



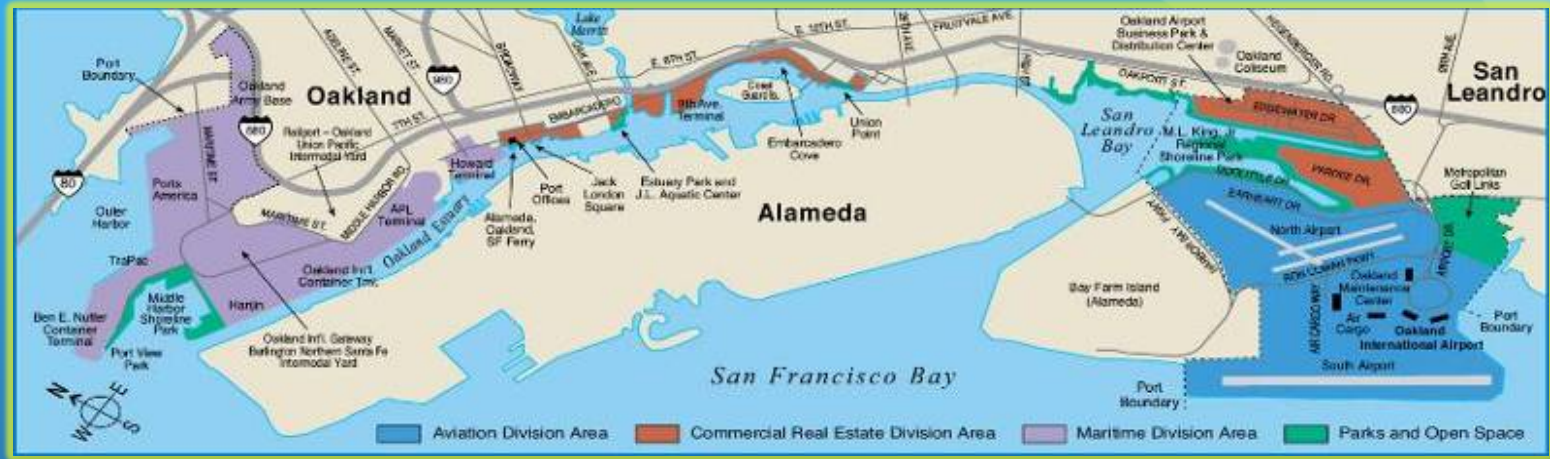
Port of Oakland

CMANC

Climate Resiliency Panel

October 13, 2022

Port of Oakland 101



- Top 10 highest volume container port in U.S.
- 12th busiest cargo airport in the U.S.
- 33rd busiest passenger airport in the U.S.
- 20 miles of waterfront (maritime, aviation and real estate), utilities, public parks and habitat



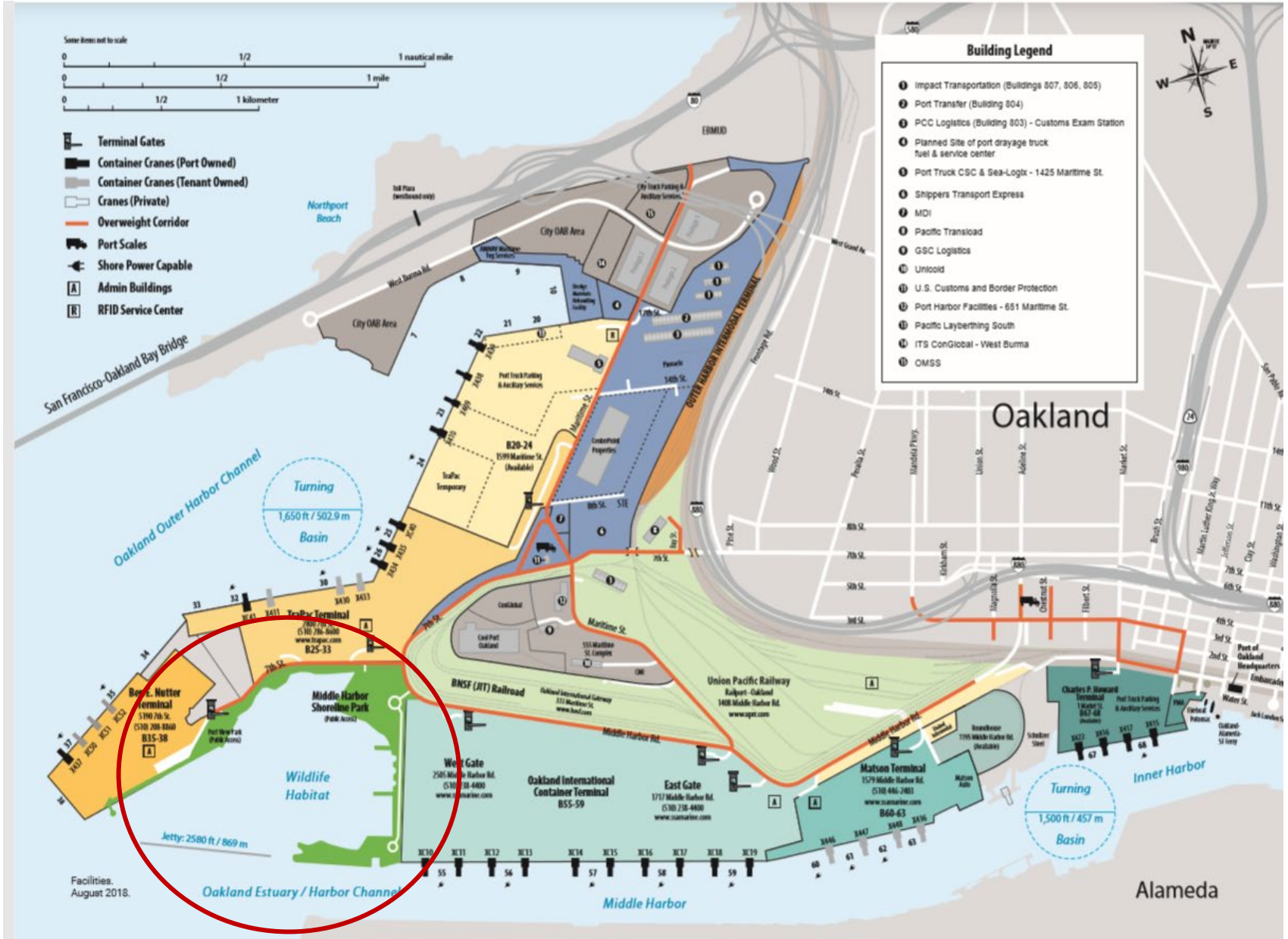
Middle Harbor Enhancement Area



Ancillary Feature Design
via Design Charrette

September 22, 2020

Maritime Area



Facilities.
August 2018.

Oakland 1859 - Not Much to Harbor



Middle Harbor in the 1990s



Vision 2000 - Oakland Harbor Navigation Improvement (-50 Foot) Project



Goals - Middle Harbor Target Habitats



MHEA Implementation ?



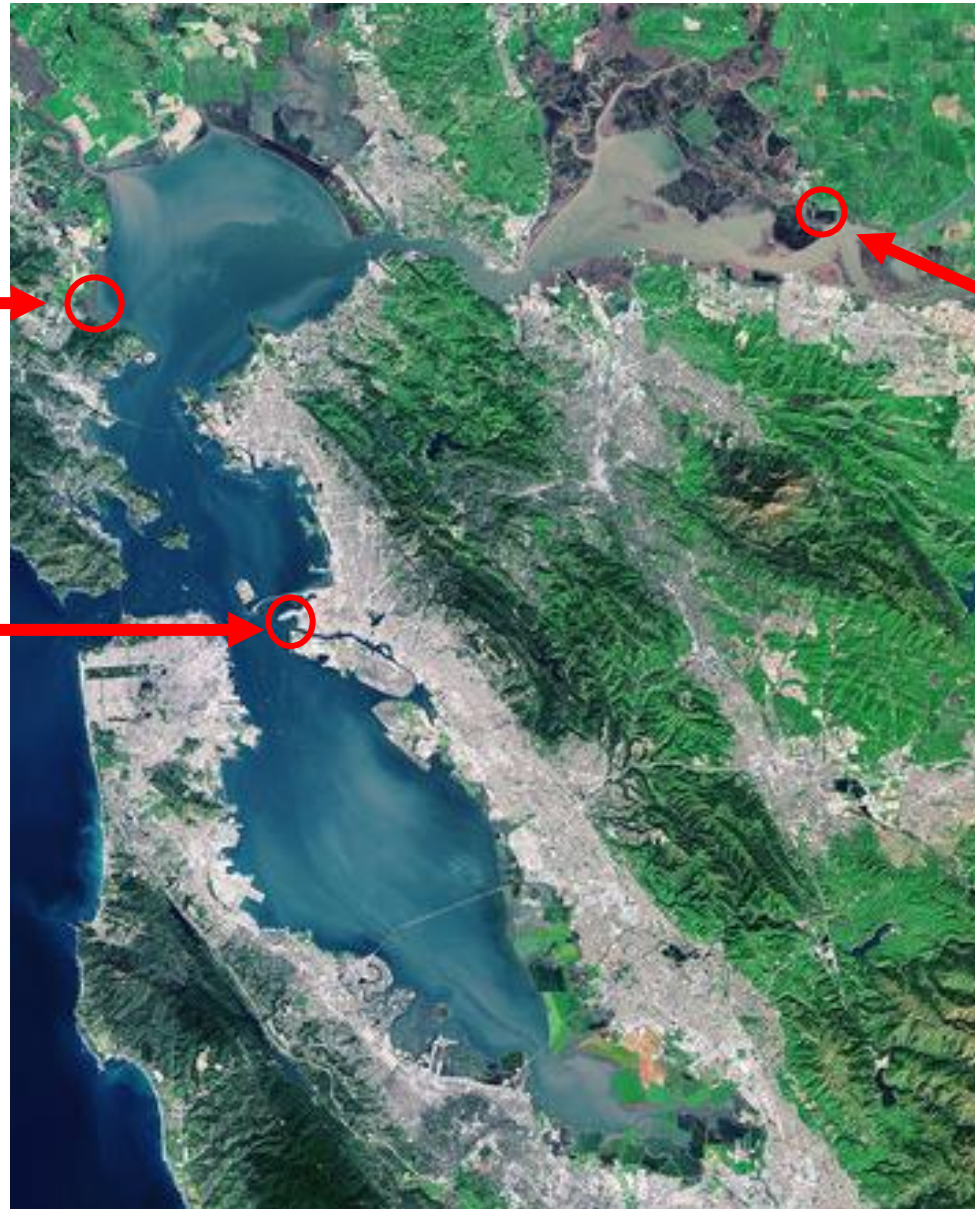
Restoration Projects Receiving Dredge Material

(millions of cubic yards – mcy)

Hamilton
Airforce Base
(5.9 mcy)

Middle
Harbor
Enhancement
Area
(5.6 mcy)

Montezuma
(2.8 mcy)



A Pod of Pelicans Feeding in MHEA



AB 691 SLR Adaptation Strategy Assessment

1.A

- Assessment of SLR Impacts: Inventory

2

- SLR Mapping - 2030, 2050, 2100 (low and high)

1.B

- Assessment of SLR Impacts: Vulnerability Assessment

3

- Estimation of Financial Costs

4a

- Development of Adaptation Strategies

4b.

- SLR Assessment Plan

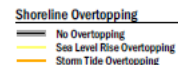
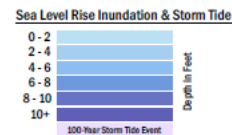
SLR Mapping - Year 2030 / 2050



This map and the associated analyses are intended to improve sea level rise awareness and preparedness by providing a regional-scale illustration of inundation and coastal flooding due to specific sea level rise and storm surge scenarios. This map and the associated analyses are not detailed to the parcel-scale and do not account for flooding from other sources, erosion, subsidence, future construction or shoreline protection upgrades, or other changes to the region that may occur in response to sea level rise. Flooding due to sea level rise and storm surges is possible in areas outside of those predicted in these maps, and the maps do not guarantee the safety of an individual or structure.

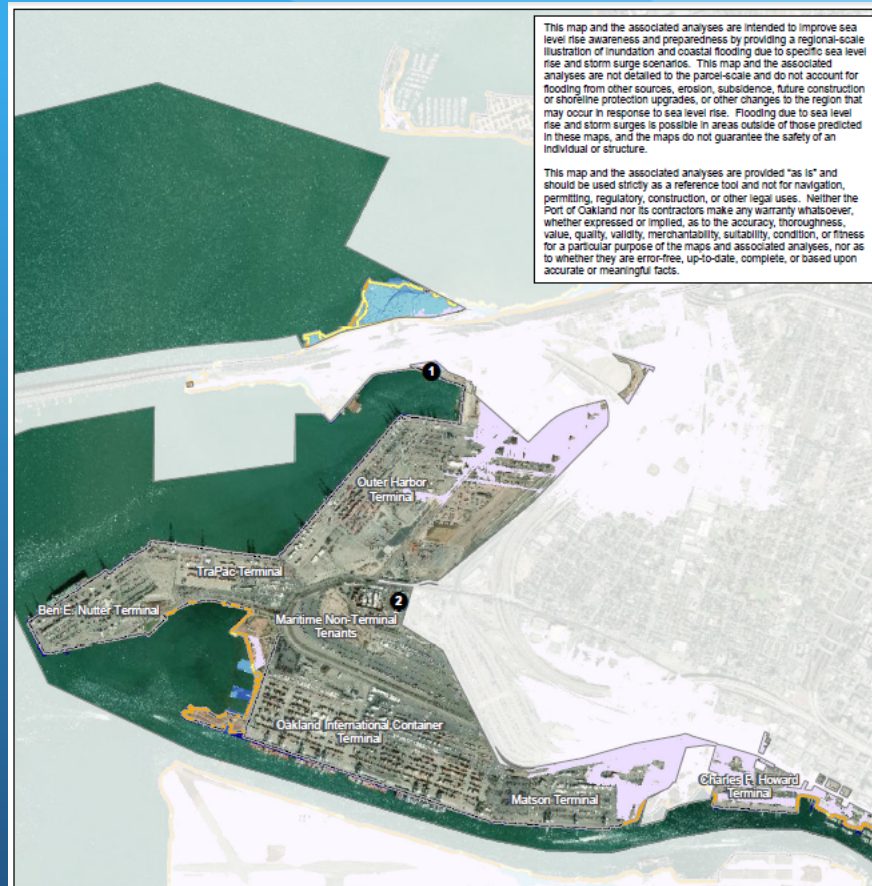
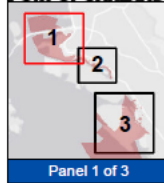
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YEAR 2030 SCENARIO: 1 FOOT SEA LEVEL RISE + 100-YEAR STORM TIDE EVENT



Port of Oakland Assets

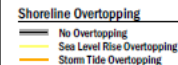
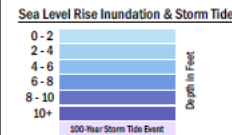
- 1 AMNAV Maritime Tug Service
- 2 Port Harbor Facilities



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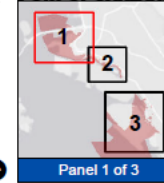
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YEAR 2050 SCENARIO: 2 FEET SEA LEVEL RISE + 100-YEAR STORM TIDE EVENT



Port of Oakland Assets

- 1 AMNAV Maritime Tug Service
- 2 Port Harbor Facilities



Adaptation



PORT OF OAKLAND

M.1 Middle Harbor Shoreline

Strategy Types



Enhance existing dunes area; add a living shoreline south of Middle Harbor Shoreline Park; elevate street; and construct seawall to protect the park area, International Container Terminal and maintain roadway access. Also add armoring, such as riprap, to stabilize shoreline along peninsula of Middle Harbor Shoreline Park.



Initial Exposure

- Extreme Storm Flooding: 100-year storm tide + 2 feet (Year 2050)
- Daily Tidal Inundation: MHHW + 5.5 feet (Year 2100)

Assets Protected

- Middle Harbor Shoreline Park
- Oakland International Container Terminal

Strategy Cost

- Protect to 3 feet of SLR = Medium
- Protect to 5.5 feet of SLR = Medium

Potential Collaborators

- City of Oakland

Case Study

Airport Perimeter Dike



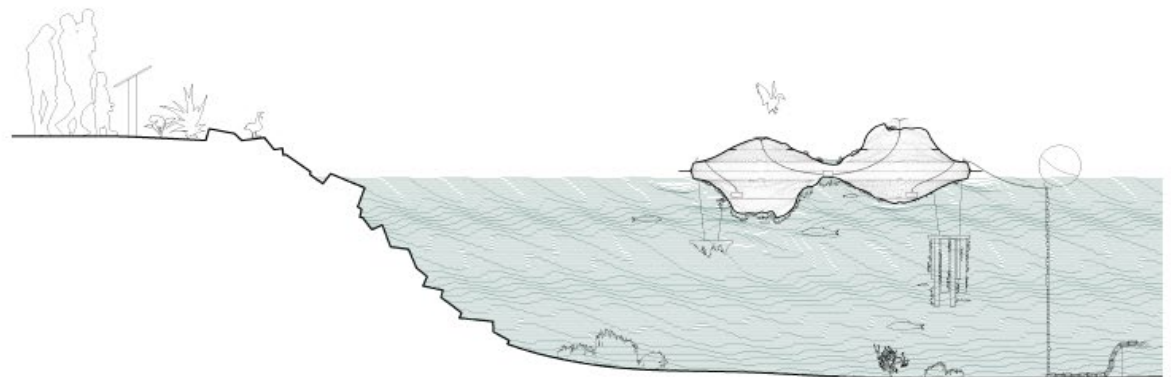
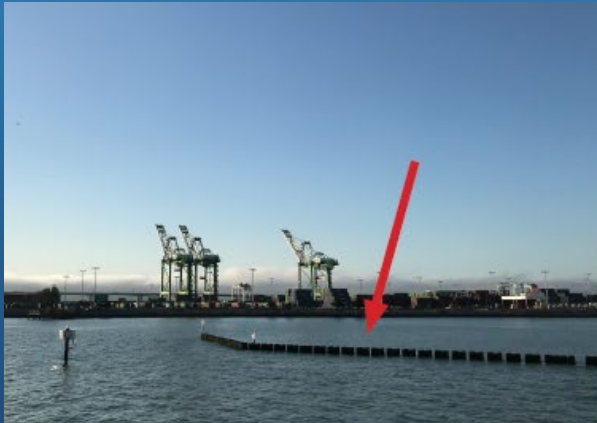


PORT OF OAKLAND



Other SLR Efforts

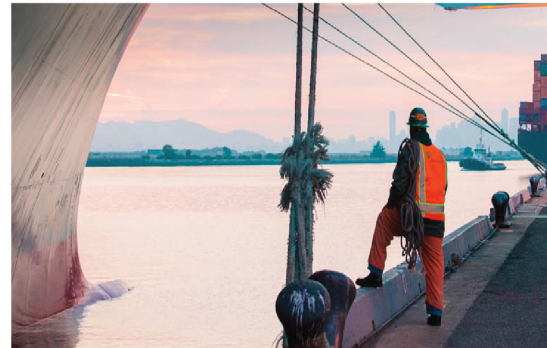
- Oakland Airport Perimeter Dike Improvement, Seismic work
- Float Lab, ongoing





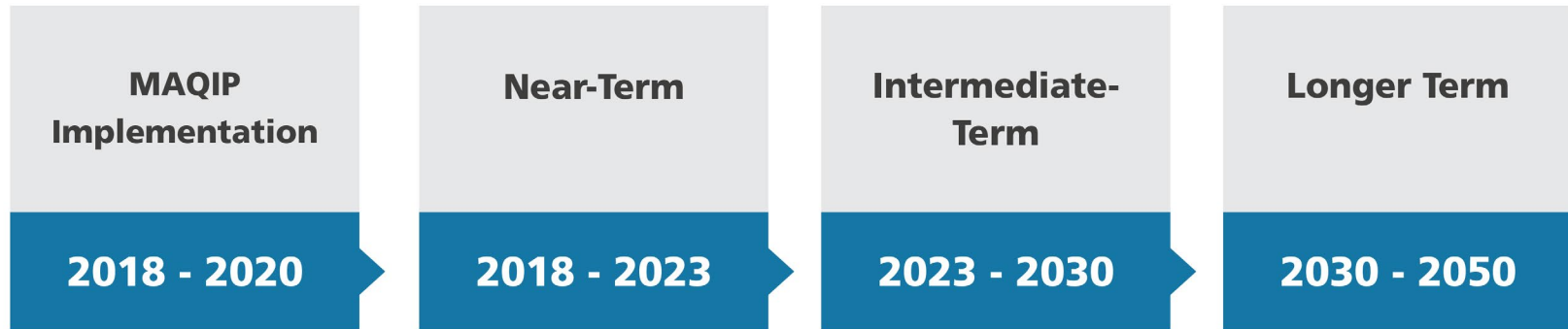
Draft Seaport Air Quality 2020 and Beyond Plan

July 12, 2018



- Pathway to Zero-Emissions Seaport.
- Reduces criteria pollutants and greenhouse gases.
- Long-term; phased implementation.
- Practical, technology-flexible, subject to feasibility.
- Robust stakeholder engagement.
- *Let's get started...* Near-Term Action Plan (2018-2023).

Phasing



Potential Implementing Actions

- Shore power.
 - Emissions inventory.
 - Comprehensive Truck Management Plan.
 - Task Force Meetings.
 - Additional emission reduction measures.
- Renewable diesel.
 - Voluntary vessel speed reduction.
 - Hybrid rubber tired gantry (RTG) cranes.
 - Zero-emission trucks.
 - Emissions inventory.
 - Task Force meetings.
 - Plan Update.
- Electrical upgrades.
 - Smart technology.
 - Hybrid and zero-emissions cargo handling equipment.
 - Port fleet conversion.
- Infrastructure build out.
 - New implementing actions.
 - Cleaner ocean-going vessels.



Powering the Future

Replacing aging electrical infrastructure with new state-of-the-art substations and locally-generated renewable power to support a zero-emissions Seaport





What's Next

SLR and Groundwater
Intrusion Study planned
to start in 2023



MHEA Project
Performed in
Collaboration
with USACE.

Thank you to
Eric Jolliffe,
Al Paniccia,
Keith Merkel,
Jon Amdur
for their
assistance



**US Army Corps
of Engineers**®
San Francisco District

Jan Novak, PWS*
Associate Environmental Planner/Scientist
Port of Oakland

Thank You