

NEW HAMPSHIRE COASTAL RISK AND HAZARDS COMMISSION

# Preparing New Hampshire for Projected Storm Surge, Sea-Level Rise, and Extreme Precipitation

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## Final Report Summary

Kyle Pimental, Principal Regional Planner  
Strafford Regional Planning Commission

November 15, 2017

Madbury Planning Board Meeting



# Coastal Risk and Hazards Commission



Clear & Focused Mission

Broad-based Membership

Sunset Date: December 1, 2016

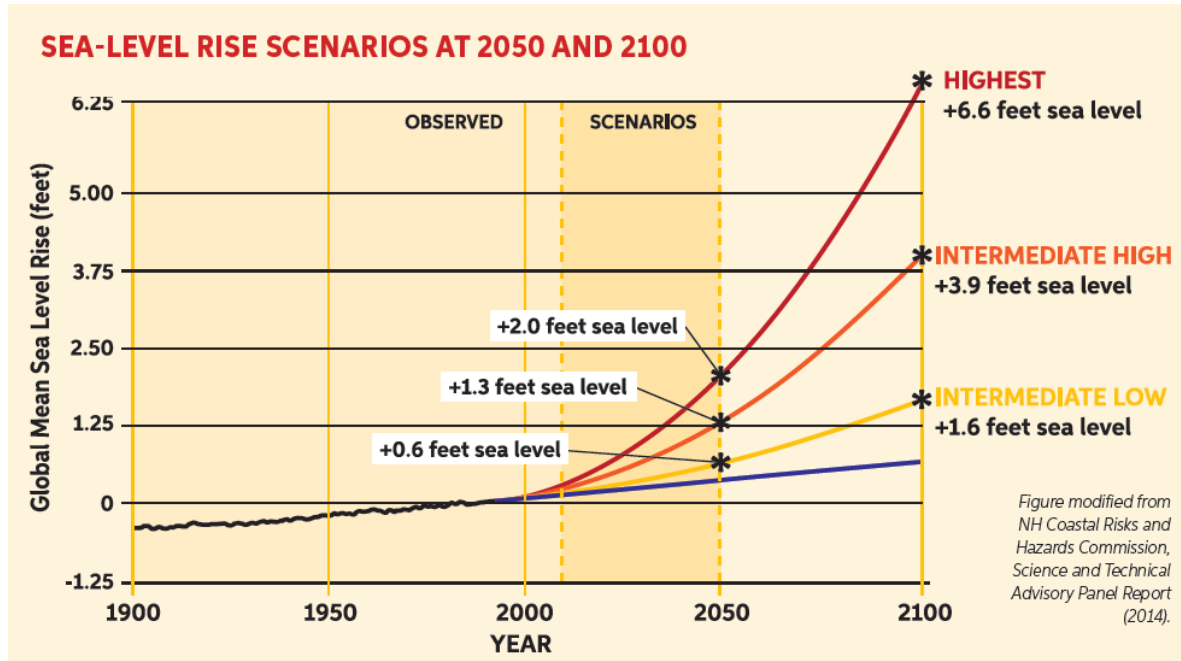
Photo credit: Maren Bhagat

Senate Bill 163 | 2013 | Chapter Law 188 (RSA 483-E)

# Understanding What We're Facing

## 2014 Science and Technical Advisory Panel (STAP) Report

### SEA-LEVEL RISE



### PROJECTIONS

- ↑ 0.6 – 2.0 ft. by 2050
- ↑ 1.6 – 6.6 ft. by 2100

### HOW TO PREPARE

1. Select time period
2. Commit to manage *intermediate high*
3. Adjust if necessary

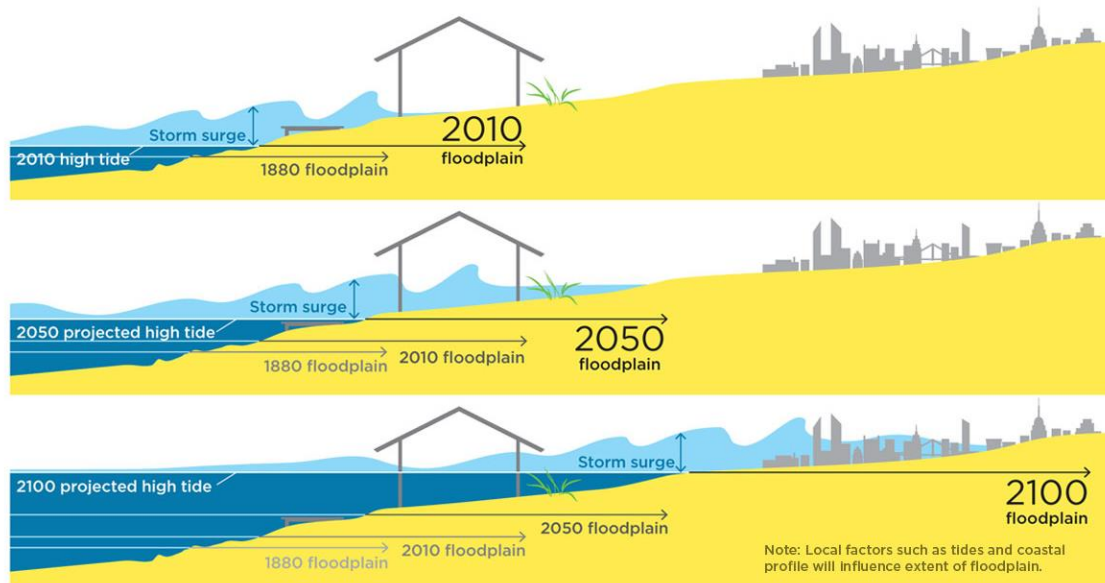
**Example:** If the design time period is 2050-2100, commit to manage 3.9 ft. of sea-level rise, but be prepared to manage and adapt to 6.6 ft. if necessary.



# Understanding What We're Facing

## 2014 Science and Technical Advisory Panel (STAP) Report

### STORM SURGE



Sea level sets a baseline for storm surge—the potentially destructive rise in sea height that occurs during a coastal storm. As local sea level rises, so does that baseline, allowing coastal storm surges to penetrate farther inland. With higher global sea levels in 2050 and 2100, areas much farther inland would be at risk of being flooded. The extent of local flooding also depends on factors like tides, natural and artificial barriers, and the contours of coastal land.

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### PROJECTIONS

Today's storm surge events (i.e., 100-year flood) will:

- ↑ Inundation extent
- ↑ Frequency
- ↑ Flood duration

### HOW TO PREPARE

**Add** projected sea-level rise heights to current storm surge heights (i.e., 100- and 500-year flood)

# Understanding What We're Facing

## 2014 Science and Technical Advisory Panel (STAP) Report

### EXTREME PRECIPITATION



Photo credit: Fosters Daily Democrat

### PROJECTIONS

- ↑ Frequency
- ↑ Amount

### HOW TO PREPARE

- 2014–2050:** design to withstand extreme precipitation intensities based on the most current data.
- 2051–2100:** design to manage a 15% increase in the amount of precipitation produced

# Understanding our Risks and Vulnerabilities

## Key Topic Areas



**OUR ECONOMY** is the systematic and productive exchange and flow of goods, services and transactions that must be intact, functioning, and resilient to coastal risk and hazards in order to create and sustain jobs and a high quality of life in coastal New Hampshire.



**OUR BUILT LANDSCAPE** is the network of structures and facilities owned by state and municipal governments and private entities in coastal New Hampshire. Our built landscape must be prepared to adapt and respond to coastal risk and hazards.



**OUR NATURAL RESOURCES** are the natural systems that support important species and biodiversity in coastal New Hampshire and provide critical and important services to coastal New Hampshire like food, flood protection, fresh water, raw materials, and recreation opportunities.



**OUR HERITAGE** encompasses the abundance of recreational, cultural, and historic resources, including economic assets and elements of the built landscape, in coastal New Hampshire that our state and municipalities wish to protect from coastal risk and hazards.

# Vulnerability Highlights: C-RiSe Assessment



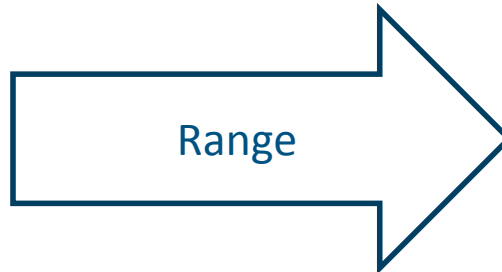
**OUR ECONOMY** is the systematic and productive exchange and flow of goods, services, and transactions that must be intact, functioning, and resilient to coastal risks and hazards in order to create and sustain a high quality of life in coastal New Hampshire.

## Parcels and 2016 Assessed Value by Scenario (year 2100)

1.7ft SLR + storm surge

10 parcels

\$43,100



6.3ft SLR + storm surge

19

\$2,104,168

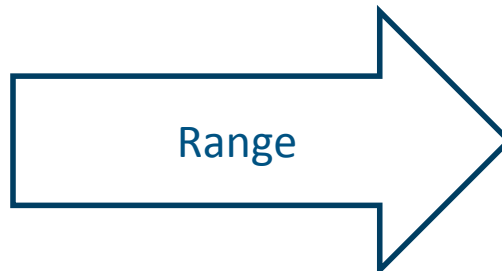
**PLANNING PURPOSES ONLY!!**

## Residential Structures and 2016 Assessed Value (year 2100)

1.7ft SLR + storm surge

0

\$0



6.3ft SLR + storm surge

0

\$0



# Vulnerability Highlights: C-RiSe Assessment



**OUR BUILT LANDSCAPE** is the network of structures and facilities owned by state and local governments and private entities in coastal New Hampshire. Our built environment must be prepared, adaptive, and responsive to coastal risks and hazards.

## Infrastructure – 6.3ft SLR + storm surge

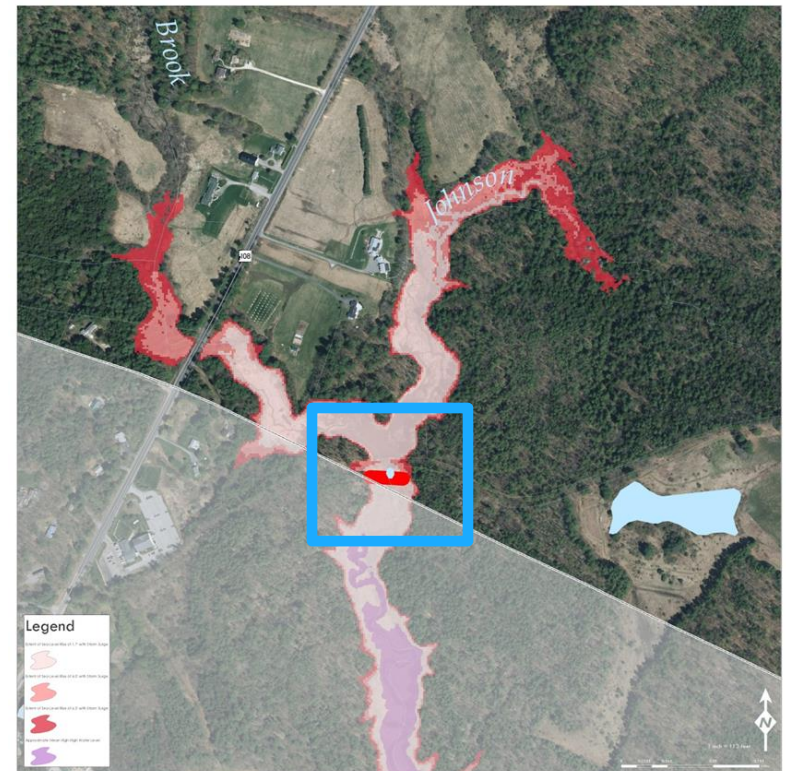
- none

## Critical Facilities – 6.3ft SLR + storm surge

- none

## Transportation Assets – 6.3ft SLR + storm surge

- 0 miles of **State** roads
- 0 miles of **Local and Private** roads
- >1/10 mile of **Not Maintained** roads (Creek Rd)





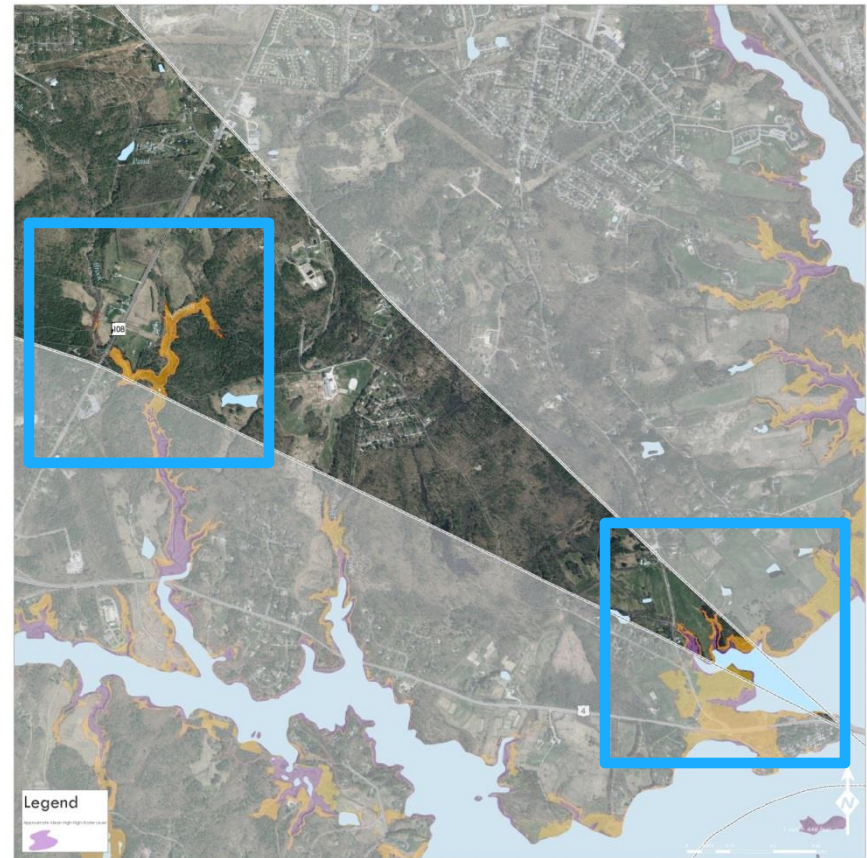
# Vulnerability Highlights



**OUR NATURAL RESOURCES** are the natural systems that support important species and biodiversity in coastal New Hampshire and provide critical and important services to coastal New Hampshire like food, flood protection, fresh water, raw materials, and recreation opportunities.

## Natural Resources – 6.3ft SLR + storm surge

- 1.5 acres
  - (1 property – Smith easement)
- 24 acres of lands identified in the Wildlife Action Plan
- 26 acres of lands identified in the Land Conservation Plan for NH's Coastal Watershed
  - Bellamy River & Johnson and Bunker Creek



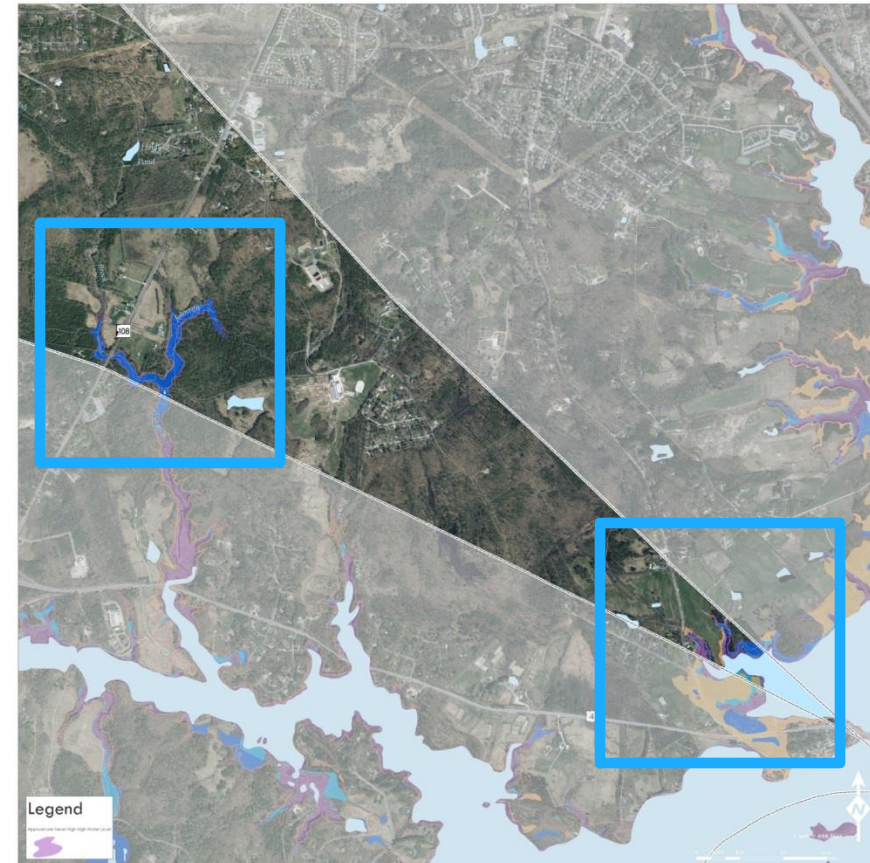
# Vulnerability Highlights



**OUR NATURAL RESOURCES** are the natural systems that support important species and biodiversity in coastal New Hampshire and provide critical and important services to coastal New Hampshire like food, flood protection, fresh water, raw materials, and recreation opportunities.

## Water Resources – 6.3ft SLR + storm surge

- 1.3 acres of tidal wetlands
- 20.5 acres of freshwater wetlands
- 7.7 acres of stratified drift aquifers
- 65.5% of flooding due to highest SLR scenario is captured within the existing 100-year floodplain
  - Tidal areas along the Bellamy River and at the confluence of Gerrish Brook and Johnson Creek



# Vulnerability Highlights



**OUR HERITAGE** encompasses the abundance of recreational, cultural, and historic resources, including economic assets and elements of the built landscape, in coastal New Hampshire that our state and communities wish to protect in the face of coastal risk and hazards.

## Recreational – 6.3ft SLR + storm surge

- No assets identified

## Cultural/Historic – 6.3ft SLR + storm surge

- No assets identified





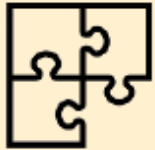
# Our Goals, Recommendations, and Actions

## SAIL: Four Goals for a Resilient Coast



### Goal 1: SCIENCE

Research, understand, establish, and use the best available science about current and future coastal hazards in New Hampshire relating to storm surge, sea-level rise, and extreme precipitation



### Goal 2: ASSESSMENT

Identify assets and resources within our economy, our built landscape, our natural resources, and our heritage that are vulnerable to storm surge, sea-level rise, and extreme precipitation; understand the scope of that vulnerability; and evaluate existing statutes, ordinances, rules and regulations, policies, programs, and plans to determine whether changes should be made to reduce vulnerabilities.



### Goal 3: IMPLEMENTATION

Identify and implement strategies that will enable the State and coastal municipalities to effectively protect, adapt, and sustain our current and future economy, built landscape, natural resources, and heritage.



### Goal 4: LEGISLATION

Recommend timely considerations for legislation that leads to actions, both immediate and long-term, that reduce and/or eliminate vulnerability and result in adaptation to existing and future coastal hazards.

# Recommendation Highlights



## Assessment & Implementation Recommendations Examples

- Incorporate coastal hazards, risks, and vulnerability in policies, plans, and investments
- Incorporate best available climate science and vulnerability assessment information into municipal economic development plans
- Improve information available to property owners and prospective buyers about coastal hazards and vulnerabilities

# Questions?

For more information, visit:

<http://nhcrhc.org/>

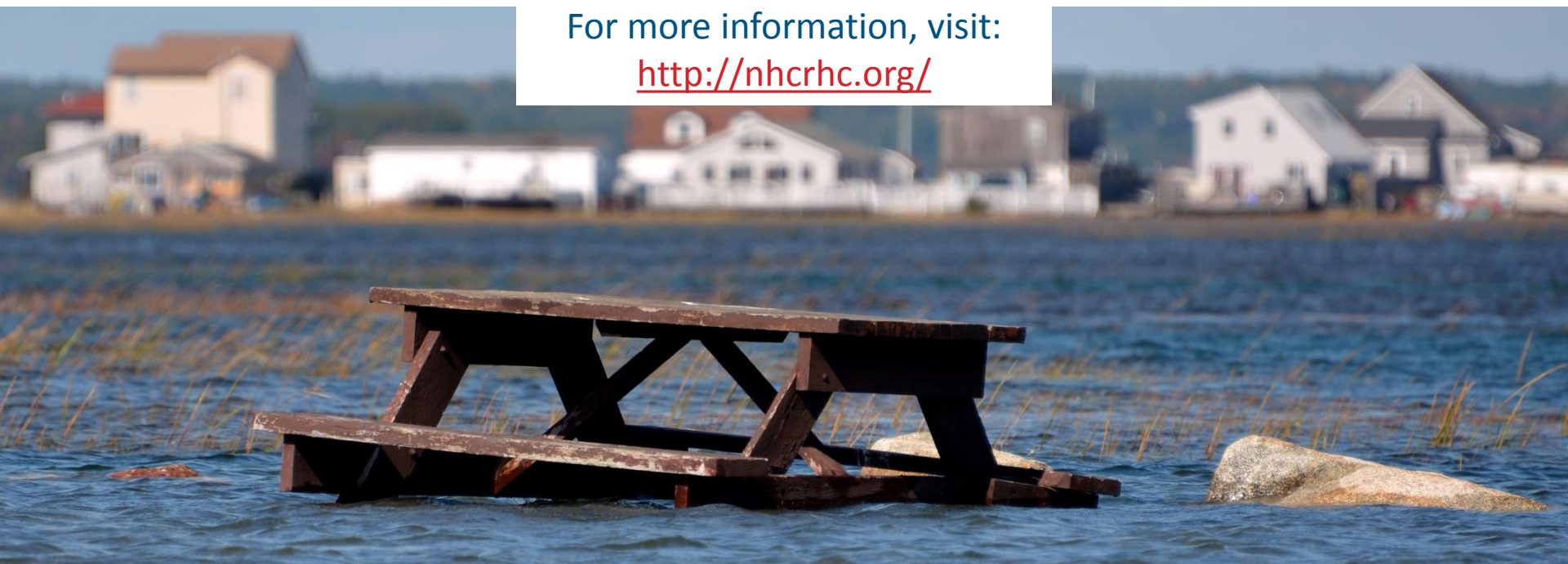


Photo credit: Ron Sher

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