

# CLIMATE READY ESTUARIES



## *Jumpstarting Coastal Adaptation at EPA*

OCRM  
Ocean and Coastal Program Managers' Meeting  
February 24, 2009

# Outline

- Climate Ready Estuaries
  - Opportunity
  - Approach
- Adaptation planning and CRE
  - Lessons learned from NEPs



# 2007 - No CC in CCMPs

- Growing demand for coastal adaptation
  - IPCC, CCSP 4.4
  - National focus on mitigation
- NEPs' Comprehensive Conservation Management Plans completed in '90s
  - Focus on habitat, growth, water quality
  - None addressed climate change
  - NEPs requested help
- National technical expertise on adaptation
  - Needed implementation

# Approach – Jump Start Adaptation

- Test and Learn Through NEPs
  - Existing stakeholder/planning structure
  - National distribution
  - Existing partners for inundation and adaptation - CCSP 4.1
- Climate Ready Estuaries
  - Provide access to information, data, and tools.
  - Advance how we assess vulnerability and plan for adaptation.
  - Support coordination amongst federal agencies.

# What is CRE Doing?

- Partnered with six NEPs.
  - Albemarle-Pamlico NEP
  - Charlotte Harbor NEP
  - New Hampshire Estuary Project
  - Partnership for the Delaware Estuary
  - Massachusetts Bays Program
  - San Francisco Estuary Project
- Created web-based toolkit for coastal managers and the public ([www.epa.gov/cre/toolkit](http://www.epa.gov/cre/toolkit)).
- Participating in federal interagency forums to:
  - Identify, share, and support development of data/maps
  - Coordinate with other coastal management programs working on adaptation
  - Integrate funding and assistance
  - Promote local coordination

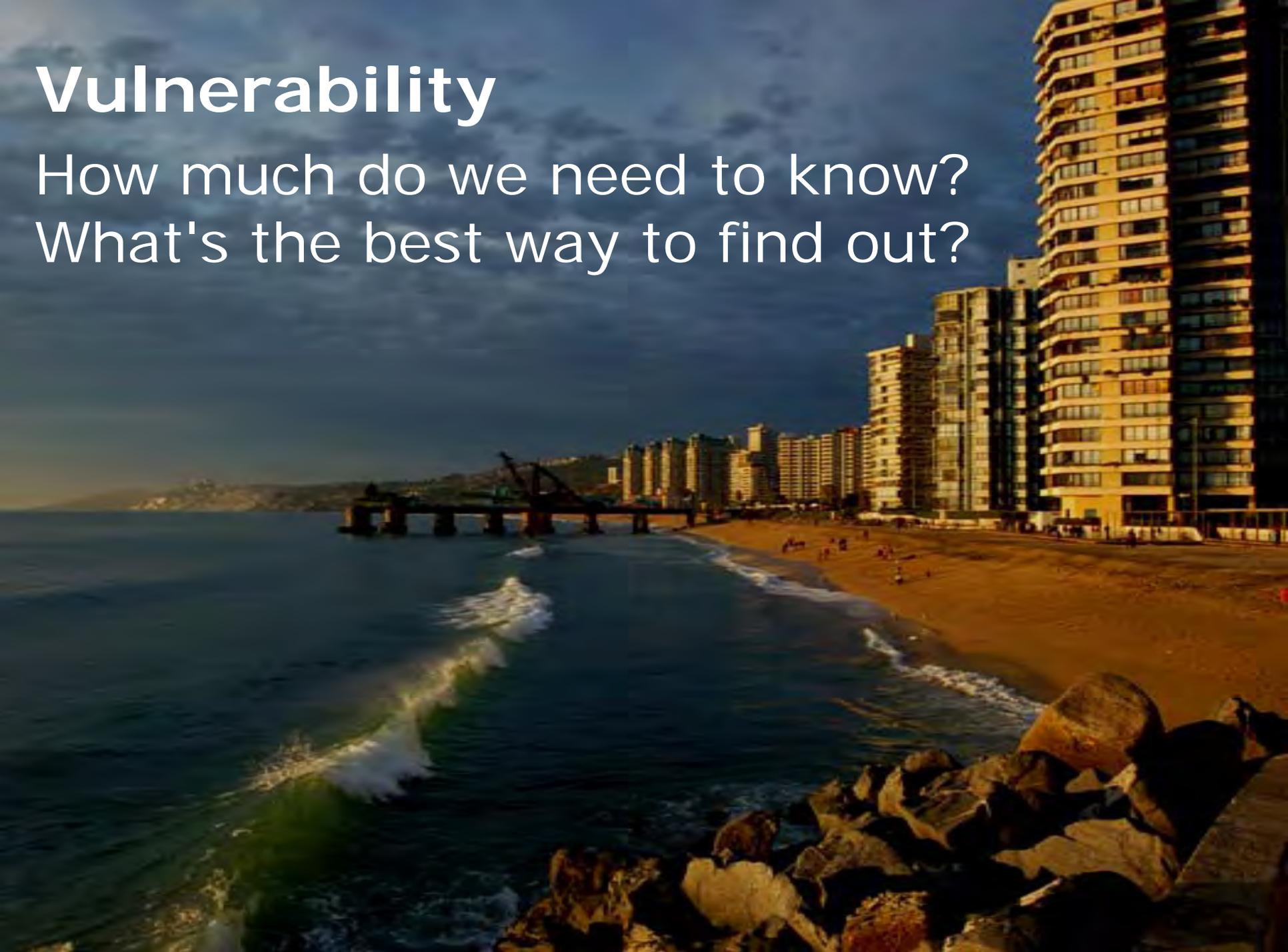


# Challenges

- How do we best assess vulnerability?
- How do we plan and raise support for action in the face of uncertainty?
- What constitutes an adaptation plan?
  - What adaptation approaches and actions work?

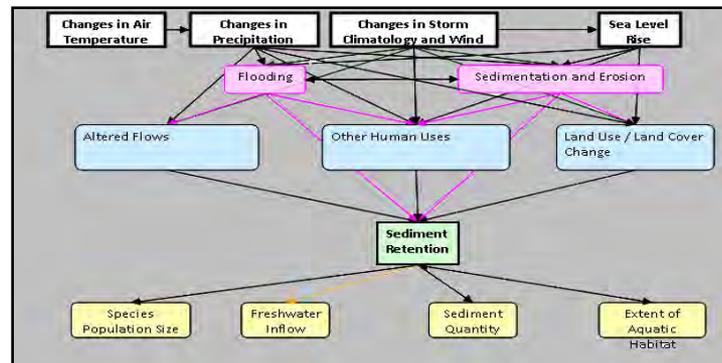
# Vulnerability

How much do we need to know?  
What's the best way to find out?



# Different Approaches

- Piscataqua Region Estuaries Partnership
  - Vulnerability assessment on impacts to transportation infrastructure (e.g., culverts).
  - Using narrow focus initially to build support for additional vulnerability and adaptation work.
- Mass Bays Program
  - Examine management goals and associated ecosystem processes.
  - Create conceptual models for projected climate change impacts.
  - Assess vulnerabilities of management goals for incorporation into adaptation plan.



# Vulnerability Lessons Learned

- Start with what you know.
  - Review goals for climate change sensitivities.
  - Identify key analytical questions of interest.
- Focus initially on resources or endpoints that are of high priority.
- Intensive/comprehensive exercises may not be needed.
  - Partner with stakeholders
  - Start with a broad, superficial assessment of risk.
  - Assess sensitivities and analyze management priorities.
  - Identify areas for more in-dept analysis.
- Create an ‘adaptive’ process that easily responds to changing information and events.

**How do we attract support for  
adaptation planning & implementation?**



# Linking to ongoing efforts

- **Albemarle-Pamlico Sounds NEP**
  - Linked to state-wide initiatives
    - Listening sessions and workshops with UNC.
    - Emergency management officials on storm surge vulnerability.
    - Assessing habitat vulnerability with TNC
- **Charlotte Harbor NEP**
  - Formed Partnerships
    - EPA Region 4 for a Vulnerability Assessment
    - City of Punta Gorda comprehensive plan
    - SW Florida Regional Planning Council
      - Expand hurricane/storm surge work assessment
    - US Dept. of Commerce, Economic Development Agency
      - Develop models of extreme weather impacts

The background of the slide is a photograph of a vast, deep blue ocean stretching to the horizon. The sky is filled with soft, white and light blue clouds, suggesting a clear but slightly overcast day. The water has a textured surface with small waves and ripples.

**What should adaptation plans look like?**

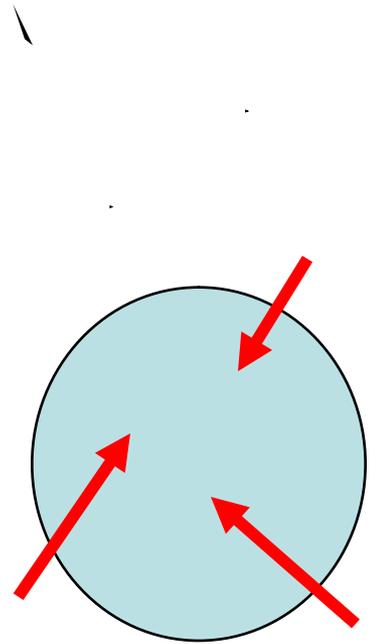
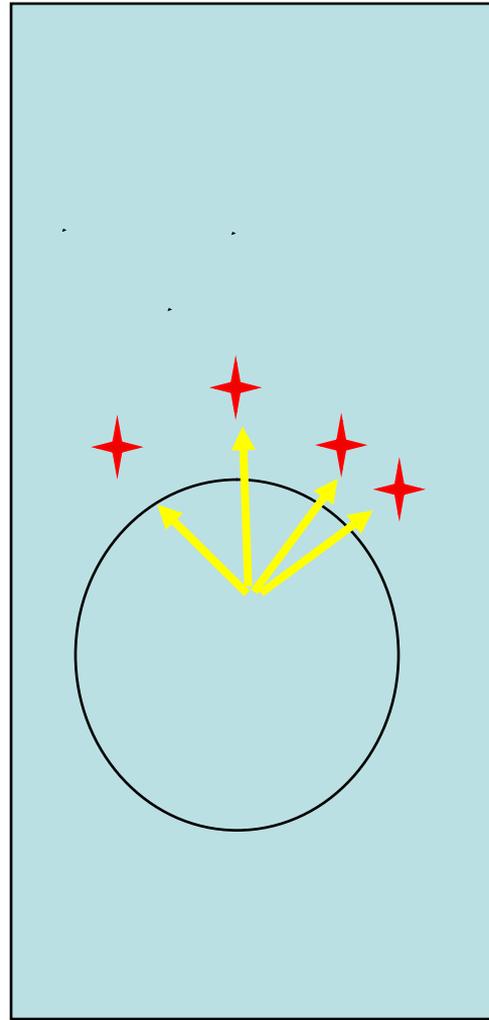
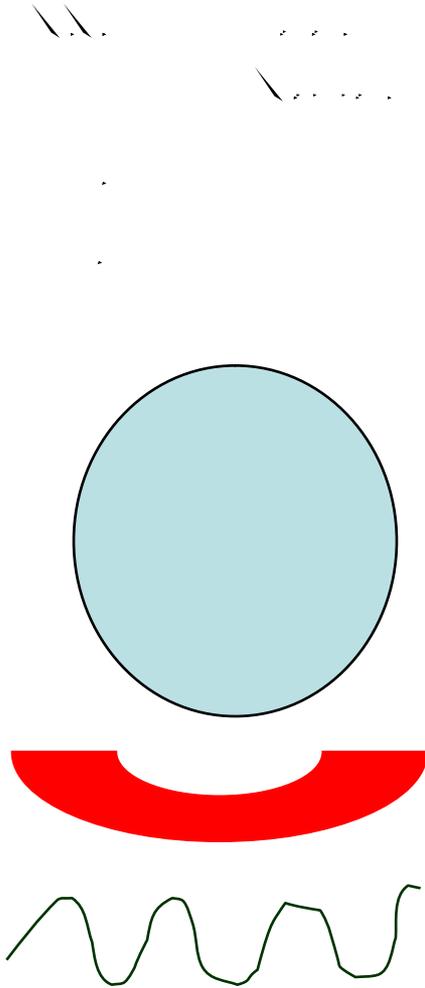
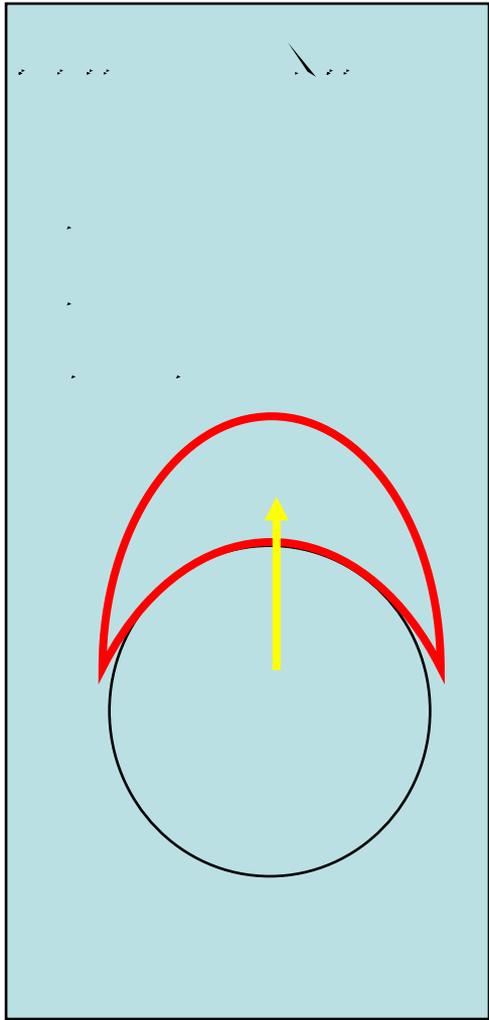
# Questions:

- What constitutes an adaptation plan?
- How do we plan for action in the face of uncertainty?
- What adaptation approaches and actions work?
- How do we pay for adaptation?
- How do we convince others to take on adaptation actions?

# Adaptation Planning and CRE

- Primary objective of CRE pilots: understand form and function of adaptation plans
  - Flexible and iterative
  - Few models - breaking new ground
  - Each NEP is different, which invites different approaches and plans.
- Drafting guidance on adaptation planning:
  - Key elements
  - Requirements for “Climate Ready” recognition.
  - Examples and additional resources.
  - Sample adaptation plan/template.

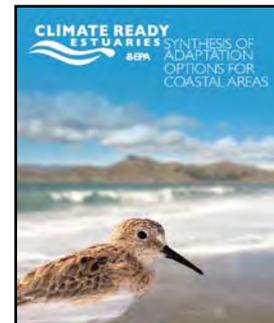
# Difficult Choices



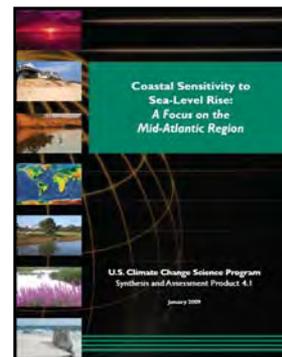
# New Adaptation Resources

- Synthesis of Adaptation Options for Coastal Areas
  - Lists options by management goal (e.g., preserve wetlands) and briefly summarizes, benefits, constraints, and existing examples of each option.

[www.epa.gov/cre/adaptationoptions.html](http://www.epa.gov/cre/adaptationoptions.html)



- CCSP SAP 4.1: Coastal Sensitivity to Sea-Level Rise - A Focus on the Mid-Atlantic Region
  - The Physical Environment
  - Societal Impacts and Implications
  - Preparing for Sea-Level Rise
  - National Implications and a Science Strategy for Moving Forward
  - Appendix I: State and Local Information on Vulnerable Species and Coastal Policies
  - Appendix II: Basic Approaches for Shoreline Change Projections



# CRE in 2009

- Add New NEP “Partners” for Start-up
- Support Implementation
  - Direct Technical Assistance
- Plan NEP CC Adaptation Workshop
- Add to Toolkit
- Build Greater Federal Coordination
  - CSO
  - NOAA

# Take-away Lessons

- CC adaptation is the context for planning decisions in existing programs
- Local communities lead; site-specific
- Ready, Fire, Aim - analysis paralysis
  - Start with priority endpoints
  - Design in future analysis
- Communicate with stakeholders
- Join forces with other efforts
  - Link local efforts
  - Strengthen Federal cooperation
- Adaptive adaptation

# Are You Ready?



[www.epa.gov/cre](http://www.epa.gov/cre)

