



SAN PEDRO BAY PORTS CLEAN AIR ACTION PLAN

Port of Los Angeles Air Quality Programs
Shanghai Regional Knowledge Sharing Workshop on Port
Greening and Decarbonization
July 28, 2023

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Clean Air Action Plan (CAAP) Drivers

- Ozone & Particulate Matter nonattainment area
- Diesel Particulate Matter (DPM) Identified as Air Toxic by California Air Resources Board (CARB)
- Early air agency health studies (MATES)
- Health risk to surrounding communities

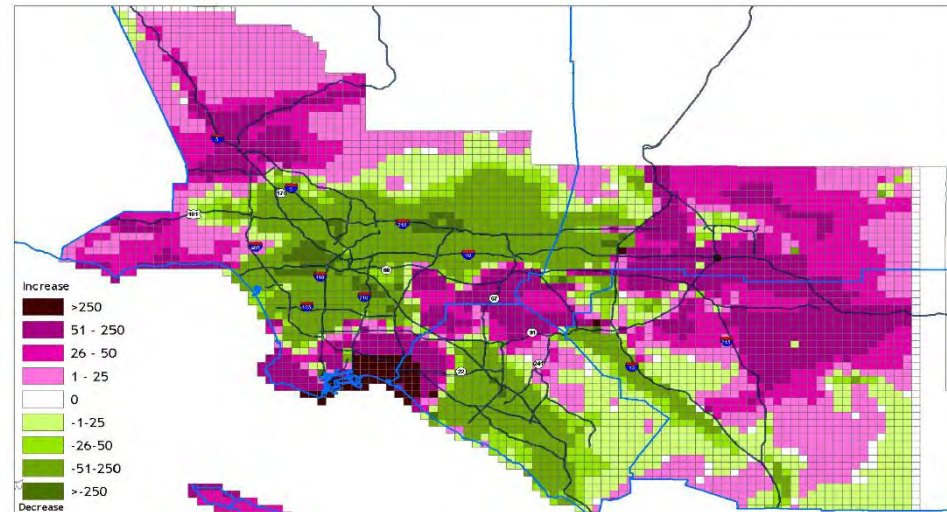


Figure 4-8
Change in CAMx RTRAC Simulated Air Toxics Risk (per million) from the 1998-99 to 2005
(using back-cast 1998 emissions and 1998-99 MMS generated meteorological data fields)

**Latino areas
are hit hard by
environmental
health threats**

REPORT: Group suffers more from pollution than the rest of the population, study finds.

San Pedro Bay Port Complex

Wilmington

Long Beach

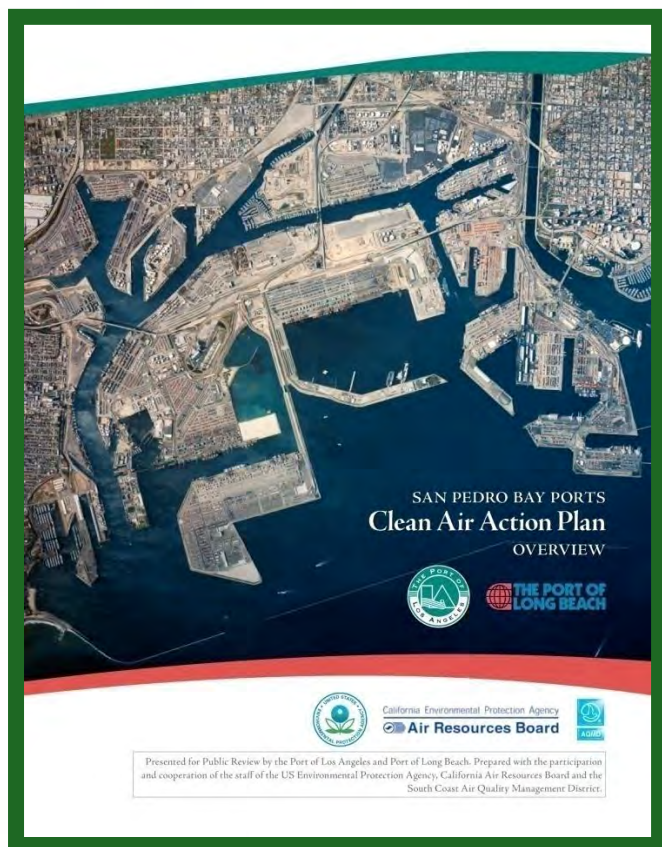
Port of Long Beach

San Pedro





2006 CAAP Overview



- First comprehensive port emission reduction plan
- Focuses on DPM, NO_x, SO_x & health risk reductions
- Coordinated with regulatory agencies & stakeholders
- Sets future emission & health risk reduction goals
- Consists of a series of source category measures
- Progress is tracked through activity-based annual inventories



Mobile Source Categories

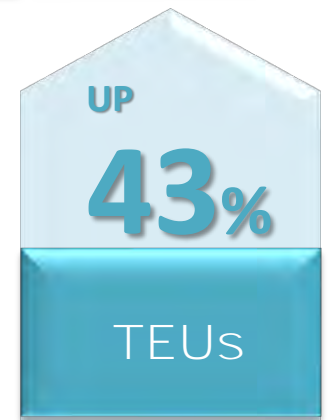
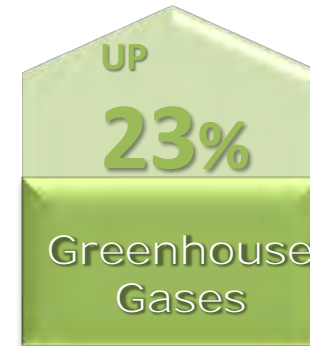
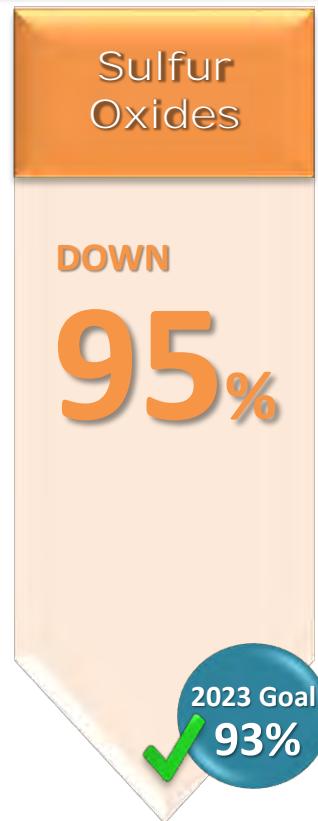
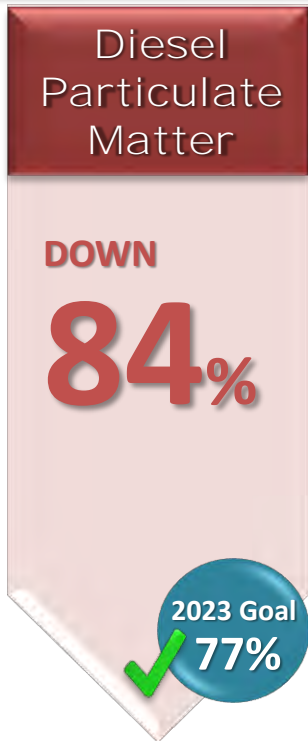




Major CAAP Strategies

- Clean Truck Program
- Alternative Maritime Power (AMP)
- Vessel Speed Reduction Program
- Fuel Switching
- Fleet Turnover Incentives/Lease Measures
- Technology Advancement Program

Emissions Comparison (2005-2021)



Real-Time Website

www.cleanairactionplan.org

Map View | Current Data | Yesterday's Data | Daily Highs | Historical Data | Reports | Glossary

CAAP Home > Air Quality > Map View - locations of the monitoring stations in the Port of Los Angeles and Port of Long Beach

Port of Los Angeles Outer Harbor Current Data

O ₃ (1-hr avg)	0.046 ppm
O ₃ (8-hr avg)	0.047 ppm
PM ₁₀ (24-hr avg)	32.5 µg/m ³
PM _{2.5} (24-hr avg)	10.7 µg/m ³
NO ₂ (1-hr avg)	0.006 ppm
CO (1-hr avg)	0.622 ppm
CO (8-hr avg)	0.618 ppm
SO ₂ (1-hr avg)	0.005 ppm
SO ₂ (24-hr avg)	0.005 ppm
UFP (1-hr avg)	2544 #
Wind Speed (1-hr avg)	5.7 mph
Wind Direction (1-hr avg)	E direction

Site Name
Port of Los Angeles - Outer Harbor
Port of Los Angeles - San Pedro
Port of Los Angeles - Terminal Island
Port of Los Angeles - Wilmington
Port of Long Beach - Inner Port
Port of Long Beach - Outer Port

San Pedro Bay Ports Clean Air Action Plan

The Port of LONG BEACH

Map View | Current Data | Yesterday's Data | Daily Highs | Historical Data | Reports | Glossary

CAAP Home > Air Quality > Current Data - real-time air quality information

Select A Site: Port of Los Angeles - Outer Harbor | Observation To Graph: PM10 (24-hr)

Monitored Parameter	Averaging Period	Current Value	Units	State Standard	Federal Standard
O ₃	1-hr	0.046	ppm	0.09	-
O ₃	8-hr	0.047	ppm	0.07	0.08
PM ₁₀	24-hr	32.5	µg/m ³	50	150
PM _{2.5}	24-hr	10.7	µg/m ³	-	35
NO ₂	1-hr	0.006	ppm	0.25	-
CO	1-hr	0.622	ppm	20.0	35.0
CO	8-hr	0.618	ppm	9.0	9.0
SO ₂	1-hr	0.005	ppm	0.250	0.075
SO ₂	24-hr	0.005	ppm	0.04	0.14
UFP	1-hr	2544	#	-	-
Wind Speed	1-hr	5.7	mph	-	-
Wind Direction	1-hr	E	direction	-	-
Temperature	1-hr	59.8	deg F	-	-

** indicates reading occurred during instrument calibration*

PM10 (24-hr) Daily Observations

Legend: PM10 (24-hr), State Standard, Federal Standard

** In May 2006, the Port of Los Angeles implemented a special study to collect "real-time" PAH data at four air quality monitoring stations located in or near the Port. This study was funded under a grant administered by the Environmental Protection Agency. The data collection for the study is complete and a comprehensive report which details the findings of this special study is available here for your information. Real-time PAH data will not be reported after December 31, 2010.

2017 CAAP Update Strategies

An aerial photograph of a coastal city and port area. The image shows a dense urban landscape on the left, transitioning into a large harbor with several piers and docks. Numerous ships and cargo containers are visible in the water. The sky is clear and blue.

- **OCEAN-GOING VESSELS**
- **ON-ROAD TRUCKS**
- **TERMINAL EQUIPMENT**
- **EFFICIENCY IMPROVEMENTS**

Ocean-Going Vessels



- Increase vessel speed reduction compliance within 40 nautical miles
- Use at-berth emission reduction technologies
- Incentivize energy efficiency upgrades and clean technologies
- Develop a Clean Ship Program to transition the oldest, most polluting ships out of the fleet

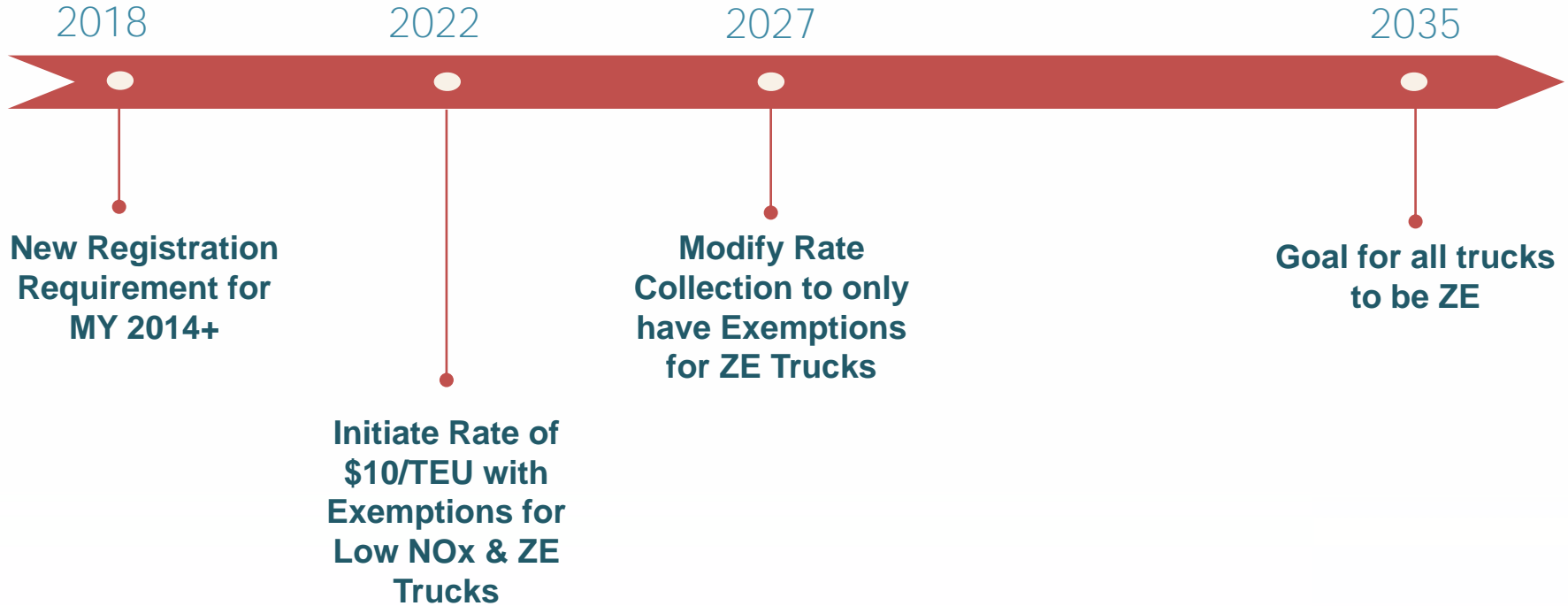
Heavy-Duty Trucks



- **Advance the Clean Trucks Program and transition to zero-emission (ZE) trucks by 2035**
- **Adopt a reservation system at terminals to improve trucks turn times**



New Clean Trucks Program Timeline



Terminal Equipment



- Transition to zero-emission (ZE) cargo-handling equipment (CHE) by 2030
- Limit idling



Zero-Emission Trucks & CHE Feasibility Assessments

- **Technical Viability**
- **Operational Feasibility**
- **Availability of Supporting Infrastructure and Fuels**
- **Economic Considerations**
- **Commercial Availability**



Additional 2017 CAAP Update Highlights

- **Expand use of on-dock rail**
- **Accelerate deployment of cleaner harbor craft engines**
- **Encourage improvements in freight efficiencies**
- **Develop Green Terminal Recognition Program**
- **Ensure energy infrastructure is available to support use of cleaner technologies**

Technology Development

An aerial night photograph of a port city. The foreground shows a large industrial area with numerous cranes and brightly lit structures. The middle ground features a city skyline with many lights, and the background shows a body of water with several ships. The overall scene is illuminated by the warm lights of the city and the cooler lights of the industrial area.

- **Demonstrations of Zero Emission On-Road Trucks**
- **Zero-Emission Locomotive Demonstration**
- **Demonstration of Harbor Craft Technologies**
- **Demonstration of At-Berth Emission Reduction Technologies**
- **Demonstrations of Zero-Emission Terminal Equipment**

POLA Grant Funded Demonstrations

Green Omni-Terminal Project

CARB \$14.5 Million

STATUS UPDATE:

- 5 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

2023 Goal

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

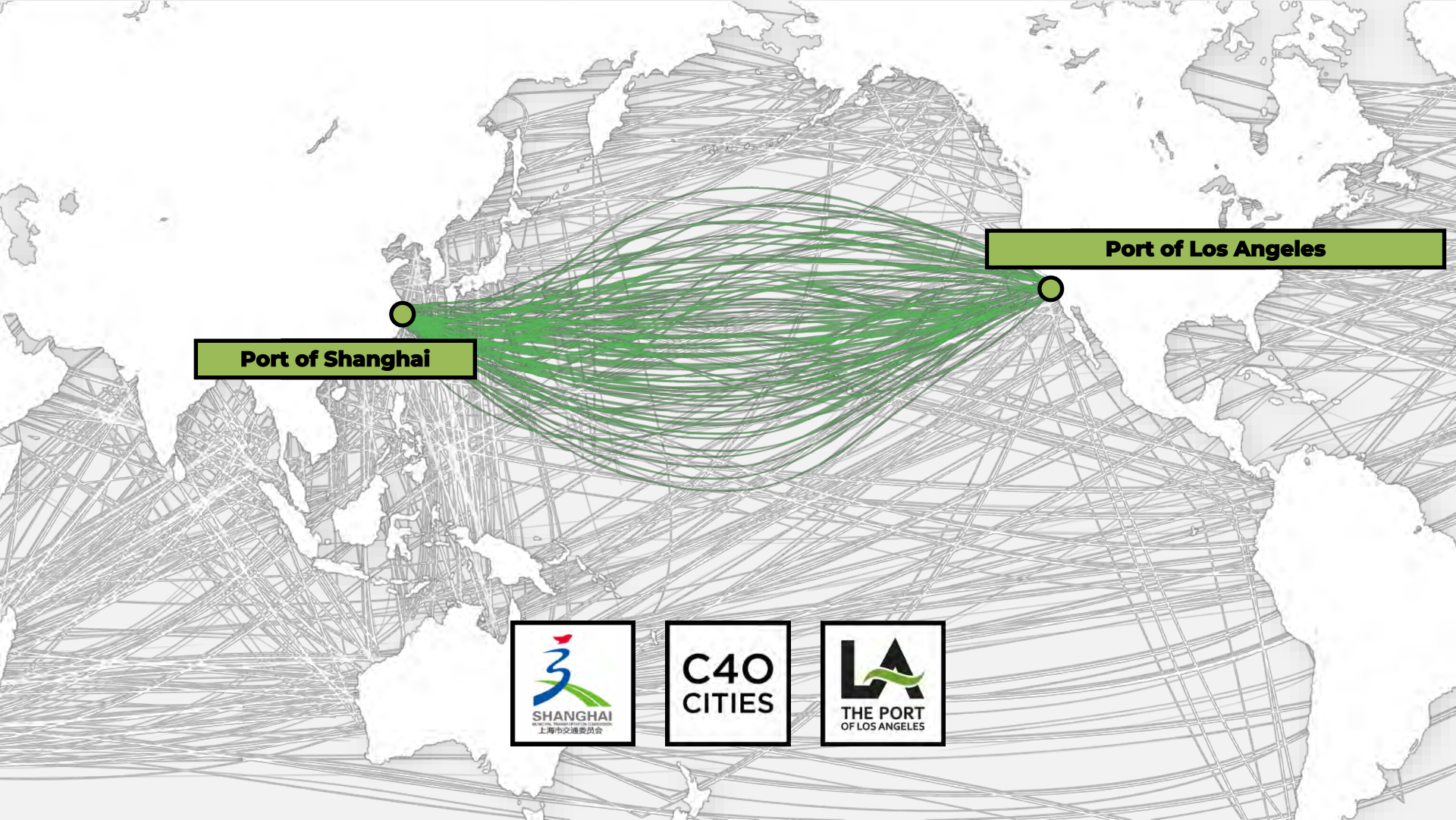
Port of
Long Beach

Port of
Los Angeles



Ongoing Efforts

- Clean Truck Fund Rate Collection
- CAAP Implementation Advisory Workgroup
- Technology Demonstrations
- Feasibility Assessments
- Annual Emissions Inventories
- Air Quality Monitoring
- Green Corridor Development



Port of Shanghai

Port of Los Angeles





Proposed Scope of the Green Shipping Corridor

The participants of this Green Shipping Corridor strive to reduce carbon emissions from shipping and port activities and to address local community impacts.

The incoming gate of the departure terminal including ship loading activities;



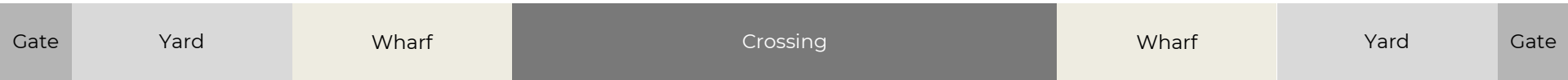
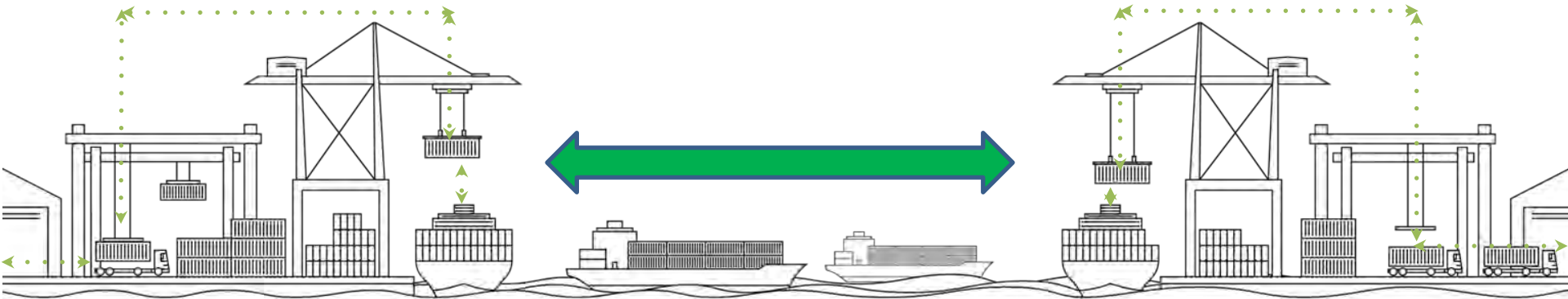
Transit along the shipping route to the arrival terminal;



Unloading of the ship and movement to the outgoing gate of the arrival terminal.

Port of Shanghai

Ports of Los Angeles/Long Beach



An aerial photograph of a large port and city area. The image shows a complex network of piers, docks, and shipping lanes. In the foreground, there is a residential area with a green field and a swimming pool. The water is deep blue, and several ships are visible. The text "Thank you!" is overlaid in the center in a white, sans-serif font on a semi-transparent teal background.

Thank you!