

# Planning for Maine's Climate Future: Implications for Geologists

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# Context for This Effort

- LD 460, "Resolve, To Evaluate Climate Change Adaptation Options for the State": 124<sup>th</sup> Maine Legislature (2009)
- "Prepare for and adapt to most likely impacts of climate change."
- Produce a report with recommendations by February 27, 2010
- Stakeholder group(s) of 100+ from private, public interest, state agencies

# LIKELY FORESEEABLE IMPACTS / EFFECTS

- Changes in air temperature (increase/decrease)
- Oceanic changes
  - o Sea-level rise
  - o Changes in circulation patterns
  - o Increase in ocean temperature
  - o Changes in seawater chemistry, nutrient levels
- Terrestrial surface water changes
  - o Changes in seasonal flow regimes and volumes
  - o Nutrient levels
  - o Freshwater chemistry, temperature
- Seasonal shift / variation
- Precipitation changes
- Weather extremes and storm events
- Wind variability (pattern/intensity)

# LD 460 - "Planning is Necessary"

- Emergency response
- Built infrastructure, especially coastal
- Fish / wildlife habitat
- Marine eco-systems
- Water supplies and drinking water
- Forests and forestry
- Agriculture and farming
- Human health
- Identify sustainable opportunities for offsets and technologies

## Basic approach as borrowed from Washington State's plan (2007)

- Four working groups (Built; Coastal; Natural; Human / Social Environments)
- Identify key impacts and issues
- Assess vulnerability / risk / urgency
- Choose sector-specific strategies
- Develop specific recommendations
  - Likely to be top-level, planning focused
  - "Current Preparedness" and "Building Resilience"

# Key Assumptions / Principles

- This is only the beginning: realistic planning will take 3-5 years
- Build resiliency in natural and human systems
- Municipal and local planning will be critical to success; avoid "unfunded mandates"
- Current predictive modeling must be validated by long-term ongoing mapping and monitoring
- "No regrets" strategies that are valuable regardless of how things turn out, and which address things that we already ought to be doing

# Key Issues: Coastal Geology

- Sea level rise / storm surge
  - Inundation of natural and human systems
  - Beach, dune, and wetland migration
  - Bluff erosion
  - Coastal infrastructure
  - Potential saltwater intrusion to DW sources
- Stormwater, esp. in coastal rivers and estuaries
- Need for comprehensive coastal LIDAR maps
- Development planning

## Key Concerns: Inland Geology

- Impacts due to severe weather, increases / changes in precipitation and stormwater flow
- TP 40 maps
- Vulnerable systems include vertical infrastructure; water and wastewater infrastructure; transportation; stormwater; electricity delivery; emergency response
- Riverine flood plains
- Water resources: precipitation changes will affect water availability and use patterns