



SAN PEDRO BAY PORTS CLEAN AIR ACTION PLAN

Status Update on Current Technology
Demonstrations
June 24, 2020

Questions or comments? Chat us or
submit via caap@cleanairactionplan.org

Rose Szoke, Port of Long Beach
Jacob Goldberg, Port of Los Angeles



Technology Demonstration Updates at the Ports

- Update on the Ports' Technology Advancement Program, or TAP
- Port of Long Beach Grant-Funded Technology Demonstrations
- Port of Los Angeles Grant-Funded Technology Demonstrations
- COVID-19 Impacts



Ports' Technology Advancement Program Update

- Updated TAP Program Guidelines is available online.
- Includes the new Request for Information and Concept Paper process.
- This is how the Ports will accept and review technology advancement proposals moving forward.

San Pedro Bay Ports
Technology Advancement Program

Program Guidelines





Updated: December 2019



Ports' Technology Advancement Program Update

- TAP Request for Information (RFI) is available online.
- Concept papers (along with the RFI form) may be submitted at any time online.
- Project concepts that conform to the TAP Program Guidelines will be considered for the next step, which is an invitation to submit a full proposal.

Request for Information
San Pedro Bay Ports Technology Advancement Program
CONCEPT PAPER

Instructions: Read the "San Pedro Bay Ports Technology Advancement Program Guidelines" in its entirety. These guidelines contain information about applicant eligibility, project eligibility, match funding requirements, and the evaluation process. **Concepts that do not conform to the guidelines will be rejected**, and proposers will be unable to resubmit this same concept for a full calendar year. Fill in all fields in the form below; if you cannot answer a question, write "N/A." **Note:** Proposers should be aware that documents submitted to the Ports are considered public records.

Company Information		
Company Name:		Year Established:
Address:		
City:	State:	ZIP Code:
Primary Point of Contact:	Title/Position:	
Phone Number:	E-mail:	
Technical/Engineering Contact:	Title/Position:	
Phone Number:	E-mail:	
Technology Description (300 characters max)		
Target Source Category		
<input type="checkbox"/> Heavy-Duty Trucks (Class 8)	<input type="checkbox"/> Locomotives	
<input type="checkbox"/> Cargo-handling Equipment	<input type="checkbox"/> Infrastructure	
<input type="checkbox"/> Ocean-Going Vessels	<input type="checkbox"/> Other, please describe:	
<input type="checkbox"/> Harbor Craft		
Funding		
Total Project Cost:	TAP Funding Requested:	
Total Secured Match Funding (\$):		
Match Funding Source:	Amount:	
Match Funding Source:	Amount:	
For additional match funding sources and amounts, please upload an attachment.		
Partners		
Do you have a demonstration partner?		
<input type="checkbox"/> Yes, describe:		
<input type="checkbox"/> No		
Have you approached other agencies to fund or support this technology demonstration?		
<input type="checkbox"/> Yes		
<input type="checkbox"/> No		
If yes, please describe:		



Ports' Technology Advancement Program Update

- 2019 TAP Annual Report is available online.
- The TAP Annual Reports highlight technology advancement and progress via TAP, grant-funded demonstrations as well as cost-sharing partnerships





Technology Advancement Program – New Project

AQMD/MAN Energy Solutions - OGV Water-in-Fuel Demonstration





Technology Advancement Program – Project Updates

Centerline (formerly Harley Marine) Electric Drive Tugboat Design

- Final design of the electric drive tugboat completed. The Ports will be closing out the project under the TAP.
- The next phase of the project will be managed under the Port of Long Beach's START project which is funded by ARB.

Nett Technologies BlueMAX™ NOVA 320e Harbor Craft Demonstration

- Installation of the BlueMAX™ system into Pacific Tugboat's *Bass* was completed as of June 2020.
- The next step is to activate the NOx component of the system which will happen when travel restrictions are lifted and the boat comes back for service.



Technology Advancement Program – Project Updates

Effenco Active Stop-Start™ Technology Demonstration

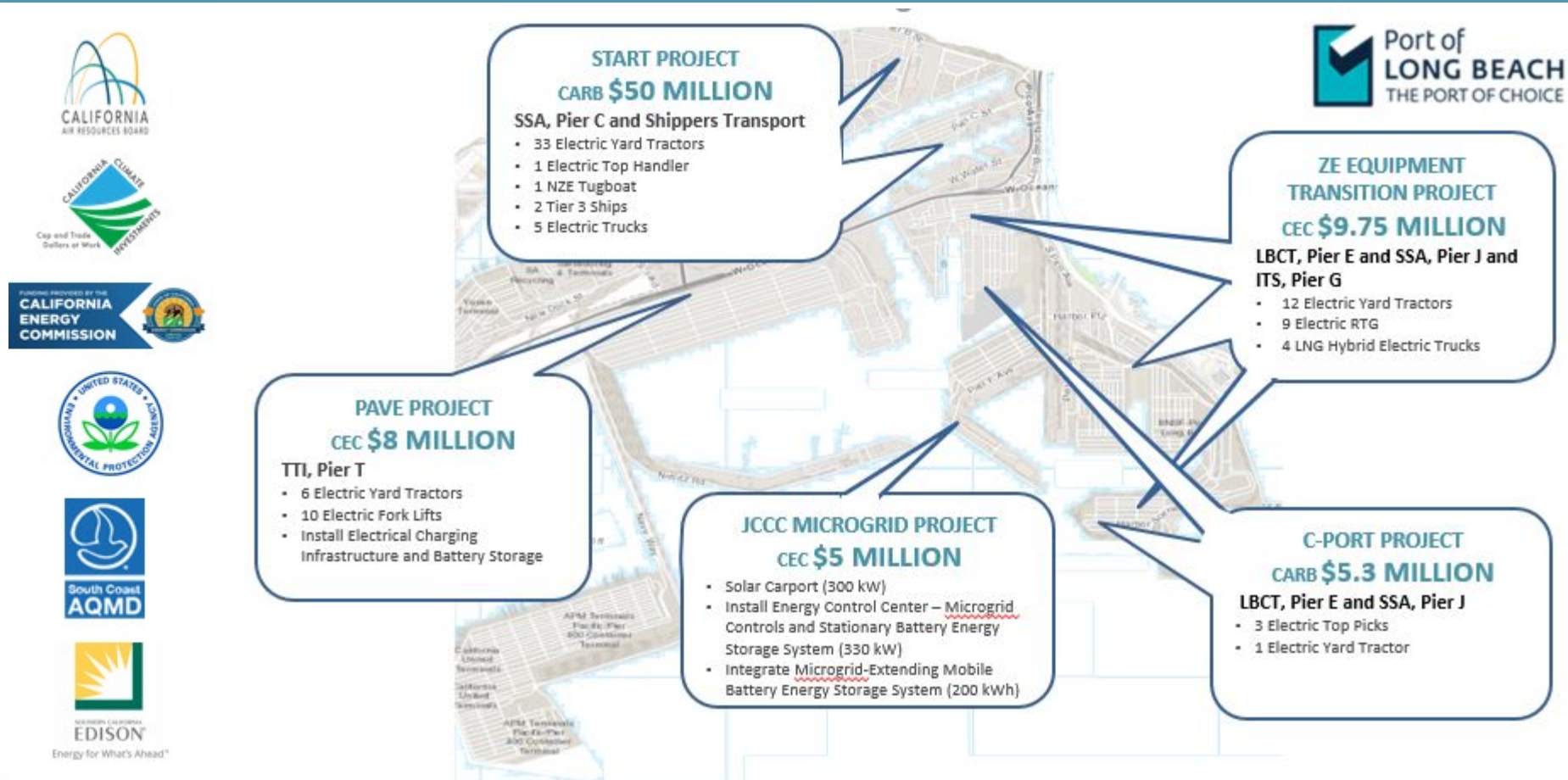
- Currently, project team is working with CARB on a path to verification.

AQMD/DOE Zero Emission Cargo Transport Demonstration II (ZECT II)

- Truck project lead by AQMD (under a DOE grant) to develop and demonstrate PHEV, BEV and fuel cell technology with five different manufacturers.
- Out of the seven project trucks, six have been deployed.
- Truck and technology manufacturer partners affected by COVID due to low freight volumes and stay-at-home restrictions.



POLB Grant-Funded Demonstrations - Overview





eRTG Crane Conversion in Progress at Pier J





Electric Yard Tractor and EVSE at ITS, Pier G





POLB Technology Demonstrations – COVID Impacts

- Technology manufacturers temporarily shutting down their businesses or facilities to comply with the Governor’s stay-at-home order.
- Shifting priorities and redeployment of personnel to COVID-related activities.
- Limited access to terminals for equipment testing and data collection.
- Paused demonstrations until freight volume increases and business operations return to normal.

POLA Grant-Funded Technology Demos - Update

Green Omni-Terminal Project

CEC \$10.3 Million

STATUS UPDATE:

- 4 electric yard tractors
- 2 electric Class 8 trucks
- ShoreKat land-based at-berth emissions control system
- Solar rooftop array with microgrid controls and battery storage
- 3 electric forklifts

Shore to Store Project

CARB \$41 Million

Various Partners off-Port Property

- 10 H₂-electric Class 8 trucks
- 2 heavy duty H₂ fueling stations
- 2 electric yard tractors with charging infrastructure (Port of Hueneme)
- 2 Zero-emission forklifts

AID Project

CEC \$7.8 Million

WBCT (China Shipping)

- 10 battery-electric yard tractors
- 12 Wireless charging stations
- Peak-shaving storage system

Advanced CHE Demonstrations

CEC \$10.3 Million

Everport

- 20 RNG yard tractors
- 5 electric yard tractors, standard chargers
- 3 electric yard tractors, advanced charging system
- 2 electric top handlers



Kenworth Toyota Zero Emissions Trucks





Shell Hydrogen Station – Ontario





Shell Hydrogen Station – Long Beach





Battery Electric Yard Tractors





Taylor Battery Electric Top Handler





Pasha Green Omni Terminal - ShoreKat System



Assembled ShoreKat System on Trailer

An aerial photograph of a large city harbor, likely Seattle, showing a dense urban area, a large marina with many boats, and a deep blue body of water. A semi-transparent teal rectangular box is overlaid in the center of the image, containing the text "Thank you!".

Thank you!



SAN PEDRO BAY PORTS CLEAN AIR ACTION PLAN

**Update On 2018 Drayage Truck
Feasibility Study
June 24, 2020**

**Questions or comments? Chat us or
submit via caap@cleanairactionplan.org**

**Jacqueline Moore
Port of Long Beach**



2018 Drayage Truck Feasibility Study

- Drayage Truck Assessment released Spring 2019
- Found that there are no zero- or near-zero technologies that are fully feasible today.

*2018 Feasibility Assessment for Drayage Trucks –
Section 14: Addendum A: Technology Readiness Level Status Update for NZE NG Engines*

SAN PEDRO BAY PORTS
CLEAN AIR ACTION PLAN

RE: DETERMINATION OF REVISED TECHNOLOGY READINESS LEVEL STATUS FOR NEAR-ZERO EMISSION NATURAL GAS ENGINES IN THE PORTS 2018 TECHNOLOGY FEASIBILITY ASSESSMENT FOR DRAYAGE TRUCKS

The San Pedro Bay Ports Clean Air Action Plan 2017 Update (CAAP) established the need to prepare





2018 Drayage Truck Feasibility Study

Cummins ISX12N Natural Gas engines





Future Truck Feasibility Updates

Assessed by using the following *minimum* criteria, which are required for all such requests:

1. The findings must identify specific elements of the Feasibility Assessment to be updated.
2. Supporting data specific to the requested elements must be provided.
3. The data must be corroborated by a credible third party with technical expertise and involvement with generation of the data.

Next Round of Assessments will evaluate commercial availability, technical viability, operational feasibility, infrastructure availability and economic workability beginning in 2021.



2018 Drayage Truck Feasibility Study

Final Truck Feasibility Assessment with addendum was posted on May 11, 2020

<https://cleanairactionplan.org/documents/final-drayage-truck-feasibility-assessment.pdf/>

For feasibility assessment update requests, email caap@cleanairactionplan.org

An aerial photograph of a large city harbor, likely Seattle, showing a dense urban area, a large marina filled with boats, and a deep blue body of water. A semi-transparent teal banner is overlaid across the center of the image, containing the text "Thank you" in white. The background shows a vast cityscape extending to the horizon under a blue sky with light clouds.

Thank you



SAN PEDRO BAY PORTS CLEAN AIR ACTION PLAN

Clean Truck Program Update
June 24, 2020

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Heather Tomley
Port of Long Beach



Statistics from the Port Drayage Truck Registry

- 17,966 trucks registered
- 3,293 MY 2014+ trucks registered since October 1, 2018
- 60% trucks meet 2010 EPA standards and perform 60% of the moves
- 40% trucks meet 2007 EPA standards
- 719 trucks are LNG-fueled and perform 4.6% of the moves
- 77 trucks use the 0.02g NOx/bhp-hr Cummins natural gas engines
- ~20 trucks are zero emissions

Clean Truck Fund Rate



Resolution adopted by both Boards in March 2020



Clean Truck Fund Rate of \$10 per loaded TEU moved by truck in and out of port terminals



Zero emission trucks exempt from the rate. Other exemptions under consideration.



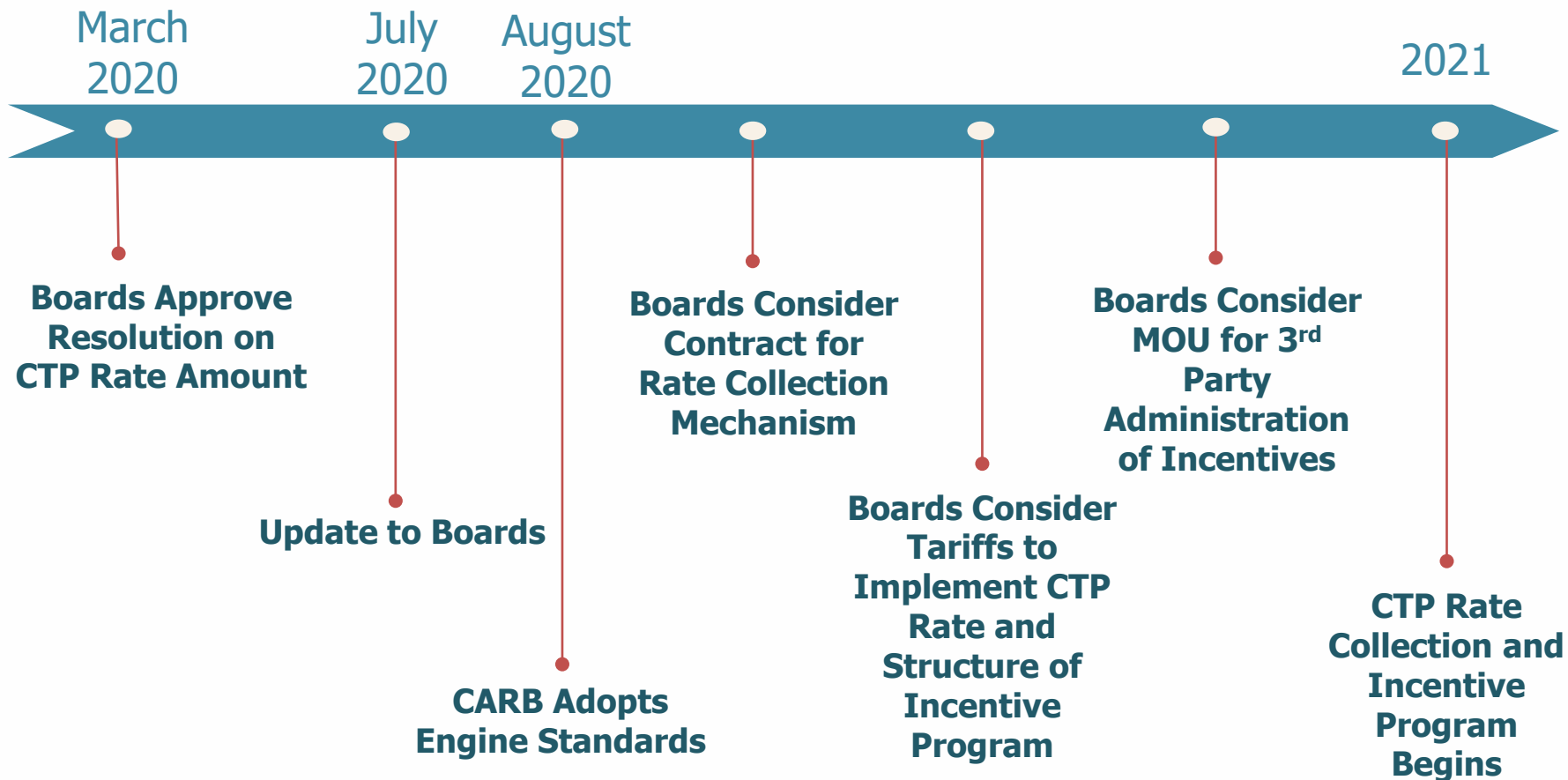
Develop comprehensive long-term strategy



Regular reports back to the Boards



Anticipated CTF Rate Implementation Timeline





CTF Rate Incentive Program

- Develop priorities and guidance for distributing funds to incentivize transition to near-zero and zero-emission trucks
- Weekly meetings between Ports, SCAQMD, and CARB staff to discuss potential incentive program structure and requirements
- Additional outreach, including focused meetings with key stakeholders will be scheduled in the coming months



Ports' CTP Long Term Strategy Plan

CAAP Goal of 100% Zero Emission Trucks by 2035

- Develop a comprehensive long term strategy plan for how the Ports can meet the CAAP goal
- Scope developed and initial work has begun
- Each Port will return to their individual Board in July with an update on approach and progress to date
- Draft document will be released for public review



Truck Manufacturer Summit

- High level meeting of agency leaders and OEMs
- Objectives
 1. Identify the actions of policymakers, regulators, equipment manufacturers, equipment operators, and other key stakeholders needed to build and transition to a market for zero emissions Heavy Duty Trucks
 2. Obtain commitments from stakeholders to take coordinated action
 3. Report out to stakeholders on the outcome of the Summit



50 to 100 Truck Demonstration Update

- Concept Paper for ZE Large-Scale Drayage Truck Pilot Program
- Upcoming CARB and CEC Grant Funding Opportunity
 - Available amount is \$40M
 - \$20M for trucks & \$20M for infrastructure
 - Likely awarding 2-3 projects
 - 50% Cost Share required
- The Ports are coordinating with AQMD and reaching out to drayage trucking fleet operators to develop a demonstration proposal



Next Steps

- Update to Ports Boards of Harbor Commissioners in July
- Truck Summit with agency leadership and OEMs
- Establish a rate collection mechanism
- Develop comprehensive long-term strategy plan
- Monitor economic impacts and cargo disruptions due to COVID-19
- Update the tariff to implement the CTF Rate
- Define the incentive program priorities and structure and establish 3rd party administration
- Collect the CTF and begin incentivizing the NZ and ZE Trucks

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