SAN PEDRO BAY PORTS

CLEAN AIR ACTION PLAN

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

SAN PEDRO BAY PORTS

CLEAN AIR ACTION PLAN

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

SAN PEDRO BAY PORTS

CLEAN AIR ACTION PLAN

TERMINAL EQUIPMENT STRATEGIES

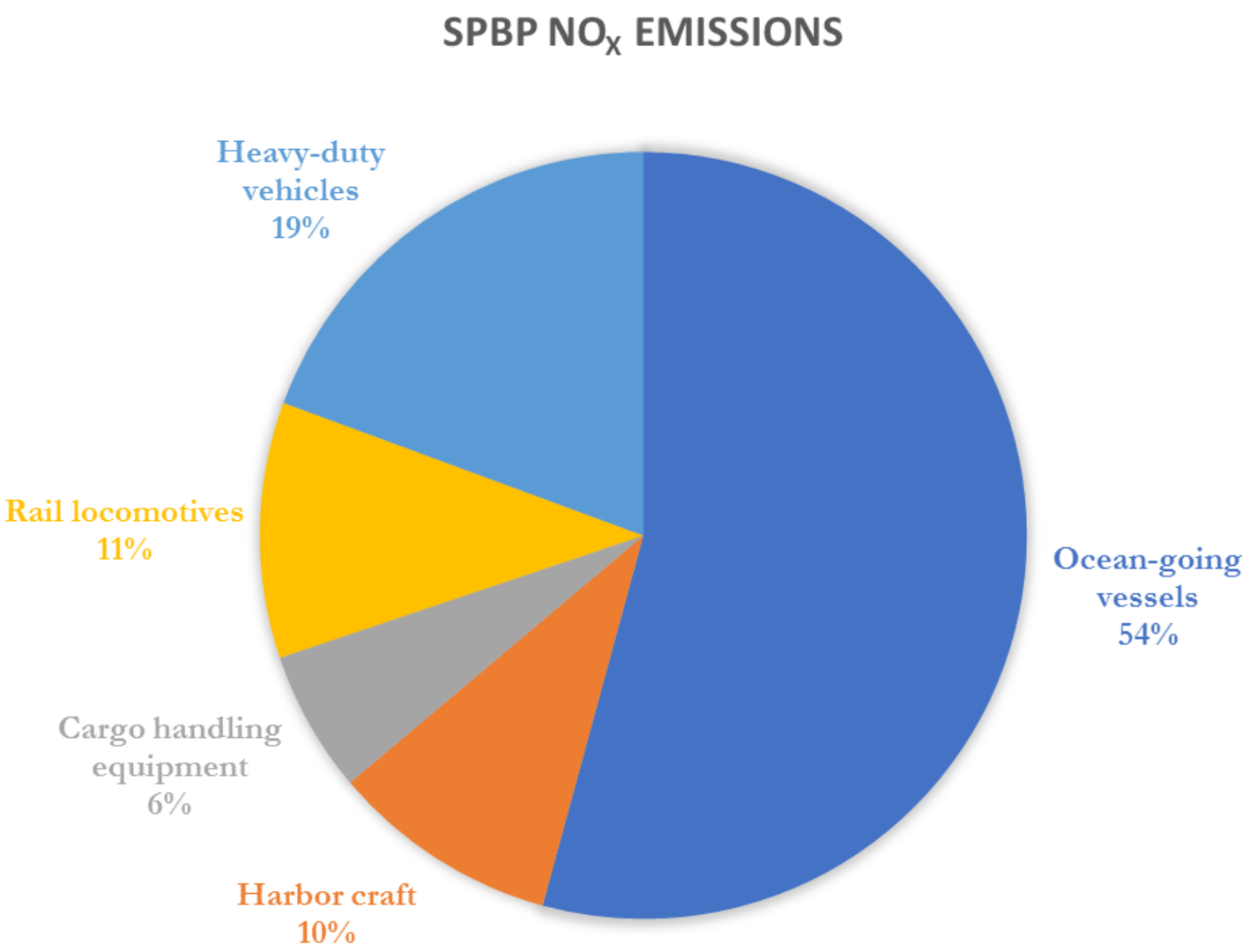
March 13, 2019

Renee Moilanen
Air Quality Manager
Port of Long Beach

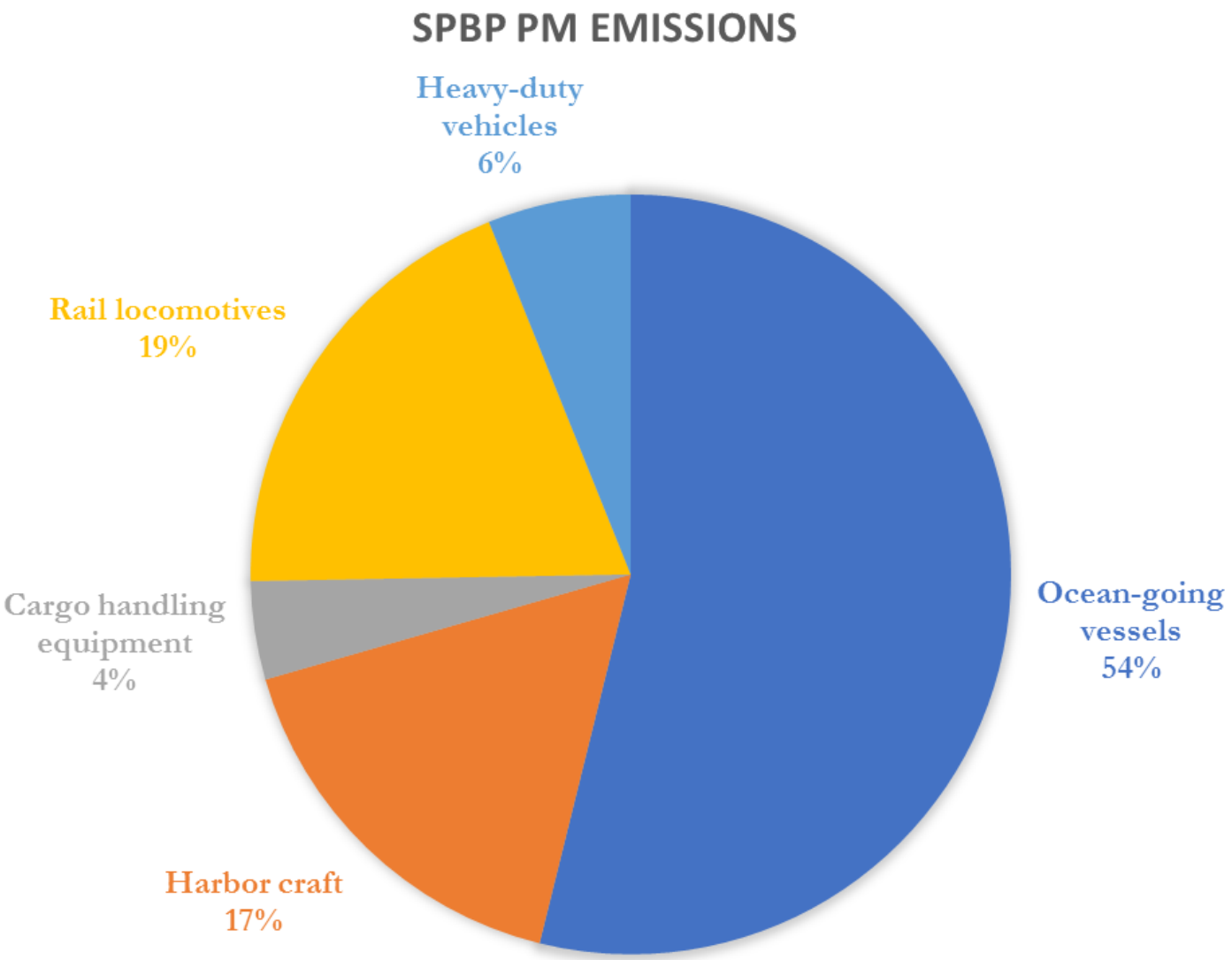
TERMINAL EQUIPMENT

DEMONSTRATIONS, FEASIBILITY ASSESSMENTS, PROCUREMENT PLANNING, INFRASTRUCTURE

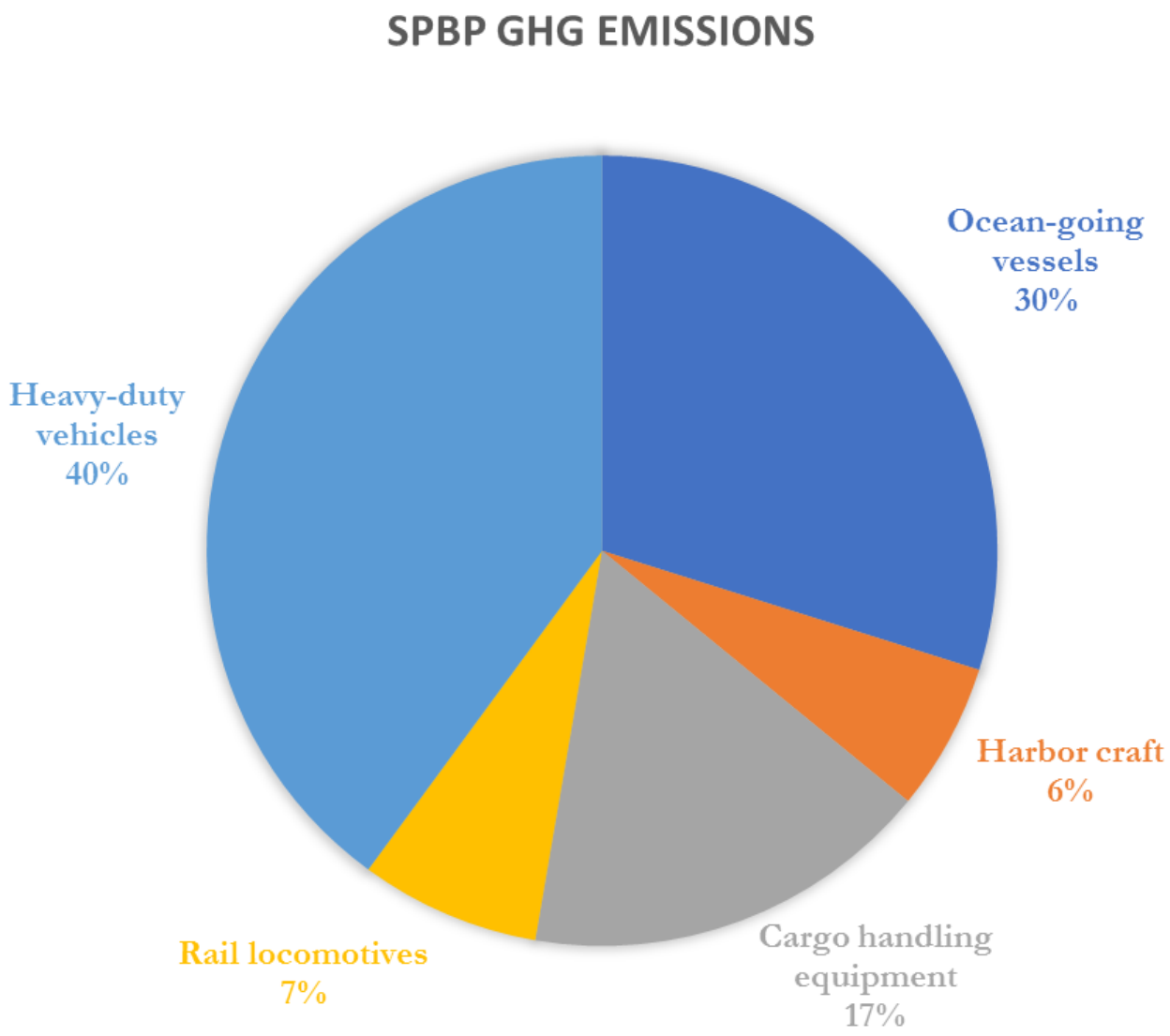
SPBP NOx Emissions



SPBP PM Emissions



SPBP GHG Emissions



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

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

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

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

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

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

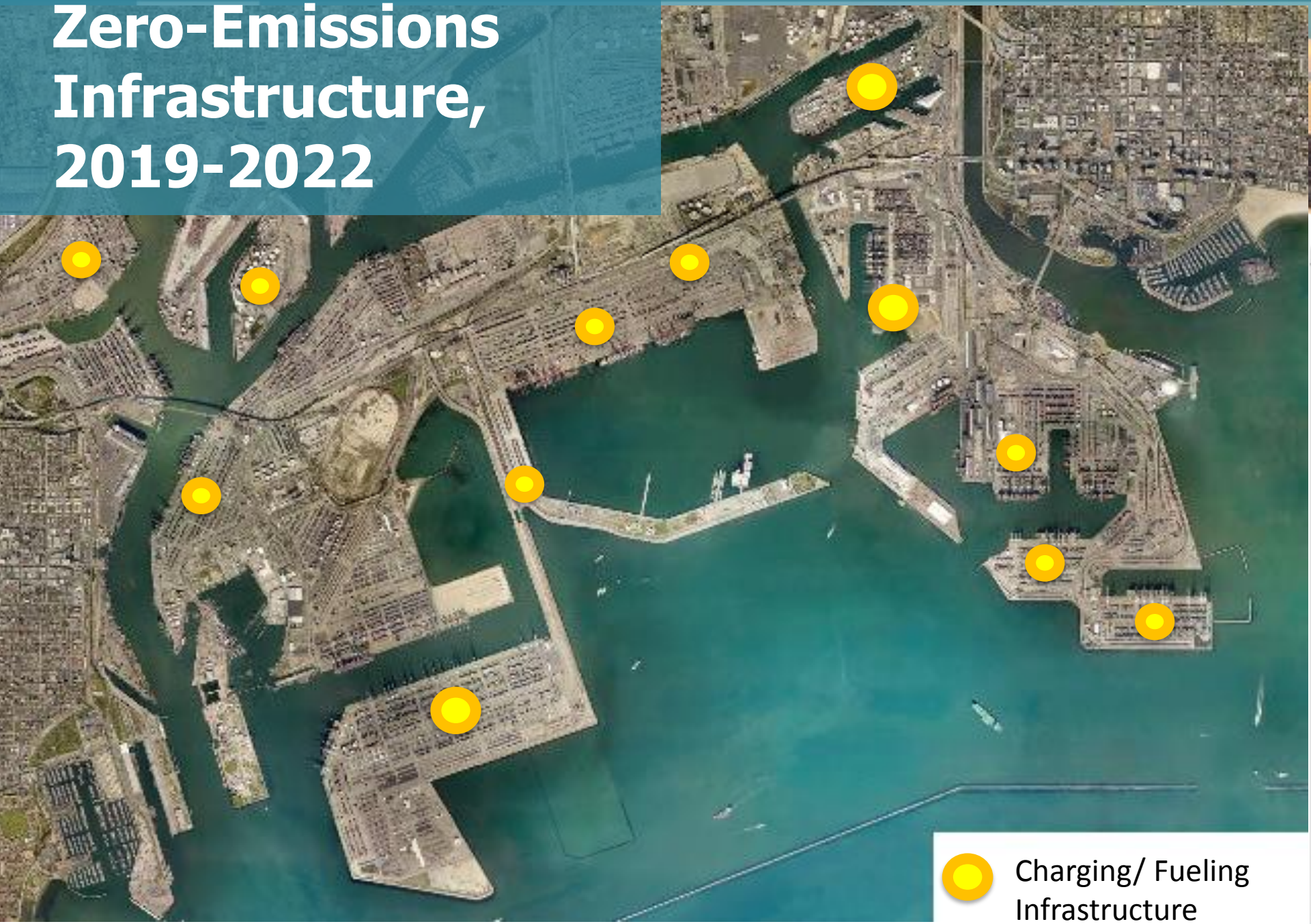
New Equipment, 2017-2031

	2017-2020	2020-2023	2023-2031	% fleet turnover by 2031
Yard Tractors	490	527	1,716	70%
Top Handlers	136	154	512	66%
RTGs	42	48	160	54%
Forklifts	174	192	573	54%

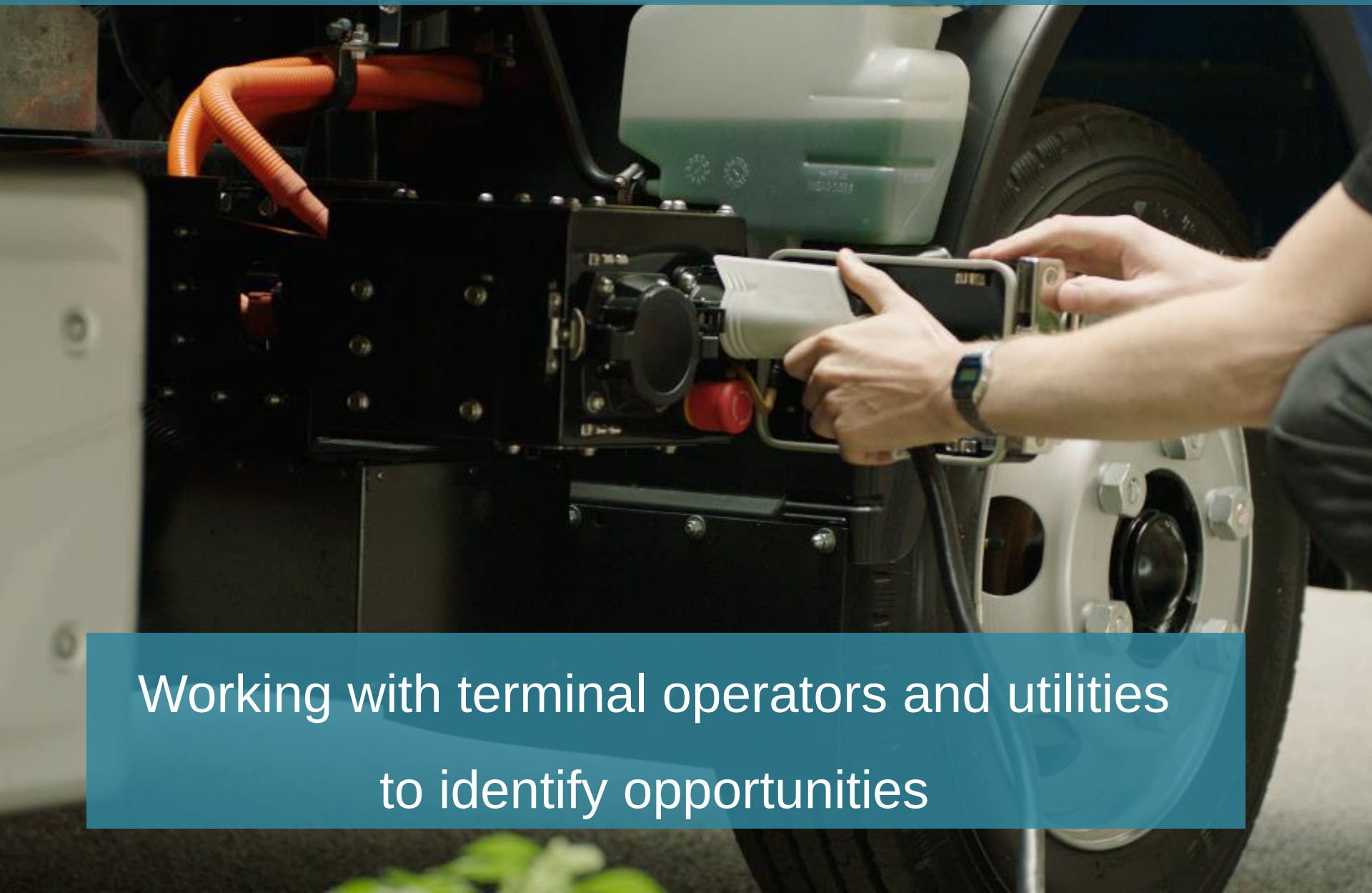
Next Steps

- 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

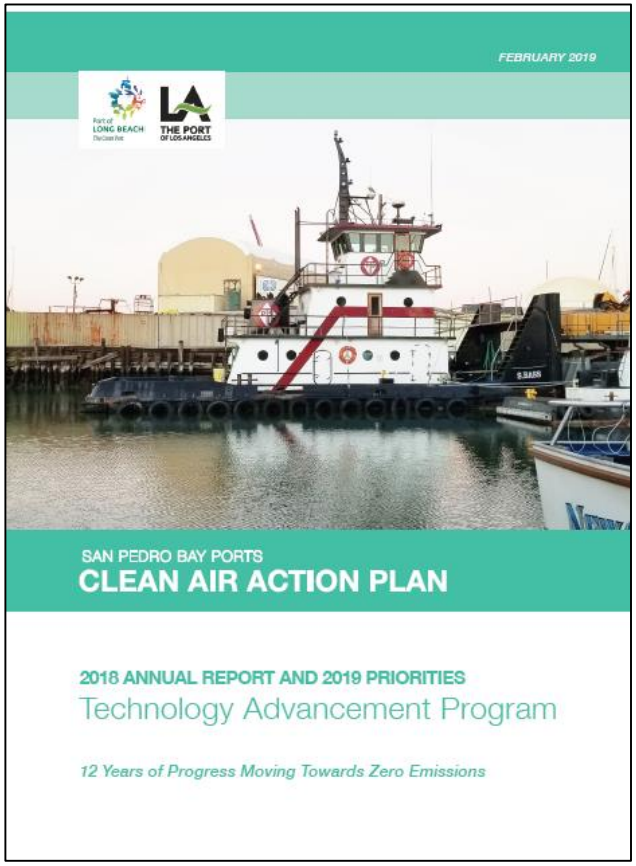
CLEAN AIR ACTION PLAN

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

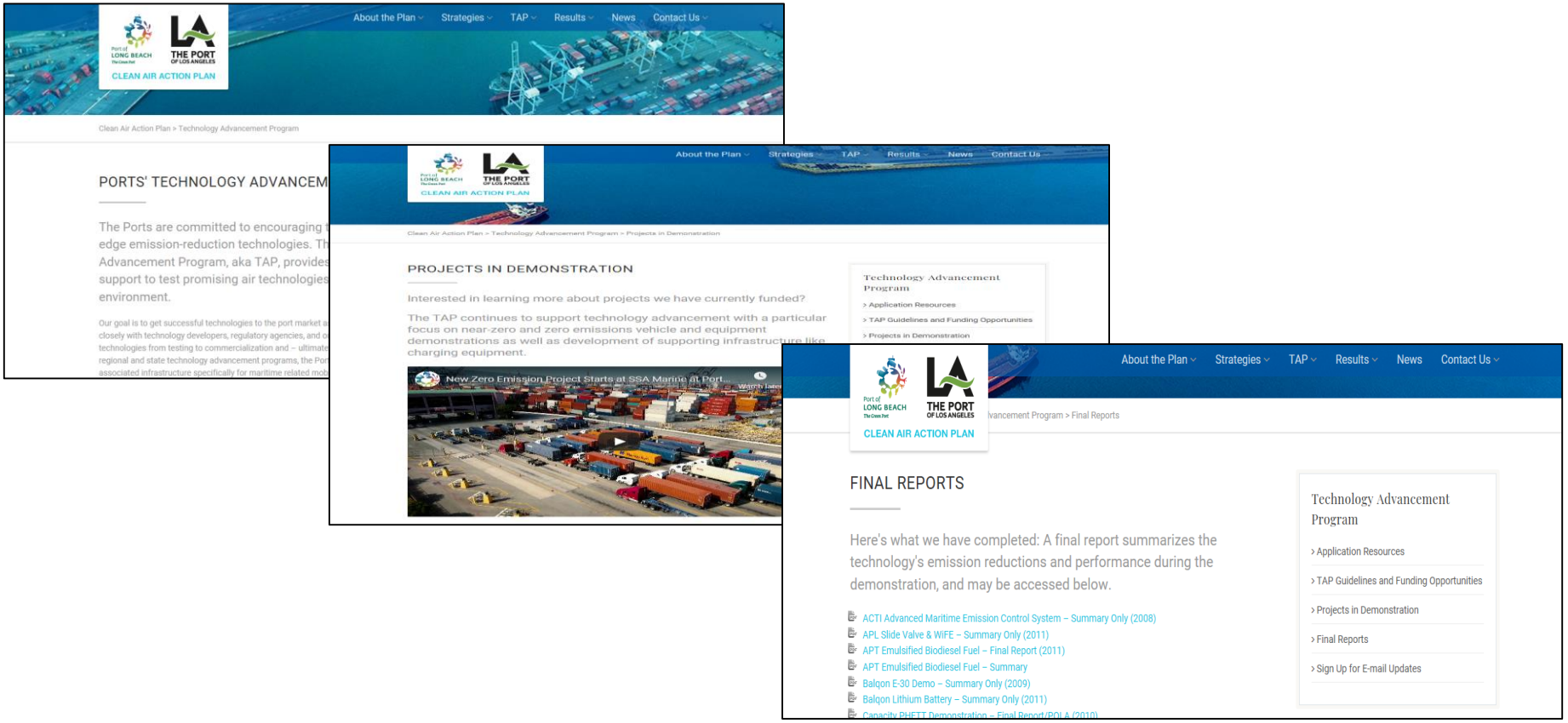
PASHA Two Ohana Class LNG Powered Container Vessels Project

- 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)

TAP Website


About the Plan
Strategies
TAP
Results
News
Contact Us
CLEAN AIR ACTION PLAN
Clean Air Action Plan > Technology Advancement Program
PORTS' TECHNOLOGY ADVANCEM
The Ports are committed to encouraging
edge emission-reduction technologies. Th
Advancement Program, aka TAP, provides
support to test promising air technologies
environment.
Clean Air Action Plan > Technology Advancement Program > Projects in Demonstration
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 like charging equipment.
New Zero Emission Project Starts at SSA Marine at Port...
Technology Advancement Program
> Application Resources
> TAP Guidelines and Funding Opportunities
> Projects in Demonstration
Clean Air Action Plan > Technology Advancement Program > Final Reports
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.
ACTI Advanced Maritime Emission Control System – Summary Only (2008)
APL Slide Valve & WiFE – Summary Only (2011)
APT Emulsified Biodiesel Fuel – Final Report (2011)
APT Emulsified Biodiesel Fuel – Summary
Balqon E-30 Demo – Summary Only (2009)
Balqon Lithium Battery – Summary Only (2011)
Technology Advancement Program
> Application Resources
> TAP Guidelines and Funding Opportunities
> Projects in Demonstration
> Final Reports
> Sign Up for E-mail Updates