UPDATE ON TECHNOLOGY FEASIBILITY STUDIES
March 13, 2019

Teresa Pisano
Air Quality Specialist
Port of Los Angeles
Feasibility Assessments

- Drayage Trucks
- Cargo Handling Equipment (CHE)
Drayage Truck Feasibility Study Status

- Draft released December 18, 2018
- Comments received through January 2019
- Final release expected by April 2019
CHE Feasibility Study Status

- Third party review complete and draft document is being finalized
- Draft release by April 2019
- Final release expected 2Q 2019
Clean Truck Program – 1st Quarter 2019 Update

Tim DeMoss
Air Quality Supervisor
Port of Los Angeles
Joint Ports CTP Statistics

- 17,713 trucks signed up in the PDTR
- 14,081 trucks made moves in the month of January 2019
- 1,146 MY 2014+ trucks registered in the PDTR since October 1, 2018
- 55% trucks in the PDTR are 2010 EPA compliant trucks
- 54% of the moves are being done by 2010 EPA compliant trucks
- 45% trucks are 2007 EPA Compliant
- 46% of the moves are being done by 2007 EPA compliant trucks
- 27% of the trucks in the PDTR are Model Year 2014+ Trucks
- 20% of the moves are being done by Model Year 2014+ Trucks
- 595 Natural Gas trucks are signed up in the PDTR
- 3.4% of the moves are being done by LNG trucks
CTP Rate Study

• Process and Schedule
  – Davies Transportation Consulting, Inc. is preparing the report
  – Study launched in Q4 2018
  – Estimated completion Q2 2019
Rate Collection Mechanism

- RFP contains minimum requirements to collect a rate from the Beneficial Cargo Owners
- Ports held a Pre-Solicitation Workshop on January 24, 2019
- Ports released a Request for Proposals (RFP) on February 14, 2019
- Questions were received on February 28, 2019
- Answers will be posted on March 13, 2019
- Proposals are due on April 3, 2019
- Ports plan to select a Contractor in Q2 2019
CTP Early Action

- Low NOx Truck Early Deployment Program
  - CEC grant secured by AQMD
    - Total budget $14M ($8M CEC grant, plus $2M each from AQMD, POLA, and POLB)
    - Up to 140 Low NOx Trucks
      - AQMD has selected the 140 trucks and contracting on most of the trucks has begun
      - The trucks will be operational in 6 to 8 months
TERMINAL EQUIPMENT STRATEGIES
March 13, 2019

Renee Moilanen
Air Quality Manager
Port of Long Beach
TERMINAL EQUIPMENT

DEMONSTRATIONS, FEASIBILITY ASSESSMENTS, PROCUREMENT PLANNING, INFRASTRUCTURE
SPBP NOx Emissions

- Heavy-duty vehicles: 19%
- Rail locomotives: 11%
- Cargo handling equipment: 6%
- Harbor craft: 10%
- Ocean-going vessels: 54%
SPBP PM Emissions

- Heavy-duty vehicles: 6%
- Rail locomotives: 19%
- Cargo handling equipment: 4%
- Harbor craft: 17%
- Ocean-going vessels: 54%
SPBP GHG Emissions

SPBP GHG EMISSIONS

- Heavy-duty vehicles: 40%
- Ocean-going vessels: 30%
- Harbor craft: 6%
- Cargo handling equipment: 17%
- Rail locomotives: 7%
Equipment Contributions

Yard tractors, top handlers, rubber-tired gantry cranes

62% of the fleet

86% DPM
88% NOx
91% GHGs
**West Basin Container Terminal**
**ZE CHE:**
- 10 BE Yard Tractors
**Start Date:** June 2018
**Est. End Date:** Mar 2022

**Pasha Terminals (“Green Omni”)**
**ZE CHE:**
- 4 BE Yard Tractors
- 2 BE Forklifts
- 1 BE Top Pick
**Start Date:** June 2017
**Est. End Date:** Feb 2019

**SSA, Pier C and Shippers Transport (“Start” Phase 1)**
**ZE CHE:**
- 33 BE Yard Tractors
- 1 BE Top Handler
**Start Date:** Jan 2018
**Est. End Date:** Apr 2020

**LBCT Pier E / ITS Pier G**
**ZE / NZE CHE:**
- 12 BE Yard Tractors
- 9 Grid Electric RTGs
**Start Date:** Jan 2018
**Est. End Date:** Apr 2020

**Everport Terminal**
**ZE / NZE CHE:**
- 22 NG Yard Tractors
- 8 BE Yard Tractors
- 2 BE Top Picks
**Start Date:** June 2017
**Est. End Date:** May 2020

**Total Terminal Int’l Pier T (“PAVE”)**
**ZE CHE:**
- 6 BE Yard Tractors
- Charging, Infrastructure, battery storage
**Start Date:** July 2018
**Est. End Date:** Mar 2022

**APM Terminals Pier 400**
**ZE CHE:**
- 1 BE Top Pick
**Start Date:** July 2017
**Est. End Date:** Oct 2019

**LBCT Pier E and SSA Pier J (“C-PORT”)**
**ZE CHE:**
- 3 Electric Tip Picks
- 1 Electric Yard Tractor
- 1 Fuel Cell Yard Tractor
**Start Date:** Aug 2017
**Est. End Date:** Feb 2021

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**Snapshot of Active CHE Demonstration Projects within the SPB Ports – Fall 2018**
Terminal Equipment Demonstrations

- Yard tractors, top handlers, rubber-tired gantry cranes, forklifts
- 180 pieces of equipment
- 10 marine terminals
- Deployment 2019-2022
Procurement Planning

- Annual equipment inventory
- 10-year procurement projections
- Equipment purchase discussions
  - Better understanding of equipment demand
  - Signal to manufacturers
  - Funding advocacy
# New Equipment, 2017-2031

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<thead>
<tr>
<th>Equipment</th>
<th>2017-2020</th>
<th>2020-2023</th>
<th>2023-2031</th>
<th>% Fleet Turnover by 2031</th>
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<tr>
<td>Yard Tractors</td>
<td>490</td>
<td>527</td>
<td>1,716</td>
<td>70%</td>
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<td>Top Handlers</td>
<td>136</td>
<td>154</td>
<td>512</td>
<td>66%</td>
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<td>RTGs</td>
<td>42</td>
<td>48</td>
<td>160</td>
<td>54%</td>
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<tr>
<td>Forklifts</td>
<td>174</td>
<td>192</td>
<td>573</td>
<td>54%</td>
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Next Steps

• CAAP Feasibility Assessments
• Infrastructure planning
• Funding opportunities and advocacy
• Ongoing conversations with terminal operators
Zero-Emissions Infrastructure, 2019-2022
Infrastructure Planning

Working with terminal operators and utilities to identify opportunities
San Pedro Bay Ports
Clean Air Action Plan
Technology Advancement Program Update
March 13, 2019

Rose Szoke
Air Quality Specialist
Port of Long Beach
2018 TAP Annual Report
2018 TAP Accomplishments

- First Call for Projects Released; Four Projects Awarded
- Harbor Craft Retrofit Project In Progress
- Zero- and Near-Zero Emissions Technology Demonstrations In Progress
- Large-Scale ZE Pilot Truck Deployment Effort Underway
- Natural Gas Near-Zero Truck Project Complete
- Updated TAP Website
Near-Zero Ultra-Low NOx Natural Gas Engine Operating on Renewable Natural Gas
2019 TAP Priorities

• Provide Funding to Support ZE Pilot Truck Deployment
• Allocate Funding to Support Technology Demo for Ships
• Initiate Projects Selected Under Call for Projects
• Explore Options for Terminal Equipment Charging Infrastructure (i.e. Fast Charge, Automatic Charge, etc.)
• Continue to Seek Out Agency Partnerships
Effenco’s Active Stop-Start™ Electric Hybrid Technology Project

- Anti-Idling Technology for Yard Tractors
- Tractor Idles/Stops; Hybrid System Starts
- Retrofit Six Yard Tractors at APM Terminal (POLA)
- Goal: Technology Verification as Retrofit Device
Harley Marine Electric Drive Tugboat Design Project

- Tier 4+ Tugboat via Diesel-Electric Technology
- TAP Funds Support Complete Design Package and Shipyard Construction Quotes; Emission and Fuel Consumption Data
- Six Tier 4 Diesel Engines; Two Electric Propulsion Motors
- CARB-Funded under START Project
PASHA Two Ohana Class LNG Powered Container Vessels Project

- TAP Funds Support Construction of Two (2) New Tier 3 LNG Dual Fuel Engine
- Can Use LNG or Diesel Fuel
- Shorepower Capability
- Ships Will Be Demonstrated at PASHA Terminal (POLA)
PASHA C9 Class Vessel LNG Repower Project

- TAP Funds Support Repower of One (1) Existing C9 Class Vessel with Tier 3 LNG Dual Fuel Engine
- Can Use LNG or Diesel Fuel
- Shorepower Capability
- Ship Will Be Demonstrated at PASHA Terminal (POLA)
PORTS’ TECHNOLOGY ADVANCEMENT PROGRAMS

The Ports are committed to encouraging the development of innovative technology for reducing emissions of air pollutants. Through its Technology Advance Program, aka TAP, the Ports work closely with technology developers, regulatory agencies, and field operators to support the implementation of new and emerging technologies. Our goal is to get successful technologies to the port market as quickly as possible while ensuring proper testing and validation with the environment.

PROJECTS IN DEMONSTRATION

Interested in learning more about projects we have currently funded? The TAP continues to support technology advancement with a particular focus on near-zero and zero emissions vehicle and equipment demonstrations as well as development of supporting infrastructure and charging equipment.

FINAL REPORTS

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.

- AML, Bale Valve & MFE – Summary Only (2011)
- APT Emissary Reduced Black Diesel Fuel – Summary
- Sulion E-CAT Diesel – Summary Only (2008)
- Sulion Ultra Battery – Summary Only (2011)

www.cleanairactionplan.org