

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 rail yard 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 and Muscoy community and has been identified as a major air quality concern (see Figure 5-1 for a map of the railyards in this community).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 Rail yards

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)

¹ Southern California Association of Governments, 2016 RTP, Goods Movement Appendix

² California Air Resources Board, Railyard Maps, March 2013, <https://www.arb.ca.gov/railyard/community/map.htm>, Accessed May 1, 2019.

³ Caltrans GIS Data, May 20 2019, <http://www.dot.ca.gov/hq/tsip/gis/datalibrary/>, Accessed June 3, 2019.

⁴ California Air Resources Board, Health Risk Assessment for the BNSF Railway San Bernardino Railyard. June 11, 2008. https://www.arb.ca.gov/railyard/hra/bnsf_sb_final.pdf?_ga=2.248110979.56395114.1560264190-1564673299.1501803809. Accessed April 15, 2019

- 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. 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.

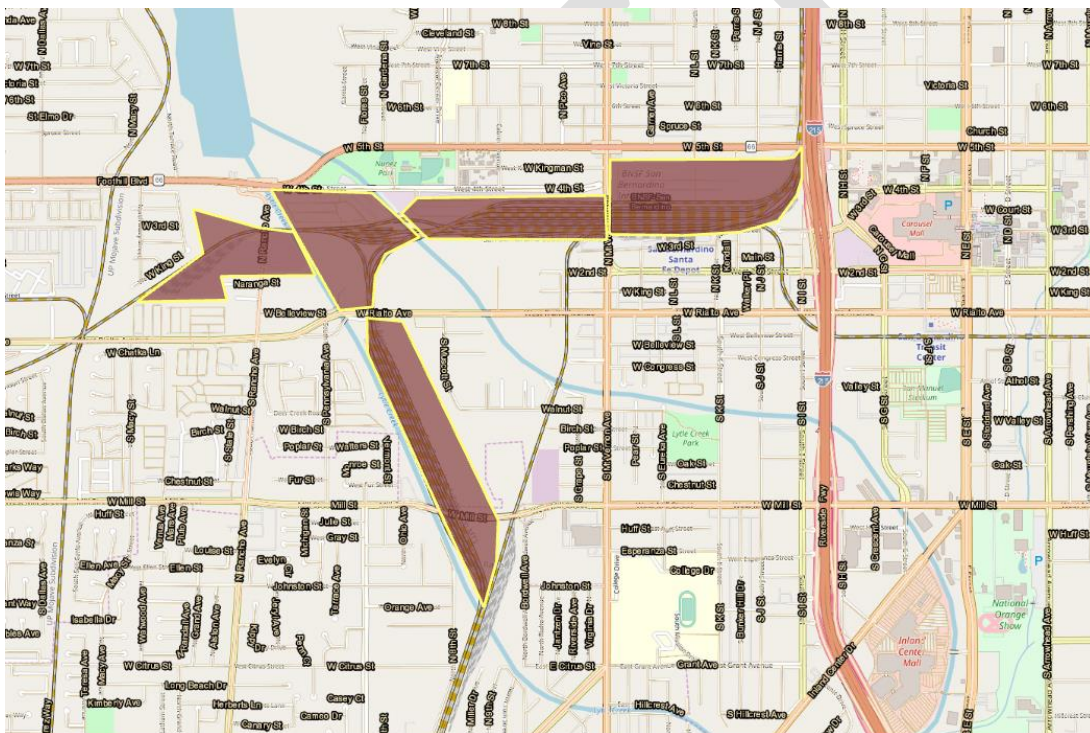


Figure 5-1. The BNSF Railyard within the San Bernardino and Muscoy Community

⁵ Association of major California freight railyards with asthma-related pediatric emergency department hospital visits. Loma Linda University School of Public Health. March 2019.

<https://www.sciencedirect.com/science/article/pii/S2211335518302626?via%3Dihub>. Accessed April 30, 2019.

⁶ Project ENRRICH: A Public Health Assessment of Residential Proximity to a Goods Movement Railyard. Loma Linda University School of Public Health. May 2014. http://www.aqmd.gov/docs/default-source/clean-air-plans/clean-communities-plan/enrrich_final_report_29may2014.pdf. Accessed April 30, 2019

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 are regulated at the federal level primarily by the Federal Railroad Administration and the Surface Transportation Board. These agencies' regulatory authority preempt certain federal, state, and local regulatory authorities. 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.⁸ These regulations limit idling for both new and remanufactured locomotives⁹ and mandate the use of ultra-low sulfur diesel fuel¹⁰. However, these regulations do not require railroads to reduce their usage of existing older, higher-emitting locomotives. 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 U.S. EPA has not yet acted on this petition. Because locomotive engines can last over 30 years, locomotive fleet turnover is slow, so even if EPA were to develop a Tier 5 emission standard, it would not result in immediate emission reductions.

State Actions (CARB)

CARB has two agreements¹¹ 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

⁷ U.S. EPA, Regulations for Emissions from Locomotives, <https://www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-emissions-locomotives>, Accessed May 1, 2019.

⁸ 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.

⁹ U.S. EPA, Control of Emissions from Idling Locomotives, <https://nepis.epa.gov/Exe/ZyPdf.cgi?Dockey=P100HP4Q.pdf>, Accessed May 1, 2019.

¹⁰ U.S. EPA, Diesel Fuel Standards and Rulemakings, <https://www.epa.gov/diesel-fuel-standards/diesel-fuel-standards-and-rulemakings#nonroad-diesel>, Accessed May 1, 2019.

¹¹ California Air Resources Board, 1998 Tier 2 Fleet Average in the South Coast Air Basin Agreement:

<https://www.arb.ca.gov/railyard/1998agree/1998agree.htm>

2005 Statewide Rail Yard Agreement: <https://www.arb.ca.gov/railyard/2005agreement/2005agreement.htm>

Regulation, Transportation Refrigeration Unit Regulation, and its Drayage Truck Regulation to begin the transition to zero-emission technology starting in 2026¹².

South Coast AQMD

South Coast AQMD previously adopted rules¹³ 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.

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 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 diesel 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):

¹² California Air Resources Board, <https://www.arb.ca.gov/gmp/sfti/sfti.htm>, Accessed June 5, 2019.

¹³ Regulation XXXV: <http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/regulation-xxxv>

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| <ul style="list-style-type: none"> • Continue to 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 and the Public Utilities Commission to encourage the installation of infrastructure needed to fuel/charge zero-emissions vehicles and on-site equipment at the BNSF Railyard • Continue to support CARB’s petition¹⁴ to the U.S. EPA for new national locomotive emission standards • Work with the BNSF railyard in the San Bernardino and Muscoy community to replace diesel-fueled equipment with cleaner technologies¹⁵ • Conduct fenceline and/or mobile monitoring around railyards to identify activities that may cause increased levels of air pollution. Mobile measurements (and fixed 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. • 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 bi-annual 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 XX pieces of diesel equipment at the BNSF railyard through incentive funding programs |
| <p>Estimated Timeline:</p> <ul style="list-style-type: none"> • In the second half of 2019, South Coast AQMD to conduct air monitoring at railyards and nearby communities • In 2020, South Coast AQMD to consider new ISR and/or other measures on railyards |

¹⁴ California Air Resources Board, CARB Locomotive Petition to U.S. EPA, April 2017, <https://ww2.arb.ca.gov/resources/documents/carb-petitions-us-epa-strengthen-locomotive-emission-standards>, Accessed June 5, 2019.

¹⁵ 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/>

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| <ul style="list-style-type: none"> • Between 2020 and 2022, CARB to consider new regulations and/or other measures for locomotives • By 2020, CARB to consider amending its regulation for zero-emissions refrigeration units (TRUs) • By 2022, CARB to consider amending its regulations for zero-emission drayage trucks and cargo handling equipment | |
| Implementing Agency, Organization, Business or Other Entity: | |
| Name: | Responsibilities: |
| South Coast AQMD | <ul style="list-style-type: none"> • Continue to pursue indirect source requirements and other measures for railyards, and improve community access to rule development process by holding a working group meeting in or near this community • Provide the CSC with updates on the development of indirect source requirements for railyards • 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 • Conduct air monitoring in community areas near the BNSF railyard and provide updates to the CSC • Work with CARB to identify opportunities for new financial incentives in this community |
| CSC | Participate in the CARB and South Coast AQMD rulemaking 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 to achieve additional emission reductions at railyards • Prioritize enforcement (e.g., for cargo handling equipment) in this community |
| References: | |
| <ul style="list-style-type: none"> • For more information on 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 • For more information on the Carl Moyer Program: http://www.aqmd.gov/home/programs/business/business-detail?title=heavy-duty-engines&parent=vehicle-engine-upgrades¹⁶ | |

¹⁶ South Coast AQMD, Carl Moyer Program (Heavy-Duty Engines), <http://www.aqmd.gov/home/programs/business/business-detail?title=heavy-duty-engines&parent=vehicle-engine-upgrades10>), Accessed May 31, 2019.

- For more information on CARB’s proposed regulations to reduce emissions from locomotives: <https://ww2.arb.ca.gov/resources/documents/evaluation-and-potential-development-regulations-reduce-emissions-locomotives>¹⁷
- [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)
<https://www.arb.ca.gov/board/books/2019/032119/19-3-2pres.pdf>

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¹⁷ California Air Resources Board, Evaluation and Potential Development of Regulations to Reduce Emissions from Locomotives, <https://ww2.arb.ca.gov/resources/documents/evaluation-and-potential-development-regulations-reduce-emissions-locomotives>, Accessed May 30, 2019.