



SAN PEDRO BAY PORTS
CLEAN AIR ACTION PLAN

**IMPLEMENTATION STAKEHOLDER
ADVISORY MEETING**
March 29, 2018

An aerial photograph of a coastal city and harbor. The image shows a dense urban area on the left, a large harbor with numerous piers and ships in the center, and a large body of water on the right. In the background, there are mountains under a blue sky with some clouds. A semi-transparent teal rectangle is overlaid in the center of the image, containing white text.

Role of the CAAP Implementation Stakeholder Advisory Meeting




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NEAR-TERM PRIORITIES FOR CAAP IMPLEMENTATION

Heather Tomley
Director of Environmental Planning
Port of Long Beach

Near-Term Truck Priorities

- 
- Tariff Changes for MY 2014 New Registration Requirements and Fee Waiver
 - Feasibility Assessment
 - Truck Rate-Setting Study
 - Begin Establishing Rate Collection Mechanism
 - Begin Developing Truck Reservation System

Near-Term CHE Priorities

- Feasibility Assessment
- Zero Emission Infrastructure Planning





Additional Near-Term Priorities

- Launch CAAP Implementation Stakeholder Advisory Meetings
- Baseline Greenhouse Gas Emissions Inventory
- Funding Advocacy & Grant Strategy

The background of the slide is a wide-angle photograph of a busy port terminal. In the foreground, there are stacks of colorful shipping containers (blue, red, yellow) 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 hills and a cityscape under a clear sky.

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CLEAN TRUCK PROGRAM STATUS

Chris Cannon
Director of Environmental Management
Port of Los Angeles



2017 CAAP Update CTP milestones

- 2018 – Pre-2014 Trucks can no longer register in PDTR
- 2018 – Zero/Near-Zero Emission Feasibility Study completed
 - Study to be updated every 3 years at minimum
- 2019 – Clean Truck Rate Study completed
- 2019 – CARB promulgates Near-Zero Manufacturing Standard
- 2019 – Pilot Heavy-Duty Inspection Program
- 2020 – Clean Truck Rate goes into effect on non-NZE/ZE Trucks



2017 CAAP Update CTP milestones cont.

- 2023 – Only NZE/ZE trucks can register in PDTR
 - Pre-2010 drayage trucks banned by State Truck and Bus Rule
- 2023-2035 – Clean Truck Rate continues to be evaluated and adjusted as needed
 - Informed by Zero/Near-Zero Emission Feasibility Study and updates
 - Informed by fleet composition and transition to ZE by 2035
- 2035 only ZE trucks can register in PDTR



CTP Implementation

- 2018 Tariff Modification Activities
 - Only allow 2014 or newer trucks to register in the PDTR
 - Existing pre-2014 trucks grandfathered, provided no change in ownership
 - PDTR registration fee exemption for trucks participating in Port demonstration programs
 - PDTR registration fee exemption for all NZE/ZE trucks requires regulatory standard/definition



CTP Implementation

- Clean Truck Rate Study
 - Goals:
 - Determine optimal rate(s)
 - Project anticipated fleet composition over time
 - Evaluate anticipated effect on trucking companies/drivers, drayage service availability, cargo diversion
 - Evaluate how public funding or private financing mechanisms could mitigate impacts



CTP Implementation

- Clean Truck Rate Study cont.
 - Draft scope of work has been developed
 - Selection of economic expertise in Spring 2018
 - Study expected to begin Summer 2018
 - Estimated completion 2nd Quarter 2019



CTP Implementation

- Near-zero and zero emission early adopter activities
 - Joint incentive program with AQMD under development to encourage early deployment of NZE trucks
 - 50 to 100 ZE Truck Pilot Deployment
 - Grant programs and stakeholder partners being considered



Port Truck Reservation System

- Goals:
 - Reduce turn times and improve efficiencies
 - Establish uniform ports-wide system for securing appointments for all truck transactions at the terminals, including imports, empties, exports and chassis
 - Integrate with existing terminal operating systems
 - Improve data availability to allow for advanced planning

Pilot Program

GE Information Portal

A first-of-its-kind port information portal to demonstrate the benefits of digitizing maritime operational data and making it available in real time to cargo owners, shipping lines and supply chain operators on a permissions-based, highly-secure platform that provides cargo owners and their agents complete control over who can see their data.



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FEASIBILITY ASSESSMENTS: SCOPE, PROCESS, TIMELINE


Tim DeMoss
Air Quality Supervisor
Port of Los Angeles

Feasibility Assessments

- Trucks
- Terminal Equipment



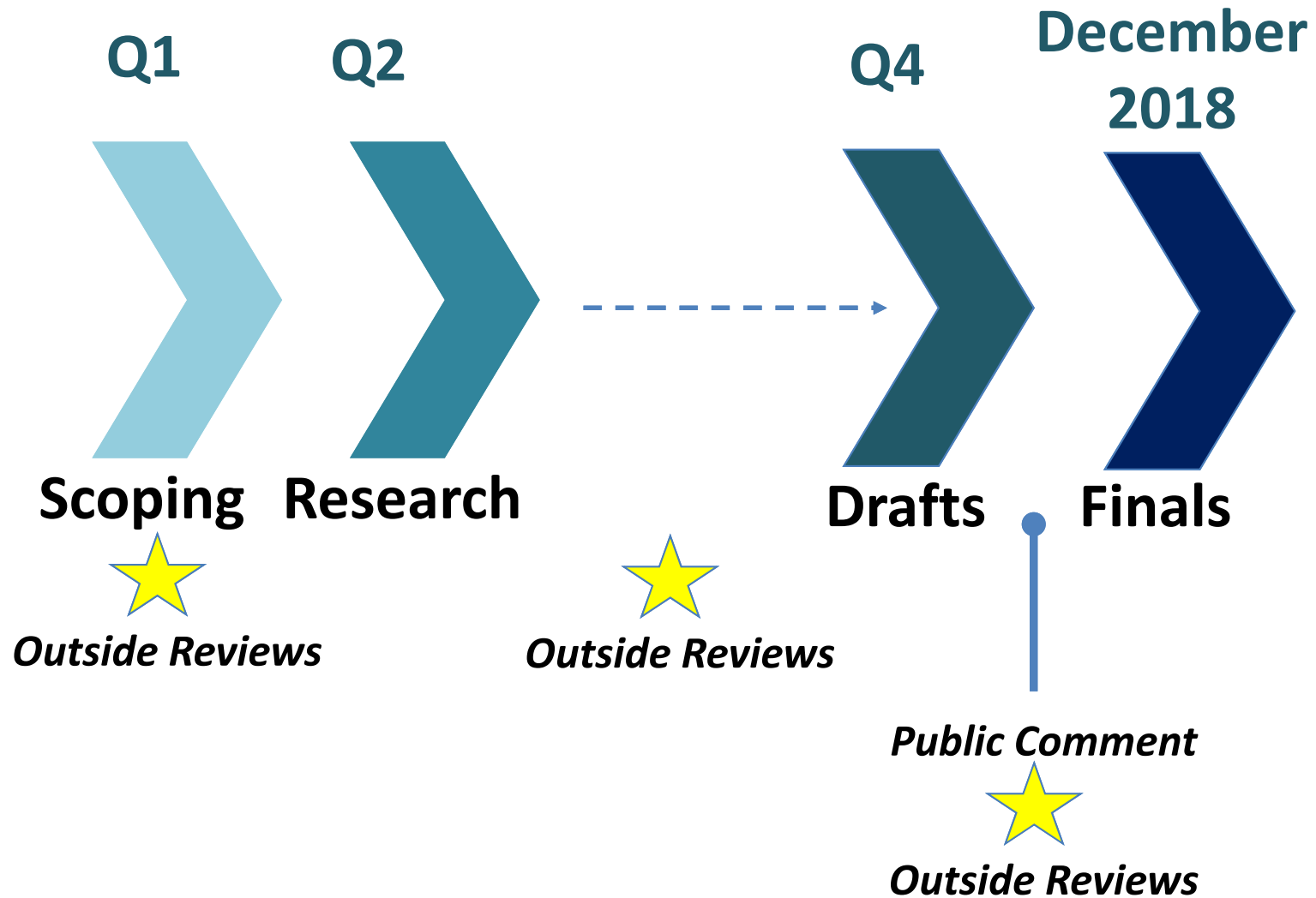
Purpose

- 
- Assess feasibility of near-zero and zero-emissions
 - Evaluate progress toward CAAP goals
 - Identify actions to overcome challenges
 - Determine if timelines need to be adjusted

Process

- Expert consultant to develop assessments
 - Tetra Tech
- Public review and stakeholder outreach
- Third-party outside reviews
 - Starcrest Consulting, LLC
 - National Renewable Energy Lab
 - Technology Advancement Program Advisory Committee

Timeline



Scope

14



- Technical Viability
- Commercial Availability
- Operational Feasibility
- Infrastructure Availability
- Key Economic Considerations

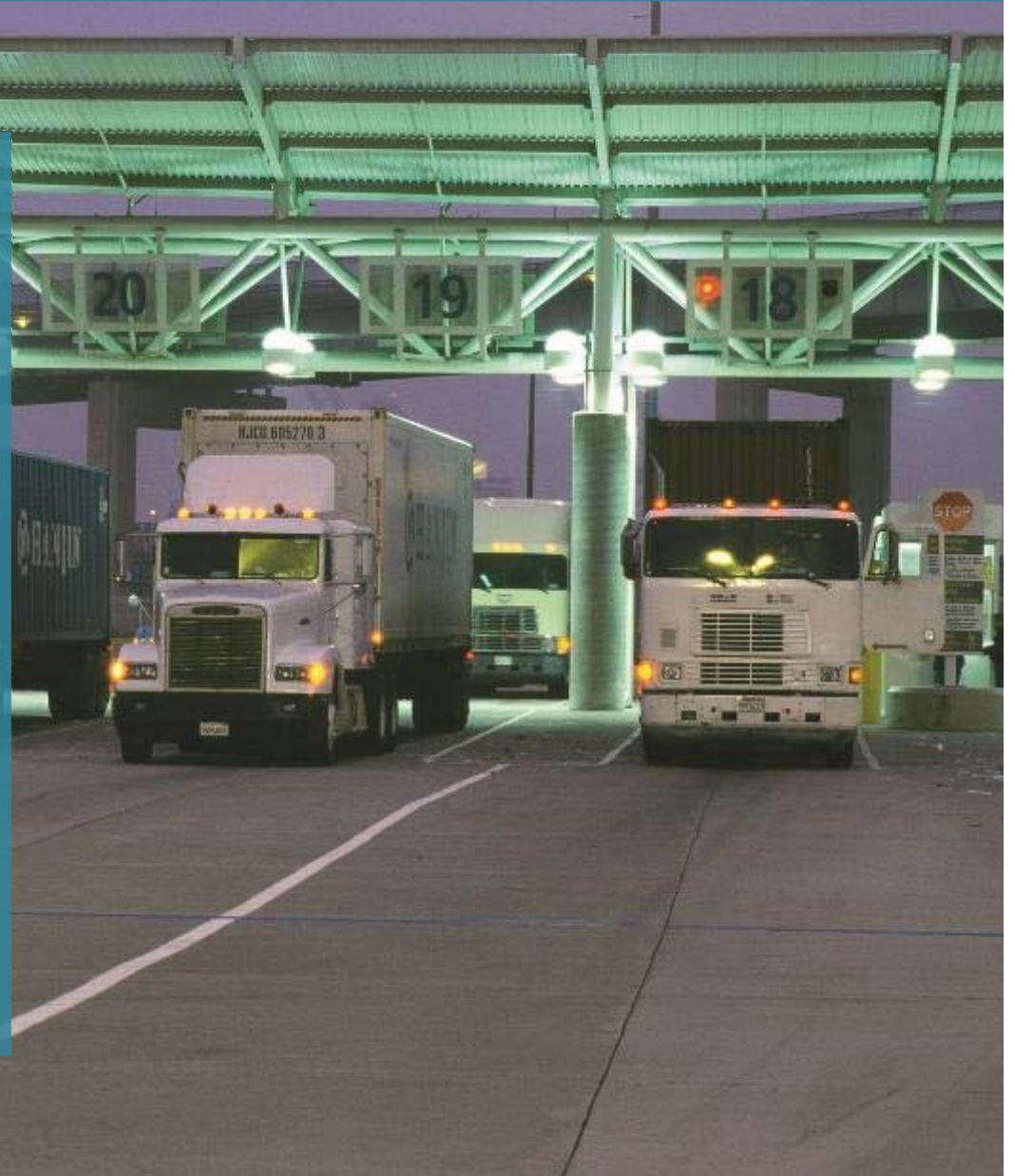
Technical Viability

- Performance Meets or Exceeds In-Use Equipment
- State Certified



Commercial Availability

- Major Manufacturer
- Production Timeframes
- Manufacturer Warranty, Long-Term Maintenance and Parts Support



Operational Feasibility

- Minimum Performance
- Required Duty Cycles
- Similar Maintenance
- Operator Feedback
- Long-Term Market Support



Infrastructure Availability

- Charging and/or fueling infrastructure is available at ports and regionally



Economic Considerations



- Direct Costs
- Fueling Costs
- Incentive Funding
- Workforce
- Impacts
- Cost Effectiveness
- Economic Impacts

An aerial photograph of a coastal city, likely Seattle, showing a large harbor with a marina filled with boats, industrial areas, and residential neighborhoods. The city extends to the mountains in the background under a blue sky with light clouds. A semi-transparent teal box is overlaid on the center of the image, containing white text.

Send comments to:
caap@cleanairactionplan.org



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UPDATE ON TECHNOLOGY DEMONSTRATIONS

Rose Siengsubcharti
Environmental Specialist
Port of Long Beach

Teresa Pisano
Environmental Specialist
Port of Los Angeles

Technology Development

An aerial night photograph of a port city, likely Los Angeles, showing a large shipyard with several large vessels under construction or repair. The city lights are visible in the background, and the harbor is illuminated by the city lights and the shipyard's own lights. The image is used as a background for the slide.

- Demonstrations of Zero Emission On-Road Trucks and Development of 50-100 Truck Pilot Deployment
- Evaluation of Vessel Energy Efficiency Technologies and Demonstration of Vessel At-Berth Technologies
- Demonstration of Harbor Craft Technology
- Near-Zero Switcher Locomotive Demonstration
- Demonstrations of Zero Emission Terminal Equipment

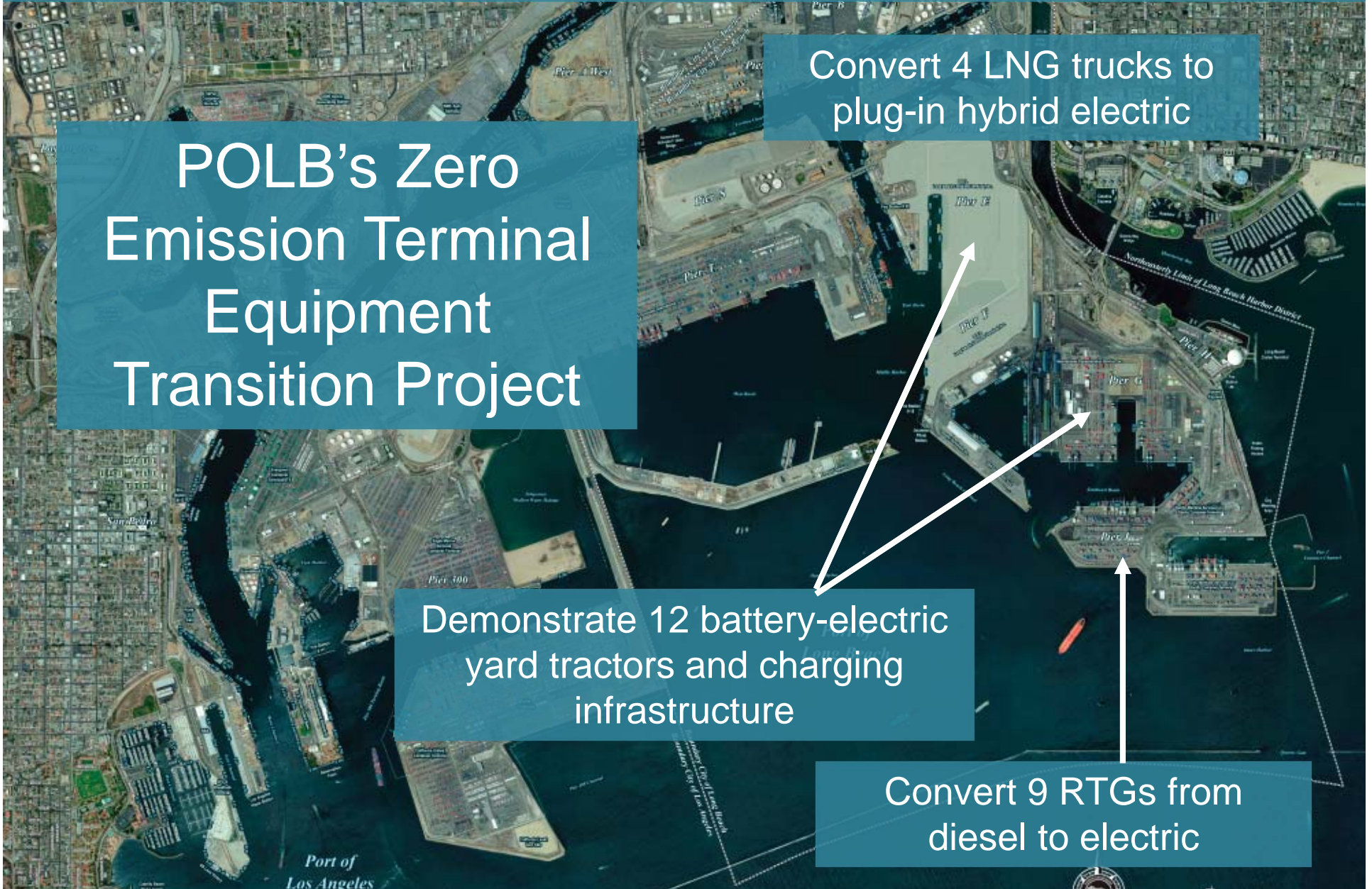
Technology Development

POLB's Zero Emission Terminal Equipment Transition Project

Convert 4 LNG trucks to plug-in hybrid electric

Demonstrate 12 battery-electric yard tractors and charging infrastructure

Convert 9 RTGs from diesel to electric



Technology Development

Install solar panels, battery storage, and microgrid controls to allow JCCC to continue operations during an outage

POLB Microgrid –
Resilience for
Critical Facilities



Technology Development



POLA's Green
Omni Terminal
Demonstration Project

Demonstrate 4 battery-electric yard tractors, 2 battery-electric on-road trucks, 2 electric forklifts, 1 electric top handler, solar rooftop array with battery storage and microgrid controls, and land-based vessel emission capture system

Technology Development



POLA's Everport
Advanced Cargo
Handling Equipment
Demonstration
Projects

Demonstrate 20 low-NOx yard tractors, 8 battery-electric yard tractors, 2 battery-electric top picks, and charging infrastructure



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CAAP WEB SITE OVERVIEW

Renee Moilanen
Manager of Air Quality Practices
Port of Long Beach

2017 CAAP Update

An aerial photograph of a coastal city, likely San Francisco, showing a large harbor with a marina filled with boats, a city grid, and a bay extending to the right. The image is used as a background for the slide.

- **Communication**
- **Transparency**
- **Easy Access**

2017 CAAP Update

www.cleanairactionplan.org

- News
- Plan and supporting documents
- Technology reports
- CAAP progress reports
- Details on strategies



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2017 CLEAN AIR ACTION PLAN UPDATE APPROVED BY HARBOR COMMISSIONS

LATEST CLEAN AIR ACTION PLAN NEWS

- [Clean Air Action Plan Advisory Meeting Set for March 29](#)
- [Proposals Sought for Ocean-Going Vessel At-Berth Exhaust Emissions Capture & Treatment Systems](#)
- [San Pedro Bay Ports Approve Bold New Clean Air Strategies](#)



The Clean Air Action Plan identifies strategies to reduce pollution from every source – ships, trucks, trains, cargo-handling equipment and harbor craft.

[VIEW STRATEGIES](#) >



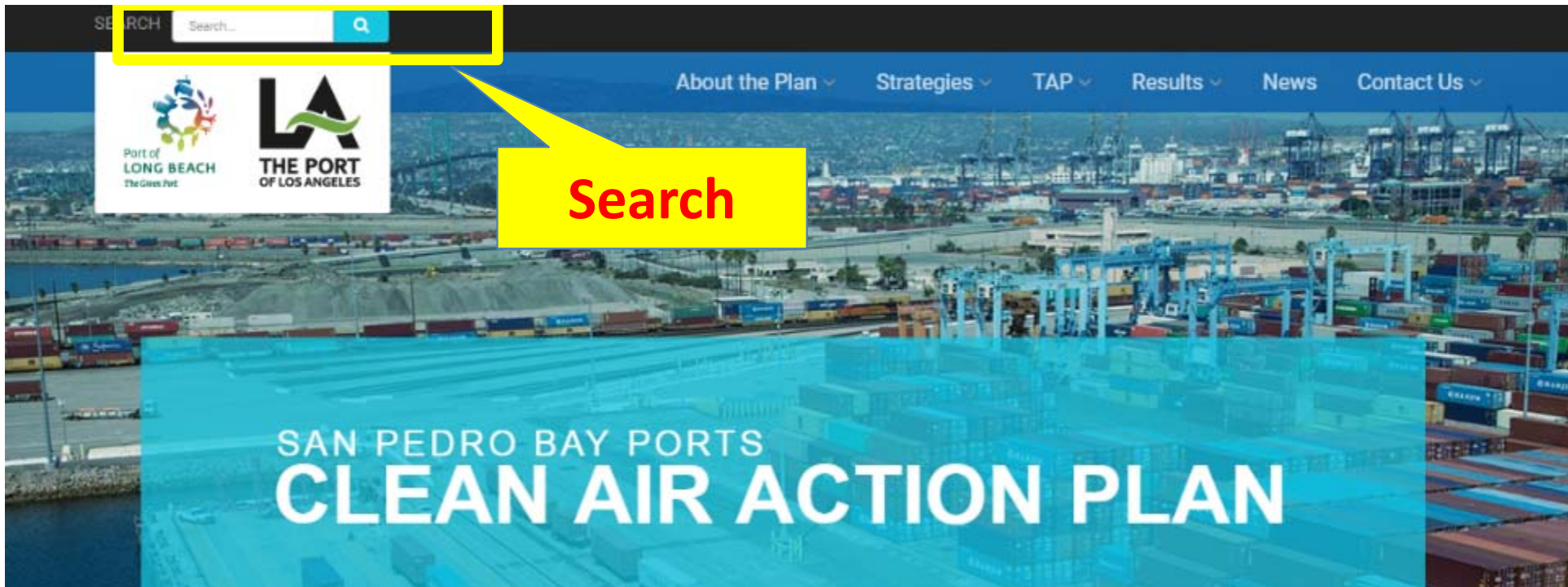
The Ports' Technology Advancement Program provides funding, guidance, and staff support to test promising clean air technologies.

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Learn more about the 2017 Clean Air Action Plan Update and follow our progress as we transform into the cleanest container port complex in the world.

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Clean Air Action Plan > 2017 Clean Air Action Plan Update

2017 CLEAN AIR ACTION PLAN UPDATE

The governing boards of the ports of Los Angeles and Long Beach have approved the 2017 Clean Air Action Plan Update, ushering in a new era of aggressive clean air strategies for moving cargo through the nation's busiest container port complex. The document provides high-level guidance for accelerating progress toward a zero-emission future while protecting and strengthening the ports' competitive position in the global economy.

2017 Clean Air Action Plan Documents

- [Final 2017 CAAP Update](#)
- [Response to Comments](#)
- [Supporting Docs](#)
 - [Preliminary Cost Estimates for Select CAAP Strategies](#)
 - [Economic and Workforce Considerations](#)
 - [Potential Emission Reductions](#)
 - [Feasibility Assessment Framework](#)
 - [Vessel Forecast \(Draft\)](#)
- [2017 Clean Air Action Plan Fact Sheet](#)
- [2017 Final Clean Air Action Plan Presentation](#)
- [Webcast of joint Port of Los Angeles/Port of Long Beach Board Meeting on the CAAP update](#)

**Progress
Reports to be
Added**



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COMPLETED PROJECTS

Here's what we have completed: A final report summarizes the technology's emission reductions and performance during the demonstration, and may be accessed below.







OCEAN-GOING VESSELS

-  [Evaluation of the Emission Reduction Performance of a Hamworthy/Krystallon Exhaust Gas Cleaning Scrubber](#)
-  [MAN Slide Valve Low-Load Emissions Test](#)

ON-ROAD TRUCKS

-  [Compressed Natural Gas \(CNG\) Port Drayage Truck Demonstration Program Final Report July 2010](#)
-  [Interim Electric Drayage Demonstration Report Update – June 2016](#)
-  [TIAX Characterization of Drayage Truck Duty Cycles at the Port of Long Beach and Port of Los Angeles \(March 2011\)](#)
-  [TIAX Development of a Drayage Truck Chassis Dynamometer Test Cycle at the Port of Long Beach and Port of Los Angeles \(September 2011\)](#)
-  [TIAX Technology Status Report Zero Emission Drayage Trucks \(June 2011\)](#)
-  [US Hybrid On-Board Charger for Zero Emission Cargo Transport Demonstration – December 2015](#)
-  [Yard Tractor Test Protocol Final Draft](#)

CARGO-HANDLING EQUIPMENT

-  [Alternative Petroleum Technologies Emulsified Biodiesel Fuel Demonstration Final Report \(August 2011\)](#)
-  [CAPACITY Plug-in Hybrid Terminal Tractor \(PHETT\) Demonstration – POLA Final Report](#)
-  [CAPACITY Plug-in Hybrid Terminal Tractor \(PHETT\) Demonstration – POLB Final Report](#)
-  [Hybrid Yard Hostler Demonstration and Commercialization Project Revised Final Report \(August 2012\)](#)
-  [LBCT EcoCrane Final Report \(January 2012\)](#)
-  [Rypos Verification Testing for RYPOS ActiveDPF/C3+ Summary Report \(May 2015\)](#)

Technology Advancement Program

- [> Submit a Proposal](#)
- [> Current Projects](#)
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Recent News

Clean Air Action Plan Advisory Meeting Set for March 29

Posted on 1st March, 2018

Proposals Sought for Ocean-Going Vessel At-Berth Exhaust Emissions Capture & Treatment Systems

Posted on 5th December, 2017

San Pedro Bay Ports Approve Bold New Clean Air Strategies

Posted on 2nd November, 2017



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THANK YOU FOR PARTICIPATING

Upcoming Meetings:

June 2018

September 2018

December 2018