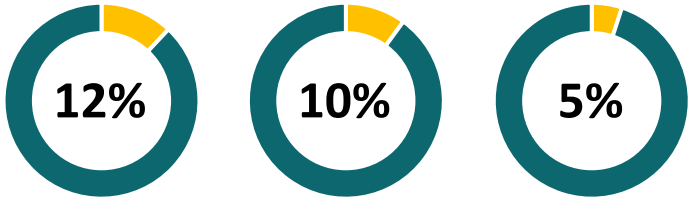
San Pedro Bay Ports Background

HARBOR CRAFT

Emissions Inventory & Strategic Outlook – January 2026

EMISSIONS & TRENDS

Current Share: Harbor craft are the second largest source of port DPM and NOx relative to other sources.



Diesel Particulate Matter (DPM) | Nitrogen Oxides (NOx) | Greenhouse Gases (GHG)

Progress (2005-Present):

72% Reduction in DPM

39% Reduction in NOx

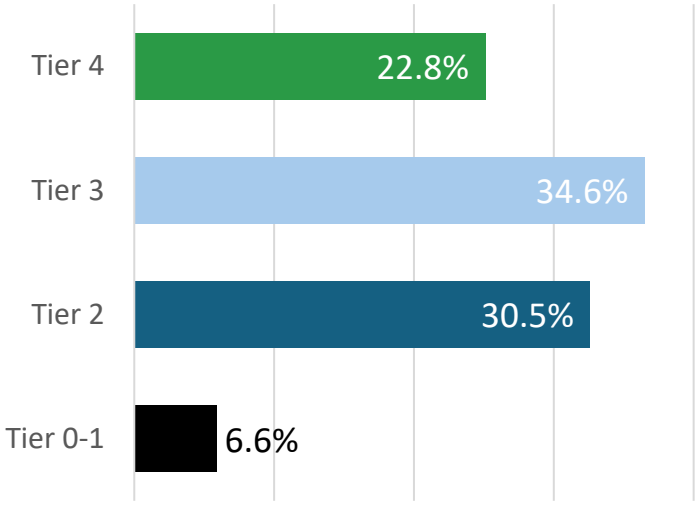
Context: Achieved while cargo volume grew 41%.

2024 Inventory Note: Long-term trends are down but when compared to 2023, emissions rose (DPM +18%, GHG +13%) largely due to surges in cargo volume.

ENGINE TIER STATUS

The Goal: Transition to Tier 4 engines (cleanest) or Zero-Emissions as required by State Regulation.

Current Reality: The majority of the fleet still uses lower tier engines, but many are scheduled for upgrades over the next 2 years.



Note: 100% use renewable diesel which has lower emissions compared to conventional diesel.

CURRENT STRATEGY HIGHLIGHTS

INNOVATION

$33.7 Million in active technology demonstration projects.

Focus: Zero-emission capable tugs and excursion vessels.

Partners: Harbor Breeze, Bay Delta Maritime, Pacific Maritime Group, Arc Boats

INCENTIVES

$28.7 Million awarded by Port of Long Beach in first funding round.

Impact: Upgrading 10 vessels to cleanest-diesel or zero-emission capability.

Next Step: Another funding round anticipated in 2026.

INFRASTRUCTURE

Future Study: Identifying charging and fueling locations for zero-emission craft.

Active Project: Charging infrastructure is being installed in Los Angeles to support zero-emission excursion boats

San Pedro Bay Ports Background

SWITCHER LOCOMOTIVES

Emissions Inventory & Strategic Outlook – January 2026

EMISSIONS & TRENDS

Current Share: Switcher locomotives account for a negligible share of total port-related emissions.

Diesel Particulate Matter (DPM) | Nitrogen Oxides (NOx) | Greenhouse Gases (GHG)

Progress (2005-Present):

92% Reduction in DPM

85% Reduction in NOx

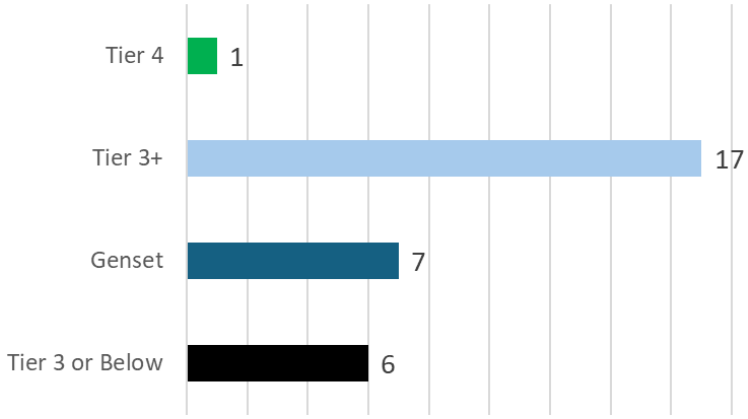
Context: Achieved while cargo volume grew 41%.

2024 Inventory Note: Long-term trends are down but compared to 2023 emissions rose (DPM +9%, GHG +3%) largely due to recent surges in cargo volume.

FLEET STATUS

The Goal: Transition the switcher fleet to Zero-Emission (ZE) via new technology and operator contracts.

Current Reality: The current fleet is modernizing but relies on diesel technology and older engines.



Fuel Note: 100% of the switcher locomotive fleet uses renewable diesel which has lower emissions compared to conventional diesel.

CURRENT STRATEGY HIGHLIGHTS

INNOVATION

Active Demonstrations: The Ports have invested in demos including a recent test of a battery-electric locomotive.

POLA Project: Using a Federal grant to develop an electric switcher locomotive with expected deployment in 2026.

INCENTIVES

POLB Program: Launching a new incentive program in early 2026 to provide funds for zero-emission switchers.

Assessment: POLB conducts a tech assessment every five years to support the Pier B On-Dock Rail Support Facility Project.

PROCUREMENT & CHARGING

Rail Operator: Procurement for new on-port rail operator prioritizes applicants with defined ZE switcher implementation plan.

Charging: POLA developing charging components alongside locomotive grant project.

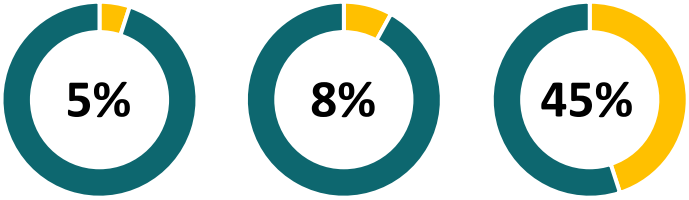
San Pedro Bay Ports Background

DRAYAGE TRUCKS

Emissions Inventory & Strategic Outlook – January 2026

EMISSIONS & TRENDS

Current Share: Drayage trucks account for a small share of total port-related air emissions but the largest share of greenhouse gas emissions.



Diesel Particulate Matter (DPM) | Nitrogen Oxides (NOx) | Greenhouse Gases (GHG)

Progress (2005-Present):

98% Reduction in DPM

94% Reduction in NOx

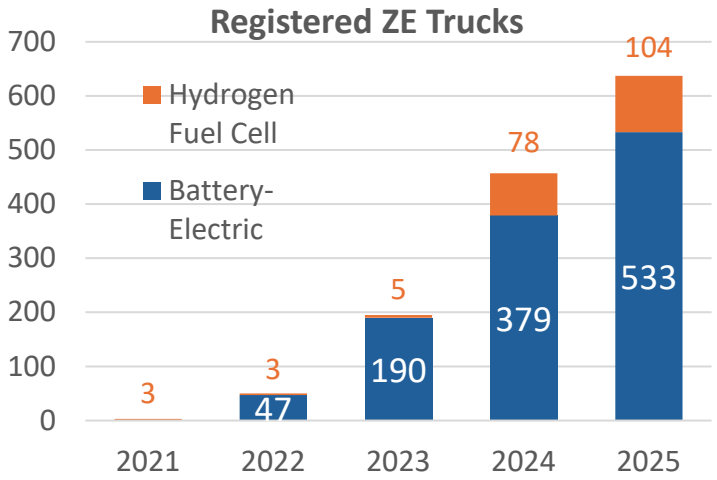
Context: Achieved while cargo volume grew 41%.

2024 Inventory Note: Long-term trends are down but compared to 2023 emissions rose (DPM +42%, GHG +18%) largely due to recent surges in cargo volume.

FLEET STATUS

The Goal: Transition the entire drayage fleet to Zero-Emissions (ZE) technology.

Current Reality: In December 2025, there were 17,762 registered trucks and 14,345 were active. ZE trucks account for 3% of all truck moves.



Note: Market fragmented among fleets of varying size: 1-10 trucks (17%), 11-20 trucks (16%), 21-50 trucks (26%), 51 and above (41%).

CURRENT STRATEGY HIGHLIGHTS

INNOVATION

Demonstrations: Actively fund projects to advance ZE truck technologies to validate performance.

Active Projects: Pilots monitor range capability, noting a typical shift requires 117-300 miles with needed range of up to 550 miles.

INCENTIVES

Clean Truck Fund Rate (CTFR): Cargo owners pay $10 for 20-ft or $20 for 40-ft container per truck move; ZE trucks exempt.

Reinvestment: Collected CTFR funds are used for ZE purchase incentives and to offset high-cost of hydrogen fuel.

INFRASTRUCTURE

Funding Support: CTFR revenue is also directed toward building ZE truck charging infrastructure.

Active Projects: The ports are investing in charging depots and hydrogen fuel near the port complex and regionally.

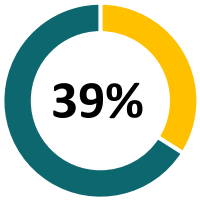
San Pedro Bay Ports Background

OCEAN-GOING VESSELS

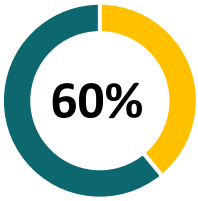
Emissions Inventory & Strategic Outlook – January 2026

EMISSIONS & TRENDS

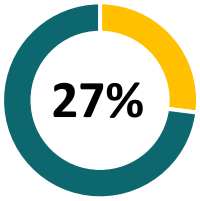
Current Share: Ocean Going Vessels (OGVs) remain a dominant source of port-related emissions.



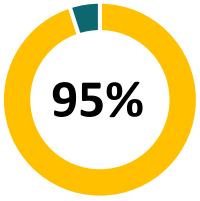
Diesel Particulate Matter (DPM)



Nitrogen Oxides (NOx)



Greenhouse Gases (GHG)



Sulfur Oxides (SOx)

Progress (2005-Present):

98% in SOx

93% in DPM

54% in NOx

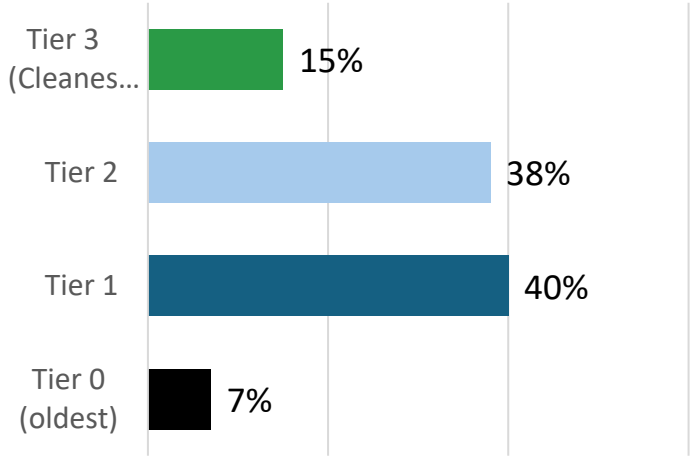
Context: Achieved while cargo volume (TEUs) grew 41%.

2024 Inventory Note: While long-term trends are down, GHGs increased 18% and NOx rose 1% since 2023, reflecting increased vessel activity.

ENGINE TIER STATUS

The Goal: Transition to net-zero lifecycle carbon emissions through use of cleaner technology and fuel.

Current Reality: Tier 1 and Tier 2 engines still dominate the fleet calling San Pedro Bay.



Note: The primary fuel is marine gas oil (MGO), but vessels using LNG and methanol have started to make calls.

CURRENT STRATEGY HIGHLIGHTS

INNOVATION

Global Partnership: Working with Shanghai and Singapore to accelerate use of clean marine fuels and technologies.

Demos: Financial support for technology projects, including water-in-fuel emulsions, slide valves, and scrubbers.

INCENTIVES

Speed Reduction: Voluntary program with 95% participation, offers incentives to slow down reducing engine load.

Clean Ship Incentives: Rewards ships using cleaner tech via Environmental Ship Index (ESI) and Green Ship Incentives.

INFRASTRUCTURE

Shore Power: The ports pioneered shoreside power, also known as Alternative Maritime Power (AMP).

Current Status: Berths are equipped for container and tanker vessels to plug into electrical grid while at berth.

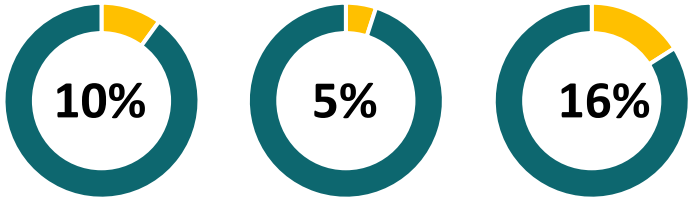
San Pedro Bay Ports Background

CARGO HANDLING EQUIPMENT

Emissions Inventory & Strategic Outlook – January 2026

EMISSIONS & TRENDS

Current Share: Cargo handling equipment (CHE) is the 3rd largest contributor to port-related emissions.



Diesel Particulate Matter (DPM) | Nitrogen Oxides (NOx) | Greenhouse Gases (GHG)

Progress (2005-Present):

78% Reduction in DPM

82% Reduction in NOx

16% Increase in GHGs

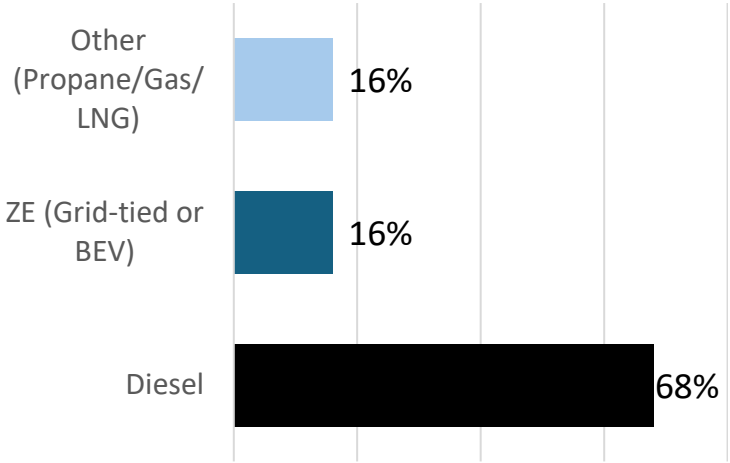
Context: Achieved while cargo volume grew 41%.

High Emitters: Three equipment types – yard tractors, top handlers, and RTGs – comprise 85% of the Complex's CHE NOx emissions and 89% of CHE GHG emissions.

FLEET FUEL STATUS

The Goal: Transition to Zero-Emissions (ZE) technology.

Current Reality: Understanding technological and infrastructure readiness is critical. The majority of the fleet still uses diesel.



Total Inventory: 3,632 pieces of equipment serving the Ports in 2024.

Fuel Trend: The diesel share has held steady at 68% since 2017. 47% of the fleet uses renewable diesel.

CURRENT STRATEGY HIGHLIGHTS

INNOVATION

Feasibility: ZE CHE feasibility assessment every three years; the next release is expected Q1 2026.

Demos: Nearly $200M in CHE technology demos through the Technology Advancement Program and grants.

INCENTIVES

Active Funding: State and Federal funding secured to deploy nearly 600 pieces of new ZE CHE over next three years.

New Program: POLB launching new incentive program in 2026 providing $58M for ZE CHE and hard-to-decarbonize sources.

INFRASTRUCTURE

ZE Infrastructure Plans: Ports working with terminals to develop infrastructure plans under the Cooperative Agreement with SCAQMD.

Utilities: Both ports are working with their utilities on service upgrades to support ZE.