysis of reasonably foreseeable alternative means of compliance with the rule or regulation, which would avoid or eliminate the identified environmental impacts.

In analyzing the potential environmental impacts of PR 2306 as required by CEQA Guidelines Section 15187, South Coast AQMD finds that, pursuant to CEQA Guidelines Section 15162, that PR 2306 does not contain new information of substantial importance which was not known and could not have been known at the time of certification of: 1) Final Program EIR for the 2022 AQMP; and 2) the Final Program EIR for the 2016 AQMP. [CEQA Guidelines Section 15162(a)(3)]. Therefore, a Subsequent EIR is not required.

Instead, a detailed environmental analysis as required by CEQA Guidelines Section 15187 has been provided in Appendix A of this Staff Report which examines whether PR 2306 qualifies as a later activity within the scope of the previous analyses conducted in the certified Final Program EIRs for the 2022 AQMP and the 2016 AQMP pursuant to CEQA Guidelines 15168(c) – Use with Later Activities. Specifically, Appendix A: 1) compares the proposed later activity of PR 2306 with the previously approved programs, Control Measures MOB-02A and MOB-02B which were adopted in the 2022 AQMP and Control Measure MOB-02 which was adopted in the 2016 AQMP; 2) summarizes the environmental impacts analyzed in the Final Program EIRs for the 2022 AQMP and 2016 AQMP for Control Measures MOB-02A, MOB-02B, and MOB-02; 3) identifies the differences, if any, between the analyses of environmental impacts in the Final Program EIRs for 2022 AQMP and 2016 AQMP for the applicable control measures and PR 2306 and, as needed, identifies any other impact areas which may require further analysis; and 4) considers the evidence and determines whether: a) PR 2306 is a later activity within the scope of the programs approved earlier for the 2022 AQMP and 2016 AQMP; and b) the Final Program EIRs for the 2022 AQMP and the 2016 AQMP adequately describe the later activity of PR 2306 for the purposes of CEQA such that no new environmental document is~~will be~~ required.

The analysis in Appendix A determined that the physical changes expected as a result of implementing PR 2306 are the same as those contemplated for Control Measures MOB-02A and MOB-02B of the 2022 AQMP and Control Measure MOB-02 of the 2016 AQMP which were analyzed under the Final Program EIR for the 2022 AQMP and Final Program EIR for the 2016 AQMP, respectively.

Owners or operators of the freight rail yards that will be subject to PR 2306 have not provided site-specific details regarding any additional potential modifications and associated environmental impacts that could potentially occur at individual freight rail yard locations to comply with PR 2306 beyond what has been previously forecasted and analyzed in accordance with CEQA Guidelines Section 15144 in the Final Program EIRs for the 2022 AQMP and 2016 AQMP. Please see Appendix A: Detailed CEQA Analysis which summarizes the prior environmental analyses conducted in the Final Program EIRs for the 2022 AQMP and 2016 AQMP and demonstrates that PR 2306 constitutes a later activity of these previously approved programs (i.e., 2022 AQMP and 2016 AQMP) under CEQA Guidelines Section 15168(c)(3).

Response to Comment 3-3

Both the Final Program EIR for the 2022 AQMP and the Final Program EIR for the 2016 AQMP analyzed potential infrastructure and electricity needs associated with zero emission equipment relying on electricity to operate at freight rail yards and the utilities producing additional electricity

to satisfy increased demand. Control Measures MOB-02A and MOB-02B were analyzed in Final Program EIR for the 2022 AQMP which specifically identified energy impacts (e.g., increased demand for electricity (for vehicles, rail, and equipment) and natural gas associated with infrastructure development required to achieve emission reductions at existing rail yards and intermodal facilities from on-road heavy-duty vehicles, off-road equipment, and locomotives. Table A-9 in Appendix A provides a summary of the electricity use estimates that were conducted in the Final Program EIR for the 2022 AQMP. The estimates show that vehicles affected by Control Measures MOB-02A and MOB-02B contribute to an estimated increase of Basin-wide annual electricity use by 160.5 gigawatt hours (GWh) per year. The Final Program EIR for the 2022 AQMP concluded that implementation of 2022 AQMP control measures (including but not limited to mobile sources) would increase total Basin-wide electricity demand 11 percent over 2020 consumption but the overall potential increase in electricity demand could be higher. Because the energy impacts from implementing the 2022 AQMP were expected to be significant for electricity demand, feasible mitigation measures E-1 to E-7 for reducing impacts related to potential electricity demand were adopted the Final Program EIR for the 2022 AQMP (see pp. 4.3-21 to 4.3-22 of the Final Program EIR for the 2022 AQMP). Even after mitigation measures E-1 to E-7 were applied, electricity demand impacts would remain significant.

Similarly, Control Measure MOB-02 was analyzed in the Final Program EIR for the 2016 AQMP which also identified energy (electrical/natural gas demand) associated with constructing the necessary infrastructure to provide support for new cleaner equipment or vehicles and accelerating the penetration of zero and near–zero emission locomotives. The Final Program EIR for the 2016 AQMP similarly anticipated that the mobile source control measures in the 2016 AQMP, including Control Measure MOB-02, would increase the electricity demand in the Basin, and the analysis relied on Basin-wide electricity use to evaluate the potential energy impacts from electricity demand. The anticipated shift of cars, trucks, off-road vehicles, and marine vessels from gasoline and diesel fuels to electricity was projected to create an additional electrical load demand. Because the energy impacts from implementing the 2016 AQMP were expected to be significant for electricity demand, feasible mitigation measures E-1 to E-7 for reducing impacts related to potential electricity demand were adopted the Final Program EIR for the 2016 AQMP (see pp. 4.2-24 of the Final Program EIR for the 2016 AQMP). Even after mitigation measures E-1 to E-7 were applied, electricity demand impacts would remain significant.

In addition, it is important to note that PR 2306 is intended to supplement, but not duplicate, the local implementation of CARB's In-Use Locomotive and Advanced Clean Fleets Regulations within South Coast AQMD by requiring all freight rail yards to meet set emission reductions targets for milestone years. Moreover, as part of regulatory development and adoption process, CARB examined the environmental impacts associated with implementing each regulation by preparing CEQA documents which evaluated all of the environmental topic areas in Appendix G of the CEQA Guidelines, including energy. Specifically, on April 27, 2023, CARB certified a Final Environmental Analysis (State Clearinghouse No. 2022090408)[151] which examined the environmental impacts associated with implementing the In-Use Locomotive Regulation. Similarly, on August 28, 2023, CARB certified a Final Environmental Analysis (State

[151] CARB, 2023. Final Environmental Analysis for the Proposed In-Use Locomotive Regulation, April 14, 2023

Clearinghouse No. 2021030340) which examined the environmental impacts associated with implementing the Advanced Clean Fleets Regulation.[152]

The CEQA analysis for PR 2306 is not required to repeat or duplicate the environmental analyses previously conducted by CARB for these two adopted regulations. Instead, Appendix A incorporates these documents by reference in accordance with CEQA Guidelines Section 15150. Lastly, after CARB adopted their In-Use Locomotive and Advanced Clean Fleets Regulations, CARB published a detailed Fact Sheet "Yes, the California grid can handle electrification of all switchers in all railyards" which analyzes the energy and power requirements of locomotives (and a cruise ship at berth), and California grid capacity. The results indicated that if all switchers in California were battery electric and charged by the grid, they will account for about 0.1 to 0.2 percent of the 2022 California grid capacity.[153] CARB's analysis concluded that, "In terms of power, energy, and land requirements, challenges of charging infrastructure for battery electric switchers are small compared to the current infrastructure capacity." However, according to CARB's analysis in their Technical Support Document on Zero Emission Conversions in Appendix C of CARB's In-Use Locomotive Regulation[154], which provides further discussion on the potential conversion of existing diesel locomotives to zero emission locomotives, zero emission line haul locomotives are expected to rely mainly on hydrogen fuel cells as the primary energy source instead of battery electric locomotives being recharged from the grid and/or local power generation. Thus, the actual electrical demand for zero emission locomotive conversions may be less than CARB's initial projections. CARB has indicated that Appendix C is an introduction to the topic of zero emission conversions and that a more detailed technical analysis will be conducted in technical assessment which is scheduled for 2027.

Response to Comment 3-4

Both the 2022 AQMP and the 2016 AQMP provided estimates for NOx emission reductions which reflected the best information available at the time. The Final Program EIR for the 2022 AQMP concluded that the implementation of all of the control measures in the 2022 AQMP would result in an overall reduction in NOx emissions over the long-term (an environmental benefit) but with potentially significant secondary impacts for the following environmental topic areas: air quality and greenhouse gas (GHG) emissions, energy, hazards and hazardous materials, hydrology and water quality, noise, and solid and hazardous waste. Specific to the implementation of Control Measures MOB-02A and MOB-02B, the Final Program EIR for the 2022 AQMP analyzed and concluded potentially significant impacts to the environmental topic areas of air quality from construction, energy, hazards and hazardous materials, noise, and solid and hazardous waste.

In addition, the Final Program EIR for the 2016 AQMP concluded that the implementation of all of the control measures in the 2016 AQMP would result in an overall reduction in NOx emissions

[152] CARB, 2023. Final Environmental Analysis for the Proposed Advanced Clean Fleets Regulation, April 23, 2023.

[153] CARB, 2023. Fact Sheet "Yes, the California grid can handle electrification of all switchers in all railyards." Published June 28, 2203, https://ww2.arb.ca.gov/resources/fact-sheets/yes-california-grid-can-handle-electrification-all-switchers-all-railyards.

[154] CARB, 2023. In-Use Locomotive Regulation, Appendix C: Technical Support Document: Zero Emission Locomotive Conversion, March 1, 2023, pp. 12-13, https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/15dayappc.pdf.

over the long-term (an environmental benefit) but with potentially significant secondary impacts for the following environmental topic areas: aesthetics, air quality and greenhouse gas emissions, energy, hazards and hazardous materials, hydrology and water quality, noise, solid and hazardous waste, and transportation and traffic. Specific to the implementation of Control Measures MOB-02, the Final Program EIR for the 2016 AQMP analyzed and concluded potentially significant impacts to the environmental topic areas of air quality from construction, energy, noise, and solid and hazardous waste.

CEQA requires that feasible mitigation measures be applied to reduce or eliminate potentially significant impacts and the Final Program EIRs for the 2022 AQMP and 2016 AQMP adopted a suite of feasible mitigation measures for the topics of construction air quality, energy, noise, and solid and hazardous waste. In addition, Mitigation, Monitoring and Reporting Plans were prepared and adopted with the Final Program EIRs for the 2022 AQMP and the 2016 AQMP pursuant to Public Resources Code Section 21081.6 and CEQA Guidelines Section 15097.

Appendix A of this report contains a section which is dedicated to summarizing these environmental topic areas concluded in the Final Program EIRs for the 2022 AQMP and 2016 AQMP to have significant impacts. For every topic area identified as having significant impacts, a summary of the mitigation measures that were adopted in Final Program EIRs for the 2022 AQMP and 2016 AQMP is also provided.

Finally, Table 3-5 of the ~~Draft~~ Final Staff Report provides updated estimated NOx emission reductions that are projected to be achieved by South Coast AQMD implementing PR 2306 plus CARB implementing their In-Use Locomotive and Advanced Clean Fleets Regulations. While these estimates contain updated information relative to what was presented previously, the estimates of NOx emission reductions presented in Table 3-5 do not change the previously conducted analyses and conclusion of adverse environmental impacts in South Coast AQMD's Final Program EIRs for the 2022 AQMP and 2016 AQMP or CARB's Final Environmental Analyses for the In-Use Locomotive and Advanced Clean Fleets Regulations.

Response to Comment 3-5

The Final Program EIR for the 2022 AQMP estimated an increase of approximately 11 percent over 2020 consumption of electricity in the Basin, and also indicated that this estimate did not take into account the electricity that may be needed to operate additional air pollution control equipment or to convert combustion equipment to fully electric. Thus, the analysis acknowledged that the overall potential increase in electricity demand could be higher. This increase, along with the increases in electricity associated with other state programs and mandates, was expected to exceed the electrical generating capacity of the system.

In addition, the Final Program EIRs for the 2022 AQMP and 2016 AQMP acknowledged and analyzed the potential electricity impacts associated with infrastructure and operation of indirect sources such as on-road heavy-duty vehicles, off-road equipment, and locomotives associated with implementing Control Measures MOB-02A and MOB-02B from the 2022 AQMP and Control Measure MOB-02 from the 2016 AQMP.

Because the energy impacts from implementing the 2022 AQMP were expected to be significant for electricity demand, feasible mitigation measures E-1 to E-7 for reducing impacts related to potential electricity demand were adopted in the Final Program EIR for the 2022 AQMP.

Similarly, because the energy impacts from implementing the 2016 AQMP were expected to be significant for electricity demand, feasible mitigation measures E-1 to E-7 for reducing impacts related to potential electricity demand were adopted in the Final Program EIR for the 2016 AQMP. Please also see Response to Comment 3-3.

Regarding the comment suggesting that an EIR needs to be prepared, please see Response to Comment 3-2.

Comment Letter #4 from the Coalition for Clean Air

June 17th, 2021

Members of the Governing Board
South Coast Air Quality Management District (SCAQMD)
21865 Copley Drive
Diamond Bar CA 91765

Re: Support for strengthening and adopting Proposed Rules 2306 and 316.2 (Freight Rail Yards Indirect Source Review Rule)

Dear Chair Delgado and members of the SCAQMD Governing Board,

The Coalition for Clean Air supports the final approval of Rules 2306 and 316.2 the Freight Rail Yards Indirect Source Review (ISR) rule. While the rulemaking for this began in earnest in 2017, the need to address rail yard pollution stretches back over a century. The South Coast Air Basin's persistent extreme nonattainment of the National Ambient Air Quality Standards (NAAQS), a threat of federal sanctions, and the enactment of 2017's AB 617 stress the need for emission reductions from the goods movement sector. Passing a robust ISR for rail yards will help the South Coast basin achieve a reduction in smog-forming nitrogen oxides of 9 tons per day--almost 10% of what is required to meet the 1997 standard for ozone.[1] Comment 4-1

While we support the approval of Rules 2306 and 316.2, we urge the South Coast Air Management District ("the District") to implement the strongest rule possible. Basing the rule off of proportional California Air Resources Board (CARB) compliance is a good start, however, we would prefer to see a rule that goes above and beyond CARB's rules. A strong rule would include emissions targets from all sources of emissions that rail yards attract--including cargo handling equipment and transportation refrigerated units (TRUs)--and go beyond compliance with CARB's In-Use Locomotive and Advanced Clean Fleet rules.

The air district has legal authority to implement these rules and has been given such by Congress in 1977 and confirmed in the 9th Circuit Court of Appeals in 2010. South Coast's own counsel believes that it has the authority to act in this manner (see, "Office of General Counsel Memorandum" including as addendum). South Coast AQMD has successfully adopted PR 2305, the Warehouse ISR Rule, in 2021 and the San Joaquin Air Pollution Control District adopted an ISR in 2005, both of which have given the market the strong signal it needs to adequately clean up air pollution associated with warehouses and new development. Comment 4-2

[1] https://www.latimes.com/environment/story/2024-02-04/epa-poised-to-reject-southern-california-smog-plan

Now is the perfect time to implement such a rule. The Federal Transit Administration, which analyzes the physical health of transit capital around the country has determined that 43% of California's transit capital assets--including rail--are at or past their useful life. Operating a train beyond its useful life of 25 years can lead to equipment failure. With the average age of California's rail fleet at 24 years, now is the perfect time for railroads to invest in new zero emissions equipment—ensuring the safe and reliable movement of goods.[2]

Comment 4-3

To pass a robust rule, we believe PR 2306 must be strengthened in the following specific ways:

I. **The District must use its authority over stationary sources to develop more aggressive, facility-wide, emission reduction targets —not limited to just locomotives and trucks as governed by state rules.**

Emissions reductions targets should be set for rail yard facilities as a whole to address the entire impact that rail yard facilities have on local public health--including impacts from pollution and noise--and regional nonattainment of federal and state standards. An Indirect Source Review rule should account for all pollution attributed to the stationary source, i.e. the rail yard--rather than exclusively on emissions from locomotives and trucks, with other emission sources being an optional "sprinkle" of emissions reduction benefits. The current ISR will only require the rail yards to do what is already mandated by statewide rules and nothing else. The Ninth Circuit has interpreted this authority as requiring emissions reductions that are "site-based" rather than "engine" or "vehicle-based." PR 2306 should use a site-based approach to set emission-reduction targets looking at all emissions the facility draws to the region. Rail yards are major hubs of activity and significant sources of nitrogen oxides (NOx), particulate matter (PM), and other pollutants contributing to the region's poor air quality. Polluting mobile sources operating at these facilities, including trains, trucks, TRUs, and cargo handling equipment, each contribute to overall facility emissions. PR 2306 can use the latest inventory of emissions by source type to discern the appropriate facility-wide emission-reduction targets.

Comment 4-4

II. PR 2306 should eliminate unnecessary regulatory off-ramps for rail yard facilities claiming reduced throughput.

The suggested compliance exemption for reduced throughput facilities contradicts the ISR's original intent and should be removed. Allowing regulatory carve-outs for any facility undermines the objectives of SCAQMD, CARB, and AB 617 communities by enabling rail yards to maintain the status quo, while avoiding any action that would help them transition to zero emissions. No facility should have the option to continue polluting without taking action to clean up their operations. A comprehensive, coordinated effort across all rail yards in the District is necessary to achieve pollution reduction, even if activity shifts between facilities at any given time. It is also unclear how the District would measure the average annual throughput for a facility to qualify for the reduced throughput option, as the draft language does not specify a metric. The only suggestion is that a facility can demonstrate reduced throughput in a milestone year preceded by two calendar years of lower throughput compared to the base period.[3] This compliance exemption could potentially apply to some of the heaviest polluting rail yards and could

Comment 4-5

[2] https://www.lao.ca.gov/Publications/Report/3860

[3] *PROPOSED RULE 2306 FREIGHT RAIL YARDS "Second Draft Preliminary Rule Language."* aqmd.gov/docs/default-source/planning/fbmsm-docs/pr2306-draft-rule-language-clean-final.pdf?sfvrsn=6. Accessed 13 June 2024. Page 6

perpetuate existing harm and undermine the District's commitments to environmental justice and public health. There is no justification for this exemption, and it should be eliminated.

Comment 4-5 Con't

III. PR 2306's infrastructure component should require commitments supporting a facility-wide transition to zero-emissions.

Rail yards should each have infrastructure plans in place for how they will reach zero-emissions goals, what load is required, and how much renewable energy they can install to reduce impacts to the grid, in collaboration with their utility provider. Infrastructure requirements should be focused on a facility-wide approach, considering other energy demands from cargo-handling equipment, trucks and TRUs. The rail yard ISR is a powerful tool to accelerate the development of electric charging infrastructure. The District's Warehouse ISR rule has successfully led to infrastructure planning and the creation of custom plans, including the development of zero-emission vehicle charging stations and localized renewable energy installations. The rule should mandate operators to provide precise timelines for when they request utilities to support infrastructure installation and provide evidence that these requests were submitted.

Comment 4-6

IV. The rail yard ISR Should Require Facilities to Build Infrastructure to Support Facility-wide Transition to Zero-Emissions.

We are glad to see that the draft language includes an infrastructure component to support the deployment of zero-emissions technology at rail yard facilities. The current draft must do more to catalyze a broad-scale transition to zero-emission infrastructure. We urge the staff to broaden the scope of this component to include infrastructure planning and commitments that can facilitate a transition of the stationary source to zero emissions, including possible on-site deployment of renewable energy.

Comment 4-7

V. PR 2306 should require new rail yard facilities to start at zero-emissions operations.

With current technology available and with the milestones as suggested by PR 2306 there should be adequate time for new rail yards to comply fully with a zero-emissions operation. State law requires the district to implement all feasible measures to meet air quality standards. Thanks to technological advancements, it is now possible to have a zero-emission rail yard. With federal sanctions for non-attainment already a possibility, new rail yards should not add to our existing pollution burden. South Coast needs to comply with federal mandates to meet the current 70 part per billion ozone standard. To achieve this, the District needs to reduce emissions by 67 percent more than the current regulations adopted and approved in previous plans. Proven technologies such as catenary, third rail, and non-locomotive electric-battery train systems should be considered. Analysis by the California Air Resources Board (CARB) and the Biden Administration, through its National Blueprint for Transportation Decarbonization, show that transition to zero emissions rail is both technologically and economically feasible and also necessary for public health and to address our carbon emissions.[4] [5] It is counterproductive to have a two-year lag time for new rail yards to demonstrate zero-emissions

Comment 4-8

[4] California Air Resources Board Locomotive Authorization Request to U.S. Environmental Protection Agency (April 22, 2024), Docket ID No. EPA–HQ–OAR–2023–0574, Exhibit A- ZE Locomotive Feasibility Analysis Port of LA to Barstow Report; available at: https://www.regulations.gov/comment/EPA-HQ-OAR-2023-0574-0153.

[5] Office of Energy Efficiency & Renewable Energy, The National Blueprint for Transportation Decarbonization: A Joint Strategy to Transform Transportation, https://www.energy.gov/sites/default/files/2023-01/the-us-nationalblueprint-for-transportation-decarbonization.pdf.

infrastructure planning and reporting. Instead, new rail yards should be required to report on infrastructure planning at the inception, as soon as the owner has notified the District of the potential new facility for the region.

Comment 4-8 Con't

VI. PR 2306 should empower environmental justice communities with information access, including emissions reporting, and a role in making decisions on how to best address the impact of offending facilities.

The District should share all reports and recordkeeping documents with the public to ensure transparency and accountability. Public access to monitoring and reporting data will make enforcement of the rule more effective by expanding opportunities to identify non-compliance. Using CalEnviroScreen or another trusted and accessible software for data sharing would be invaluable. If these documents contain private or proprietary information, the entity seeking to protect the information should provide evidence to support their claim. As required under the California Public Records Act, the district can redact the information necessary to protect confidential business information and make the remaining information public to ensure transparency and accountability. The public should be informed about changes in ownership and operations, construction of new facilities, infrastructure plans, and milestone reporting on emissions reduction targets, and have access to key reports and recordkeeping. Community Emission Reduction Plans ("CERPs") for four AB 617 communities identify the rail yard ISR, the expansion of zero-emissions infrastructure, and expanded fenceline monitoring and reporting as critical mechanisms to address the acute localized dangers these facilities pose. If facilities are in non-compliance there should be clear pathways for enforcement.

Comment 4-9

The District should use fines for non-compliance or failure to meet targets to create community-advised funds. The Rule should incorporate a program that allows impacted communities to have a say in how the District uses these funds to support the deployment of zero-emissions solutions and to address a rail yard's impact on public health.

The Freight Rail Yard ISR, along with all Facility-Based Mobile Source Measurements, are important tools for cleaning Southern California's air. SCAQMD's analysis projects the ISR's health benefits alone will result in up to 275 fewer deaths and 1,940 fewer emergency department visits and hospital admissions avoided per year. These public health benefits, coupled with the need to meet state and federal air quality standards for Ozone and Fine Particulate Matter, indicates a compelling reason for the board to pass the Freight Rail Yards ISR. The District has the legal authority to adopt these rules and can do so with more stringency than other state or federal agencies because it experiences greater proportionality of impacts. Protecting the health of our local community should be enough of a reason to pass the strongest rule possible.

Comment 4-10

Sincerely,

Dori Chandler
Policy Advocate

Cc:
Wayne Nastri, Executive Officer, SCAQMD
Ian McMillan, Planning and Rules Manager, SCAQMD

OFFICE OF GENERAL COUNSEL
MEMORANDUM

To: Dr. William A. Burke, Chairman
SCAQMD Governing Board Members

From: Barbara Baird, Chief Deputy Counsel Barbara Baird

Re: Authority to Adopt Indirect Source Rule for Railyards

Date: March 19, 2018

Introduction

At the March 2, 2018, Governing Board Meeting, during public comment on the Facility Based Mobile Source Measures item, (Agenda Item 32) a representative of the freight railroads commented that they believed the SCAQMD lacked authority to adopt an indirect source rule for railyards. The railroads have also commented on the AQMP that such a rule would in any event be preempted. A Governing Board member asked for staff's response to this comment. This memo provides such a response. [1]

Issue 1: Authority

The SCAQMD has authority to adopt rules to reduce or mitigate emissions from indirect sources (Health & Saf. Code Sec. 40716(a)(1), especially for areas where there are high-level localized levels of pollutants or for new sources which will have a significant impact on air quality. Health & Saf. Code Sec. 40440(b)(3). An indirect source is "a facility, building, structure, installation, real property, road, or highway which attracts, or may attract, mobile sources of pollution." CAA Sec. 110(a)(5)(C); 42 U.S.C. Sec. 7410(a)(5)(C). A railyard meets this definition and thus may be the subject of an indirect source rule.

In the past, the railroads have argued that only CARB has the authority to regulate locomotives as a matter of state law. Since what is proposed is an indirect source rule, and not a regulation of locomotives, this issue is irrelevant. In any event, we disagree. State law provides that the air districts are primarily responsible for "control of air pollution from all sources, other than emissions from motor vehicles." Health & Saf. Code Sec. 40001. This includes locomotives. CARB legal counsel agrees with our interpretation. In earlier litigation over the SCAQMD's rail idling rules, the trial court held that the SCAQMD could not regulate locomotives, but since the

[1] Staff has already stated its view briefly at the February 16, 2018 Mobile Source Committee discussion of this issue, which is part of the record for Agenda Item 32. In addition, staff's view has been expressed in responses to comments on the 2016 AQMP, in legal proceedings before the Surface Transportation Board, Docket 35803,(a proceeding in which the Association of American Railroads, BNSF, and Union Pacific participated), and in letters to US EPA. Accordingly this memo is being made available to the public.

Ninth Circuit did not affirm that holding, it is not binding. *Martin v. Henley*, 452 F. 2d 295,300 (9th Cir. 1971). The Ninth Circuit said: "[W]e assume without deciding that the rules fall within the District's regulatory authority." *Association of American Railroads v. South Coast Air Quality Management District,* 622 F. 3d 1094, 1096 n. 2 (9th Cir. 2010)("*AAR*")

In commenting on the 2016 AQMP, the Association of American Railroads asserted that the proposed facility-based measure would violate the trial court's injunction against enforcing the previously-adopted idling regulation. The trial court held that the idling rules were preempted by the Interstate Commerce Commission Termination Act ("ICCTA"). However, the proposed indirect source rule would be a new rule, not enforcement of an existing rule. Further, it would not specify that the railyards must limit idling. Therefore, adopting the proposed new rule would not violate the injunction.

Issue 2: Preemption

While the Clean Air Act (CAA) generally preempts state and local governments from establishing emission standards for motor vehicles and non-road engines, including locomotives, the CAA does not preempt indirect source rules. *National Association of Home Builders v. San Joaquin Valley Unified Air Pollution Control District*, 627 F. 3d 730 (9th Cir. 2010).

The Ninth Circuit Court of Appeals upheld the trial court's decision that the SCAQMD locomotive idling rules were preempted by ICCTA. *AAR,* 622 F. 3d. 1094. ICCTA is a federal de-regulatory statute that places certain aspects of rail operations under the jurisdiction of the federal Surface Transportation Board ("STB"), and preempts some kinds of state and local regulation applicable to railroads. However, the Court of Appeals explained that if the rules had been approved by EPA into the State Implementation Plan, "ICCTA generally does not preempt those regulations because it is possible to harmonize ICCTA with those federally-recognized regulations…" *AAR,* 622 F. 3d 1094, 1098. The STB itself has stated that ICCTA is not intended to "interfere with the role of state and local agencies in implementing Federal environmental statutes such as the Clean Air Act, the Clean Water Act, and the Safe Drinking Water Act, unless the regulation is being applied in such a manner as to unduly restrict the railroad from conducting its operations on unreasonably burden interstate commerce." *Friends of the Aquifer,* 2001 WL 928949,STB F.D. No. 33966 at 5 (Aug. 15, 2001) Staff recommends that any railyard indirect source rule specify that it is not to become operative until approved into the SIP, to ensure that the rule can be harmonized with ICCTA in any judicial challenge.

The courts have provided guidance in how to "harmonize" two overlapping federal statutes, stating that the overriding purposes or objectives of each statute must be determined, and that if a challenged provision implements a core purpose of one law while affecting only the periphery of the other, the first provision must be upheld. *Morton v. Mancari,* 417 U.S. 535,550 (1974); *Merrill Lynch Pierce Fenner & Smith v. Ware,* 414 U.S.117, 131-136. (1973). The STB itself has also provided guidance, holding that in determining whether a federal environmental statute (or state rule implementing such a statute) unreasonably interferes with rail operations, "[t]he severity of the likely environmental impacts should be weighed against the severity of the transportation impacts of compliance to determine whether, and how, the various Federal statutes

can be accommodated." *Joint Petition for Declaratory Order-Boston & Maine Corp. and Town of Ayer,* 2001 WL 1174385, STB Finance Docket 33971 (Oct. 3, 2001). Staff believes an indirect source rule can be crafted that would provide significant environmental benefits outweighing any adverse impacts on rail transportation, and could thus be harmonized with ICCTA. In particular, the indirect source rule is not expected to specify a method of compliance, so that the railyard can select its own methods for compliance to minimize any adverse impact.

We also wish to advise you that in 2014, the U.S. EPA filed a petition for declaratory order with the STB asking for a ruling on whether the SCAQMD idling rules would be preempted if they were approved in to the SIP. The STB declined to issue such an order, but instead issued "guidance" stating that the rules would "likely" be preempted even if approved into the SIP. *United States Environmental Protection Agency-Petition for Declaratory Order,* STB Docket FD 35803 (served Dec. 30, 2014). The STB based its opinion on the potential for other states or localities to adopt and implement conflicting rules. While we disagreed with the STB "guidance," the manner in which it was issued made it unable to be reviewed in court under the federal Administrative Procedures Act. STB stipulated with us that the "guidance" could be reviewed if EPA or any other agency were to rely on it, e.g.in disapproving the existing idling rules. EPA has not taken action on these rules as of yet. The STB "guidance" could also be challenged if EPA were to rely on it in disapproving a future indirect source rule. In any event, staff believes that an indirect source rule that provides flexibility to the railyards for compliance would not present a serious risk of inconsistent requirements in other jurisdictions and thus would not be preempted under the theory used by the STB in its "guidance."

Conclusion

An indirect source rule for railyards is within the SCAQMD's state law authority, and likely could be crafted in a way that would allow it to survive the harmonization process and therefore not be preempted.

cc: Wayne Nastri

Staff Responses to Comment Letter #4:

Response to Comment 4-1

Staff appreciates the support and recognition of the need for PR 2306 as an integral piece of a broader plan needed for the South Coast AQMD to address emissions from the goods movement sector for the purpose of attaining health-protective NAAQS, avoiding potential federal sanctions triggered by nonattainment, and addressing air quality priorities for the region's AB 617 communities.

Response to Comment 4-2

Please refer to staff response to Comment 1-3.

Response to Comment 4-3

Staff acknowledges the need for locomotives to transition to cleaner technologies. PR 2306 is designed to work in conjunction with CARB's In-Use Locomotive and ACF regulations to ensure emission reductions for freight rail yards in the South Coast AQMD region will occur at levels that are at least proportional, if not more than proportional, to statewide emission reductions achieved from implementation of state regulations.

Response to Comment 4-4

Please refer to staff responses to Public Workshop Comment PW-10-c and Comment 1-3. Moreover, South Coast AQMD's regulatory authority is limited to air pollution control and is unable to promulgate rules addressing other forms of pollution and environmental nuisances.

Response to Comment 4-5

Please refer to staff response to Comment 1-4.

Response to Comment 4-6

Staff appreciates the comment and consider it as largely consistent with PR 2306 requirements related to zero emission infrastructure.

Response to Comment 4-7

Please refer to staff response to Comment 1-5.

Response to Comment 4-8

Please refer to staff response to Comment 1-6.

Response to Comment 4-9

With regard to information access, please refer to staff responses to Public Workshop Comment PW-3-b and Comment 1-7. With regards to potential monetary penalties, please refer to staff responses to Public Workshop Comment PW-8-a and Comment 1-8.

Response to Comment 4-10

Staff appreciates the concluding comment and concur with the importance of public health protection in South Coast AQMD rulemaking and implementation of AQMP control measures.

Comment Letter #5 from the Pacific Merchant Shipping Association

PMSA
PACIFIC MERCHANT SHIPPING ASSOCIATION

June 18, 2024

Ian MacMillan
Assistant Deputy Executive Officer
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765

Submitted to: railyardisr@aqmd.gov

Subject: Comments on Proposed Rule 2306 – Railyard Indirect Source Rule

Dear Mr. MacMillan:

As you know, the Pacific Merchant Shipping Association (PMSA) has been actively engaged with South Coast Air Quality Management District (SCAQMD) staff and Board Members on development of the proposed Port Indirect Source Rule (ISR). The development of Proposed Rule 2306 (PR2306) has now raised additional concerns that are addressed below. As always, PMSA believes that in order to be successful, any regulatory scheme must effectively target the source of emissions and do so in a way that does not interfere with operations and is not duplicative of existing regulatory programs. PMSA is deeply concerned that PR2306 is duplicative, incompatible with the proposed port indirect source rule, and will not reduce emissions while substantially burdening facilities with additional reporting requirements.

Comment 5-1

No Demonstrated Need

SCAQMD staff has not demonstrated the need for the PR2306. Staff presentations make clear that there are no likely emission reductions beyond the recently adopted California Air Resources Board In-Use Locomotive Regulation. The only justification for the rule provided by staff is that there is some unquantified possibility that emissions reductions under the State rule could disproportionately happen in parts of the State outside of the South Coast Air Basin. With the concentration of rail activity in the South Coast, it strains credulity to imagine a scenario where emissions reductions could occur disproportionately outside South Coast. As the sole basis demonstrating the need for PR2306, SCAQMD staff should quantify what likely and reasonable scenarios exist that would result in disproportionate emissions reductions outside the South Coast. Without such an analysis, the benefit of PR2306 is speculative at best.

Comment 5-2

PR2306 Exemptions

Based on staff presentations, it appears that the intent of PR2306 is to contain a "full exemption" for facilities in the port complex. The language contained in the draft rule language does not accomplish this. The draft language would exempt port facilities that are not intermodal rail facilities. By design, marine terminals are intermodal facilities; their purpose is to transfer cargo between ships and trucks and trains. As written, the proposed exemption language does not accomplish SCAQMD staff's stated

Comment 5-3

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goals; the language is vague and unclear. SCAQMD should consider explicit language regarding which facilities are regulated and which facilities are exempt from the proposed rule.

Equally concerning is the concept of a "full exemption" presented during the public workshop on June 4, 2024. In fact, there is no "full exemption" due to the design of PR2306. While it appears that between PR2306 and the proposed port ISR there is no overlap in identified regulated entities, SCAQMD staff made clear during the workshop that nothing in PR2306 excludes the same activity being regulated simultaneously under both proposed rules. This is deeply problematic. PR2306 makes the operator of locomotives directly responsible for emissions reductions from their operations on a facility-by-facility basis. Since multiple regulated facilities under PR2306 share responsibility for the same activity, it is in the interest of facilities regulated under PR2306 to maximize their actions on activity that involves multiple facilities, thereby minimizing their cost and maximizing the benefit of any action taken. This rule design would have two detrimental impacts on marine terminal operators under a proposed port ISR. First, facilities regulated under PR2306 would be incentivized to maximize emissions reductions outside the port complex since maximum benefit would be achieved by focusing emissions reductions on activity between multiple regulated facilities, all of which would be outside of the port complex. Second, marine terminal operators would still be responsible for emissions reductions from locomotive activity under the concept proposed by SCAQMD staff, but no opportunity would exist for emission reductions beyond what PR2306 regulated facilities would already be implementing.

Comment 5-3 Con't

PR2306 needs to include an actual full exemption for both the regulated facility and the regulated activity. It should be clear that any activity subject to PR2306 will not also be subject to the proposed port ISR. Failing to do so would create a situation where marine terminal operators would be subject to limits on activity that the facility would have no ability to influence.

Additional CEQA Review Required

SCAQMD proposes that no additional review under the California Environmental Quality Act (CEQA) is required beyond the reviews that were conducted in Program environmental Impact Report (EIR) for the 2016 and 2022 Air Quality Management Plans (AQMPs). One of the primary purposes of preparing a PEIR is that impacts of specific actions of a larger program are speculative at the time of the program adoption. A project-specific EIR would allow for the analysis of environmental impacts not previously possible. This is demonstrated by the text of the 2016 Program EIR. In one of many examples, the Program EIR states:

> The 2016 AQMP would establish in-use strategies that may require or promote the use of alternative fuels including control measures MOB-01, MOB-02, MOB-03, MOB-04, MOB-05, OB-07, MOB-09, MOB-10, MOB-13, EGM-01, ORLD-01, ORLD-3, ORHD-02, ORHD-04, ORHD-05, ORHD-06, ORHD-07, ORHD-08, ORH-09, ORFIS-01, ORFIS-05, OFFS-01, OFFS-04, OFFS-05, OFFS-07, and OFFS-08.

Comment 5-4

Here, the PR2306 (MOB-02) is lumped into a series of AQMP control measures that "*may require or promote the use of alternative fuels".* That speculation is repeated throughout the Program EIR for the

various resource areas. While that speculative approach may be acceptable in a Program EIR, additional analysis is required for the adoption of PR2306. Presumably, SCAQMD staff believes regulated facilities will take action on a facility-level basis to meet the requirements of PR2306 – as that is the intended goal. By not quantifying the need for the regulation (as discussed previously) and therefore, what actions would be necessary to comply with PR2306, SCAQMD staff is avoiding analysis of actions that staff must believe are necessary to avoid disproportionate emissions reductions taking place outside the South Coast. SCAQMD staff must do a proper CEQA analysis on PR2306.

Comment 5-4 Con't

PMSA appreciates the opportunity to submit these comments.

Sincerely,

Thomas Jelenić
Vice President

Staff Responses to Comment Letter #5:

Response to Comment 5-1

Staff appreciates the commentor's participation in multiple rulemakings and providing comments throughout the rule development process. Staff has demonstrated in this report the necessity, consistency, and non-duplication of the proposed rules pursuant to Health and Safety Code Section 40727. A similar demonstration will be performed for any potential future rule, including any rule to address emissions associated with marine ports. For emission reduction estimates, please refer to Table 3-5 and the associated discussion in this report, as well as staff response to Comment 5-2 below.

Response to Comment 5-2

PR 2306 is part of the AQMP Facility Based Mobile Source Measures aimed to reduce freight emissions from the goods movement sector that are a major contributor to the region's attainment challenges. Please refer to Chapter 2, *Public Health and Air Quality Needs* section, of this report for the significant health impacts and air quality needs in South Coast AQMD, and Box 4-2 in Chapter 4 for the potential consequences of nonattainment. Moreover, staff acknowledges that reducing freight rail yard emissions within our region cannot be accomplished by one rule alone. PR 2306 is positioned to be one component of the multi-agency regulatory framework to collectively address goods movement emissions within our region (including from rail yards), along with state and federal regulations promulgated by CARB and U.S. EPA using their respective authorities.

Regarding emission reductions potential, please refer to staff responses to Public Workshop Comment PW-10-c and Comment 1-3. Furthermore, staff respectfully disagrees with the assessment in the comment that "it strains credulity to imagine a scenario where emissions reductions could occur disproportionately outside South Coast." Take the same example of locomotive emissions referenced in the comment. Based on the annually reported data under the 1998 MOU between CARB and the two Class 1 railroads, a total of 4,554 locomotives operated by Union Pacific Railroad visited or operated within the South Coast Air Basin at any time during 2022, and the corresponding number was 5,344 for BNSF Railway. Among the approximately 10,000 locomotives, the majority of them are line haul locomotives, as well as locomotives conducting regional switching activities, that are not captive to a single freight rail yard or to the South Coast AQMD region. Based on CARB's estimate, only about 17 percent of line haul locomotive activities, thereby emissions, occur in the South Coast AQMD region.[155] Moreover, Class 1 line haul locomotives do not only travel in and out of the South Coast AQMD region, but they belong to the two railroads' respective nationwide fleets that can be deployed anywhere in the nation. The non-captive nature of the locomotive fleet is a key factor why our region has seen in recent years significantly more work (in megawatt-hours) done by the dirtiest locomotives (Tier 1/1+ or dirtier) when compared to a decade ago.[156] This is despite increasingly more stringent federal locomotive standards with the cleanest current standard being Tier 4. Based on

[155] See the 2021 Line-Haul Locomotive Emission Inventory https://ww2.arb.ca.gov/sites/default/files/2021-02/2021_line_haul_locomotive_emission_inventory_final.pdf

[156] See the 2022 Compliance Report and Data Summaries published by CARB for the 1998 MOU at: https://ww2.arb.ca.gov/resources/documents/rail-emission-reduction-agreements.

observations as such as well as the design of statewide regulations, it is therefore not beyond the realms of possibility that South Coast AQMD may not benefit from proportional implementation of statewide regulations. Moreover, uneven implementation of existing statewide rules and programs has been seen with CARB's Advanced Clean Cars (ACC) regulation.[157] An even more pertinent example is how the phase-in implementation of CARB's statewide Truck and Bus regulation has impacted turnover of drayage trucks differentially across California air districts, with a turnover to cleaner trucks that occurred more slowly in South Coast AQMD. Please refer to Chapter 2 of this report for more details.

Based on the above, PR 2306 emission reductions targets are set at levels to ensure that proportional or more-than-proportional emission reductions will be achieved at facility-level in the South Coast AQMD region relative to emission reductions achieved throughout California from implementation of state regulations. For more details on the public health and air quality needs, please refer to Chapter 2 of this report.

Response to Comment 5-3

Staff appreciates the concern raised by this commenter and similar comments regarding exemption language from the ports of Los Angeles and Long Beach. However, the comments here regarding how railroads would respond if both PR 2306 and PR 2304 (marine ports) were promulgated is speculative, as no draft rule language has been released for PR 2304, and the rule concept is still in development.

In the PR 2306 preliminary draft rule language released on May 17, 2024, the exemption language in paragraph (j)(2) clearly exempts freight rail yards that are used primarily for on-port switching activities and owned/operated by either cities (or their respective port authorities) and any third party contracted under operating agreement(s) with either city. Additionally, based on their current operating model, the definition of "Freight Rail Yard" in the rule will exclude on-dock rail facilities located on marine terminals as these facilities are operated by terminal operators who do not operate locomotives outside of their terminals, if at all. Still, after considering this comment from PMSA and similar comments submitted by the Port of Long Beach and the Port of Los Angeles (see Comment Letters #6 and #7, respectively), staff has revised the exemption language in paragraph (j)(2) to explicitly clarify the exemption for on-dock rail facilities located on marine terminals at the San Pedro Bay Ports. The revisions remain consistent with the original intent and will only exempt on-dock intermodal rail facilities and any non-intermodal freight rail yards whose operations are solely for the purpose of moving railcars to and/or from marine terminals at the ports of Long Beach or Los Angeles.

The phrase "full exemption" used in the staff presentation at the PR 2306 and PR 316.2 Public Workshop, held on June 4, 2024, was meant to contrast the full exemption in PR 2306 paragraph (j)(2) with the partial exemption provided in paragraph (j)(1), the latter of which will exempt low-

[157] Please see South Coast AQMD staff's analysis included in PR 2305 Staff Report (May 2021): Chapter 1 - http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2021/2021-May7-027.pdf for analysis of Advanced Clean Cars. Additional information about CARB's 1998 Railroad MOU and the Truck and Bus Rule can be found in Box 2-1 and Box 2-2 of ~~the Draft~~ Final Staff Report.

activity sites from some but not all rule provisions.[158] The phrase "full exemption" was never meant to imply that PR 2306 intends to exempt all rail activities related to port operations, as seemingly suggested by the comment.

In fact, as mentioned in staff response to Public Workshop Comment PW-17, PR 2306 requires a freight rail yard operator to demonstrate compliance with the proposed rule requirements by including any activities that are associated with that specific freight rail yard, whether or not the activities are also associated with the operation of other indirect sources of emissions such as another freight rail yard or a marine terminal. A freight rail yard operator needs not be concerned by the eventual accounting of SIP creditable emission reductions for the South Coast AQMD region. As emphasized in this report, including this appendix, PR 2306 is part of the suite of AQMP Facility Based Mobile Source Measures (FBMSM) aimed at collectively addressing freight emissions in the South Coast AQMD region. Each of these measures is designed to promote actions to be taken by separate, non-overlapping groups of freight hubs (including freight rail yards) that will result in or facilitate reductions of emissions associated with their operations. And each such measure is implemented in a manner such that the same freight hub, as an indirect source of emissions, would not be subject to multiple facility-based rules. The interconnectivity of the goods movement sector, along with South Coast AQMD authority considerations, necessitate a control strategy like FBMSM which focuses on freight hubs and emissions-reducing and -facilitating actions taken individually, or potentially jointly, by these freight hubs. When a freight rail yard operator takes action to reduce its facility emissions from locomotives and/or any other freight rail yard sources that travel between the freight rail yard and the ports, port emissions will be also reduced as a result. Staff appreciates PMSA's continued engagement in FBMSM implementation and participation in PR 2304 rulemaking to address freight emissions associated with marine port operations.

Response to Comment 5-4

Relative to the suggestion that a project-specific CEQA document needs to be prepared for PR 2306, please see staff response to Comment 3-2 which describes the CEQA requirements applicable to PR 2306 and the basis for how the environmental analysis was conducted. Please also see Appendix A: Detailed CEQA Analysis which summarizes the prior environmental analyses conducted in the Final Program EIRs for the 2022 AQMP and 2016 AQMP and demonstrates that PR 2306 constitutes a later activity of these previously approved programs (i.e., 2022 AQMP and 2016 AQMP) under CEQA Guidelines Section 15168(c)(3).

[158] See the presentation slides at: https://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/pr-2306/pr-2306_pw_presentation_06042024.pdf.

Comment Letter #6 from the Port of Long Beach

Port of LONG BEACH
THE GREEN PORT

June 18, 2024

Ian MacMillan, Assistant Deputy Executive Officer
South Coast Air Quality Management District
21685 Copley Drive
Diamond Bar, CA 91765
Email: imacmillan@aqmd.gov

Subject: Port of Long Beach Comments on the Proposed Rule 2306 – Freight Rail Yards

Dear Mr. MacMillan:

On June 4, 2024, the South Coast Air Quality Management District (South Coast AQMD) remotely held Proposed Rule 2306 (PR 2306) – Freight Rail Yards Workshop, which provided an update on the draft Indirect Source Rule for Rail Yards. Slide 42 of the workshop presentation, dated May 31, 2024, indicates that the South Coast AQMD intends to exempt on-port switching locomotive activity from PR 2306. The slide notes that this exemption is made in Paragraph (j)(2) and in Paragraph (c)(9) within the definition of a Freight Rail Yard in the May 17, 2024 Preliminary Draft Proposed Rule 2306.

The Port of Long Beach (Port) appreciates that this exemption is intended to clarify the intended locomotive activity regulated by Proposed Rule 2306 – Rail Yards and Proposed Rule 2304 – Commercial Marine Ports. It is our understanding, pursuant to verbal discussions with South Coast AQMD staff, that the South Coast AQMD intends to regulate Port-related locomotive activity under Proposed Rule 2304 and not under Proposed Rule 2306. This important distinction must be adequately reflected in the rule language. Without clear, unambiguous language, regulated entities may be responsible for mitigating the same rail activity under both Proposed Rule 2304 and Proposed Rule 2306. Comment 6-1

However, the exemption language as presently written does not exempt all rail activity occurring on property owned by the Ports of Long Beach and Los Angeles, and therefore, would result in rail activity that would be regulated by both PR 2304 and PR 2306. For example, Paragraph (j)(2) does not exempt Freight Rail Yards that are considered Intermodal Rail Yards under the rule. Therefore, on-dock rail activity which takes place on marine terminals is not exempted from this rule, and the marine terminal would be considered a Freight Rail Yard subject to PR 2306. If this language remains in PR 2306, the on-dock rail activity would be controlled by two South Coast AQMD rules, in addition to the California Air Resources Board's In-Use Locomotive Regulation.

To minimize an already complex regulatory landscape, the Port would like to propose modified rule language for Proposed Rule 2306. In Paragraph (j)(2), the Port proposes the following revised language:

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THE GREEN PORT

> "The City of Long Beach, the City of Los Angeles, and/or any third party under contractual operating agreement(s) with the City of Long Beach and/or the City of Los Angeles are not subject to the requirements of this rule for any of its owned or operated-Freight Rail Yards where the primary Freight Rail Yard Operations are to move cargo onto Railcars to and from docks at marine terminal(s), or move Railcars between marine terminals located within the Long Beach Harbor District or the Los Angeles Harbor District (Harbor Districts)."

We believe that by limiting the exemption to the Long Beach and Los Angeles Harbor Districts, this new language achieves the South Coast AQMD's original goal to exempt locomotive activity at marine terminals. This language would not exempt the Dolores, Watson, or Mead Rail Yards because they are not located within the Long Beach or Los Angeles Harbor Districts. ICTF would be excluded from the proposed revision, because ICTF's "primary Freight Rail Yard Operations" are not to move cargo onto railcars to and from the docks at marine terminals located in the Harbor Districts, or to move railcars between marine terminals located within the Harbor Districts. ICTF's primary operations are to move containers trucked from terminals located within the Harbor Districts to ICTF for loading/unloading onto/from trains that depart to/arrive from the Alameda Corridor. Please find a reference map to the Long Beach Harbor District, as requested by the South Coast AQMD staff, attached.

Comment 6-1 Con't

Additionally, not all loading, unloading, transport, or movement of containerized or non-containerized freight at the Ports include empty containers and chassis, so the Port requests that the South Coast AQMD replace "including empty containers and chassis" with "which may include empty containers and chassis" in all locations where this language presently exists, including the "Classification Yard" and "Freight Rail Yard Operations" definitions.

Comment 6-2

The Port also requests removal of Section (i) in the rule. All local, state, and federal laws established by regulatory agencies already require compliance from regulated parties. There is no legal mandate to require local or state government agencies that contract with a party for rail services to state in the contract that the party must comply with Rule 2306. Section (i) introduces an unnecessary administrative burden to the Ports of Long Beach and Los Angeles.

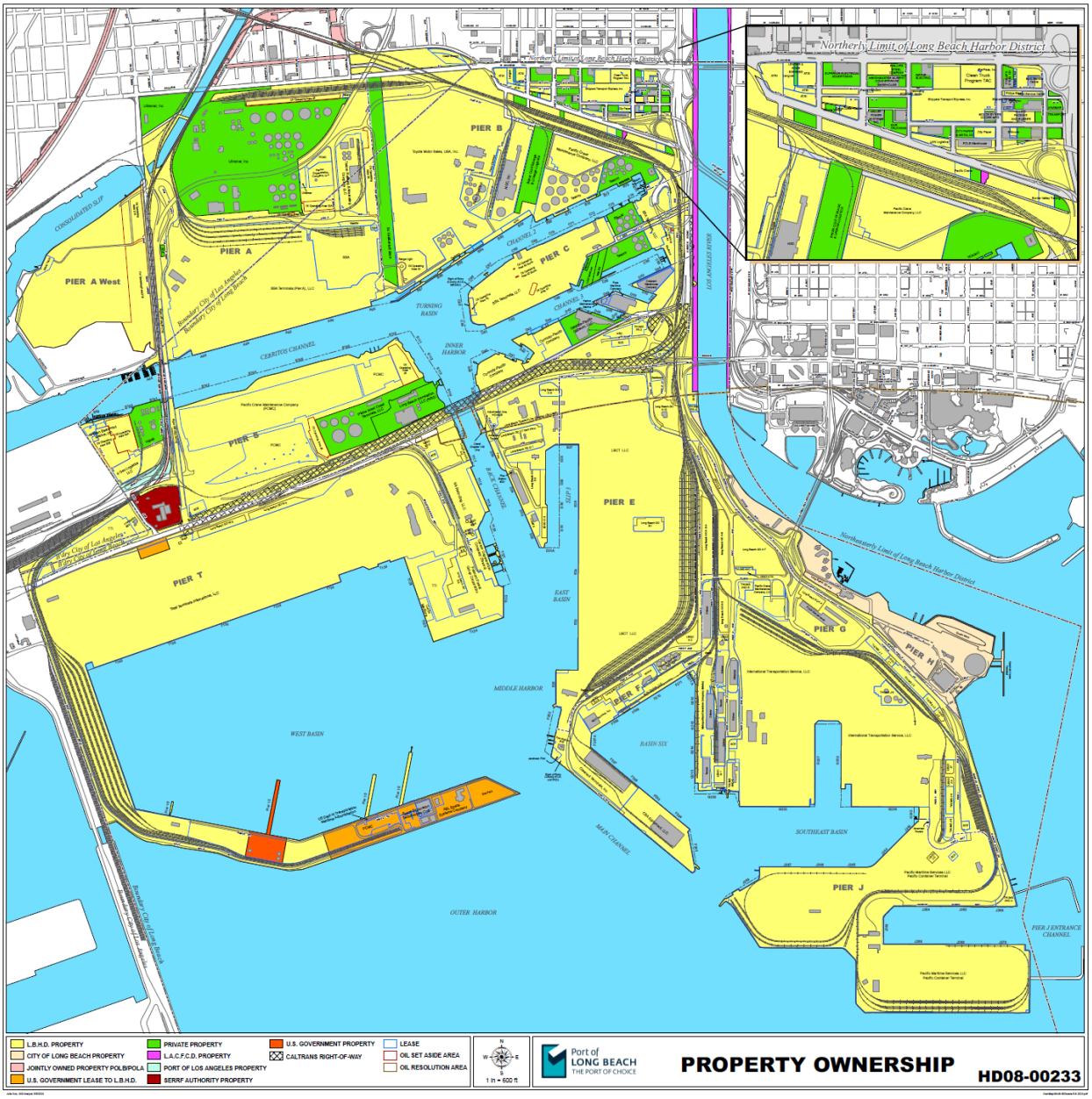
Comment 6-3

Thank you for your consideration of these comments. If you have any questions about this letter, please contact Morgan Caswell, Manager of Air Quality Practices, at Morgan.Caswell@polb.com.

Sincerely,

James Vernon
Acting Director of Environmental Planning

6/18/2024 Page **2** of **2**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PRIVATE PROPERTY
L.A.C.F.C.D. PROPERTY
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THE PORT OF CHOICE
PROPERTY OWNERSHIP
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Staff Responses to Comment Letter #6:

Response to Comment 6-1

Staff appreciates Port of Long Beach's suggestion for modifying PR 2306 rule language in paragraph (j)(2) and providing the reference map. Please refer to staff response to Comment 5-3 for more detailed discussion. As indicated in that response, PR 2306 intends to exempt from the proposed rule the owners and operators of marine terminals, specifically those with on-dock rail capabilities. This is because these entities are potentially subject to PR 2304, which is the facility-based rule proposed to address port emissions. Staff appreciates the suggestion for improving rule clarity and have revised PR 2306 paragraph (j)(2) to explicitly exempt such marine terminal owners and operators. Additionally, staff would like to reiterate the nature of any facility-based rule, PR 2306 included, as applying to indirect sources of emissions (as facilities) instead of any specific mobile sources attracted to those facilities.

Response to Comment 6-2

Staff appreciates the comment and have revised the rule language as suggested for the purpose of added clarity.

Response to Comment 6-3

PR 2306 subdivision (i) provides an added layer of enforceability for PR 2306 compliance, and it also serves to ensure that any actions carried out under such contracts do not potentially negate the effect of the proposed rule. Moreover, based on staff's review of multiple operating and other contractual agreements between the Port of Long Beach (or the Port of Los Angeles) and its counterparties, it is already a common practice that the Ports include in such contractual agreements certain provisions to require compliance by a counterparty (or counterparties) with all applicable and lawfully enacted federal, state, and local laws, regulations, rules, and other requirements. The Alameda Corridor Use and Operating Agreement is one such example, and it is an agreement among both cities/ports, the Alameda Corridor Transportation Authority (which is a joint powers authority formed by both cities), and the two Class 1 railroads including the Union Pacific Railroad and the BNSF Railway.[159] In this agreement, there are several provision related to compliance with "all applicable law" (or phrases of similar effect), for example for maintenance of equipment (p. 20), operations on the Alameda Corridor and on tracks owned by either Ports (p. 21), maintenance and repair of tracks (p. 45), storage and holding (p. 48). Further, this agreement includes an entire section on "marketable emission reduction credits" administered by South Coast AQMD (pg. 66), however this appears to be speculative as staff is not aware of any applicable credits that have ever been granted to the parties to this agreement. Regardless, staff believes that specific provisions within state or local government agency contractual agreements regarding PR 2306 is appropriate and necessary given the importance of reducing emissions from these facilities, the role of state and local government agencies when entering into contracts to serve the public, and current practice in these agreements. Still, after considering this comment from the Port of Long Beach and a similar comment submitted by the Port of Los Angeles (see Comment Letter

[159] See: https://www.acta.org/wp-content/uploads/2021/01/Executed-Alameda-Corridor-UOA.pdf.

#7), staff has revised the language in paragraph (i) to clarify that inclusion of provision(s) in such contractual agreements that have the effect of requiring compliance with Rule 2306 (if adopted and becomes effective) by the contracted freight rail yard owner or operator would suffice to satisfy this rule requirement for the state or local public agencies.

Comment Letter #7 from the Port of Los Angeles

THE PORT OF LOS ANGELES
425 S. Palos Verdes Street Post Office Box 151 San Pedro, CA 90733-0151 TEL/TDD 310 SEA-PORT www.portoflosangeles.org

June 20, 2024

Ian MacMillan, Assistant Deputy Executive Officer
South Coast Air Quality Management District
21685 Copley Drive
Diamond Bar, CA 91765
Email: imacmillan@aqmd.gov

Subject: PORT OF LOS ANGELES COMMENTS ON THE PROPOSED RULE 2306 - FREIGHT RAIL YARDS

Dear Mr. MacMillan:

On June 4, 2024, the South Coast Air Quality Management District (South Coast AQMD) remotely held Proposed Rule 2306 (PR 2306) – Freight Rail Yards Workshop, which provided an update on the draft Indirect Source Rule for Rail Yards. Slide 42 of the workshop presentation, dated May 31, 2024, indicates that the South Coast AQMD intends to exempt on-port switching locomotive activity from PR 2306. The slide notes that this exemption is made in Paragraph (j)(2) and in Paragraph (c)(9) within the definition of a Freight Rail Yard in the May 17, 2024, Preliminary Draft Proposed Rule 2306.

The Port of Los Angeles (POLA) appreciates that this exemption is intended to clarify the intended locomotive activity regulated by Proposed Rule 2306 – Rail Yards and Proposed Rule 2304 – Commercial Marine Ports. It is our understanding that the South Coast AQMD intends to regulate Port-related locomotive activity under Proposed Rule 2304 and not under Proposed Rule 2306. This important distinction must be adequately reflected in the rule language. Without clear, unambiguous language, regulated entities may be responsible for mitigating the same rail activity under both Proposed Rule 2304 and Proposed Rule 2306.

Comment 7-1

However, the exemption language as presently written does not clearly reflect the intent of South Coast AQMD to exempt all rail activity occurring on property owned by the Ports of Long Beach and Los Angeles, and therefore, would result in rail activity that would be regulated by both PR 2304 and PR 2306. For example, Paragraph (j)(2) does not exempt Freight Rail Yards that are considered Intermodal Rail Yards under the rule. Therefore, intermodal on-dock rail activity that takes place on marine terminals is not exempted from this rule, and the marine terminal would be considered a Freight Rail Yard subject to PR 2306. If this language remains in PR 2306, the on-dock rail activity would be controlled by two South Coast AQMD rules, in addition to the California Air Resources Board In-Use Locomotive Regulation.

To minimize an already complex regulatory landscape and reflect South Coast AQMD's intent, the POLA would like to propose modified rule language for Proposed Rule 2306. In Paragraph (j)(2), the POLA proposes the following revised language:

> "The City of Long Beach, the City of Los Angeles, and/or any third party under contractual operating agreement(s) with the City of Long Beach and/or the City of Los Angeles are not subject to the requirements of this rule for any of its owned or operated-Freight Rail Yards where the primary Freight Rail Yard Operations are to move cargo onto Railcars to and from docks at marine terminal(s), or move Railcars between marine terminals located within the Long Beach Harbor District or the Los Angeles Harbor District (Harbor Districts)."

We believe that by limiting the exemption to the Long Beach and Los Angeles Harbor Districts, this new language achieves the South Coast AQMD's original goal to exempt locomotive activity at marine terminals. Our proposed language would not extend the exemption to the Dolores, Watson, or Mead Rail Yards because they are not located within the LA or LB Harbor Districts. ICTF would also still be regulated by PR 2306 because ICTF's "primary Freight Rail Yard Operations" are not to move cargo onto railcars to and from the docks at marine terminals located in the Harbor Districts or move railcars between marine terminals located within the Harbor Districts. ICTF's primary operations are to move containers trucked from terminals located within the Harbor Districts to ICTF for loading/unloading onto/from trains that depart to/arrive from the Alameda Corridor. Please find the reference maps to the Los Angeles Harbor Districts, as requested by the South Coast AQMD staff, attached.

Comment 7-1 Con't

Additionally, not all loading, unloading, transport, or movement of containerized or non-containerized freight at the Ports include empty containers and chassis, so the Ports request that the South Coast AQMD replace "including empty containers and chassis" with "which may include empty containers and chassis" in all locations where this language presently exists, including the "Classification Yard" and "Freight Rail Yard Operations" definitions.

Comment 7-2

POLA also requests modification of Section (i) in the rule to read as follows.

> "(i) Any state or local government agency who enters, renews, or amends a Contractual Agreement, which is separately enforceable independent of this rule and the California Environmental Quality Act, shall include in such Contractual Agreement(s) that the applicable countersigned party or parties must comply with all applicable federal, state and local laws, rules and regulations that govern the countersigned party's activities."

This modification will reduce the unnecessary administrative burden on POLA. All local, state, and federal laws established by regulatory agencies already require compliance from regulated parties and POLA's contracts already include standard language requiring counterparties to comply with all applicable laws, rules, and regulations that govern their operations.

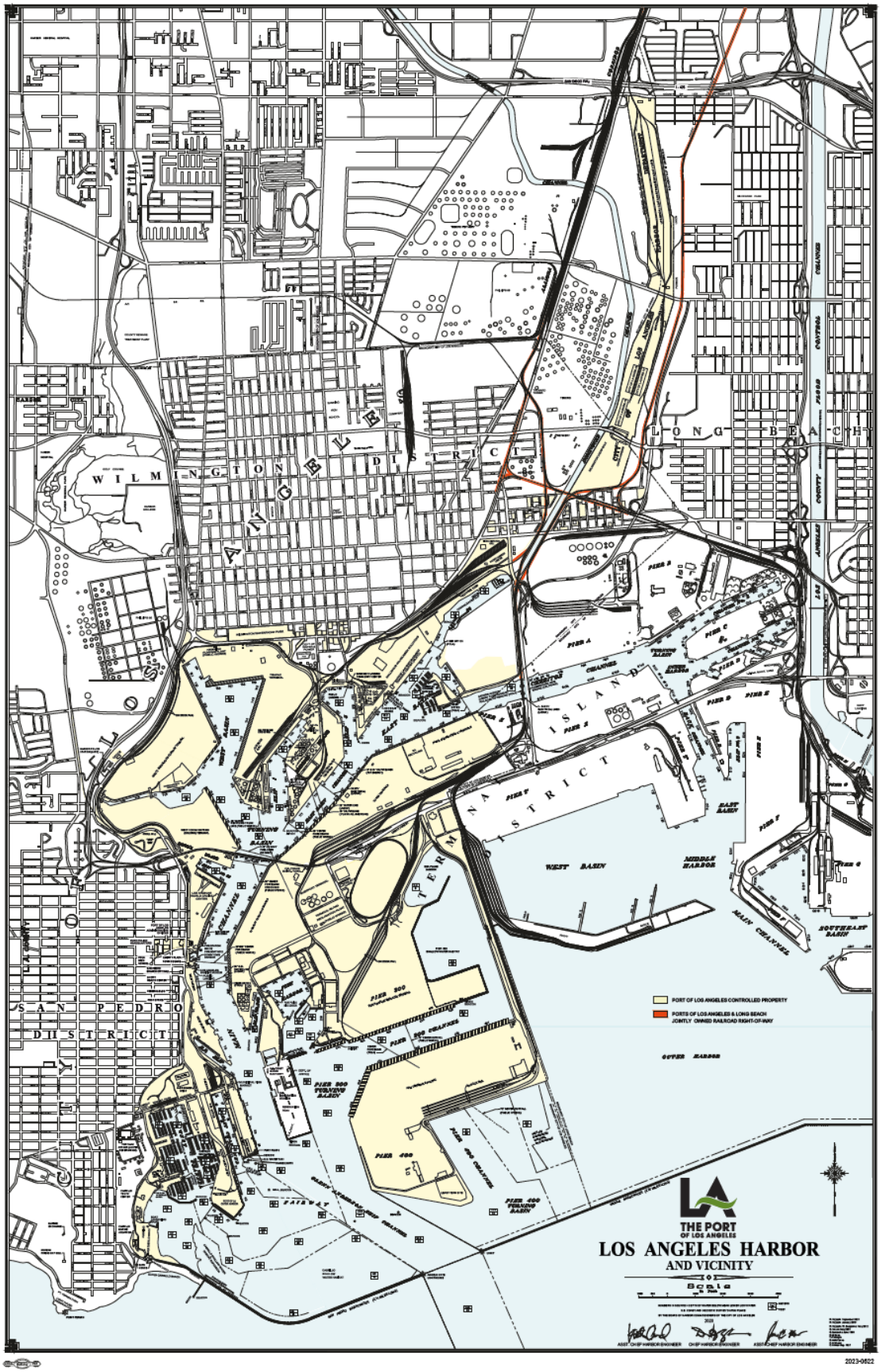
Comment 7-3

Thank you for your consideration of these comments. If you have any questions about this letter, please contact Lisa Wunder, Acting Director of Environmental Management, at LWunder@portla.org.

Sincerely,

AVIN P SHARMA
Senior Director, Labor Relations and Government Affairs

APS:vb


WILMINGTON
DISTRICT
LONG BEACH
SAN PEDRO
DISTRICT
TERMINAL ISLAND
NAVAL DISTRICT
WEST BASIN
MIDDLE HARBOR
MAIN CHANNEL
SOUTHEAST BASIN
OUTER HARBOR
PORT OF LOS ANGELES CONTROLLED PROPERTY
PORTS OF LOS ANGELES & LONG BEACH JOINTLY OWNED RAILROAD RIGHT-OF-WAY
THE PORT OF LOS ANGELES
LOS ANGELES HARBOR
AND VICINITY
Scale
2023-0822

Staff Responses to Comment Letter #7

Response to Comment 7-1

Staff appreciates Port of Los Angeles's suggestion for modifying PR 2306 rule language in paragraph (j)(2) and providing the reference map. Please refer to staff responses to Comments 5-3 and 6-1.

Response to Comment 7-2

Please refer to staff response to Comment 6-2.

Response to Comment 7-3

Please refer to staff response to Comment 6-3. Staff believes that the revised rule language is consistent with the suggested language provided by the commentor, which reflects the Port of Los Angeles's current practice for its contractual agreements.

Comment Letter #8 from Sierra Club

From: Yassi Kavezade [redacted]
Sent: Tuesday, June 25, 2024 10:30 AM
To: Elaine-Joy Hills [redacted]; Ian MacMillan [redacted]
Subject: [EXTERNAL] Quick question on labor

Hi all,

Speaking very roughly here.. As tech for ZE cargo handling increases and brings on the possible threat of automation and displacement for workers, I am wondering how we can partner with unions operating at Railyards and ports to embed worker training language or some kind of job retention protection language to encourage operators to select technology that is safe for workers, fund trainings, and minimizes jobs displacement, etc. I'm sure there ideas out there from union leaders themselves.

Could this be something required in reporting data they turn into you? I know it's outside jurisdiction already but would there be any creative place to see these rules as way to grow jobs.

Comment 8-1

Thanks for entertaining this random question. Also really excited to get these rules done and continue this legacy at the air district.

Staff Responses to Comment Letter #8

Response to Comment 8-1

Staff appreciates the comment from Sierra Club. Staff has continued engagement with various stakeholders including labor groups. As correctly indicated in the comment, South Coast AQMD's regulatory authority is limited to air pollution control; as such, PR 2306 requirements are proposed for the purpose of reducing and facilitating emission reductions. In complying with PR 2306 requirements, staff expects that freight rail yard operators will also independently comply with any pertinent labor or safety rules and regulations; however, it is not within South Coast AQMD's purview to enforce such rules and regulations.

At the same time, Health and Safety Code Section 40728.5 requires that the South Coast AQMD Governing Board make good faith effort to minimize adverse socioeconomic impacts, including potential impacts on regional employment. The Socioeconomic Impact Assessment as included in Chapter 4 of this report does not identify additional employment impacts beyond what have been analyzed in CARB's regulatory impact analysis for statewide regulations. However, staff continues to welcome further feedback and suggestions during PR 2306 rulemaking (and

separately for PR 2304 rulemaking). While this rulemaking does not necessarily provide a mechanism to address job impacts as described in the comment, staff appreciates the issue raised and will continue to seek ways to address job impacts through other means. As one example, as part of the Volvo LIGHTS project for zero emission trucks, South Coast AQMD co-funded training programs for workers at Rio Hondo College and San Bernardino Valley College (https://www.lightsproject.com/project-partners/, https://www.aqmd.gov/home/research/pubs-docs-reports/newsletters/august-september-2022/volvo-lights-project-wins-award).

Additionally, please also refer to staff response to Comment PW-2 in terms of technology neutrality of PR 2306.

Comment Letter #9 from Port of Long Beach and Port of Los Angeles

SAN PEDRO BAY PORTS
CLEAN AIR ACTION PLAN

July 24, 2024

Wayne Nastri
Executive Officer
South Coast Air Quality Management District
21865 Copley Dr.
Diamond Bar, CA 91765

SUBJECT: COMMENTS ON PROPOSED RULE 2306 - FREIGHT RAIL YARDS

Dear Mr. Nastri,

The Port of Long Beach (POLB) and Port of Los Angeles (POLA) (Ports) appreciate the opportunity to provide comments on Proposed Rule 2306 for Freight Rail Yards. We also want to thank SCAQMD staff, specifically Elaine Shen, for making herself available to discuss our comments related to the exemption included within Proposed Rule 2306 for certain POLB rail operations. We are following up on our previous comments, to better ensure that SCAQMD accomplishes its stated intent to regulate Port-related locomotive activity under Proposed Rule 2304 and not under Proposed Rule 2306. This important distinction must be adequately reflected in the rule language. However, the exemption (j)(2) language, as most recently revised in the 30-day package, would not exempt all rail activity occurring on property owned by the POLB and POLA, and therefore, would result in rail activity that would be regulated by both PR 2304 and PR 2306.

Comment 9-1

We are requesting minor changes to the proposed language to better fulfil the exemption's intent and reflect our geographical and jurisdictional boundaries. Our proposed edits are indicated below in bold underline:

(j) Exemptions

(1) The Freight Rail Yard Owner or Operator is not subject to the requirements in paragraphs (d)(1) through (d)(3), subparagraphs (d)(4)(C) through (d)(4)(D), paragraph (d)(5), and subdivision (f) of this rule for any of its owned- or operated Freight Rail Yards that is not an Intermodal Rail Yard and where Switching Activities occur no more than 30 calendar days per year within a Milestone Year and any of the two preceding calendar years.

Comment 9-2

(2) The City of Long Beach, the City of Los Angeles, and/or any third party under contractual operating agreement(s) with the City of Long Beach and/or the City of Los Angeles are not subject to the requirements of this rule for any of its owned- or operated-Freight Rail Yard that meets one of the following:

(A) An Intermodal Rail Yard located on dock at a Marine Terminal **that is wholly or partially** located within the Long Beach Harbor District or the Los Angeles Harbor District (Harbor Districts); or
(B) A Freight Rail Yard that is not an Intermodal Rail Yard and where the Freight Rail Yard Operations are solely for the purpose of moving Railcars to and/or from Marine Terminal(s) **that are wholly or partially** located within the Harbor Districts.

Comment 9-2 Con't

This clarification is necessary because at least one marine terminal in Long Beach – Pier A – is partially outside the Long Beach Harbor District. As shown in the attached map, the Harbor District boundary runs through the northwest corner of the Pier A marine terminal; this boundary has no effect on terminal operations, which are continuous across the property. The Ports believe our minor suggested edits achieve the proposed exemption's intention while further clarifying the scope. The Ports are happy to provide more clarification upon request.

Thank you in advance for considering our comment. If you need any further information, please contact Renee Moilanen, POLB Director of Environmental Planning at (562) 283-7100 or Lisa Wunder, POLA Acting Director of Environmental Management at (310) 732-7688 or via email at lwunder@portla.org.

Sincerely,

RENEE MOILANEN
Director of Env. Planning
Port of Long Beach

LISA WUNDER
Acting Director of Env. Management
Port of Los Angeles

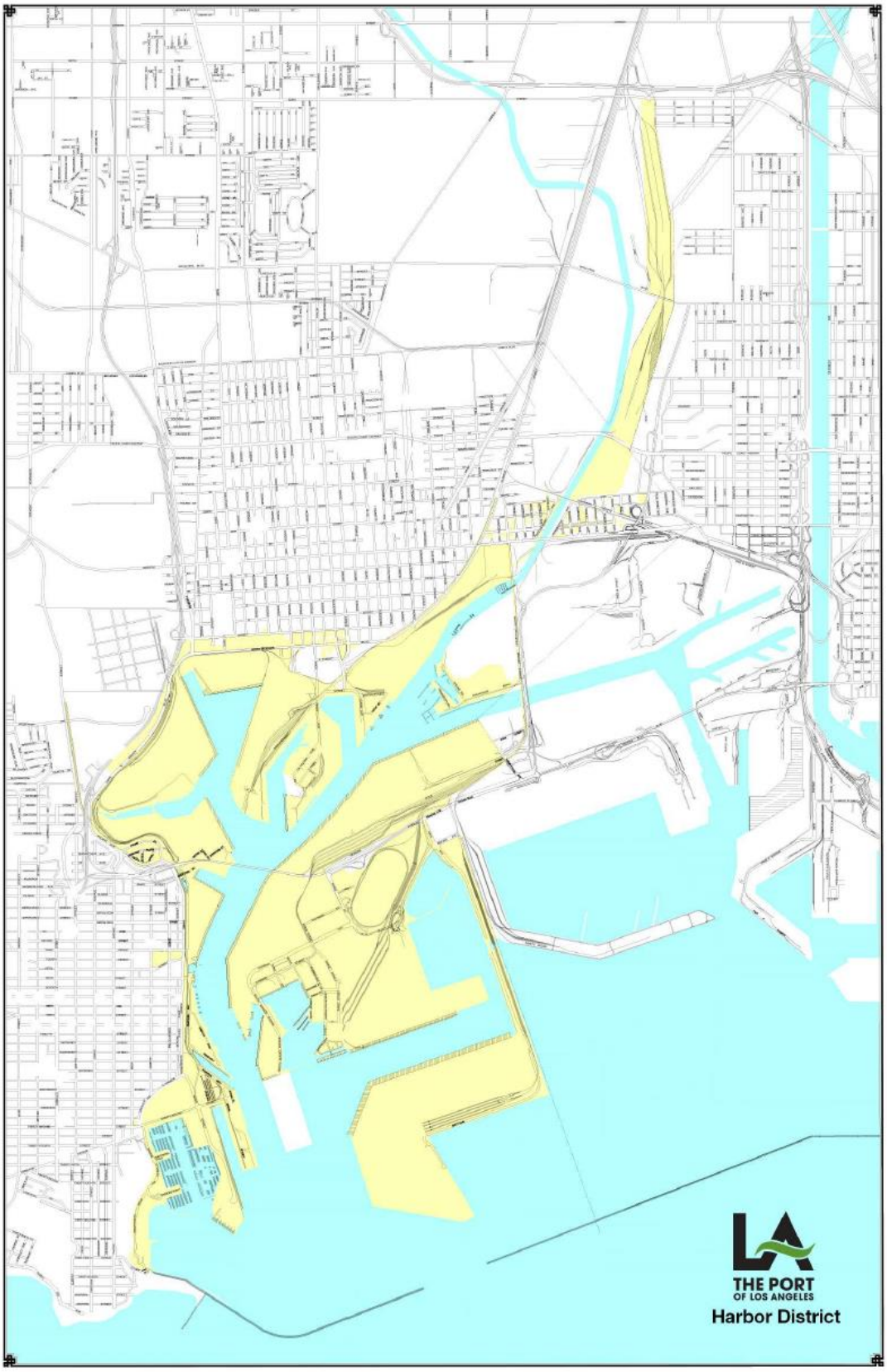
Attachment: Long Beach Harbor District Boundary Map
Los Angeles Harbor District Boundary Map

Port of LONG BEACH
THE GREEN PORT
Port of Long Beach | Environmental Planning
415 W. Ocean Blvd | Long Beach, CA 90802
562.283.7100

THE PORT OF LOS ANGELES
Port of Los Angeles | Environmental Management
425 S. Palos Verdes Street | San Pedro, CA 90731
310.732.3675

The San Pedro Bay Ports Clean Air Action Plan was developed with the participation and cooperation of the staff of the US Environmental Protection Agency, California Air Resources Board and the South Coast Air Quality Management District.

Long Beach Harbor District and Coastal Zone Boundary


THE PORT
OF LOS ANGELES
Harbor District

Staff Responses to Comment Letter #9

Response to Comment 9-1

Staff thanks the Port of Long Beach and Port of Los Angeles for their comment. In regards to the interaction between PR 2306 and other facility-based measures, including PR 2304 that is currently in rule development, please see staff responses to Comment 6-1 and Comment 7-1 previously submitted by the Ports.

Response to Comment 9-2

Staff appreciates the comment and have revised the rule language as suggested for the purpose of added clarity.

Comment Letter #10 from Member of Congress Nanette Barragán

NANETTE DIAZ BARRAGÁN
44TH DISTRICT, CALIFORNIA
WWW.BARRAGAN.HOUSE.GOV
FACEBOOK.COM/CONGRESSWOMANBARRAGAN
TWITTER: @REPBARRAGAN

CONGRESSIONAL HISPANIC CAUCUS
CHAIRWOMAN

COMMITTEE ON ENERGY AND COMMERCE
SUBCOMMITTEES:
HEALTH
ENVIRONMENT AND CLIMATE CHANGE
ENERGY

Congress of the United States
House of Representatives
Washington, DC 20515

WASHINGTON OFFICE:
2312 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
(202) 225-8220

DISTRICT OFFICES:
MAIN OFFICE
4201 LONG BEACH BOULEVARD, SUITE 422
LONG BEACH, CA 90807
(310) 831-1799

701 E. CARSON STREET
CARSON, CA 90745

8650 CALIFORNIA AVENUE
SOUTH GATE, CA 90280

July 24, 2024

Members of the Governing Board
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

RE: Proposed Rule 2306 – Freight Rail Yards

Dear Members of the Governing Board:

I support the South Coast Air Quality Management District's (SCAQMD) Proposed Rule 2306 – Freight Rail Yards (Rail Yards ISR) and urge the Governing Board to adopt the rule at the next meeting on August 2, 2024. The need to reduce pollution from freight rail yards in the South Coast Air Basin is long overdue and the proposed rule would result in significant air quality improvements and benefits for the region.

The Rail Yards ISR will deliver the greatest benefits to those living in neighborhoods adjacent to railyards and disproportionately exposed to the deadly impacts of rail pollution. In conjunction with CARB's In-Use Locomotive Rule and Advanced Clean Fleets regulations, the proposed Rail Yards ISR is estimated to reduce over 9 tons of nitrogen oxide emissions each day, which would greatly contribute to improved regional air quality and protecting public health. Additionally, the proposed rule is expected to prevent 275 premature deaths and over 1,940 emergency room visits and hospital admissions each year. Comment 10-1

Railroads are an essential part of the supply chain, as well as our local and national economies, but they are also major sources of air pollution with serious public health consequences. My Congressional District, which includes the railyard adjacent communities of Wilmington and Long Beach, is burdened by one of the highest asthma rates in the nation. Existing regulations on locomotives have not kept pace with the cleaner technology readily available, and the railroads have not made sufficient investments in reducing emissions to meet the district's clean air goals or combat excessively polluting trains from operating in the South Coast Air Basin. Strengthening regulations on rail yards will have a significant impact on the health and quality of life of my constituents.

Adoption of the proposed Rail Yards ISR is a necessary step, but the air district must use their legal authority, provided by Congress, to strengthen the regulations and continue to work with our frontline AB617 communities toward solutions that will more effectively reduce pollution Comment 10-2

from freight rail yards, accelerate the transition to zero emission facilities, and provide greater public transparency of how the district will hold violators accountable.

Comment 10-2 Con't

As the Representative of California's 44th Congressional District, I respectfully urge the SCAQMD Governing Board to consider the health and quality of life of frontline communities across the South Coast Air Basin by adopting the proposed Rail Yards ISR.

Sincerely,

Nanette Barragán
Member of Congress

Staff Responses to Comment Letter #10

Response to Comment 10-1

Staff appreciates Congressmember Barragán's comment and concur with the importance of public health protection through this rulemaking.

Response to Comment 10-2

Staff recognizes that continued outreach to and engagement with AB 617 communities is an important aspect to the successful implementation of PR 2306 if the rule is adopted and becomes effective. PR 2306 requires freight rail yard owners and operators to report on the planning, development status, and use of on- and off-site zero emission infrastructure in support of freight rail yard operations. This reporting will facilitate information sharing and coordination to expedite the development of necessary infrastructure and deployment of zero emission technologies.

Staff intends to conduct public outreach to identify an appropriate method to make reported information publicly available in a user-friendly format and consistent with transparency obligations under the California Public Records Act. The outreach will be followed by an update to the South Coast AQMD Governing Board Mobile Source Committee. Please also refer to staff responses to PW-3-b and Comment 1-7 for further details.

Comment Letter #11 from U.S. EPA - La Kenya Evans-Hopper

From: Evans-Hopper, La Kenya <[redacted]>
Sent: Thursday, July 25, 2024 11:51 AM
To: Zoya Banan <[redacted]>
Cc: Valerie Al Rwais <[redacted]>; Elaine Shen <[redacted]>; Lo, Doris <[redacted]>; Lueders, Jesse (he/him/his) <[redacted]>
Subject: [EXTERNAL] EPA Comments for Draft ISR Rule 2306

Dear Zoya,

Thank you for the opportunity for EPA to comment on the draft language for South Coast AQMD Rule 2306. Our comments below are based on the draft proposed language as found on the Proposed Rule 2306 webpage for the public hearing on August 2, 2024.

1. Section (c)(17) is the definition for Locomotive Engine Certification Data. The definition references EPA locomotive certification procedures. While we understand this as a reference to the certification procedures under 40 CFR part 1033, we recommend revising this definition to include a CFR citation or other reference to clarify the applicable certification procedures. Comment 11-1
2. The EPA recommends submitting Rule 2306 Calculation Methodology to the SIP at the same time that Rule 2306 is submitted to the SIP. Comment 11-2

Please let me know if you have any questions.

Sincerely,

La Kenya Evans-Hopper (Ph.D)
Rules Office, Air and Radiation Division
Life Scientist
U.S. EPA Region 9
75 Hawthorne Street, San Francisco, 94105
Office: (415) 972-3245

Staff Responses to Comment Letter #11

Response to Comment 11-1

Staff appreciates the comment and added the citation to U.S. EPA 40 CFR Part 1033 – Control of Emissions from Locomotives to the Definition section in Chapter 3 of this Staff Report.

Response to Comment 11-2

Staff appreciates U.S. EPA's recommendation. PR 2306 and the accompanying PR 2306 Calculation Methodology and Data Appendix will be submitted to CARB for their consideration and transmittal to U.S. EPA.

Fees for PR 316.2 Reports					
South Coast AQMD Staff Analysis Time (hour)					
Staff	**Burdened Hourly Rate**	**Initial Facility Information Report**	**Initial Zero Emission Infrastructure Report**	**Milestone Compliance Report**	**Zero Emission Infrastructure Status Update Report**
Planning & Rules Manager	$149.71	1.0	0.5	6.0	0.5
Program Supervisor	$135.56	6.0	1.0	20.0	1.0
Air Quality Specialist	$118.42	12.0	2.5	60.0	2.5
Air Quality Inspector II	$101.36	10.0	10.0	10.0	10.0
Total Staff Costs per Report		**$3,397.71**	**$1,520.07**	**$11,728.26**	**$1,520.07**

Fees for PR 316.2 Notifications								
South Coast AQMD Staff Analysis Time (hour)								
Staff	**Burdened Hourly Rate**	**Change of Freight Rail Yard Operator**		**Change of Freight Rail Yard Owner**		**Freight Rail Yard Shutdown**	**Exceedance of Low Activity Exemption Threshold**	**Proposed Freight Rail Yard Construction, Conversion, or Expansion Notification**
		Initial	*Secondary*	*Initial*	*Secondary*			
Planning & Rules Manager	$149.71	0.15	0.10	0.15	0.10	0.25	0.25	0.25
Program Supervisor	$135.56	0.15	0.10	0.15	0.10	0.25	0.25	0.25
Air Quality Specialist	$118.42	0.30	0.20	0.30	0.20	0.50	0.50	0.50
Total Staff Costs per Notification		**$ 78.32**	**$ 52.21**	**$ 78.32**	**$ 52.21**	**$ 130.53**	**$ 130.53**	**$ 130.53**

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SUBJECT: **NOTICE OF EXEMPTION FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT**

PROJECT TITLE: **PROPOSED RULE 316.2 – FEES FOR RULE 2306**

Pursuant to the California Environmental Quality Act (CEQA) Guidelines, the South Coast Air Quality Management District (South Coast AQMD), as Lead Agency, has prepared a Notice of Exemption pursuant to CEQA Guidelines Section 15062 – Notice of Exemption for the project identified above.

If the proposed project is approved, the Notice of Exemption will be filed for posting with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino Counties. The Notice of Exemption will also be electronically filed with the State Clearinghouse of the Governor's Office of Planning and Research for posting on their CEQAnet Web Portal which may be accessed via the following weblink: https://ceqanet.opr.ca.gov/search/recent. In addition, the Notice of Exemption will be electronically posted on the South Coast AQMD's webpage which can be accessed via the following weblink: http://www.aqmd.gov/nav/about/public-notices/ceqa-notices/notices-of-exemption/noe---year-2024.

NOTICE OF EXEMPTION FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

To:	County Clerks for the Counties of Los Angeles, Orange, Riverside and San Bernardino; and Governor's Office of Planning and Research – State Clearinghouse	**From:**	South Coast Air Quality Management District 21865 Copley Drive Diamond Bar, CA 91765

Project Title: Proposed Rule 316.2 – Fees for Rule 2306

Project Location: Proposed Rule (PR) 316.2 is located within the South Coast Air Quality Management District's (South Coast AQMD) jurisdiction, which includes the four-county South Coast Air Basin (all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties), and the Riverside County portion of the Salton Sea Air Basin and the non-Palo Verde, Riverside County portion of the Mojave Desert Air Basin.

Description of Nature, Purpose, and Beneficiaries of Project: PR 316.2 establishes fees for owners and operators of freight rail yards which will be used to fund reasonable operating expenses incurred by South Coast AQMD implementing PR 2306 – Freight Rail Yards. PR 316.2 applies to owners and operators of proposed, new, and existing freight rail yards subject to PR 2306 and specifies: 1) fees for submitting the various reports and notifications required by PR 2306; 2) payment due dates; and 3) service charges for any returned checks. While there will be no emission reductions associated with its implementation, PR 316.2 will ensure that the South Coast AQMD will have the necessary resources to provide necessary cost recovery while implementing PR 2306 requirements.

Public Agency Approving Project:	**Agency Carrying Out Project:**
South Coast Air Quality Management District	South Coast Air Quality Management District

Exempt Status: CEQA Guidelines Section 15273 – Rates, Tolls, Fares, and Charges

Reasons why project is exempt: South Coast AQMD, as Lead Agency, has reviewed the proposed project (PR 316.2) pursuant to: 1) CEQA Guidelines Section 15002(k) – General Concepts, the three-step process for deciding which document to prepare for a project subject to CEQA; and 2) CEQA Guidelines Section 15061 – Review for Exemption, procedures for determining if a project is exempt from CEQA. PR 316.2 is statutorily exempt from CEQA requirements pursuant to CEQA Guidelines Section 15273 – Rates, Tolls, Fares, and Charges, because it involves charges established by the South Coast AQMD, a public agency, for the purpose of meeting operating expenses associated with implementing PR 2306.

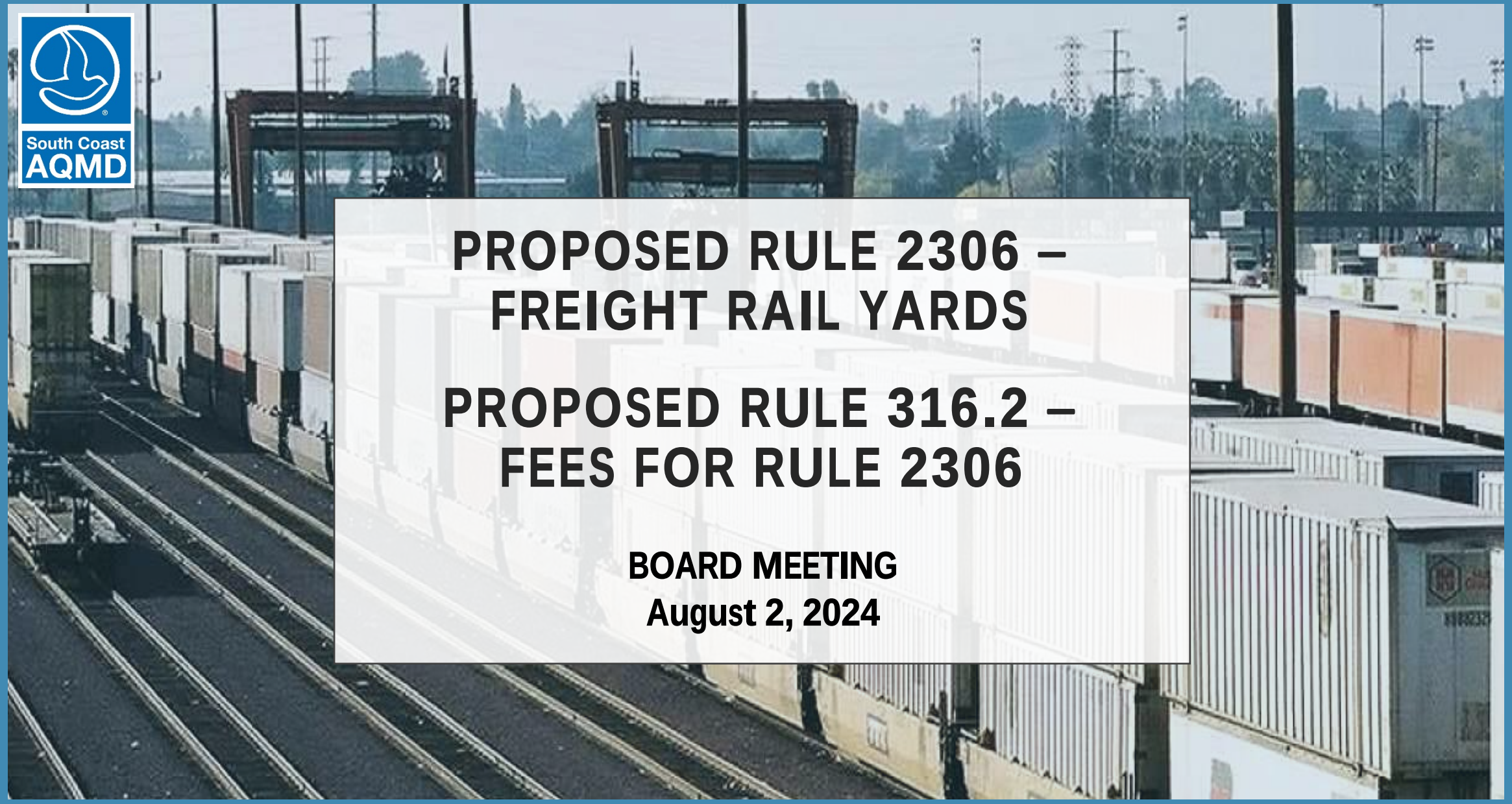
Date When Project Will Be Considered for Approval (subject to change):
South Coast AQMD Governing Board Public Hearing: August 2, 2024

CEQA Contact Person:	**Phone Number:**	**Email:**	**Fax:**
Jivar Afshar	(909) 396-2040	jafshar@aqmd.gov	(909) 396-3982
PR 316.2 Contact Person:	**Phone Number:**	**Email:**	**Fax:**
Cindy Guzman De La Rocha	(909) 396-3209	RailyardISR@aqmd.gov	(909) 396-3982

Date Received for Filing: _____ **Signature:** *(Signed and Dated Upon Board Approval)*

Kevin Ni
Program Supervisor, CEQA
Planning, Rule Development, and Implementation

ATTACHMENT L

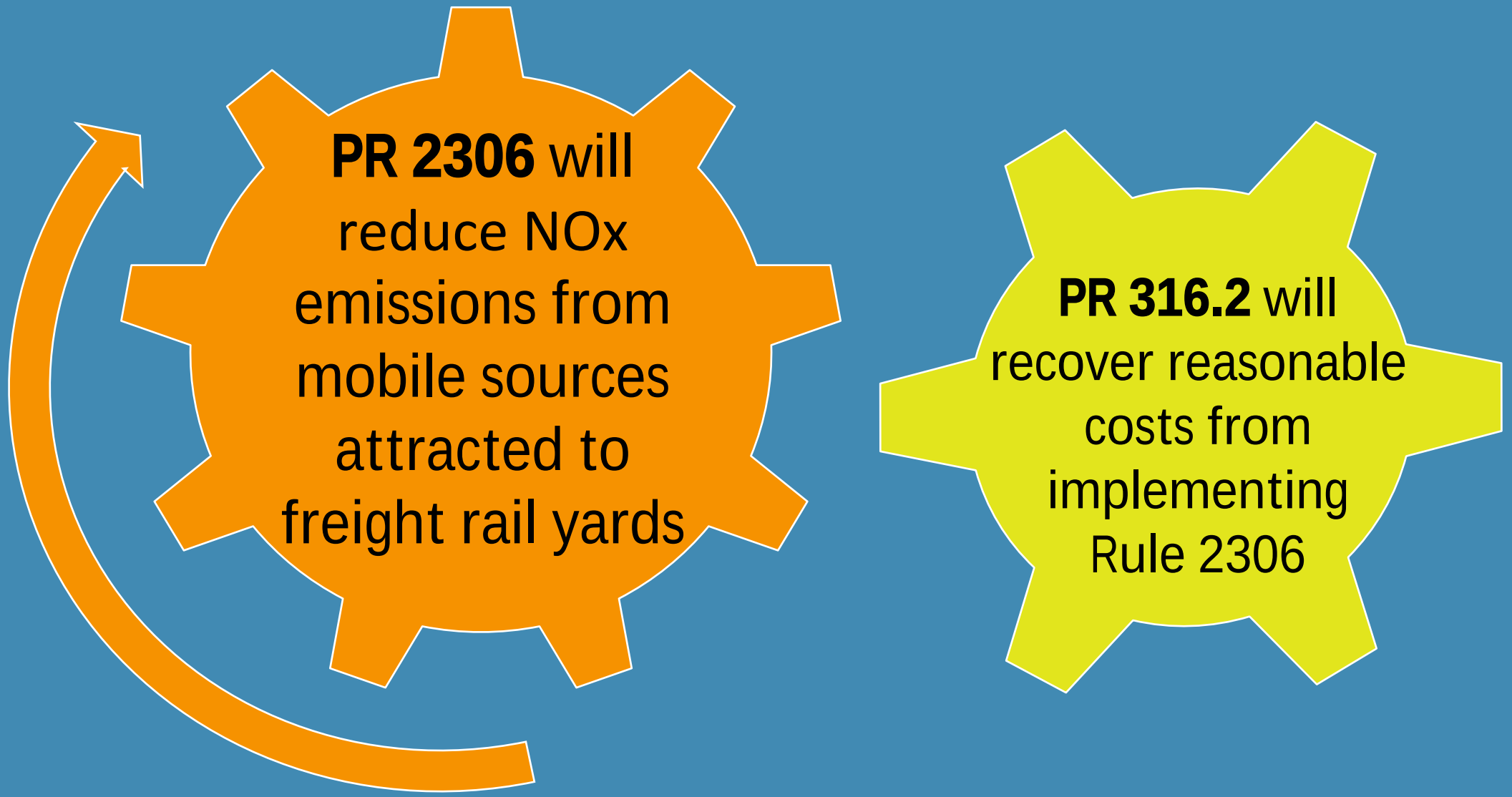


PROPOSED RULE 2306 – FREIGHT RAIL YARDS

PROPOSED RULE 316.2 – FEES FOR RULE 2306

BOARD MEETING
August 2, 2024

OVERVIEW

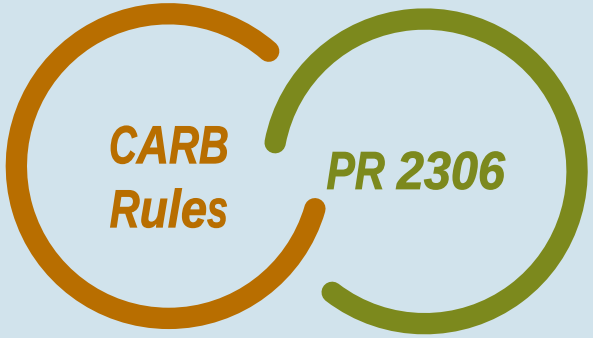

PR 2306 will reduce NOx emissions from mobile sources attracted to freight rail yards
PR 316.2 will recover reasonable costs from implementing Rule 2306

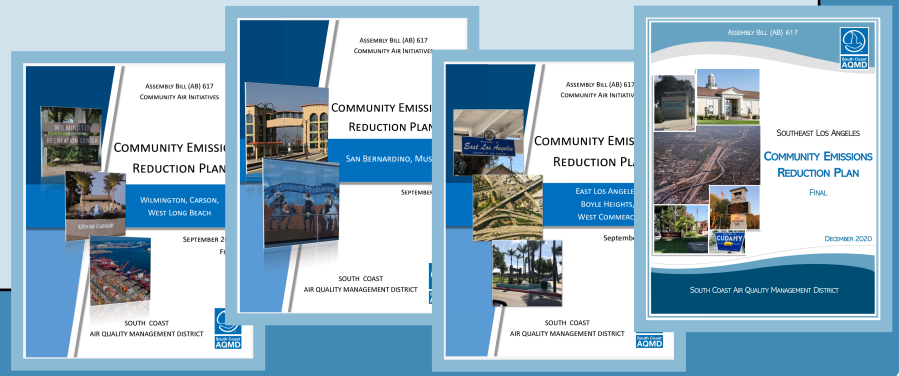
PUBLIC PROCESS

Presented 16 Updates to Mobile Source Committee (3 on current proposal) and 5 Updates to the Board

PR 2306 ADDRESSES FREIGHT RAIL YARD EMISSIONS

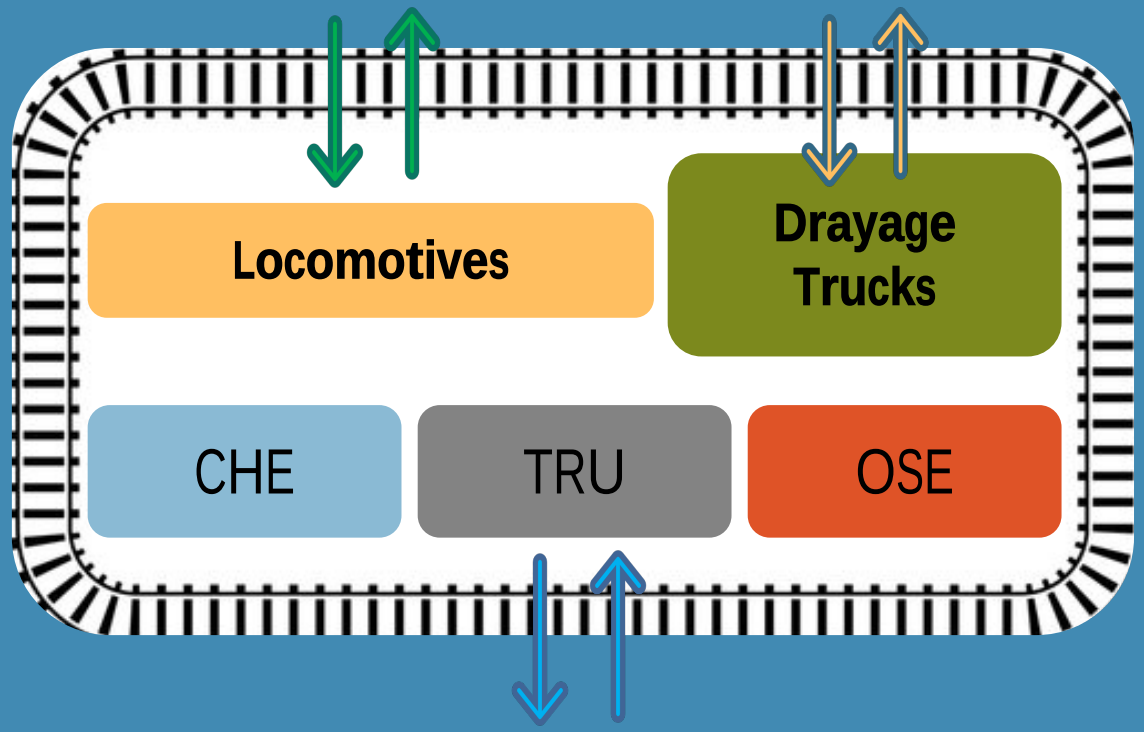
- Part of the suite of AQMP Facility-Based Mobile Source Measures to collectively address freight emissions
  - *Facilitates CARB's State SIP Strategy in South Coast AQMD*
  - *Assists attainment of state and federal air quality standards*
- PR 2306 complements implementation of CARB's:
  - *In-Use Locomotive Regulation*
  - *Advanced Clean Fleets Regulation*
- Implements AB 617 Community Emissions Reduction Plans for rail yard-adjacent EJ communities

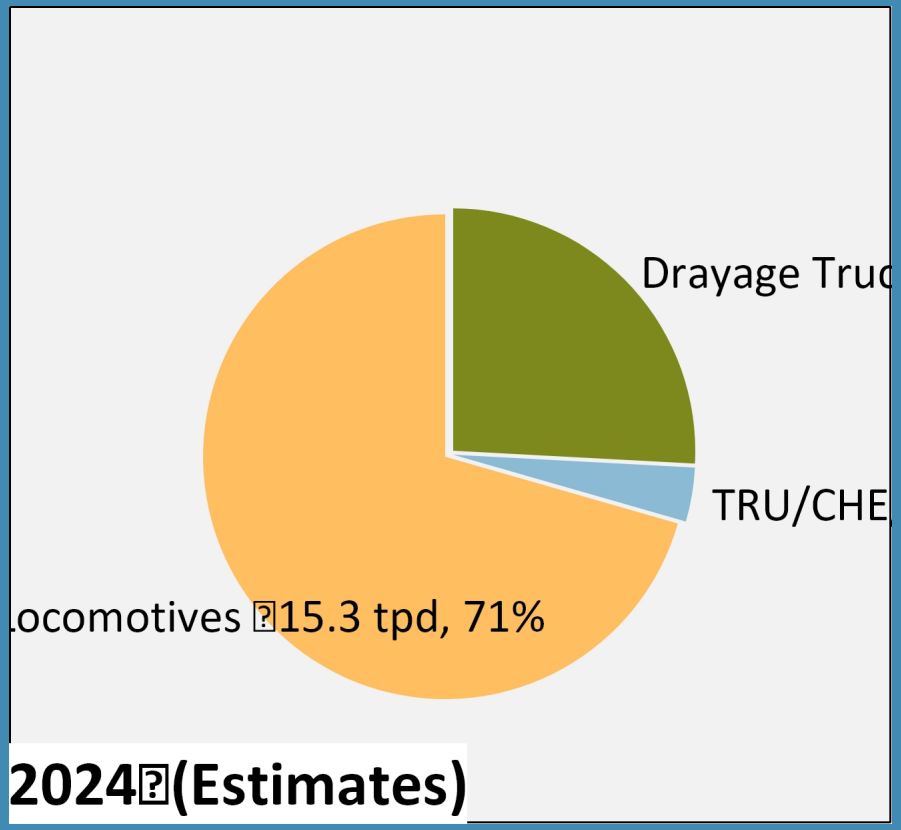




AQMP = Air Quality Management Plan SIP = State Implementation Plan EJ = Environmental Justice

FREIGHT RAIL YARD EMISSION SOURCES



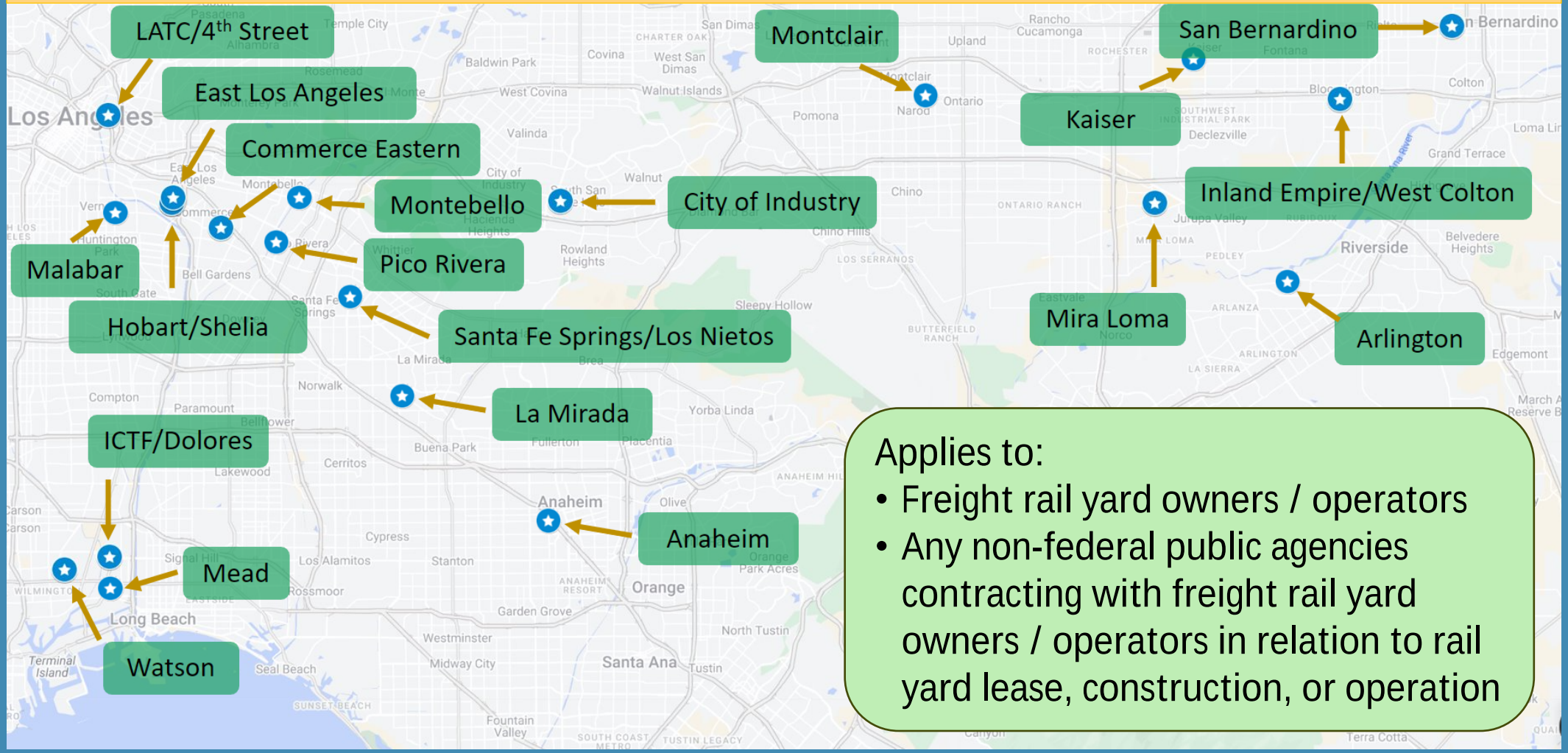


Total NOx emissions associated with freight rail yards make up nearly 9% of total South Coast Air Basin emissions

CHE = Cargo Handling Equipment
TRU = Transportation Refrigeration Unit
OSE = Other Support Equipment

PR 2306 APPLICABILITY

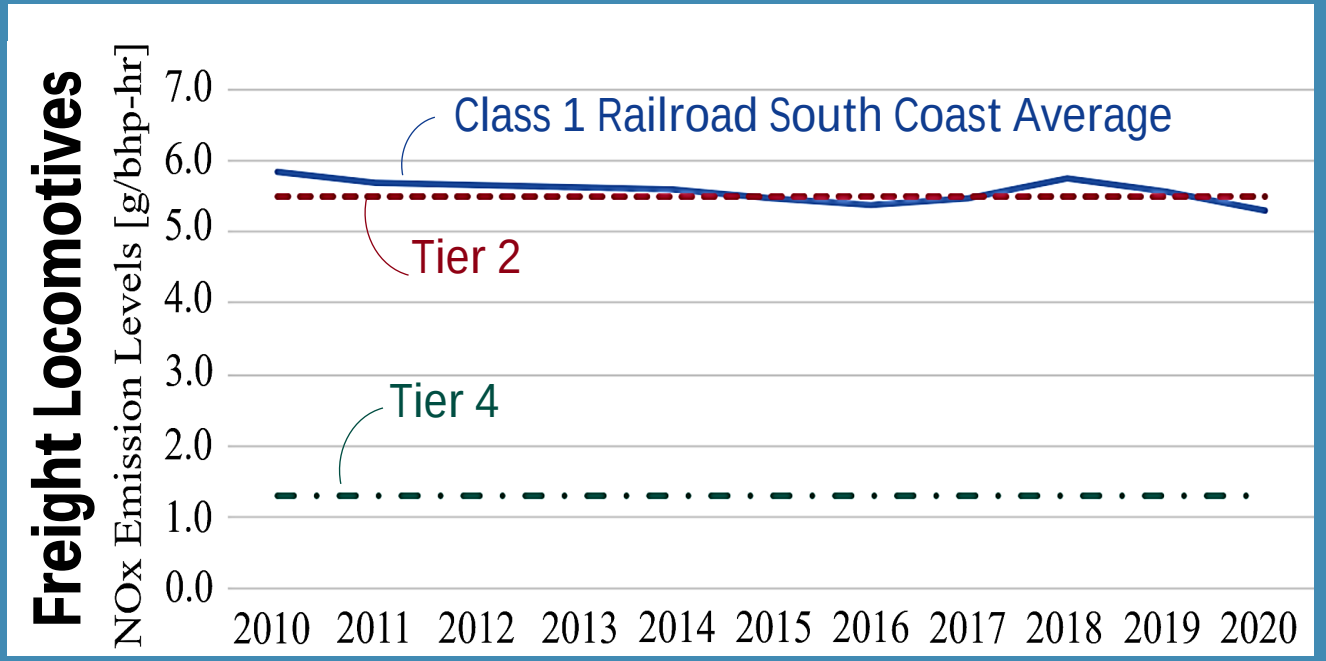
Freight Rail Yards Potentially Subject to PR 2306



(The map represents known freight rail yards potentially subject to PR 2306 and may not be exhaustive. See PR 2306 for detailed definitions related to rule applicability)

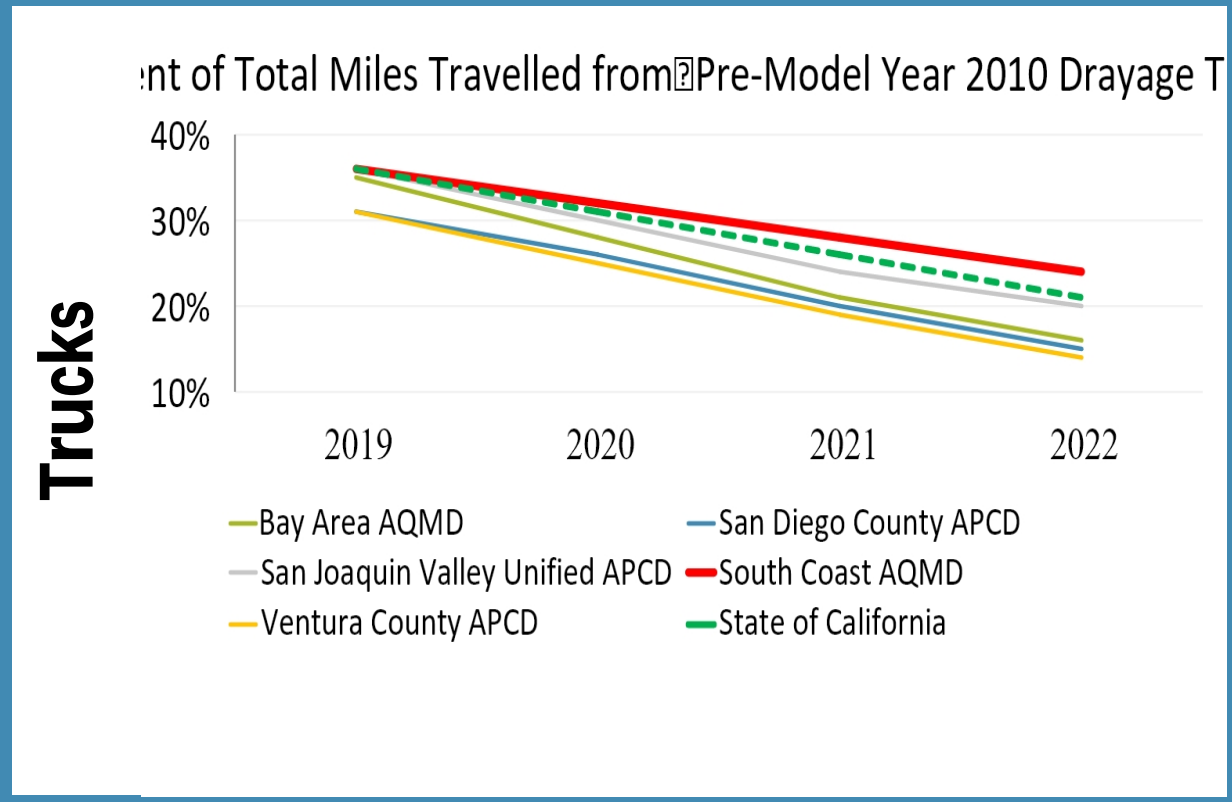
FREIGHT RAIL YARD EMISSIONS REMAIN TOO HIGH

- Railroad emission rates in South Coast Air Basin have not improved in the past decade despite federal standards and CARB MOU
  - Lack of investment by railroads in newest, Tier 4 locomotives



STATE-WIDE REGULATIONS DO NOT ENSURE REDUCTIONS IN SOUTH COAST AQMD

- CARB rules will significantly reduce emissions statewide
- No guarantee proportional reductions in South Coast AQMD
- South Coast AQMD emission reductions lagged behind rest of state for other state rules

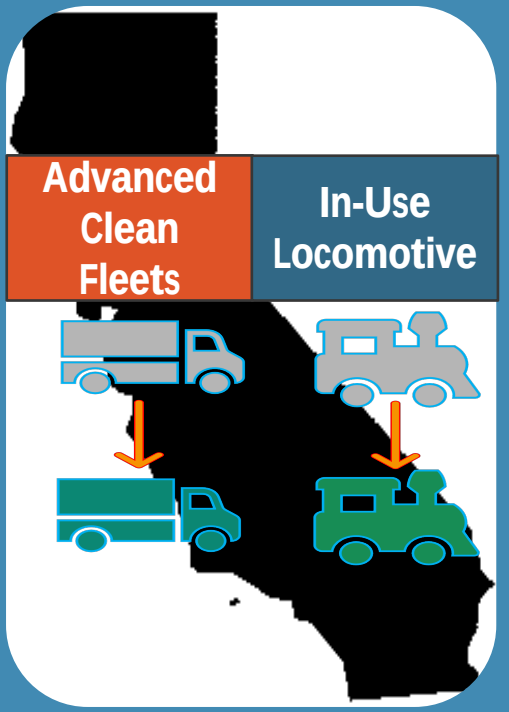


PR 2306 ENSURES NECESSARY EMISSION REDUCTIONS

% NOx Reductions from Facility-Level Compliance with PR 2306

≥

% NOx Reductions from Statewide Compliance with State Regulations



PR 2306 KEY COMPONENTS

Reduce NOx Emissions Associated with New and Existing Freight Rail Yards

Operators shall:

- ***Meet or exceed percent NOx reductions targets***
  - Milestone years
  - Based on emission reductions throughout California from implementation of recently adopted state rules
  - Can choose multiple compliance pathways, all ensuring NOx reductions at facility level
- ***Provide reports*** to demonstrate facility NOx reductions

- Owners and operators shall ***report on zero emission infrastructure*** planning, development, and use, with regular updates
  - Railroads must request grid upgrade by electrical utilities if a need is identified
- ***Non-federal public agencies*** shall include PR 2306 compliance requirements in their freight rail yard contract provision(s)
- *Exemptions* for very low use facilities, as well as certain port-owned/operated facilities

Effective upon U.S. EPA approval of PR 2306 SIP inclusion and waiver/authorization for CARB rules

KEY REMAINING ISSUES

Communicating rule performance with the public

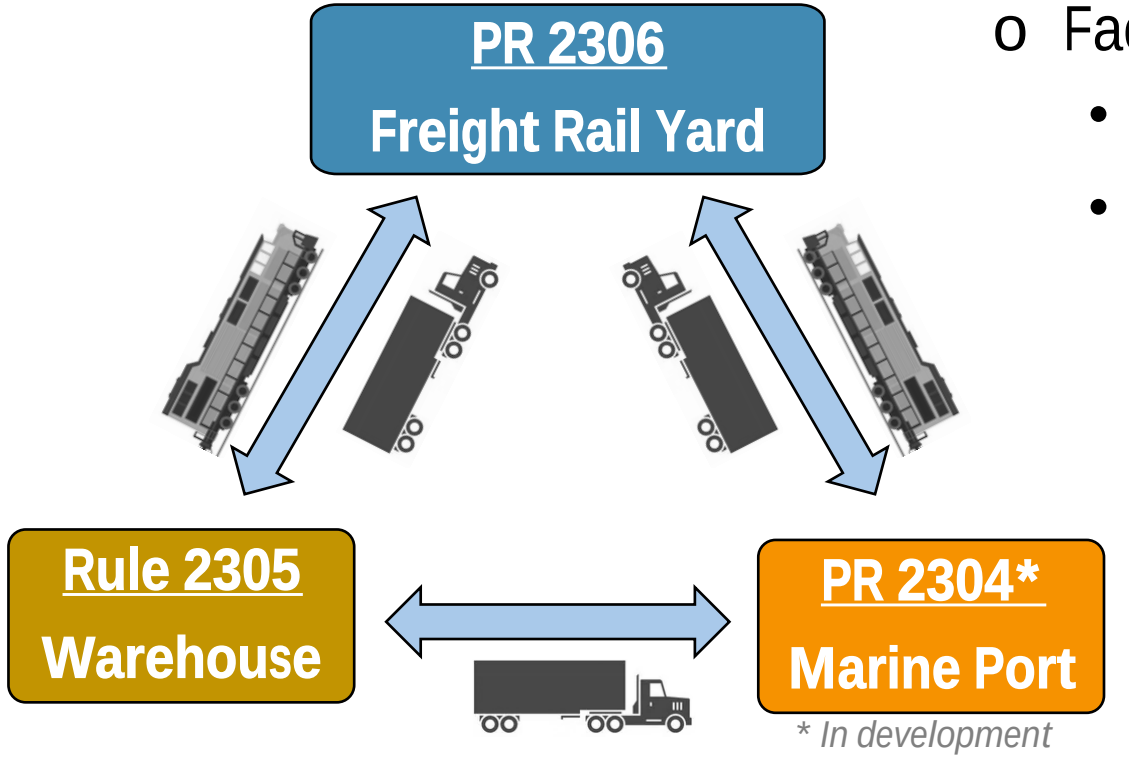
- Board Resolution directs staff to consult with public during rule implementation about making rule reporting data accessible in user-friendly format

Request for stronger targets to ensure emissions reduced from all mobile sources

- PR 2306 is designed to be consistent with state rules
  - Up to 82% NOx reductions by 2037
- Compliance through emission reductions from one or more mobile sources as long as targets are met
  - Locomotives, drayage trucks, cargo-handling equipment, transportation refrigeration units, etc.

KEY REMAINING ISSUES (CONT.)

Concern about potentially overlapping requirements between PR 2306 and other facility-based measures



- Facility-based measures
  - Applicable to respective types of facilities
  - Designed to not conflict with:
    - Other facility-based measures
    - CARB or U.S. EPA requirements applicable to fleets and engine manufacturers
- Actions taken by one facility type can help other facility types reduce their emissions

POTENTIAL FUTURE STAFF ACTIVITY FROM BOARD ACTION TODAY

Federal Approval

Report back to Mobile Source Committee on status of:

- PR 2306 SIP inclusion
- Authorization/waiver of CARB rules

Status update in March/April 2025

Compliance Outreach

Conduct outreach to affected facilities about PR 2306 and 316.2 requirements:

- When specific effective date of PR 2306 is known

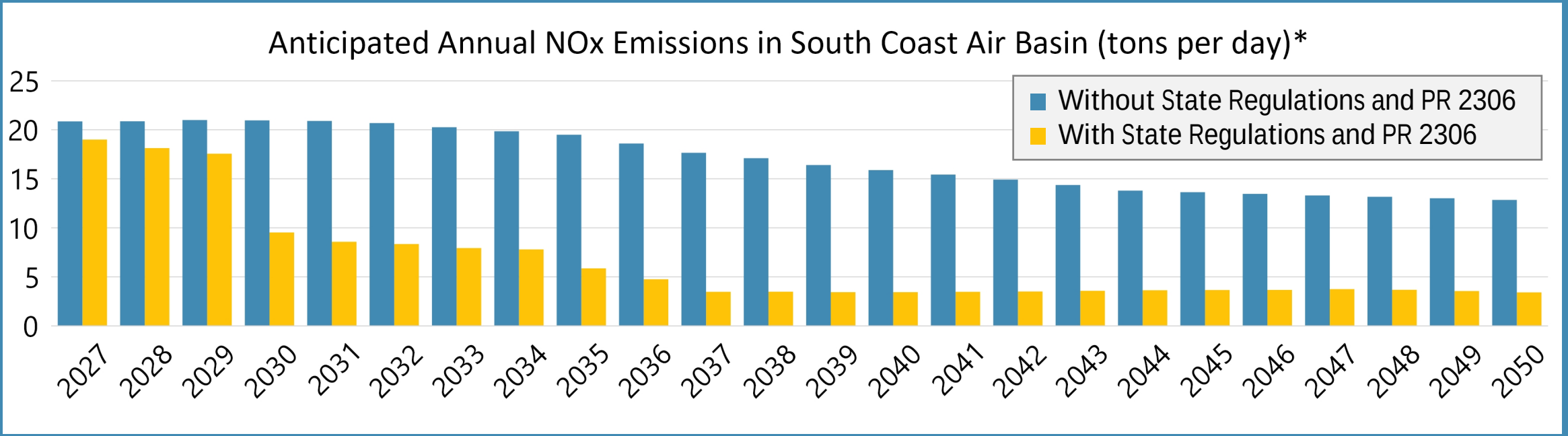
Access to Information

Report back to Mobile Source Committee on:

- Recommended approach to make compliance information publicly available in a user-friendly format, identified via public outreach

EMISSION REDUCTIONS AND HEALTH BENEFITS

- On average **10.5 tons per day of NOx reductions** projected over 2027 - 2050 from implementation of PR 2306, in conjunction with CARB's In-Use Locomotive and Advanced Clean Fleets regulations
  - ***~300 premature deaths*** avoided per year
  - ***~2,100 emergency department visits and hospital admissions*** avoided per year



** Estimated based on CARB's projections for statewide implementation of state rules*

CEQA AND SOCIOECONOMIC IMPACTS

California Environmental Quality Act (CEQA)

- **PR 2306** relies on the CEQA analyses previously conducted for the 2022 and 2016 AQMPs which adequately describe the activities and impacts
- **PR 316.2** is statutorily exempt from CEQA

Cost Impacts

- Nominal incremental compliance costs expected for PR 2306 due to majority of costs attributable to implementation of recently adopted state rules
- New incremental report and notification preparation costs and the associated PR 316.2 fees estimated at ~$15,000 per facility per year

STAFF RECOMMENDATIONS

Adopt Resolution:

- Determining that Proposed Rule 2306 – Freight Rail Yards does not require a new environmental document
- Determining that Proposed Rule 316.2 – Fees for Rule 2306 is exempt from the requirements of CEQA

- Adopting:
  - Rule 2306
  - Rule 316.2

- Approving:
  - Proposed Rule 2306 Calculation Methodology and Data Appendix