



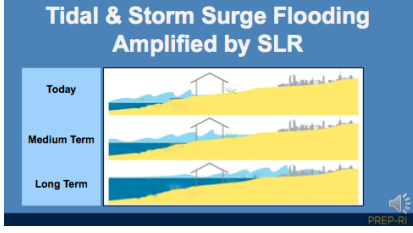

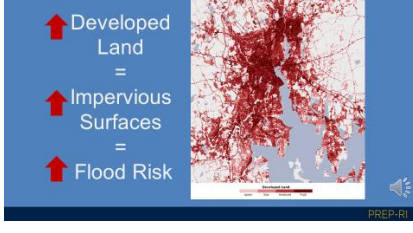







PRESENTATION NOTES

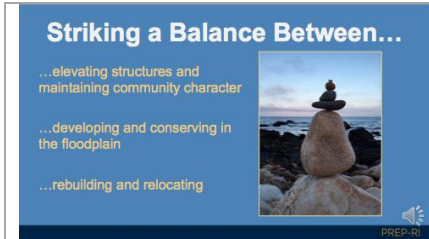
	<p>1. Welcome to “Rising Waters: Planning for Flooding in the Ocean State,” part of the online series, “Providing Resilience Education for Planning in Rhode Island,” (or “PREP-RI”). ***</p> <p>Image Source: North Road, Jamestown, R. Calabro, Save the Bay</p>
	<p>2. I am pleased to introduce the speakers for this module. I am Melinda Hopkins of the Rhode Island Emergency Management Agency, or RIEMA. I am joined by Wayne Barnes, Senior Planner and Deputy EMA Director of East Providence, and Joseph Warner Jr., the Charlestown Building Official and Floodplain Manager.</p>
	<p>3. The PREP-RI series is designed to support local decision-making and community resilience.</p> <p>By the end of this module you will be able to:</p> <ul style="list-style-type: none"> • Recognize different flooding scenarios in Rhode Island; • Describe the social and economic impacts of flooding; and • Identify flood mitigation examples, opportunities, and programs.
	<p>4. So why should we care about flooding?</p>
	<p>5. Hundreds of miles of Rhode Island’s riverine and coastal shorelines have been historically used for business and pleasure. Many of these areas lie in floodplains and may be vulnerable to disruption and damage. In fact, flooding is the most prevalent and frequent natural hazard that impacts Rhode Island.* We can be proactive and take steps to reduce risk. ***</p>

	<p>Image Source: Rhode Island Sea Grant Flickr</p> <p>Citation: *State of Rhode Island Hazard Identification and Risk Assessment, RIEMA, 2016 (DRAFT)</p>
	<p>6. Much of Rhode Island’s economy relies on coastal businesses. A 2016 Special House Commission Study found that Newport alone has more than 500 businesses at risk of flooding, including 50% of the city’s hotel industry.* ***</p> <p>Image Source: Downtown Newport, M. Allard Cox, Rhode Island Sea Grant Flickr</p> <p>Citation: *Special House Commission to Study Economic Risk Due to Flooding and Sea Level Rise</p>
	<p>7. Rhode Island has approximately 17,000 structures (including public, residential, and commercial) and about 40,000 residents* within the 1% annual flood area.**</p> <p>This flood zone—historically referred to as a 100-year flood—has a 1% chance of occurring in any given year. Another way to think about this is that over the course of a 30-year mortgage, there is a 26% chance of this type of storm. Flood maps show the 1% annual flood and .2% annual flood areas. ***</p> <p>Image Source: FEMA Flood Map Service Center</p> <p>Citation: *Based on number of residential structures located within the 1% annual flood area and the average household size of 2.46 (Census Data, 2011-2015) **State of Rhode Island Hazard Identification and Risk Assessment, RIEMA, 2016 (DRAFT)</p>
	<p>8. So what exactly is happening? Over the past dozen years Rhode Island has experienced significant flooding due to hurricanes, nor’easters, and other heavy rain events.</p>

	<p>9. In 2005, heavy rains swelled the Blackstone River more than 5 feet, causing over \$11 million in damages.¹ In 2010, rains over the course of a month caused massive flooding of the Pawcatuck, Pawtucket, and Blackstone River Basins, severely impacting interstate highways, treatment plants, residences, and businesses.² In 2011, Hurricane Irene caused flooding, as well as severe wind damage, in many areas across the state.³ In 2012, Superstorm Sandy resulted in extensive damages and over \$100 million in private insurance claims from storm surge and erosion.⁴</p> <p>***</p> <p>Image Source: (Left to Right) Central Falls Town Dock, Blackstone River Tourism Council; Warwick Mall, NOAA; Ann Street Pier, City of Newport, 2011; Corn Neck Road, Block Island, J.Brady, L.U.A.O.</p> <p>Citation:</p> <ol style="list-style-type: none"> 1. More than \$11 million in damages from 7 RI communities (Woonsocket, N. Smithfield, Smithfield, Lincoln, Cumberland, Central Falls, Pawtucket). Blackstone River Flood Damage Reduction Rhode Island, Section 905b, US Army Corps of Engineers, 2008. 2. Northeast River Forecast Center, National Weather Service 3. State of Rhode Island Hazard Identification and Risk Assessment, RIEMA, 2016 (DRAFT) 4. Rhode Island Coastal Property Guide, BeachSAMP, 2014 5. Wickford, MyCoast (2017)
	<p>10. Flooding can occur with daily high tides or intermittently with storms. Along the coast, tidal flooding affects low-lying areas during extreme high tides. Flooding due to storm surge--which occurs when strong winds push waves landward--is less frequent, but can devastate coastal floodplains, especially when a storm hits at high tide. Inland, heavy rainfall may inundate areas more rapidly than our environment and infrastructure can absorb it, resulting in riverine and flash flooding.</p> <p>***</p> <p>Image Source: (Left to Right) Tidal, T. Faulkner, ecoRI News; Storm Surge, Rhode Island Sea Grant Flickr; Riverine, National Weather Service</p>

	<p>11. Sea level rise will amplify both tidal flooding and storm surge, causing more widespread damage to coastal areas in the future. ***</p> <p>Image Source: Adapted from an infographic from the Union of Concerned Scientists</p> <p><i>Watch the Climate Change in Rhode Island Module for more information on sea level rise.</i></p>
	<p>12. Riverine flooding is becoming more common in Rhode Island. Rhode Island’s rain events have become more frequent and intense due to changing climate conditions. ***</p> <p>Image Source: National Weather Service</p> <p><i>Watch the PREP-RI Climate Change in Rhode Island Module for more information on changing climate conditions.</i></p>
	<p>13. Increasing precipitation results in increases in flood risk, which is made worse by development with hard surfaces (like roads and parking lots) that prevent water from soaking into the soil. Before 1970, many local rivers experienced a flood event every 5 to 10 years, but today we are seeing flooding every 1 to 3 years. In many cases the severity of the flooding is worse as well. ***</p> <p>Image Source: NASA Citation: David Vallee, National Weather Service, NE River Forecast Center, NOAA.</p> <p><i>Watch the PREP-RI Stormwater Module for more information on impervious cover contributing to flooding.</i></p>
	<p>14. So what can we do? As municipal decision-makers, we realize floodplain management cannot be an afterthought.</p>
	<p>15. Cities and towns are working to be better prepared through their local planning efforts. Some examples include:</p> <ul style="list-style-type: none"> • Comprehensive and Hazard Mitigation plans; • Floodplain ordinances, the building code, and the National Flood Insurance Program (NFIP); and • Standard operations around emergency response and recovery.

<p>Complementary Plans</p> 	<p>16. The Comprehensive Plan and Hazard Mitigation Plan do not exist in isolation—they build upon, and reinforce, each other. Information about recurring hazards and past impacts identified in a Hazard Mitigation Plan help determine priority hazards to be included in the Comprehensive Plan. The Comprehensive Plan establishes goals, priorities, and actions which become the blueprint for the community and its decision-making.</p> <p>***</p> <p>Citation: Statewide Planning and RIEMA, RI Flood Mitigation Association presentation on comprehensive planning, April 2016.</p>
<p>Comprehensive Plans Must Incorporate Natural Hazards and Climate Change</p> 	<p>17. A Comprehensive Plan’s 20-year planning horizon and its 10-year implementation programs must consider climate change, flooding, and hazard mitigation.</p> <p>***</p> <p>Citation: Guidance Handbook #12: Planning for Natural Hazards & Climate Change, Statewide Planning, January 2016.</p>
<p>Complying with Standards</p> 	<p>18. Municipalities must comply with their local floodplain maps and ordinances as well as the State Building Code, which includes minimum standards for building in floodplains. A community which fails to adhere to these regulations, or which grants variances in floodplains, risks its National Flood Insurance Program status.</p>
<p>Be Prepared</p> 	<p>19. Municipal emergency management administrators establish plans and procedures to ensure effective responses to an emergency. For example, East Providence response personnel and affected neighborhoods now receive automated notifications whenever flood gauges in the Ten Mile River reach the level at which minor flooding is expected. This provides municipal leaders additional lead time to prepare for possible flooding.</p> <p>***</p> <p>Image Source: Left to Right Left: Road may flood sign, P. Rubinoff; Middle: City of East Providence, http://www.eastprovidence.com/flood Right: Middletown road closed sign, Aquidneck Island Planning Commission</p>



20. Everyone wants a safe community; however, challenges exist. At the heart of many decisions is weighing short and long term costs and benefits and finding a balance that works for your community and your tax base.

Striking a Balance Between:

- ...elevating structures and maintaining community character
- ...developing and conserving in the floodplain
- ...rebuilding and relocating

Image Source: Balanced stones, M. Truman



21. Municipalities have opportunities to do more to reduce the risks from flooding by protecting, accommodating, or avoiding impacts. Cities and towns can incentivize developers to build to higher standards, join the Community Rating System, retrofit municipal properties, acquire flood prone properties, and engage residents through outreach programs.



22. By State Law, municipalities are not permitted to modify the Uniform State Building Code. However they may establish incentives to persuade property owners to build to higher standards. Elevating structures higher than minimum standards reduces flood risks and flood insurance premiums. For example, under a new definition for “building height” in the Rhode Island Zoning Enabling Act, freeboard of up to 5 feet may be excluded from municipal height calculations, providing an incentive to elevate more than is required.




Image Sources: Left to Right Freeboard Image (<http://ri.stormsmart.org/files/2008/10/freeboard-both.gif>)

Center house raised 5’ above base flood elevation, Rhode Island Castal Property Guide, BeachSAMP, 2014



23. Many communities are going above and beyond by participating in FEMA’s Community Rating System, or “CRS.” This voluntary program recognizes and encourages community floodplain management activities that exceed the NFIP minimum requirements and saves policy holders money on their annual flood insurance premiums.

Benefits to the community include enhanced public safety, a reduction in damage to property and public infrastructure, avoidance of economic disruption and losses, reduction of human suffering and/or loss of life, and protection of the environment. In addition, policy holders in ten participating communities will receive discounts of up to 15%* on flood insurance premiums.

	<p>This kind of savings can catalyze community interest and action around hazard mitigation.</p> <p>***</p> <p><i>*Note: The maximum discount that can be received for the CRS Program in Rhode Island is 15% due to State amendments to the Code and the delay in adoption of the most current Code.</i></p>
 <p>Retrofits Reduce Risk</p> <p>The image shows three panels: an elevated house in Westerly, an AC unit elevated at a home in Westerly, and a historic property in Newport.</p>	<p>24. Municipalities and property owners can significantly reduce risk by elevating critical elements such as utilities and information technology infrastructure above flood level. Newport, for example, is drafting guidance on elevating historic buildings while maintaining village character. Bristol has installed backflow valves to prevent sewage from backing-up into buildings as a result of rising waters. Westerly and Barrington have elevated several coastal properties using grant funds.</p> <p>***</p> <p>Image Source: Left: Elevated home in Westerly; P. Rubinoff Middle Top: AC elevated at a home in Westerly (elevation project completed with HMP funds); Middle Bottom: Historic property in Newport; P. Rubinoff Right: Potter League for Animals, Middletown RI</p>
 <p>Getting Out of Harm's Way</p> <p>The image shows a house being demolished and a wetland area.</p>	<p>25. Cranston has also used grant funds to-acquire vulnerable properties to restore the floodplain.</p> <p>***</p> <p>Image Source: Left to Right F. Jonic, Rhode Island Public Radio, 2013 http://ripr.org/post/flood-prone-homes-cranston-demolished-returning-wetlands; Perkins Ave, M. Kane, 2017</p>
 <p>Outreach is Key to Success!</p> <p>The image shows a 'PIPELINE' sign and a person looking at an outdoor education sign.</p>	<p>26. Outreach is key to overcoming the challenges presented by flooding. Decide what works best for your community. Charlestown sends out a bi-annual newsletter to all property owners informing them of best practices to reduce flood damage and insurance premiums. Our building department proactively advises property owners on the regulations. Bristol took a community-wide approach, creating an outdoor education program with signage explaining the impacts of historic hurricanes.</p> <p>***</p> <p>Image Source: Left to Right Town of Charlestown Newsletter, 2016 Sign, D. Williamson, Town of Bristol</p>

<table border="1"> <thead> <tr> <th>ELIGIBLE ACTIVITIES</th> <th>HMGP</th> <th>PDM</th> <th>FMA</th> </tr> </thead> <tbody> <tr> <td>Property Acquisition and Structure Demolition</td> <td>X</td> <td>X</td> <td>X</td> </tr> <tr> <td>Property Acquisition and Structure Relocation</td> <td>X</td> <td>X</td> <td>X</td> </tr> <tr> <td>Structure Elevation</td> <td>X</td> <td>X</td> <td>X</td> </tr> <tr> <td>Dry Floodproofing of Historical Residential Structures</td> <td>X</td> <td>X</td> <td>X</td> </tr> <tr> <td>Dry Floodproofing of Non-residential Structures</td> <td>X</td> <td>X</td> <td>X</td> </tr> </tbody> </table> <p>Hazard Mitigation Assistance Grants (RIEMA/FEMA)</p>	ELIGIBLE ACTIVITIES	HMGP	PDM	FMA	Property Acquisition and Structure Demolition	X	X	X	Property Acquisition and Structure Relocation	X	X	X	Structure Elevation	X	X	X	Dry Floodproofing of Historical Residential Structures	X	X	X	Dry Floodproofing of Non-residential Structures	X	X	X	<p>27. RIEMA administers FEMA’s three Hazard Mitigation Assistance grant programs. (1) The flood mitigation assistance program funds projects that reduce flood risk to buildings insured under the NFIP (2) The pre-disaster mitigation program funds hazard mitigation planning. (3) The Hazard Mitigation Grant Program assists in implementing long-term measures FOLLOWING Presidential disaster declarations. Remember, a FEMA approved hazard mitigation plan is required for this funding.</p>
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<p>Other Funding Opportunities</p> <ul style="list-style-type: none"> Community Development Block Grants (HUD) Natural Resource Conservation Service (USDA) Transportation Improvement Plan (RI) RI Infrastructure Bank (RI) Capital Improvement Program (Local) 	<p>28. There are other funding options that municipalities have used.</p>																								
<p>Opportunities Exist to Help Mitigate Flooding Impacts</p> <ul style="list-style-type: none"> Integrate with municipal plans Promote incentives Retrofits reduce risk Outreach is critical Explore funding options 	<p>29. In summary, there are floods which impact Rhode Island communities, but there are many tools, strategies, and funding opportunities available to help mitigate and lessen the impacts of flooding.</p>																								
<p>PROVIDING RESILIENCE EDUCATION FOR PLANNING IN RHODE ISLAND PREP-RI.SEAGRANT.GSO.URI.EDU</p> <ul style="list-style-type: none"> Check out the resources document and presentation notes Fill out survey and get your certificate! View other modules 	<p>30. Thank you for viewing this module. Go to the PREP-RI website to see the resources document and presentation notes, to fill out the survey, get your certificate, and view the other modules.</p>																								
<p>Acknowledgements</p> <p>Support Governor Gina Raimondo, RI Legislature, and the University of Rhode Island</p> <p>Oversight Committee Janet Coit, RI Department of Environmental Management Grover Fugate, RI Coastal Resources Management Council Representative Lauren Carson, District 75, Newport Parag Agrawal, RI Division of Planning (formerly) Michelle Burnett, RI Emergency Management Agency (formerly) Kelly Mahoney, University of Rhode Island</p> <p>Topic Advisors Carissa Lord, VHB and Jessica Henry, CVS</p>	<p>31. The PREP-RI team acknowledges the support of statewide leaders, experts and practitioners who helped to make this a reality.</p>																								
<p>PREP-RI Team</p> <p>A partnership of the URI Coastal Resources Center, RI Sea Grant, the Graduate School of Oceanography, and the Narragansett Bay National Estuarine Research Reserve.</p> <p>Pam Rubinoff, Jennifer West, Jennifer McCann, Teresa Crean, Dawn Kotowicz, Mary-Kate Kane, Kevin Prott, Sue Kennedy, Cathy Dwyer, Monica Alard Cox</p> <p>PROVIDING RESILIENCE EDUCATION FOR PLANNING IN RHODE ISLAND PREP-RI.SEAGRANT.GSO.URI.EDU</p>	<p>32. Thanks to the PREP-RI team for pulling this all together.</p>																								



33. Providing Resilience Education for Planning in Rhode Island
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