



Preliminary Draft 2023 Emissions Inventory Estimate for Rail Yards

Background

The objective of this document is to provide a rough estimate of the baseline emissions of nitrogen oxides (NO_x) in 2023 that could be affected by potential facility-based measures that would apply to rail yards. The estimated emissions values described in this document are not intended to be final values used for the State Implementation Plan or for regulatory purposes. Instead, they are intended only as a point of reference to guide future strategies, policies and/or rules aimed at reducing emissions from rail yards in the Basin. More detailed emissions inventories for this source category will be developed in future public processes for any specific measure that will be used to obtain SIP credit (such as a regulation, MOU, etc.) and for future Air Quality Management Plans.

NO_x Emissions Inventory for Rail Yards

The estimate presented here relies on the substantial work that has previously been conducted to estimate mobile source NO_x emissions, including work performed by California Air Resources Board (CARB) staff for the 2016 Air Quality Management Plan (AQMP) emissions inventoryⁱ and the Southern California Regional Association of Governments (SCAG) and SCAQMD staff during development of the Final 2016 AQMP. The table below provides a summary of the overall NO_x emissions inventory for off-road equipment and on-road vehicles potentially associated with rail yards in 2023. The rail yards included in this estimate include those operated by Union Pacific (UP), Burlington Northern Santa Fe (BNSF), and Metrolink.

Methodology for Estimating 2023 NO_x Emissions from Rail Yards

Locomotives

All freight and Metrolink locomotive emissions from the South Coast air basin are included in this estimate. While most of these locomotive emissions will not occur at the rail yards, potential facility-based measures could affect the type of locomotives used, and could therefore affect emissions outside of rail yards too. The SIP inventory includes the following approximate tier distribution for line-haul locomotives.

Line-Haul Tier Level Distribution Forecast

Year	Tier 1	Tier 2+	Tier 3	Tier 4
2023	1%	19%	34%	45%

Trucks

The emission factor for trucks was derived from the EMFAC2014 POLA fleet (trucks subject to the CARB drayage rule for ports and rail yards). The truck trip mileage was estimated by applying a ratio of 2.082 trips per liftⁱⁱ, the number of lifts expected in 2023 at all off-dock freight rail yardsⁱⁱⁱ, and the average miles per truck trip from SCAG’s 2016 Regional Transportation Plan. Idling emissions were calculated using the same data sources as well as information from the emissions inventories prepared for Health Risk Assessments (HRAs) prepared by UP for CARB^{iv} and emission factors from EMFAC2014. Truck emissions associated with Metrolink are assumed to be negligible and are not included.

Transportation Refrigeration Units (TRUs)

TRU NO_x and DPM emissions in 2005 were calculated in the HRA emission inventories prepared by UP for CARB, and DPM emissions were calculated in HRA emissions inventories prepared by BNSF. The

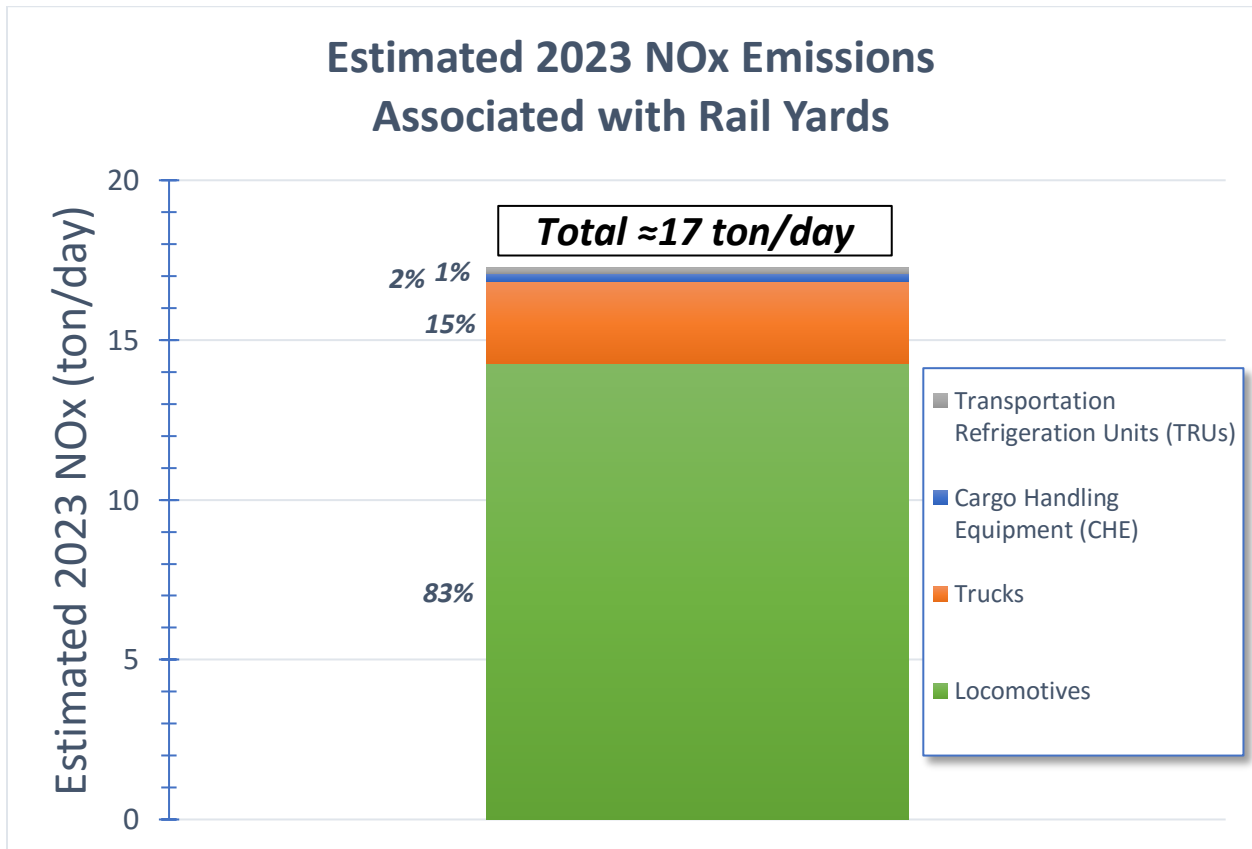


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ratio of NOx to DPM in the UP HRAs was applied to the BNSF emission inventories to estimate NOx emissions at BNSF rail yards in 2005. These total NOx TRU emissions at rail yards in 2005 were then compared to the total TRU emissions in the air basin in 2005. This ratio was then applied to total TRU emissions in 2023 in the air basin to estimate rail yard TRU emissions. These emissions would only apply to onsite TRU emissions.

Off-Road Cargo Handling Equipment

Cargo handling equipment emissions from rail yards were extracted directly from the SIP inventory.



Vehicle Type	2023 NOx Emissions
Locomotives	14.3
Cargo Handling Equipment (CHE)	0.3
Trucks	2.6
Transportation Refrigeration Units (TRUs)	0.2
Total	17

ⁱ <https://www.arb.ca.gov/app/emsinv/fcemssumcat/fcemssumcat2016.php>

ⁱⁱ SCIG EIR, Section 3.10

ⁱⁱⁱ SCIG EIR Appendix G4, Scenario 5

^{iv} <https://www.arb.ca.gov/railyard/hra/hra.htm>