



SAN PEDRO BAY PORTS
CLEAN AIR ACTION PLAN

**2024 San Pedro Bay Ports
Air Emissions Inventory Results**

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Background

- Annual activity-based
 - 2005 through 2024
- Source categories
 - Ships, harbor craft, cargo handling equipment, trucks, trains
- Pollutants/Greenhouse gases
 - PM_{10} , $PM_{2.5}$, DPM, NOx, SOx, CO, HC, CO_2e (CO_2 , CH_4 , N_2O)
- Annually coordinated with and reviewed by EPA, CARB, and SCAQMD



2024 Air Emissions Inventories

PORT OF LOS ANGELES

Inventory Of Air Emissions 2024

Technical Report | September 2025



THE PORT
OF LOS ANGELES

STARCREST CONSULTING GROUP, LLC

<https://www.portoflosangeles.org/environment/air-quality/air-emissions-inventory>

20
YEARS
HARBOR DYNASTY

Port of
LONG BEACH
THE GREEN PORT

AIR EMISSIONS
INVENTORY - 2024



September 2025

Prepared By:
STARCREST CONSULTING GROUP, LLC

<https://www.polb.com/environment/air/#emissions-inventory>

LA
THE PORT
OF LOS ANGELES

Port of
LONG BEACH
THE PORT OF CHOICE

SAN PEDRO BAY PORTS
EMISSIONS INVENTORY
METHODOLOGY REPORT

Version 5 - 2024



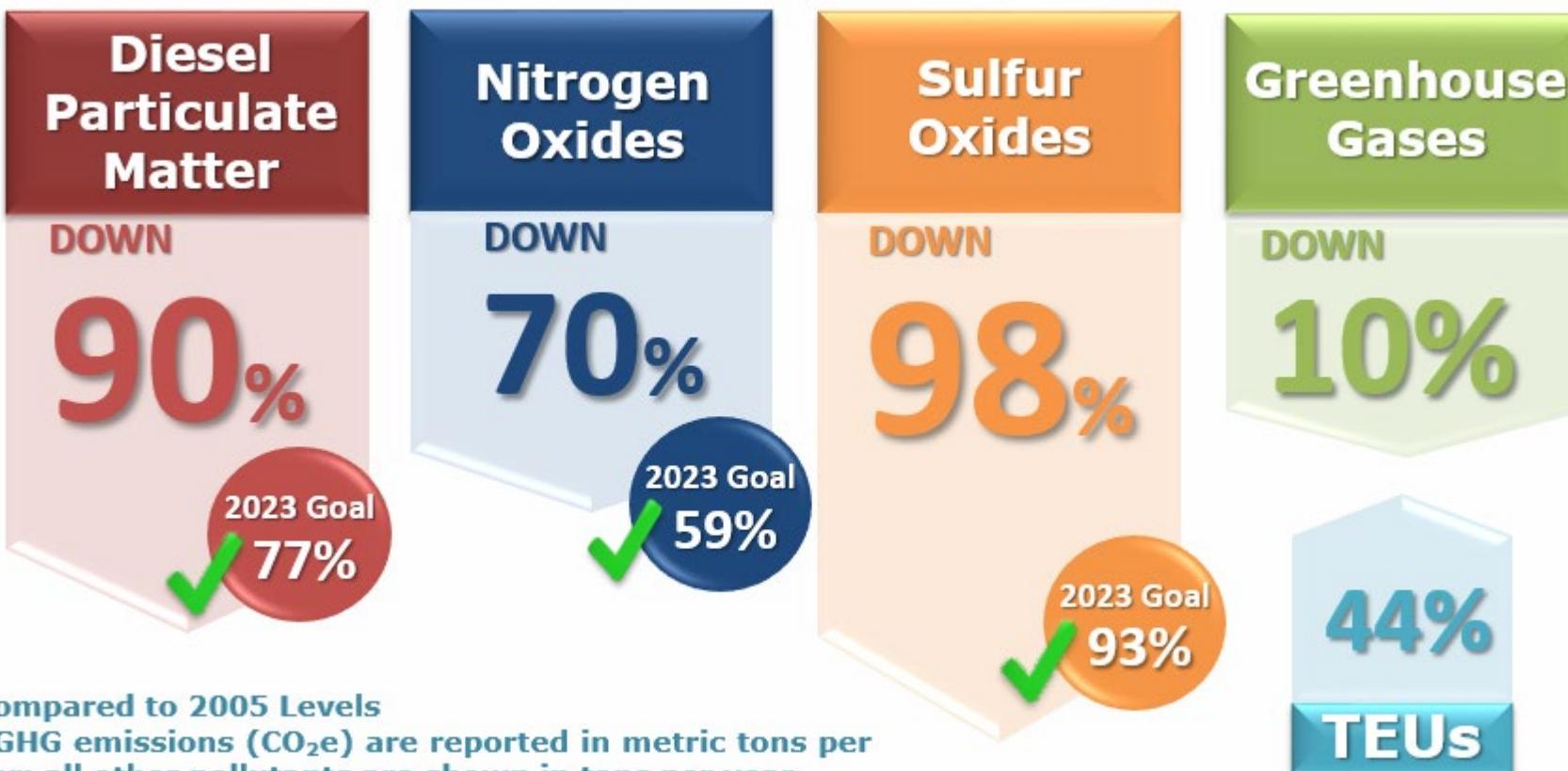
August 2024

Prepared By:
STARCREST CONSULTING GROUP, LLC

[San Pedro Bay Ports Emissions Inventory
Methodology Report](#)

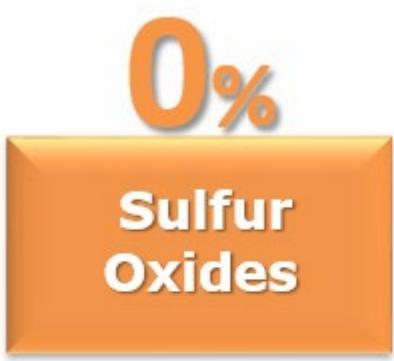


SPBP 2024 Air Emissions vs. 2005





SPBP 2024 Air Emissions vs. 2023

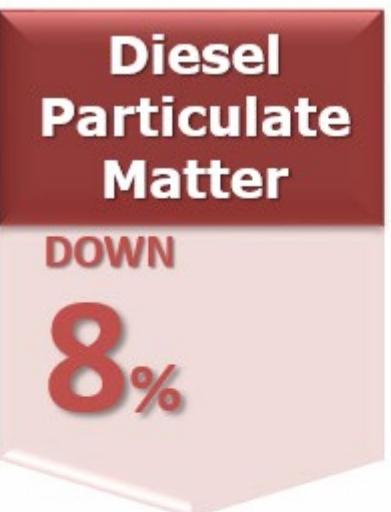


***Compared to 2023 Levels**

****GHG emissions (CO₂e) are reported in metric tons per year; all other pollutants are shown in tons per year.**



SPBP 2024 Air Emissions vs. 2017



*Compared to 2017 Levels

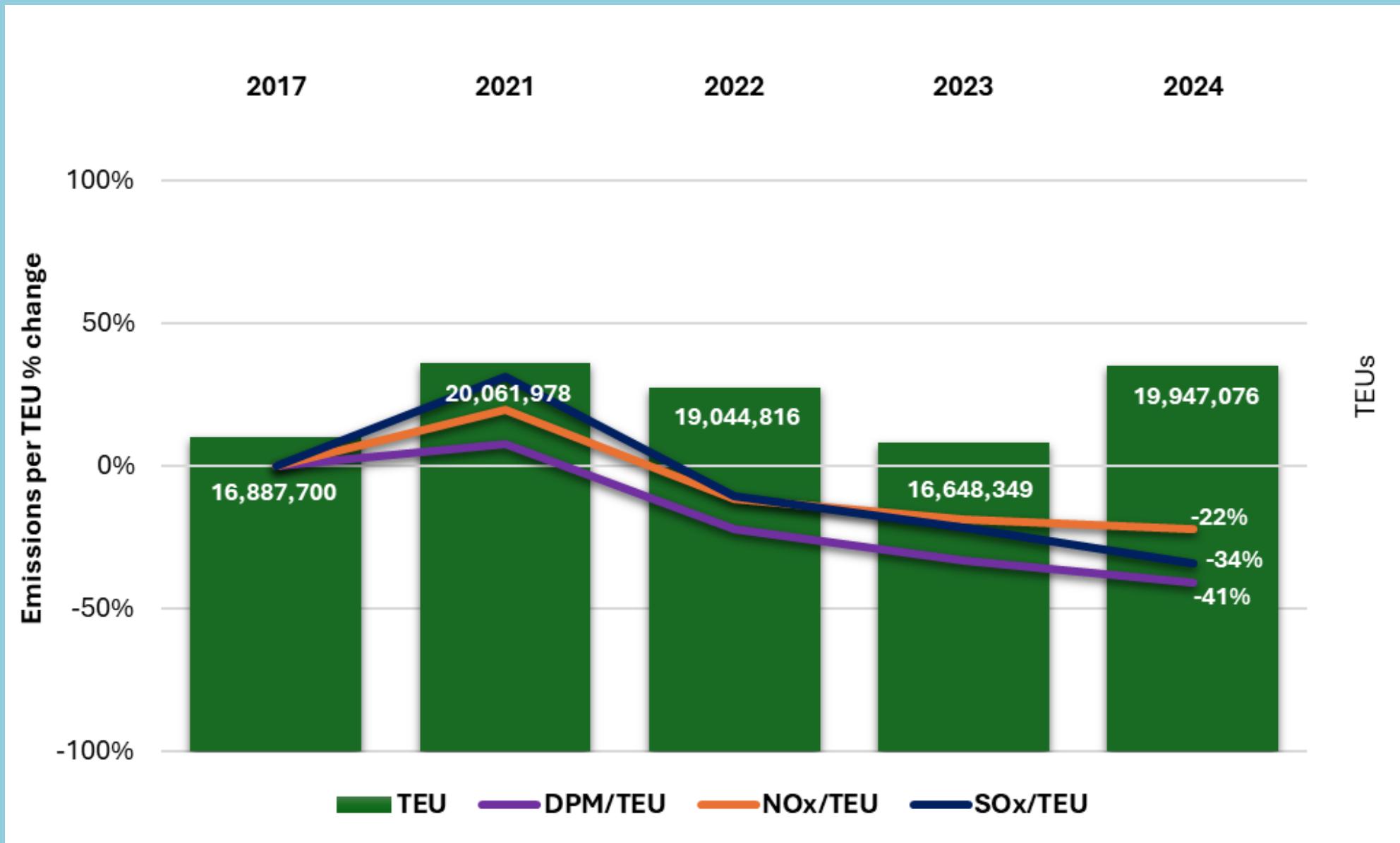
**GHG emissions (CO₂e) are reported in metric tons per year; all other pollutants are shown in tons per year.



Notable Highlights from 2024

- Factors affecting 2024 emissions include:
 - A 20% increase at POLB and 19% increase at POLA in cargo throughput compared to 2023, which led to increased activity of all mobile sources
 - Use of renewable diesel fuel by all harbor craft, switcher locomotives, and some container terminals, which can lower NOx and PM emissions
 - Increased zero emission cargo handling equipment use lowered emissions, but overall increases in activity resulted in a net increase from this category

SPBP TEU Efficiency





Moving Forward

- ✓ Infrastructure Upgrades
- ✓ Technology Advancement & Grant Implementation
- ✓ Clean Truck Fund Rate Spending Plan Implementation
 - ✓ ZE Truck Deployment
 - ✓ Infrastructure Development
- ✓ Ship Incentive Programs
- ✓ Green Shipping Corridors
 - ✓ Carbon Neutral Ships
- ✓ State and Federal Regulations
- ✓ Cooperative Agreement with SCAQMD

An aerial photograph of a coastal port area. In the upper portion of the image, a large industrial port terminal is visible, featuring numerous shipping containers stacked in organized rows. A network of cranes and conveyor belts is used for moving the cargo. Below this, a marina is filled with many small boats and yachts. To the left, a dense residential area with houses and streets is visible. A beach and some industrial structures are at the bottom. A white rectangular box with a black border is overlaid on the image, containing the text "Thank you!".

Thank you!



SAN PEDRO BAY PORTS
CLEAN AIR ACTION PLAN

**Update on Technology Advancement
Program and Grant-Funded Projects**

December 9, 2025

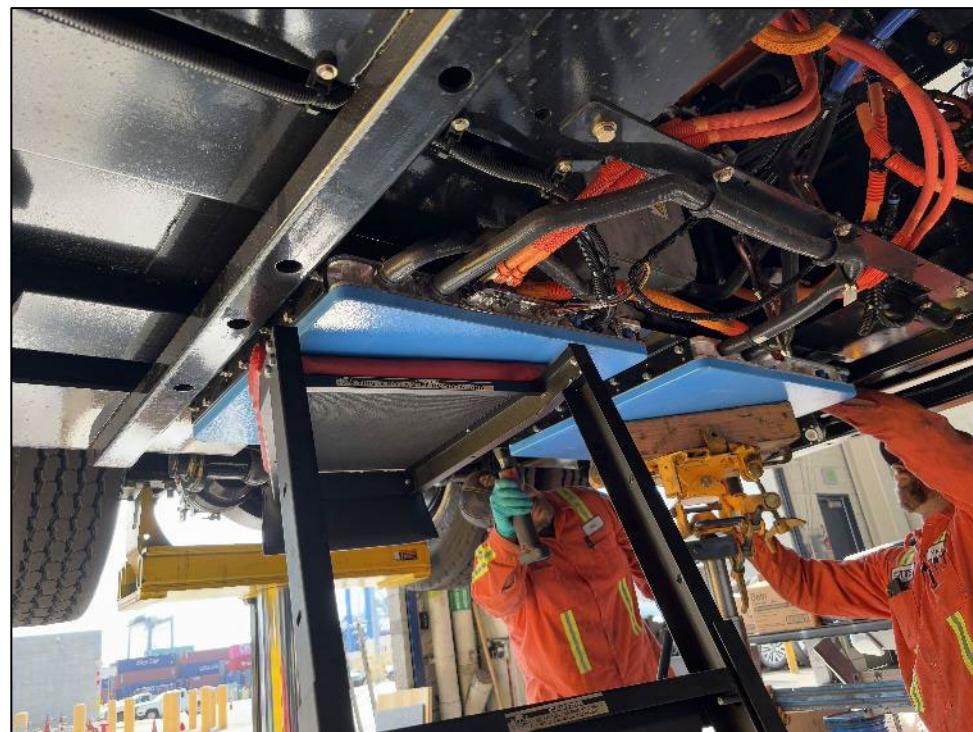
Rose Szoke
Air Quality Officer
Port of Long Beach

Brittney Ford
Planning Assistant
Port of Los Angeles



Technology Advancement and Grants Highlights

- Technology Advancement Program (TAP) Updates
- Grant-Funded Demonstration and Deployment Status
- Looking Ahead and Next Steps



ITS Hands-Free Charging Demonstration
Mechanics installing inductive charging pads under an eUTR.
Photo credit: ITS



Technology Advancement Program

The **Technology Advancement Program (TAP)** helps accelerate the development of clean technologies so they can become commercially available and widely used, reducing emissions across port operations.

TAP supports efficient, cleaner goods movement while helping **protect community health** from air pollution.

The Ports are **funding zero-emission demonstrations**, allowing equipment operators and industry partners to test technologies in real-world port environments.

The **TAP Advisory Committee** works with the Port to review and recommend projects to ensure each initiatives delivers meaningful environmental and community benefits.



TAP Eligible Projects

- Zero-emission cargo-handling equipment
- Zero-emission or zero-emission-capable locomotives
- Zero-emission or zero-emission-capable harbor craft
- Cleaner ocean-going vessel technologies
- Innovative fueling and charging infrastructure



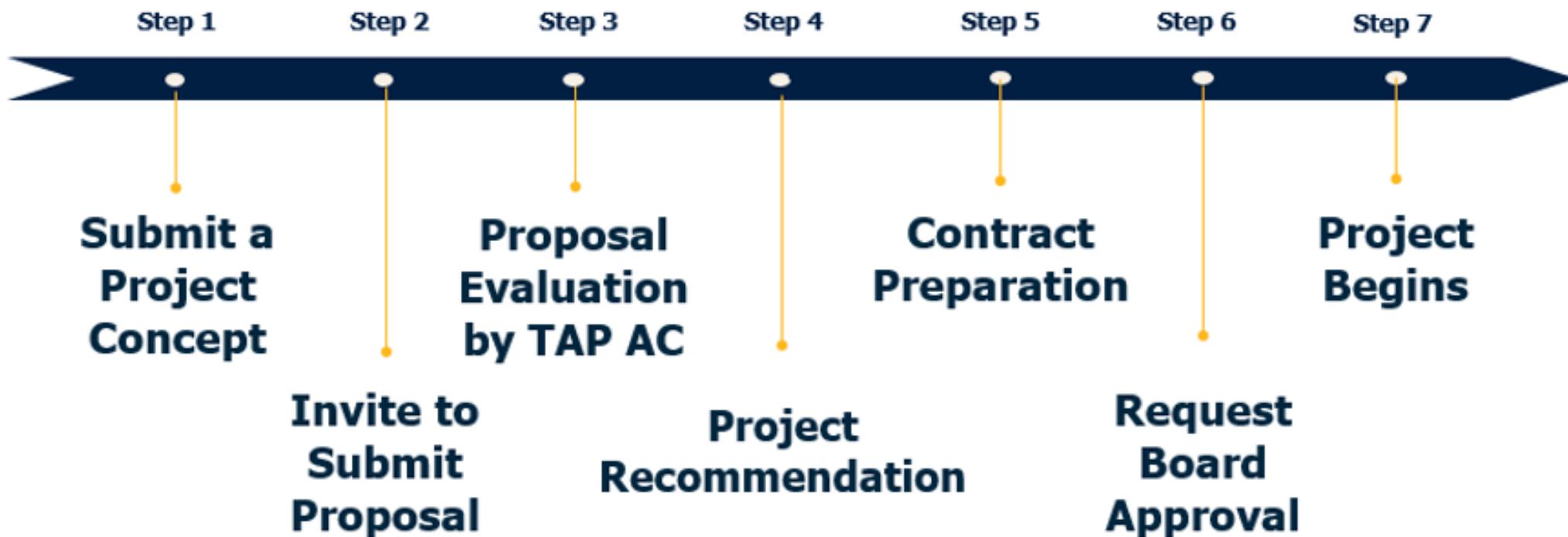
Program Guidelines



Updated: April 2023

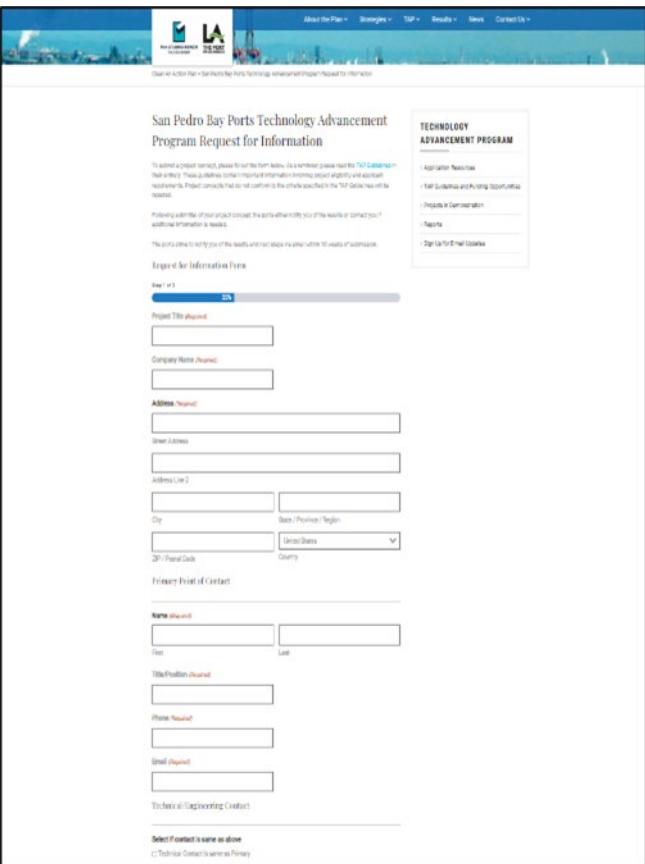


TAP Request For Information (RFI) Process





TAP Request for Information



San Pedro Bay Ports Technology Advancement Program Request for Information

To submit a project concept, please fill in the form below. As a reference please read the [TAP Overview](#) that details the types of projects that may be submitted. If you have any questions, please contact the TAP Office via email or phone.

Project concepts must be submitted in the order specified in the TAP Overview. Project concepts that do not conform to the criteria specified in the TAP Overview will not be reviewed.

Please contact the TAP Office via email or phone for more information or to discuss your project concept.

The project concept must be submitted in the order specified in the TAP Overview. If you have any questions, please contact the TAP Office via email or phone.

Project for Information Form

Project Title

Project Title

Company Name

Address

Street Address

Address Line 2

City State / Province / Region

Zip / Postal Code Country

Primary Point of Contact

Name

First Last

Title / Position

Phone

Email

Technical / Engineering Contact

Select if contact is same as above

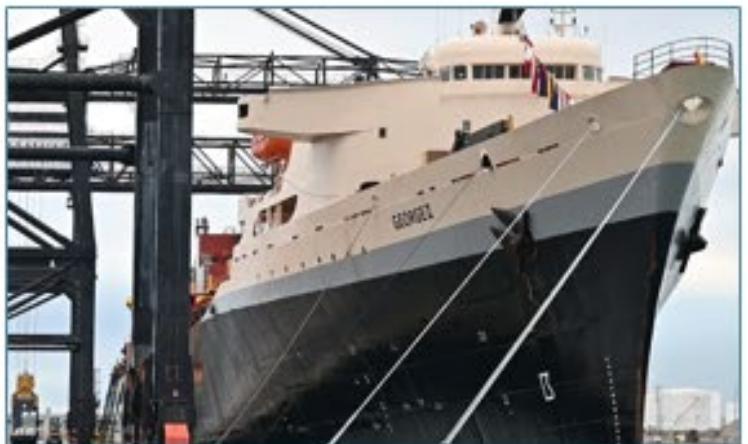
Technical Contact is selected Primary

Project concepts may be submitted via the TAP RFI page at:

www.cleanairactionplan.org/TAP



Completed Projects in 2024



**PASHA LNG (Repowered) Vessel,
George II, Demonstration**

Photo credit: PASHA Hawaii

**PHL Locomotive Charger
Demonstration**

Photo credit: PHL

**Toyota Tsusho Hydrogen Fuel
Cell Top Handler Demonstration**

Photo credit: Toyota Tsusho



2025 Recommended Demonstration Projects

- Hybrid Excursion Vessel (New Build) and Infrastructure
- Advanced Truck Charging Infrastructure
- Innovative Cargo-Handling Equipment Charging
- Zero-Emissions Tugboat (Retrofit)

Harbor Breeze
Yacht Charters and Cruises

The Adept Group



RocketTruck



Elonroad



TAP Next Steps

Future Board Funding Recommendations

The Ports will present new funding recommendations for TAP projects to their respective Boards of Harbor Commissioners, which will include expanded zero-emissions options for harbor craft, and additional innovative charging for heavy-duty trucks to further reduce emissions and improve operational efficiency.

Ongoing TAP Demonstrations

The Ports will continue to identify, fund and demonstrate promising clean technologies through TAP and other grant-funded initiatives, to help prove the performance and reliability of zero-emissions equipment in real-world port operations.



TAP Resources

- Information on completed projects and those in demonstration may be found in our latest 2024 TAP Annual Report.
- The Ports will soon begin development of the 2025 TAP Annual Report.





Grant-Funded Programs for a Cleaner Port Community

Investing in clean air. Since 2017, the San Pedro Bay Ports have secured over **\$820 million** to support the transition to cleaner, zero-emission vehicles and equipment, including \$331 million for the Port of Long Beach and \$492 million for the Port of Los Angeles.

Cleaner operations today. The Ports have deployed **127** grant-funded zero-emission vehicles and equipment, reducing pollution and greenhouse gases, and improving air quality in nearby communities.

A healthier future ahead. With funding in place to add **910** more zero-emission units over the next three to five years, the Ports are continuing their commitment to cleaner air and healthier communities, and decarbonizing port operations.



U.S. DOE Hydrogen Hubs Grant Cancelled

Grant Summary: The Alliance for Renewable Clean Hydrogen Energy Systems (ARCHEs) received a \$1.2 billion grant under the Department of Energy's (DOE) Hydrogen Hub grant funding opportunity with POLA and POLB receiving \$50 million each to deploy various hydrogen fuel cell technologies at the Ports.

Recent Updates: On October 1, 2025, DOE cancelled its funding commitment for ARCHEs. Prior to cancellation, each Port released a Call for Projects in September of 2025, inviting projects that would advance clean hydrogen technologies and support the region's zero-emission goals. The Ports will continue to explore opportunities to support these projects.



South Coast AQMD Zero-Emission Collaboration

Grant Summary: South Coast Air Quality Management District (AQMD) awarded \$500 million for the INVEST CLEAN project, which includes funding for heavy duty trucks and charging infrastructure, battery-electric cargo handling equipment, and battery-electric locomotives. The Ports committed to support AQMD's application with \$5 million in Clean Truck Fund Rate dollars per Port to support charging stations for zero-emission drayage trucks.

Recent Updates: AQMD applications for all programs will close December 16, 2025.



POLB SWIFT Programs

The **System-Wide Investment in Freight Transport (SWIFT)** includes three major projects advancing zero-emission equipment, cleaner operations, and community benefits.

SSA Top Handlers and Chargers (\$36.03 million)

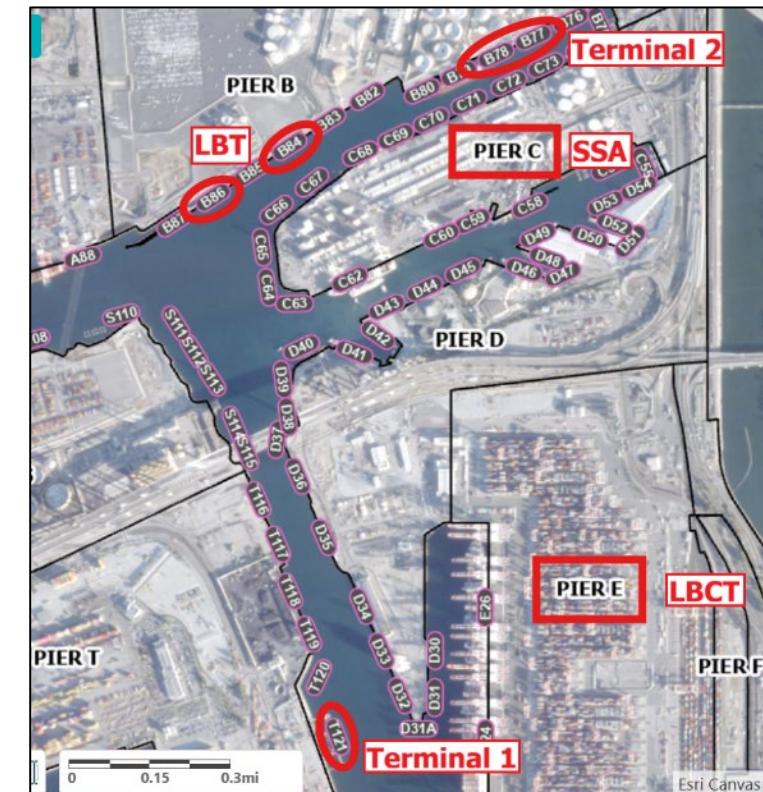
- Deploy 9 battery-electric top handlers and supporting charging units

Tesoro Shore Power at T121, LBT, and T2 (\$70.4 million)

- Install new and upgraded shore power systems for tanker vessels

LBCT Equipment Replacement and Chargers (\$45.21 million)

- Replace various diesel cargo-handling equipment with zero-emission cargo-handling equipment and supporting charging units



Map of project locations



POLB SWIFT Incentive Programs

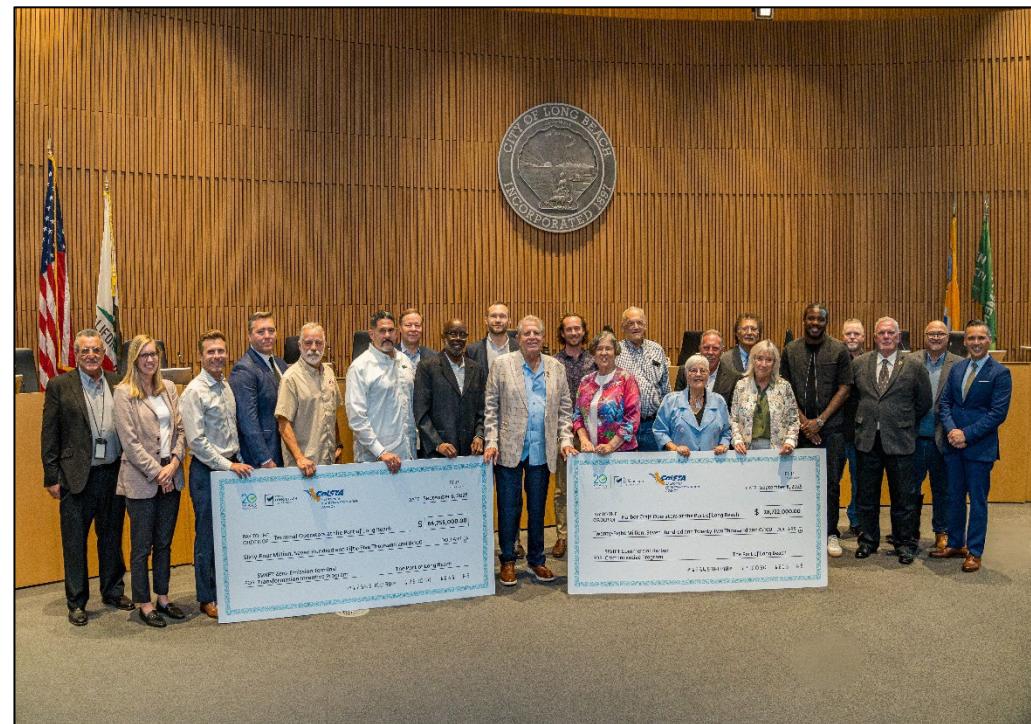
Zero-Emission Terminal Transformation (\$28.7 million)

- Deploy 56 zero-emissions cargo-handling equipment and 50 charging units

Commercial Harbor Craft Incentive (\$28.7 million)

- Support 39 harbor craft engine replacements with cleaner or zero-emission technology

All contracts were executed in October 2025, allowing awardees to begin work.



9/8/2025 Board of Harbor Commission Meeting
SWIFT Incentive Program Awardees with POLB Harbor
Commissioners



POLA Los Angeles Marine Emissions Reduction Project

Los Angeles Marine Emissions Reduction (LA MER) Project (\$62,451,868)

- \$30,980,376 in funding from CARB and \$31,471,492 in matching funds and in-kind contributions

Catalina Channel Express

- Deployment of a new Passenger Ferry with Tier 4 Engines and diesel particulate filter (DPF)
 - Assuming a DPF that has been verified by CARB and approved by USCG at the time of engine installation

Status: The hull is under construction and Welders are working on the deck layout

Harbor Breeze Corp.

- Two Zero-Emission Capable Hybrid Excursion Boats
- Expected to exceed the definition of Zero Emission and Advanced Technology (ZEAT)

Status: The first vessel is nearly complete and expected to be in the water to begin sea trials in December 2025



POLA Los Angeles Marine Emissions Reduction Project

Next Generation Harbor Craft Technology Assessment (Funded jointly by POLA and POLB)

- Evaluate the commercial status of emission-reduction technologies
- Assess the feasibility of marinizing DPFs
- Identify infrastructure gaps for ZE harbor craft
- Gain understanding of workforce development needs specific to tugs, ferries, and pilot boats operating in San Pedro Bay



The first Harbor Breeze vessel preparing to roll out of the build cell and begin sea trials.



TAP Funding for LA MER Project Upgrades

LA MER Project TAP Funding (\$3,500,000)

- \$2,450,000 in funding from POLA and \$1,050,000 in funding from POLB
- **Install shore side charging infrastructure at the West Harbor Development**
- **Additionally, Harbor Breeze Corp. will upgrade one of the vessels to demonstrate technology that was not available at the time of the grant award:**
 - OEM components to further reduce particulate matter emissions
 - A larger (588 kWh) battery energy storage system (BESS)
 - Added safety mode for contingent DPF regeneration
 - Improved engine efficiency
 - Electric heaters to eliminate low power idling

POLA U.S. EPA Clean Ports

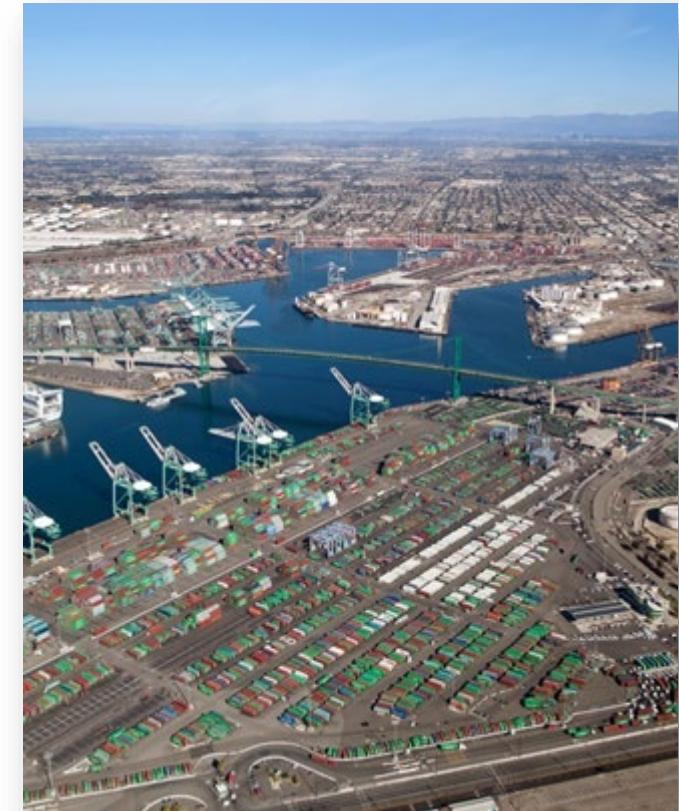
EPA Clean Ports Program (CPP) to fund zero-emission electrification projects for terminal equipment and related infrastructure (\$412 million)

Ongoing Efforts include POLA's CPP ZE Equipment grant implementation and terminal designs (*numbers are approximate*)

- 400 battery electric cargo handling equipment (CHE)
- 250 heavy-duty drayage trucks
- 300 charging ports for CHE
- 4 power management systems & solar arrays
- Workforce development programs¹
- Shorepower installation

Harbor Community Benefits Foundation (HCBF) Planning and implementation of ZE subgrant fund

- Workforce development
- Public engagement & outreach





Grant Funding Outlook

- Since 2022, the Ports have secured over \$820 million in state and federal funding to support CAAP objectives over the next 3–5 years. The Ports will be focused on grant implementation.
- The Ports will continue collaborating with terminal operators to develop zero-emission infrastructure master plans, ensuring readiness for zero-emission operations.
- Both Ports will actively explore new opportunities for collaboration on technology deployment and demonstration projects.
- The Ports will pursue state and federal grant opportunities.



Port Contacts

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An aerial photograph of a coastal city, likely Long Beach or Los Angeles, showing a large port area with numerous shipping containers and industrial structures. To the left, a residential area with houses and a marina filled with boats are visible. The city extends along a coastline with a beach and a pier. A large white rectangular box is overlaid on the image, containing the text "Thank You!".

Thank You!



SAN PEDRO BAY PORTS
CLEAN AIR ACTION PLAN

**Clean Truck Program
and Rate Updates**

December 9, 2025

Amber Coluso
Environmental Specialist
Port of Los Angeles

Diana Thai
Environmental Specialist
Port of Long Beach



Updates



Clean Truck
Fund (CTF) Rate



Ports' Plus-Up
Program



Port of Los
Angeles (POLA)
Zero-Emission
(ZE) Early
Deployment



United States
Environmental
Protection
Agency (U.S.
EPA) Clean
Ports Program



Public Charging
Infrastructure

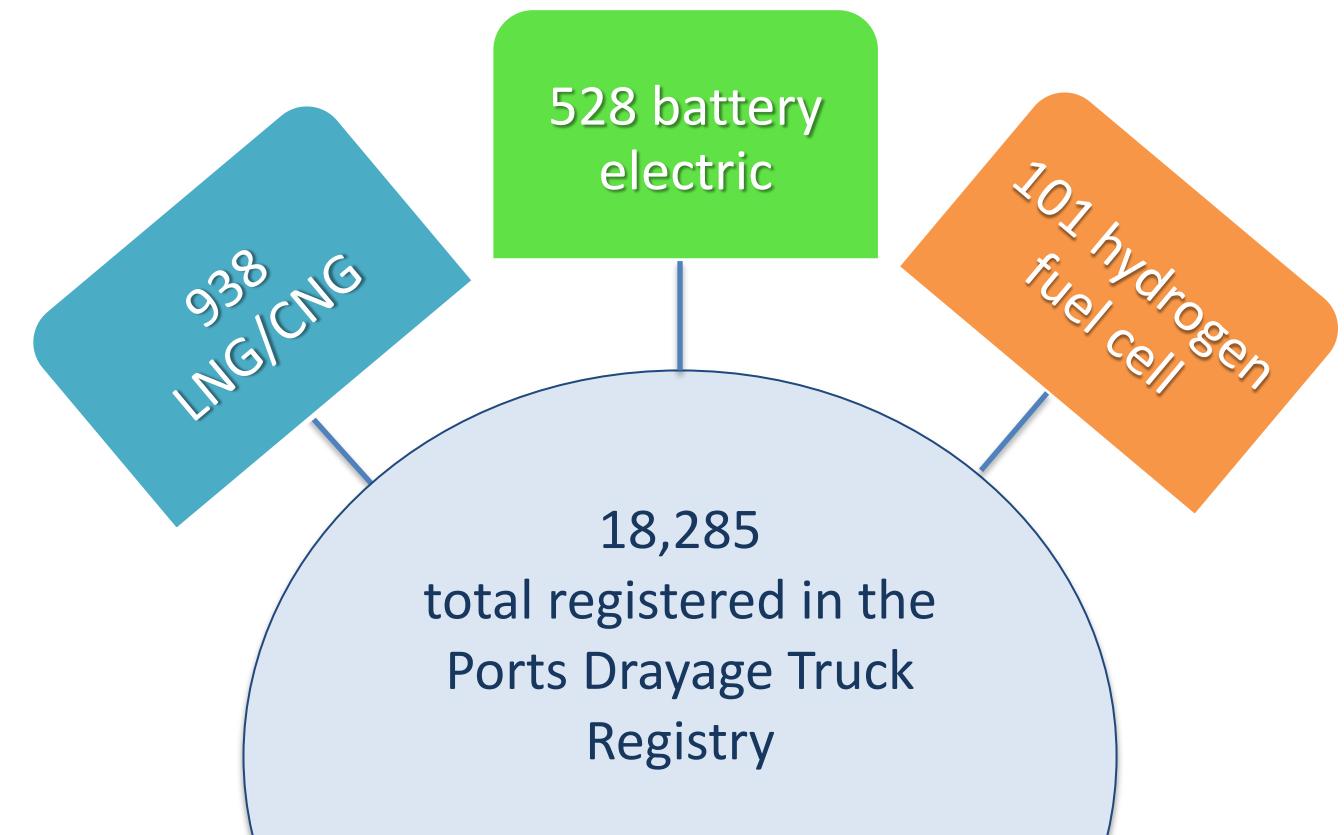


Port of Long
Beach (POLB)
Hydrogen Fuel
Grant Program



Ports Trucks Today*

*As of October 2025



Model Year and Moves	
2014 and newer	<ul style="list-style-type: none">13,992 trucks94.63% of moves
Meet 2010 EPA standards	<ul style="list-style-type: none">99.95% of trucks99.96% of moves
2007-2009 engine year	<ul style="list-style-type: none">0.05% of trucks0.04% of moves



Clean Truck Fund (CTF) Rate Status



- Collection began at both Ports on April 1, 2022
- Approximately \$2-4 million collected by each port monthly
- As of October 2025, ~\$288 million has been collected by Ports
 - Approximately \$156 million allocated to zero-emission (ZE) trucks, infrastructure, and demonstration projects



Ports' Plus-Up Program

Program Details

- Opened November 2023 with \$60 million, closed in October 2024
- \$150,000 CARB HVIP Voucher + \$75,000 plus-up OR \$100,000 for fleets with less than 20 trucks

September 2025

- Reopened using returned funds
- ~\$60 million CARB HVIP Drayage Set-Aside funding still available

Winter 2025

- Expected to open with settlement funds from the Hino case
- ~\$95 million CARB HVIP standard funding available

CARB's HVIP = California Air Resources Board Clean Truck and Bus Voucher Incentive Project

Information on the Hino case: <https://ww2.arb.ca.gov/resources/fact-sheets/hino-settlement-frequently-asked-questions>



POLA ZE Early Deployment

- POLA released a Request for Proposal (RFP) (in 2021) for ZE trucks and associated infrastructure
- POLA Board approved two proposals for a total of \$6 million
 - One project with 10 trucks scheduled for completion end of 2025
 - Second project has received 12 trucks and waiting for infrastructure installation (estimated completion Quarter 2 2026)
 - Truck operator will use offsite charging station to begin vehicle deployment until onsite infrastructure is completed



U.S. EPA Clean Ports Program – ZE Truck RFP

\$50 million
(*of the ~\$412 M EPA grant*)



\$25 million
(*from POLA CTF*)

\$75 million

- Must be battery electric Class 8 trucks
- Minimum of 10 trucks purchased
- Up to \$300,000 per truck
- Minimum of 100 truck trips annually to POLA



U.S. EPA Clean Ports Program – ZE Truck RFP (cont.)

- Vehicle deployment by September 30, 2028
- Bonus Considerations
 - Small fleet of 20 or fewer trucks
 - Voluntary scrappage
 - Voluntary workforce development/training plan
 - Earlier deployment
- Expected release = Quarter 4 2025 (October to December)



Public Charging Infrastructure



- POLB used CTF Rate to help fund a public charging station located at 2665 W. Seaside Blvd.
 - 84 chargers
 - Expected to open January 2026
- POLB released an RFP for the Terminal Access Center site in July 2023
 - POLB Board action for lease agreement December 2025
 - Grant agreement expected Quarter 1 2026 (January to March)
- POLA released an RFP for a site in Wilmington in January 2024
 - Selection and California Environmental Quality Act (CEQA) analysis has been completed Summer 2025
 - POLA Board action pending

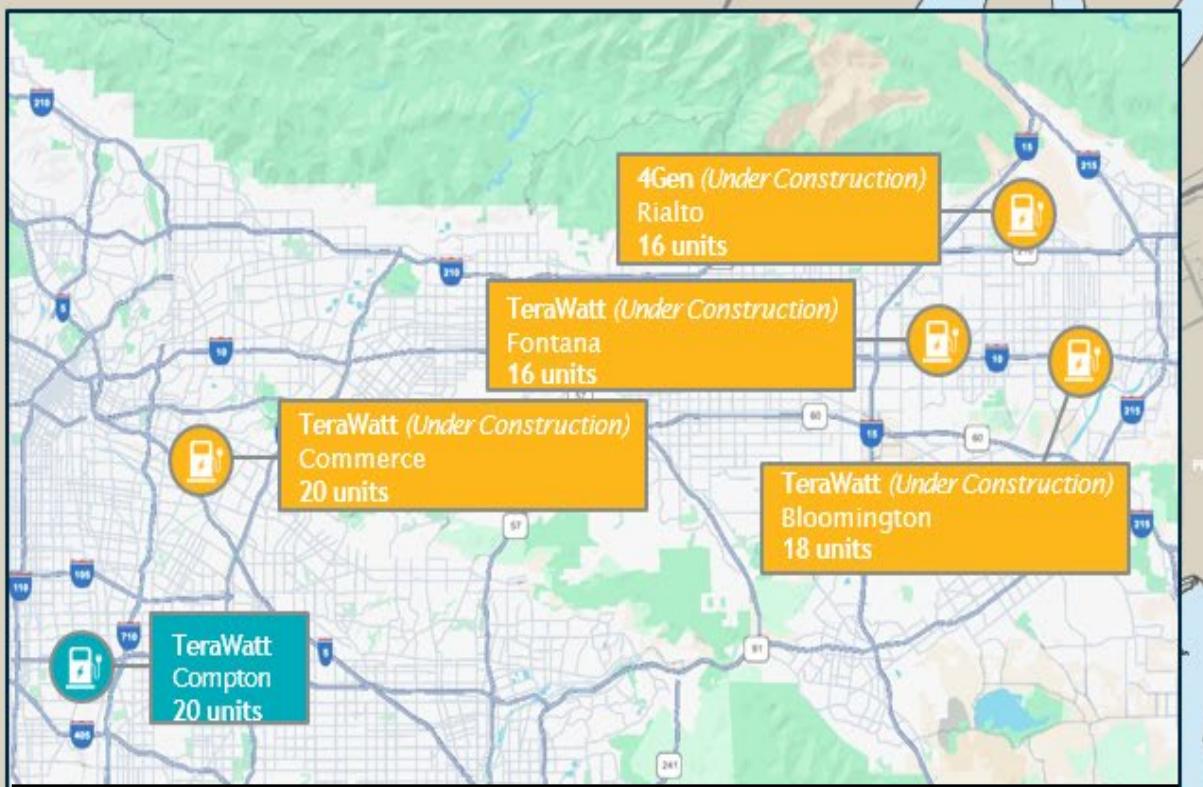
Public Charging Infrastructure

TOTAL: 313+ Charging Units

Operating

Under Construction

Proposed



Port of LONG BEACH
THE GREEN PORT



THE PORT
OF LOS ANGELES



POLB Hydrogen Fuel Grant Program



Purpose

- Helps address hydrogen fueling costs for early adopters of fuel cell trucks
- Encourages adoption of additional fuel cell trucks
- May result in 3.7 million zero-emission miles



Program Elements

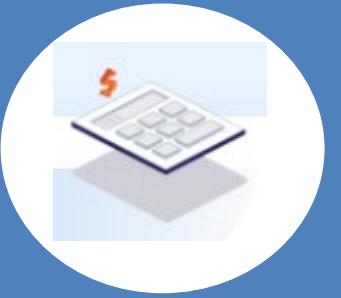
- Allocated \$10 million over a 2 year period
- Lowers fueling costs to \$7.50 kilogram (kg)
- Monthly usage reimbursement
- Must serve the Ports and meet 50 truck trips annually
- Program reevaluation every 6 months (i.e., renewables, hydrogen availability)

For more information:

www.polb.com/hydrogengrants



Next Steps



Continue to monitor CTF
Rate implementation &
spending plan roll-out



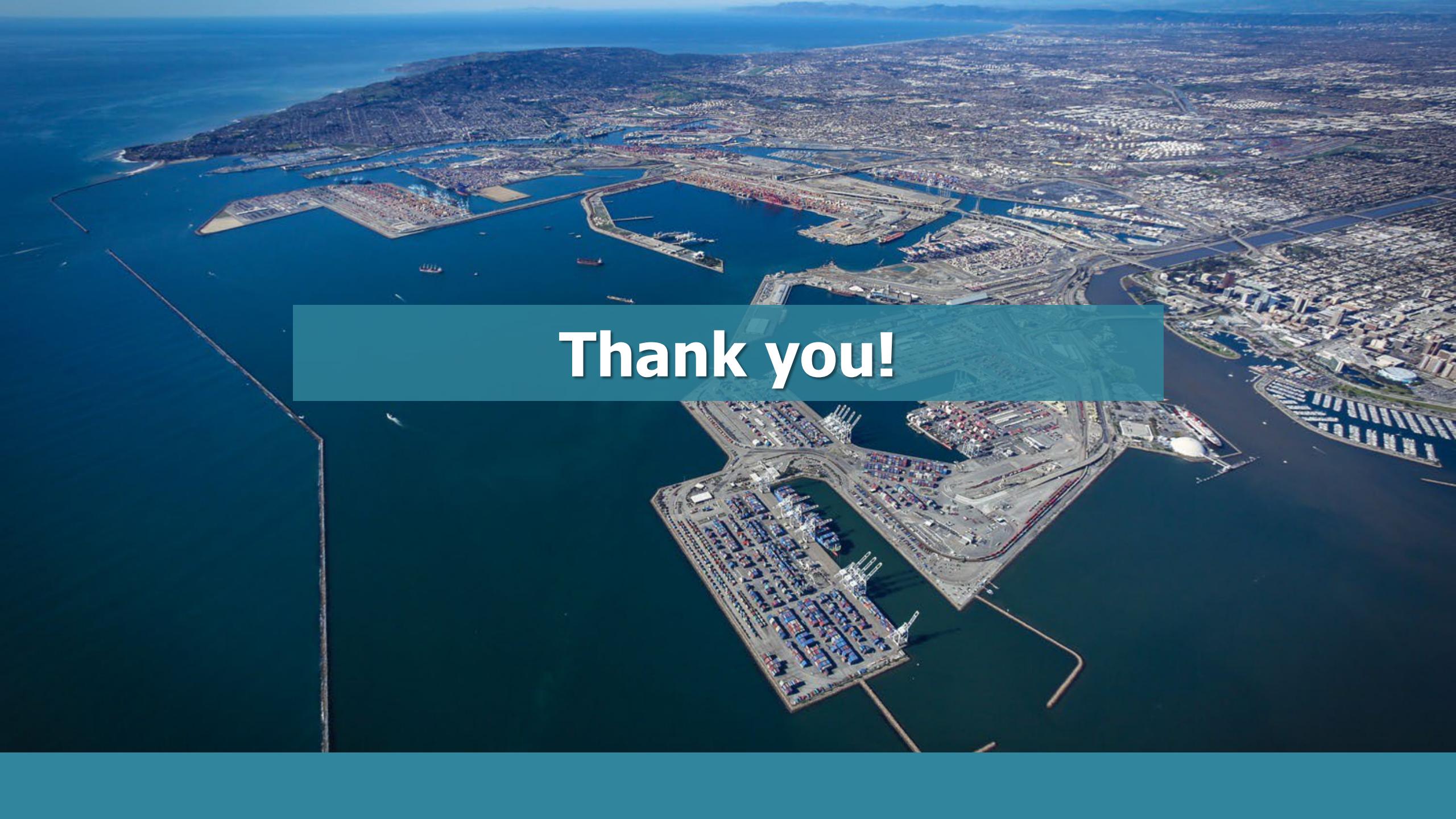
Develop additional strategies
for ZE truck deployment (i.e.,
truck trip, priority lanes) &
monitor ongoing programs



Complete ongoing public
charging depot infrastructure
projects

Next Steps



An aerial photograph of the Port of Los Angeles, showing the large shipping terminals, cranes, and containers. The San Pedro peninsula is visible in the background, and the city of Los Angeles extends along the coast. A large, semi-transparent teal rectangular box is overlaid on the image, containing the text "Thank you!".

Thank you!