
APPENDIX 5:

AIR QUALITY PRIORITIES

Trucks and Freeways

Community Concerns

The Southeast Los Angeles (SELA) community is surrounded by the Interstate 105 to the south, Interstate 110 to the west, and Interstate 710 (I-710) to the east. The I-710 is a vital transportation corridor for goods movement out of the Ports of Los Angeles and Long Beach, the busiest container ports in the United States. A daily average of up to 240,000 vehicles transit along the portion of the Interstate 710 in the SELA community.¹ Heavy-duty trucks contribute to about 8.7% of the average daily traffic volume and over 90% of diesel particulate matter (DPM) emissions.² Based on South Coast AQMD's MATES IV study, in 2012 DPM emissions account for about 68% of the air toxics risk in the South Coast Air Basin. However, the California Air Resources Board (CARB) projects that between 2012 and 2030 there will be over a 95% reduction in on-road DPM emissions in the South Coast Air Basin from the implementation of mobile source regulations, with most of the reductions occurring before 2023.²



The SELA community has expressed concern about emissions from heavy-duty trucks traveling along the I-710 and idling near storage yards and fueling stations. Community residents are also concerned about the general traffic congestion in their neighborhoods and the potential of large warehouses or fulfillment centers opening in the future, which may also increase truck activity. To gain understanding of the vehicle population in the SELA community, a summary of vehicles registered by model year is available at the following webpage <https://www.aqmd.gov/nav/about/initiatives/community-efforts/environmental-justice/ab617-134/southeast-los-angeles>. It should be noted that many on-road vehicles categories, such as trucks, may not always operate where they are registered.





Emissions from Trucks and Freeways

The largest sources of emissions from Trucks in SELA generally fall into two categories, including, medium heavy-duty trucks (14,001 - 33,000 lbs.) and heavy heavy-duty trucks (over 33,000 lbs.). Examples of medium heavy-duty trucks include commercial delivery trucks, beverage trucks, and school buses. Examples of heavy heavy-duty trucks are freight trucks used to move shipping containers, cement trucks, dump trucks, and city transit buses. See Figure 1 – General Trucks Categories.

¹ Caltrans, Caltrans Traffic Census Program. <https://dot.ca.gov/programs/traffic-operations/census>, Accessed February 13, 2020.

² California Air Resources Board, Community Air Protection Program 2019 Community Recommendations Staff Report. <https://ww2.arb.ca.gov/resources/documents/2019-community-recommendations-staff-report>, Accessed February 18, 2020.

Figure 1 – General Truck Categories

Category	Definition	Example
<p>Medium Heavy-Duty</p>		
<p>Heavy Heavy-Duty</p>		

Based on emissions from the years 2016 and 2017, medium heavy-duty and heavy-heavy duty trucks contribute approximately 53% of all DPM in SELA.³ Other large sources of DPM in SELA are locomotives (i.e., trains), off-road equipment (e.g., cargo handling equipment, construction equipment), and diesel buses. For the overall contribution of these sources by percentage, see Figure 3 – Sources of DPM in SELA. DPM is a toxic air pollutant that comes from diesel engines and is a top contributor to air toxics cancer risk. Additional information about DPM and health effects is available at <https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health>.

Trucks also contribute to fine particulate matter (PM2.5), particulate matter (PM10), volatile organic compounds (VOCs), and nitrogen oxides (NOx) emissions. PM10 and PM2.5 are particles smaller than 10 and 2.5 microns, respectively that can be inhaled deep into the lungs and cause health problems. Figure 4 – Particulate Size Comparison shows the relative sizes of PM10 and PM2.5. Additional information about PM10 and PM2.5 are available at <https://ww2.arb.ca.gov/resources/inhalable-particulate-matter-and-health>. ROG is a group of gases that contribute to forming smog, such as acetone, benzene, and formaldehyde. NOx is a family of gases that are highly reactive with other pollutants to form both ozone (smog) and PM2.5. Ozone can harm the respiratory system. Additional information about ozone is available at <https://ww2.arb.ca.gov/resources/ozone-and-health>.

³ South Coast Air Quality Management District, Sources of Air Pollution Southeast Los Angeles. <http://www.aqmd.gov/docs/default-source/ab-617-ab-134/steering-committees/southeast-los-angeles/source-attribution-fact-sheet.pdf>. Accessed July 10, 2020.

Figure 2 – Sources of DPM in SELA

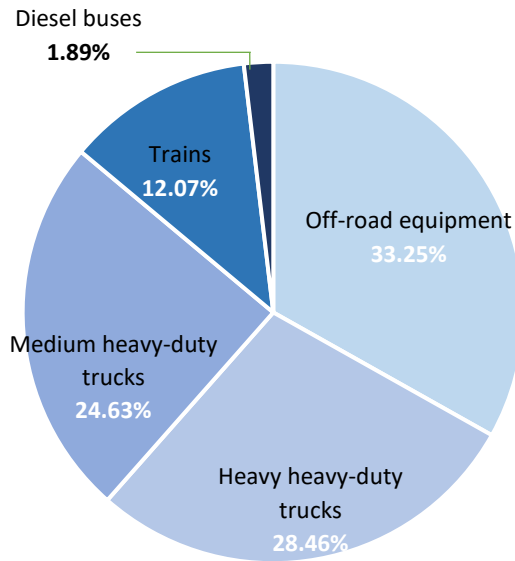
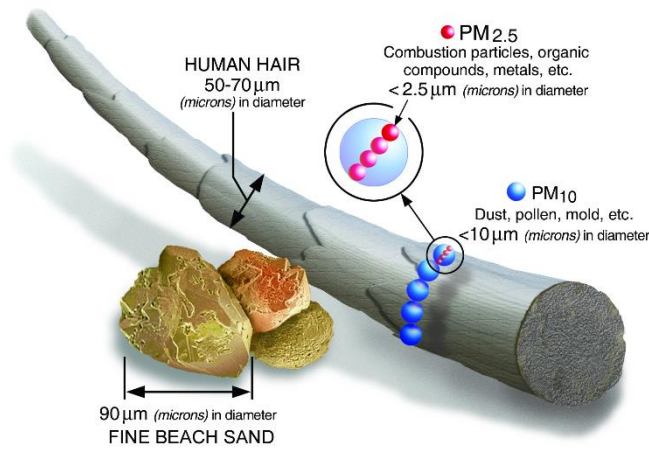


Figure 3 – Particulate Matter Size Comparison (PM10 and PM2.5)⁴



⁴ U.S. EPA. Particulate Matter (PM) Basics. <https://www.epa.gov/pm-pollution/particulate-matter-pm-basics>. Accessed July 14, 2020.

Table 1 – Emissions from Mobile Sources in SELA below, provides an overview of on-road mobile source emissions in SELA. Emissions from medium heavy-duty and heavy-heavy duty trucks are in yellow highlights.

Table 1 – Emissions from On-Road Mobile Sources in SELA in 2018 (Tons per Year)^{5, 6}

On-Road Mobile Sources – SELA	NOx	ROG	PM10	PM2.5	DPM
†Light and Medium-Duty Vehicles	447.75	492.00	134.76	57.58	0.37
†Light Heavy-Duty Vehicles	17.45	20.97	2.82	1.19	--
Medium Heavy-Duty Vehicles	208.68	17.02	12.09	7.99	5.25
Heavy-Heavy Duty Vehicles	493.37	25.79	12.84	8.34	5.93
Buses	17.24	2.32	1.25	0.73	0.38
Total On-road Mobile Sources	1,184.49	558.10	163.76	75.83	11.94

*Passenger cars and pickup trucks

Air Monitoring

The SELA community is intersected by a multitude of public roads and freeways with high traffic volumes and a high fraction of diesel trucks due to the presence of railyards, warehouses and the associated goods movement in the area. Diesel engines emit a complex mixture of air pollutants, including both gaseous and solid material. The solid material in diesel exhaust is known as DPM, which is a component of PM2.5. There is no technique to directly measure DPM (a major contributor to health risk); therefore, indirect measurements based on surrogates for diesel exhaust are used, specifically black carbon (BC). DPM is typically composed of carbon particles (“soot”, also called BC) and numerous organic compounds. Diesel exhaust also contains gaseous pollutants, including volatile organic compounds (VOC) and NOx.

The monitoring strategy to study and characterize this air quality priority consists of comprehensive measurements conducted using a mobile platform capable of monitoring a wide range of particulate and gaseous pollutants, including BC, PM, ultrafine particles (UFP), and nitrogen dioxide (NO₂). Mobile monitoring is first conducted in areas identified by the CSC, such as areas with heavy-duty trucks idling near storage yards and fueling stations, as well as roadways with traffic congestion in neighborhoods, prioritized based on available truck density information. These measurements will extend to other areas within the SELA community to support implementation of emission reduction strategies and help track their progress; identify air pollution hotspots; and help to assess the impact of truck emissions on community exposure.

⁵ South Coast Air Quality Management District, Sources of Air Pollution Southeast Los Angeles. <http://www.aqmd.gov/docs/default-source/ab-617-ab-134/steering-committees/southeast-los-angeles/source-attribution-fact-sheet.pdf>. Accessed July 10, 2020.

⁶ California Air Resources Board, Community Air Protection Program 2019 Community Recommendation Staff Report. ww2.arb.ca.gov/resources/documents/2019-community-recommendations-staff-report. Accessed July 10, 2020.

Regulatory Efforts and Enforcement

Under the Clean Air Act (CAA),⁷ the U.S. EPA sets standards for air quality for certain ‘criteria’ air pollutants, including the maximum concentration of those pollutants in the air anywhere in the United States. The CAA allows EPA to establish emission limits on mobile sources, such as heavy-duty trucks, by regulating both the composition of fuels and tailpipe emissions and on-road and off-road engines. CARB is the primary authority over mobile sources in the state of California and can set in-state fuel and tailpipe standards for many of the same vehicles as the federal government, though it often requires a waiver from EPA. South Coast AQMD has primary authority over stationary sources with some limited mobile source authority. For example, South Coast AQMD can address “indirect sources” (facilities that attract mobile sources) through facility-based measures. The sections below describe the regulatory and enforcement efforts from the U.S. EPA, CARB, and South Coast AQMD.

US EPA and CARB

Since the designation in California of diesel particulate matter as a toxic air contaminant in 1998, CARB has developed a suite of regulations (rules) and Airborne Toxic Control Measures to reduce Californians’ exposure to this cancer-causing pollutant, including emissions from heavy-duty (large) diesel trucks and buses. CARB has addressed truck and bus diesel emission reductions through existing regulations, such as the Drayage Truck Regulation,^{8,9} and the Truck and Bus Regulation,^{10, 11} which require the use of exhaust after treatment, like diesel particulate filters; newer engines that meet lower air pollutant emissions standards; and limits on idling of diesel-fueled vehicles, such as trucks and buses. See Figure 5 - CARB Enforcement Programs Relevant to Trucks, for more details on these rules. Figure 5 – CARB Enforcement Programs Relevant to Trucks, provides an overview of CARB’s enforcement programs).

⁷ U.S. EPA, Summary of the Clean Air Act. <https://www.epa.gov/laws-regulations/summary-clean-air-act>. Accessed July 14, 2020.






⁸ California Air Resources Board, Update on California Actions to Minimize Community Health Impacts from Freight, March 2019, https://www.arb.ca.gov/board/books/2019/032119/19-3-2pres.pdf?_ga=2.79278740.1419761847.1559951314-1545453421.1552083450, Accessed July 4, 2019.

⁹ California Air Resources Board, Drayage Trucks at Seaports and Railyards, <https://ww2.arb.ca.gov/our-work/programs/drayage-trucks-seaports-and-railyards>, Accessed July 4, 2019.

¹⁰ California Air Resources Board, Truck and Bus Regulation Compliance Requirement Overview, <https://www.arb.ca.gov/msprog/onrdiesel/documents/FSRegSum.pdf>, Accessed July 4, 2020.

¹¹ California Air Resources Board, Truck and Bus Regulation On-Road Heavy Duty Diesel Vehicles (In-Use) Regulation, <https://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm>, Accessed July 4, 2020.

Figure 4 – CARB Enforcement Programs Relevant to Trucks

	<p>CARB conducts idling sweeps to ensure vehicle idling limits are not exceeded. See below for further details on this rule.</p>
	<p>Drayage vehicles are heavy-duty diesel vehicles (HDDV) that move goods. HDV that enter the port or intermodal facility are required to have newer engines (2007+) that are certified to cleaner emissions standards.</p>
	<p>Transport Refrigeration Units (TRUs): Inspect secondary engines to ensure TRUs meet labeling and clean air requirements.</p>
	<p>For the Heavy-Duty Vehicle Inspection Program, CARB conducts inspections for:</p> <ul style="list-style-type: none"> • Diesel Emission Fluid (DEF): a liquid used as a reductant in heavy-duty diesel engines to reduce NOx emissions • Emission Control Label (ECL): Engine certification labeling requirements • Smoke/Tampering: Requires heavy duty trucks/buses to be inspected
	<p>Statewide Truck and Bus Regulation requires all vehicles with 2009 or older engines weighing over 14,000 pounds to reduce exhaust emissions by upgrading to 2010 or newer engines by 2023. Non-compliant vehicles will be denied DMV registrations.</p>

Both CARB and South Coast AQMD enforce the idling rules, including the Commercial Vehicle Idling Regulation restricts commercial vehicle idling (with a gross vehicle weight rating of greater than 10,000 pounds).¹² The regulation restricts idling to five minutes or less for commercial vehicles:

- Without a “Clean Idle” sticker (2007 and newer model-year diesel engines that meet low NOx limit of 30 g/hr), or
- With a “Clean Idle” sticker and idling within 100 feet of schools, residences, hotels, or other restricted areas, or
- Operating diesel-fueled auxiliary power systems within 100 feet of restricted areas.

The regulation also provides exceptions for queuing (i.e., vehicles waiting in line to perform work where shutting engines off is not possible). Figure 5 – “Clean Idle” sticker, shows a “Clean Idle” sticker provided for diesel engines that meet CARB’s certification requirements.

¹² California Air Resources Board, Complaints – Idling Vehicles, <https://ww2.arb.ca.gov/our-work/programs/environmental-complaints/complaints-idling-vehicles>, Accessed July 4, 2020.

Figure 5 – CARB Certified Clean Idle Sticker



In addition, to helping cities address idling, CARB has developed an “Options for Cities to Mitigate Heavy-Duty Vehicle Idling” guidance document, which includes options for cities to address heavy-duty vehicle idling emissions in their communities.¹³

CARB continues to work towards reducing emissions from transport refrigeration units (TRU)¹⁴ near distribution centers and other facilities where TRU activity is focused, and reducing emissions while in transit, especially near the most impacted communities. Improving freight efficiency and transitioning to zero-emission technologies will reduce toxic air contaminant, criteria pollutant, and greenhouse gas emissions. Improving freight efficiency and transitioning to zero-emission technologies will also reduce these same categories of emissions. CARB has created advisories and forms to assist TRU owners in understanding compliance requirements to ensure that regulated entities (e.g., TRU owners, TRU operators, facilities that support TRU use, etc.) are aware of their responsibilities under the TRU regulation.

CARB also recently adopted the Advanced Clean Trucks Rule requiring truck manufacturers to transition from producing diesel trucks and vans to electric zero-emission trucks including heavy-duty vehicles beginning in 2024. Manufacturers who certify Class 2b-8 chassis or complete vehicles with combustion engines would be required to sell zero-emission trucks as an increasing percentage of their annual California sales from 2024 to 2035. By 2035, zero-emission truck/chassis sales would need to be 55% of Class 2b – 3 truck sales, 75% of Class 4 – 8 straight truck sales, and 40% of truck tractor sales. This rule also requires that fleets report information on a one-time basis about their vehicles to support future zero-emission fleet rules.¹⁵ CARB is also considering new requirements to further reduce emissions from trucks and TRUs. Table 2 below illustrates the key upcoming activities from U.S. EPA and CARB.

¹³ California Air Resources Board, Options for Cities to Mitigate HDV Idling, https://ww2.arb.ca.gov/sites/default/files/2020-03/arb_options_cities_mitigate_idling.pdf, Accessed July 4, 2020.

¹⁴ California Air Resources Board, Transport Refrigeration Units, <https://ww2.arb.ca.gov/our-work/programs/transport-refrigeration-unit>, Accessed July 4, 2020.

¹⁵ California Air Resources Board, Advanced Clean Trucks, <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks>, Accessed July 4, 2020

Table 2 – Upcoming Rule Development/Activities from U.S. EPA and CARB

Agency	Proposed Action	Expected Decision	Expected Phase-in Period
U.S. EPA	Cleaner Truck Initiative ¹⁶ – In response to a petition from the South Coast AQMD, U.S. EPA has committed to updating its truck engine standard to reduce NOx emissions.	2021	2027-?
CARB	Transport Refrigeration Unit Regulation ¹⁷ – Measure to reduce emissions and residual risk from TRUs by transitioning to zero-emission technologies.	2021	TBD
CARB	Advanced Clean Fleets ¹⁸ – Would require fleets to transition to zero-emissions, including drayage trucks.	2021	2024-?
CARB	Heavy-Duty Low NOx Rule ¹⁹ – Would set new statewide engine standards for trucks. 60-75% NOx reduction between 2024-2026. Additional reductions in 2027 and beyond.	2020	2024-?
CARB	Heavy-Duty Inspection and Maintenance - Similar to smog check for cars and light duty trucks, this would allow on-board diagnostics (OBD) system checks and require periodic OBD data submissions to identify malfunctioning emissions-related components in applicable engines, include opacity checks for pre-2013 model year engines (non-OBD engines), and require vehicle repairs, if necessary, for all vehicles operating in California. ²⁰	2021	2023-?

South Coast AQMD

South Coast AQMD staff is actively working on Proposed Rule 2305 Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program.²¹ Staff released the first draft rule in May 2020. The purpose of the draft rule is to reduce local and regional NOx and DPM emissions and facilitate local and regional emission reductions associated with warehouses larger than 100,000 square feet and the

¹⁶ U.S. EPA, Cleaner Trucks Initiative, <https://www.epa.gov/regulations-emissions-vehicles-and-engines/cleaner-trucks-initiative>, Accessed July 4, 2020.

¹⁷ California Air Resources Board, New Transport Refrigeration Unit Regulation in Development, <https://ww2.arb.ca.gov/our-work/programs/transport-refrigeration-unit/new-transport-refrigeration-unit-regulation>, Accessed July 4, 2020

¹⁸ California Air Resources Board, Advanced Clean Fleets, <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets>, Accessed October 23, 2020.

¹⁹ California Air Resources Board, Heavy-Duty Low NOx, <https://ww2.arb.ca.gov/our-work/programs/heavy-duty-low-nox>, Accessed July 4, 2020.

²⁰ California Air Resources Board, Heavy-Duty Inspection and Maintenance Program, <https://ww2.arb.ca.gov/our-work/programs/heavy-duty-inspection-and-maintenance-program>, Accessed October 23, 2020.

²¹ South Coast AQMD, Proposed Rule 2305 Warehouse Indirect Source Rule – Warehouse Actions and Investments to Reduce Emissions (WAIRE) Program. https://www.aqmd.gov/docs/default-source/planning/fbmsm-docs/warehouse-isr_prelim-1st-draft.pdf. Accessed July 14, 2020.

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mobile sources attracted to these warehouses. The Warehouse ISR is scheduled to be considered by the South Coast AQMD Governing Board in the first quarter of 2021.

South Coast AQMD has limited authority to regulate on mobile sources; however, the state’s Air Toxic Control Measure to address diesel particulate matter from heavy duty diesel vehicles specifically provides enforcement authority to air districts to enforce truck idling regulations. Activities for truck idling inspections fall into two categories:

- Those initiated by South Coast AQMD – that is, prearranged field operations (also referred to as “sweeps”) to identify violating trucks.
- Those prompted by an outside party, such as public complaints and agency referrals.

While there are many reasons to conduct an inspection, air pollution concerns received directly from community members by way of public complaints are a very important source of information. All complaints are assigned to an inspector for investigation. The complaint telephone line is handled by a live attendant during business hours (Monday – Friday) or by a standby system during off hours. Complainant information is always kept confidential, and while anonymous complaints are accepted, having contact information is crucial to ensure that the inspector can gather all the relevant information to conduct an effective investigation. **To report complaints, please call 1-800-CUT-SMOG (1-800-288-7664) or file an online complaint at www.aqmd.gov.**

Truck idling inspections are unannounced to ensure that the inspector can identify any trucks that may be in violation of the truck idling standards. The locations at which inspectors conduct field operations are chosen based on community input, historical complaint data, locations of sensitive receptors, and other data sources that give insight as to where trucks may be idling in the community. If a truck is found to be in violation of California’s idling regulation, inspectors will take necessary enforcement action to address the non-compliant activity. This enforcement action generally takes the form of a Notice of Violation (NOV) to the owner of the vehicle. NOVs generally result in a fine or other penalty.

Since truck idling has been identified as a community priority, AB 617 CERP actions include enhanced enforcement efforts intended to address SELA community concerns directly, taking community input into account where appropriate.

Incentives

South Coast AQMD funds projects to develop zero-emission technologies, such as battery-electric and fuel cell, for heavy-duty trucks. South Coast AQMD also offers incentives to truck owners to replace older polluting trucks with cleaner trucks. Specifically, the truck owners must use these incentives to purchase trucks that are cleaner than what the regulations currently require. South Coast AQMD’s Voucher Incentive Program (VIP)²² provides incentives for smaller businesses with fleets of 10 or fewer vehicles that primarily

²² South Coast Air Quality Management District, Voucher Incentive Program. <http://www.aqmd.gov/home/programs/business/business-detail?title=voucher-incentive-program&parent=vehicle-engine-upgrades>, Accessed July 6, 2020

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operate within California. The Carl Moyer Program²³ is another incentive program for truck owners to obtain cleaner trucks.

South Coast AQMD staff is exploring a new system called Portable Emissions AcQuisition System (PEAQS) equipped with Automated License Plate Readers (ALPRs)²⁴ in collaboration with the California Air Resources Board (CARB). PEAQS measures emissions as vehicles pass by the sensors, while ALPRs are high-speed, computer-controlled camera systems that can capture license plate numbers that come into their view. ALPR data, when cross-referenced with the Department of Motor Vehicles (DMV) records, can provide more information about vehicles. South Coast AQMD staff is exploring the possibility of using this technology to identify older heavy-duty diesel trucks and notify truck owners who may qualify for incentive programs to replace their truck with newer cleaner models.

In support of AB 617, the legislature has budgeted funds for local air district incentives to support advanced technologies that reduce emissions in disadvantaged communities. CARB facilitates these incentives through the Community Air Protection Program (CAPP). CAPP incentives help owners of older high-polluting vehicles and equipment replace them with newer models with much lower emissions or zero emissions. The incentives may also be used for changes at local industrial facilities that reduce emissions of toxic or smog-forming pollutants, to build zero-emission charging stations, or to support local measures that air districts and communities identify through AB 617 Community Emissions Reduction Programs.

South Coast AQMD has funded about 360 mobile source projects (resulting in approximately \$78.1 million in grants) in 2018 – designated AB 617 communities with CAPP incentives. Examples of the type of projects funded include the replacement of heavy-duty trucks, off-road equipment, and locomotives, and zero-emission infrastructure (e.g., outlet for electric-powered truck refrigeration units). For more information on CAPP incentives, including the applications submitted and final project selection for the first two years of the program, please visit the following webpage at www.aqmd.gov/cappincentives.

The ports are also developing their Clean Truck Program (CTP) as part of their Clean Air Action Plan (CAAP) to reduce emissions at the ports. The CTP is aimed at generating an additional source of incentive funds for cleaner drayage trucks. The funds would be generated by charging a fee per loaded container to trucks entering the ports facilities, with a rebate for cleaner trucks. In March 2020, the ports harbor commissioners voted to support a truck rate of \$10 per Twenty Foot Equivalent (TEU), or \$20 per truck. This rate is anticipated to provide \$90 million per year for truck incentives.

Initially the ports intended to design and implement the program in 2020, with a target of starting to collect the truck rate by the end of 2020. However, due to the economic uncertainties triggered by the COVID-19 pandemic, the ports have delayed that date and both the details of the program and the start date are uncertain. The ports have stated that they remain committed to developing the CTP and will start implementing as soon as there is more certainty regarding the economic outlook.

²³ 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-upgrades>, Accessed July 6, 2020.

²⁴ California Air Resources Board, Improving On-road Vehicle Data: Automated License Plate Readers (ALPR) Portable Emission AcQuisition System (PEAQS), slide 35 through 42. <http://www.aqmd.gov/docs/default-source/ab-617-ab-134/steering-committees/east-la/meeting-presentation-may26-2019.pdf>, Accessed July 6, 2020.

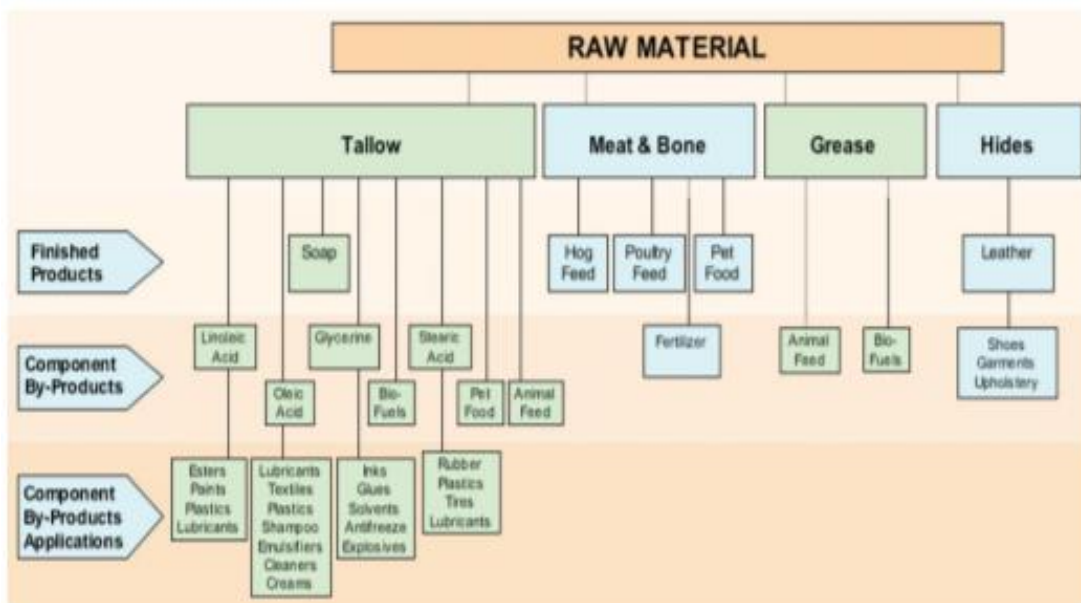
Rendering Facilities

Community Concerns

The Southeast Los Angeles (SELA) community is affected by odors from rendering plants located within the emissions study area (ESA). Rendering is a process that converts waste animal tissue into grease, soap, meat meal, and other useful materials. Dry material from the process may be used for pet food, fertilizer and other products. The raw material that is rendered includes animal carcasses, slaughter waste and trimming, and out-of-date supermarket stock. Figure 1 shows the products and by-products of the rendering process. Because animal carcasses are generally not allowed to be put in landfills, these materials must go to rendering facilities to be processed. Several processes within rendering facilities can emit odors. The processes include raw material receiving, raw material size reduction, cooking, fat processing, and wastewater treatment.



Figure 1 – Products and By-products Produced During Rendering²⁵

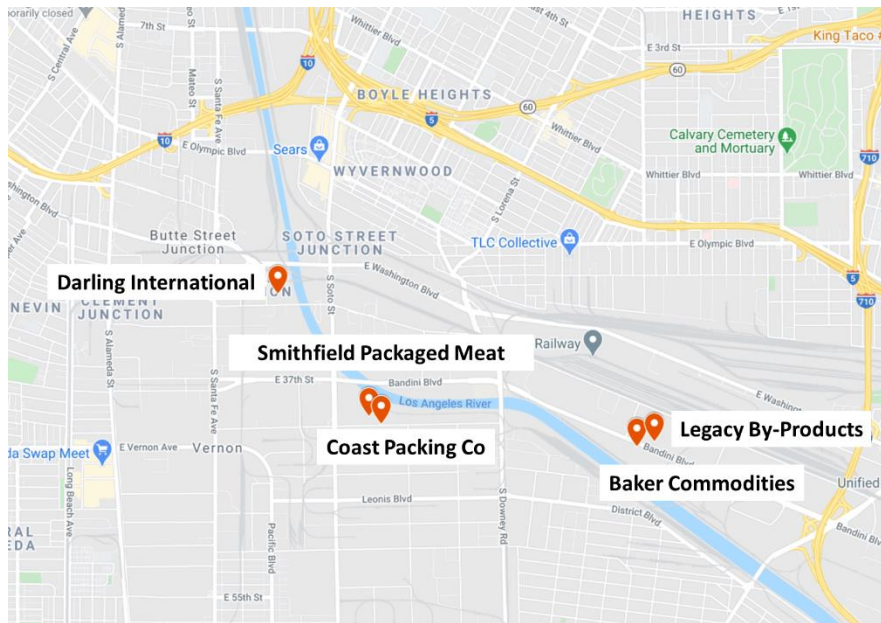


²⁵ South Coast AQMD, Final Staff Report for Proposed Rule 415 – Odors from Rendering Facilities <http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2017/2017-nov3-030.pdf>, Accessed October 8, 2020.

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The SELA Community Steering Committee (CSC) has expressed concerns about odors from rendering facilities located in or adjacent to the Vernon area that affect the quality of life in SELA. Figure 2 shows the five rendering facilities located in the SELA emissions study area, including Baker Commodities, Darling International, Legacy By-Products (formerly D & D/West Coast Rendering), Smithfield Packaged Meat (formerly Farmer John), and Coast Packing. It is often difficult to identify which rendering facility is the source of an odor detected in the community because the facilities are located close to one another.

Figure 2 – Map of Rendering Facilities



Emissions from Rendering Facilities

Odors emitted from rendering facilities can come from raw material receiving, high-intensity odors from processing operations (e.g., cooker, presses, and centrifuges), wastewater treatment, and many other sources of fugitive odors at the facility. Figure 3 shows some of the potential odor emission points in the continuous rendering process. The rendering process can release odors that cause health effects and reduced quality of life. The symptoms that accompany odors include coughing, sore throat, burning eyes, runny nose, headache, nausea, and respiratory irritation.²⁶ Table 1 includes the emissions inventory for rendering facilities in SELA during 2018 including some criteria air pollutants and toxic air contaminants.

²⁶ Science of Odors as a Potential Health Issue, Journal of Environmental Quality, (Susan Schiffman and C.M. Williams, 34:129-138 (2005)

Figure 3 – Potential Odor Emission Points in Continuous Rendering Process²⁷

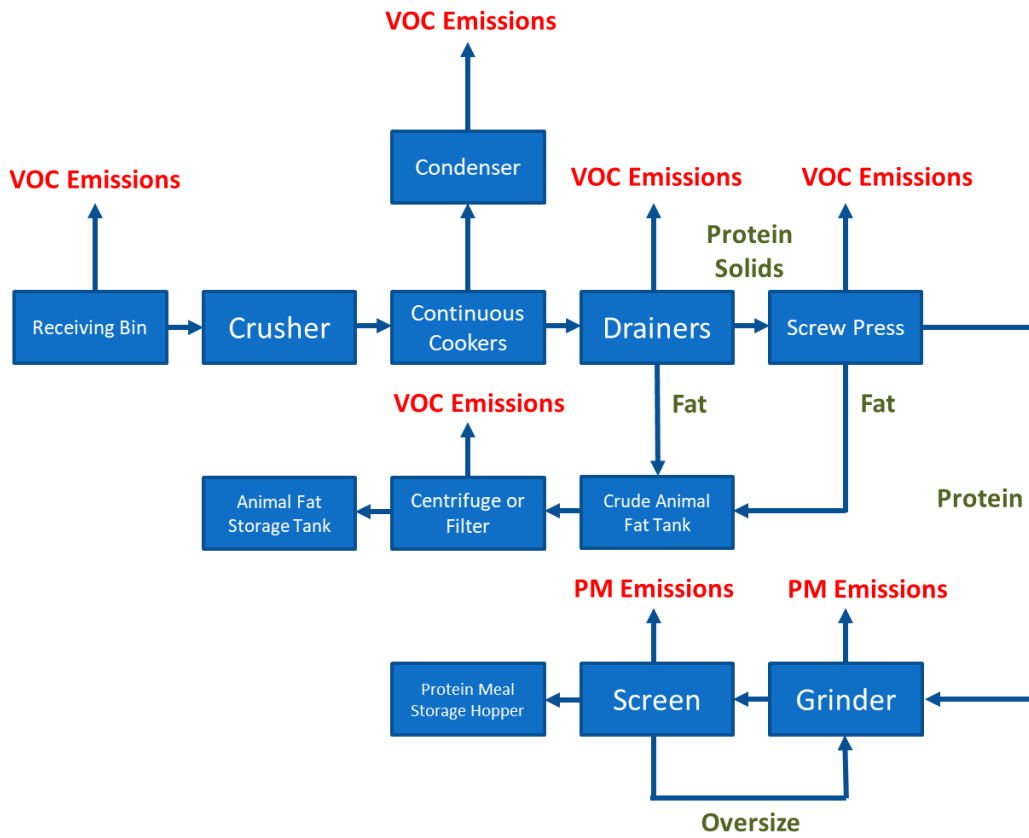


Table 1 – 2018 Emissions Inventory for Rendering Facilities in SELA in Tons per Year

Facility	CO	NO _x	SO _x	NH ₃	VOC	PM10	PM2.5	Benzene
Baker Commodities	11.6	-	0.1	0.5	0.9	1.6	1.6	2.3
Smithfield Packaged Meat	19.3	33.0	0.1	4.2	9.9	-	-	26.4
Legacy By-Products	1.2	-	-	0.2	0.2	0.2	0.2	1.5
Coast Packing Company	4.1	4.9	3.3	0.9	7.5	5.5	5.4	0.8

²⁷ U.S. EPA, AP42, section 9.5.3 – Meat Rendering Plants. <https://www3.epa.gov/ttn/chief/ap42/ch09/final/c9s05-3.pdf>. Accessed September 9, 2020.

Darling Ingredients	12.7	1.6	0.1	0.4	0.9	-	-	0.6
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Air Monitoring

The rendering process involves many steps, each of which is a potential source of fugitive odors at a facility (Figure 3). In general, odors are mainly comprised of volatile organic compounds (VOCs). Even with modern air monitoring techniques, the presence and intensity of odors is difficult to measure, and the human nose is often a better detector of the presence of odorous compounds. Odors are often the product of a number of different compounds present in a single plume and an approach that captures as many of these VOCs as possible provides the best chance to understand odor sources.

To address this community concern mobile monitoring of VOCs will be conducted near the five rendering facilities identified in the emissions study area (Figure 2). These studies will be conducted using a mobile platform capable of simultaneous real-time monitoring of hundreds of VOCs at very low levels. Concurrent measurements of VOCs and wind speed/direction while driving near target facilities will enable locating potential source(s) of emissions, and onboard data visualization tools will be used to detect and track plumes of interest in real-time. Community monitoring will be conducted to help support compliance investigations, where appropriate, and to assess the extent to which emissions from rendering facilities impact the air quality of the nearby community.

Regulatory Efforts and Enforcement

South Coast AQMD staff regularly conducts compliance and enforcement activities at rendering facilities within South East Los Angeles. These activities fall into two categories:

- Those initiated by South Coast AQMD, such as routine facility inspections or targeted rule inspections.
- Those prompted by an outside party – e.g., complaint investigations, facility notifications, and agency referrals.

While there are many reasons to conduct an inspection, air pollution concerns received directly from community members by way of public complaints are a very important source of information. All complaints are assigned to an inspector for investigation. Complaints received regarding rendering plant odors are investigated for compliance with Rule 415 – *Odors from Rendering Facilities* and Rule 402 – *Public Nuisance*. The complaint telephone line is handled by a live attendant during business hours (Monday – Friday) or by a standby system during off hours. Complainant information is always kept confidential, and while anonymous complaints are accepted, having contact information is crucial to ensure that the inspector can gather all the relevant information to conduct an effective investigation. **To report complaints, please call 1-800-CUT-SMOG (1-800-288-7664) or file an online complaint at www.aqmd.gov.**

Inspections are generally unannounced to ensure that the inspector gets a snapshot of the normal operations at the rendering plants. Inspections can be conducted to evaluate the overall compliance status of the facility or focus on specific aspects of an operation or specific rule or regulation. At

rendering facilities, inspectors will verify compliance with Rule 415 (including the relevant BMPs), permit conditions, and any other applicable rules or regulations.

If a facility is found to be out of compliance with air pollution rules/regulations or permit conditions, inspectors will take necessary enforcement action to address the non-compliant activity. There are two methods of enforcement action:

1. A Notice to Comply (NC) may be issued for minor violations found during an inspection or to request additional information.
2. A Notice of Violation (NOV) may be issued for non-compliance with rules, permit conditions, or administrative requirements. NOVs generally result in a fine or other penalty.

If a facility cannot immediately comply with air pollution laws, it may seek a variance from a rule requirement or permit condition by filing a petition and appearing before the South Coast AQMD Hearing Board. In cases of ongoing non-compliance, an abatement order may be served on the facility and will require the company to take specific actions or shut down its operation. These processes serve to ensure that a facility can return to compliance expeditiously while minimizing air quality impacts.

Since rendering facilities have been identified as a community priority, AB 617 CERP actions include enhanced enforcement efforts intended to address SELA community concerns directly, taking community input into account where appropriate.

Figure 4 summarizes the key elements of Rule 415, including best management practices, enclosures, signage, and additional requirements.

Figure 4 – Key Elements of Rule 415



Green Spaces

Community Concerns

Green spaces, such as parks and reserves, sporting fields, greenways and trails, and community gardens provide various environmental benefits to residents. Green spaces may help reduce the concentration of pollution the air,^{28,29} reduce noise impacts and lower outdoor temperatures reducing urban heat impacts. Additionally, residents who live near green spaces may be encouraged to engage in physical activity, which provides health benefits by increasing physical fitness, reducing depression and anxiety, and improving cognitive function.³⁰



The CSC expressed interest in increasing green spaces in SELA through tree planting, school and community gardens, tree buffers near freeways, and greenways or tree canopy covers over bike trails.

Green Space Programs

State Programs

The Coastal Conservancy has been designing and funding urban greening projects in Los Angeles county since 2008. The agency works to introduce green spaces and green infrastructure to communities that have been historically deprived of natural spaces. The Coastal Conservancy's *L.A. Urban Greening Program*³¹ seeks to expand open space and support water quality in under-served communities in Los Angeles. The program is composed of multi-benefit projects that:

- Create new parks and improve existing parks and green spaces
- Help cool down neighborhoods with native plantings
- Create urban greenways with bike and pedestrian paths
- Improve recreation opportunities in park-poor neighborhoods
- Support the restoration of the L.A. River
- Improve groundwater recharge, reduce storm water runoff, and improve coastal water quality

²⁸ CARB, Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways <https://ww2.arb.ca.gov/resources/fact-sheets/strategies-reduce-air-pollution-exposure-near-high-volume-roadways>. Accessed October 30, 2020.

²⁹ VOCs and NOx produce ozone and secondary organic aerosols in the presence of sunlight. Therefore, low VOC emitting trees should be planted to minimize their contribution to air pollution.

³⁰ C. Haaland and C.K. van den Bosch. Urban Forestry & Urban Greening 14 (2015) 760 – 771. <https://doi.org/10.1016/j.ufug.2015.07.009>. Accessed July 30, 2020.

³¹ State Coastal Conservancy, Urban Greening. <https://scc.ca.gov/projects/urban-greening/#:~:text=The%20Conservancy's%20L.A.%20Urban%20Greening,of%20multi%2Dbenefit%20projects%20that%3A&text=Improve%20groundwater%20recharge%2C%20reduce%20storm%20water%20runoff%20and%20improve%20coastal%20water%20quality>. Accessed August 4, 2020.

Table 1 shows a description of a current L.A. Urban Greening Program project in SELA

Table 1 – L.A. Greening Program Projects in SELA

Location	Project	Description
South Gate	Hollydale Regional Park	Use green infrastructure to enhance urban forestry and native habitat, improve water quality of the LA river, and create a safe and beautiful park to benefit critically park-deficient residents. The project aims to reduce water and fertilizer use by replacing grass with native plants and replacing invasive plants with native trees and shrubs.

The California Natural Resources Agency works to ensure access to natural lands for all Californians. The agency administers the Urban Greening Grant Program.³² The projects funded under the grant program must acquire, create, enhance, or expand community parks and green spaces, and/or use natural systems or systems that mimic natural systems to achieve multiple benefits. The projects must also reduce greenhouse gas emissions. The Urban Greening Grant Program also emphasizes grant funding to critically underserved or disadvantaged communities. The California Natural Resources Agency includes the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC) which covers eastern Los Angeles County and western Orange County and provides a variety of grants for projects consistent with the agency mission and which prioritize projects in disadvantaged communities.

Local City and Neighborhood Plans and Ordinances

California state law requires every city and county to prepare a comprehensive, long-term general plan to guide its future, known as a General Plan. These General Plans contain goals and policies necessary to guide public policy for future land uses, including the inclusion or expansion of green spaces. Table 2 shows SELA city general plans and a brief overview of their green space policies.

Table 2 – SELA City and County General Plans and Ordinances

City or Neighborhood	Plan	Green Space Goals
Cudahy	Cudahy General Plan 2040 ³³	<ul style="list-style-type: none"> • Create new park, parklet space, and urban recreation spaces • Repurpose street infrastructure to create new green space or to “green” existing space
Florence-Firestone	Florence Firestone Community Plan ³⁴	<ul style="list-style-type: none"> • Provide more neighborhood parks and pocket parks dispersed equally throughout

³²California Natural Resources Agency, Urban Greening. <https://resources.ca.gov/grants/urban-greening>. Accessed August 7, 2020.

³³City of Cudahy, Cudahy General Plan 2040. <https://www.cityofcudahy.com/DocumentCenter/View/216/Cudahy-General-Plan-2040-PDF>. Accessed July 30, 2020.

³⁴Los Angeles County Department of Regional Planning, Florence Firestone Community Plan. <http://planning.lacounty.gov/ffcp>. Accessed July 30, 2020.

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		<p>the community proximate to residential areas and easily accessible</p> <ul style="list-style-type: none"> Promote the conversion of underutilized spaces, such as alleys, utility corridors and vacant land, into parks, community gardens, and other green space
Huntington Park	City of Huntington Park 2030 General Plan Draft ³⁵	<ul style="list-style-type: none"> Provide an active and passive park system and recreational facilities Upgrade existing park facilities to improve park use and appearance
South Gate	South Gate General Plan 2035 ³⁶	<ul style="list-style-type: none"> Maintain and enhance existing parks Seek to increase the amount of parks, trails, and open space whenever possible, to enhance pedestrian connections to these areas
Walnut Park	Walnut Park Neighborhood Plan ³⁷	<ul style="list-style-type: none"> Increase number of trees along Florence Ave., especially at the westerly entry point of the Walnut Park Provide street trees along Santa Fe Ave.
Los Angeles County	Unincorporated Los Angeles County Community Climate Action Plan 2020 ³⁸	<ul style="list-style-type: none"> Support and expand urban forest programs within the unincorporated areas Restore and re-vegetate previously disturbed land and/or unused urban and suburban areas
Los Angeles County	LA County Green Zone Ordinance ³⁹	<ul style="list-style-type: none"> New development standards for specific industrial, recycling, or vehicle-related uses within 500 feet of existing sensitive uses on other properties (e.g., landscape buffers, fencing, solid wall screens)

³⁵ City of Huntington Park Focused General Plan Update, City of Huntington Park General Plan 2030. <http://planhp.com/wp-content/uploads/2018/01/Draft-Huntington-Park-General-Plan-Update-Aug-2017-opt.pdf>. Accessed July 30, 2020.

³⁶ City of South Gate, South Gate General Plan 2035. <https://www.cityofsouthgate.org/192/General-Plan>. Accessed July 30, 2020.

³⁷ Los Angeles County Department of Regional Planning, Walnut Park Neighborhood Plan. http://planning.lacounty.gov/assets/upl/data/pd_walnut-park.pdf. Accessed July 30, 2020.

³⁸ Los Angeles County Department of Regional Planning, Community Climate Action Plan. http://planning.lacounty.gov/assets/upl/project/ccap_final-august2015.pdf. Accessed August 11, 2020.

³⁹ Los Angeles County Department of Regional Planning, Green Zones Program. <http://planning.lacounty.gov/greenzones/documents>. Accessed August 11, 2020

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The Gateway Cities Council of Governments (COG) is a regional governing body comprised of local government representatives from Southeast Los Angeles County, including the cities within the AB 617 SELA community boundary. The COG administers the Complete Street Initiative, which includes urban greening and open space elements.⁴⁰

Nonprofit Organizations

Several nonprofit organizations with environmental missions to expand green spaces serve the Greater Los Angeles Area, including the SELA community. Table 3 lists some of the nonprofits with missions that align with the CSC's air quality concern to increase green space in SELA.

⁴⁰ Gateway Cities Council of Governments, Complete Street Initiative.
<http://www.gatewaycog.org/initiatives-and-projects/intelligent-transportation-systems/complete-street-initiative>. Accessed October 15, 2020.

Table 3 – Nonprofit Organizations with Green Space Expansion Missions

Nonprofit Organization	Missions
From Lot to Spot ⁴¹	Dedicated to improving blighted, urban neighborhoods in the greater Los Angeles area one vacant space at a time. Founded as a direct result of the relationship between lack of accessible green space and the quality of life in low-income neighborhoods.
Tree People ⁴²	Inspires and supports the people of Los Angeles to come together to plant and care for trees, harvest the rain, and renew depleted landscapes.
LA Neighborhood Land Trust ⁴³	Addresses park inequities in Los Angeles. Focuses efforts exclusively in communities of color that have little to no access to green space.
Farm LA ⁴⁴	Dedicated to rescuing underutilized lots in Los Angeles communities for solar and agricultural farms. Turn vacant properties in to farms that grow food for community distribution or solar farms to help Los Angeles generate its water and energy from renewable sources.
Friends of the LA River ⁴⁵	Ensure an equitable, publicly accessible, and ecologically sustainable Los Angeles River by inspiring River stewardship through community engagement, education, advocacy, and thought leadership.
Jobs Corp ⁴⁶	Career training program that helps eligible young people to train for meaningful careers, including landscaping, and assists them with obtaining employment.
LA Conservation Corp ⁴⁷	Provide at-risk young adults and school-aged youth with opportunities for success through job skills training, education, and work experience with an emphasis on conservation and service projects that benefit the community.

⁴¹ From Lot to Spot. <http://fromlottospot.org/>. Accessed July 30, 2020.

⁴² Tree People. <https://www.treepeople.org/>. Accessed July 30, 2020.

⁴³ Los Angeles Neighborhood Land Trust. <https://www.lanlt.org/>. Accessed July 30, 2020.

⁴⁴ FarmLA. <https://www.farmla.org/>. Accessed July 30, 2020.

⁴⁵ Friends of the LA River. <https://folar.org/>. Accessed October 15, 2020.

⁴⁶ Job Corp. <https://www.jobcorps.gov/>. Accessed October 15, 2020.

⁴⁷ LA Conservation Corps. <https://www.lacorps.org/>. Accessed October 15, 2020.

Metal Processing Facilities

Community Concerns

The Southeast Los Angeles (SELA) community and emission study area (ESA) encompass the unincorporated Los Angeles County neighborhoods of Florence-Firestone, Vernon, and Walnut Park and the cities of Bell, Bell Gardens, Cudahy, Huntington Park, Maywood, and South Gate. There are one hundred and thirty-two (132) metal processing facilities within the SELA community and ESA that are affected by South Coast AQMD Rules and Regulations. Metal processing facilities in SELA conduct various operations, such as heat treating, melting, plating, machining, forging, grinding, and recycling. See Figure 1 – Examples of Metal Processing Facilities, for examples of operations at metal processing facilities.

The SELA community has expressed concern about toxic metal air pollutants, odors, and particulate matter emissions from metal processing facilities. Metal processing is a source of toxic metal air pollutants, such as arsenic, cadmium, hexavalent chromium, lead, and arsenic. Toxic metal air pollutants are a group of air pollutants that may cause or contribute to an increase in mortality or an increase in serious illness or pose a present or potential risk to human health.⁴⁸ For example, breathing in hexavalent chromium over long periods of time increases the risk of lung and nasal cancers.⁴⁹

Figure 1 – Examples of Metal Processing Facilities



Emissions from Metal Processing Facilities

Emissions information for SELA metal processing facilities is available in Chapter 3b – Emissions and Source Attribution Analysis.

⁴⁸ California Health and Safety Code, Section 39655, http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=39655&lawCode=HSC, Accessed September 2020

⁴⁹ California Office of Environmental Health Hazard Assessment, Health Effects of Hexavalent Chromium, <https://oehha.ca.gov/air/health-effects-hexavalent-chromium>, Accessed February 2020.

Air Monitoring

South Coast AQMD’s efforts to address this air quality priority in the SELA community and ESA entail a comprehensive strategy to systematically identify and characterize sources of air toxic metals emissions using a combination of advanced air monitoring technologies and traditional methods operated in a mobile platform and/or at a fixed locations. The mobile monitoring approach will begin with an area-wide survey to measure air toxic metals around the metal processing facilities of interest and in surrounding communities. Such survey will prioritize areas with the highest density of facilities to identify air pollution hotspots and assess the potential impact of emissions from metal processing facilities on the air quality of residential neighborhoods nearby. Measurements will then extend to other areas of the SELA community where the density of metal processing facilities is not as pronounced.

If potential sources are identified through mobile monitoring, stationary measurements will also be conducted near (e.g. downwind) the identified facilities to better characterize their emissions. For this purpose, ambient levels of particulate metals will be measured using either continuous measurements with a high-time resolution, or 24-hr time-integrated sampling methods followed by chemical analysis, or a combination of both. Meteorological parameters (e.g., wind speed and direction) will be measured concurrently to help locating the source of emissions. In case these measurements suggest that any of the operations or other sources at the metal-processing facility of concern have the potential to emit Cr6+, fixed-site monitoring of Cr6+) will also be carried out through the collection of time-integrated samples followed by chemical analysis.

Findings from these monitoring efforts will provide information to support CERP actions. When appropriate, follow-up compliance and enforcement actions will also be taken by the South Coast AQMD inspectors to mitigate emissions.

Regulatory Efforts and Enforcement

State and Federal Actions

Several state and federal rules apply to sources of pollution from metal processing facilities within this community. Table 1 summarizes the state and federal programs to address toxic metal air pollutant emissions.

Table 1 – State and Federal Programs to Address Toxic Metal Air Pollutant Emissions

Program	Purpose
<p>CARB’s Airborne Toxic Control Measures⁵⁰</p>	<ul style="list-style-type: none"> • A statewide air emission control program to reduce air emissions from mobile and stationary sources, including measures that address processes that emit metals (e.g., hexavalent chromium and cadmium)
<p>Assembly Bill 2588 (AB 2588) -Air Toxics Hot Spots Program†</p>	<ul style="list-style-type: none"> • A statewide program that addresses air toxics pollution from certain facilities by: <ul style="list-style-type: none"> ○ Collecting air toxics emissions information

⁵⁰ California Air Resources Board, Airborne Toxic Control Measures. <https://ww2.arb.ca.gov/resources/documents/airborne-toxic-control-measures>. Accessed September 4, 2020.

	<ul style="list-style-type: none"> ○ Identifying facilities that have local impacts ○ Providing public information about air toxics impacts from facilities ● Reducing significant air toxics risks from facilities
U.S. EPA Title V	<ul style="list-style-type: none"> ● A federal law that requires major sources of air pollutants, and certain other sources, to <ul style="list-style-type: none"> ○ Obtain an operating permit ○ Operate in compliance with the permit ○ Certify at least annually their compliance with permit requirements
U.S. EPA Superfund Program	<ul style="list-style-type: none"> ● A federal program that is responsible for: <ul style="list-style-type: none"> ○ Environmental cleanups of some of the most contaminated land ○ Responding to environmental emergencies, oil spills, and natural disasters

†Applies to facilities that have an estimated annual emissions of four (4) or more tons of either sulfur oxides (SOx), volatile organic compounds (VOCs), nitrogen oxides (NOx), specific organics (SPOG), particulate matter (PM), or emissions of 100 tons per year or more of carbon monoxide (CO).

Additionally, several other state and federal agencies are also responsible for regulating, monitoring, or ensuring employee safety from exposure to hazards such as toxic metal air pollutants. The United States Department of Labor’s Occupational Safety and Health Administration (OSHA) ensures that employees work in a safe and healthful environment by setting and enforcing standards, and by providing training, outreach, education, and assistance.⁵¹ The Department of Toxic Substances Control (DTSC) protects California’s people and the environment from the harmful effects of toxic substances by restoring contaminated resources, enforcing hazardous waste laws, reducing hazardous waste generation, and encouraging the manufacture of chemically safer products.⁵² Additionally, The DTSC’s Toxicity Criteria for Human Health Risk Assessment Regulation⁵³ adopts certain toxicity criteria for all human health risk assessments, screening levels, and remediation goals. The California Office of Environmental Health and Hazard Assessment (OEHHA) protects and enhances the health of Californians and the state’s environment through scientific evaluations that inform, support, and guide regulatory and other actions.⁵⁴

South Coast AQMD

Many South Coast AQMD rules reduce metal emissions from a specific type of operation or source of pollution. For example, South Coast AQMD has rules that control air pollution from metal processing facilities. Table 2 and 3 summarize South Coast AQMD’s rules to address toxic metal air pollutants. Additionally, South Coast

⁵¹ Occupational Safety and Health Administration, Toxic Metals. <https://www.osha.gov/SLTC/metalsheavy/index.html>. Accessed August 13, 2020.

⁵² Department of Toxic Substances Control. <https://dtsc.ca.gov/assessing-risk/>. Accessed August 13, 2020.

⁵³ Department of Toxic Substances Control, Toxicity Criteria for Human Health Risk Assessment Regulation. <https://dtsc.ca.gov/regs/toxicity-criteria-for-human-health-risk-assessment/>. Accessed August 13, 2020.

⁵⁴ California Office of Environmental Health and Hazard Assessment (OEHHA). <https://oehha.ca.gov/about>. Accessed August 13, 2020.

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AQMD’s Rule 402 – Nuisance and Rule 403– Fugitive Dust are general rules that can be applied to metal processing facilities. Rule 402 prohibits the release of air contaminants in quantities that harm public health or causes public endangerment.

Rule	Source Category	Toxic Metal Air Pollutant	Estimated # of SELA Facilities	Purpose	Applicability	General Provisions
1407	Control of Emissions of Arsenic, Cadmium, and Nickel from Non-Ferrous Metal Melting Operations	Nickel, Cadmium, Arsenic	18	<ul style="list-style-type: none"> •Reduce arsenic, cadmium, and nickel emissions from non-iron metal melting operations 	<ul style="list-style-type: none"> • Smelters • Foundries • Die-casters • Coating (galvanizing and tinning) •Misc. processes: dip soldering, brazing, aluminum powder production 	<ul style="list-style-type: none"> •Arsenic, cadmium, and nickel point source emission limit •Emissions source testing •Building enclosure requirements •Housekeeping provisions
1420	Control of Lead Emissions from Stationary Sources	Lead	5	<ul style="list-style-type: none"> •Reduce lead emissions from non-vehicle sources •Reduce exposure to lead •Continue to meet the National Ambient Air Quality Standard for lead 	<ul style="list-style-type: none"> •Lead smelters •Foundries •Lead-acid battery manufacturers and recyclers •Lead platers •Metal alloy producers processing lead-containing materials 	<ul style="list-style-type: none"> •Lead point source emission limit •Ambient lead concentration limit •Emissions source testing •Building enclosure •Housekeeping
1420.1	Lead-acid Battery Recycling	Lead Arsenic Benzene 1,3-Butadiene	0	<ul style="list-style-type: none"> •Reduce lead, arsenic, 1,3 butadiene, and benzene emissions from large lead-acid battery recycling facilities •Ensure attainment and maintenance of the National Ambient Air Quality Standard for Lead 	<ul style="list-style-type: none"> •Large lead-acid battery facilities 	<ul style="list-style-type: none"> •Lead, arsenic, 1,3 butadiene, benzene point source emission limit •Ambient lead concentration limit •Emissions source testing •Permanent total enclosure, vented to pollution controls •Housekeeping •Compliance Plan with additional measures if exceed ambient concentrations

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Rule	Source Category	Toxic Metal Air Pollutant	Estimated # of SELA Facilities	Purpose	Applicability	General Provisions
1420.2	Metal Melting Facilities	Lead	0	<ul style="list-style-type: none"> •Reduce emissions and ambient air concentrations of lead from metal melting facilities •Reduce exposure to lead •Ensure attainment and maintenance of the National Ambient Air Quality Standard for Lead 	<ul style="list-style-type: none"> •Facilities melting more than 100 tons per year of lead 	<ul style="list-style-type: none"> •Lead point source emission limit •Ambient lead concentration limit •Emissions source testing •Building enclosure requirements •Housekeeping provisions
1430	Grinding Operations and Metal Forging Facilities	Chromium, Nickel, Cadmium	2	<ul style="list-style-type: none"> •Reduce air toxic emissions, particulate matter emissions, and odors from metal grinding and metal cutting operations at metal forging facilities 	<ul style="list-style-type: none"> •Metal forging facilities with metal grinding or cutting 	<ul style="list-style-type: none"> •Point source requirement •Emissions source testing •Building enclosure •Permanent total enclosure, vented to pollution controls for facilities close to sensitive receptors •Housekeeping •Odor contingency measures
1469	Control of Hexavalent Chromium Emissions from Plating and Anodizing Operations	Hexavalent Chromium	10	<ul style="list-style-type: none"> •Reduce hexavalent chromium emissions from chromium electroplating and chromic acid anodizing operations (e.g., chrome plating shops) 	<ul style="list-style-type: none"> •Chromium electroplating and chromic acid anodizing and associated operations 	<ul style="list-style-type: none"> •Hexavalent chromium point source requirements •Emissions source testing •Building enclosures •Housekeeping •Best Management Practices
1480	Ambient Monitoring of Metal Toxic Air Contaminants	Metal Toxic Air Contaminants	0 ⁵⁵	<ul style="list-style-type: none"> •Require an owner or operator of a facility that is designated by the Executive Officer as a Metal TAC Monitoring Facility to conduct Monitoring 	<ul style="list-style-type: none"> •Facilities with emissions of toxic metal air pollutants where investigative monitoring and sampling actions are occurring 	<ul style="list-style-type: none"> •Process to require a facility to conduct Monitoring and Sampling of metal toxic air contaminants •Requirements if facility is required

⁵⁵ All facilities could possibly be subject to Rule 1480 if they have metal emissions **and** are designated PHRLF under Rule 1402. No facilities are being investigated as possible Rule 1480 facilities AFAIK as of October 2020. No facilities are PHRLF AFAIK.

Rule	Source Category	Toxic Metal Air Pollutant	Estimated # of SELA Facilities	Purpose	Applicability	General Provisions
				and Sampling (i.e., ambient monitoring)		to conduct Monitoring and Sampling <ul style="list-style-type: none"> •Process for facility to cease Monitoring and Sampling

*Toxic metal air pollutants rules at: <http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/regulation-xiv>

Table 3 - Relevant Rules for Toxic Metal Air Pollutants in Development or Amendment Process **

Rule	Source Category	Toxic Metal Air Pollutant	Estimated # of SELA Facilities	Purpose	Applies to
1407.1	Control of Toxic Air Contaminant Emissions from Chromium Alloy Melting Operations	Hexavalent Chromium, Arsenic, Cadmium, and Nickel	4	<ul style="list-style-type: none"> •Reduce toxic air contaminant emissions from chromium alloy metal melting operations 	<ul style="list-style-type: none"> •Chromium alloy metal melting facilities such as smelters, foundries, die-casters, mills, and other miscellaneous metal melting processes
1426	Emissions from Metal Finishing Operations	Chromium, Nickel, Cadmium, Lead, and Copper	17	<ul style="list-style-type: none"> •Reduce emissions from metal finishing operations 	<ul style="list-style-type: none"> •Chromium, nickel, cadmium, lead, or copper electroplating •Chromic acid anodizing • Operations associated with above electroplating or anodizing using process tanks containing sulfuric, nitric, hydrochloric, and chromic acids, and spraying operations using sodium hydroxide
1469.1	Control of Hexavalent	Hexavalent Chromium	4	<ul style="list-style-type: none"> • Reduce hexavalent chromium from spray coating operations 	<ul style="list-style-type: none"> • Spray operations for coatings

Rule	Source Category	Toxic Metal Air Pollutant	Estimated # of SELA Facilities	Purpose	Applies to
	Chromium from Chrome Spraying Operations				containing hexavalent chromium

**Under the amendment process as of September 2020

Table 3 - Relevant Rules for Toxic Metal Air Pollutants in Development or Amendment Process **

Rule	Source Category	Toxic Metal Air Pollutant	Purpose	Applies to
1407.1	Control of Toxic Air Contaminant Emissions from Chromium Alloy Melting Operations	Hexavalent Chromium, Arsenic, Cadmium, and Nickel	<ul style="list-style-type: none"> Reduce toxic air contaminant emissions from chromium alloy metal melting operations 	<ul style="list-style-type: none"> Chromium alloy metal melting facilities such as smelters, foundries, die-casters, mills, and other miscellaneous metal melting processes
1426	Emissions from Metal Finishing Operations	Chromium, Nickel, Cadmium, Lead, and Copper	<ul style="list-style-type: none"> Reduce emissions from metal finishing operations 	<ul style="list-style-type: none"> Chromium, nickel, cadmium, lead, or copper electroplating Chromic acid anodizing Operations associated with above electroplating or anodizing using process tanks containing sulfuric, nitric, hydrochloric, and chromic acids, and spraying operations using sodium hydroxide
1469.1	Control of Hexavalent Chromium from Chrome Spraying Operations	Hexavalent Chromium	<ul style="list-style-type: none"> Reduce hexavalent chromium from spray coating operations 	<ul style="list-style-type: none"> Spray operations for coatings containing hexavalent chromium

**Under the amendment process as of September 2020

Compliance and Enforcement

South Coast AQMD staff regularly conducts compliance and enforcement activities at metals processing facilities within South East Los Angeles. These activities fall into two categories:

- Those initiated by South Coast AQMD, such as routine facility inspections or targeted rule inspections.
- Those prompted by an outside party – e.g., complaint investigations, facility notifications, and agency referrals.

While there are many reasons to conduct an inspection, air pollution concerns received directly from community members by way of public complaints are a very important source of information. All complaints

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are assigned to an inspector for investigation. The complaint telephone line is handled by a live attendant during business hours (Monday – Friday) or by a standby system during off hours. Complainant information is always kept confidential, and while anonymous complaints are accepted, having contact information is crucial to ensure that the inspector can gather all the relevant information to conduct an effective investigation. **To report complaints, please call 1-800-CUT-SMOG (1-800-288-7664) or file an online complaint at www.aqmd.gov.**

Inspections are generally unannounced to ensure that the inspector gets a snapshot of the normal operations at a facility. Inspections can be conducted to evaluate the overall compliance status of the facility or focus on specific aspects of an operation or specific rule or regulation. Different types of metal processing facilities may have different applicable rules; therefore, inspectors will verify compliance with all rules, regulations, and permit conditions that are relevant to a facility.

If a facility is found to be out of compliance with air pollution rules/regulations or permit conditions, inspectors will take necessary enforcement action to address the non-compliant activity. There are two methods of enforcement action:

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Since metal processing facilities have been identified as a community priority, AB 617 CERP actions include enhanced enforcement efforts intended to address SELA community concerns directly, taking community input into account where appropriate.

Incentives

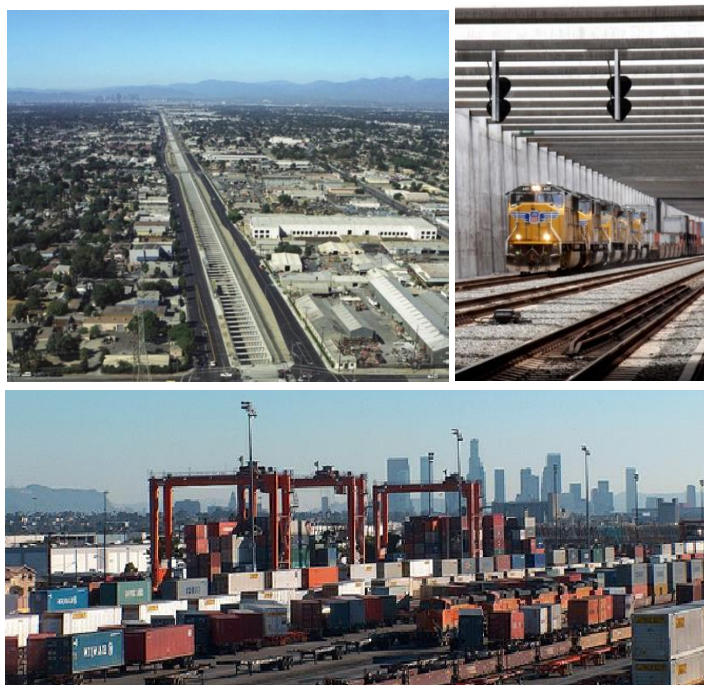
CARB's Community Air Protection Incentives 2019 Guidelines (CAP Guidelines),⁵⁶ identifies projects eligible for incentive funds that reduce emissions, such as those from hexavalent chromium plating facilities. In the second quarter of 2020, CARB allocated about \$360,000 in CAP funds to South Coast AQMD for metal processing facilities in SELA. South Coast AQMD staff is initiating outreach efforts to work with metal plating facilities in SELA to fund the installation of emissions control device projects (e.g., installation of HEPA filters) and conversion projects (i.e., switching from the use of hexavalent chromium to trivalent chromium at chrome plating facilities) that could further reduce hexavalent chromium emissions.

⁵⁶ California Air Resources Board, Community Air Protection Incentives Guidelines. <https://ww2.arb.ca.gov/resources/documents/community-air-protection-incentives-guidelines> Accessed August 14, 2020.

Railyards and Locomotives

Community Concerns

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 destination. Regional rail volumes are projected to increase between 2021 - 2040 in response to growing international trade⁵⁷ however, the potential amount of growth at railyards in this community is unknown. The Southeast Los Angeles (SELA) community boundary and emissions study area encompasses the BNSF Hobart Railyard, BNSF Commerce Eastern Railyard, and BNSF Sheila Mechanical railyards.



The SELA community boundary also includes parts of the Alameda Corridor that runs from the Ports of Long Beach and Los Angeles to Downtown Los Angeles, primarily along and adjacent to Alameda Street. The Alameda Corridor is a trench that parallels Alameda Street that contains three rail tracks used by BNSF and UP to transport trains to and from the ports. Nearly forty (40) trains and a volume of about thirteen thousand (13,000) twenty-foot equivalent units (TEUs) travel through the Alameda Corridor daily.⁵⁸ Stations and rail lines for passenger rail services operated by LA Metro, Amtrak, and Metrolink also run through the SELA community boundary, and the California High Speed Rail project has also indicated that they will use tracks in the northern part of the SELA emissions study area.⁵⁹

Emissions from Railyards and Locomotives

Air pollution is generated by equipment and vehicles that are used for railyard operations (Figure 1). These vehicles and equipment move containers and railcars into and around the railyard to load, unload, and

⁵⁷ Southern California Association of Governments, The 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy. <http://scagrtpsc.net/Documents/2016/final/f2016RTPSCS.pdf>. Accessed July 8, 2020.

⁵⁸ Alameda Corridor Transportation Authority. <http://www.acta.org/>. Accessed July 14, 2020.

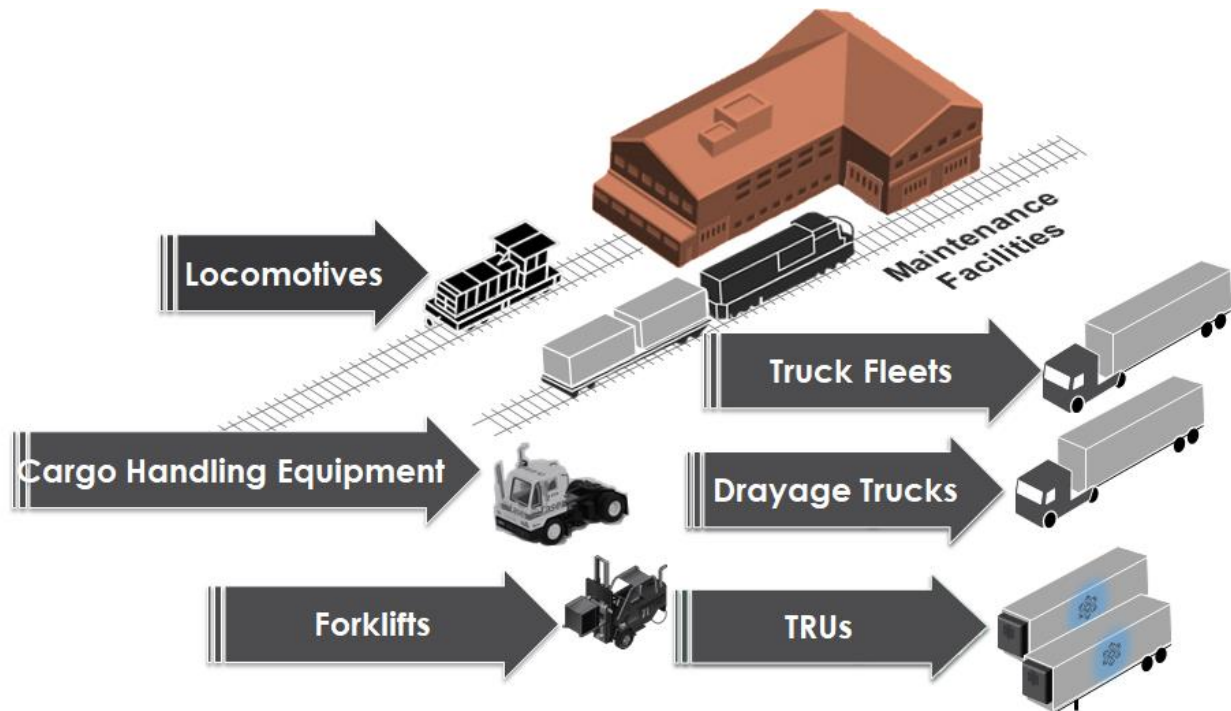
⁵⁹ California High Speed Rail Authority, Los Angeles to Anaheim. https://hsr.ca.gov/high_speed_rail/project_sections/los_angeles_anaheim.aspx. Accessed July 15, 2020.

transport goods in and out of the railyard. Emissions can also be generated during maintenance activities (e.g., load testing). 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)
- Miscellaneous equipment (e.g., fuel trucks)

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 lower or zero-emission yard trucks, capturing and controlling emissions from locomotive load testing), and ensuring that the replacement or repower of equipment is based on the cleanest technology commercially available.

Figure 1 – Examples of Railyard Operations Equipment⁶⁰

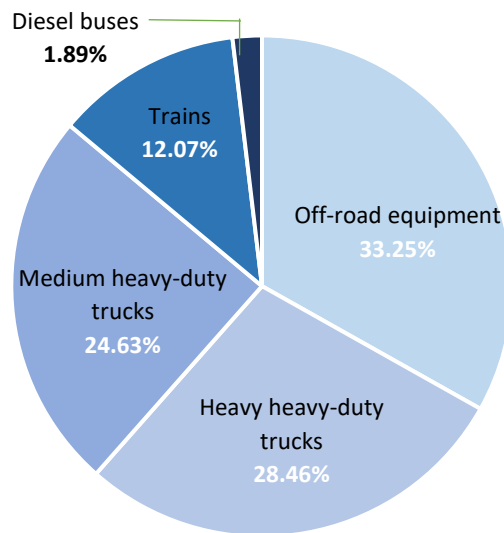


⁶⁰ Concepts to Reduce Emissions from Locomotives, South Coast AQMD and CARB Workshop. https://www.ecfr.gov/cgi-bin/textidx?SID=159ba6f126272ea1995c71a43b7af309&mc=true&node=pt40.36.1033&rgn=div5#se40.36.1033_1101. Accessed July 9, 2020.

Appendix 5 – Air Quality Priorities

Based on a preliminary emissions inventory covering the years 2016 and 2017, trains (including line-haul and switcher locomotives, Metrolink, and passenger trains) contribute approximately 12% of all diesel particulate matter (DPM) in SELA. Off-road equipment, including equipment used for railyard operations, is also a source of DPM in SELA. Other large sources of DPM in SELA include medium heavy-duty trucks, heavy heavy-duty trucks, and diesel buses. For the overall contribution of these sources by percentage, see Figure 2 – Sources of DPM in SELA. DPM is a toxic air pollutant that comes from diesel engines and it is estimated that 68% of total known cancer risk related to air toxics in the South Coast Air Basin is attributable to DPM. However, the California Air Resources Board (CARB) projects that between 2012 and 2030 there will be over a 95% reduction in on-road DPM emissions in the South Coast Air Basin from the implementation of mobile source regulations, with most of the reductions occurring before 2023.⁶¹ Additional information about DPM and health effects is available at <https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health>.

Figure 2 – Sources of DPM in SELA



Railyards and locomotives also contribute particulate matter (PM), volatile organic compounds (VOCs), and nitrogen oxides (NOx) emissions. PM10 and PM2.5 are particles smaller than 10 and 2.5 microns in diameter, respectively, that can be inhaled deep into the lungs and cause health problems. Additional information about PM10 and PM2.5 are available at <https://ww2.arb.ca.gov/resources/inhalable-particulate-matter-and-health>. ROG is a group of gases that contribute to forming smog, such as acetone, benzene, and formaldehyde. NOx is a family of gases that are highly reactive with other pollutants to form ozone (smog). Ozone can affect the respiratory system. Additional information about ozone is available at <https://ww2.arb.ca.gov/resources/ozone-and-health>.

Table 1 – Emissions from Off-Road Mobile Sources in SELA below, provides an overview of emissions from trains and off-road equipment in SELA. The Off-Road Equipment category includes equipment used to operate railyards (e.g., cargo handling equipment and forklifts) as well as other sources outside of railyards (e.g., diesel-

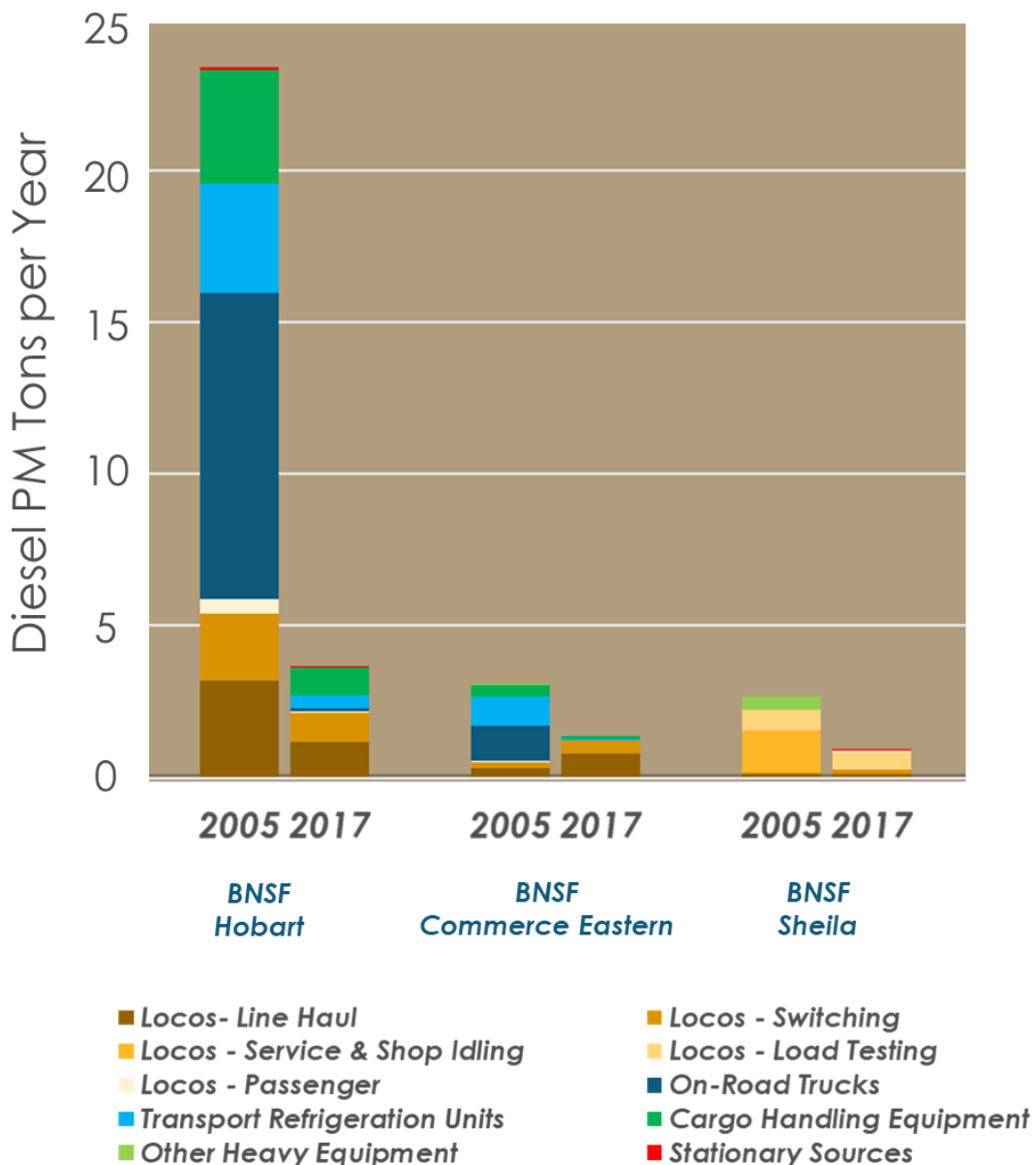
⁶¹ South Coast Air Quality Management District, Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES-IV). <https://www.aqmd.gov/docs/default-source/air-quality/air-toxic-studies/mates-iv/mates-iv-final-draft-report-4-1-15.pdf>. Accessed July 15, 2020.

powered construction trucks and construction equipment). Figure 3 – Railroad Self-Reported Onsite Railyard Emissions Inventories shows the SELA railyard DPM emissions during 2005 and 2017.

Table 1 – Emissions from Off-Road Mobile Sources in SELA (Tons per Year)

Emissions Source	NOx	VOC	PM10	PM2.5	DPM
Trains	366.82	19.92	7.05	6.47	6.47
Off-Road Equipment	431.80	266.94	29.57	25.51	13.36

Figure 3 – Railroad Self-Reported Onsite Rail Yard Emissions Inventories



Air Monitoring

The air quality concern for this source category is related to diesel exhaust emissions from locomotives, cargo handling equipment, trucks and other diesel equipment. Emissions can also be generated during maintenance activities (e.g., load testing of locomotives). Diesel engines emit a complex mixture of air pollutants, including both gaseous and solid material. The solid material in diesel exhaust is known as DPM, which is one of the components of PM_{2.5}. There is no technique to directly measure DPM (a major contributor to health risk); therefore, indirect estimates based on surrogates for diesel exhaust are used, specifically black carbon (BC). DPM is typically composed of carbon particles (“soot”, also called BC) and numerous organic compounds. Diesel exhaust also contains gaseous pollutants, including volatile organic compounds (VOC) and NO_x.

The monitoring strategy to study and characterize this air quality priority consists of measurements using a mobile platform capable of monitoring a wide range of particulate and gaseous pollutants, including BC, PM, ultrafine particles (UFP), and nitrogen dioxide (NO₂). If needed, air monitoring can also be conducted to determine specific emission sources; identify activities that may lead to increase in emissions; identify potential sites for fixed monitoring, if appropriate; help assess the potential contribution of railyards to the overall air pollution burden in the SELA community; and help track the progress of emission reduction strategies.

Regulatory Efforts and Enforcement

Federal Efforts

Railroad 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. Table 2 – Federal Line-Haul Locomotive Standards and Table 3 – Federal Switcher Locomotives below, identify the emissions standards required by the United States Environmental Protection Agency (U.S. EPA).⁶² These agencies’ regulatory authority may preempt certain federal, state, and local regulatory authorities and actions. However, 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).⁶³

These regulations require the installation of devices that reduce idling (i.e., require idling limits with exceptions) on newly manufactured and remanufactured locomotives⁶⁴ and mandate the use of ultra-low sulfur diesel fuel.⁶⁵ However, these regulations do not require railroads to reduce their use of existing older, higher-emitting locomotives. Locomotives must meet federal emissions standards when they are remanufactured and may become cleaner at that time. In 2017, CARB also petitioned U.S. EPA to develop a new regulation requiring

⁶² Control of Emissions from Locomotives. https://www.ecfr.gov/cgi-bin/text-idx?SID=159ba6f126272ea1995c71a43b7af309&mc=true&node=pt40.36.1033&rgn=div5#se40.36.1033_1101. Accessed July 9, 2020.

⁶³ U.S. EPA, Regulations for Emissions from Locomotives. www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-emissions-locomotives, Accessed July 8, 2020.

⁶⁴ U.S. EPA, Control of Emissions from Idling Locomotives, nepis.epa.gov/Exe/ZyPdf.cgi?Dockey=P100HP4Q.pdf, Accessed July 8, 2020.

⁶⁵ U.S. EPA, Diesel Fuel Standards and Rulemakings, www.epa.gov/diesel-fuel-standards/diesel-fuel-standards-and-rulemakings#nonroad-diesel, Accessed July 8, 2020.

Appendix 5 – Air Quality Priorities

engine manufacturers to meet a cleaner Tier 5 emission standard for new engines. The new emission standards would provide critical NO_x and PM reductions, particularly in the disadvantaged communities that surround railyards. The U.S. EPA has not yet acted on this petition. Locomotive fleet turnover is slow as locomotive engines can last over 30 years, so even if the U.S. EPA were to develop a Tier 5 emission standard, it would not result in immediate emission reductions.

Table 2 – Federal Line-Haul Locomotive Emission Standards

Emission Tier	Year of Original Manufacture	NOX (g/bph·hr)	PM (g/bph·hr)	HC (g/bph·hr)
Tier 0	1973 - 1992	8.0	0.22	1.00
Tier 1	1993 - 2004	7.4	0.22	0.55
Tier 2	2005 - 2011	5.5	0.10	0.30
Tier 3	2012 – 2014	5.5	0.10	0.30
Tier 4	2015 or later	1.3	0.03	0.14

Table 3 – Federal Switcher Locomotive Emission Standards

Emission Tier	Year of Original Manufacture	NOX (g/bph·hr)	PM (g/bph·hr)	HC (g/bph·hr)
Tier 0	1973 - 1992	11.8	0.26	2.10
Tier 1	1993 - 2004	11.0	0.26	1.20
Tier 2	2005 - 2011	8.1	0.13	0.60
Tier 3	2012 – 2014	5.0	0.10	0.60
Tier 4	2015 or later	1.3	0.03	0.14

State Actions (CARB)

CARB has signed two agreements with BNSF and UP to reduce locomotive emissions, including in and around railyards.⁶⁶ An agreement in 1998 required BNSF and UP to meet a fleet average of Tier 2 locomotives in the South Coast Air Basin every year between 2010 and 2030. Both railroads have met this commitment every year, though emissions in recent years have increased due to increased activity as seen in Figure 4. The second agreement between 2005 and 2015 focused on railyards and required implementation of an 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.

⁶⁶ California Air Resources Board, 1998 Tier 2 Fleet Average in the South Coast Air Basin Agreement, ww2.arb.ca.gov/1998-mou-summay-data-archive, and 2005 Statewide Rail Yard Agreement, <https://ww2.arb.ca.gov/sites/default/files/2020-06/2005%20MOU%20Remediated%2003102020.pdf>, Accessed June 5, 2019.

Table 4 – CARB Concepts for Cleaner Locomotive Use

Concept	Description
<p>Locomotive Emissions Reductions Spending Account</p>	<ul style="list-style-type: none"> • Require railroads to place funds in a trust account when using dirtier locomotives in the state • Funds in the trust account could only be used to purchase cleaner locomotives • Railroads would be required to report purchasing activity, which CARB would make available to the public. • CARB would pursue an economic analysis to determine the relevant amounts
<p>In-Use Locomotive Useful Life Limit</p>	<p>Ban locomotives that have exceeded a second useful life from operating in California, unless the engine is remanufactured to Tier 4 standards or cleaner.</p>
<p>Implement 30-minute Idling Limit</p>	<p>Similar to federal requirements, this will allow CARB to respond to violations and public complaints on locomotive idling, with the potential for enforcement by air districts through an enforcement MOU</p>

Also, CARB staff plans to develop amendments to the Cargo Handling Equipment Regulation, Transportation Refrigeration Unit Regulation, as well develop new zero-emission fleet rules to transition the state’s trucking fleet to zero-emission starting in 2024 with a focus on drayage and railyards.^{67, 68, 69}

Currently, CARB enforces several regulations at railyards. The Cargo Handling Equipment Regulation requires equipment such as yard trucks, rubber-tired gantry cranes, top and side picks, forklifts, etc. at ports and intermodal railyards to meet engine performance standards and opacity standards. The Drayage Truck Regulation requires heavy-duty vehicles that transport containers and bulk to and from ports and intermodal railyards to meet engine emission performance standards and be registered with CARB. The Transportation Refrigeration Unit (TRU) Regulation requires refrigeration units to meet engine performance standards and be registered with CARB. At railyards, TRUs can be found on truck trailers, railcars, and connected to shipping containers as generator sets (gensets). CARB is also fielding locomotive complaints by working with air districts, railroad companies, and U.S. EPA to resolve them.

South Coast AQMD

South Coast AQMD has limited authority over locomotives and railroad activity, and any regulations it might pass will likely require federal approval before they can go into effect. With these limits in mind, South Coast

⁶⁷ California Air Resources Board, Sustainable Freight Transport. <https://ww2.arb.ca.gov/our-work/programs/sustainable-freight-transport>, Accessed March 17, 2020.

⁶⁸ California Air Resources Board, Zero-Emission Vehicle Fleet. <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-fleets>. Accessed July 14, 2020.

⁶⁹ California Air Resources Board, New Transport Refrigeration Unit Regulation in Development. <https://ww2.arb.ca.gov/our-work/programs/transport-refrigeration-unit/new-transport-refrigeration-unit-regulation>. Accessed July 17, 2020.

Appendix 5 – Air Quality Priorities

AQMD is pursuing four concepts to reduce emissions from railyards, including developing an Indirect Source Rule (ISR).⁷⁰ These include:

- Reducing exposures from locomotive maintenance and service emissions
- Requiring railroads to develop zero emission infrastructure plans for railyards
- Developing new incentive programs to focus on incentivizing cleaner locomotive activity instead of cleaner locomotive purchases
- Evaluating new monitoring approaches for in-use locomotives

South Coast AQMD staff continues to work with stakeholders (i.e., rail yard operators, communities, etc.) on proposed concepts for the Railyard ISR. The proposed Railyard ISR is currently scheduled for consideration by the Governing Board in the second quarter of 2021.

Incentives

South Coast AQMD has various programs through which incentives are available to reduce emissions from both locomotives and railyard operations. Table 5 summarizes some of South Coast AQMD's programs, the amounts distributed, and the equipment replaced through these incentive programs. Further, South Coast AQMD has also proposed a new incentive program concept to focus on the cleanest locomotive use. Current incentive programs have limited effectiveness in accelerating the widespread use of the cleanest locomotives (Tier 4). Therefore, South Coast AQMD staff is working on a concept for a new local program that provides incentives tied to clean locomotive use, not replacements. This approach will attract the cleanest existing locomotives now and achieve faster emissions reductions than regulations. The concept also includes the potential for increased incentives in disadvantaged communities.

Table 5 – South Coast AQMD Railyard and Locomotive Incentive Programs

Program	Description	Emission Source	Amount Distributed	Equipment Replaced
Prop IB: Goods Movement Emission Reduction Program	To reduce diesel air pollution from goods movement operations and achieve the earliest possible health risk reduction in nearby communities	Locomotives and cargo handling equipment at rail yard facilities	⁷¹ \$16,885,195	6 Yard Tractors 4 Forklifts 10 Locomotives
Carl Moyer	To obtain emission reductions from heavy-duty vehicles and other equipment operating in California as early and as cost-effectively as possible	On- and off-road heavy-duty vehicles/equipment and infrastructure for zero and near-zero emission technologies	⁷² \$12,776,780	7 Locomotives

⁷⁰ South Coast Air Quality Management District, Railyards and Intermodal Facilities Working Group. <http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/facility-based-mobile-source-measures/rail-fac-wkng-grp>. Accessed July 8, 2020.

⁷¹ Data since 2016

⁷² Data since 2018

Appendix 5 – Air Quality Priorities

Clean Off-Road Equipment Voucher Incentive Project

CARB's Clean Off-Road Equipment Voucher Incentive Project (CORE)⁷³ is designed to accelerate deployment of cleaner off-road technologies by providing a streamlined way for fleets ready to purchase specific zero-emission equipment to receive funding to offset the higher cost of such technologies. CORE specifically target zero-emission off-road freight equipment that is currently in the early stages of commercial deployment. CORE will provide vouchers to California purchasers and lessees of zero-emission off-road freight equipment on a first-come, first-served basis, with increased incentives for equipment located in disadvantaged communities.

⁷³ California Air Resources Board, Clean Off-Road Equipment Voucher Incentive Project. <https://ww2.arb.ca.gov/our-work/programs/clean-off-road-equipment-voucher-incentive-project/about>. Accessed July 13, 2020.