Climate Mitigation and Adaptation Plan (CMAP)
Port of San Diego

AWMA: Greenhouse Gas Strategies In A Changing Climate
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*speakers

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Outline

- Port Goals and Process
- Climate Change Adaptation Component of CMAP
- GHG Mitigation Component of CMAP

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Port of San Diego Background

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Port Goals

- Key Planning Goal: Provide a tool for streamlining GHG evaluation for future CEQA (California Environmental Quality Act) processes
  - Revised CEQA Guidelines have a specified approach
  - Focus is on greenhouse gas (GHG) emission reductions
- Additional Goals:
  - Achieve GHG reductions on Port tidelands
  - Address adaptation issues – recent CA planning issue

CMAP Development Process

Stage 1:
Development of CMAP

GHG Mitigation

1. Baseline & Future Emission Inventories
2. Review & Categorize Mitigation Measures
3. Set Goals
4. Specify Mitigation Measures to Achieve Goals
5. Tracking Methods

Climate Change Adaptation

1. Existing Conditions
2. Port Vulnerabilities
3. Port Prioritization of Actions
4. Port Implementation Strategies

Stage 2: Draft CMAP

Stage 3: Final CMAP

Stage 4: CEQA Process

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Climate Adaptation for a Port: Considerations

- Climate adaptation planning is a new concept
  - New paradigm that manages risks related to climate change
- Different approach than typical planning process
  - Departure from relying solely on historical info
  - Emphasis on future planning and risk management
- Long planning horizon – 50yr and 100yr
- No “low-hanging fruit” for adaptation (unlike GHG)
- Requires multi-jurisdictional coordination

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Regional Effort – San Diego Bay Climate Adaptation Strategies

- ICLEI Local Governments for Sustainability – lead
- Multi-jurisdictional
- Toolbox – recommendations to address certain impacts, vulnerabilities, sectors, or timeframes

BEACH NOURISHMENT
Expanding beach depth, replenishing beach sand, and constructing or expanding sand dunes provides spatial/passive buffering from high sea levels.

WETLANDS
Wetlands provide flood water storage, buffers from storms and erosion control. They are also particularly sensitive and will "naturally" shift upland with the increasing salinity and water depth that results from sea level rises.

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GHG Emissions Reduction for a Port: Considerations

- Many recent plans underway but focus on Cities/Counties
- The Port is different than a City/County
  - No Port template exists
- Presents unique challenges given Port's mandate
  - Different types and mix of sources than cities
  - Land-use restrictions
  - Bottom-up approach needed to inform goals and measures

Stakeholder involvement, public process

- Typical process at Port and for Plans under CEQA
- Involves a more focused technical advisory group
  - Port's Climate and Energy Work Group
  - Meeting at key milestones steps
- Involves public participation during development
  - Website
  - Email notices
  - Public Meetings
  - Environmental review and formal public comment period

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Climate Adaptation Component

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Five Milestones for Climate Adaptation

Make Commitment

Vulnerability Assessment and Prioritize Actions

Identify Implementation Strategies

Adopt Climate Mitigation and Adaptation Plan

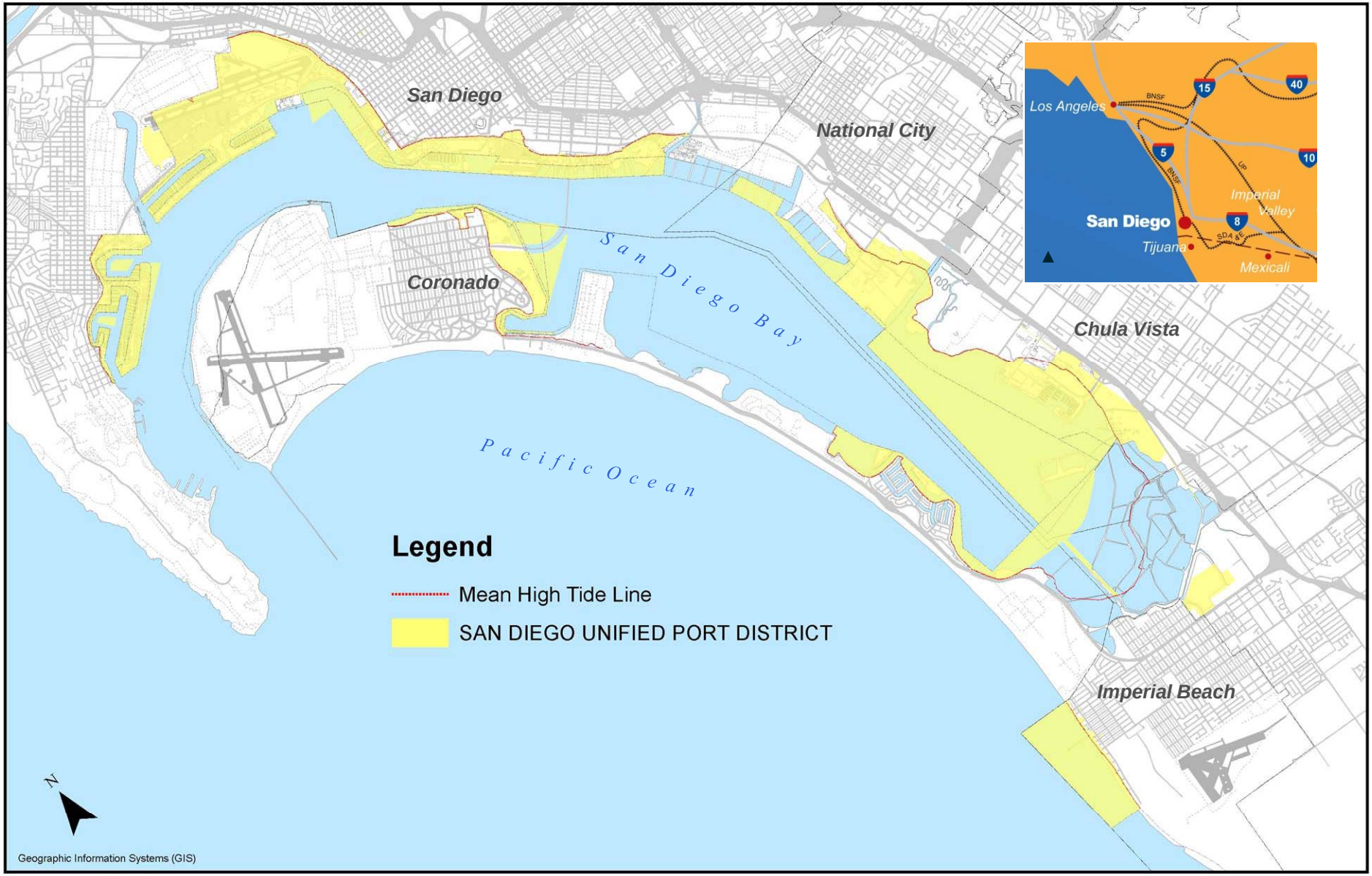
Implement Strategies

Measure Progress & Evaluate Plan

Adapted from ICLEI – Local Governments for Sustainability

Key Vulnerabilities

- Quantitative sea-level rise (SLR) impacts
  - Land Use (Port and tenant activities)
  - Stormwater infrastructure
  - Natural Resources
  - Other (e.g. goods movement, safety, etc.)
- Qualitative Summary of Vulnerabilities
  - Temperature Increases
  - Other Impacts
    - Peak energy demand reduction
    - Water conservation
    - Increased erosion



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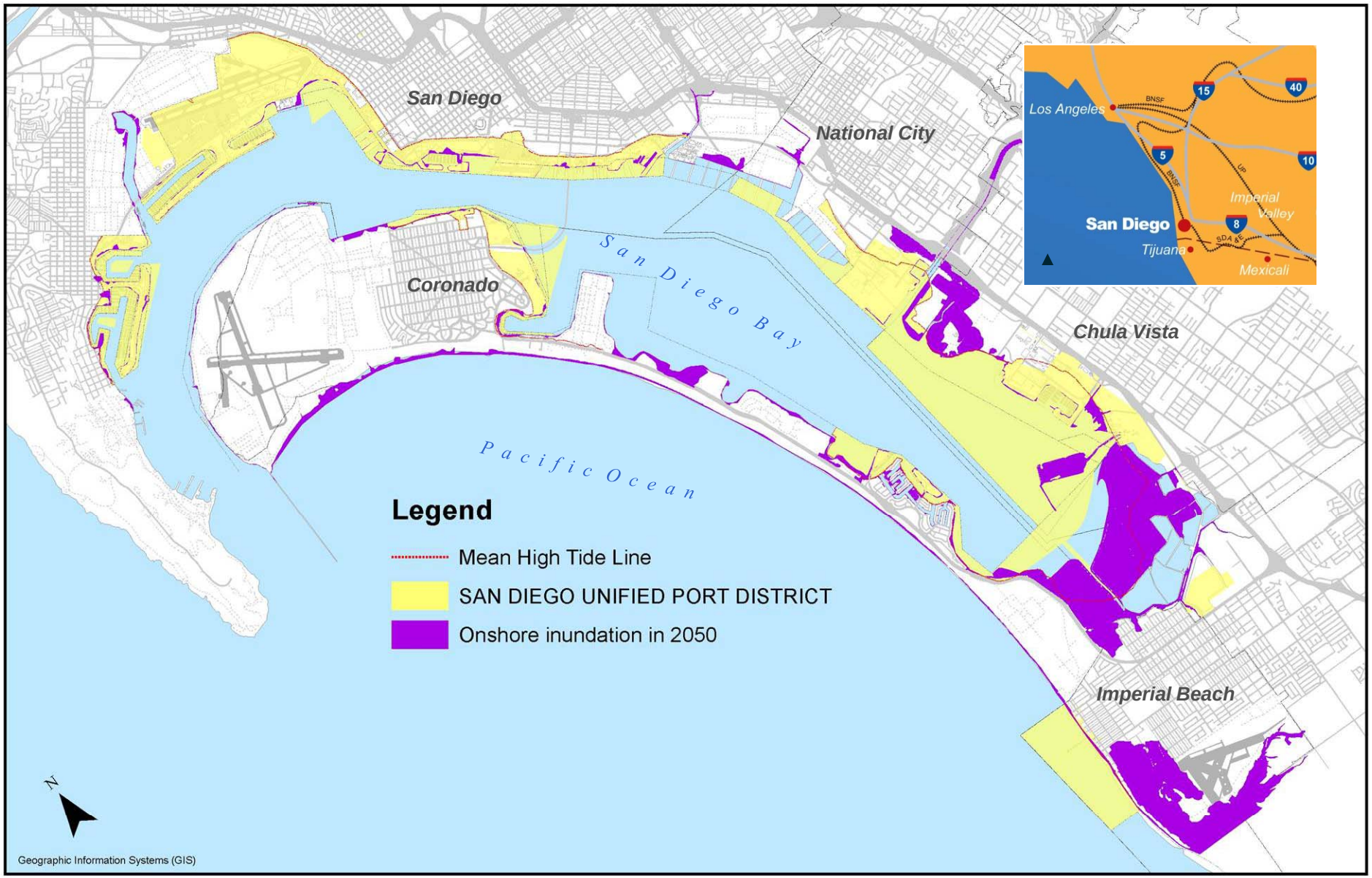

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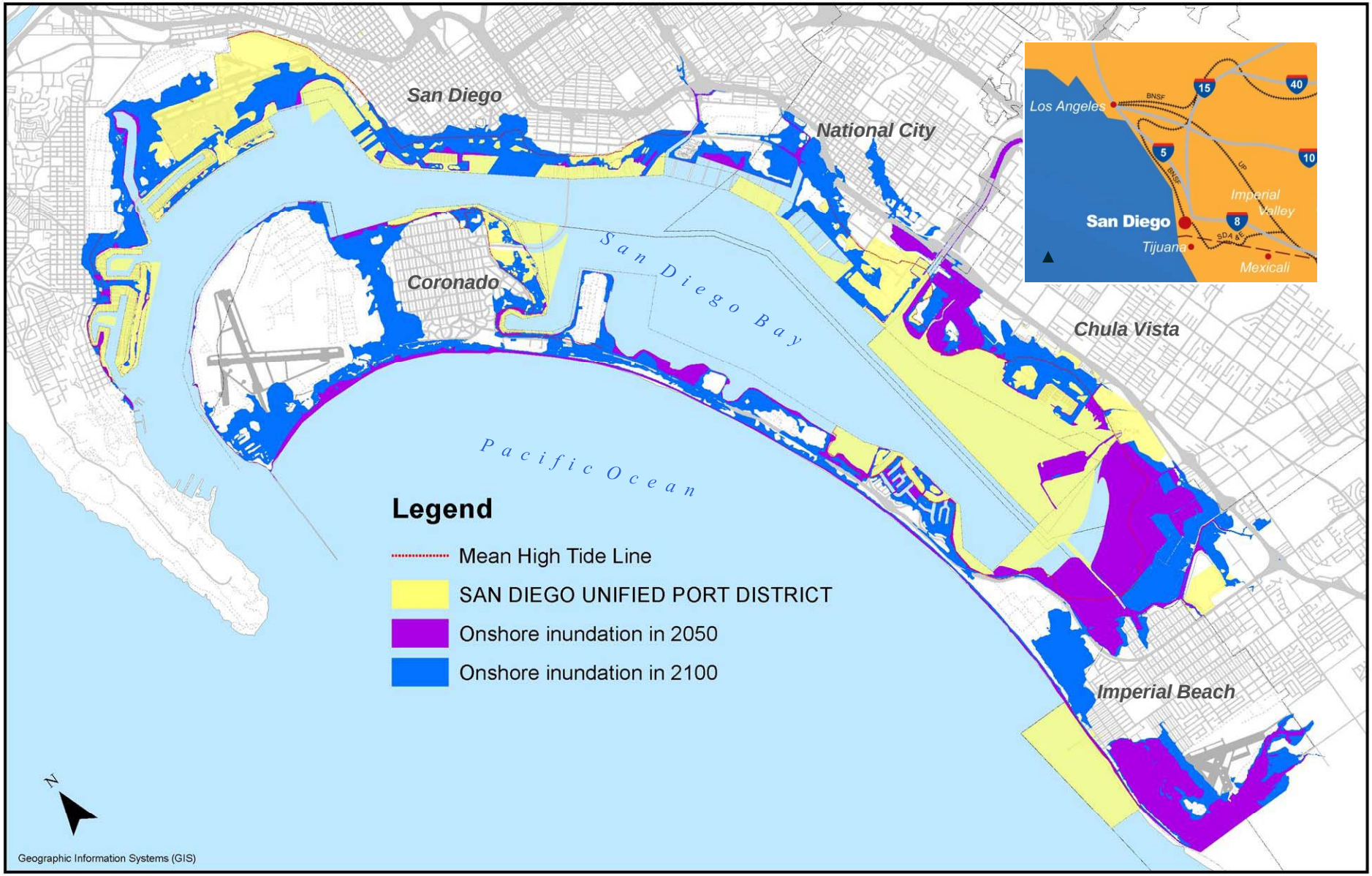

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Likelihood

LIKELIHOOD RATINGS		
Almost certain	5	Expect this event almost annually. Highly likely (>90% probability).
Probable	4	Expect this event several times by 2050/2100. Likely to occur (50-90% probability).
Possible	3	Expect this event to possibly occur once by 2050/2100. Not very likely, but still appreciable chance of occurring (10-50%).
Unlikely	2	Event hasn't occurred yet, but could occur at some time by 2050/2100. Unlikely but not negligible (1-10%).
Rare	1	Event has occurred in other regions of the world, but only in exceptional circumstances. Not expected to occur near the Port (<1%).

Consequence

Risk by function *	Consequence rating				
	1	2	3	4	5
Working Port	No impact or slight reduction of operations in specific areas.	Limited short-term (hours) interruptions to operations causing slight delays.	Increased medium-term (days) interruptions to operations. Damage to buildings, property, cargo, or equipment.	Longer term (months) loss of operations. Major damage to buildings, property, cargo, or equipment.	Permanent loss of operations.
Green Port	No loss of natural habitats or ecosystem services.	Disruption or damage to natural habitat components that is both short-term temporary (hours), and that is likely to be reversible (including habitats and/or native species that are not rare, nor threatened, nor endangered). No net loss of ecosystem services. **	Disruption or damage to natural habitat components that is both medium-term temporary (days) and that is likely to be reversible with restoration and/or conversion (including habitats and/or native species that are not rare, nor threatened, nor endangered). **	Disruption to or loss of natural resource components that is both long-term (months) and that is likely to be reversible with restoration and/or conversion (including habitats and/or native species that are not rare, nor threatened, nor endangered). **	Probable permanent and irreversible loss of natural resource components (including habitats and/or native species that are not rare, nor threatened, nor endangered). **

Risk Matrix to Prioritize Actions

		CONSEQUENCE				
		1	2	3	4	5
LIKELI-HOOD	5	Medium	High	Very high	Very high	Very high
	4	Medium	Medium	High	Very high	Very high
	3	Low	Medium	Medium	High	Very high
	2	Low	Low	Medium	Medium	High
	1	N/A	Low	Low	Medium	Medium

Next Steps

- Adaptation Options
  - Identification of adaptation types
  - Ranking adaptation options based on applicability (e.g. soft, hard, retreat, etc.)
- Finalize prioritization of actions using risk metric
  - Risk defined as a product of likelihood and consequence
  - Evaluated under Working Port, Safe Port, Green Port, and Public Port functions
- Describe implementation strategies

GHG Emission Mitigation Component

1. Baseline & Future Emission Inventories
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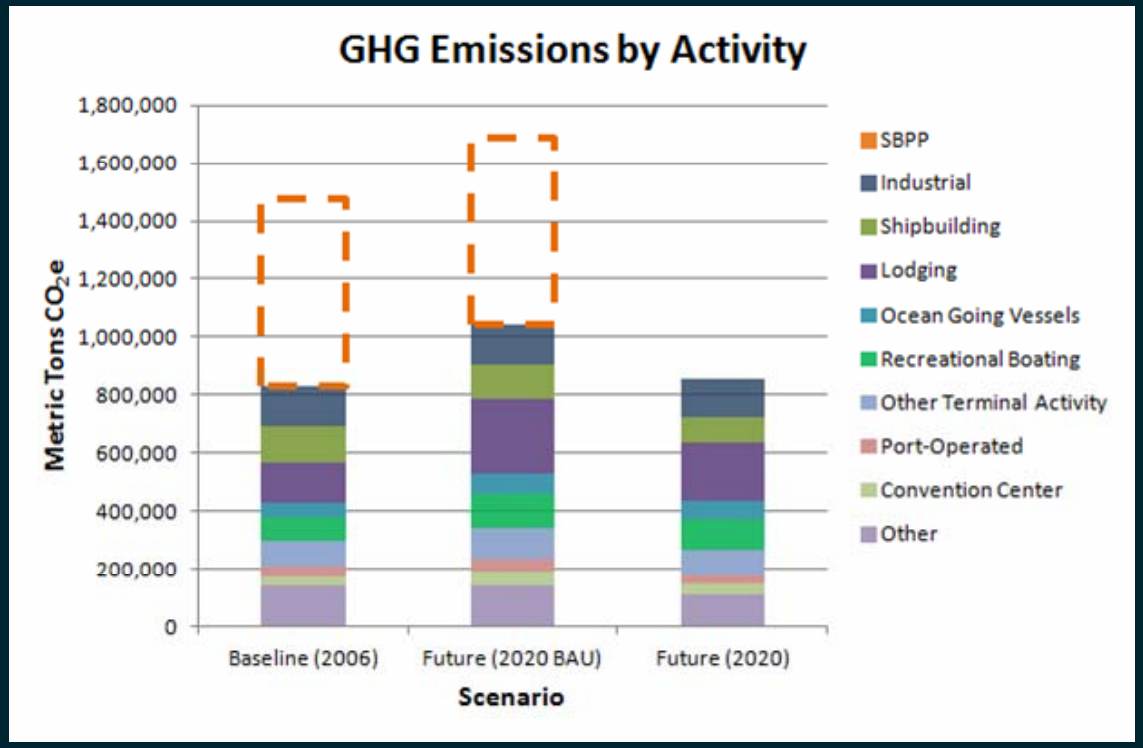
Scope of Inventory: 2006 and 2020

Category	Geographical Scope
Energy  	•Electricity and natural gas usage within jurisdiction •Minor amount of diesel combustion
Transportation: On-Road Vehicles 	•Trips originating or terminating within jurisdiction (including VMT outside of jurisdiction) •Exclude pass-by trips
Transportation: Off-Road Vehicles, Vessels, Equipment, Locomotives 	•Consistency with Maritime inventory •Locomotives – within County •OGVs and harborcraft – within County and State Waters •Trucks – within County •CHE – within Port •Cruise Terminal Transportation – within Port •Recreational boats
Water Use & Wastewater 	•Usage within jurisdiction
Waste 	•Solid Waste - Direct landfill emissions (transport in Transportation Category)

GHG Inventory Summary (By Activity)



Scenario	Emissions Excluding SBPP		
	Baseline (2006)	Future (2020 BAU)	Future (2020)
GHG Emissions (metric tons CO_2e)	828,742	1,044,539	856,431
% Increase from Baseline (2006)	--	26.0%	3.3%

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Port vs. County Comparison

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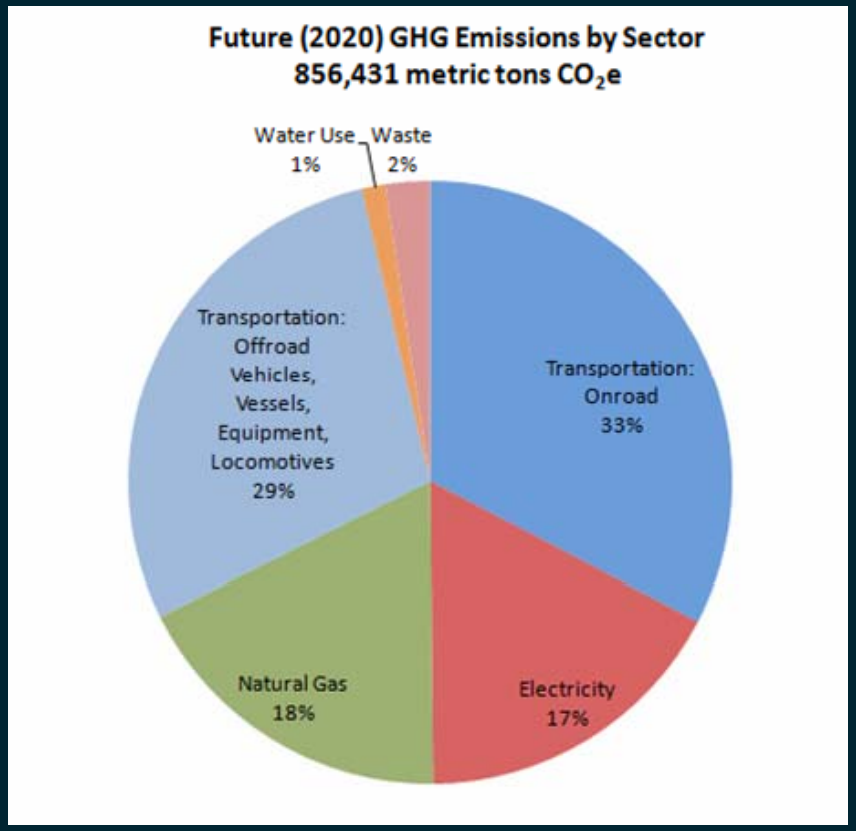
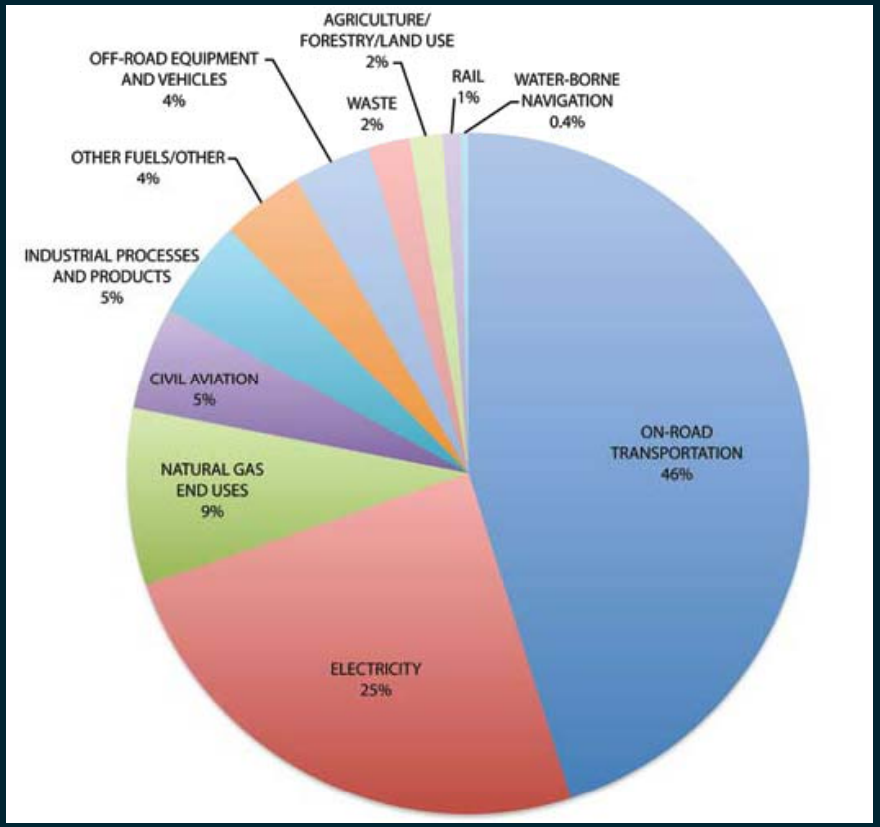


County of San Diego



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GHG Mitigation Measures

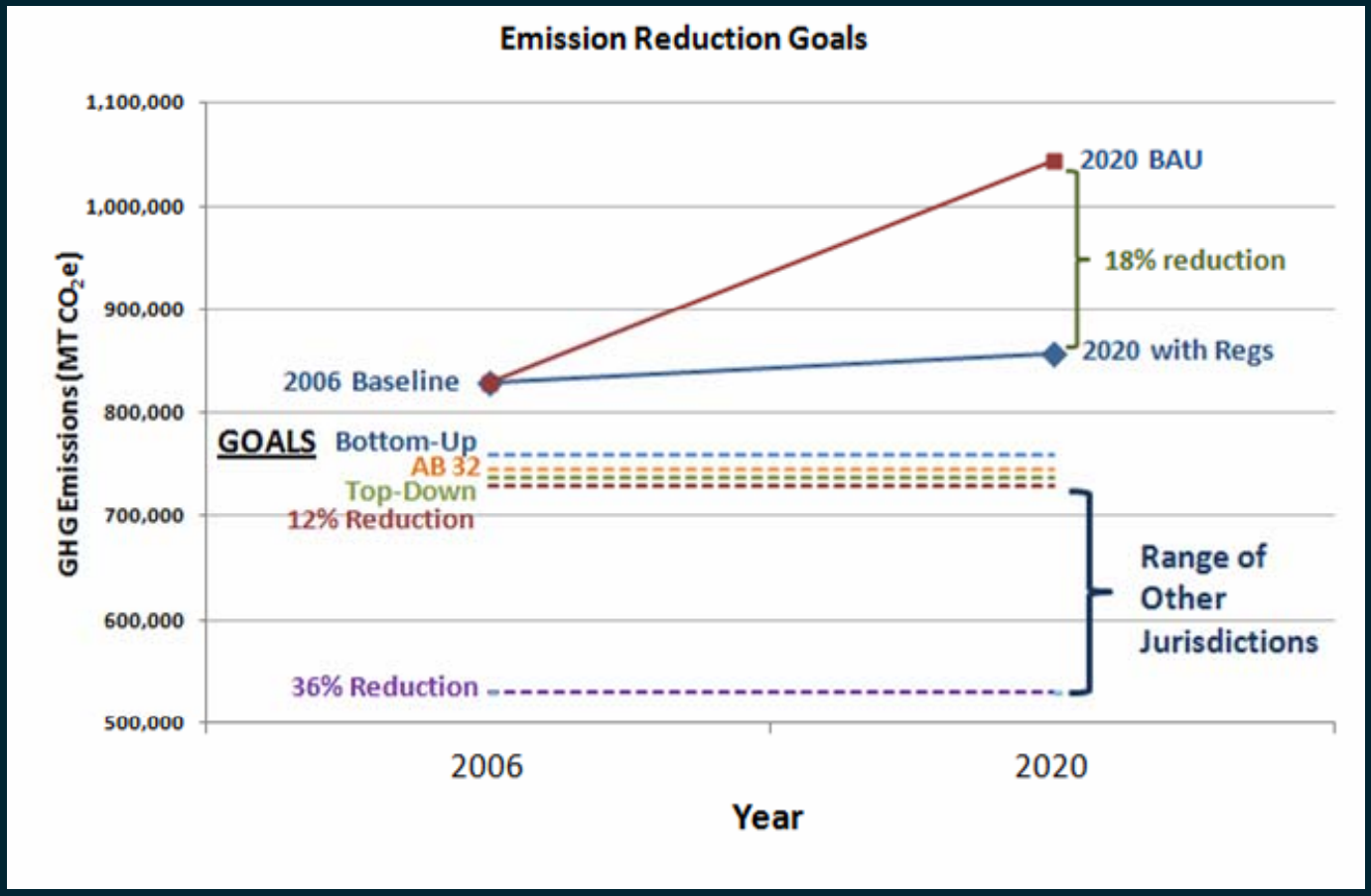
Identified mitigation measures from local efforts and other recent CEQA CAPs plus comments provided to Port

- Transportation (47)
  - Land Use/Community Design
  - Transit System Improvements
  - Parking Policy/Pricing
  - Trip and Vehicle Miles Reduction
  - Roadway System Management
  - Alternative Power Vehicles
- Solid Waste (3)
  - Waste Reduction and Recycling
  - Methane Recovery
- Energy (35)
  - Building Energy Use
  - Alternative Energy Generation
  - Heat Gain and Shading
  - Lighting
- Water (7)
  - Recycling
  - Conservation
- Others (11)

GHG Mitigation Measures: Categorization

Criterion	Quick Wins (QW)	Action Planning Required (APR)	Significant Investment Required (SIR)	For Future Consideration (FC)
Timeframe	2020	2020 or 2035	2035 or 2050	All
Reduction potential	All	All	Moderate or High	All
Cost	$ or $$	$ or $$	$$$	All
Cost effectiveness	All	Moderate or High	Moderate or High	All
Technical feasibility	High	Moderate or High	Moderate or High	All
Implementability	High	Moderate or High	All	All
Measurable results	All	All	All	All
Co-benefits	Any	Any	Any	Any
Potential funding	Current or Potential	All	All	All
Authority	Direct or Indirect	Direct or Indirect	All	All

GHG Mitigation: Goal Setting



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Remaining Steps for GHG Mitigation

- Specify goal(s)
- Describe mitigation measures to help achieve goal
- Establish mechanism to track progress towards goals
  - Identify parameters for each reduction measure that can be readily measured (i.e., fuel use, vessel trips, milestones)
  - Develop process for evaluation of secondary or backup strategies
- Draft CMAP report

Thank You for Attending

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GHG Mitigation Measure: Categories for Grouping

Category	Description
Quick Wins (QW)	• Currently underway or planned measures • Clear funding direction or strategies in place • Represent “low hanging fruit” • Prioritized for implementation
Action Planning Required (APR)	• Cost-effective measures likely needed to reach the 2020 reduction goal • Additional planning required for implementation • Need to be prioritized based on target
Significant Investment Required (SIR)	• Expensive to implement (time and cost) • GHG reductions not expected prior to 2020 • Implementation planning for the highly cost effective measures can begin now
Future Consideration (FC)	• All other measures considered during the process • Should be monitored and updated periodically, since changes to technology, funding sources, and potential partners may make these measures more suitable for implementation in the future