

# SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Preliminary Draft Staff Report

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

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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 (NO<sub>x</sub>) from the goods movement sector, to assist in meeting state and federal air quality standards for ozone and fine particulate matter. NO<sub>x</sub> is the key pollutant that must be controlled in order to meet federal air quality standards, and over 80 percent of the NO<sub>x</sub> 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. 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 reduction 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 NO<sub>x</sub> emissions associated with freight rail yard operations by requiring operators of freight rail yards to meet or exceed emission reduction targets. The proposed rule will ensure that emission reductions achieved will meet a specified level of implementation with statewide regulations and/or be proportional or more-than-proportional in the South Coast AQMD relative to statewide average emission reductions from implementation of state regulations. Additionally, any state or local government 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 thirteen 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**

**LEGAL AUTHORITY**

## ***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. NO<sub>x</sub> is the key pollutant that must be controlled to meet both ozone and fine particulate matter (PM<sub>2.5</sub>) standards in our region. Over 80 percent of the NO<sub>x</sub> emissions in the South Coast Air Basin (Air Basin) are from mobile sources, and nearly half of these come from mobile sources associated with goods movement.<sup>1</sup> 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 Air Basin 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 NO<sub>x</sub>, but also fine particulate matter (PM<sub>2.5</sub>). Short-term exposure to PM<sub>2.5</sub> 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 PM<sub>2.5</sub>, 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.

PR 2306 and PR 316.2 are applicable to owners and operators of freight rail yards located in the South Coast Air Quality Management District (South Coast AQMD) jurisdiction. Freight rail yards are rail yards where switching activities occur, which involve loading or unloading cargo, either in containers or not, onto or 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 NO<sub>x</sub> emissions associated with freight rail yard operations by meeting or exceeding specific emission reductions targets. The proposed targets will ensure that emission reductions will either meet a specific level of implementation of statewide rules or will be proportional or more-than-proportional in South Coast AQMD relative to the rest of the state. 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. Emission reductions targets are expected to be achieved through reductions from locomotives and drayage trucks subject to those regulations, as well as from all other mobile sources associated with freight rail yards to transport or assist in transporting cargo or goods. 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.

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<sup>1</sup> [https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocial\\_goods-movement.pdf?1606001690](https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocial_goods-movement.pdf?1606001690)

***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; therefore, this regulation 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.

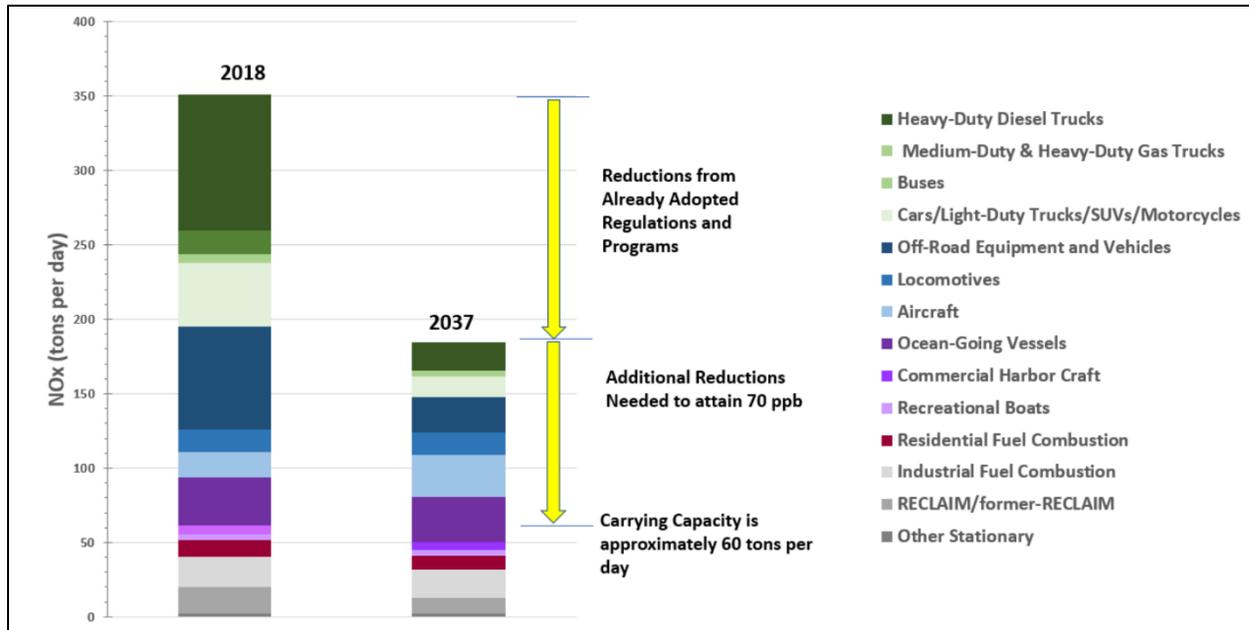
The 2022 AQMP reflects a continued effort on implementation of Further Deployment Measures for control measure MOB-02 as well as CARB’s 2022 State Strategy for the State Implementation Plan (2022 SIP Strategy). After staff explored both regulatory and voluntary approaches, rulemaking for PR 2306 was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

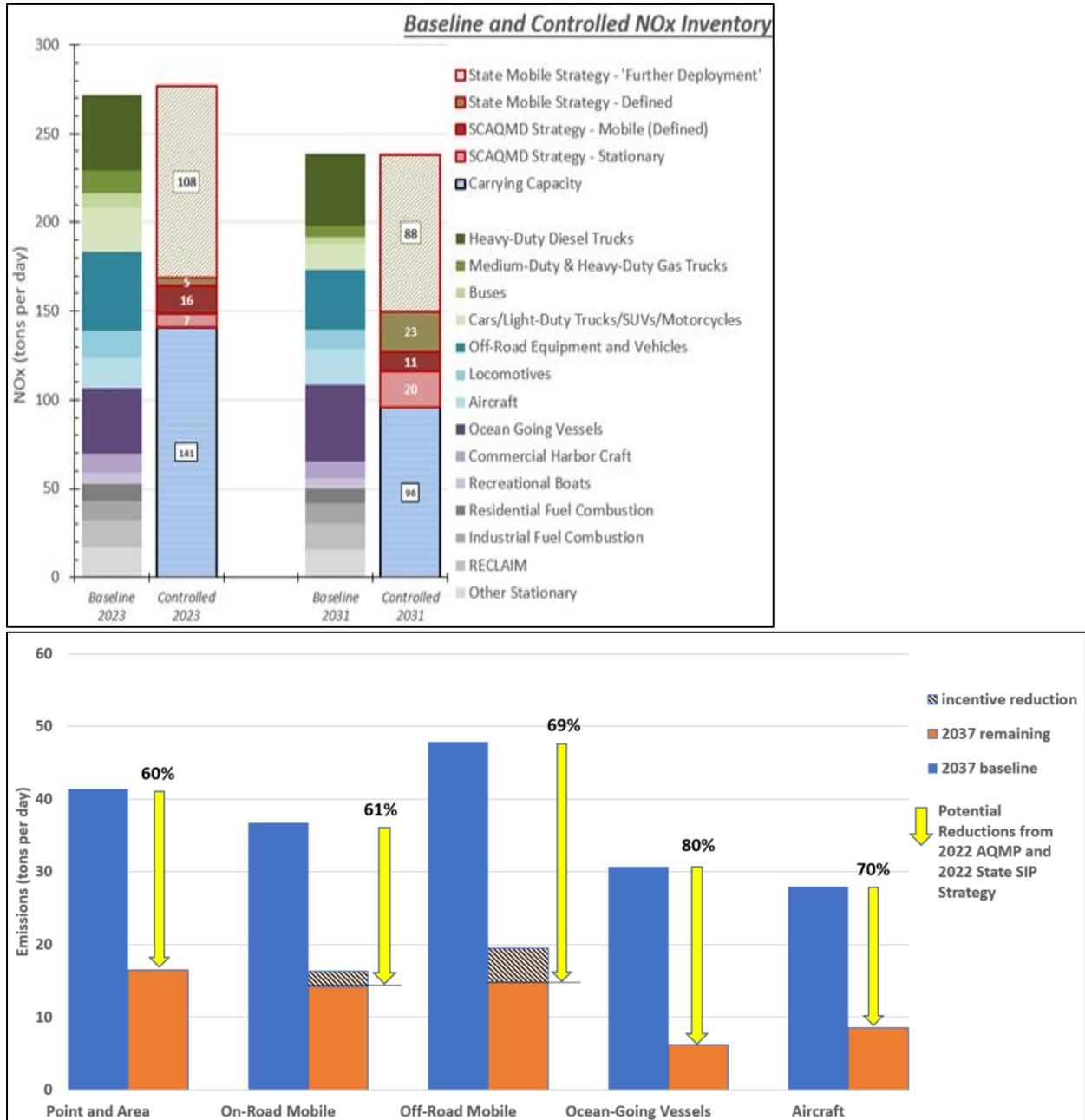
Per the Health and Safety Code, South Coast AQMD is required to adopt plans to demonstrate how the region will meet both federal and state ambient air quality standards for South Coast AQMD’s jurisdiction.<sup>7</sup> The AQMP is a blueprint for meeting federal and state air quality standards in South Coast AQMD’s jurisdiction. On December 2, 2022, South Coast AQMD’s Governing Board adopted the 2022 AQMP.<sup>8</sup> Based on analysis in the 2022 AQMP the total NOx emissions in the Air 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 Air 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 PM 2.5 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 PM 2.5 but also includes measures to reduce directly emitted PM 2.5.



**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 addresses 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 set out 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, 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 South Coast AQMD Governing Board voted to initiate rulemaking in May 2018, staff began the rule development process and has conducted 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 concerns 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
<b>Earlier rule development focused on existing rail yards</b>		
June 1, 2017	Working Group Meeting	<ul style="list-style-type: none"> <li>Working group process and metrics</li> <li>Overview of emission sources at rail yards</li> <li>Measures to improve air quality</li> </ul>
October 14, 2017	Working Group Meeting	<ul style="list-style-type: none"> <li>Framework on how Facility Based Mobile Source Measures are developed</li> <li>Emissions inventory at rail yards and intermodal facilities</li> <li>Emission reduction opportunities</li> </ul>
January 18, 2018	Working Group Meeting	<ul style="list-style-type: none"> <li>Background on previous Facility Based Mobile Source Measure activities</li> <li>List of opportunities and strategies for emission reductions</li> </ul>
<b>Staff visits to UP (Commerce and Colton) and BNSF (Hobart and San Bernardino) rail yards in Fall 2018</b>		
November 20, 2019 December 11, 2019	Community Workshops	<ul style="list-style-type: none"> <li>Regulatory background from CARB and South Coast AQMD</li> <li>CARB statewide rail yard emission reduction concepts</li> <li>South Coast AQMD rail yard emission reduction concepts</li> </ul>
<b>Rule development pivoted to new intermodal rail yards</b>		
July 30, 2021	Working Group Meeting	<ul style="list-style-type: none"> <li>Background and regulatory commitments</li> <li>Overview of two new proposed intermodal facilities in the South Coast Basin</li> <li>Environmental justice concerns</li> <li>Need for 2306 and overview of rule development process moving forward</li> </ul>
September 30, 2021	Working Group Meeting	<ul style="list-style-type: none"> <li>Summary of previous working group meeting</li> <li>Initiation of discussions with technology providers involving zero emission and near-zero emission technologies</li> <li>Presentation by representatives from BNSF</li> </ul>
December 8, 2021	Working Group Meeting	<ul style="list-style-type: none"> <li>Response to the comment letter received from BNSF on September 15, 2021</li> </ul>

Date	Meeting Title	Highlights
		<ul style="list-style-type: none"> <li>• Presentations from the following technology providers: BYD, Shuttlewagon, Volvo, KLW</li> </ul>
April 12, 2022	Working Group Meeting	<ul style="list-style-type: none"> <li>• Overview of health effects by Dr. Nichole Quick</li> <li>• Summary of comment letters from BNSF, environmental groups, and the community</li> <li>• Indirect source rule concept development applicable for new rail yards</li> <li>• CARB’s proposed regulatory actions for locomotives and drayage trucks</li> </ul>
June 7, 2022	Working Group Meeting	<ul style="list-style-type: none"> <li>• Updates on staff activities since previous working group meeting</li> <li>• Technology and infrastructure considerations</li> <li>• Overview of intermodal facility operations</li> <li>• Opportunities for emission reductions at new intermodal facilities</li> </ul>
August 10, 2022	Working Group Meeting	<ul style="list-style-type: none"> <li>• Proposed rule development</li> <li>• Determining emissions inventory for new facilities</li> </ul>
October 19, 2022		Staff visit to the Intermodal Container Transfer Facility (ICTF) operated by UP
November 15, 2022	Working Group Meeting	<ul style="list-style-type: none"> <li>• Recent staff meetings and discussion with stakeholders</li> <li>• Development of emission inventory methodologies</li> <li>• Key goals and initial rule concepts</li> </ul>
January 28, 2023		Released First Draft Preliminary Rule Language
February 1, 2023	Working Group Meeting	<ul style="list-style-type: none"> <li>• Status update of rule development schedule</li> <li>• Overview of rule concepts and requirements</li> </ul>
March 25, 2023 April 11, 2023 April 12, 2023	Community Meetings	<ul style="list-style-type: none"> <li>• Overview of health effects</li> <li>• Background for indirect source rules involving ports and rail yards</li> <li>• Affected communities surrounding proposed intermodal facilities</li> <li>• Identified applicable emission sources located at ports and rail yard and the three factors to develop and deploy zero emission technology</li> <li>• Preliminary rule concepts for PR 2306</li> </ul>
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		

Date	Meeting Title	Highlights
Rule development resumed for new and existing freight rail yards		
January 17, 2024	Working Group Meeting	<ul style="list-style-type: none"> <li>• Background and rule applicability</li> <li>• Preliminary overview of rule concepts</li> <li>• Outline of initial rule design</li> </ul>
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	<ul style="list-style-type: none"> <li>• Summaries of previous working group meeting and feedback received from community stakeholders on initial rule concepts presented</li> <li>• Updated overview of rule concepts and requirements</li> </ul>
April 19, 2024		Mobile Source Committee
May 17, 2024		Released Preliminary Draft Language and Preliminary Draft Staff Report
June 4, 2024 ( <i>tentative</i> )		Public Workshop
June 5, 2024 ( <i>tentative</i> )		Community Workshop
June 7, 2024 ( <i>tentative</i> )		Set Hearing
June 21, 2024 ( <i>tentative</i> )		Mobile Source Committee
July 2, 2024 ( <i>tentative</i> )		Releasing Draft Rule Language and Draft Staff Report
August 2, 2024 ( <i>tentative</i> )		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 Air 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 NO<sub>x</sub> (a key precursor pollutant for ozone and PM<sub>2.5</sub>). The South Coast AQMD is in nonattainment of the CAAQS for both ozone and PM 2.5. For both ozone and PM 2.5, 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 PM 2.5 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 the State Implementation Plan (SIP); the ozone-related portion of the Plan was approved by U.S. EPA in 2019.<sup>2</sup> 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, the South Coast AQMD and CARB have committed to, and the 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 PM 2.5 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.

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.”

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<sup>2</sup> 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 PM<sub>2.5</sub> NAAQS and the 2012 annual PM 2.5 NAAQS. However, the U.S. EPA did not act on the annual PM 2.5 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 PM 2.5 plan and will submit a revised plan in Spring 2024.

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 reduction strategies. Through a public process, PR 2306 will seek to reduce emissions associated with freight rail yards and implement MOB-02A and MOB-02B 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 ISR, 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 reduction 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.4<sup>th</sup> 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 reduction 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 PM 2.5 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.

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 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  
REDUCTION 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 railyards 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's-In-Use Locomotive Regulation. No single regulation 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 REDUCTION 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. Other freight rail yard emission sources and operations which are not covered under PR 2306, such as employee vehicles, vendor trucks, service trucks, and emergency generators, represent a far smaller share of emissions associated with freight rail yards and/or are already subject to the applicable state and/or local air quality regulations.

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.<sup>3</sup> Currently, Tier 4 engines are ranked as the cleanest available technology for off-road engines, and have generally been available since 2015.<sup>4</sup> 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 emissions standards in its Advanced Clean Trucks regulation.<sup>5</sup>

Emission reduction strategies across mobile sources tend to be consistent, although the plausible implementation of these strategies differ across categories. The emission reduction 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.

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<sup>3</sup> United States Environmental Protection Agency, Emission Standards Reference Guide for On-road and Nonroad Vehicles and Engines. <https://www.epa.gov/emission-standards-reference-guide>

<sup>4</sup> 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>

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

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 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 NO<sub>x</sub> and PM<sub>2.5</sub> emissions so much that transporting goods will be less polluting using trucks than trains.<sup>6</sup> This could shift 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 transport of cargo to and from 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.

Switcher locomotives are locomotives that generally operate within the 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. Switcher 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 switcher 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’s emission standards. Locomotives are generally identified by Tier levels, corresponding to the U.S. EPA’s locomotive engine emissions standards for new and remanufactured locomotives, 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. 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

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<sup>6</sup> <https://ww2.arb.ca.gov/resources/fact-sheets/truck-vs-train-emissions-analysis>

outbound train servicing a freight rail yard, the locomotive emissions will depend on the number 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 loading and unloading operation time. 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 locomotives, zero emission locomotives are just beginning to emerge commercially for switcher operations or in combination with diesel line-haul locomotives to make a hybrid consist, and technology is anticipated to continue to develop.<sup>7</sup>

## 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 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 Advanced Clean Fleets (ACF) Regulation 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 railyards or ports upon surpassing a certain mileage threshold or model year age. Zero emission trucks that can perform drayage service are now commercially available.<sup>8</sup>

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<sup>7</sup> Examples:

<https://www.progressrail.com/en/Segments/RollingStock/Locomotives/FreightLocomotives/EMDJoule.html>,  
<https://www.wabteccorp.com/locomotive/alternative-fuel-locomotives/FLXdrive>,  
<https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appf.pdf>

<sup>8</sup> Examples: <https://globaldrivetozero.org/tools/zeti/>, <https://californiahvip.org/vehicle-category/heavy-duty/?type=300>

### 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). Transportation Refrigeration Units 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 TRU's that plug in while parked) or TRU's 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.<sup>9</sup>

### 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. 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)<sup>10</sup>, or zero emission

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<sup>9</sup> Examples: <https://ww2.arb.ca.gov/our-work/programs/transport-refrigeration-unit/compliance-information/zero-emission-truck-tru>

<sup>10</sup> Examples: <https://en.byd.com/truck/terminal-tractor/>, <https://orangeev.com/huske/>, <https://taylorforklifts.com/products/electric-lift-truck>

hybrid options (e.g., rubber-tired gantries).<sup>11</sup> However zero emission technology for some categories is still developing.<sup>12</sup>

### **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.<sup>13</sup> Off-road OSE powered by diesel engines would be covered by CARB’s In-Use Off-Road Diesel regulation that was recently amended.<sup>14</sup>

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).<sup>15</sup>

### ***CURRENT STATE REGULATIONS ADDRESSING FREIGHT RAIL YARD EMISSION SOURCES***

Several state goals have focused on the need to accelerate the adoption of lower emission technologies, in particular ZEVs and locomotives. Two notable examples include CARB’s recently adopted In-Use Locomotive Regulation and ACF Regulation. PR2306 is designed with these two rules in mind and aims to guarantee localized emission reductions in freight rail yards from these regulations. In addition to the recently adopted state regulations, CARB’s 2020 Mobile Source Strategy (MSS),<sup>16</sup> the 2022 State SIP Strategy,<sup>17</sup> and an executive order from the governor aim to accelerate the adoption of zero emission technologies.<sup>18</sup> CARB’s MSS is an integrated

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<sup>11</sup> Examples: <https://mi-jack.com/ecocrane-battery-hybrid-system/>, <https://www.konecranes.com/en-us/port-equipment-services/container-handling-equipment/rubber-tired-gantry-cranes>

<sup>12</sup> 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>

<sup>13</sup> <https://ww2.arb.ca.gov/our-work/programs/truckstop-resources/road-zone/large-spark-ignition-regulation>

<sup>14</sup> <https://ww2.arb.ca.gov/our-work/programs/use-road-diesel-fueled-fleets-regulation>

<sup>15</sup> <https://californiacore.org/equipment-category/railcar-movers-switchers/?type=110>, [https://calstart.org/wp-content/uploads/2022/10/off\\_road\\_report\\_october\\_2022.pdf](https://calstart.org/wp-content/uploads/2022/10/off_road_report_october_2022.pdf)

<sup>16</sup> California Air Resource Board. (2021). 2020 Mobile Source Strategy. Available at: <https://ww2.arb.ca.gov/resources/documents/2020-mobile-source-strategy>

<sup>17</sup> CARB (2022): <https://ww2.arb.ca.gov/resources/documents/2022-state-strategy-state-implementation-plan-2022-state-sip-strategy>

<sup>18</sup> State of California. (2020). Executive Order N-79-20. Available at: <https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf>

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 Advanced Clean Trucks (ACT) Regulation have been more clearly defined through CARB rulemaking efforts, 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

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.<sup>19</sup> 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 NO<sub>x</sub> 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 locomotives. Funds may also be used for zero emission railcar movers, zero emission infrastructure, and pilot and demonstration projects. Beginning January 1, 2030, all locomotives built in or before 2007 will no longer be allowed to operate in California, and only locomotives less than 23 years of age may operate within the state. Also starting on January 1, 2030, all new passenger, switch, and industrial locomotives with original engine build dates of 2030 or later must be zero emission to operate 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 be zero emission to operate 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, 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

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<sup>19</sup> <https://ww2.arb.ca.gov/rulemaking/2022/locomotive>

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 expands on rail emission reduction efforts made earlier by CARB through the 1998 MOU that focused on locomotive fleet-wide average emission to meet Tier 2 emission levels or better for the Air Basin from 2010 through 2030. This agreement remains in effect today.<sup>20</sup>

### 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.<sup>21</sup> 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 reported 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 date, whichever is later. Also beginning January 1, 2024, any truck added to drayage service must be zero emission. ACF also requires all drayage trucks entering seaports and intermodal rail yards to be zero emission by 2035. As of the date of this report, EPA has not approved the waiver and authorization requests from CARB for ACF.

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.<sup>22</sup> 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.

### 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. CARB has proposed Part 2 Amendments to the TRU ATCM for Non-Truck TRUs with an aim to introduce zero emission requirements for non-truck TRUs, such as trailer TRUs, domestic

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<sup>20</sup> <https://ww2.arb.ca.gov/resources/documents/rail-emission-reduction-agreements>

<sup>21</sup> <https://ww2.arb.ca.gov/rulemaking/2022/acf2022>

<sup>22</sup> <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.>

container TRUs, railcar TRUs, and TRU generator sets. Starting in 2028, under the proposed strategy all new non-truck TRU acquisitions could be required to be zero emission TRUs.

### **Cargo Handling Equipment**

The 2022 SIP Strategy for CHE will establish requirements for transitioning CHE to zero emission CHE over a period of five years for all types of CHE. Zero emission transition would begin in 2026 for yard trucks and forklifts, in 2028 for rubber-tired gantry cranes, and in 2032 for other CHE types. Under this strategy, all yard trucks and forklifts will 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.

### ***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 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.<sup>23</sup> 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.<sup>24</sup>

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.<sup>25</sup> 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.<sup>26</sup>

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

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<sup>23</sup> CEC. AB 2127 Report. <https://efiling.energy.ca.gov/GetDocument.aspx?tn=254869>

<sup>24</sup> CEC. Integrated Energy Policy Report. <https://efiling.energy.ca.gov/GetDocument.aspx?tn=254463>

<sup>25</sup> CEC EDGE tool. <https://experience.arcgis.com/experience/6aaadc11586447aaaeab2a473947ad07>

<sup>26</sup> CEC. AB 2127 report. <https://efiling.energy.ca.gov/GetDocument.aspx?tn=254869>

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.

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, fine particulate matter (PM<sub>2.5</sub>), and diesel particulate matter, are not only harmful to the environment but also to human health. Regulating NO<sub>x</sub> emissions, a precursor to ozone and PM<sub>2.5</sub>, 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.<sup>27</sup> 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.

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<sup>27</sup> South Coast AQMD. (2022). 2022 Air Quality Management Plan. Available at: <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?sfvrsn=16>

Studies have found connections between high levels of particulate matter and higher mortality rates, respiratory infections, asthma attacks, COPD exacerbations, and hospital admissions.<sup>28</sup> 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.<sup>29</sup> 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, 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.<sup>30</sup>

The Air 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.<sup>31</sup> 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.<sup>32</sup> Mobile sources associated with goods movement make up about 52 percent of all NOx emissions in the Air Basin.<sup>33</sup> Trucks are the largest source of NOx emissions in the Air 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 Air 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 (ZEV). There are many actions occurring across the State of California to increase the use of ZEVs to satisfy many goals, including meeting federal and state air quality standards, reducing toxics and greenhouse gas emissions, encouraging manufacturing of ZEVs in the state, and reducing dependence on fossil fuels.<sup>34</sup> Air districts are authorized to contribute to such efforts through

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<sup>28</sup> South Coast AQMD. (2022). 2022 Air Quality Management Plan. Available at: <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?sfvrsn=16>

<sup>29</sup> U.S. EPA. (2019). Integrated Science Assessment (ISA) for Particulate Matter. Available at: <https://www.epa.gov/isa/integrated-science-assessment-isa-particulate-matter>

<sup>30</sup> South Coast AQMD. (2021). MATES V Study. Available at: <https://www.aqmd.gov/docs/default-source/planning/mates-v/mates-v-final-report-9-24-21.pdf?sfvrsn=6>

<sup>31</sup> American Lung Association. Report Card: California. Available at: <https://www.lung.org/research/sota/city-rankings/states/california>

<sup>32</sup> South Coast AQMD. (2022). 2022 Air Quality Management Plan – Socioeconomic Report. Available at: <http://www.aqmd.gov/docs/default-source/clean-air-plans/socioeconomic-analysis/final/aqmp-2022-socioeconomic-report-main-final.pdf?sfvrsn=6>

<sup>33</sup> Southern California Association of Governments. (2020). Goods Movement Technical Report. Available at: [https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocial\\_goods-movement.pdf?1606001690](https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocial_goods-movement.pdf?1606001690)

<sup>34</sup> <https://static.business.ca.gov/wp-content/uploads/2019/12/2018-ZEV-Action-Plan-Priorities-Update.pdf>,

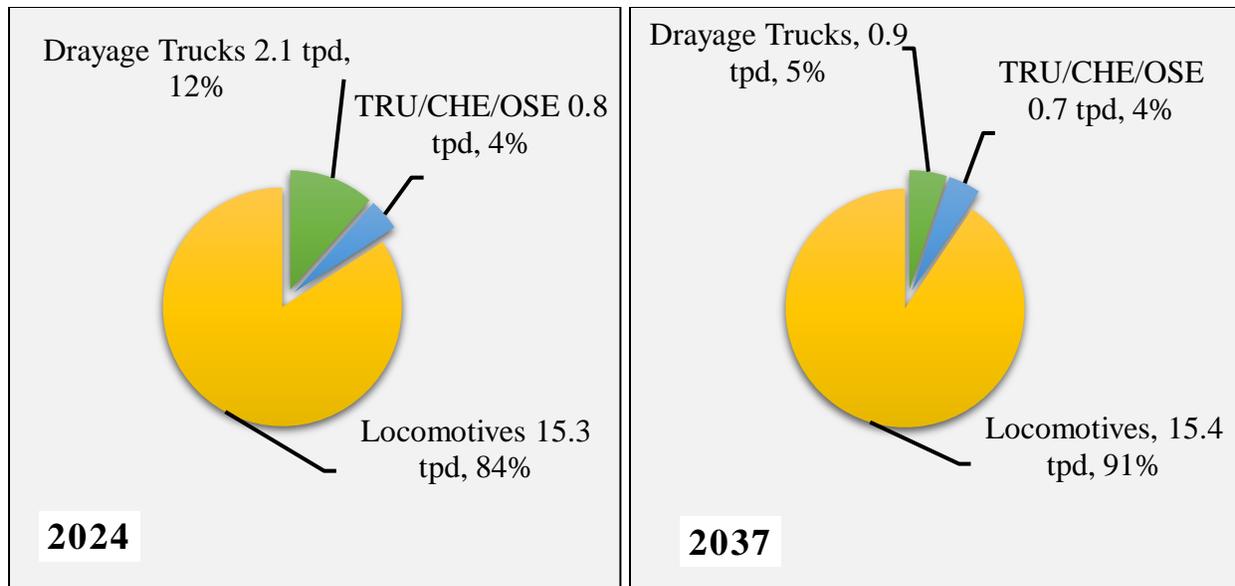
development of local regulations, such as South Coast AQMD’s PR 2306. PR 2306 provides a mechanism to require owners and operators of freight rail yards to ensure supporting infrastructure is in place for full on-site zero emission implementation. PR2306 is further necessary to ensure that state actions to require cleaner vehicles will be implemented in the South Coast AQMD region.

***BASELINE EMISSIONS INVENTORY OF FREIGHT RAIL YARD***

Emission sources at 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. Based on the projected baseline emissions inventory, which do not include the recently adopted state regulations including In-Use Locomotive and the ACF regulations, locomotives account for 84 percent of freight rail yard NOx emissions 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 other related on-site support equipment (OSE) account for 4 percent in 2024. Figure 2-1 shows the share of associated mobile sources to freight rail yards based on the projected NOx emissions in 2024 and 2037. Notable changes for the 2037 projected baseline emissions of freight rail yard 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 Air Basin emissions associated with freight rail yards in 2037.

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<https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf>,  
<https://www.ca.gov/archive/gov39/2012/03/23/news17472/index.html>,  
<https://www.ca.gov/archive/gov39/2018/01/26/governor-brown-takes-action-to-increase-zero-emission-vehicles-fund-new-climate-investments/index.html>, <https://www.ca.gov/archive/gov39/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf>



**Figure 2-1. South Coast Freight Rail Yard Projected 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. The model years and horsepower bins are taken as an aggregate. 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<sup>35</sup>, switcher activity in the Air Basin accounts for 58 percent of statewide switcher activity and line haul locomotive activity within the Air 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 South Coast Air Basin. Baseline in Figure 2-1 consists of locomotives, drayage trucks, TRU, and CHE.

For drayage trucks baseline inventory, staff worked directly with CARB staff, because the EMFAC2021 model does not include drayage trucks for freight rail yards specifically. CARB provided data for NOx, PM2.5, PM10, and CO emissions for T7 Other Port Class 8, T7 POAK (Port of Oakland) Class 8, T7 POLA (Port of Los Angeles) Class 8, and Rail trucks across the state. These baseline emissions already reflect the statewide Heavy-Duty Vehicle Inspection and Maintenance regulation for trucks. To convert the drayage statewide baseline inventory into south coast specific estimates, ACF Appendix F was referenced to see that for 2031, 2037, and 2042, it is estimated that on average approximately 28% of NOx reductions from ACF will occur in South Coast Air Basin.<sup>36</sup>

<sup>35</sup> California Air Resources Board. (2021). 2021 Line-Haul Locomotive Emission Inventory. Available at: [https://ww2.arb.ca.gov/sites/default/files/2021-02/2021\\_line\\_haul\\_locomotive\\_emission\\_inventory\\_final.pdf](https://ww2.arb.ca.gov/sites/default/files/2021-02/2021_line_haul_locomotive_emission_inventory_final.pdf)

<sup>36</sup> <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/appf.pdf>

## **CHAPTER 3 : SUMMARY OF PROPOSALS**

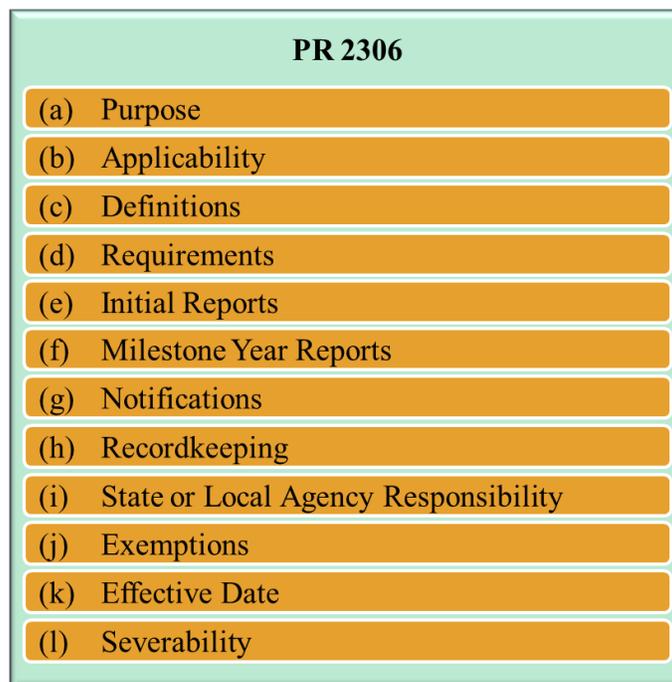
**INTRODUCTION**

**PROPOSED RULE 2306**

**PROPOSED RULE 316.2**

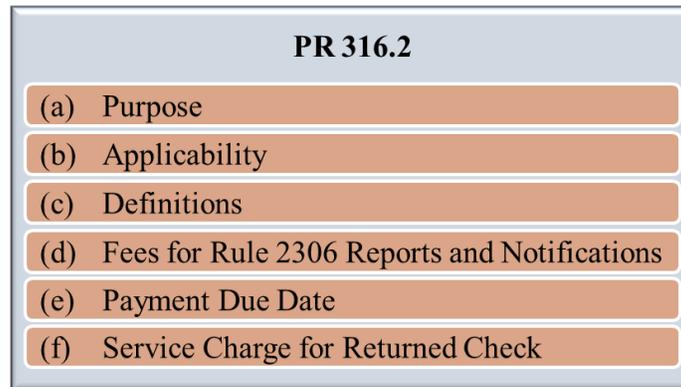
**INTRODUCTION**

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 reduction 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 NO<sub>x</sub> 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 Advanced Clean Fleets 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 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 (PM<sub>2.5</sub>)
- 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
- 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 (d)(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. Calculation of this factor is outlined in the document in PR 2306 package titled as Preliminary Draft Proposed Rule 2306 Calculation Methodology.

#### ***Paragraph (d)(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. While all the non-applicable mobile sources are important in the success

and safety of any facility, these sources are not integral to day-to-day operations and have little interaction with Rail Yard Operations.

***Paragraph (d)(3) – Base Period (BP)***

Base period for an existing freight rail yard is defined as the two 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.

***Paragraph (d)(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 operations.

***Paragraph (d)(9) – Freight Rail Yard***

Any rail yard where switching activities occur or where cargo, including empty containers and chassis, are loaded or unloaded from railcars for the transportation to or from an outside location by locomotives. This includes but is not limited to intermodal rail yards and classification yards. A group of rail yards that are located within the vicinity of each other and support the freight rail yard operations and activities by the same operator are considered as components of one freight rail yard.

***Paragraph (d)(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.

***Paragraph (d)(11) – Freight Rail Yard Operator***

A freight rail yard operator is the entity who conducts daily operations which might be the freight rail yard operator itself, its contractor, a subsidiary of the operator, or a sibling company of the operator.

***Paragraph (d)(12) – Freight Rail Yard Owner***

The legal, beneficial, and/or equitable owner or group of owners of a freight rail yard. Freight rail yard owner can be comprised of multiple entities that each own a portion of the facility or a single entity that owns the whole facility. In certain instances, a freight rail yard owner may also be the freight rail yard operator.

***Paragraph (d)(13) – Fuel type***

The different types of fuels used in vehicles and equipment that operate at and travel to and from a freight rail yard that may include, but is not limited to, diesel, natural gas, gasoline, and electricity.

***Paragraph (d)(14) – Intermodal Rail Yards***

Any rail yard where cargo transportation involves two or more different modes of transportation, including but not limited to transportation through rail, water, or road (i.e., trucks).

***Paragraph (d)(18) – Milestone Year (MY)***

Milestone year refers to the calendar year that PR 2306 becomes effective and every other three calendar years (i.e., 3, 6, 9, 12, and so on) afterwards.

***Paragraph (d)(19) – New Freight Rail Yard***

New freight rail yard is any freight rail yard that is already built and scheduled to begin or resume operations on or after the date that the rule becomes effective.

***Paragraph (d)(21) – Other On-Site Support Equipment (OSE)***

OSE includes any mobile source equipment operating at and travelling to and from a freight rail yard, other than CHE, drayage truck, line haul locomotive, switcher, or TRU, that takes part in day-to-day operations. Railcar movers are an example of OSE. Equipment such as employee cars, delivery vans, waste collection trucks, etc., would be excluded from OSE, because they are not taking part in daily freight rail yard operations. However, if such equipment at a specific freight rail yard is used for a daily operation (e.g., hi-rail trucks are used for day-to-day maintenance), it potentially may qualify as OSE.

***Paragraph (d)(23) – 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 public roadway or other public right-of-way. An individual rail yard is owned or operated by the same entity or by entities under common control. A rail yard may be, but is not necessarily, a transportation facility, and it does not cover main lines, branch lines, or other rail tracks that are used by the passing trains.

***Paragraph (d)(28) – Reference Scenario***

Reference scenario refers to a scenario to estimate emissions of a freight rail yard in any milestone year if ACF Regulation, In-Use Locomotive Regulation, and PR 2306 are not considered.

***Paragraph (d)(29) – Responsible Official***

The highest-ranking representative identified as part of the respective entity or agency. For the purpose of PR 2306, this term can be applied to representatives from corporations, partnerships, sole proprietorships, and local, state, and federal government agencies.

***Paragraph (d)(33) – 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). Through traffic and the associated emissions are excluded from provisions of this rule.

***Paragraph (d)(34) – Throughput***

Freight rail yard throughput is defined as the total number of visits made by a set of railcars to a 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 (d)(35) – Transport Refrigeration Unit (TRU)***

TRUs are typically diesel-powered refrigeration units commonly mounted on the front of a trailer near the tractor cab, or on the front of a straight truck just above the cab. The diesel engine providing power for the TRU is smaller than a truck engine, but TRUs commonly idle for long periods at a warehouse to keep the goods inside the straight truck or trailer at appropriate temperatures.

***Paragraph (d)(38) – 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. 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.

***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 NO<sub>x</sub> Emission Reduction Targets***

The operator is required to either comply with emission reductions targets as specified in PR 2306 Table 1 – Emission Reduction Targets (PR 2306 Table 1). These percentage emission reductions targets shown in Table 3-1 (and Table 1 of PR 2306) are calculated using statewide baseline emissions for freight rail yard emission sources, excluding the impact of CARB’s In-Use Locomotive and ACF regulations, compared to the total anticipated emissions from these same emissions sources after implementation of these two CARB regulations. These emission reduction estimates are based on anticipated compliance scenarios presented in CARB regulatory documentation and are used as defaults for Table 1 in PR 2306.

Staff derived data for the emission reductions that is projected to be a direct consequence of In-Use Locomotive Regulation from In-Use Locomotive Regulation Appendix G Table 5.

For drayage trucks baseline inventory, staff worked directly with CARB staff, because the EMFAC2021 model does not include drayage trucks for freight rail yards specifically. CARB provided data for NO<sub>x</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>, and CO emissions for T7 Other Port Class 8, T7 POAK (Port of Oakland) Class 8, T7 POLA (Port of Los Angeles) Class 8, and Rail trucks across the state. The data provided by CARB also included emissions projections under ACF Regulation. Staff summed the baseline NO<sub>x</sub> emissions from both locomotives and drayage trucks for each calendar year (i.e., emissions before implementation of In-Use Locomotive and ACF regulations) and projected NO<sub>x</sub> emission for locomotives and trucks (after implementation of CARB regulations). The difference between baseline and projected emissions provides an estimate of the statewide projected NO<sub>x</sub> emission reductions from In-Use Locomotive and ACF regulations per

each year. The default emission reductions targets are the percent share of total projected NOx emission reductions out of baseline NOx emissions from both locomotives and drayage trucks for each calendar year. Table 3-1 lists emission reductions targets for any Milestone year to be achieved by any freight rail yard that is regulated under PR 2306.

**Table 3-1. PR 2306 Emission Reductions Targets**

<b>Calendar Year</b>	<b>Percent Emission Reduction Targets (%)</b>
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 3-2 includes the anticipated emission reductions within South Coast AQMD from PR 2306. “Total Baseline Emissions” values are estimated NOx emissions in South Coast AQMD without In-Use Locomotive and ACF regulations. “Total Controlled Emissions” are the projected NOx emissions in South Coast AQMD following the implementation of 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 In-Use Locomotive and ACF regulations.

**Table 3-2. PR 2306 Anticipated NOx Emission Reductions (tpd)**

<b>Year</b>	<b>Total Baseline Emissions</b>	<b>Total Controlled Emissions</b>	<b>Emission Reductions</b>
2025	17.1	16.9	0.2
2026	17.2	16.3	0.9
2027	17.4	15.6	1.9
2028	17.6	14.8	2.8
2029	17.8	14.4	3.4
2030	17.9	7.1	10.8
2031	17.9	6.2	11.8
2032	17.9	6.0	11.9
2033	17.7	5.8	11.9
2034	17.4	5.7	11.7
2035	17.2	4.2	13.0
2036	16.4	3.3	13.1
2037	15.6	2.3	13.3
2038	15.1	2.3	12.8
2039	14.5	2.3	12.3
2040	14.1	2.2	11.8
2041	13.6	2.2	11.4
2042	13.2	2.2	11.0
2043	12.6	2.2	10.4
2044	12.1	2.2	9.9
2045	12.0	2.2	9.8
2046	11.8	2.2	9.6
2047	11.7	2.2	9.5
2048	11.6	2.1	9.4
2049	11.4	2.0	9.4
2050	11.3	1.9	9.4

To estimate NOx emission reductions in the Air Basin from implementation of In-Use Locomotive Regulation, staff reviewed the 2021 statewide line-haul inventory<sup>37</sup>. This document includes CARB estimates of 58 percent of switcher locomotives activity and 17 percent of line haul locomotives activity taking place within South Coast AQMD. Both CARB's OFFROAD 2021 and Appendix G of In-Use Locomotive Regulation separate their emissions calculations between switcher and line-haul locomotives. To estimate the baseline and controlled levels of NOx emissions in South Coast AQMD, staff applied to baseline and projected controlled emissions a factor of 17 percent for emissions from line haul locomotives and a factor of 58 percent for switcher locomotives.

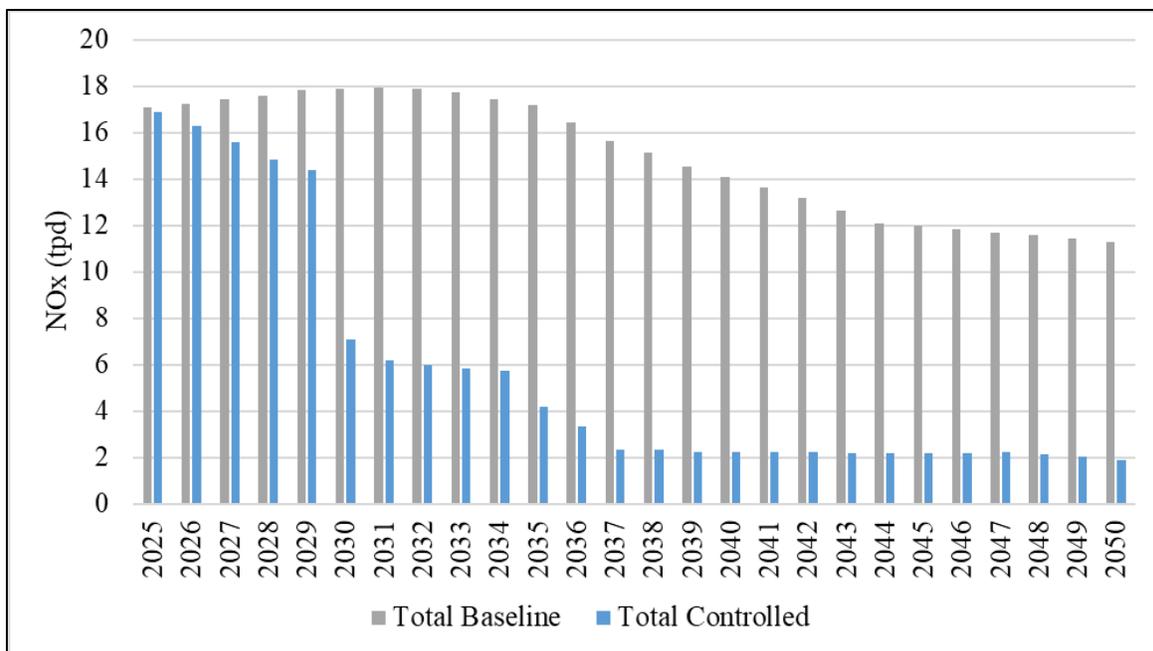
To estimate NOx emission reductions in South Coast AQMD from implementation of ACF Regulation, staff used Appendix F of ACF Regulation<sup>38</sup>. This appendix contains data for anticipated emissions reductions from implementation of ACF Regulation in both the state of California and South Coast AQMD. Comparing the projected emission reductions for South Coast AQMD to the statewide projected emission reductions shows that roughly 28 percent of all statewide emission reductions from ACF Regulation are anticipated to be realized in South Coast AQMD in 2031, 2037, and 2042. Therefore, staff assumed that around 28 percent of drayage and rail truck activity can be attributed to the Air Basin. Staff applied a factor of 28 percent to the statewide NOx emissions (baseline and projected controlled emissions) to estimate NOx emission reductions from drayage and rail trucks in South Coast AQMD.

Figure 3-3 presents the basin-wide NOx baseline emissions forecast, which reflects NOx emissions without the implementation of In-Use Locomotive and ACF regulations, along with the anticipated controlled emissions forecast for drayage trucks and locomotives reflecting the implementation of said regulations. It can be seen from this table that the NOx emissions are anticipated to decrease much faster and at a much larger magnitude through the two regulations.

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<sup>37</sup> California Air Resources Board. (2021). 2021 Line-Haul Locomotive Emission Inventory. Available at: [https://ww2.arb.ca.gov/sites/default/files/2021-02/2021\\_line\\_haul\\_locomotive\\_emission\\_inventory\\_final.pdf](https://ww2.arb.ca.gov/sites/default/files/2021-02/2021_line_haul_locomotive_emission_inventory_final.pdf)

<sup>38</sup> California Air Resources Board. (2022). Advanced Clean Fleets Regulation – Emissions Inventory and Results (Appendix F). Available at: <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 Reduction 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 reduction targets to demonstrate compliance with PR 2306. The alternative emission reduction 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 reduction target for the freight rail yard using the statewide data submitted will need to be done and submitted according to the methodology in Preliminary Draft Proposed Rule 2306 Calculation Methodology 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 Preliminary Draft Proposed Rule 2306 Calculation Methodology.

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 reduction targets. The additional opportunities for emission reductions from these equipment categories that do not have new emission reduction requirements from CARB regulations have the potential to achieve early and additional emissions reductions that would not occur but for PR 2306.

***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), an additional option is included in the rule, as calculated based on Equation 3 in PR 2306 Appendix and its corresponding methodologies specified in Preliminary Draft Proposed Rule 2306 Calculation Methodologies. 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. For 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.

For a freight rail yard that qualifies for this compliance pathway, PR 2306 requires that total NO<sub>x</sub> emissions from all applicable mobile sources be compared to NO<sub>x</sub> 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. Overall, a freight rail yard operator can demonstrate by showing 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 and use Equation 3 in PR 2306 Appendix and the corresponding methodology specified in Preliminary Draft Proposed Rule 2306 Calculation Methodology to demonstrate in the Milestone Compliance Report its compliance with the applicable emission reductions target as established by paragraph (d)(1).

***Paragraph (d)(4) – Submittal Requirements for Compliance Reports***

Paragraph (d)(4) outlines the submittal requirements for the four reports that any freight rail yard 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 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 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 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 15<sup>th</sup> 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 15<sup>th</sup> 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) – Upgrade the Electrical Service***

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 listed reports that indicates the need for such electrical service upgrades.

***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 NO<sub>x</sub> 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 Preliminary Draft Proposed Rule 2306 Calculation Methodology. 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 Preliminary Draft

Proposed Rule 2306 Calculation Methodology. 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 Preliminary Draft Proposed Rule 2306 Calculation Methodology, 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 Preliminary Draft Proposed Rule 2306 Calculation Methodology for demonstration of compliance with the applicable percent emission reduction target for each milestone year. Optional information that may be submitted and is relevant to the calculations in the Preliminary Draft Proposed Rule 2306 Calculation Methodology 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 calculation of annual aggregated emission factor for any milestone year in which the freight rail yard experienced reduced throughput compared to baseline period and 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 which 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 Preliminary Draft Proposed Rule 2306 Calculation Methodology must also be submitted for calculations of percent emission reductions targets (if applicable) and calculations that demonstrate compliance with the chosen compliance pathway and percent emission reduction target.

The freight rail yard operator who elects to comply to the applicable alternative emission reduction target must submit statewide data and information, as outlined in PR 2306 Table 3, for drayage trucks and locomotives that operate at and travelling 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***

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

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 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 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 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 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 a Exceedance of Low Activity Exemption Threshold Notification to Executive Officer no later than January 31<sup>st</sup> 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 rules 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 freight rail yards and other state or local government agencies. This subdivision requires the inclusion of following requirements in such agreements: compliance with PR 2306 emissions reduction targets, PR 2306 reporting and notification requirements, recordkeeping requirements, and request to local electric utility to upgrade the electrical service, if applicable. Also, information and records specified in paragraphs (d)(6) through (d)(8) (as applicable) must be transferred over in the event of a change in freight rail yard owner or operator, or a freight rail yard shutdown.

**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 throughput/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 rail yard that they own and/or operate that does not meet such criteria.

***Paragraph (j)(2)***

Any freight rail yard that is owned or operated by City of Long Beach or City of Los Angeles, as well as if it is operated by a third party under contractual agreement with these cities is exempt from PR 2306 if it is not an intermodal rail yard and its primary operations are limited to moving railcars within the ports boundaries.

**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 the CARB In-Use Locomotive Regulation,
- The date U.S. EPA grants an authorization or waiver for the Advanced Clean Fleets Regulation (such that at least the Drayage Truck Requirement is authorized).

**Subdivision (l) – Severability*****Paragraph (l)(1)***

If a court holds portions of PR 2306 as invalid or unenforceable, subdivision (l) reserves the right for the other provisions of the rule to 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 the provision of this rule.

***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 the 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 reduction calculations for: 1) Alternative Milestone Year Reduction Target; 2) Percent NOx Emission Reduction for Any Given Milestone Year, and 3) Percent NOx Emission Reduction Between a Milestone Year and the base period.

**Section 1 – Alternative Milestone Year Emission Reduction Target**

This section provides the methodology to calculate the alternative milestone year emission reduction target for the freight rail yard, using Equation 1 in PR 2306 Appendix and its corresponding methodology in Preliminary Draft Proposed Rule 2306 Calculation Methodology, as an alternative to the PR 2306 Table 1. The alternative NOx emission reduction 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 reduction target is calculated based on the actual NOx emissions from locomotives and drayage trucks using the methodologies specified in Section 1 in Preliminary Draft Proposed Rule 2306 Calculation Methodology, and the reference scenario NOx emissions from locomotives and

drayage trucks using the methodologies specified in Section 2 in Preliminary Draft Proposed Rule 2306 Calculation Methodology. Calculation of the alternative emission reduction 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 Preliminary Draft Proposed Rule 2306 Calculation Methodology.

### **Section 2 – Percent NOx Emission Reduction for Any Given Milestone Year**

This section provides the methodology to calculate the percent emission reduction 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 Preliminary Draft Proposed Rule 2306 Calculation Methodology 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 Preliminary Draft Proposed Rule 2306 Calculation Methodology, respectively. Under this methodology, the freight rail yards have the option of using emission reductions achieved from CHE, TRU, and OSE operating at the freight rail yard to further reduce NOx emissions based on the methodologies specified in Sections 1 and 2 in Preliminary Draft Proposed Rule 2306 Calculation Methodology. 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 in the absence of CARB’s regulations for each milestone year.

### **Section 3 – Percent NOx Emission Reduction Between a Milestone Year and the Base Period**

This section provides the methodology to calculate the percent emission reduction 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 Preliminary Draft Proposed Rule 2306 Calculation Methodology. 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 reduction achieved for the milestone year using this methodology in lieu of using the methodology for Equation 2 in PR 2306 Appendix, as long as the aggregate emission factor (AEF), described in Section 3 in Preliminary Draft Proposed Rule 2306 Calculation Methodology, for the freight rail yard in the milestone year is lower than the AEF in the base period. The NOx emission reduction achieved under this methodology is 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 Preliminary Draft Proposed Rule 2306 Calculation Methodology.

**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 administrative 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 the initial 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. 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 include 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 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**

**AFFECTED FACILITIES**

**COST IMPACTS**

**SOCIOECONOMIC IMPACT ASSESSMENT**

**CALIFORNIA ENVIRONMENTAL QUALITY ACT**

**DRAFT FINDINGS UNDER HEALTH AND SAFETY CODE SECTION  
40727**

**COMPARATIVE ANALYSIS**

## ***INTRODUCTION***

PR 2306 will reduce regional emissions of NO<sub>x</sub> that are associated with the operation of freight rail yards. The proposed rule requires freight rail yard operators to meet or exceed established emission reduction 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.

## ***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.

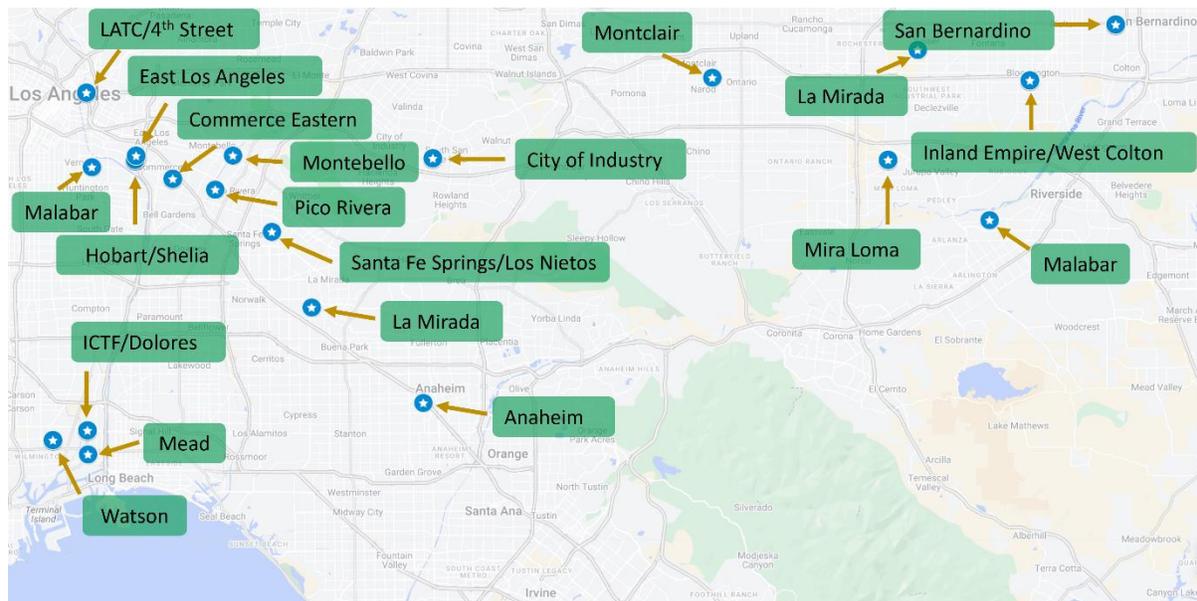
Some freight rail yards, specifically intermodal rail yards, receive inbound trains and trucks delivering freight (e.g., container, bulk cargo, auto) from port terminals, warehouses, distribution centers, industrial facilities, etc. The freight from inbound trains on railcars and from trucks are unloaded 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 4<sup>th</sup> 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 where applicable will be based on the 25 freight rail yards listed above.

**Table 4-1. Potentially Affected Freight Rail Yards**

<b>4Freight Rail Yard</b>	<b>Components</b>	<b>Location</b>	<b>Operator</b>
<b>4<sup>th</sup> Street</b>	4 <sup>th</sup> Street Yard	Los Angeles, CA 90033	Union Pacific
<b>Anaheim</b>	Anaheim Yard	Anaheim, CA 92802	Union Pacific
<b>Arlington</b>	Arlington Yard	Riverside, CA 92504	Union Pacific
<b>City of Industry</b>	City of Industry Intermodal Terminal	17225 Arenth Avenue, City of Industry, CA 91748	Union Pacific
<b>Commerce Eastern</b>	Commerce Intermodal Facility	5600 E. 26th St. Commerce, CA 90040	BNSF
<b>Dolores</b>	Dolores Support Yard	2442 E Carson St Long Beach CA, 90810	Union Pacific
<b>East Los Angeles</b>	East Los Angeles/Commerce	4341 East Washington Blvd., City of Commerce, CA 90023	Union Pacific
<b>Hobart</b>	Hobart (Los Angeles) Rail Yard	4000 Sheila St, Commerce, CA 90023	BNSF
<b>ICTF</b>	ICTF	2401 E. Sepulveda Blvd., Long Beach, CA 90810	Union Pacific
	ICTF Support Yard	Alongside Alameda Corridor	
<b>Inland Empire</b>	Inland Empire Intermodal Terminal	17550 Slover Avenue, Fontana, CA 92316	Union Pacific
<b>Kaiser</b>	Kaiser Terminal	8793 Depot Rd #8701, Fontana, CA 92335	BNSF
<b>La Mirada</b>	La Mirada Yard	14503 Macaw St, La Mirada, CA 90638	BNSF
<b>LATC</b>	Los Angeles Transportation Center	599 North Mission Road, Los Angeles, CA 90033	Union Pacific
<b>Los Nietos</b>	Los Nietos Yard	Los Nietos Rd, Santa Fe Springs, CA 90670	Union Pacific
<b>Malabar</b>	Malabar Yard	Vernon, CA 90058	BNSF
<b>Mead</b>	Mead Yard	801 N. Pennington Ave. Wilmington, CA 90744	Union Pacific
<b>Mira Loma</b>	Mira Loma	4500 Etiwanda Ave. Mira Loma, CA 91752	Union Pacific
<b>Montclair</b>	Montclair Yard	Ontario, CA 91762	Union Pacific
<b>Montebello</b>	Montebello Yard	329 Van Norman Rd, Montebello, CA 90640	Union Pacific
<b>Pico Rivera</b>	Pico Rivera Yard	7599 Rosemead Blvd #7425, Pico Rivera, CA 90660	BNSF

4Freight Rail Yard	Components	Location	Operator
<b>San Bernardino</b>	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
<b>Santa Fe Springs</b>	Santa Fe Springs Bulk Materials Transfer Terminal	8636 Sorensen Ave. Santa Fe Springs, CA 90670	Union Pacific / Savage
<b>Sheila</b>	Sheila Mechanical Yard	6300 Sheila St, Commerce, CA 90040	BNSF
<b>Watson</b>	Watson Yard	1302 E Lomita Blvd, Wilmington, CA 90744	BNSF
<b>West Colton</b>	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. 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 proportional or more-than-proportional emission reductions within the South Coast AQMD jurisdiction from the implementation of state regulations, and to be consistent with these state regulations, its potential adoption and subsequent implementation are expected to result in similar costs already analyzed by CARB for the state regulations proportioned to the South Coast AQMD region. Beyond these costs, nominal incremental costs are anticipated for freight rail yards to meet or exceed the proposed emission reduction 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 share of anticipated statewide costs from complying with CARB regulations proportionally within the South Coast AQMD jurisdiction. Additional reporting-related costs 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 reductions relative to the statewide total (see Table 4-2).<sup>39,40</sup> These calculations are performed separately for locomotives and drayage trucks, using scaling factors specific to each of these equipment types. Although the emission reduction targets set in PR 2306 are based on proportional 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.

It should be emphasized that the percent emission reduction 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 reduction 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 reduction targets.

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<sup>39</sup> California Air Resources Board. (2022). Proposed In-Use Locomotive Regulation Standardized Regulatory Impact Assessment (SRIA). Available at: <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appb.pdf>.

<sup>40</sup> California Air Resources Board. (2022). Public Hearing to Consider the Proposed Advanced Clean Fleets Regulation, Staff Report: Initial Statement of Reasons. Available at: <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/isor2.pdf>.

**Table 4-2. South Coast AQMD Region’s Estimated Share of NOx reductions Relative to the Statewide Total**

Calendar Year	Projected NOx Reductions from Locomotives (tpd)*		Projected NOx Reductions from Drayage Trucks (tpd)*		South Coast Share from Locomotive Reductions Statewide	South Coast Share from Drayage Truck Reductions Statewide
	Statewide	South Coast	Statewide	South Coast		
2025	0.21	0.08	0.40	0.11	36.8%	27.6%
2026	3.18	0.74	0.67	0.18	23.3%	
2027	6.16	1.36	1.84	0.51	22.1%	
2028	9.18	2.00	2.78	0.77	21.8%	
2029	12.24	2.64	2.89	0.80	21.5%	
2030	47.87	9.92	3.15	0.87	20.7%	
2031	51.88	10.84	3.37	0.93	20.9%	
2032	51.99	10.91	3.52	0.97	21.0%	
2033	52.09	10.97	3.45	0.95	21.1%	
2034	50.76	10.79	3.41	0.94	21.3%	
2035	57.61	12.01	3.54	0.98	20.8%	
2036	58.35	12.18	3.32	0.92	20.9%	
2037	59.33	12.40	3.14	0.87	20.9%	
2038	56.63	12.01	2.98	0.82	21.2%	
2039	53.25	11.49	2.85	0.79	21.6%	
2040	50.51	11.08	2.75	0.76	21.9%	
2041	47.85	10.68	2.68	0.74	22.3%	
2042	44.95	10.25	2.62	0.72	22.8%	
2043	41.56	9.73	2.58	0.71	23.4%	
2044	38.16	9.21	2.54	0.70	24.1%	
2045	37.08	9.08	2.51	0.69	24.5%	
2046	36.01	8.96	2.49	0.69	24.9%	
2047	34.71	8.81	2.47	0.68	25.4%	
2048	34.03	8.75	2.46	0.68	25.7%	
2049	33.52	8.73	2.45	0.68	26.1%	
2050	33.04	8.74	2.40	0.66	26.4%	

(\*Rounded to the second decimal place)

It can be seen in Table 4-2 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 (who are subject to PR 2306 emission reduction 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 railyard 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 NO<sub>x</sub> 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).

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 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 regulations 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 NO<sub>x</sub> 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., same trucks 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.<sup>41</sup> 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.<sup>42</sup> 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.

**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
<i>Locomotives:</i>			
Line Haul Locomotives	\$7,347,572 <sup>2</sup>	\$6,171,960 <sup>1</sup>	\$3,644,396 <sup>1</sup>
Road Switcher Locomotives	\$3,997,079 <sup>1</sup>	\$3,850,128 <sup>2</sup>	\$3,174,151 <sup>1</sup>
Yard Switcher Locomotives	\$3,644,396 <sup>1</sup>	\$3,850,128 <sup>2</sup>	\$2,539,321 <sup>1</sup>
<i>Drayage Trucks:</i>			
Class 8 Day Cab Tractors	\$182,623 <sup>3</sup>	\$193,322 <sup>3</sup>	\$168,760 <sup>3</sup>
Sources:			
<sup>1</sup> . California Air Resources Board. (2022). Proposed In-Use Locomotive Regulation Standardized Regulatory Impact Assessment (SRIA). Page 68. Available at: <a href="https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appb.pdf">https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appb.pdf</a> .			
<sup>2</sup> . California Air Resources Board. (2021). Preliminary Cost Document for In-Use Locomotive Regulation. Pages 9-10. Available at: <a href="https://ww2.arb.ca.gov/sites/default/files/2021-03/3.16.21%20Locomotive%20Reg%20-%20Preliminary%20Cost%20Document_Final.pdf">https://ww2.arb.ca.gov/sites/default/files/2021-03/3.16.21%20Locomotive%20Reg%20-%20Preliminary%20Cost%20Document_Final.pdf</a> .			
<sup>3</sup> . California Air Resources Board. (2022). Public Hearing to Consider the Proposed Advanced Clean Fleets Regulation, Staff Report: Initial Statement of Reasons. Page 179. Available at: <a href="https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/isor2.pdf">https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/isor2.pdf</a> .			
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.			

<sup>41</sup> 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 3 presents these price projections.

<sup>42</sup> Page 67, CARB In-Use Locomotive SRIA.

**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
<i>Locomotives:</i>			
Locomotives	\$83,586 <sup>1</sup>	\$92,873 <sup>1</sup>	\$92,873 <sup>1</sup>
<i>Drayage Trucks:</i>			
Class 8 Day Cab Tractors	\$8,801 <sup>2</sup>	\$8,801 <sup>2</sup>	\$14,644 <sup>2</sup>
Sources:			
<sup>1</sup> . California Air Resources Board. (2022). Proposed In-Use Locomotive Regulation Standardized Regulatory Impact Assessment (SRIA). Page 70. Available at: <a href="https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appb.pdf">https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/locomotive22/appb.pdf</a> .			
<sup>2</sup> . California Air Resources Board. (2022). Public Hearing to Consider the Proposed Advanced Clean Fleets Regulation, Staff Report: Initial Statement of Reasons. Pages 191-192. Available at: <a href="https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/isor2.pdf">https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/isor2.pdf</a> .			
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 switcher 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 switcher 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) <sup>1</sup>	Hydrogen (DGE) <sup>1</sup>	Diesel (DGE) <sup>1</sup>
2025	\$8.71	\$20.68	\$4.76
2030	\$9.58	\$16.48	\$4.95
2050	\$9.14	\$6.53	\$5.57

Source:

<sup>1</sup> California Air Resources Board. (2022). Proposed In-Use Locomotive Regulation Standardized Regulatory Impact Assessment (SRIA). Pages 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 implementation of PR 2306 will result in new demand for alternative fuels at railyards within the South Coast Air 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.<sup>43, 44</sup> 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.<sup>45,46,47</sup> Accordingly, the only infrastructure costs identified in this proportional analysis are the share of CARB’s statewide estimates for on-site infrastructure costs relevant to PR 2306’s

<sup>43</sup> See discussion of SB 350 and other utility actions on page 52 of CARB’s In-Use Locomotive SRIA.

<sup>44</sup> 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](#)

<sup>45</sup> “2035 Report 2.0: Distribution Grid Cost Impacts Driven by Transportation Electrification,” (2021). Energy + Environmental Economics.

<sup>46</sup> “2035 Report 2.0: Transportation.” 2021. Goldman School of Public Policy, University of California Berkeley.

<sup>47</sup> “Electric Vehicles at Scale – Phase II: Distribution System Analysis” (2022). Pacific Northwest National Laboratory

assurance that emission reductions related to statewide regulations occur within the South Coast Air Basin.

As shown in Table 4-6, the South Coast AQMD region-specific portion of statewide costs across all years analyzed (2025-2050) is approximately \$3.02 billion in undiscounted 2023 dollars.<sup>48</sup> This is comprised of \$3.23 billion associated with locomotives and -\$210 million (i.e., a \$210 million savings) related to drayage trucks. 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 20.8% for locomotives and 1.40% for drayage trucks. However, the incremental costs attributable solely to PR 2306 are expected to be nominal.

**Table 4-6. Total Present Value and Annualized Compliance Costs Over the 2025-2050 Period (2023\$)**

	Present Value Cost	Annualized Cost
<b>Undiscounted</b>	\$3,020,000,000	\$116,000,000
<b>1% Discount Rate/Real Interest Rate</b>	\$2,710,000,000	\$118,000,000
<b>4% Discount Rate/Real Interest Rate</b>	\$2,020,000,000	\$122,000,000

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 in the capital (new locomotive purchases) 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.

**Table 4-7. Undiscounted Costs Attributable to Locomotives Over the 2025-2050 Period (2023\$)**

Cost Category	Cost
Capital Cost	\$2,140,000,000
Infrastructure Cost	\$163,000,000
Operating Cost	\$786,000,000
Maintenance Cost	\$213,000,000
Salvage Revenue	-\$7,340,000
Resale Revenue	-\$69,000,000
<b>Total</b>	<b>\$3,230,000,000</b>

<sup>48</sup> 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.

**Table 4-8. Undiscounted Costs Attributable to Drayage Trucks Over the 2025-2050 Period (2023\$)**

<b>Cost Category</b>	<b>Cost</b>
Capital Cost	\$175,000,000
Infrastructure Cost	\$700,000,000
Operating Cost	-\$547,000,000
Maintenance Cost	-\$300,000,000
Midlife Costs	\$14,800,000
<b>Total Without LCFS Revenues</b>	<b>\$42,000,000</b>
LCFS Revenue	-\$252,000,000
<b>Total With LCFS Revenues</b>	<b>-\$210,000,000</b>

Note: Totals presented without and with LSFS revenues because these revenues represent a transfer.

As mentioned earlier, while the emission reductions targets set in PR 2306 are proportional or more-than-proportional reductions from state regulations addressing emissions from locomotives and trucks, additional emission reductions related to TRUs, CHE, and OSE may contribute to a freight rail yard’s compliance with PR 2306. For context, Tables 4-9 and 4-10 includes information on unit costs applicable to these alternative 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
<i>Cargo Handling Equipment:</i>		
Yard Trucks	\$355,016 <sup>1</sup>	\$110,942 <sup>1</sup>
Forklifts	\$84,214 <sup>2</sup>	\$50,321 <sup>2</sup>
RTG Cranes	\$1,996,964 <sup>1</sup>	\$1,331,309 <sup>1</sup>
Top Handlers	<sup>6</sup>	\$703,614 <sup>3</sup>
Straddle Carriers	\$1,248,103 <sup>4</sup>	\$1,382,099 <sup>3</sup>
<i>Transportation Refrigeration Units:</i>		
Transportation Refrigeration Units	\$88,754 <sup>5</sup>	\$32,617 <sup>5</sup>
Sources:		
<sup>1</sup> . San Pedro Bay Ports. (2021). Clean Air Action Plan 2021 Update: Feasibility Assessment for Cargo Handling Equipment. Pages 84-85. Available at: <a href="https://cleanairactionplan.org/wpfd_file/2021-cargo-handling-equipment-feasibility-assessment-report-final/">https://cleanairactionplan.org/wpfd_file/2021-cargo-handling-equipment-feasibility-assessment-report-final/</a> .		
<sup>2</sup> . California Air Resources Board. (2023). Proposed Zero Emission Forklift Regulation SRIA. Page 64. Available at: <a href="https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2024/zeforklifts/appb2.pdf">https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2024/zeforklifts/appb2.pdf</a> .		
<sup>3</sup> . California Air Resources Board. (2015). Draft Technology Assessment: Mobile Cargo Handling Equipment. Pages II-6 - II-7. Available at: <a href="https://ww2.arb.ca.gov/sites/default/files/classic/msprog/tech/techreport/che_tech_report.pdf">https://ww2.arb.ca.gov/sites/default/files/classic/msprog/tech/techreport/che_tech_report.pdf</a> .		
<sup>4</sup> . State of New Jersey. (2020) Volkswagen Settlement Application Port Newark Container Terminal Straddle Carrier Replacement Program. Page 7. Available at: <a href="https://www.nj.gov/dep/vw/proposals/phase2/PNCT.pdf">https://www.nj.gov/dep/vw/proposals/phase2/PNCT.pdf</a> .		
<sup>5</sup> . California Air Resources Board. (2022) 2022 Technology Assessment: Non-Truck Transport Refrigeration Units (TRU). Pages 36-37. Available at: <a href="https://ww2.arb.ca.gov/sites/default/files/2022-10/CARB%202022%20TRU%20Technology%20Assessment%2010-14-22.pdf">https://ww2.arb.ca.gov/sites/default/files/2022-10/CARB%202022%20TRU%20Technology%20Assessment%2010-14-22.pdf</a> .		
<sup>6</sup> . Costs for electric top handlers do not appear to be publicly available, as the technology has yet to be fully commercialized. CARB did fund a pilot project at the Port of Long Beach (completed in 2021) involving three battery-electric top handlers, however the equipment costs do not appear to be publicly available. More information on the pilot project is available at: <a href="https://ww2.arb.ca.gov/lcti-commercialization-polb-road-technology-c-port-demonstration">https://ww2.arb.ca.gov/lcti-commercialization-polb-road-technology-c-port-demonstration</a> .		

**Table 4-10. Annual Maintenance Costs for CHE and TRU (2023\$ per Unit of Equipment per Year)**

Equipment Type	Technology/Fuel Type	
	Electric	Diesel
<i>Cargo Handling Equipment:</i>		
Yard Trucks	\$31,056 <sup>1</sup>	\$44,380 <sup>1</sup>
Forklifts	\$3,629 <sup>2</sup>	\$5,392 <sup>2</sup>
RTG Cranes	\$70,717 <sup>1</sup>	\$94,289 <sup>1</sup>
Top Handlers	<sup>7</sup>	\$6,437 <sup>3</sup>
Straddle Carriers	\$134,284 <sup>4</sup>	\$148,701 <sup>5</sup>
<i>Transportation Refrigeration Units:</i>		
Transportation Refrigeration Units	\$1,109 <sup>6</sup>	\$2,108 <sup>6</sup>
Sources:		
<ol style="list-style-type: none"> <li><sup>1</sup> San Pedro Bay Ports. (2021). Clean Air Action Plan 2021 Update: Feasibility Assessment for Cargo Handling Equipment. Pages 84-85. Available at: <a href="https://cleanairactionplan.org/wpfd_file/2021-cargo-handling-equipment-feasibility-assessment-report-final/">https://cleanairactionplan.org/wpfd_file/2021-cargo-handling-equipment-feasibility-assessment-report-final/</a>.</li> <li><sup>2</sup> California Air Resources Board. (2023). Proposed Zero Emission Forklift Regulation SRIA. Pages 62, 67. Available at: <a href="https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2024/zeforklifts/appb2.pdf">https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2024/zeforklifts/appb2.pdf</a>.</li> <li><sup>3</sup> U.S. Environmental Protection Agency. (2022). Assessment of Fuel Cell Technologies at Ports. Page 5-8. Available at: <a href="https://nepis.epa.gov/Exe/ZyPDF.cgi/P1015AQX.PDF?Dockey=P1015AQX.PDF">https://nepis.epa.gov/Exe/ZyPDF.cgi/P1015AQX.PDF?Dockey=P1015AQX.PDF</a>.</li> <li><sup>4</sup> State of New Jersey. (2020) Volkswagen Settlement Application Port Newark Container Terminal Straddle Carrier Replacement Program. Page 7. Available at: <a href="https://www.nj.gov/dep/vw/proposals/phase2/PNCT.pdf">https://www.nj.gov/dep/vw/proposals/phase2/PNCT.pdf</a>; Average ratio between capital and maintenance costs for other CHE (10.8%).</li> <li><sup>5</sup> California Air Resources Board. (2015). Draft Technology Assessment: Mobile Cargo Handling Equipment. Pages II-6 - II-7. Available at: <a href="https://ww2.arb.ca.gov/sites/default/files/classic/msprog/tech/techreport/che_tech_report.pdf">https://ww2.arb.ca.gov/sites/default/files/classic/msprog/tech/techreport/che_tech_report.pdf</a>; Average ratio between capital and maintenance costs for other CHE (10.8%).</li> <li><sup>6</sup> California Air Resources Board. (2022) 2022 Technology Assessment: Non-Truck Transport Refrigeration Units (TRU). Pages 17, 36-37. Available at: <a href="https://ww2.arb.ca.gov/sites/default/files/2022-10/CARB%202022%20TRU%20Technology%20Assessment%2010-14-22.pdf">https://ww2.arb.ca.gov/sites/default/files/2022-10/CARB%202022%20TRU%20Technology%20Assessment%2010-14-22.pdf</a></li> <li><sup>7</sup> Costs for electric top handlers do not appear to be publicly available, as the technology has yet to be fully commercialized. CARB did fund a pilot project at the Port of Long Beach (completed in 2021) involving three battery-electric top handlers, however the equipment costs do not appear to be publicly available. More information on the pilot project is available at: <a href="https://ww2.arb.ca.gov/lcti-commercialization-polb-road-technology-c-port-demonstration">https://ww2.arb.ca.gov/lcti-commercialization-polb-road-technology-c-port-demonstration</a>.</li> </ol>		

This analysis estimates the proportional share of statewide compliance costs following local implementation within the South Coast Air Basin. 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.<sup>49</sup> 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.<sup>50</sup> 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.<sup>51</sup> The study also estimates that California would need to invest over \$25 billion for distribution grid upgrades alone.<sup>52</sup>

In addition to the emission reduction requirements, PR 2306 includes reporting and notification requirements, as well as fees for submitted reports. Unlike the emission reduction targets based on the implementation of statewide regulations, which will result in nominal new costs relative to the baseline, reporting activity and fees are new costs to facilities regulated under PR 2306 incremental to existing regulation. Table 4-11 outlines the expected labor requirements and costs per reporting item from 2025-2050, as required under PR 2306. The calculations assume that regulated entities will contract for the development of the reports at a standard hourly rate of \$150 per hour.

**Table 4-11. Reporting Costs Associated with PR 2306 (2023\$)**

Reporting Item	Frequency	Labor Hours Per Item	Total Cost Per Item	Total Costs, 2025-2050
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 2025-2050 are not estimated.

As shown in Table 4-12, the total reporting costs associated with PR 2306 across all years analyzed (2025-2050) are approximately \$266,000 in undiscounted 2023 dollars. On an annualized basis, these reporting costs are approximately \$10,200 in undiscounted 2023 dollars. Discounted reporting costs are presented in Table 4-12 as well.

<sup>49</sup> Port of Long Beach. (2022). Revised Draft Port Master Plan. Available at: <https://polb.com/port-info/mission-vision/#master-plan-update>.

<sup>50</sup> Electric Power Research Institute (EPRI). (2023). Zero Emission Planning and Grid Assessment for the Port of Los Angeles.

<sup>51</sup> Roland Berger. (2024). Forecasting a Realistic Electricity Infrastructure Buildout for Medium- & Heavy-Duty Battery Electric Vehicles. Available at: <https://www.nada.org/media/9801/download?inline>.

<sup>52</sup> *Ibid.*

**Table 4-12. Reporting Costs Associated with PR 2306: Total Present Value and Annualized Reporting Costs Over the 2025-2050 Period (2023\$)**

	Present Value Cost	Annualized Cost
<b>Undiscounted</b>	\$266,000	\$10,200
<b>1% Discount Rate/Real Interest Rate</b>	\$231,000	\$10,000
<b>4% Discount Rate/Real Interest Rate</b>	\$158,000	\$9,510

In addition to the costs of generating reports, regulated entities will also be required to pay nominal fees associated with the submission of each report. These fees will correspond to the amount of South Coast AQMD staff time required to review and file each report.

### 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 costs incurred by South Coast AQMD for implementation of PR 2306. Staff estimates 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 expects to receive 25 Initial Facility Information Reports and 25 Initial Zero Emission Infrastructure Reports for review and approval within the first year of rule implementation. Additionally, staff expects to receive 25 Milestone Compliance Reports and 25 Zero Emission Infrastructure Status Update Reports for each milestone year following the first year of the rule implementation. 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. Currently staff is unable 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 to be subject to PR 2306 after the rule's effective date.

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 district 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 regulations with similar scale for stationary sources, such as those included in Rule 1109.1 (Petroleum Refineries), as well as indirect sources, such as those included in Rule 2305 (WAIRE Program)<sup>53</sup>.

<sup>53</sup> Supplemental Information for Rule 316.2 Fee Rates can be found on <https://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules/rule-2306>

Table 4-13. 4-13 below 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. Also, as required, staff will need to engage in enforcement actions to ensure compliance with the provisions of Proposed Rule 2306.

**Table 4-13. Fees for PR 316.2 Reports**

<b>Staff</b>	<b>Burdened Hourly Rate</b>	<b>Initial Facility Information Report</b>	<b>Initial Zero Emission Infrastructure Report</b>	<b>Milestone Compliance Report</b>	<b>Zero Emission Infrastructure Status Update Report</b>
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
<b>Total Cost per Report<sup>54</sup></b>		<b>\$3,397.71</b>	<b>\$1,520.07</b>	<b>\$11,728.26</b>	<b>\$1,520.07</b>

Table 4-14 below 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.

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<sup>54</sup> Similar to other South Coast AQMD fees in Regulation III, costs are expected to increase through time, consistent with the Consumer Price Index including for increased staff costs and overhead costs from inflation. All fees in PR 316 will therefore be adjusted periodically consistent with all other Regulation III fees pursuant to Rule 320.

**Table 4-14. Fees 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
<b>Total Staff Costs per Notification<sup>54</sup></b>		<b>\$78.32</b>	<b>\$52.21</b>	<b>\$78.32</b>	<b>\$52.21</b>	<b>\$130.53</b>	<b>\$130.53</b>	<b>\$130.53</b>

***SOCIOECONOMIC IMPACT ASSESSMENT***

A socioeconomic impact assessment, to be included in the Draft Staff Report, will be conducted, and 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).

***CALIFORNIA ENVIRONMENTAL QUALITY ACT***

Pursuant to the California Environmental Quality Act (CEQA), PR 2306 is a later activity within the scope of the programs approved earlier in the 2022 Air Quality 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 will be provided in Appendix A of this Staff Report, which will be 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 be prepared for PR 316.2 pursuant to CEQA Guidelines Section 15062, and if 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 NO<sub>x</sub> 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 PM<sub>2.5</sub>. NO<sub>x</sub> is a precursor to the formation of ozone and PM<sub>2.5</sub>. 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 occurring 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***

Under Health and Safety Code Section 40727.2, South Coast AQMD is required to perform a comparative analysis when adopting, amending, or repealing a rule or regulation. 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 affected facilities subject to PR 2306 and PR 316.2. The comparative analysis for PR 2306 and PR 316.2 will be included in the draft staff report released no later than 30 days prior to the scheduled public hearing.

**APPENDIX A : DETAILED CALIFORNIA  
ENVIRONMENTAL QUALITY ACT  
ANALYSIS *[PLACEHOLDER]***

**NOTE:** California Environmental Quality Act document will be 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)