



Climate Change Adaptation and Coastal Resiliency Plan (CRP)



Port of
LONG BEACH
The Green Port

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Importance of Resiliency

- Climate impacts already impacting the Port/Southern CA
 - Sea level rise
 - Greater frequency & magnitude of storms
 - Greater number of hot weather days
- Decision making for port and port tenants & stakeholders
 - Prioritization of resource allocations
 - Investing in maritime infrastructure
- State compliance
 - AB 691, SB 375
- Hurricane Marie—August 2014
 - Demonstrated relevance & importance of adaptation planning



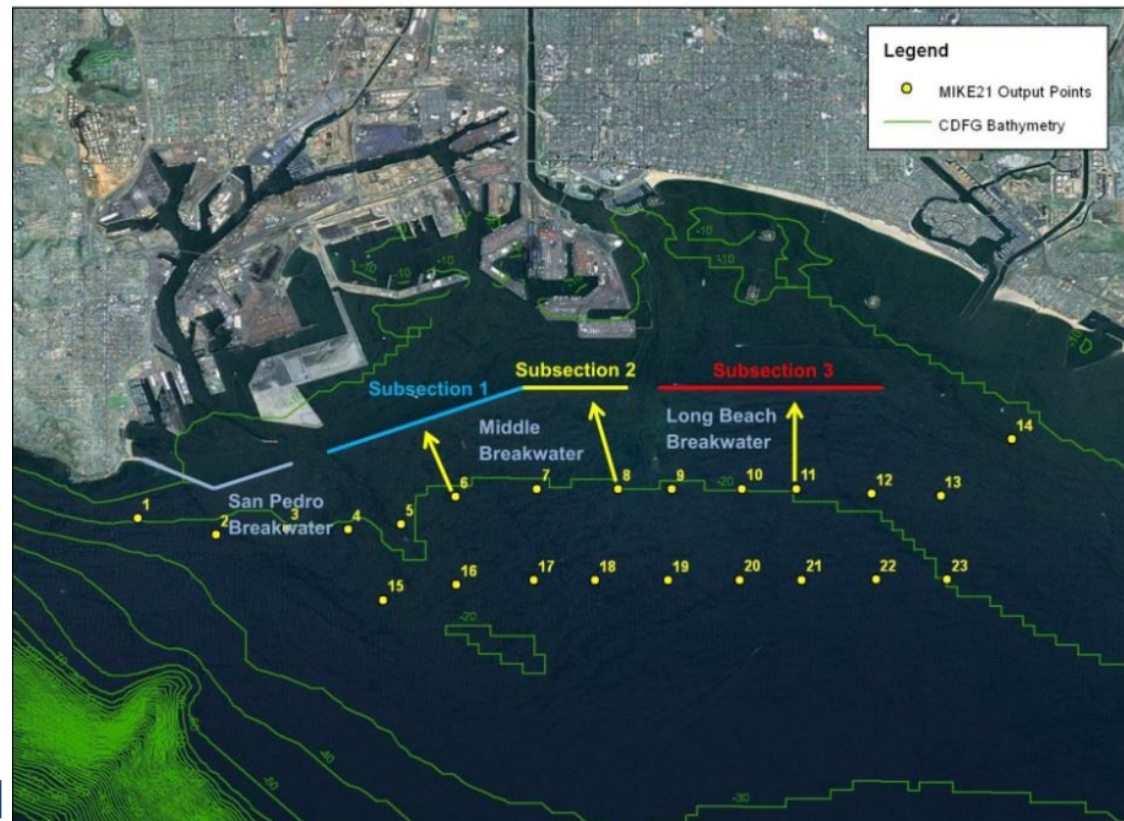
Hurricane Marie – A Case Study

- Damage at Navy Mole and Pier F shorelines & rock dikes
 - \$7M in repairs
- Significant damage to breakwater
 - 3 large holes & many other breeches
 - \$21M in repairs
- Access restricted to rail operations, critical facilities, fueling stations, etc.



Breakwater

- USACE owned & maintained
- 9 miles long – 3 sections
- 200 feet wide at bottom, 23 feet wide at top
- Long Beach breakwater most vulnerable section (based on historical storm conditions)
- Hurricane Marie included unusual wind and wave direction which caused damage to the Middle Breakwater, leading to infrastructure damage and an impact to Port operations.



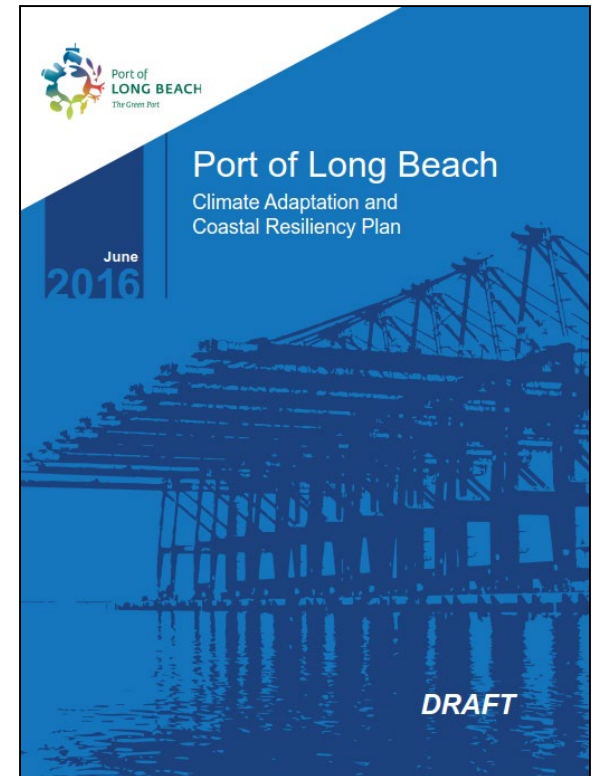
Climate Adaptation and Coastal Resiliency Plan

Project Goals

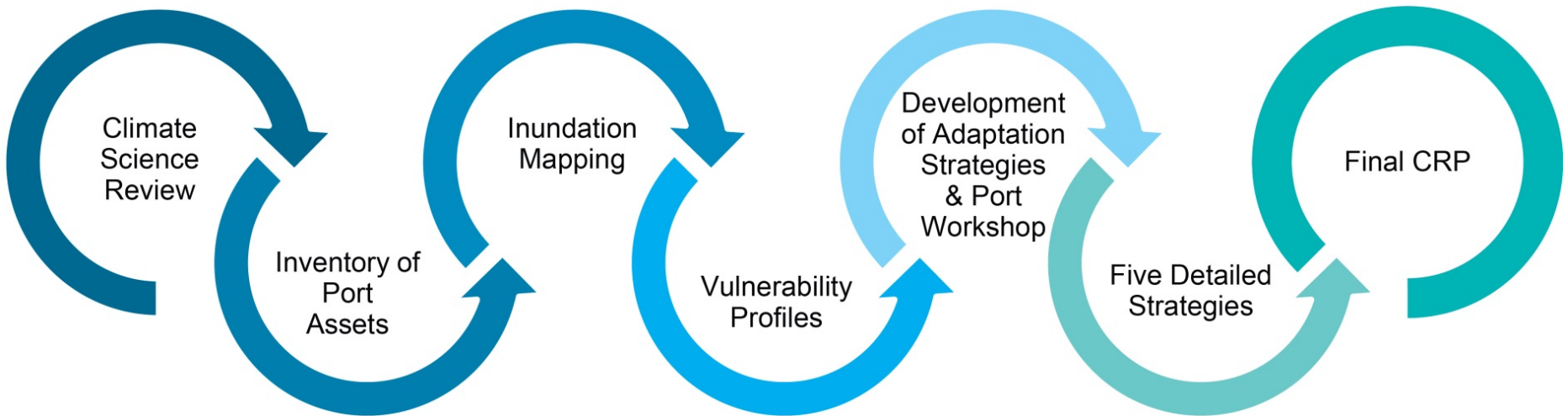
- Ensure resilience and business continuity
- Manage risks associated with climate change
- Identify most vulnerable assets
- Identify adaptation strategies to protect port infrastructure

Project Benefits

- A more resilient port able to maintain operations under changed conditions
- More future-looking risk assessment process
- Long-term sustainable development
- A port ready to adapt



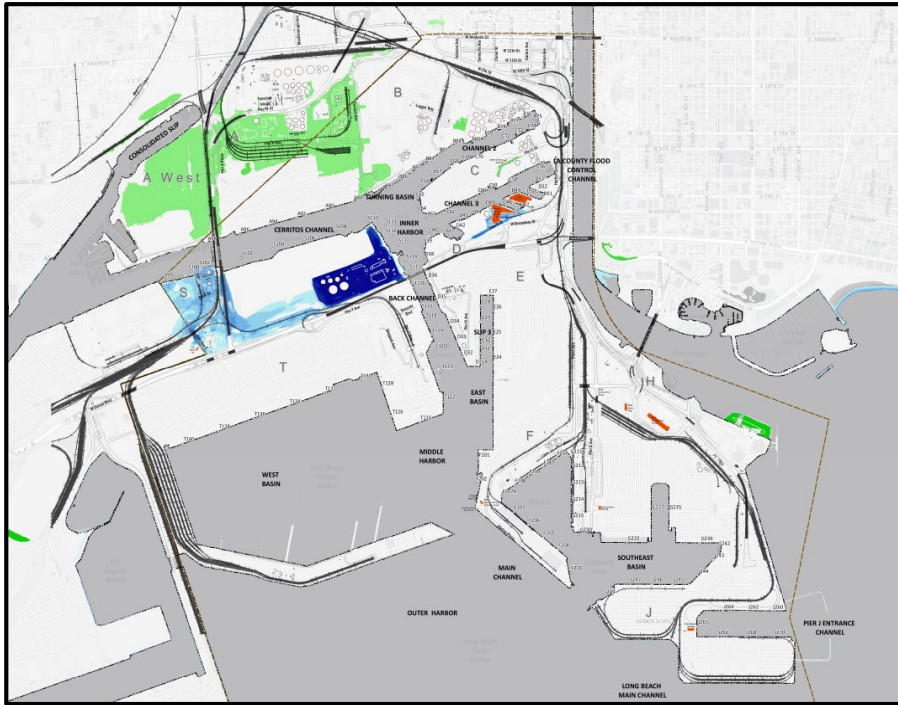
CRP – Project Approach



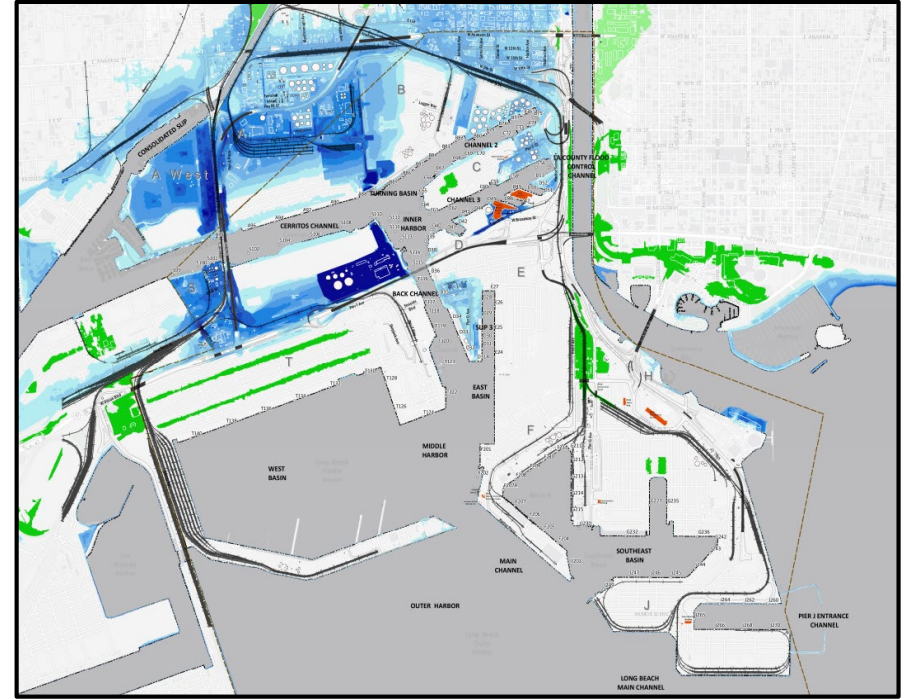
Phase 1: Data Gathering

Phase 2: Adaptation Strategies

CRP – Inundation Mapping

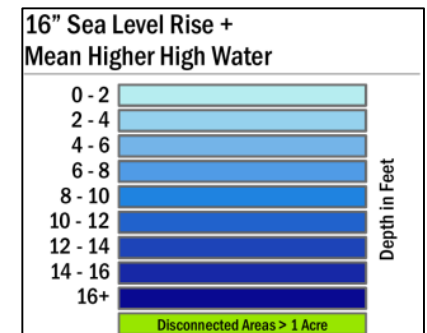


Least Extreme (16" SLR)



Most Extreme (55" SLR + 100yr Storm Surge)

	Scenario	Year
16" SLR	16" SLR + Storm Surge	2050
36" SLR	36" SLR + Storm Surge	2070
55" SLR	55" SLR + Storm Surge	2100



Next Steps

- ✓ Implement Prioritized Adaptation Strategies
 - Port policy & plan updates
 - Additional feasibility studies
 - Infrastructural enhancements
- ✓ Continue to review “future consideration” strategies based on needs and impacts seen
- ✓ Review latest climate science and reevaluate the current CRP