



## New Hampshire Setting SAIL

*Acting on the Coastal Risk and Hazards Commission*

*Science, Assessment, Implementation, and Legislation Recommendations*

Dover • Durham • Exeter • Greenland • Madbury • Newfields • Newington • Newmarket • Rollinsford • Stratham

# STRATEGIES TO ADDRESS COASTAL FLOODING

*A Workshop for Great Bay Municipalities*

Thursday, April 13, 2017

5:30 – 8:00PM

Hampton Falls Town Hall, 1 Drinkwater Road



# Workshop Agenda

- 6:00 Welcome and Introductions**
- 6:10 Overview of CRHC Report and NH Setting SAIL**
- 6:30 Summary of Atlantic Coast Vulnerability Assessment**
- 6:45 Projects to Inspire Regional Action**
- 7:20 Regional Resilience Roundtable**
  - Group 1 – Evacuation Route Planning
  - Group 2 – Public Outreach and Engagement
- 7:55 Concluding Remarks**
- 8:00 Adjourn**

# CRHC Report

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*Nathalie Morison, NHDES Coastal Program*

# Coastal Risk and Hazards Commission



Clear & Focused Mission

Broad-based Membership

Sunset Date: December 1, 2016

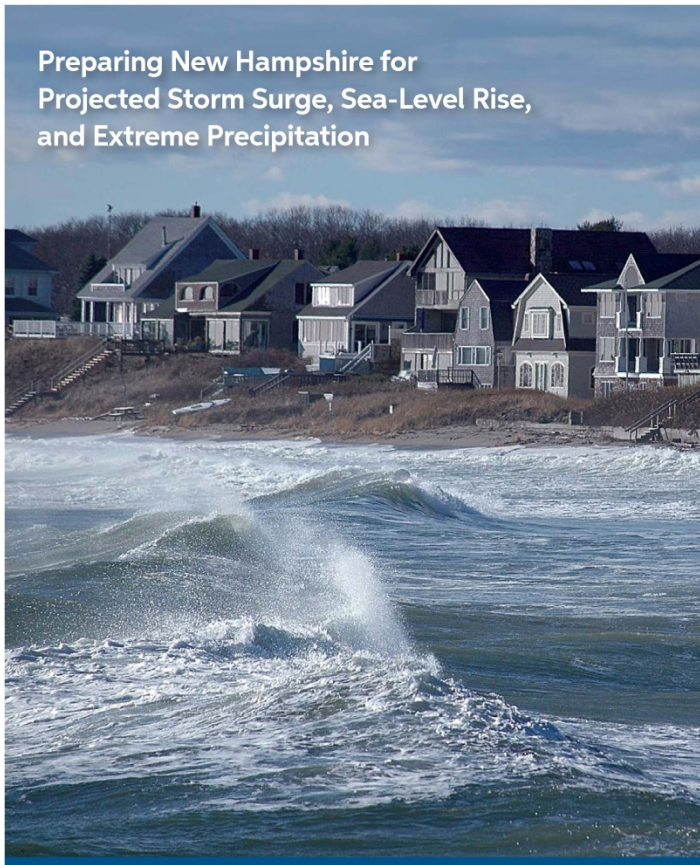
Photo credit: Maren Bhagat

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



# CRHC Report

NEW HAMPSHIRE COASTAL RISK AND HAZARDS COMMISSION



Final Report and Recommendations

November 2016

[www.nhcrhc.org](http://www.nhcrhc.org)



## What We Are Facing

The science behind projected changes in storm surge, sea-level rise, and extreme precipitation.



## Our Risks & Vulnerabilities

Potential impacts to Our Economy, Our Built Landscape, Our Natural Resources, and Our Heritage.



## What We Need To Do

General guidance and planning principles for responding to coastal flood risk in New Hampshire.



## Our Goals & Recommendations

Key Science, Assessment, Implementation, & Legislation (SAIL) recommendations for a resilient coast.

# What We Are Facing

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

### SEA-LEVEL RISE

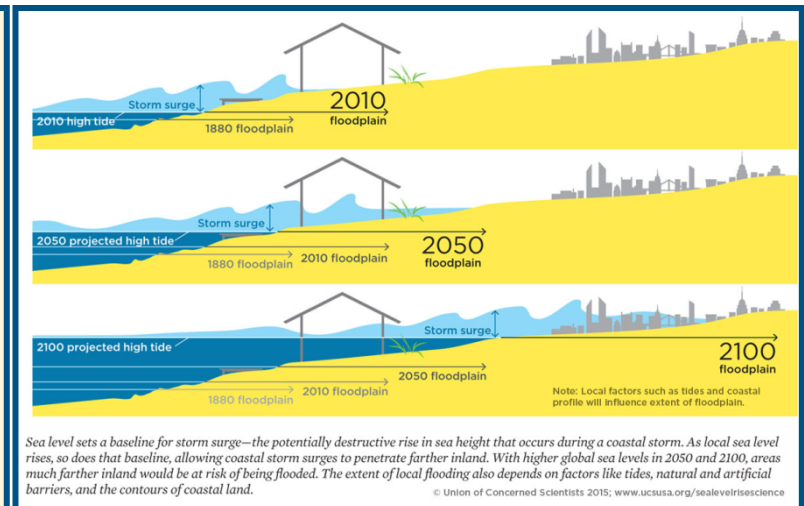
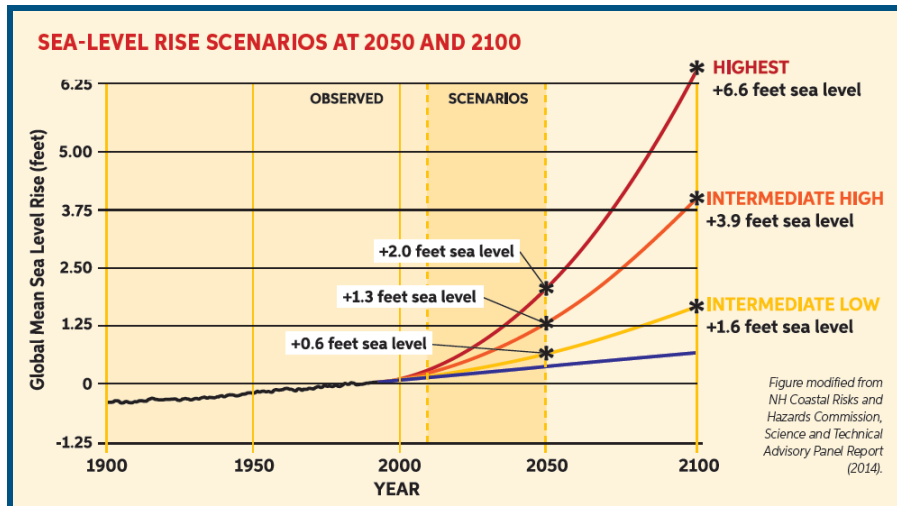
- ↑ 0.6 – 2.0 ft. by 2050
- ↑ 1.6 – 6.6 ft. by 2100

### STORM SURGE

- ↑ Inundation extent
- ↑ Frequency
- ↑ Flood duration

### EXTREME PRECIPITATION

- ↑ Frequency
- ↑ Amount



# Our Risks and Vulnerabilities



**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.



# What We Need to Do

## Six Tips to Guide Action

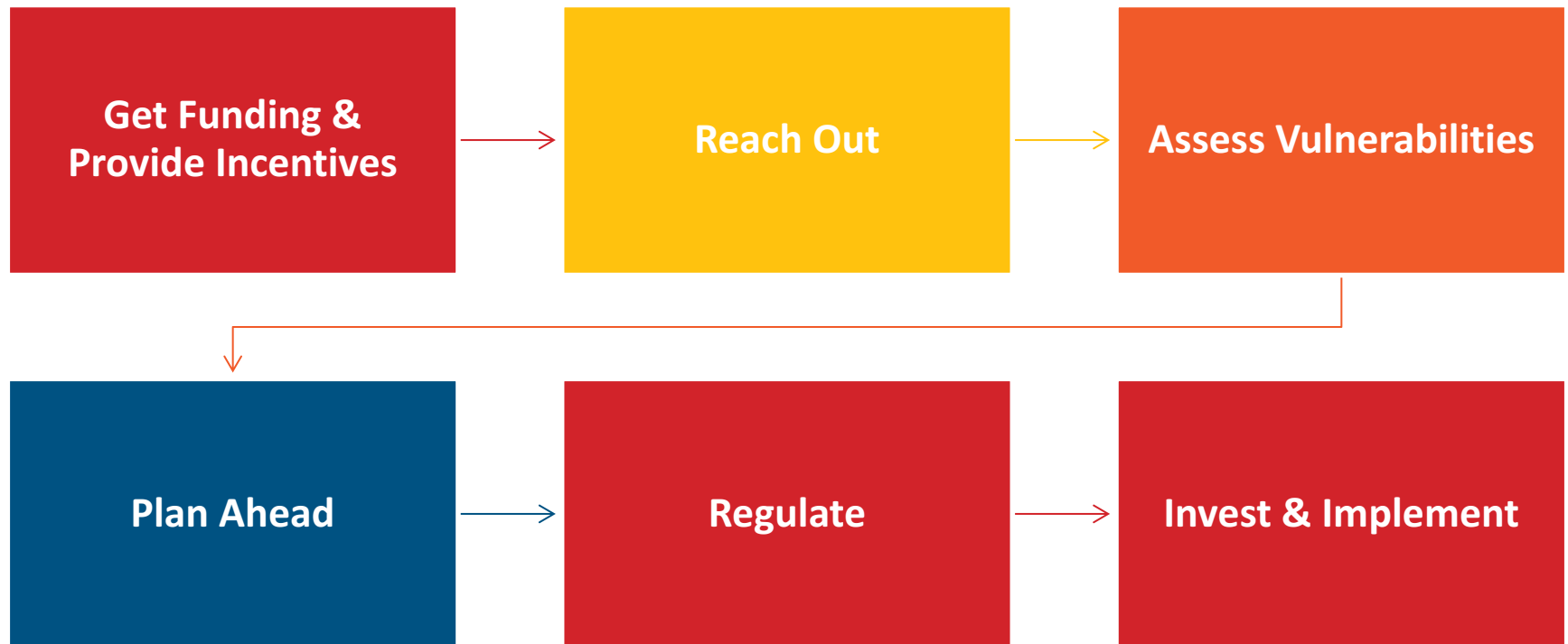


- **Act Early**
- **Respond Incrementally**
- **Revisit and Revise**
- **Collaborate and Coordinate**
- **Incorporate 'Risk Tolerance' in Design**
- **Make 'No Regrets' Decisions**



# Our Goals and Recommendations

## Specific Actions Municipalities Can Take To Prepare



# NH Setting SAIL

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*Nathalie Morison, NHDES Coastal Program*



## New Hampshire Setting SAIL

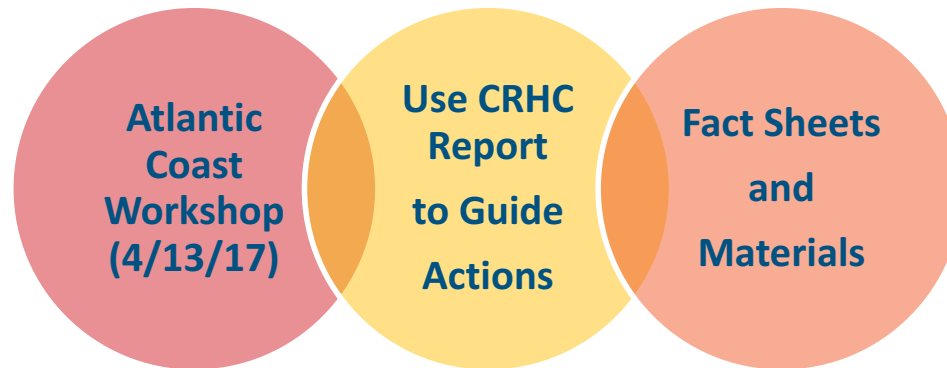
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**Goal: support state & municipal implementation of CRHC report  
through outreach and technical assistance**

**What's in it for Atlantic Coast Municipalities?**



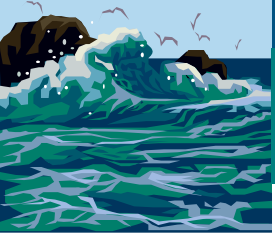
[nhcaw.org](http://nhcaw.org)

# Summary of Atlantic Coast Vulnerability Assessment

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*Julie LaBranche, Rockingham Planning Commission*





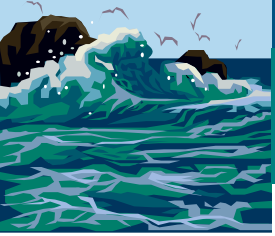
## FROM TIDES TO STORMS: PREPARING FOR NEW HAMPSHIRE'S FUTURE COAST

### Best Available Science- SLR Scenarios/Projections

Sea-Level Rise (SLR) Scenarios	Intermediate Low SLR	Intermediate High SLR	Highest SLR	Intermediate Low SLR + storm surge	Intermediate High SLR + storm surge	Highest SLR + storm surge
SLR	1.7 feet	4.0 feet	6.3 feet	--	--	--
SLR + Storm Surge	--	--	--	1.7 feet + storm surge	4.0 feet + storm surge	6.3 feet + storm surge

Source: Wake CP, E Burakowski, E Kelsey, K Hayhoe, A Stoner, C Watson, E Douglas (2011) *Climate Change in the Piscataqua/Great Bay Region: Past, Present, and Future*. Carbon Solutions New England Report for the Great Bay (New Hampshire) Stewards. <https://goo.gl/PxbLLw>.

Source: NH Coastal Risk and Hazards Commission Science and Technical Advisory Panel (2014). *Sea-level Rise, Storm Surges, and Extreme Precipitation in Coastal New Hampshire: Analysis of Past and Projected Future Trends*. <https://goo.gl/gvJgBD>.



## FROM TIDES TO STORMS: PREPARING FOR NEW HAMPSHIRE'S FUTURE COAST

# Vehicles for Informed Planning

## Vulnerability Assessment

- Critical Infrastructure
- State and Local Roads
- Utilities and Infrastructure
- Natural Resources - Environment

## Regional Planning Recommendations

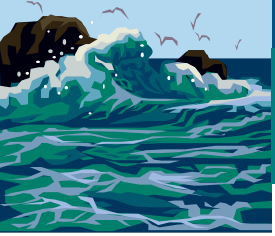
- Policy and Planning Recommendations
- Regulatory Strategies
- Non-Regulatory Approaches

*Local  
Hazard Mitigation  
Plans*

*State Agency  
Plans*

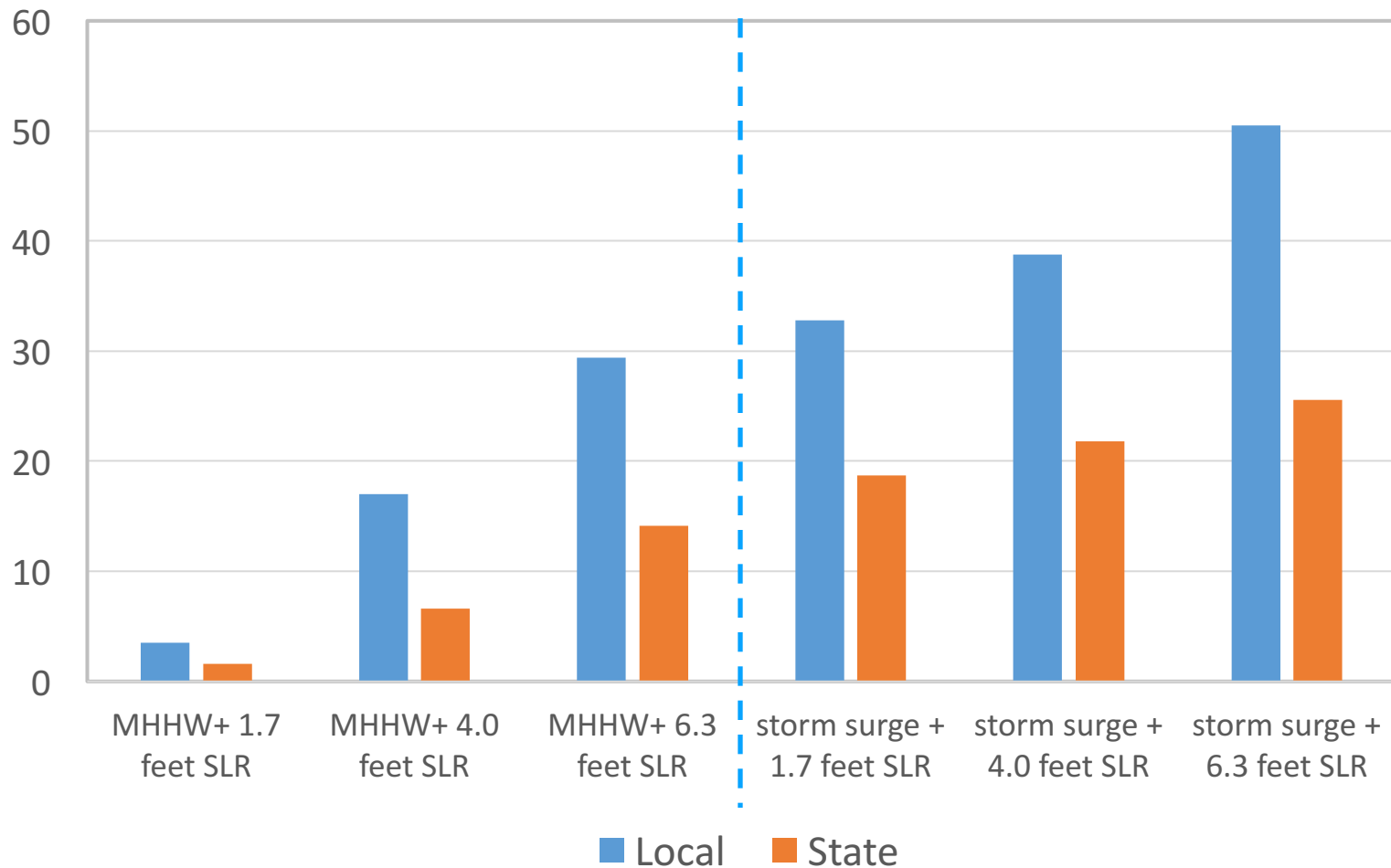
*Regional  
Master Plan*

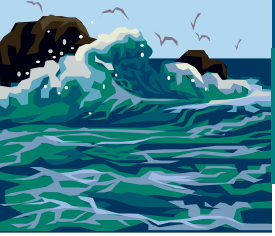
*Natural Resource  
Conservation*



## FROM TIDES TO STORMS: PREPARING FOR NEW HAMPSHIRE'S FUTURE COAST

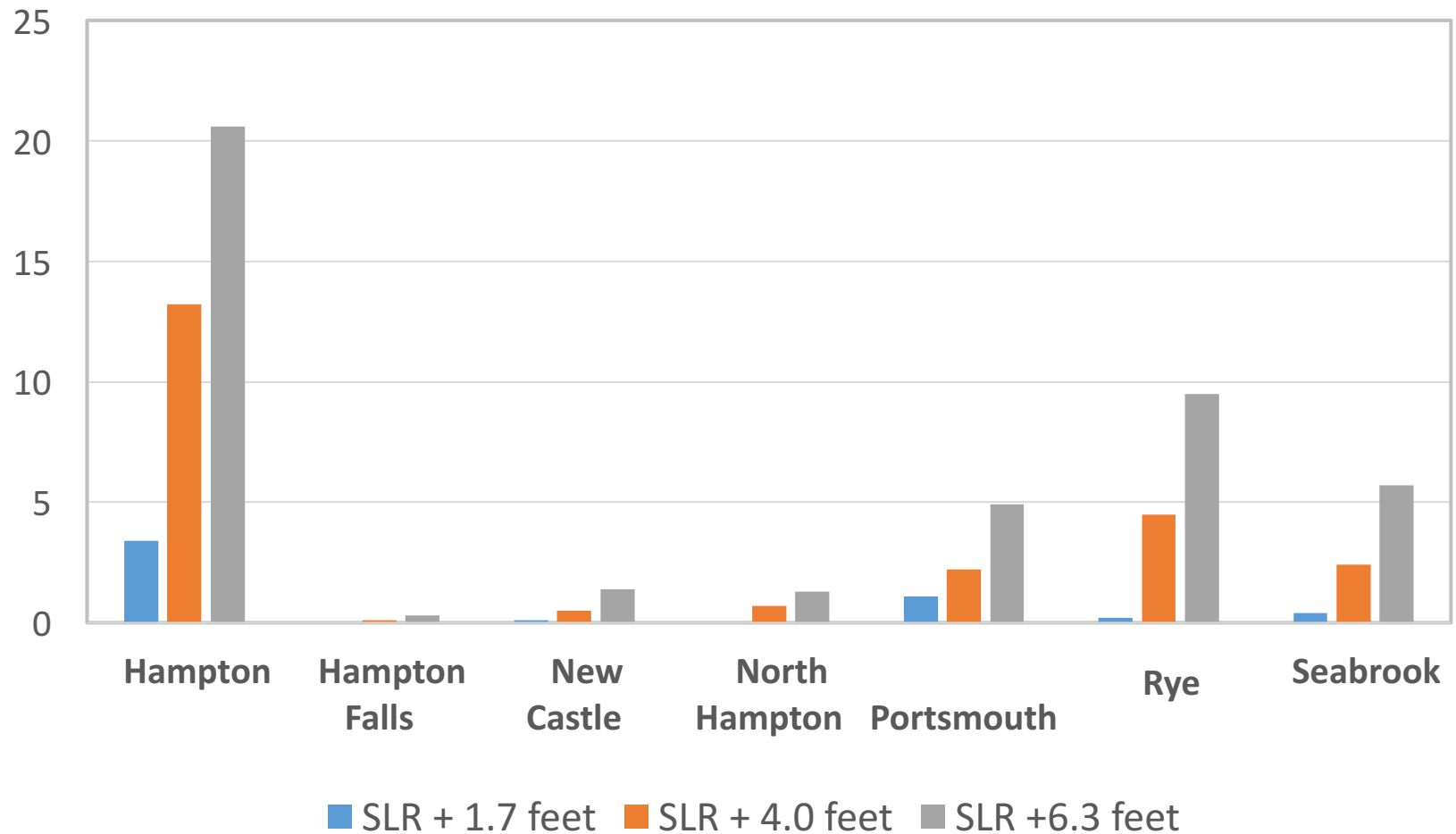
### Example: State and Local Roadways (miles)



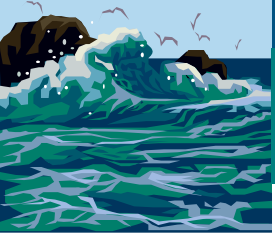


## FROM TIDES TO STORMS: PREPARING FOR NEW HAMPSHIRE'S FUTURE COAST

### Example: Miles of Roadway by Municipality

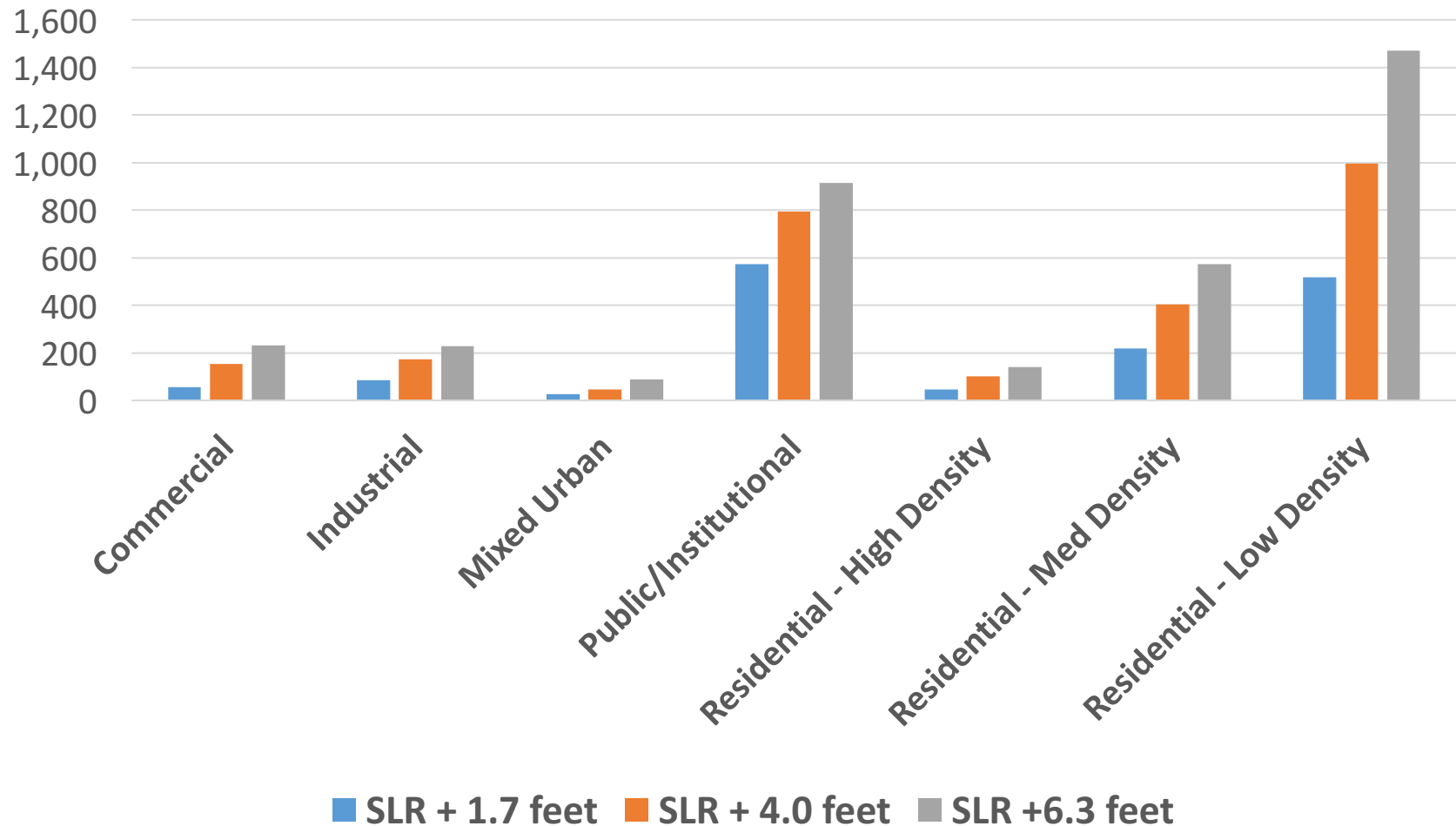


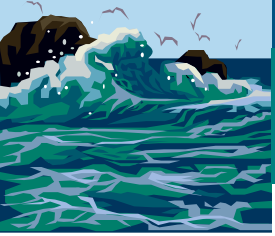




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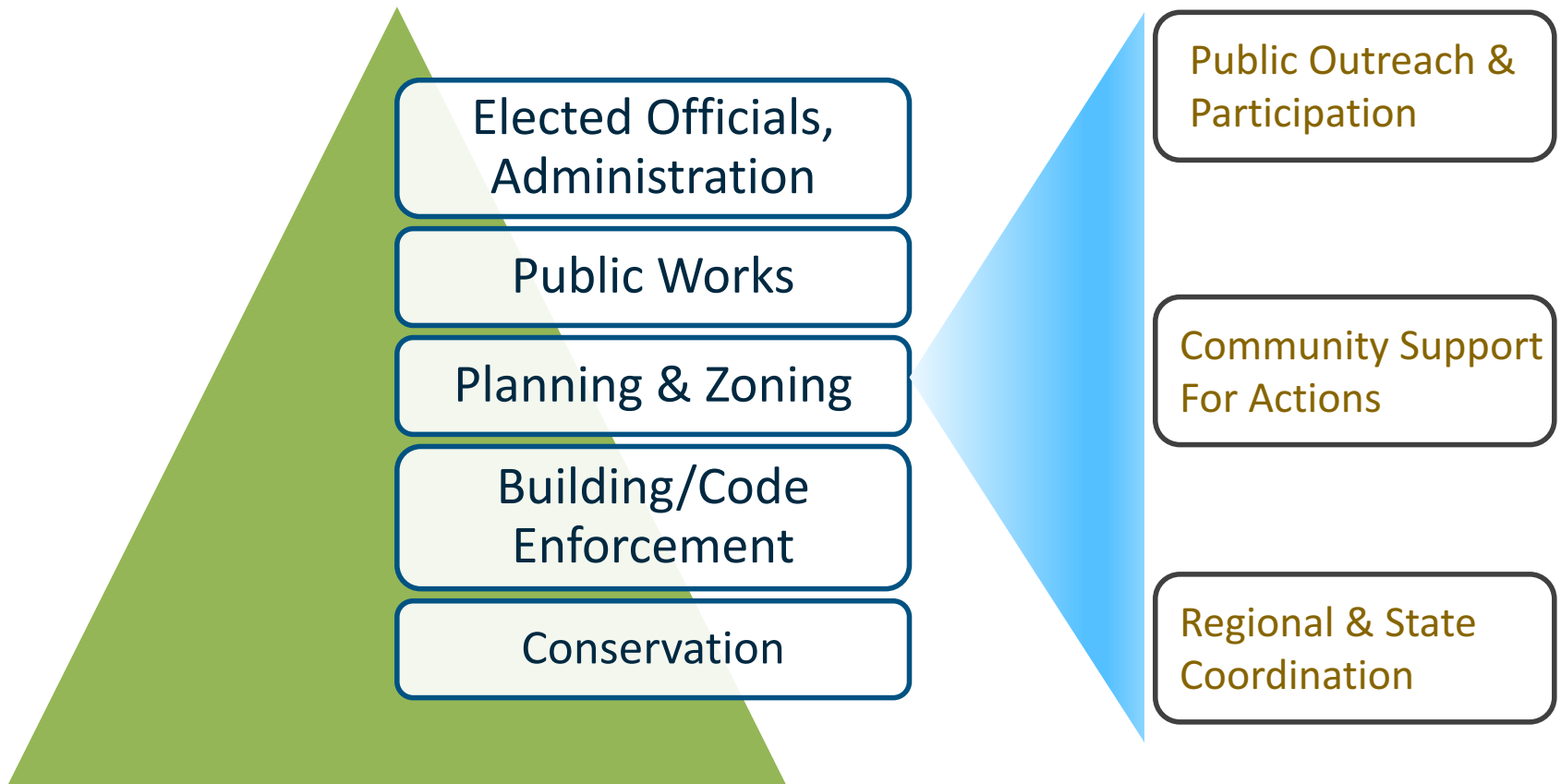
### Example: Municipal Zoning Districts (acres)





## FROM TIDES TO STORMS: PREPARING FOR NEW HAMPSHIRE'S FUTURE COAST

### Municipal Coordination



# Projects to Inspire Regional Action

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*Julie LaBranche, Rockingham Planning Commission*

# Tides to Storms 2 – Implementation Projects

## Regulatory

- Portsmouth: zoning and floodplain development standards (e.g. freeboard, natural resource buffers, special flood hazard overlay districts)
- Hampton: new/revised FEMA floodplain development standards and 1 foot of freeboard

## Non-Regulatory

- New Castle: buffer stewardship outreach program
- Hampton Falls: outreach program about role of buffers in reducing coastal flooding

## Planning

- Rye: Master Plan Chapter – Coastal Hazards and Climate Adaptation
- Seabrook: Master Plan Chapter – Coastal Hazards and Adaptation (adopted Nov. 2016)



# Regional Resilience Roundtable

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Group 1- Evacuation Route Planning

*Theresa Walker, Rockingham Planning Commission*

Group 2 - Public Outreach and Engagement

*Julie LaBranche, Rockingham Planning Commission*



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# Questions?

## Contact

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**NHDES Coastal Program:** Nathalie Morison ([nathalie.morison@des.nh.gov](mailto:nathalie.morison@des.nh.gov) / (603) 559-0029)

