

The background of the slide is a wide-angle photograph of a busy port terminal. In the foreground and middle ground, there are numerous stacks of colorful shipping containers in shades of blue, red, yellow, and green. Several large blue gantry cranes are visible, used for loading and unloading containers from ships. In the background, a cityscape is visible under a clear sky, with a large bridge spanning across the water. The overall scene is one of industrial activity and maritime commerce.

SAN PEDRO BAY PORTS
CLEAN AIR ACTION PLAN

**2017 SPBP
Air Emissions Inventory Results**

Jacqueline Moore
Port of Long Beach



SPBP 2017 Air Emissions Reductions

2005 vs. 2017

Container throughput up 19%

Containers (TEUs) per call up 58%

Containership calls down 25%



SPBP 2017 Air Emissions Reductions

**Diesel
Particulate
Matter**

Down

87%

**Nitrogen
Oxides**

Down

58%

**Sulfur
Oxides**

Down

97%

**Greenhouse
Gases**

Down

15%

Up

19%

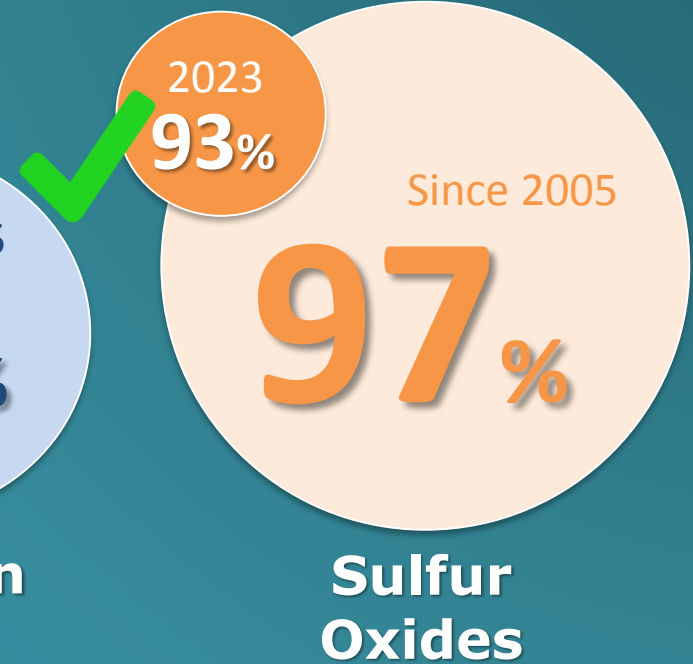
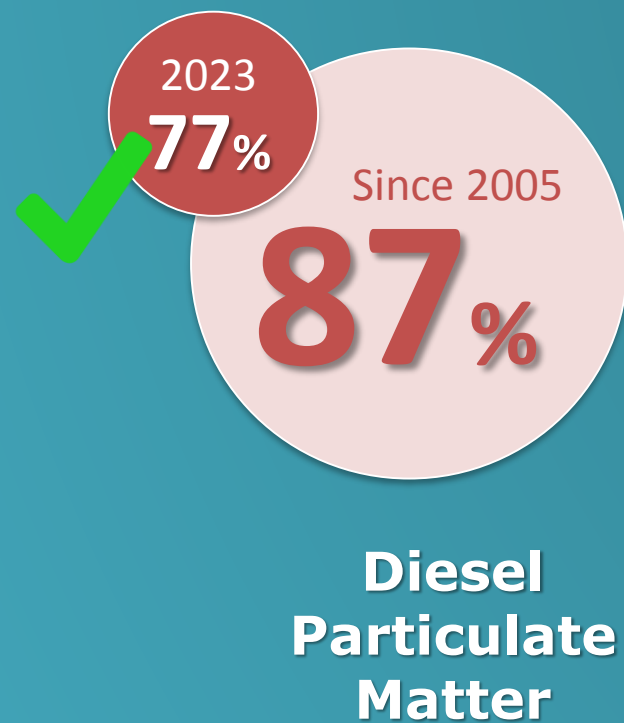
TEUs

*Compared to 2005 Levels

**GHG emissions (CO₂e) are reported in metric tons (MT) per year; all other pollutants are shown in tons per year.



CAAP Clean Air Goals





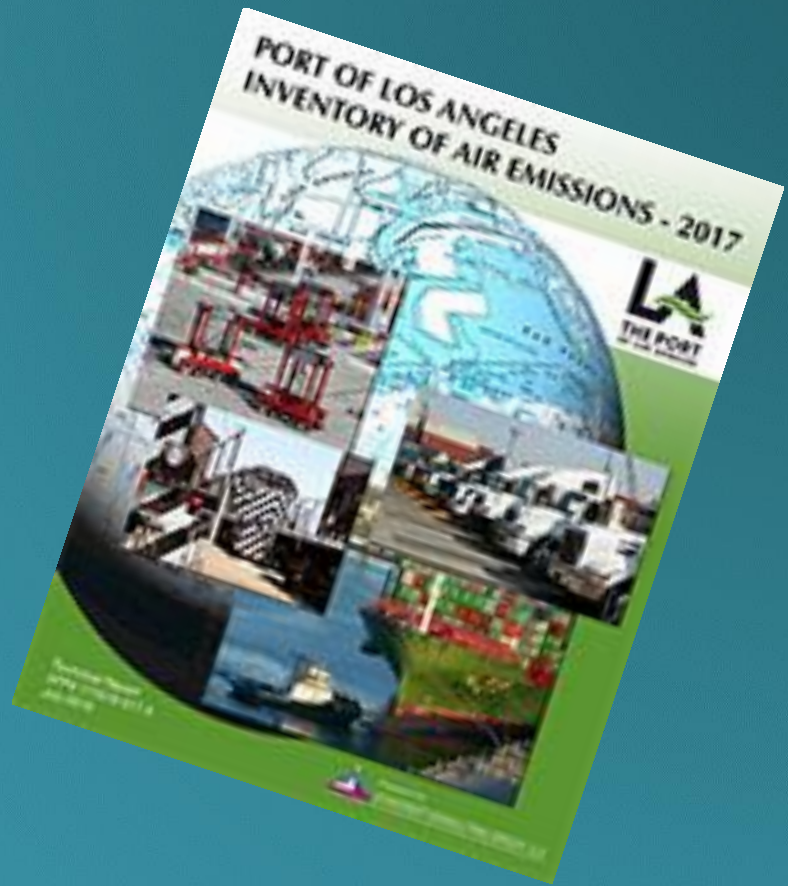
Moving Forward

CAAP Strategies

State and Federal Regulations

Feasibility Assessments

Technology Advancement



The background of the slide is a wide-angle photograph of a busy port terminal. In the foreground and middle ground, there are numerous stacks of colorful shipping containers in shades of blue, red, yellow, and green. Large blue gantry cranes are positioned over the stacks. In the background, a cityscape is visible under a clear blue sky, with a bridge spanning across the water on the left side.

SAN PEDRO BAY PORTS **CLEAN AIR ACTION PLAN**

NEXT STEPS ON CLEAN TRUCKS PROGRAM

Heather Tomley
Port of Long Beach



2017 CAAP CTP Milestones

- 2018 – Pre-2014 Trucks can no longer register in PDTR
- 2018-2019 – Near Zero/Zero (NZE/ZE) emission equipment Feasibility Study completed
 - Study to be updated every 2 to 3 years
- 2019 – Clean Truck Rate Study completed
- 2019 – CARB promulgates NZE Manufacturing Standard
- 2019 – Annual Registration Fee Exemption for NZE/ZE Trucks
- 2020 – Rate Collection mechanism developed
- 2020 – Clean Truck Rate goes into effect on non-NZE/ZE Trucks



CTP Milestones (Cont'd)

- 2023
 - Only NZE/ZE trucks can register in DTR
 - Pre-2010 drayage trucks banned by State Truck and Bus Rule
- 2023-2035
 - Continuous evaluation of Clean Truck Rate and monitoring of progress of transition to ZE trucks by 2035
 - Continued updates to NZE/ZE equipment Feasibility Study every 3 years
- 2035
 - Only ZE trucks can register in PDTR



CTP Implementation

- 2018 Tariff Modification Activities
 - Only allow MY 2014 trucks to newly register in the PDTR
 - Takes effect October 1, 2018
 - Outreach to trucking industry is underway



CTP Implementation

- Clean Truck Rate Study Goals
 - Analyze potential for cargo diversion over range of rates
 - Analyze potential effect on the local drayage industry
 - Project potential revenues that might be generated over range of rates



CTP Implementation

- Clean Truck Rate Study (Continued)
 - Draft scope of work has been developed
 - Study expected to begin 4th Quarter 2018
 - Estimated completion 2nd Quarter 2019



CTP Implementation

- Near-Zero Emission (NZE) Truck Early Deployment Program
 - Joint incentive program with AQMD *under development*
 - Up to 140 NZE Trucks
 - Up to \$4M (\$2M each port) pending approval from Boards of Harbor Commissioners
 - AQMD has agreed to request \$2M from its Board
 - California Energy Commission has preliminarily agreed to provide \$8M
 - Goal to have NZE trucks on the road by the end of 2018



CTP Implementation

- Large-Scale Zero Emission Truck Deployment Pilot Project
 - 50 to 100 zero-emissions trucks
 - Trucking Fleet Survey
 - RFI to OEMs
 - Working group meeting - Mid-October
 - Scope of Work/Concept Paper – Q4 2018
 - Future steps include issuing RFP to OEMs, making funding awards, monitoring progress, and issuing progress reports

Timeline

Large-Scale Zero Emission Truck Deployment Pilot Project



*Pending funding availability



SAN PEDRO BAY PORTS CLEAN AIR ACTION PLAN

**UPDATE ON TECHNOLOGY
FEASIBILITY ASSESSMENTS**
September 26, 2018

Tim DeMoss
Port of Los Angeles

Feasibility Assessments

- Cargo-Handling Equipment (CHE)
- Drayage Trucks



CHE Study



- OEM Survey
- Marine Terminal Operators (MTO) Data Collection Field Trips
- DRAFT Report and 3rd Party QA/QC Underway

Truck Study



- Drayage Truck OEM Survey
- Drayage Truck Operator Survey
- Draft Report and 3rd Party QA/QC Underway

Next Steps



- Draft Feasibility Reports and public comment period expected in 4th Quarter 2018
- Final Feasibility Reports expected 1st Quarter 2019



SAN PEDRO BAY PORTS CLEAN AIR ACTION PLAN

UPDATE ON TECHNOLOGY DEMONSTRATIONS IN THE PORTS

Renee Moilanen
Port of Long Beach

Jacob Goldberg
Port of Los Angeles

Technology Advancement Program

- 5 Active Projects – Harbor Craft, Rail, Trucks
- At-Berth Technologies RFP – Under Evaluation
- 2018 TAP Call for Projects – Under Evaluation
- 2018 TAP Annual Report with Funding Priorities –
Expected February 2019

“ZANZEFF”

- Zero- and Near-Zero Emissions Freight Facility Funding Program
- California Air Resources Board
- \$150 Million Available
- Preliminary Awards Made in September
 - Port of Long Beach - \$50 Million
 - Port of Los Angeles - \$41 Million



Partnering for the Future

START Phase 1

Unprecedented Deployment of Zero-Emissions Equipment

Port of Long Beach ZANZEFF Breaking New Ground



- Multiple ports
- Operator-driven
- Never-before-seen quantities

Port of Long Beach ZANZEFF

The Details

- 102 pieces of zero-emissions equipment
- 1 near-zero-emissions tugboat
- 2 Tier 3 container ships
- Public charging for trucks
- \$50 million from CARB, \$52 million public and private partners



Sacramento



Port of Stockton
CALIFORNIA

San Francisco

San Jose

Fresno
CALIFORNIA

Bakersfield

Los Angeles

Long Beach



Port of
LONG BEACH
The Green Port

San Diego

Phoenix
Mesa



Port of Long Beach ZANZEFF The Operators



SSA Marine

A Carrix Enterprise

Shippers Transport Express



Matson®



WILMINGTON

103

CIRCLE AR

ZAFERIA

EASTSIDE

Long Beach

710

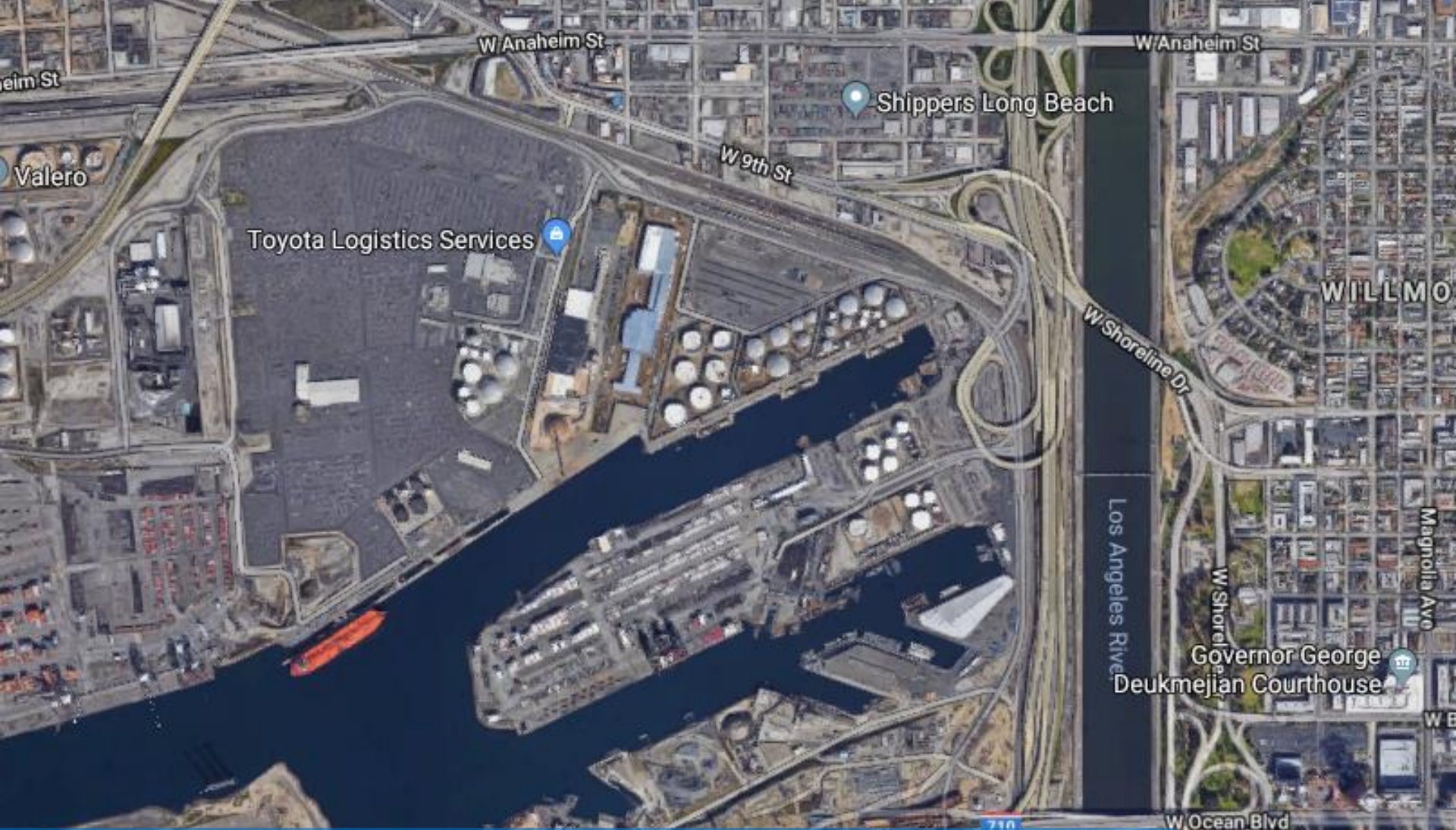
Aquarium of the Pacific

47

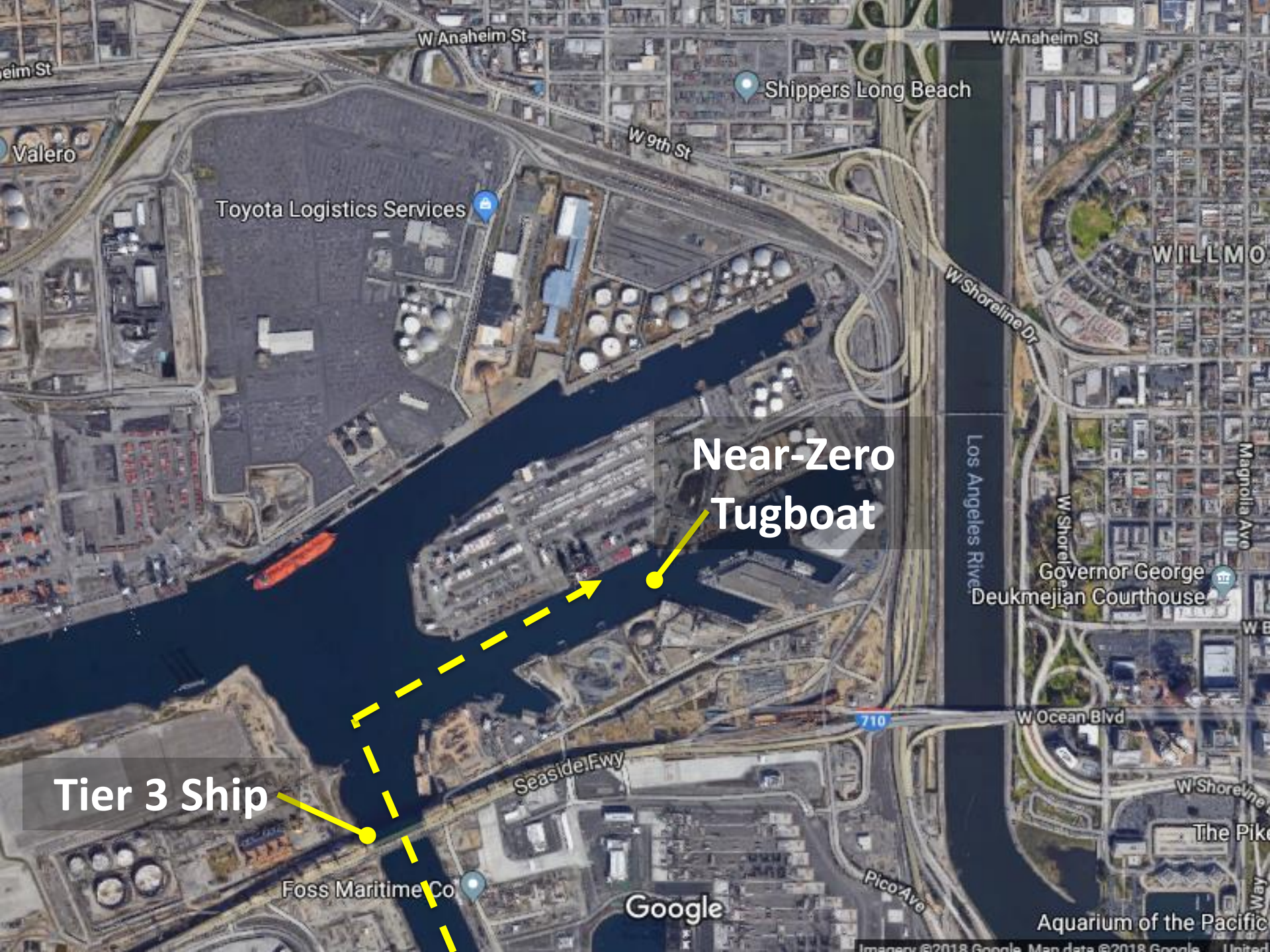
The Queen Mary

Terminal
Island

Marine
m



Sustainable Supply Chain
From Ship to Truck



W Anaheim St

W Anaheim St

W Anaheim St

Shippers Long Beach

W 9th St

Toyota Logistics Services

Valero

W Shoreline Dr

WILLMO

Near-Zero
Tugboat

Los Angeles River

W Shoreline Dr

Magnolia Ave

Governor George
Deukmejian Courthouse

Tier 3 Ship

710

W Ocean Blvd

Seaside Fwy

Foss Maritime Co

Google

Pico Ave

W Shoreline Dr

The Pike

Aquarium of the Pacific



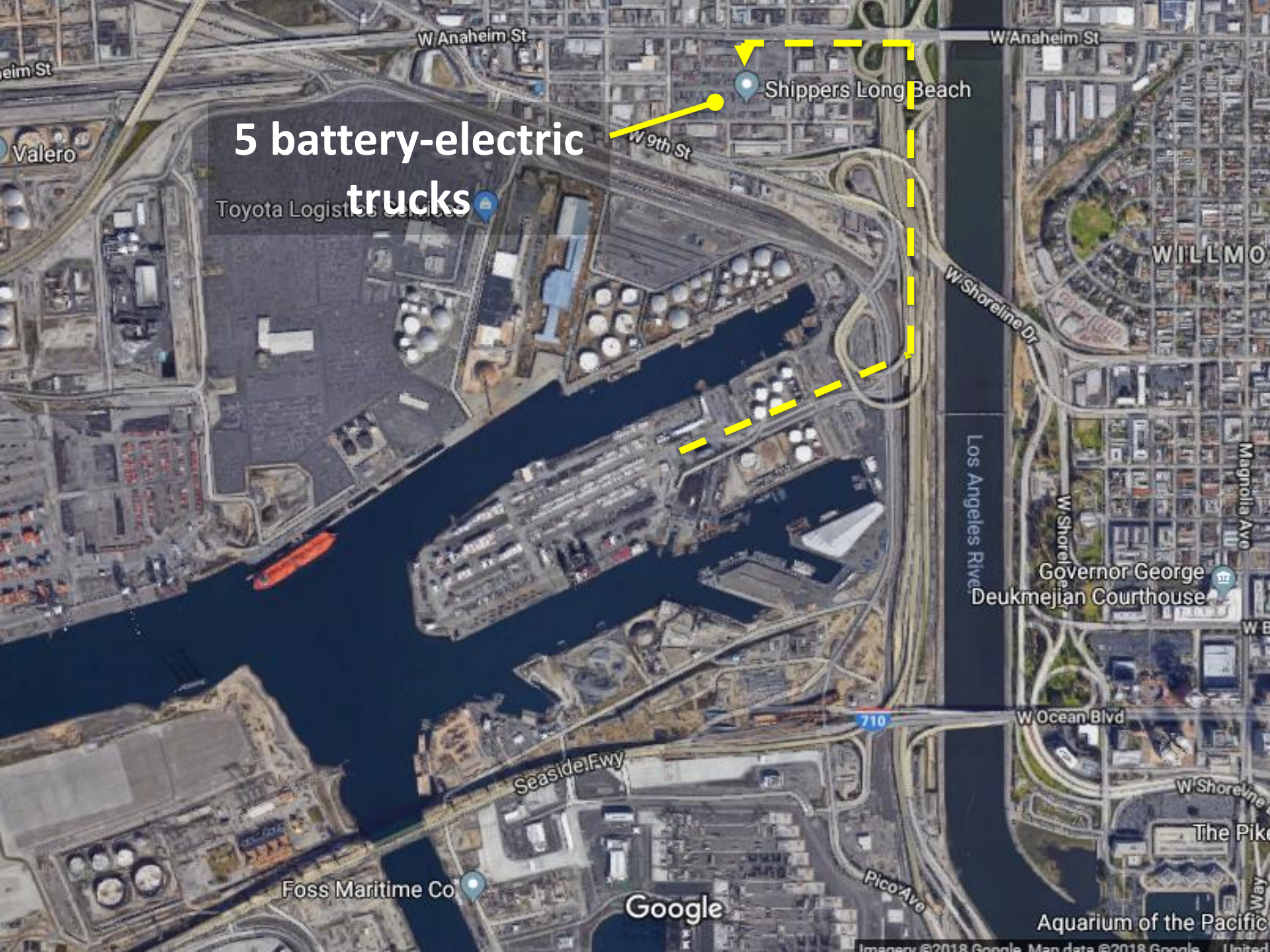
33 battery-electric yard tractors

1 battery-electric top handler



Google

5 battery-electric trucks



heim St

W Anaheim St

W Anaheim St

Valero

Toyota Logistics Center

W 9th St

Shippers Long Beach

W Shoreline Dr

WILLMO

Los Angeles River

W Shoreline Dr

Magnolia Ave

Governor George Deukmejian Courthouse

W B

710

W Ocean Blvd

Seaside Fwy

W Shoreline Dr

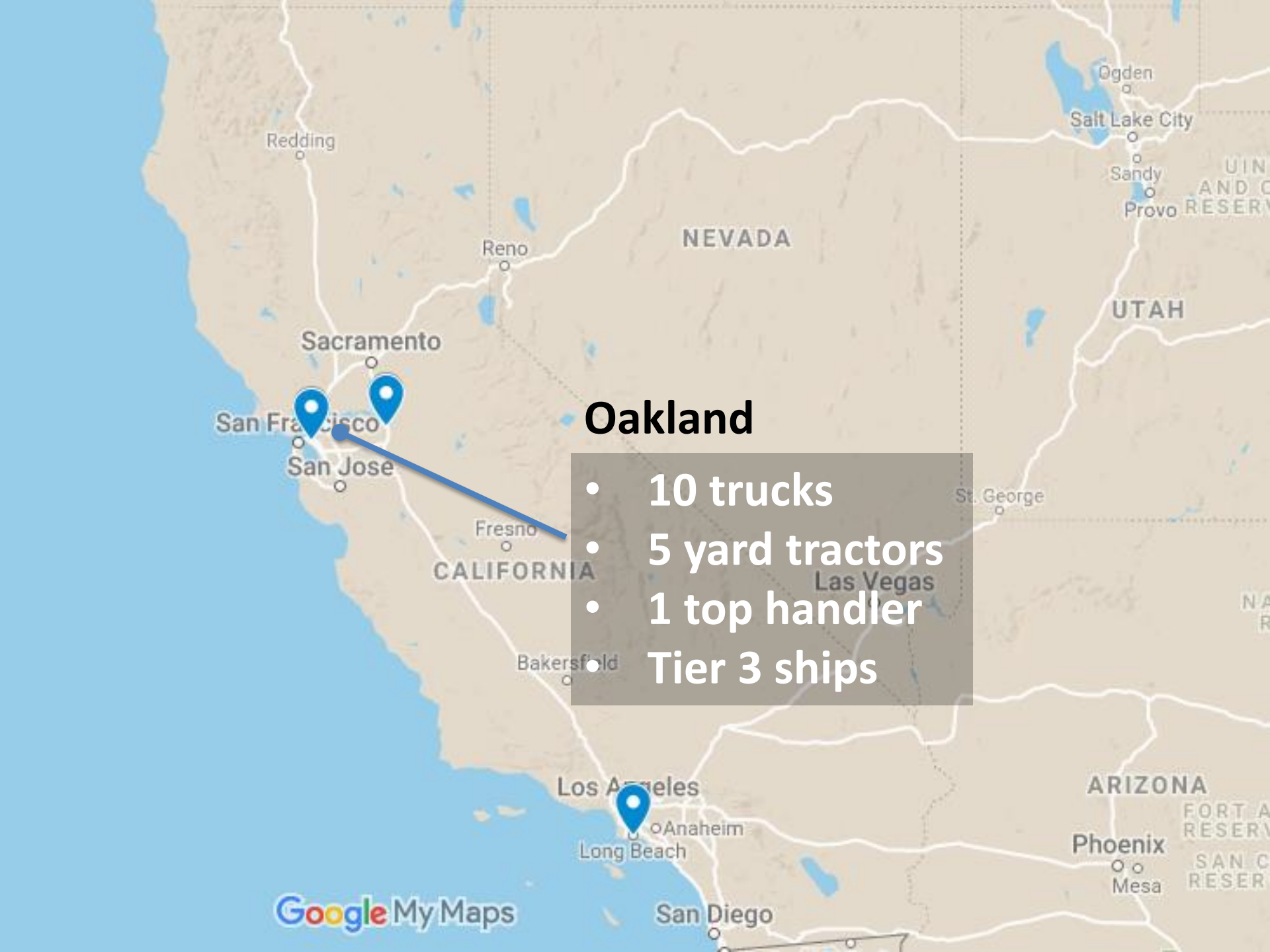
The Pike

Foss Maritime Co

Google

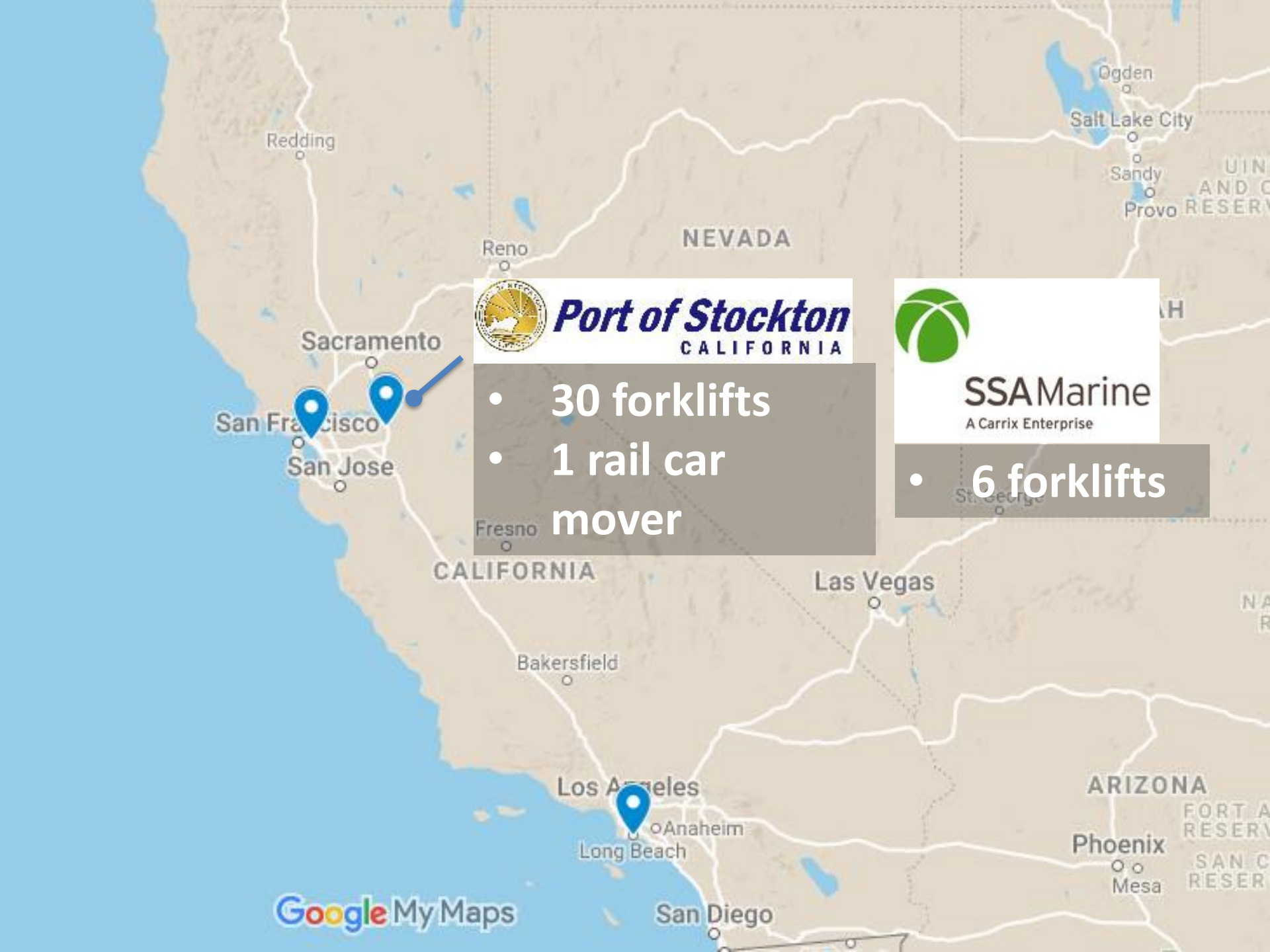
Pico Ave

Aquarium of the Pacific



Oakland

- 10 trucks
- 5 yard tractors
- 1 top handler
- Tier 3 ships



Port of Stockton
CALIFORNIA

- 30 forklifts
- 1 rail car mover



SSAMarine
A Carrix Enterprise

- 6 forklifts

Port of Long Beach ZANZEFF Workforce and Education

- New partnerships
- Community colleges
- High schools
- Long Beach, Oakland, and Stockton
- Workforce development
- Port-related environmental education



Beyond our Borders

Shore to Store Project

Demonstration of a Zero-Emissions Supply Chain

Port of Los Angeles ZANZEFF Project Highlights

- Partnering with world leading OEMs
- Focus on critical SoCal Zero Emission Infrastructure for Short, Medium and especially Long Haul Drayage
- Showcases a complete supply chain on zero emissions: Ship to drayage truck to warehouse to final storefront
- Designed to expand into a Statewide System
- New Opportunity for Port of Hueneme

Port of Los Angeles ZANZEFF Project Partners

- Worldwide leaders at the forefront:



- Additional key partners:



Port of Los Angeles ZANZEFF Project Summary

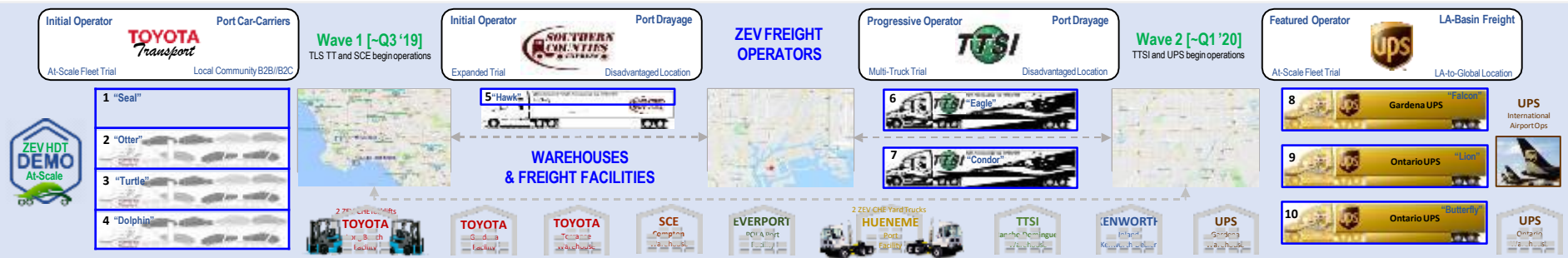
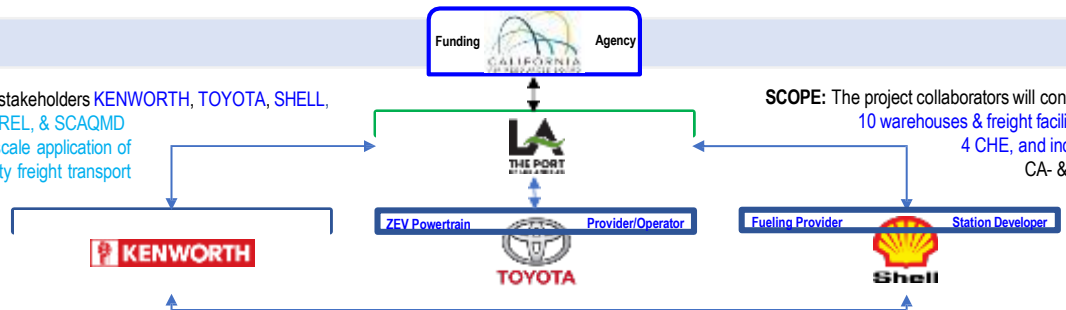
- 10 Hydrogen-Electric Class 8 Trucks
- 2 Heavy Duty Hydrogen Fueling Stations
 - 1 near-port station in Wilmington
 - 1 Inland Empire station in Ontario
- 2 Light Duty Zero Emission Warehouse Forklifts
- First Zero Emission Equipment to be deployed at the Port of Hueneme
- \$41 million from CARB, \$42 million from public and private partners

Transformational "Shore-to-Store" Zero Emissions CARB ZANZEFF Project Image

SUMMARY: POLA collaborates w/ CARB, key coalition stakeholders **KENWORTH, TOYOTA, SHELL,** and leading federal, local, & industry entities like **UPS, NREL, & SCAQMD** in a trailblazing ~\$80M initiative to demonstrate the at-scale application of zero-emissions fuel-cell-electric technology to heavy duty freight transport as a foundation blueprint towards electrifying global goods movement.

SCOPE: The project collaborators will contribute 10 Class 8 ZEV HDT H2 FCEV, 5 HD H2 stations, 10 warehouses & freight facilities, renewable-H2 & -electricity, operator OPEX support, 4 CHE, and industry HD H2 protocols and standards demonstration as a CA- & port-led path towards transformative emissions reduction economic expansion, & public health benefit for at-need communities in California, North America, and around the world

CORE COALITION



Notes: POLA=Port of Los Angeles; ZANZEFF=Zero & Near-Zero Emission Freight & Facilities; WIP=Work in Progress; TLS=Toyota Logistics Services; TT=Toyota Transport; SCE=Southern Counties Express; TTSI=Total Transportation Services Inc.; CHE=Cargo Handling Equipment; RH2=Renewable Hydrogen; 3P=3rd Party; CBO=Community-Based Organization; ZEV=Zero Emissions Vehicle; HDT=Heavy Duty Truck; FCEV=Fuel Cell Electric Vehicle; H2=Hydrogen

Port of Los Angeles ZANZEFF Project Benefits

- First true demonstration of Long Haul Zero Emissions
Drayage Solution (up to 400 miles)
 - Inland Empire and Hueneme
 - Ultimately Merced County
- Hydrogen offers a comparable driver experience compared to diesel (fueling time and range)
- Expandable Shell fueling infrastructure serves all of SoCal and beyond

Port of Los Angeles ZANZEFF Geographical Breakdown



80 miles





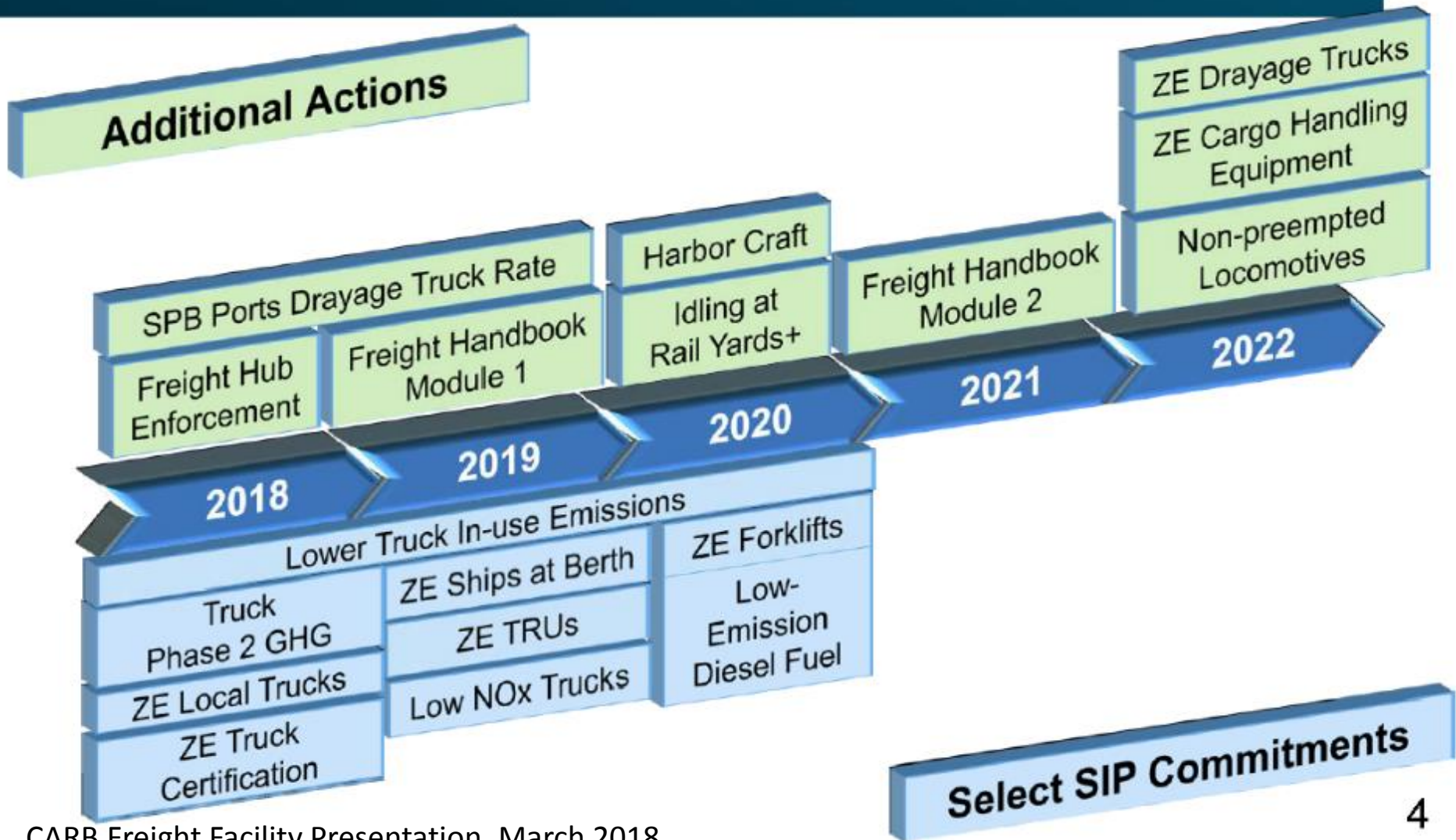
SAN PEDRO BAY PORTS CLEAN AIR ACTION PLAN

REGULATORY UPDATES

Chris Cannon
Port of Los Angeles

Milestones for Freight Actions

(Board consideration)





Ships At Berth

- Engaged with CARB staff on proposed amendments to current regulation
 - Increasing requirements for currently regulated ships
 - Adding requirements for Ro-Ros and Tankers
- Conducting preliminary infrastructure assessments
- TAP RFP for at-berth systems



Other Proposed Amendments

- 100% Zero Emission TRUs
 - Port Staff is:
 - Providing operational background and data
 - Evaluating existing infrastructure and possible necessary additions at terminals
- HDV Inspection/Maintenance Pilot
 - Port Staff is:
 - Engaging in preliminary discussions with CARB
 - Would be similar to the light-duty SMOG Check Program





Low NOx Trucks

CARB is defining Near Zero Truck emission standards and will promulgate a manufacturing requirement in 2019

Port Staff is:

- Monitoring CARBs progress in order to move forward on Clean Trucks Program
 - Registration fee exemptions for NZE
 - NZE exemptions for 2020 rate



Send comments to:
caap@cleanairactionplan.org