

# Preparing Delaware's Wetlands for Tomorrow's High Tide: Highlights from Delaware's Sea Level Rise Vulnerability Assessment

Presentation for the Delaware Wetlands Conference  
February 29, 2012



# Purpose of this Presentation

- To provide a *brief* overview of sea level rise and sea level rise planning
- To highlight relevant results of the sea level rise vulnerability assessment
- To ask you to share your ideas on strategies



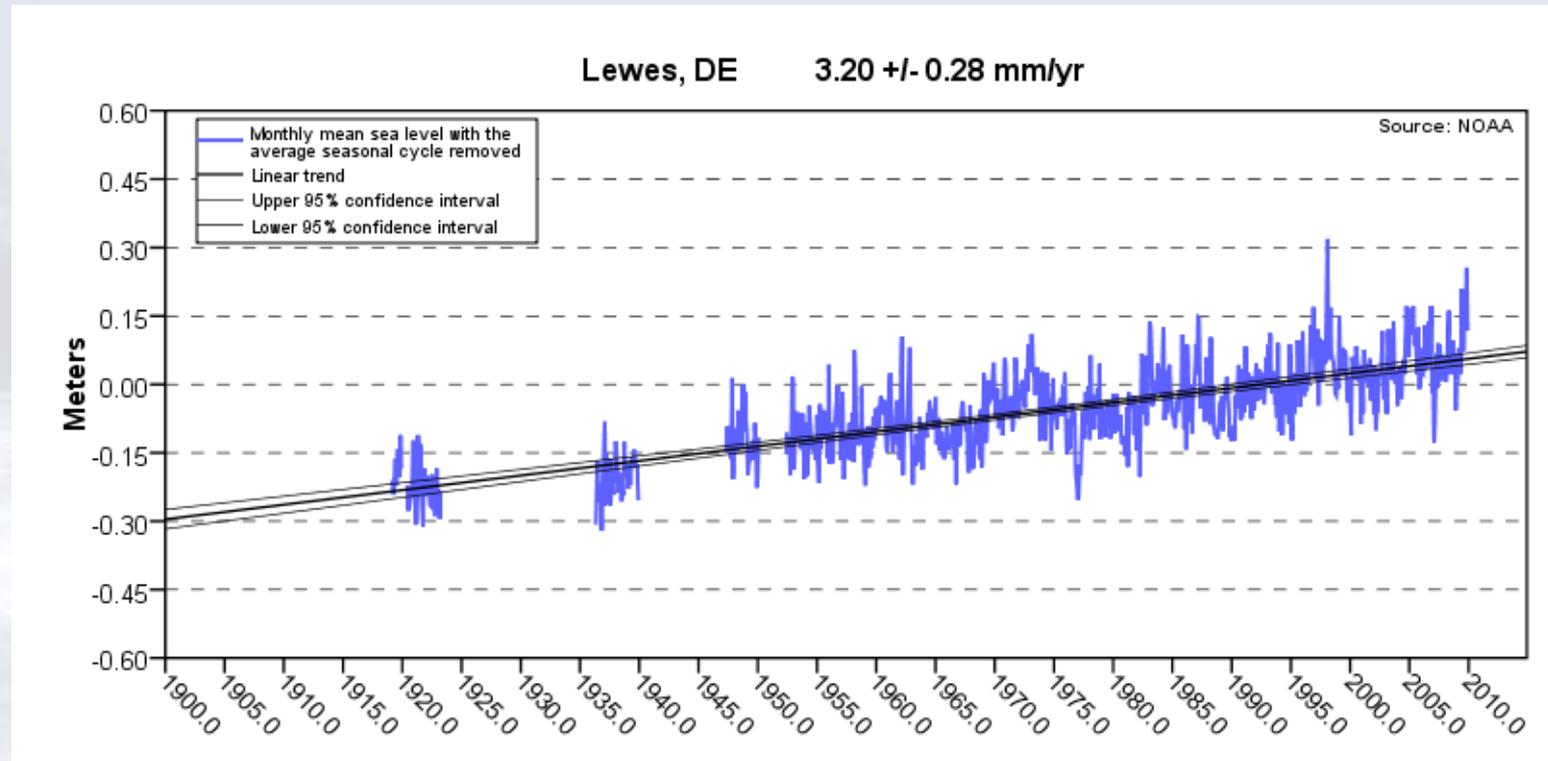
# Planning for Sea Level Rise

- Reasonable to believe current rates of sea level rise will accelerate
- Land use & public works decisions have long life-span
  - ✓ Wise use of public funds and reduction of future risk
- Preparing for long-term effects of sea level rise may also help minimize short term impacts from storms



# Sea Level Rise @ Lewes, DE

**Delaware rate = 3.35 mm/yr (13 Inches/100 years)**



**Global rate = 1.7 mm/yr**



# Today's storm surge could be tomorrow's high tide

- 3 future planning scenarios for sea level rise:
  - ✓ 0.5 Meters (1.6 ft)
  - ✓ 1.0 Meter (3.3 ft)
  - ✓ 1.5 Meters (4.9 ft)
- Within range of current storm surge
  - ✓ '62 Storm, Lewes – 4.5 ft
  - ✓ '08 Mother's Day Storm, Bowers – 4 ft
  - ✓ '09 Veteran's Day Storm, Lewes – 3 ft



# Impacts of Sea Level Rise

- Increased extent & severity of periodic flooding
- Permanent inundation of coastal areas
- Saltwater Intrusion
- Economic, Environmental & Social Impacts



Odessa, October 16, 2009



# Adaptation to Sea Level Rise

## ■ Adaption Options

- ✓ Accommodate
- ✓ Protect
- ✓ Managed Retreat

## ■ Strategies

- ✓ Planning Tools
- ✓ Regulatory Tools
- ✓ Funding/Financial Tools
- ✓ Incentives

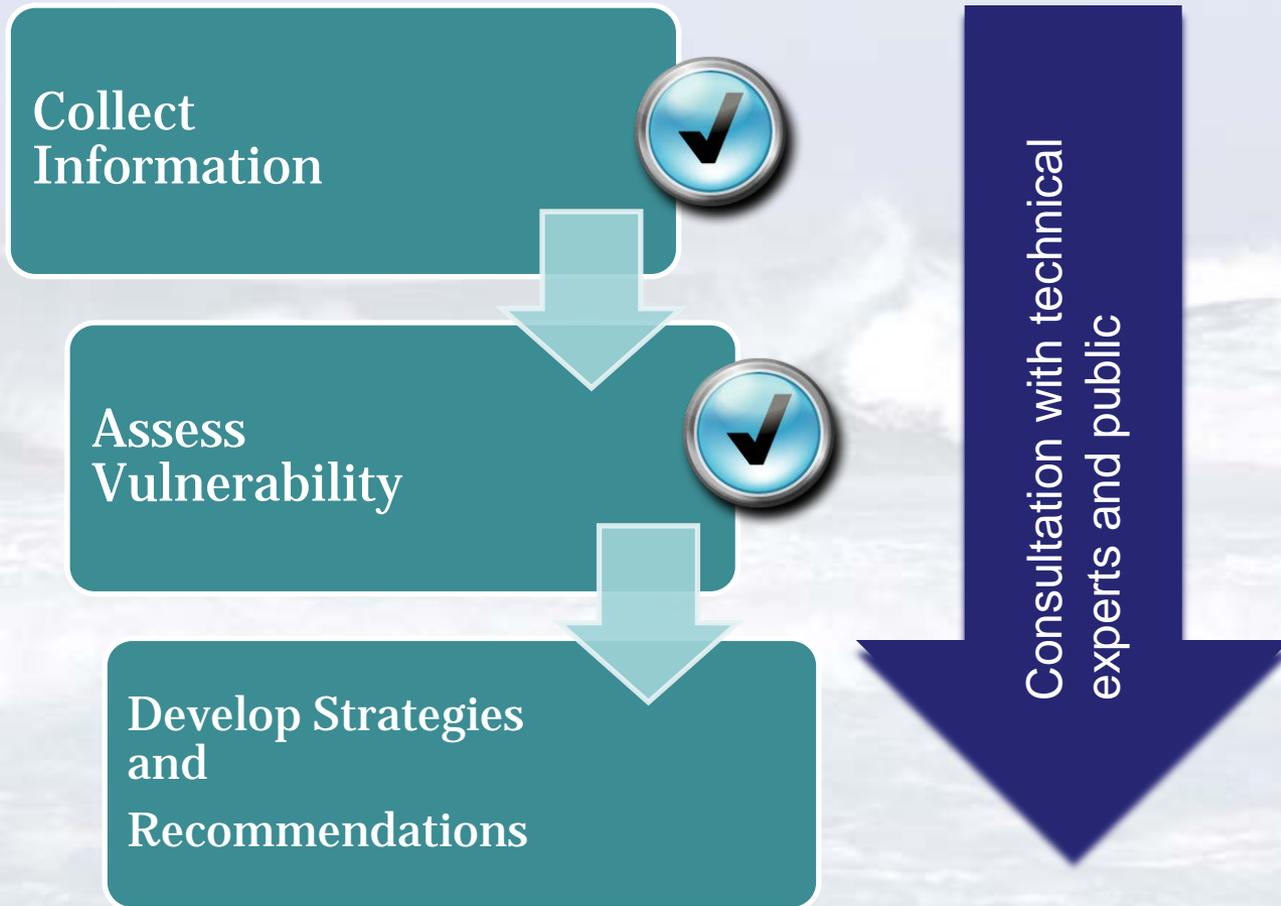


# Goal of Sea Level Rise Advisory Committee

*The goal of the Sea Level Rise Advisory Committee is to assess Delaware's vulnerability to current and future inundation problems that may be exacerbated by sea level rise and to develop a set of recommendations for state agencies, local governments, businesses and citizens to enable them to adapt programs, policies, business practices and make informed decisions.*



# Steps to an Adaptation Plan



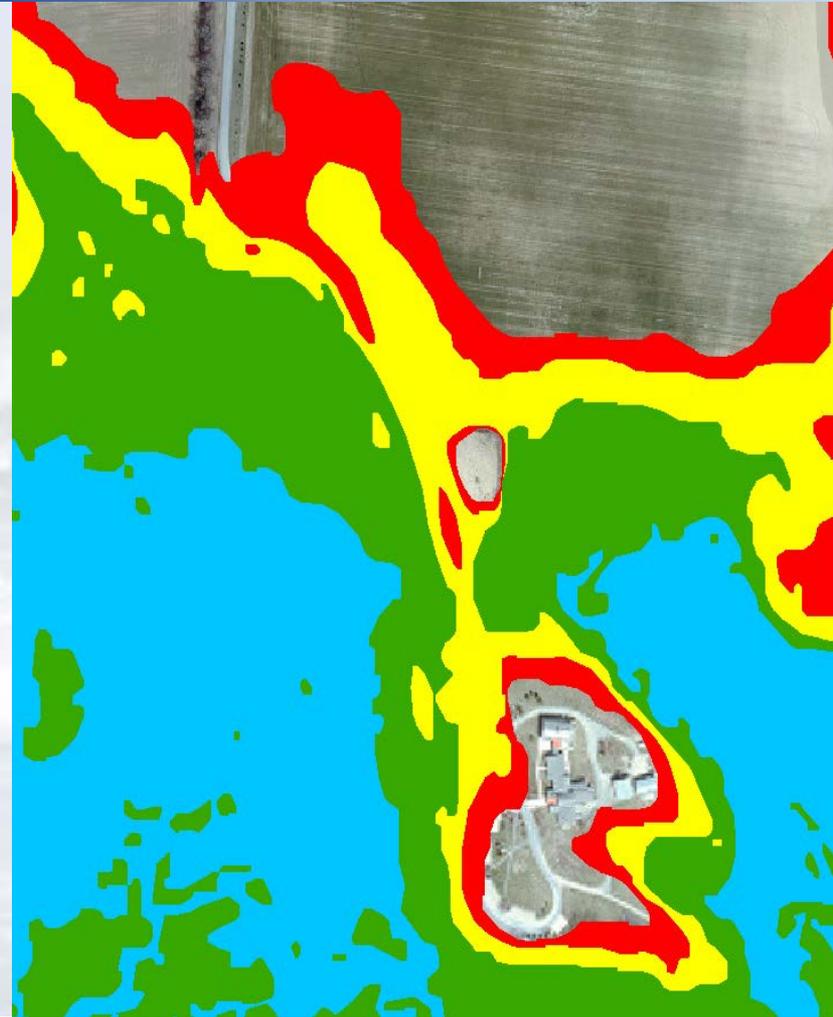
*Adapted from NOAA (2010). Adapting to climate change: a planning guide for coastal managers*



# Sea Level Rise Scenario Maps

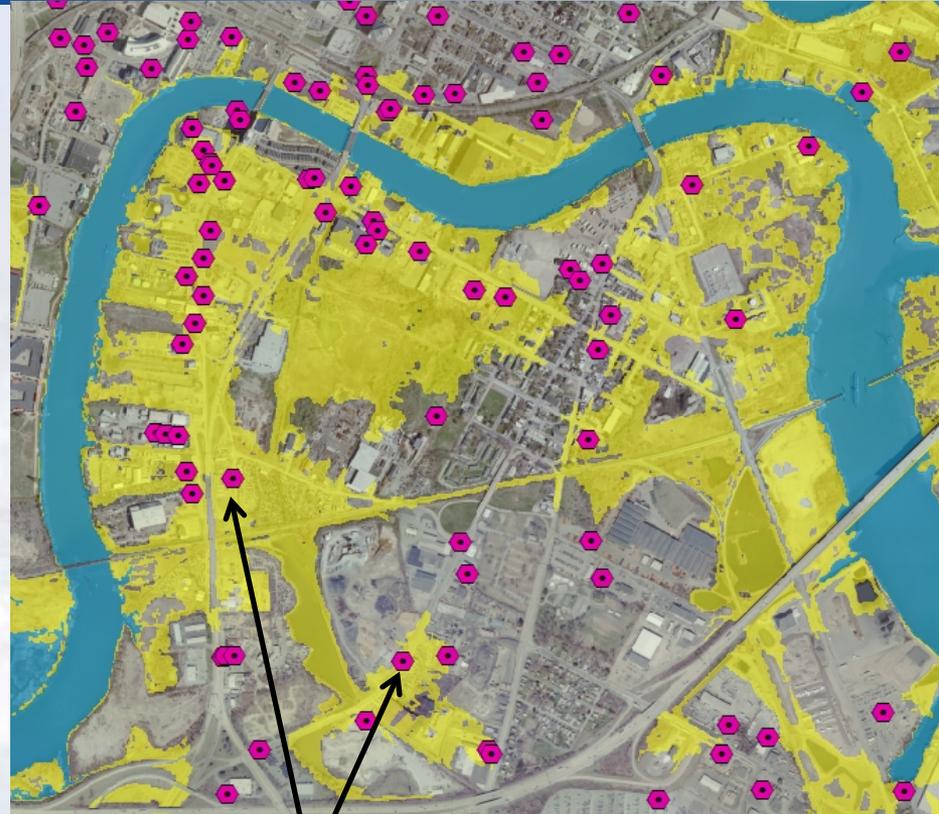
## DNREC Planning Scenario Maps

- ✓ Bath-tub Model – does not account for future changes in shoreline or elevation
- ✓ High resolution aerial photography (LiDAR)
- ✓ For planning purposes only



# Determining *Exposure* for Vulnerability Assessment

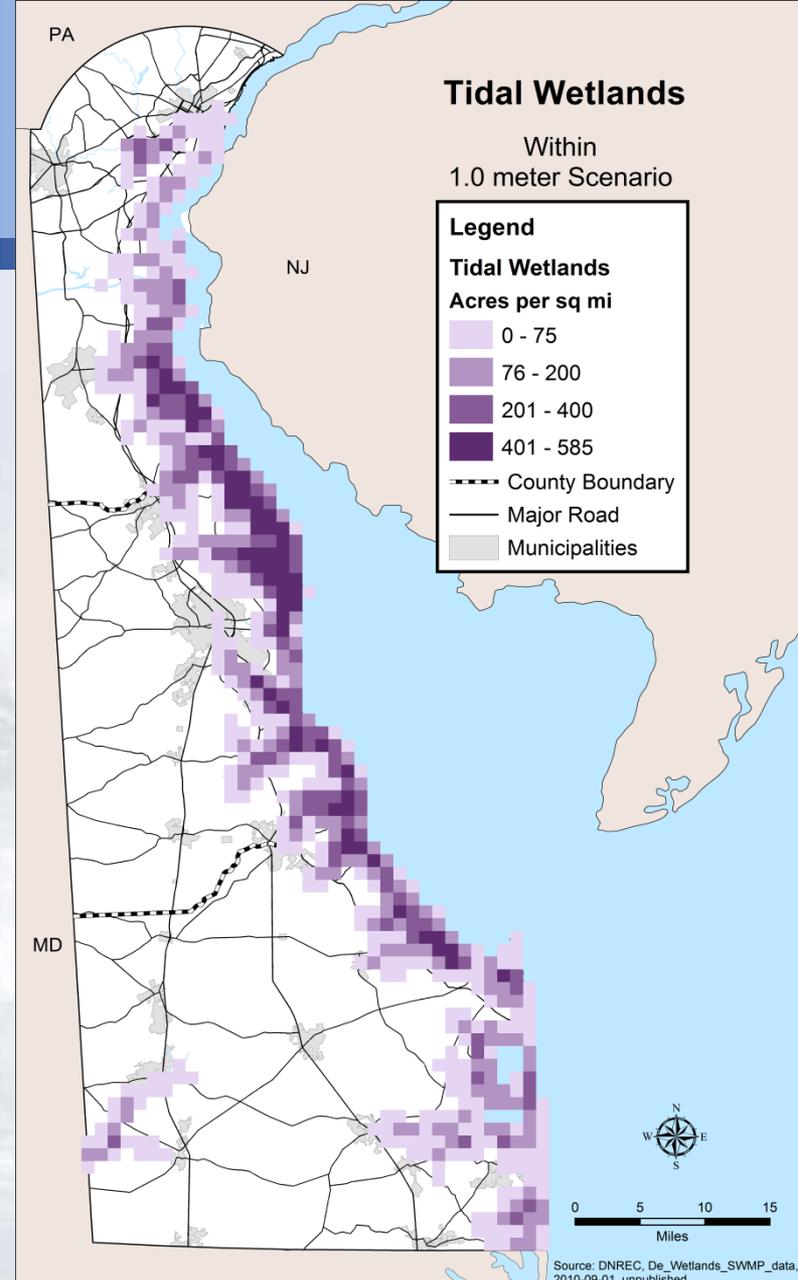
- Data gathered was overlaid with DNREC Scenario maps
- numbers and locations of resources potentially inundated were identified



Potential Exposure of Underground Storage Tanks at 1.0 meter sea level rise

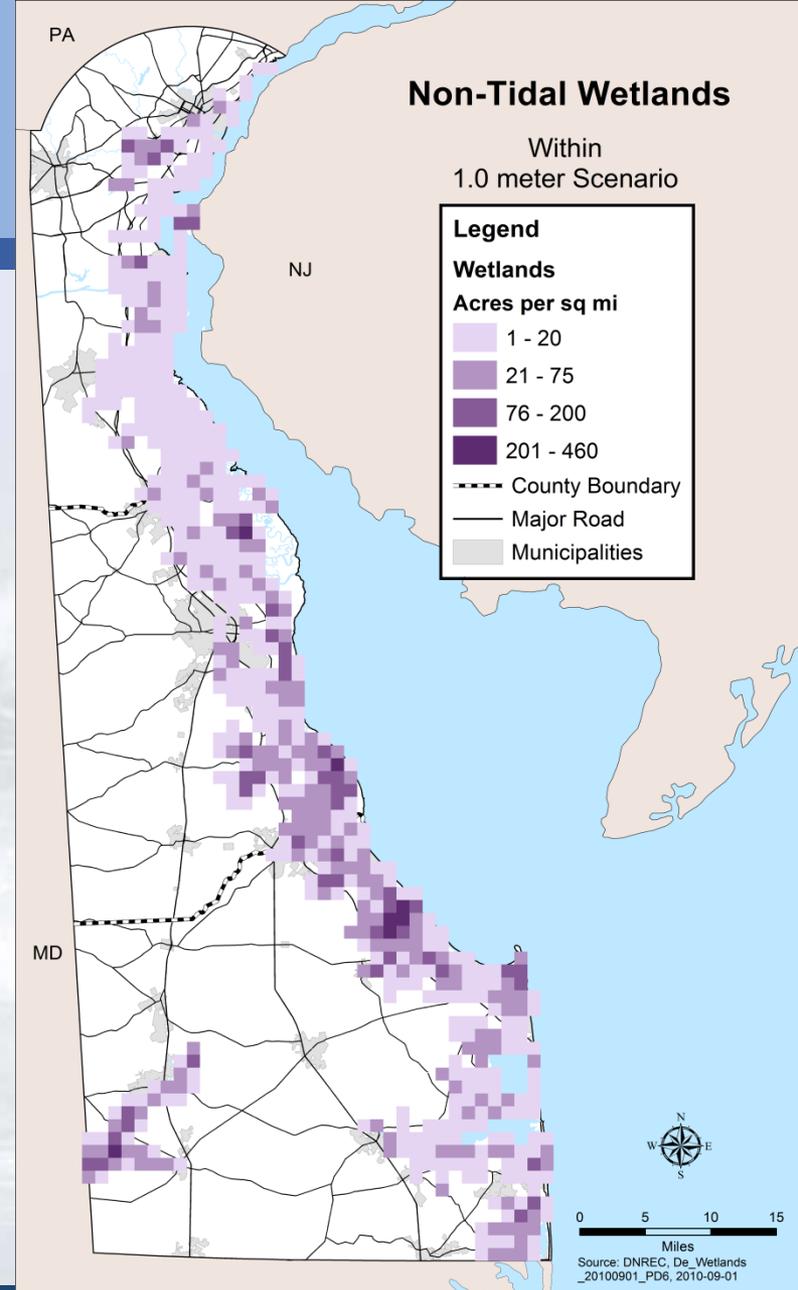
# Tidal Wetlands within SLR Scenarios

- 73,408 total acres statewide
- 71,172 (97%) - 0.5 m slr
- 72,956 (99%) - 1.0 m slr
- 73,141 (99%) - 1.5 m slr



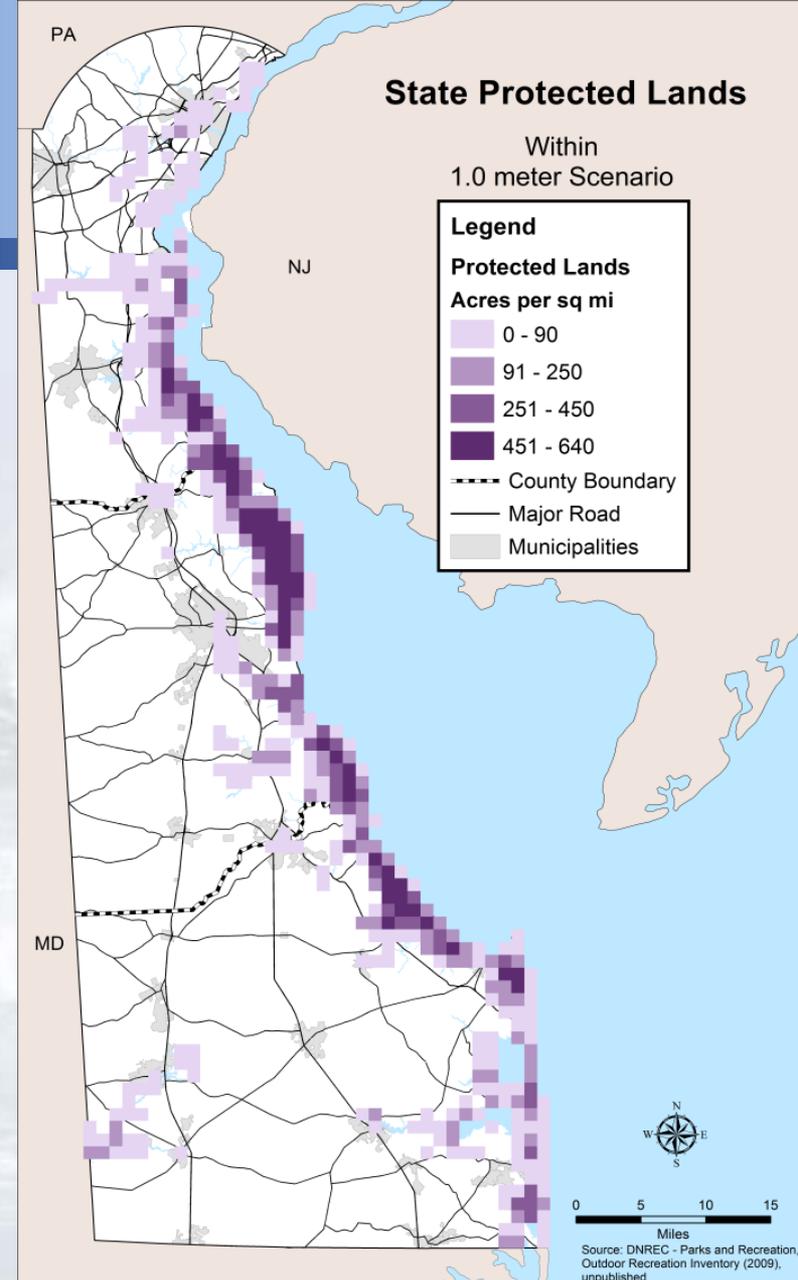
# Non-Tidal Emergent Wetlands

- 8,873 total acres statewide
- 2,236 (25%) - 0.5 m slr
- 2,950 (33%) - 1.0 m slr
- 3,140 (35%) - 1.5 m slr



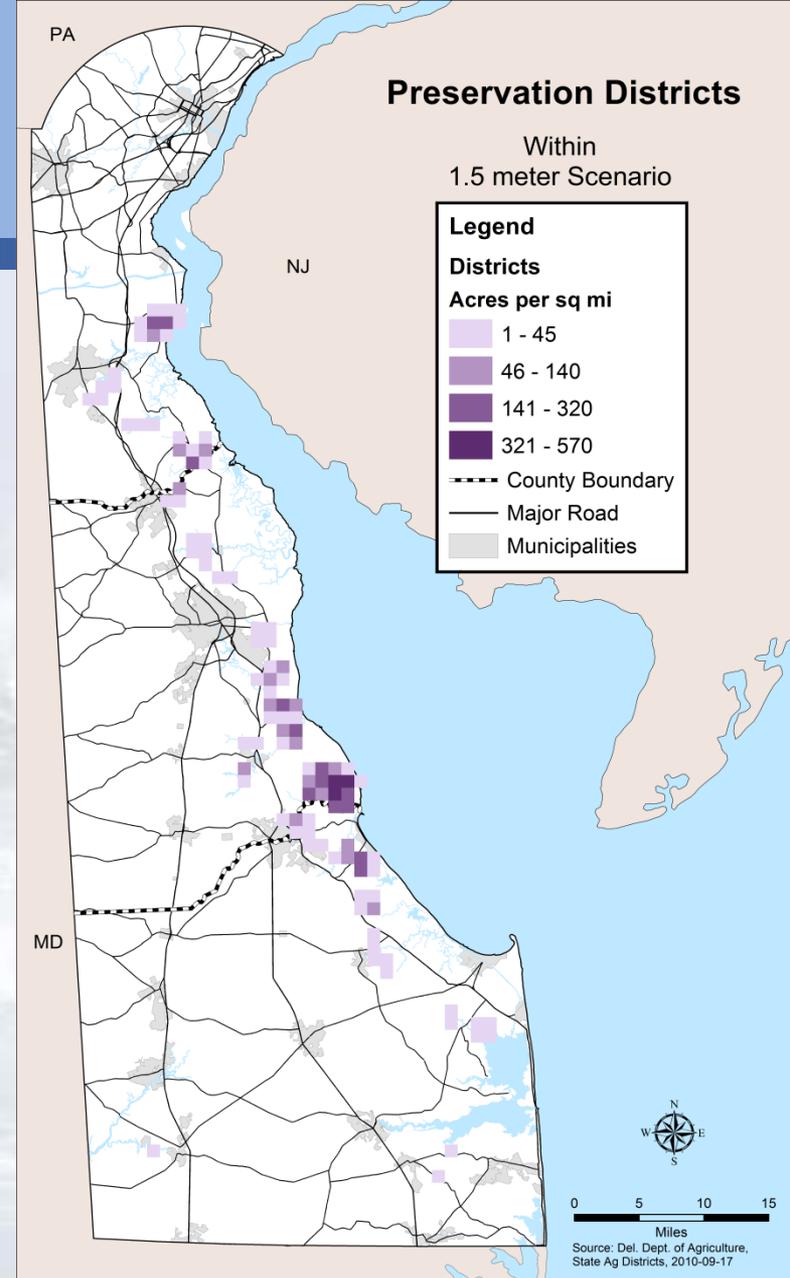
# Protected Lands within SLR Scenarios

- 168,384 total acres statewide
- 61,989 (37%) – 0.5 m slr
- 70,003 (42%) – 1.0 m slr
- 74653 (44%) – 1.5 m slr



# Ag Preservation Districts

- 94,401 total acres statewide
- 11,826 (13%) – 0.5 m slr
- 13,864 (15%) – 1.0 m slr
- 15,920 (17%) – 1.5 m slr



# Threats resulting from SLR

- Inability for wetlands to accrete vertically to keep pace with sea level rise
- Barriers to inland migration
  - ✓ Shoreline protection structures/high slope
  - ✓ Development/infrastructure
- Saltwater Intrusion into non-tidal wetlands
- “Mal-adaptation”



# On-going Research

Improving our understanding of how wetlands will respond to sea level rise:

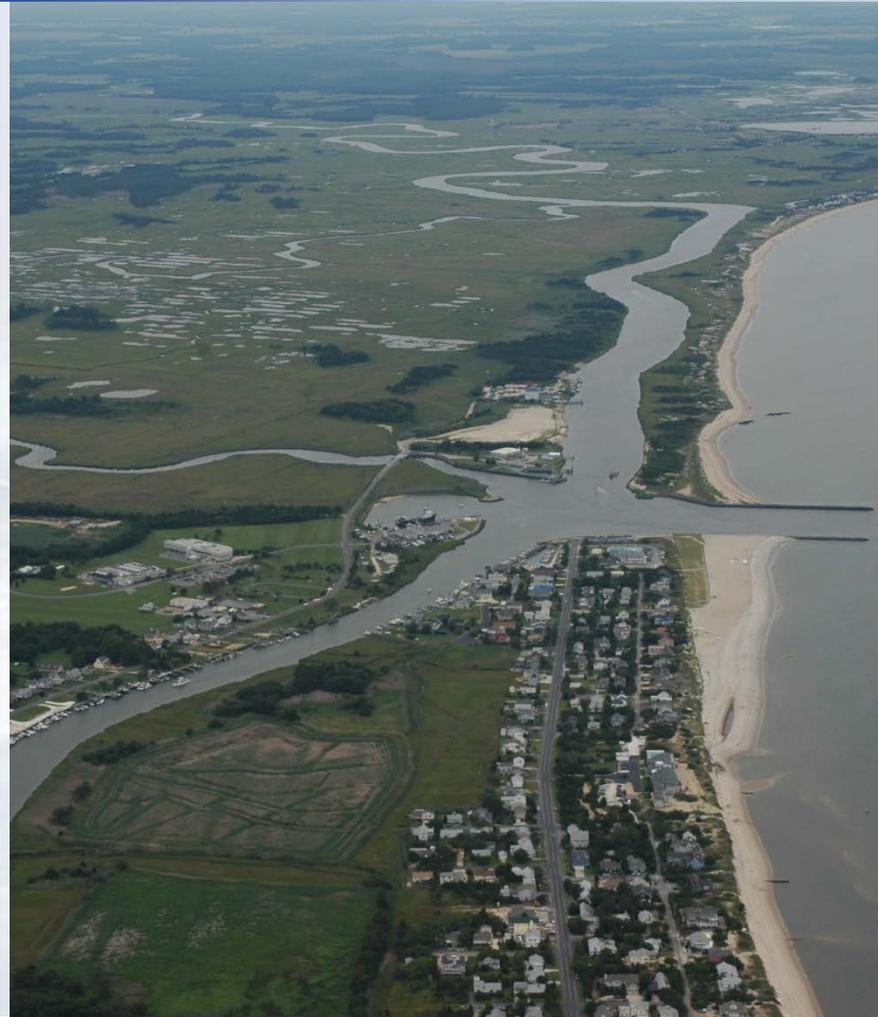
- Marsh Vulnerability Index
- Accretion Rate studies
- Coastal Impoundment studies
- Vegetated Communities Assessments



# Adaptation: Rising to the occasion

Share your thoughts today at our display:

- Legal and Regulatory Tools
- Land Use Planning Tools
- Land Preservation Mechanisms
- Funding Mechanisms
- Research Needs



# Next Steps

- Committee will finalize the vulnerability assessment and begin developing adaptation strategies
- Additional opportunities for public comments and feedback will be part of this process
- Final product will be a document that contains guidance and recommendations for citizens, businesses and governments.



# More Info available here:

- Online Sea Level Rise Map Viewer
  - ✓ <http://de.gov/slrmmap>
- Delaware Sea Level Rise General Info
  - ✓ <http://de.gov/sealevelrise>
- Delaware Sea Level Rise Advisory Committee
  - ✓ <http://de.gov/slradvisorycommittee>



# Thank you!

## Questions?

