

SAN PEDRO BAY PORTS CLEAN AIR ACTION PLAN

25th CAAP Implementation Stakeholder Advisory Meeting

April 14, 2026 – 9:00am – 11:00am

The meeting will be held at Port of Long Beach Administration Building (1st Floor Multi-Purpose Room) at [415 W. Ocean Blvd, Long Beach, California](#). Proceedings will be livestreamed, and participation is in-person only.

Click [here](#) to join the meeting or call in at **(408) 418-9388** and enter webinar access code: **249 129 28206**.

Limited parking with validation will be available in the Superior Court of California Parking Garage at 101 Magnolia Ave Long Beach, CA 90802. Parking is also available at other nearby lots. Please see [map](#) for more information.

Agenda:

1. Welcome and Opening Remarks
2. Update on the Clean Air Action Plan (CAAP) Plus Measures
3. Annual Status Update on the 2025 Accomplishments and 2026 Priorities
4. Harbor Craft Strategies
5. Adjourn

Note: Following the meeting, please feel free to send additional comments or questions to caap@cleanairactionplan.org



SAN PEDRO BAY PORTS
CLEAN AIR ACTION PLAN

**Cooperative Agreement with
South Coast Air Quality
Management District**

April 14, 2026

Renee Moilanen
Port of Long Beach



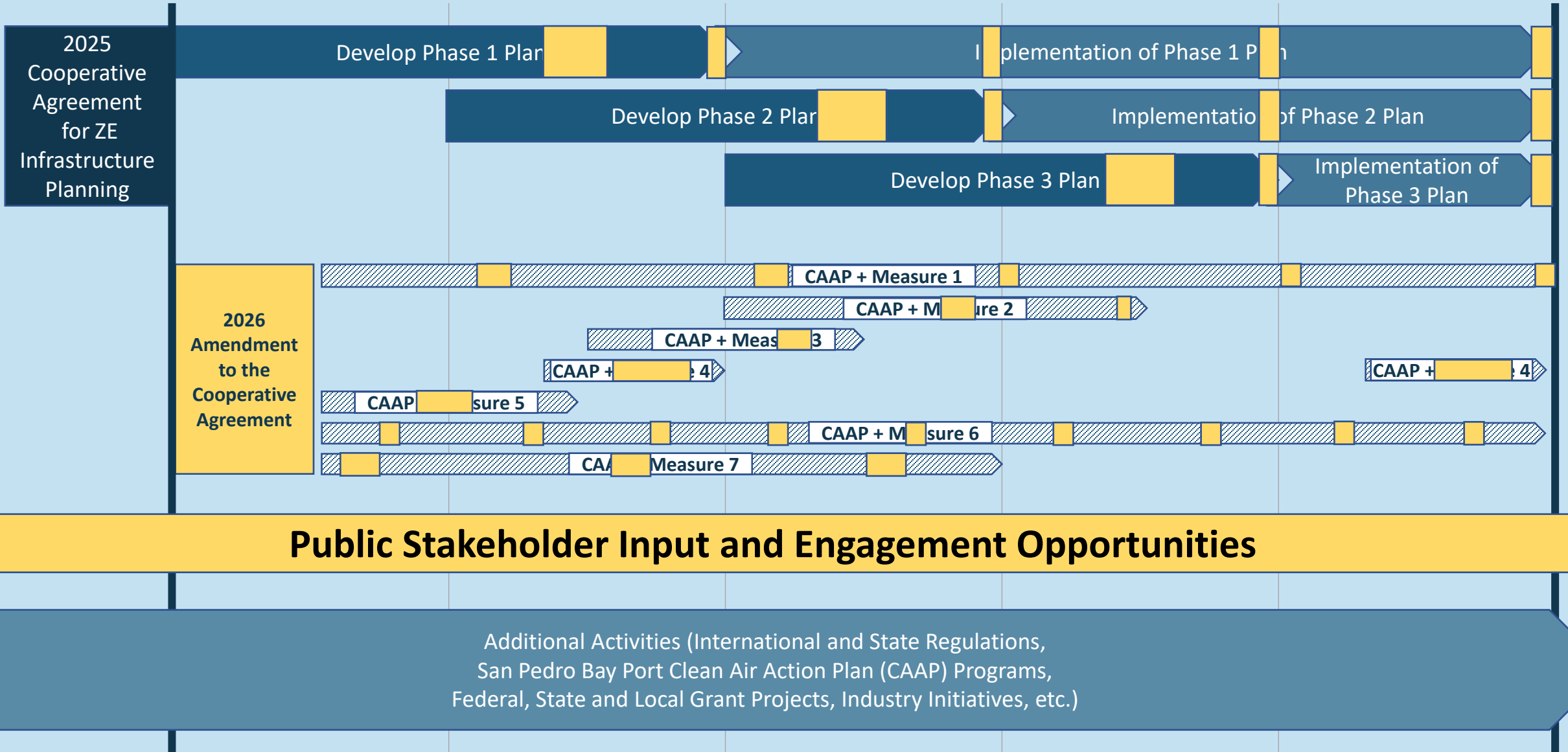
What is the Cooperative Agreement?

- Enforceable contract among South Coast Air Quality Management District, Port of Los Angeles, and Port of Long Beach executed in December 2025
- Alternative to regulation
- Specifies actions each Port must complete with penalties for non-compliance. Defines a role for SCAQMD.
- Requires infrastructure planning and implementation for zero-emissions and clean fuels through end of 2030
- New measures are currently in development to enhance the agreement

Preliminary Timeline for Program Development

Dec 2025

Dec 2030





Draft Measures Under Consideration

Facilitating Measures: technical studies and plans to support future emission-reduction programs

- Clean Marine Fuel Assessment and Pilot Project
- Technical Study on Vessel Emissions at Low Speed Operations
- Clean Truck Fund Spending Plan

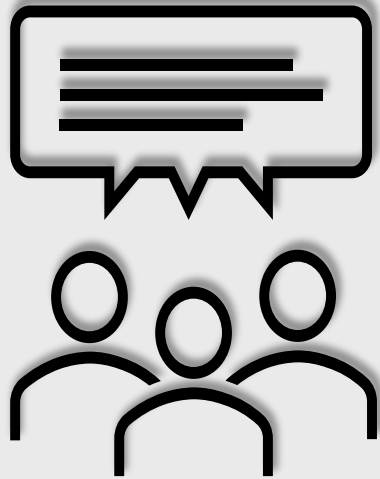
Emission Reduction Measures: implemented by the ports to support emission reductions

- Enhancements to Clean Ship Incentive
- ZE Truck Utilization Incentive
- Cargo Handling Equipment and Harbor Craft Accelerator

SCAQMD-Led Measures: implemented by SCAQMD to support emission reductions

- Funding for Regional Truck Charging and Fueling Infrastructure

Additional Questions or Comments?



South Coast AQMD and the Ports welcome comments on new measures to complement the Cooperative Agreement

Written comments may be submitted to:

ports_comments@aqmd.gov

Online form to submit ideas for potential measures:

<https://forms.office.com/g/2xXD9UkpMH>

For more information, visit:

<https://www.aqmd.gov/portsagreement>



An aerial photograph of a coastal city, likely San Francisco, showing a dense urban grid on the left and a large harbor area on the right. The harbor contains numerous piers, docks, and a large shipyard. A prominent pier extends into the water on the right side. The water is a deep blue, and the sky is clear. A semi-transparent blue banner is overlaid across the center of the image.

Thank you!

The background of the slide is a wide-angle photograph of a busy port. In the foreground, there are stacks of colorful shipping containers (red, blue, yellow, green) and several large blue gantry cranes. In the middle ground, there are more containers and a road with some vehicles. In the background, there are more port facilities, including more cranes and buildings, under a clear sky. The overall scene is a bustling industrial port.

SAN PEDRO BAY PORTS **CLEAN AIR ACTION PLAN**

San Pedro Bay Ports 2025 Accomplishments & 2026 Priorities

April 14, 2026

Teresa Pisano
Port of Los Angeles

Leela Rao
Port of Long Beach



Joint Ports' 2025 Accomplishments

Advancing zero-emission operations across all source categories



Clean Trucks



Locomotives



Cargo-Handling
Equipment



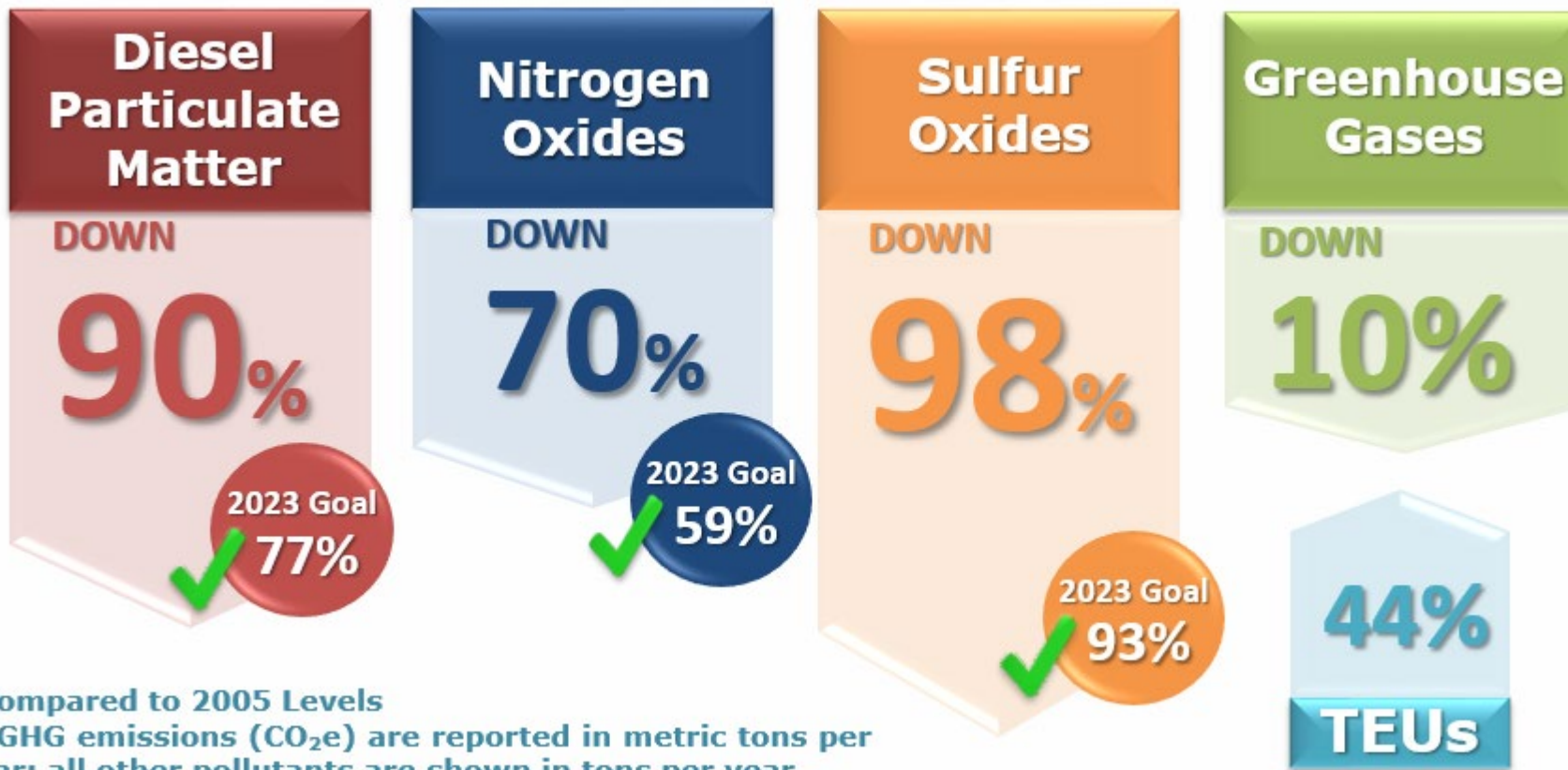
Ocean-Going
Vessels



Commercial
Harbor Craft



Joint Ports' 2025 Accomplishments



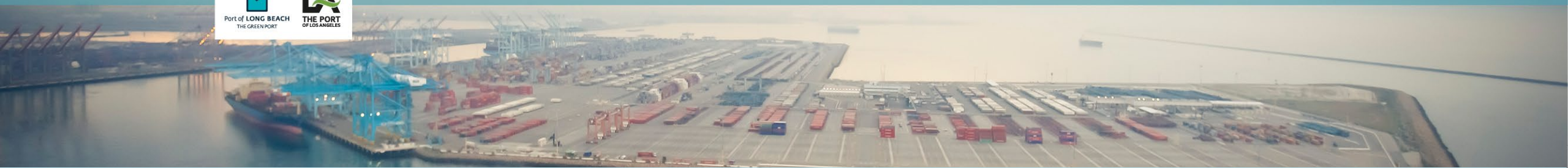
*Compared to 2005 Levels
**GHG emissions (CO₂e) are reported in metric tons per year; all other pollutants are shown in tons per year.



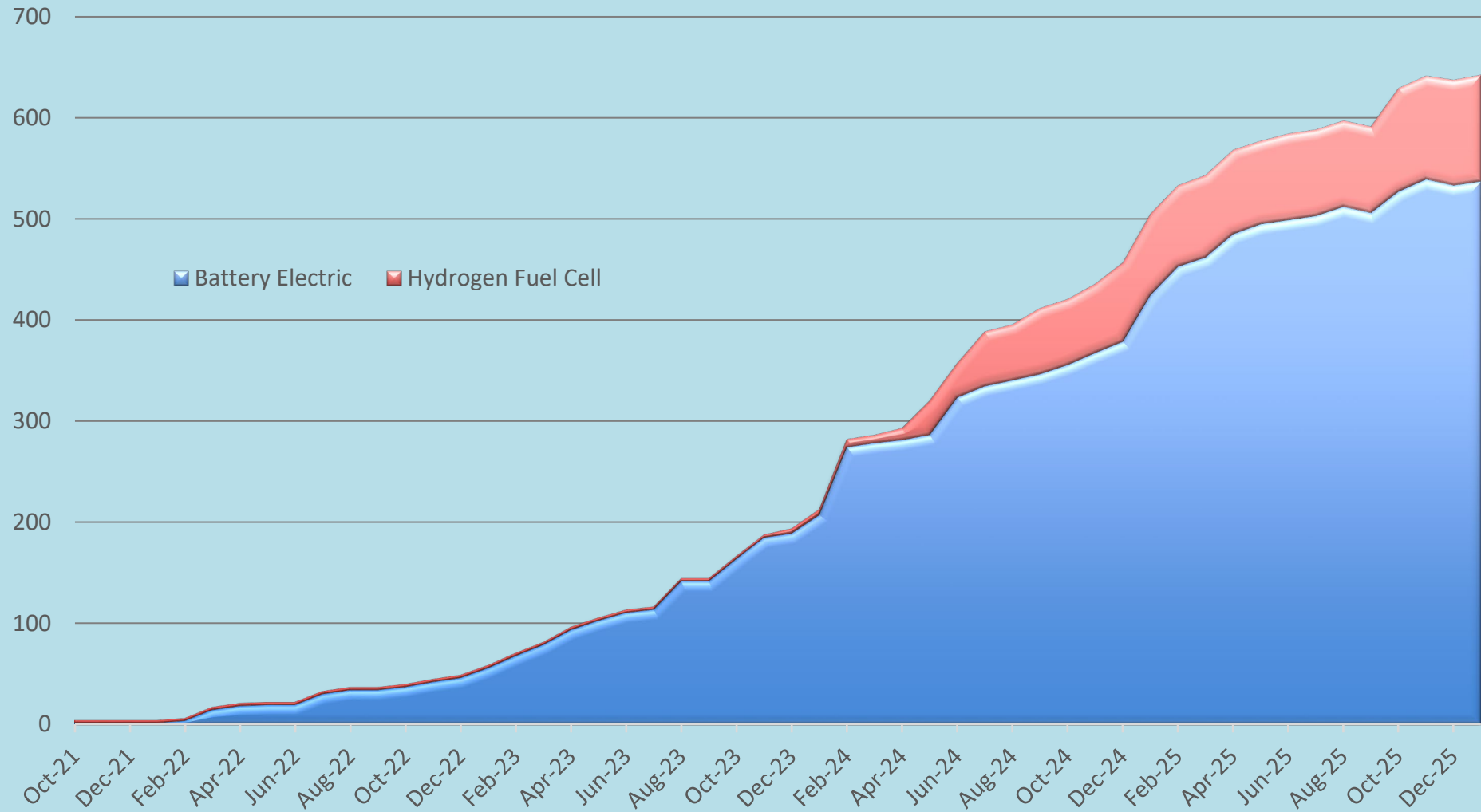
Joint Ports' 2025 Accomplishments



*Compared to 2017 Levels
**GHG emissions (CO₂e) are reported in metric tons per year; all other pollutants are shown in tons per year.



Trucks





Trucks

- Collected \$84.2 million in Clean Truck Fund Rate dollars and allocated \$28.5 million toward the purchase of zero-emission (ZE) trucks and infrastructure projects/programs
 - POLB Hydrogen Fuel Grant Program (\$10 million) to subsidize the high cost of hydrogen fuel for drayage
- Continued managing ongoing programs
 - Port Plus-up Program
 - Mobile Source Air Pollution Reduction Committee infrastructure projects
 - Zeem Solutions Charging Depot (completed construction)
 - Lease agreement approved for Terminal Access Center Charging Depot
- Completed 2024 Drayage Truck Feasibility Assessment





Cargo Handling Equipment

- Progressed technology advancement through completion of demonstrations
 - POLB START Grant: yard tractor and drayage truck demonstrations
- Continued development of zero-emission (ZE) infrastructure transition plans for terminal equipment across both Ports





Cargo Handling Equipment

- Advanced infrastructure design to support 60 ZE yard tractors, 1 ZE reach stacker, 2 ZE top handlers, and 27 ZE heavy forklifts at LBCT (MARAD \$30.1 million, CALSTA \$28.6 million)
- Approved TAP award for ITS hands free charging for yard tractors demonstration (\$1.4 million)





Cargo Handling Equipment



- POLB issued RFP and awarded incentives for 56 pieces of terminal equipment and 50 charging stations (CALSTA \$28.7 million)
- Continued demonstrating 10 ZE yard tractors with 12 inductive charging pads and continued permitting process to utilize battery storage at West Basin Container Terminal (CEC \$7.8 Million)
- Continued work on the 2024 Update to the CHE Feasibility Assessment



Port of Los Angeles – SEA CHANGE Project Details



EQUIPMENT

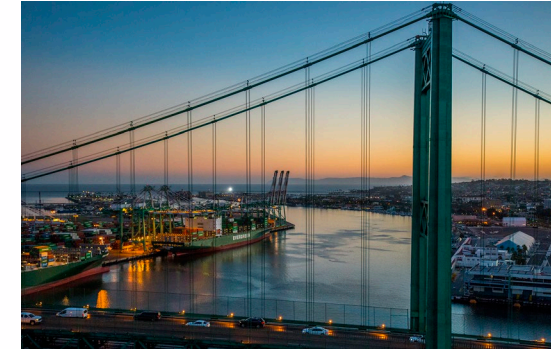
- ~400 battery electric cargo handling equipment (CHE)
- ~250 heavy-duty drayage trucks



INFRASTRUCTURE

Upgrade and expand ZE charging infrastructure

- ~ 300 charging ports for CHE
- 4 power management systems & solar arrays
- Additional shore power for auto terminal



COMMUNITY BENEFITS

\$50 million community benefits program

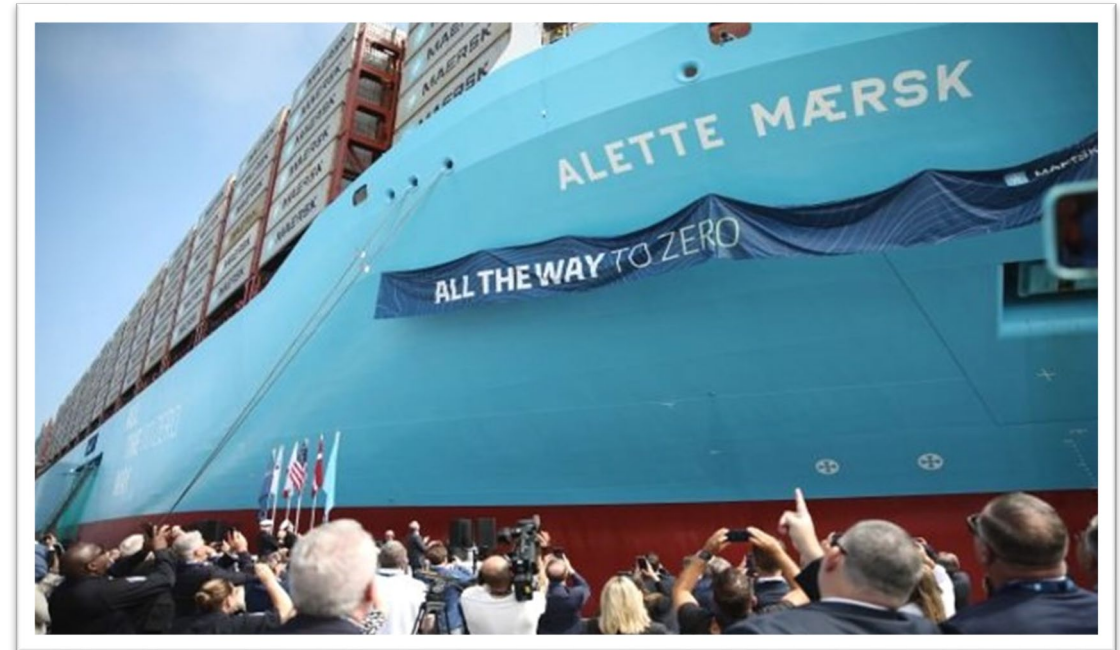
- Workforce development
- Community-directed grant program

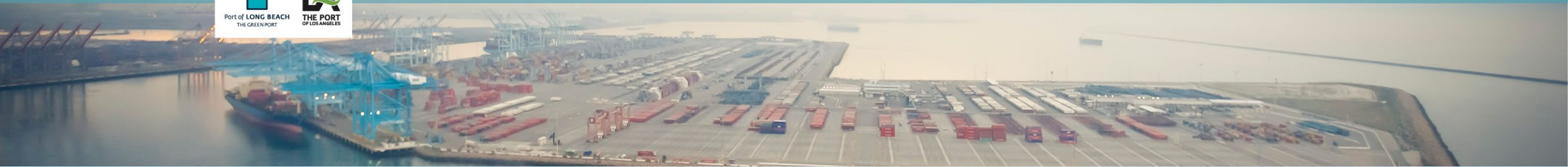


Ocean Going Vessels

San Pedro Bay Clean Fuels Feasibility Studies

- Based on Clean Marine Fuel White Paper recommendations, the Ports facilitated further studies of alternative clean marine fuels' viabilities
- Facilitated Infrastructure and Bunkering Feasibility assessment for alternative fuels
- Coordination began for methanol pilot project
- Continued the AERAS capture and control technology demonstration





Harbor Craft

- POLB awarded incentives for cleaner harbor craft engine upgrades and zero-emission capable vessels (\$28.7 million)
- Approved TAP award for Arc Boats zero-emission tugboat retrofit project
- POLA continued implementation of the LA MER project
- Approved TAP award to support Harbor Breeze vessel advancements and infrastructure





Locomotives

- Advanced design and construction on the \$1.5bn Pier B On-Dock Rail Support Facility to increase efficiency and shift cargo from trucks to trains
- Continued implementation of ZE Switcher Project with Union Pacific (DERA \$2 million)



An aerial photograph of a coastal city, likely San Francisco, showing a dense urban grid on the left, a large marina with many boats in the center, and industrial areas with large piers extending into the water on the right. The water is a deep blue, and the sky is clear. A semi-transparent blue banner is overlaid across the middle of the image.

2026 Priorities

Truck Priorities

- Develop strategies to accelerate the deployment of ZE trucks in the Ports' fleet
 - Release new Port Voucher Program drayage truck incentives
 - Develop and initiate the ZE Truck Utilization Incentive Program
 - Continue infrastructure development projects and explore new infrastructure investments
 - Explore innovative concepts to reward early adopters
- Begin development of the Phase 1 Drayage Truck Infrastructure Plan under the Cooperative Agreement

CHE Priorities

- Begin development of the Phase 1 Container Terminal Infrastructure Plan under the Cooperative Agreement
- Accelerate ZE CHE technology development through demonstrations
- Continue progress on grant-funded ZE CHE deployments
- Complete 2024 CHE Feasibility Assessment
- POLB to release second phase of financial incentives for ZE CHE

OGV Priorities

- Update Green Ship Incentive Program (ESI 2.0)
- Support tanker and RoRo terminals in installing shore power
- Progress development and implementation of Green Shipping Corridors
 - Clean marine fuel efforts
- Continue to implement OGV demonstration projects
- POLB to implement ship-to-shore power projects under CalSTA
- Accelerate deployment of at-berth emission control systems

The background image shows a harbor scene. In the upper right, a large yellow and red cargo ship is visible. In the center, a large blue cargo ship is docked or moving slowly. In the lower center, a white tugboat with a dark hull is moving through the water, leaving a white wake. The sky is a clear, light blue.

Harbor Craft

- Advance innovative harbor craft technologies through demonstrations
- Begin development of harbor craft technology and complex-wide zero-emission infrastructure assessment
- POLB to provide second phase of financial incentives for cleaner harbor craft

Locomotives

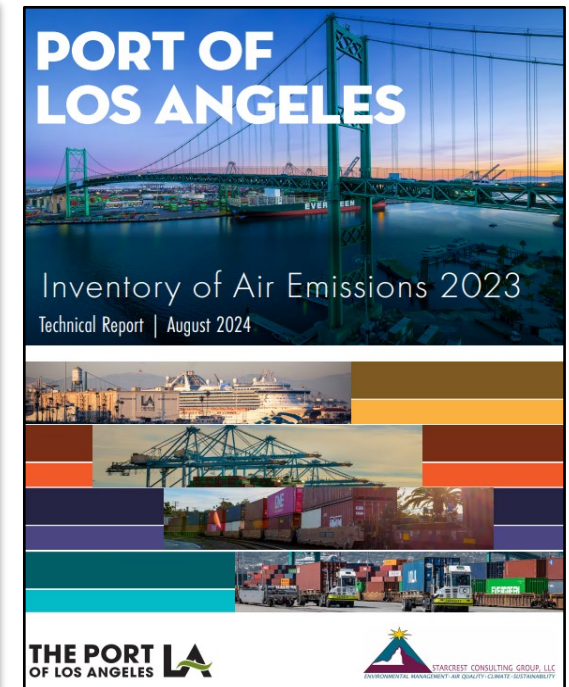
- POLB to provide financial incentive for zero emission locomotives
- POLA to finalize EPA DERA grant to implement zero emission switcher locomotive project with Union Pacific





Emission Inventories and Air Monitoring

- 2025 Emissions Inventories
 - [Air - Port of Long Beach \(polb.com\)](https://polb.com)
 - [Air Emissions Inventory | Air Quality | Port of Los Angeles](#)
- 2025 Air Monitoring Reports
 - [Clean Air Action Plan Reports - San Pedro Bay Ports Clean Air Action Plan](#)





Grants

- Continue monitoring local, state, and federal funding opportunities to support the CAAP
- Noteworthy programs for consideration:
 - EPA Diesel Emission Reduction Act (DERA)
 - MARAD Port Infrastructure Development Program (PIDP)
 - South Coast AQMD
 - Carl Moyer Program
 - Prop 1B
 - CEC Clean Transportation Program
 - Port ZEV Infrastructure Solicitation
 - Depot Charging and Hydrogen Refueling Infrastructure Solicitation

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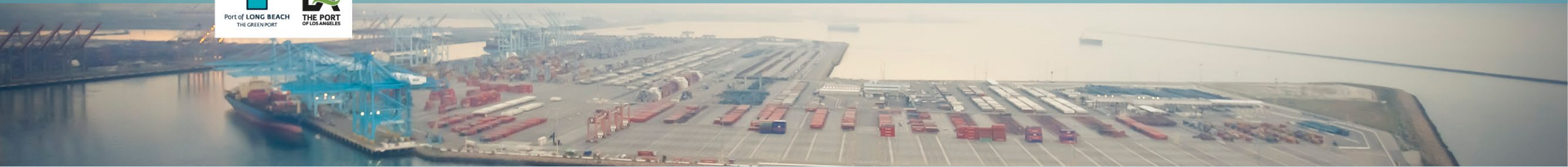


SAN PEDRO BAY PORTS **CLEAN AIR ACTION PLAN**

Harbor Craft Strategies

April 14, 2026

Laura Hunter
Port of Los Angeles



Harbor Craft Programs

- ✓ Technology Advancement Program Projects
- ✓ Programs and Incentives to Deploy Cleaner Vessels
- ✓ Charging Infrastructure
- ✓ Supportive Studies



Technology Advancement Projects – In Progress

- Arc Boats Zero-Emission (ZE) Tugboat Demonstration
 - Retrofit diesel tug to battery-electric with associated infrastructure; deployment in Q4 2027
 - Outcomes: 1.75 tpy NOx; 0.05 tpy PM
- Harbor Breeze ZE-Capable Excursion Vessel (in conjunction with the CARB funded LA MER grant)
 - TAP funding is for the charging infrastructure and upgrades to the hybrid system
 - Vessel currently undergoing sea trials; deployment in spring 2026
 - Charging infrastructure anticipated mid-2026
 - Outcomes: 1.71 tons NOx; 0.07 tons PM



Technology Advancement Projects – *Under Review*

- Curtin Maritime Zero-Emissions Vessel Charging Station: charging barge to serve ZE vessels
 - Floating station to charge two electric vessels with minimal shore-side construction
 - Uses grid power and solar to support cleaner port operations
 - Concept approved; proposal pending review



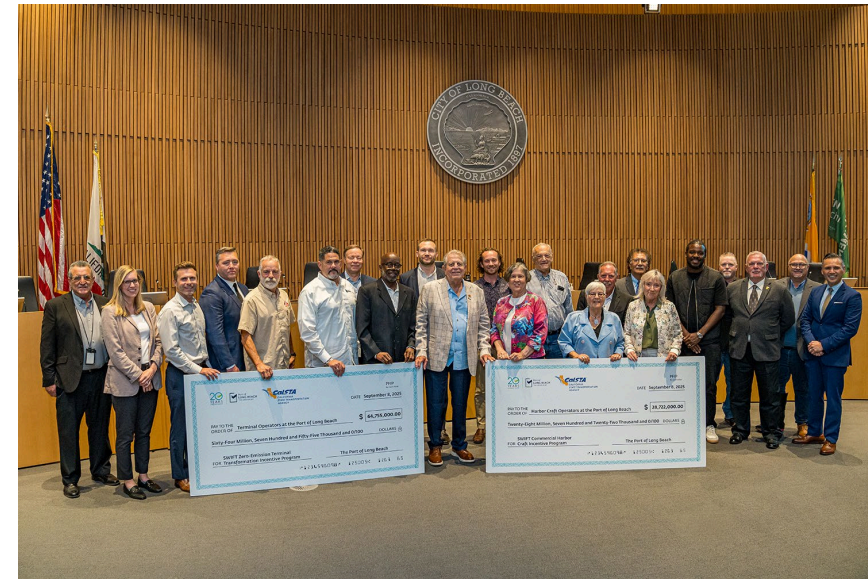
Curtin Maritime Charge Barge Rendering



Clean Harbor Craft Deployments

System-Wide Investment in Freight Transport (SWIFT) Harbor Craft Incentive Program (POLB)

- \$27,722,000 awarded to ten harbor craft companies in 2025
- 39 engines in 15 vessels (tugboats, workboats, ferries, excursion)*
- 4 zero-emission-capable vessels
- Deployment by end of 2027
- Outcomes: 93 tpy of NO_x, 1.5 tpy of PM



* Includes two vessels that received TAP or state funding



Clean Harbor Craft Deployments

NEW SWIFT Incentive Program (POLB)

- \$58 million for ZE locomotives, equipment, and cleaner harbor craft
- Solicitation is currently open (closes May 1, 2026)
- Deployment required by end of 2027



Artemis EF-12 Pilot Boat Rendering



Clean Harbor Craft Deployments

LA MER Harbor Craft Grant from CARB (POLA)

- \$62.4 million for two ZE-capable excursion vessels and one Tier 4+ ferry
 - The first ZE-capable excursion vessel began sea trials in January 2026
 - Vessel deployment expected in spring 2026
 - Tier 4+ ferry deployment expected Q3 2027
- Outcomes: Anticipated Project Emission Reductions

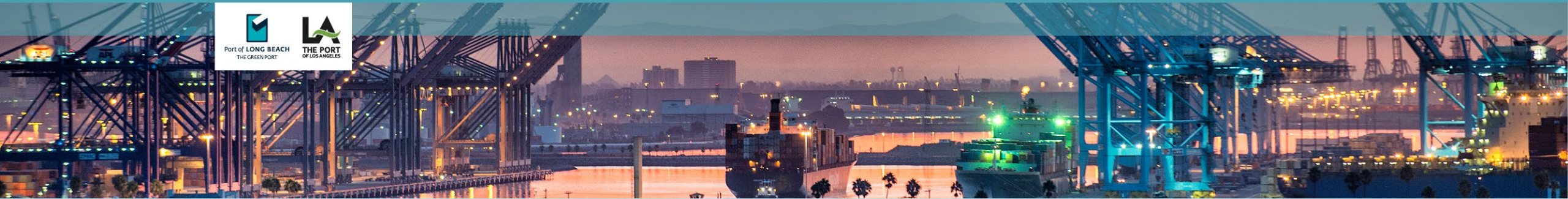
Project Period	NO _x Reductions (short tons)	ROG Reductions (short tons)	PM/DPM/PM10 Reductions (short tons)	PM _{2.5} Reductions (short tons)	MT CO _{2e}
One Year (Demonstration Period)	62.749	5.804	2.421	2.3148	1,503
Two Years	125.498	11.608	4.842	4.6296	3,006
Ten Years	627.49	58.04	24.21	23.148	15,030



Harbor Breeze vessel beginning sea trials



Catalina Channel Express vessel rendering



Clean Harbor Craft Deployments



LA MER: The first Harbor Breeze vessel was completed in December 2025 and began sea trials in January 2026.





Clean Harbor Craft Deployments

Inglewood Basketball and Entertainment Center Marine Vessel Engine Replacement Mitigation Program (POLA)

- 10 vessels in the engine repower program: ferry, commercial fishing, sport fishing, and an educational vessel
- \$5.1 Million awarded
- Outcomes: targeted emission reductions of 60 tons of NOx and 1.5 tons of PM 2.5 from the basin and surrounding region annually during the first three years (2023 - 2025)



Los Angeles Maritime Institute (LAMI) educational vessel repower



Port-Owned Harbor Craft

Port-Owned Harbor Craft Zero-Emission Transition Plan (POLB)

- Goal of 100% ZE harbor craft by 2035
- Two fireboats are diesel powered and are not feasible to replace at this time
- Outcomes: 2.9 tpy NOx and 0.04 tpy PM





Port-Owned Harbor Craft

Port-Owned Harbor Craft Purchasing Plan (POLA)

- POLA implemented a Purchasing Plan for ZE or cleanest-available feasible technology
- POLA's fleet includes: C&M, Port Police, and Port Pilots
 - Port Police and Port Pilot vessels are unable to transition to ZE at this time, based on current technology and duty-cycle
- C&M is actively exploring avenues to turn over their fleet to ZE



Charging Infrastructure

- One 400 kW DC charging station with ~1MW microgrid at POLA for Harbor Breeze and potentially other harbor craft – mid-2026
 - Ability to scale up for public/private charging with confirmed proof of concept
- One 480V, three-phase AC shoreside charging infrastructure up to 166 kW for Arc Boats at POLB – end of 2027



Supportive Studies

- Next Generation Harbor Craft Technology Evaluation (POLA/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
- Each Port will Conduct a ZE Vessel Feasibility Assessment for their Port-Owned Fleet
 - Technical analysis of the potential to replace/repower current fleet vessels with zero emission alternatives. Study into potential charging/fueling needs, vessel specifications, costs, etc.
 - POLB began this effort in Q1 2026 and the initial results are promising for both technology availability and infrastructure viability

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