

Railyards (On-site Emissions)

Background

Railyards are used to store, sort, or load and unload railroad cars. Common loads include containers (stacked or on trailers), tankers with chemical or petroleum products, and bulk products such as construction materials or grain. Containers can be transported to and from warehouses for storage and sorting before reaching their final destination. Regional rail volumes are projected to more than double between 2012-2040 in response to growing international trade,¹ however the potential amount of growth at railyards such as the BNSF San Bernardino railyard is unknown.

BNSF Railway Company (BNSF) operates many railyards² throughout California. The San Bernardino BNSF Railyard is located next to residential areas within the San Bernardino, Muscoy community and has been identified as a major air quality concern (Figure 5e-1).³ The BNSF San Bernardino Railyard is located at 1535 West 4th Street in San Bernardino, and encompasses about 168 acres. Most of the railyard is located in a commercial and manufacturing area. However, several residential areas are next to the facility on the north and west sides, with some homes within 200 feet of the fenceline. The facility operates 24 hours a day, 365 days a year.⁴

Community Air Quality Priority – Emissions from Railyards

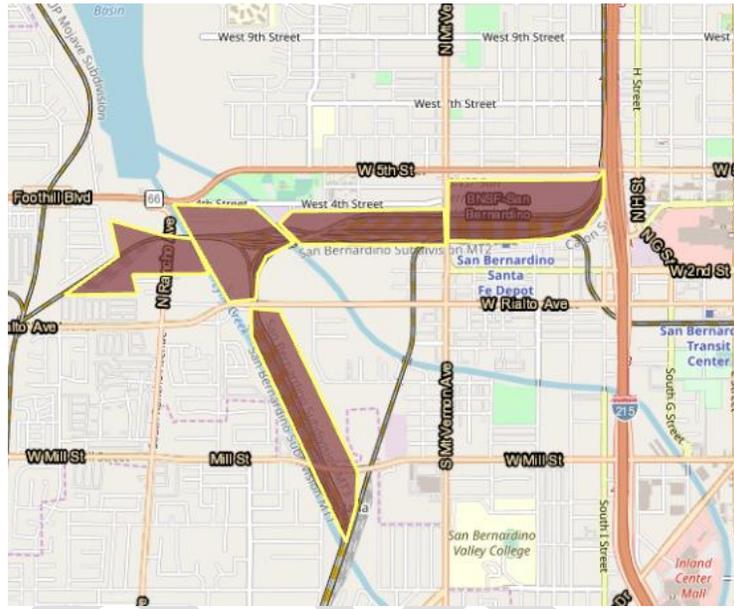
Air pollution is generated by equipment and vehicles that are used for railyard operations. These vehicles and equipment move containers and railcars into and around the railyard to load, unload, and transport goods in and out of the railyard. Emissions can also be generated during maintenance activities (e.g., track maintenance). Examples of equipment used for railyard operations include:

- Locomotives (including ‘switchers’ that build and deconstruct trains, often within railyards, and larger ‘line-haul’ locomotives that pull trains hundreds of miles between railyards)
- Drayage trucks (i.e., on-road tractors that pull trailers loaded with containers, often from the ports)
- Cargo handling equipment (e.g., gantry cranes, top picks, and off-road yard trucks)
- Transportation Refrigeration Units (e.g., truck refrigeration units and refrigerated railcars), and
- Miscellaneous equipment (e.g., fuel trucks)

The CSC prioritized addressing air pollution from the BNSF railyards in the CERP. Specifically, the CSC expressed concerns about diesel emissions from trains and other diesel equipment at the San Bernardino BNSF railyard. Appendix 5e provides additional information about on-road and off-road equipment at railyards and related emissions. The CSC also cited health studies conducted in the nearby community as part of their reasoning for prioritizing this issue.^{5,6}

Potential opportunities to reduce emissions from diesel equipment used at railyards, include replacing older equipment with newer, less polluting equipment (e.g., replacing diesel-fueled yard trucks with electric yard trucks), and ensuring that the replacement or repower of equipment is based on the cleanest technology available.

Figure 5e-1. The BNSF Railyard within the San Bernardino, Muscoy Community



Ongoing Efforts

A short summary is provided below of the key regulations and programs that are in place or are being developed at the national, state, and local level to address emissions from railyards.

Federal Actions

Railroads operations are regulated at the federal level primarily by the Federal Railroad Administration and the Surface Transportation Board, and locomotive emissions are regulated by the U.S. EPA. These agencies' regulatory authority may preempt certain federal, state, and local regulatory authorities and actions. However, the U.S. EPA has used its authority under the Clean Air Act to require new diesel locomotives to be built to meet the cleanest emission standard (also known as Tier 4).⁷ This requirement also applies to certain locomotives that are remanufactured.ⁱ These regulations require the installation of devices that reduce idling on newly manufactured^{ii,8} and remanufactured locomotives⁹ and mandate the use of ultra-low sulfur diesel fuel.¹⁰ However, these regulations do not require railroads to reduce their usage of existing older, higher-emitting locomotives. Locomotives must meet federal emissions standards when

ⁱ Remanufacturing can include activities like replacing an old engine in a locomotive with a new engine. The useful life of a locomotive is typically at least ten years.

ⁱⁱ The U.S. EPA defines newly manufactured as freshly manufactured.

they are remanufactured, and may become cleaner at that time. In 2017, CARB also petitioned the U.S. EPA to develop a new regulation requiring engine manufacturers to meet a cleaner Tier 5 emission standard for new engines. The CARB petition is under review by the U.S. EPA. Because locomotive engines can last over 30 years, locomotive fleet turnover is slow, so even if the U.S. EPA were to develop a Tier 5 emission standard, it would not result in immediate emission reductions.

State Actions (CARB)

CARB has two agreements^{11, 12} with BNSF to reduce locomotive emissions in and around railyards. An agreement in 1998 required BNSF to meet a fleet average of Tier 2 locomotives in the South Coast Air Basin every year between 2010 and 2030. BNSF has met this commitment every year. The second agreement in 2005 focused on railyards and required: implementation of a locomotive idling-reduction program, maximizing the use of ultra-low sulfur diesel fuel, preparation of health risk assessments, evaluation of measures to further reduce diesel particulate emissions, and an assessment of remote sensing technology to identify high-emitting locomotives. CARB has discussed the potential for two new regulations that would reduce emissions from locomotives, including regulation to reduce idling activity and a regulation to address non-preempted locomotive use in the state through retrofit, replacement and other actions. Also, CARB staff plans to develop amendments to the Cargo Handling Equipment Regulation, Transportation Refrigeration Unit Regulation, and its Drayage Truck Regulation to begin the transition to zero-emission technology starting in 2026.¹³

South Coast AQMD

South Coast AQMD previously adopted rulesⁱⁱⁱ that would have required railroads to reduce idling, conduct recordkeeping, and prepare emissions inventories and health risk assessments for railyards. However, the railroads sued the South Coast AQMD, and the courts determined that the rules cannot currently be enforced as they are preempted by federal law. South Coast AQMD is evaluating potential new strategies to reduce emissions from railyards, including developing a potential regulation affecting railyards called an Indirect Source Rule (ISR), and/or other potential partnering strategies that could reduce emissions. This ISR was initially intended to address regional air pollution, in particular through reducing NOx emissions. The CSC has made it clear that an ISR must also focus on reducing localized impacts from railyards. The railroads have participated in workshops related to Facility Based Mobile Source Measures and will continue to work with District staff and the community.

South Coast AQMD funds projects to help develop technology that can lower emissions from locomotives (e.g., natural gas hybrid, battery electric, and fuel cell). These projects are in the design and demonstration phase and not yet commercially available. Additionally, the South

ⁱⁱⁱ Regulation XXXV: <http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/regulation-xxxv>

Coast AQMD provides incentives for rail operators that purchase technologies for locomotives and cargo handling equipment that is cleaner than required.

Identifying Opportunities for Action

South Coast AQMD staff conducted air monitoring near SBM during the Multiple Air Toxics Exposure Study (MATES) in 2013, which identified high levels of black carbon (BC) and ultrafine particulate matter (PM) near the BNSF railyard. The community near this railyard was part of the pilot communities for the South Coast AQMD Clean Communities Plan (CCP), which included significant community engagement activities, and emissions and exposure reduction efforts (e.g., air filtration projects, use of low-VOC paints, and other emission reduction measures). South Coast AQMD also funded the Environmental Railyard Research Impacting Community Health (ENRRICH) study, which consisted of a community health assessment and public health outreach project led by the late Dr. Sam Soret of Loma Linda University.

The South Coast AQMD continues to seek opportunities to reduce air pollution from railyards. The actions below have been identified by the CSC to reduce emissions from railyards.

Action 1: Reduce Emissions from Railyards

Course of Action(s):

- Pursue strategies to reduce air pollution from railyards through the development of indirect source requirements and other measures, including reducing localized emissions and exposures
- Work with CARB on the development of new requirements to reduce air pollution from railyards
- Work with local utilities and state agencies like the California Energy Commission (CEC) and the Public Utilities Commission (PUC) to encourage the installation of infrastructure needed to fuel/charge zero-emission vehicles and on-site equipment at the BNSF Railyard
- Continue to support CARB's petition^{iv} to the U.S. EPA for new national locomotive emission standards
- Work with the BNSF railyard in the San Bernardino, Muscoy community to replace diesel-fueled equipment with cleaner technologies^v
- Conduct fence-line and/or mobile monitoring around railyards to identify activities that may cause increased levels of air pollution. Mobile measurements (and fixed

^{iv} CARB Locomotive Petition to U.S. EPA (April 2017): <https://ww2.arb.ca.gov/resources/documents/carb-petitions-us-epa-strengthen-locomotive-emission-standards>.

^v A variety of technology assessments have been conducted to assist in this effort. Examples include: <https://ww2.arb.ca.gov/resources/documents/technology-and-fuels-assessments>; <http://www.cleanairactionplan.org/documents/draft-2018-feasibility-assessment-for-cargo-handling-equipment.pdf/>.

<p>monitoring, when appropriate) will extend into the community to assess how railyard related emissions may contribute to the overall air pollution burden in this community</p> <ul style="list-style-type: none"> • Use emissions inventory and monitoring information to identify opportunities for emission reductions 	
<p>Strategies:</p> <ul style="list-style-type: none"> • Rules and Regulations • Incentives • Collaboration • Monitoring 	
<p>Goals:</p> <ul style="list-style-type: none"> • Provide biannual updates and engage the CSC on new requirements being developed by CARB and South Coast AQMD • Provide quarterly or annual updates to the CSC on air monitoring results • Replace two line haul and two switcher locomotives at the BNSF railyard through incentive funding programs • Emissions Reduction Target: emissions reduced from this action contribute to the mobile source incentives target 	
<p>Estimated Timeline:</p> <ul style="list-style-type: none"> • 2020, South Coast AQMD to consider new ISR and/or other measures on railyards • Between 2020 and 2022, CARB to consider new regulations and/or other measures: <ul style="list-style-type: none"> -Between 2020 and 2022, for locomotives -By 2020, amendments for zero-emission refrigeration units (TRUs) -By 2022, amendments for zero-emission drayage trucks and cargo handling equipment • 2020, begin working with local utilities and state agencies such as CEC and PUC to encourage the installation of infrastructure for fuel/charge zero-emission vehicles and on-site equipment at the BNSF Railyard • Continue to support CARB’s petition to the U.S. EPA for new national locomotive standards • 2020, work with BNSF railyard in the San Bernardino, Muscoy community to replace diesel-fueled equipment with cleaner technologies • Second half of 2019, South Coast AQMD to conduct air monitoring at railyards and nearby communities • When available, use emissions inventory and monitoring information to identify opportunities for emission reductions 	
<p>Implementing Agency, Organization, Business or Other Entity:</p>	
<p>Name:</p>	<p>Responsibilities:</p>
<p>South Coast AQMD</p>	<ul style="list-style-type: none"> • Pursue indirect source requirements and other measures for railyards, and improve community access to rule development process by holding a working group meeting

	<p>in or near this community. Provide updates to the CSC on the development of indirect source requirements for railyards</p> <ul style="list-style-type: none"> • Work with CARB on the development of new requirements to reduce air pollution from railyards. Continue to support CARB’s petition to U.S. EPA for new national locomotive standards • Work with local utilities and state agencies to encourage the installation of infrastructure for fuel/charge zero-emission vehicles and on-site equipment at the BNSF Railyard • Work to allocate incentive funding to replace on-site diesel equipment with the cleanest technologies available • Work with BNSF to provide updates to the CSC on emission reduction progress within the San Bernardino BNSF railyard • Work with CARB to identify opportunities for new incentives in this community • Conduct air monitoring in community areas near the BNSF railyard and provide updates to the CSC
CSC Members	Participate in CARB and South Coast AQMD rule development process (e.g., attending working group meetings, providing comments on draft rule materials, etc.) for regulations affecting railyards
CARB	<ul style="list-style-type: none"> • Pursue regulations and/or other measures (e.g., incentives) to achieve additional emission reductions at railyards • Prioritize enforcement (e.g., for cargo handling equipment) in this community
Additional Information:	
<ul style="list-style-type: none"> • Indirect Source Rule for Railyards: http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/facility-based-mobile-source-measures/rail-fac-wkng-grp⁹ • Carl Moyer Program: http://www.aqmd.gov/home/programs/business/business-detail?title=heavy-duty-engines&parent=vehicle-engine-upgrades¹⁴ • CARB’s proposed regulations to reduce emissions from locomotives: https://ww2.arb.ca.gov/resources/documents/evaluation-and-potential-development-regulations-reduce-emissions-locomotives¹⁵ 	

- Additional information on CARB's actions to minimize community health impacts from freight and estimated timelines is available at :
<https://www.arb.ca.gov/board/books/2019/032119/19-3-2pres.pdf>

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