



# SAN PEDRO BAY PORTS CLEAN AIR ACTION PLAN

Status Update on Current Technology  
Demonstrations  
June 1, 2022

Questions or comments? Chat us or  
submit via [caap@cleanairactionplan.org](mailto:caap@cleanairactionplan.org)

**Morgan Caswell**, Port of Long Beach  
**Jacob Goldberg**, Port of Los Angeles



## Overview


- Update on the Ports' Technology Advancement Program, or TAP
  - 2021 Highlights
  - 2021 TAP Annual Report
- Update on the Ports' Grant-Funded Technology Demonstrations
- Supply Chain/COVID-19 Impacts



# Technology Advancement Program Highlights

## TAP Open Request for Information

- Total of ten project concepts received in 2021.
- Of the ten, the Ports requested proposals for seven projects. Three concepts were deemed ineligible.
- Of the seven proposals requested, three proposals have been submitted and are under review.
- Two project concepts were withdrawn, two are still pending submission.



**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 record.*

<b>Company Information</b>	
Company Name:	Year Established:
Address:	
City:	State: ZIP Code:
Primary Point of Contact:	Title/Position:
Phone Number:	Email:
Technical/Engineering Contact:	Title/Position:
Phone Number:	Email:
Technology Description (500 characters max)	
<b>Target Source Category</b>	
<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	
<b>Funding</b>	
Total Project Cost:	TAP Funding Requested:
Total Secured Match Funding (\$):	
Match Funding Source:	Amount:
Match Funding Source:	Amount:
<i>For additional match funding sources and amounts, please upload an attachment.</i>	
<b>Partners</b>	
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: _____	





# Technology Advancement Program Highlights

## TAP Projects Underway

### Vessels

- SCAQMD/MAN Water-in-Fuel Project
- PASHA LNG/Diesel Dual-Fuel Projects

### Harbor Craft

- Nett Technologies Retrofit Project

### Anti-Idling Technology

- Effenco Active Stop-Start™ Technology Project

### Trucks

- Daimler/SCAQMD Zero-Emission Trucks Project



2021 TAP Annual Report to be released June 2022



## Ports Grant-Funded Demonstration and Deployment Updates

- The Ports have secured a combined ~\$172 M in grant funds to support the advancement of technology.
- In 2021, the Port of Long Beach received \$2.5M from CEC for infrastructure master planning.
- In 2021, the Port of Los Angeles received \$2M from USEPA for a Zero Emission Switch Locomotive Project.
- To date, the Ports have deployed 99 zero- and near-zero emission vehicles and equipment.





## EV Ready Communities Phase II- Blueprint Implementation

- \$2.5 million was awarded to the Port of Long Beach from the California Energy Commission in 2021 for:
  - Zero-emission infrastructure master plan (ZEIMP) for SSA Marine, Pier J facility.
  - ZEIMP for Port-owned fleet vehicles and vessels.
  - Infrastructure and charger installation at Port's Maintenance Facility.
  - Long Beach City College workforce assessment focused on zero-emission drayage trucks and infrastructure

### GFO-19-603 - Electric Vehicle Ready Communities Phase II- Blueprint Implementation

**SOLICITATION TYPE**  
Grant Funding Opportunity

**SOLICITATION NUMBER**  
GFO-19-603

**SOLICITATION STATUS**  
Awarded — Notice of Proposed Award  
([Cover Letter and Results Table](#))

**DIVISION**  
[Fuels and Transportation](#)

**PROGRAM**  
[Clean Transportation Program](#)

**RELEASE DATE**  
August 12, 2020

**SUBMISSION DEADLINE**  
October 23, 2020, 5:00 pm

**QUESTIONS DEADLINE**  
August 31, 2020, 5:00 pm

#### Purpose

The purpose of this solicitation is to announce the availability of up to \$7.5 million in grant funds for projects that will implement projects developed and identified in Phase I, Blueprint Development, of the Electric Vehicle (EV) Ready Communities Challenge.



## POLA - Union Pacific Electric Switch Locomotive Project

- \$2,025,000 Grant from US EPA
- Replace one (1) existing Tier 0+ switch locomotive with one (1) new battery-electric switch locomotive
- Battery-electric switch locomotive that works in a consist
- Estimated Yearly Emissions Reductions
  - 8 tons of NOx
  - 0.3 tons of DPM
  - 450 tons of CO2





# ZE TRUCKS

PORT OF LONG BEACH - PETERBILT/MERITOR - SHIPPERS TRANSPORT EXPRESS – OAKLAND

PORT OF LOS ANGELES - KENWORTH/TOYOTA - UPS, TTSI, SCE AND TLS





# ZE YARD TRACTORS

PORT OF LONG BEACH  
PORT OF LOS ANGELES

- BYD – LBCT, ITS
- BYD – PASHA, WBCT, EVERPORT
- KALMAR – PASHA
- TRANSPower/MERITOR – PASHA





# ZE TAYLOR TOP HANDLERS

PORT OF LOS ANGELES - EVERPORT  
SHIPPERS TRANSPORT EXPRESS – OAKLAND





# HYDROGEN INFRASTRUCTURE

SHELL (ONTARIO AND WILMINGTON SITES) – PORT OF LOS ANGELES





# Looking Forward

- Both Ports continue to seek additional opportunities to partner on technology development and demonstration projects and to secure further grant funding
- CA State – Proposed budget includes \$6.1 Billion for zero-emission vehicle funding, including future year recommendations for Port specific funds
- Federal – Bipartisan Infrastructure Law includes substantial funding for seaport-specific infrastructure, hydrogen technology development, and zero-emission heavy-duty vehicle fueling/charging





# Contacts/Information

- Jacob Goldberg, Port of Los Angeles: [jgoldberg@portla.org](mailto:jgoldberg@portla.org)
- Rose Szoke, Port of Long Beach: [rose.szoke@polb.com](mailto:rose.szoke@polb.com)
- [www.cleanairactionplan.org](http://www.cleanairactionplan.org)
- [www.polb.com/zeroemissions](http://www.polb.com/zeroemissions)
- <https://www.portoflosangeles.org/environment/air-quality/zero-emissions-technologies>

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!".

**Thank you!**

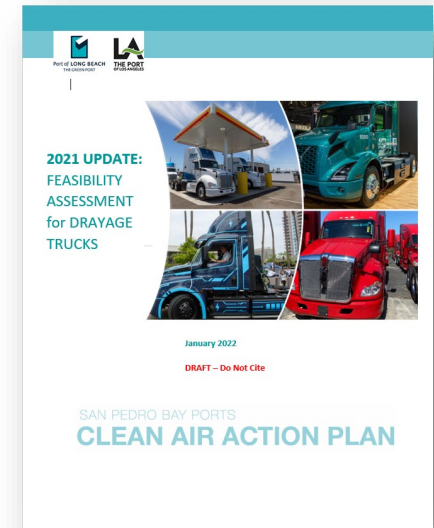


# SAN PEDRO BAY PORTS CLEAN AIR ACTION PLAN



## Status Update: 2021 FEASIBILITY ASSESSMENTS for CARGO-HANDLING EQUIPMENT and DRAYAGE TRUCKS

June 2022



Presented at the **CAAP Stakeholder Implementation Meeting**

Patrick Couch / Jon Leonard  
Gladstein, Neandross & Associates

June 1, 2022



# Feasibility Assessment: Structure

- 2021 Assessments **build upon and update** original (2018) Feasibility Assessments
- Continue to follow Ports' November 2017 "Framework" document
- Emerging **ZE** and **NZE** fuel-technology platforms are evaluated according to the following five basic parameters:
  1. Technical Viability
  2. Commercial Availability
  3. Operational Feasibility
  4. Availability of Infrastructure and Fuel
  5. Economic Workability



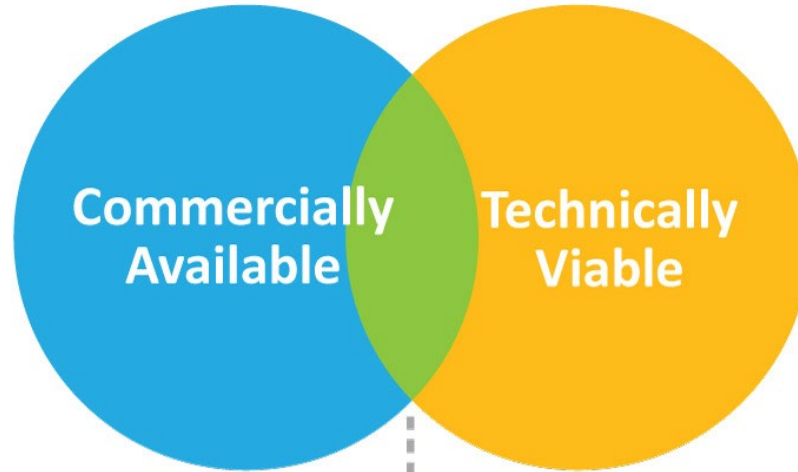


# Feasibility Assessment: Structure (continued)

- **Breadth of Application** – Capability for widespread deployment
- **Timeframe** - 2021 to 2024
- **Fuel-Technology Platforms**
  - 1) Advanced diesel combustion
  - 2) Natural gas combustion
  - 3) Other combustion (e.g., propane)
  - 4) Hybrid-electric platforms (may include combustion)
  - 5) Pure battery-electric (or grid-electric) systems
  - 6) Hydrogen fuel cell
- **Sources of Information Used**
  - ✓ Technical reports, papers and literature resources
  - ✓ Key agencies (ARB, CEC, AQMD, Ports)
  - ✓ Surveys

# Basic Screening Methodology:

Currently available for commercial sale by capable OEM(s)?



Technically capable of performing service (drayage or CHE) specifically at the SPB Ports?

YES = Further Assessment for Below Parameters





# Overall Status / Schedule (Both 2021 Assessments)

- **Completed:** extensive info gathering / interviews with dozens of stakeholders to capture verifiable updates
  - ✓ Manufacturers and Technology Partners (CHE and Class 8 Drayage Truck)
  - ✓ End Users (MTOs and Drayage Fleets, Trade Associations, etc.)
  - ✓ Fuel / Energy / Infrastructure Providers
  - ✓ Regulators (CARB, SCAQMD, etc.)
  - ✓ Public Information and Literature
- **Completed:** documentation of important advancements and milestones since 2018
- **Status:**
  - CHE Assessment was released for public comment and the comment period is closed. Review of comments underway.
  - Drayage Assessment has completed initial drafting. 3<sup>rd</sup> party review complete. Public release will follow in June.

# 2021 Drayage Truck Assessment Update

Key development since '18: OEM advancement of **ZE** platforms

## **ZE** Battery-Electric Trucks:

- Seven (7) Class 8 OEMs offer commercial platforms with increasing production in 2022
- Demonstrations continue; completions are very important
  - Initial demos: some challenges emerged, many lessons learned
  - Larger demos: underway or in planning
- 2022 NACFE Run on Less demonstrations largely support Assessment's operational assumptions for BE trucks.

## **ZE** Hydrogen Fuel Cell Trucks:

- Solid OEM advancements
- At least 10 pre-commercial units in demo

## **NZE** Natural Gas Trucks:

- Fully commercial options, multiple OEMs
- Primary remaining challenge is modest incremental TCO to baseline



← **ZE** battery-electric  
Class 8 trucks



← **ZE** fuel cell  
Class 8 trucks



**NZE** natural gas  
Class 8 truck →



# 2021 Drayage Truck Assessment Update

## Drayage Truck Progress Since 2018

### Preliminary Results

#### 2021 Updates:

- Progress toward *overall feasibility*
- Battery-electric trucks TRL 7-8. Anticipated TRL 9 by 2024 for short range drayage. →
- NZE Natural Gas likely to be considered sufficiently feasible to remove from future assessments
- **Blue pie wedges** identify progress from 2018
- Update of NZE term to Low Emission (LE) for consistency with ACT/Low NOx Omnibus

Feasibility Parameter / Criteria	Overall Achievement* of Criteria in 2021 (Commercially Available / Technically Viable Truck Platforms)	
	ZE Battery-Electric	LE NG ICE
Commercial Availability		
Technical Viability	TRL 7 to 8 (moving to 9) (for short-range drayage)	TRL 9
Operational Feasibility		
Infrastructure Availability		
Economic Workability		
<b>Legend: Achievement of Each Noted Parameter / Criteria (2021)</b> 		
<small>*These ratings for overall achievement of each five feasibility parameter are based on the analysis of several criteria within that parameter. Because each criterion is important for the success of a given fuel-technology platform in drayage, the overall achievement ratings are based on the <u>lowest</u> criterion score for each feasibility parameter.</small>		

# 2021 CHE Assessment Public Comments

## Public Comments Received

- Received written comments from five entities including Labor, PMSA, CARB, Impact Project, and local resident
- Topics receiving multiple comments:
  - Need for immediate local air quality benefits
  - Safety concerns regarding new CHE platforms
  - Remove low emission natural gas platforms from future Assessments
  - Focus Assessments on strategies to achieve 2030 ZE goals
- Areas of significant debate amongst commenters:
  - Selection of appropriate TRLs
  - Evidence of technical feasibility of ZE equipment in various categories
  - Inclusion of grants and overall TCO analysis



# SAN PEDRO BAY PORTS CLEAN AIR ACTION PLAN

## Thank You!





# SAN PEDRO BAY PORTS CLEAN AIR ACTION PLAN

## Update on Clean Truck Program Implementation

**Leela Rao – Port of Long Beach**  
Environmental Specialist

**Tim DeMoss – Port of Los Angeles**  
Environmental Affairs Officer

**CAAP Stakeholder Implementation**  
June 1, 2022





# Joint Port Trucks Today\*

- 21,221 trucks are in the Port Drayage Truck Registry (PDTR)
- 9,607 2014+ trucks registered in the PDTR and make 54% of moves
- 74% of trucks in the PDTR have engines meeting 2010 EPA standards
- 26% of trucks in the PDTR are engine year 2007-2009
- 772 LNG/CNG trucks are in the PDTR and perform 5% of moves
- 324 trucks with the Cummins natural gas fueled 0.02g/bhp-hr NOx engines are in the PDTR
- 31 Zero Emission (28 battery-electric, 3 Hydrogen Fuel Cell) trucks in the PDTR

\* Snapshot from April 2022



# Clean Truck Fund Rate

- Boards of Harbor Commissioners approved the Clean Truck Fund (CTF) Rate in November 2021.
- Collection began at both Ports on April 1, 2022
- Charge \$10 per loaded TEU or \$20 per loaded FEU
  - Charged to BCOs or their specified agents for loaded containers hauled by truck
  - Zero-emission trucks are exempt
  - Port-specific exemptions for low NOx trucks





# Current CTF Rate Status

- Collection mechanism did not cause any major delays to port operations
- Approximately \$8 million collected by the two Ports in April
- Ports have not heard any of incidents of the rate being passed along to drivers
- Drivers are encouraged to contact the Ports with any comments or concerns
  - By email at : [caap@cleanairactionplan.org](mailto:caap@cleanairactionplan.org)
  - By phone at : (866) 721-5686.



# How will the CTF Rate funds be used?

- Potential to generate approximately \$90 million per year initially (both Ports combined)
- 2017 CAAP Update commitment to use the funding for truck initiatives
- Small amount to cover administrative expenses
- Both Ports received approval of their spending plans from respective Boards on March 24



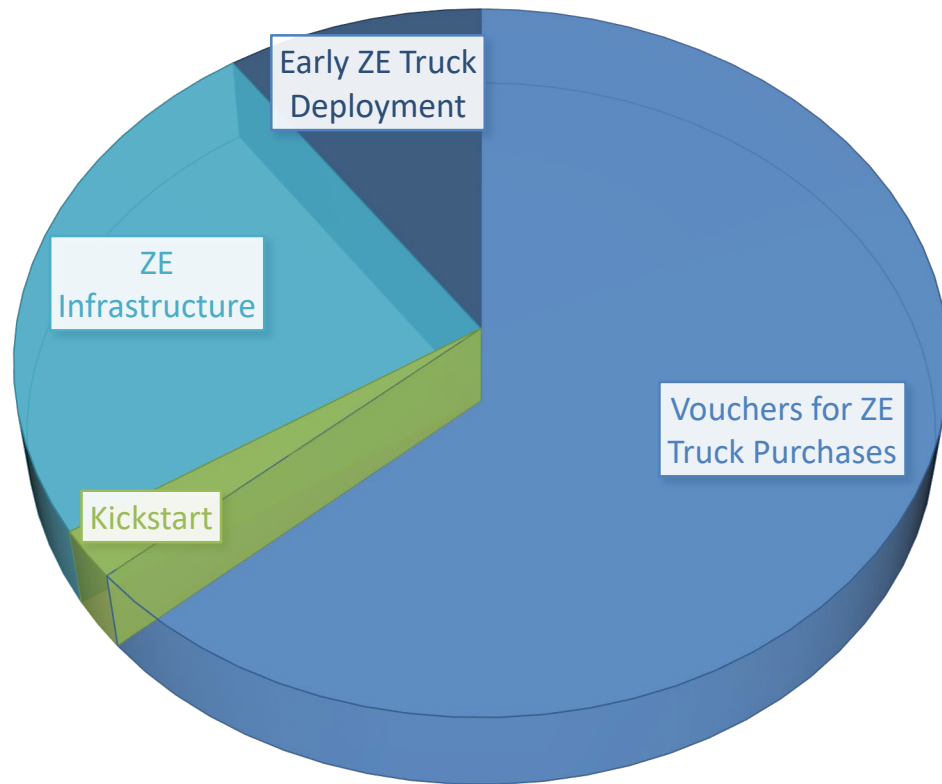
# CTF Rate Revenue Spending Objectives

- Funded trucks must be deployed in port drayage service (registered and active in PDTR)
- No money to companies with labor law violations
- Allocate funding efficiently
- Leverage CTF Rate funds against other funding programs
- Support early adopters
- Distribute funds equitably
- Transparency



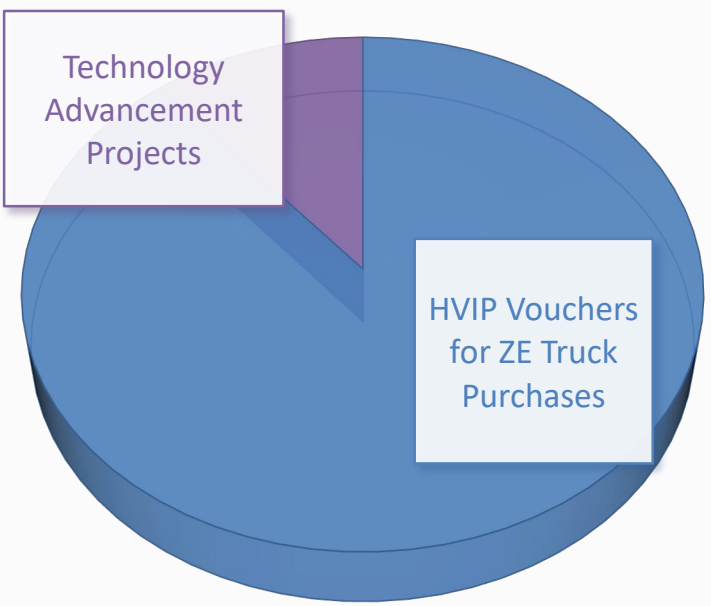


# Approved POLB Year 1 Spending Plan

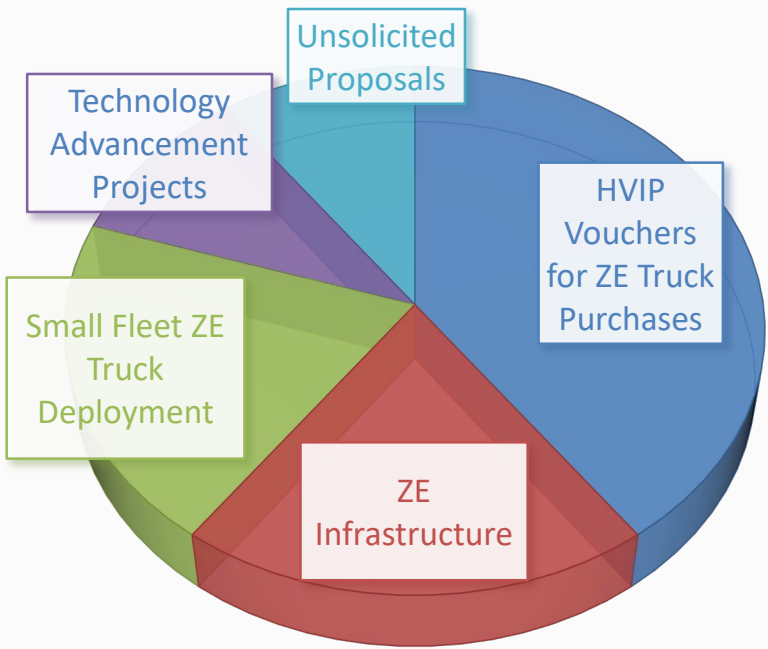




# Approved POLA Spending Plan



Year 1



Future Years (Details TBD)



# ZE Truck Voucher Incentive Program

- POLA Board approved agreement with CALSTART to use the HVIP mechanism. POLB currently developing a similar contract with CALSTART for Board approval.
  - \$150,000 per truck for currently listed HVIP approved ZE trucks
  - Potential for up to \$300,000 per truck for more expensive technology advancements or to match any changes to HVIP funding
- POLA expected to open the a small trial round of vouchers summer of 2022. Both Ports to issue a larger second round of vouchers later in 2022.





# POLA Early ZE Truck Deployment

- POLA released a RFP late 2021 for 10 or more ZE trucks and associated infrastructure to be deployed before the end of 2022
- POLA plans to award 3 of the proposals for a total of \$9 million pending future Board approval later this summer
- Total of 42 trucks



# POLB Public Charging Infrastructure

- Completed the Public Truck Charging and Fueling Assessment in September 2021
- Issued a Request for Information (RFI) in February 2022 to obtain information on potential development of the “Tier 1” sites identified in the Assessment
- Currently evaluating the RFI submissions and developing a publicly available document summarizing responses received
- More information on next steps, such as issuance of an RFP for specific sites, will follow release of the summary document
- Port to issue guidance on EVITP requirements for charging infrastructure installed with CTF Rate funds



# CARB Truck Regulations

- Truck and Bus (adopted Dec 2008)
  - January 1, 2023 = All in use diesel trucks/buses in California must meet EPA 2010 engine emission standards or cleaner
  - Manufacturer Delay Compliance Extension is available for truck owners who obtain a purchase order for a new truck by September 1, 2022
- Heavy Duty Vehicle Inspection & Maintenance = 15 day notice posted on May 11, 2022
- Advanced Clean Fleet = draft language released and workshops held in early May 2022





## Next Steps

- Both Ports to closely monitor implementation of CTF Rate and spending plan roll-out
  - Evaluate if any near-term adjustments needed
- Public engagement and input into longer term (e.g., 3-year) spending plan
- In early 2023, seek Board consideration of funding priorities for year 2

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!".

**Thank you!**





# POLA Low NOx Exemptions

- Any low NOx truck registered in the Port Drayage Truck Registry (PDTR) and placed into service at POLA by December 31, 2022 are exempt until December 31, 2027
- Low NOx trucks registered January 1, 2023 and beyond will not receive an exemption





# POLB Low NOx Exemptions

- Exemption through **December 31, 2034** for low-NOx drayage trucks servicing the Ports and purchased before November 8, 2021, provided that the truck is owned by the original purchaser
- Exemption through **December 31, 2031** for low-NOx trucks:
  - Registered in the PDTR by December 31, 2022, OR
  - Purchased by July 31, 2022 and registered in the PDTR within 30 days of receipt of the truck from the manufacturer