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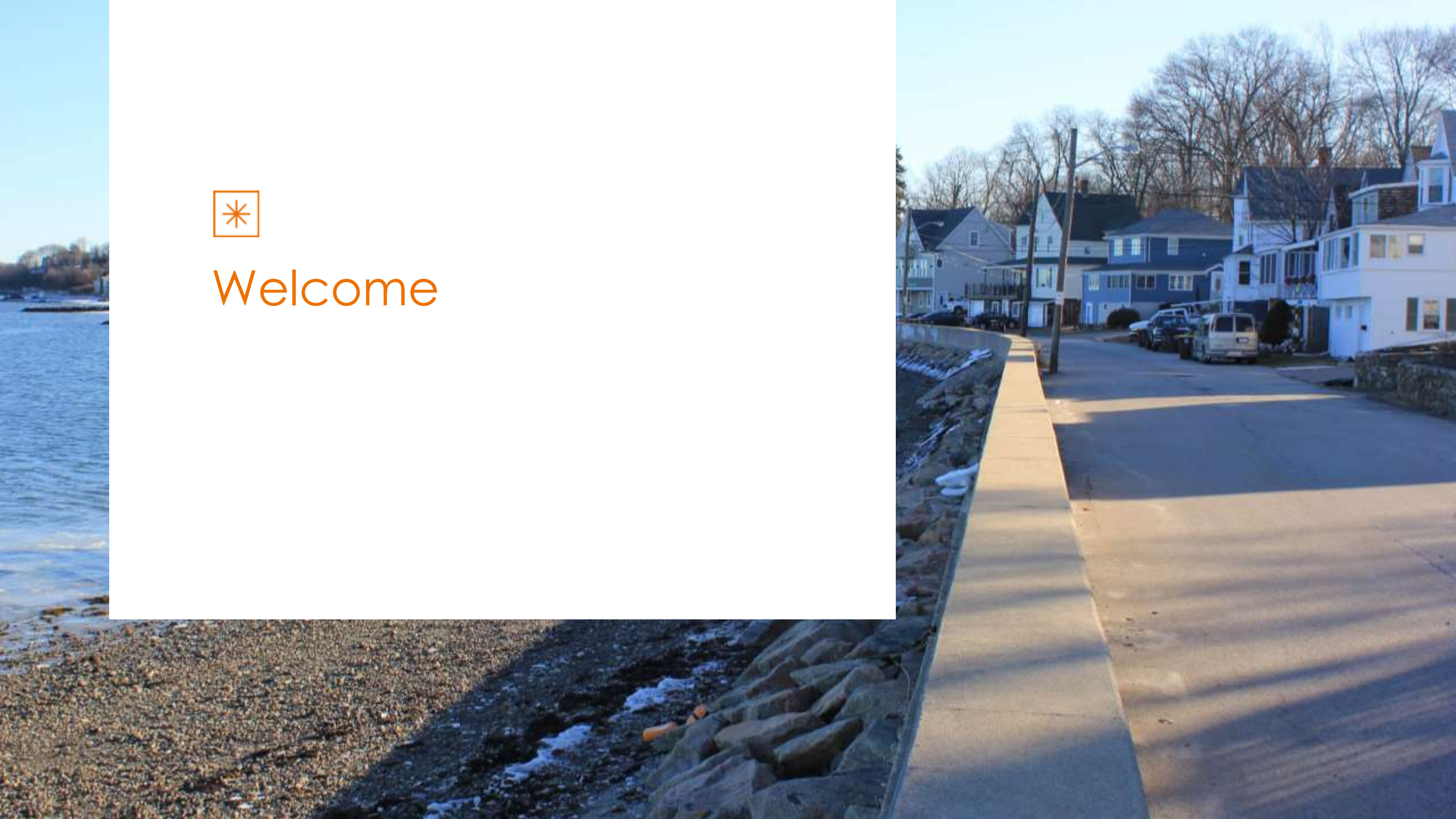
Weymouth
Municipal Vulnerability Preparedness Program

Community Listening Session

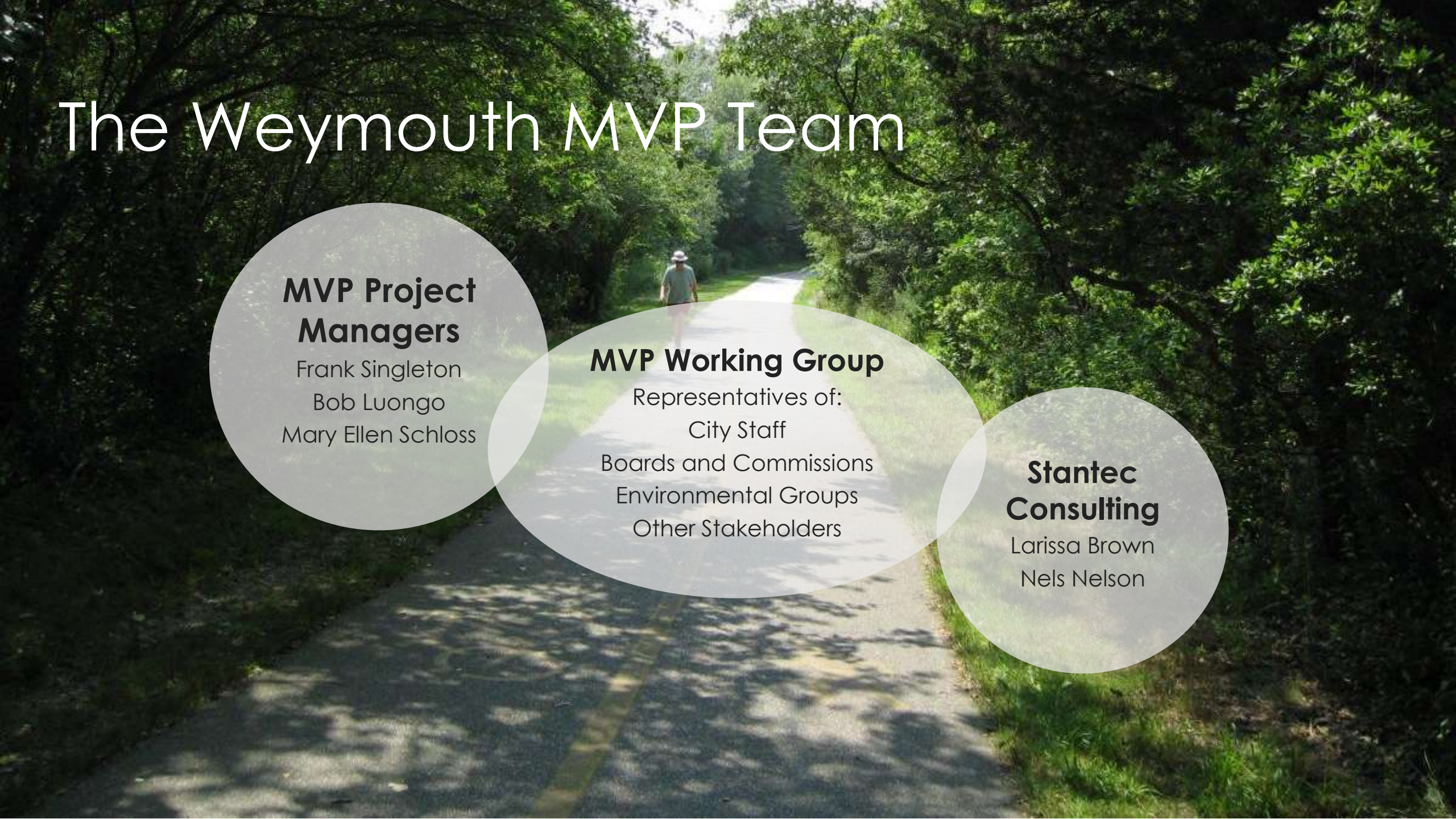


Welcome

AGENDA

1. About the MVP program
2. The MVP program in Weymouth
3. Natural hazards and resilience in Weymouth
4. Results of the MVP program workshop
5. Weymouth's MVP project grant
6. Your questions

The Weymouth MVP Team



MVP Project Managers

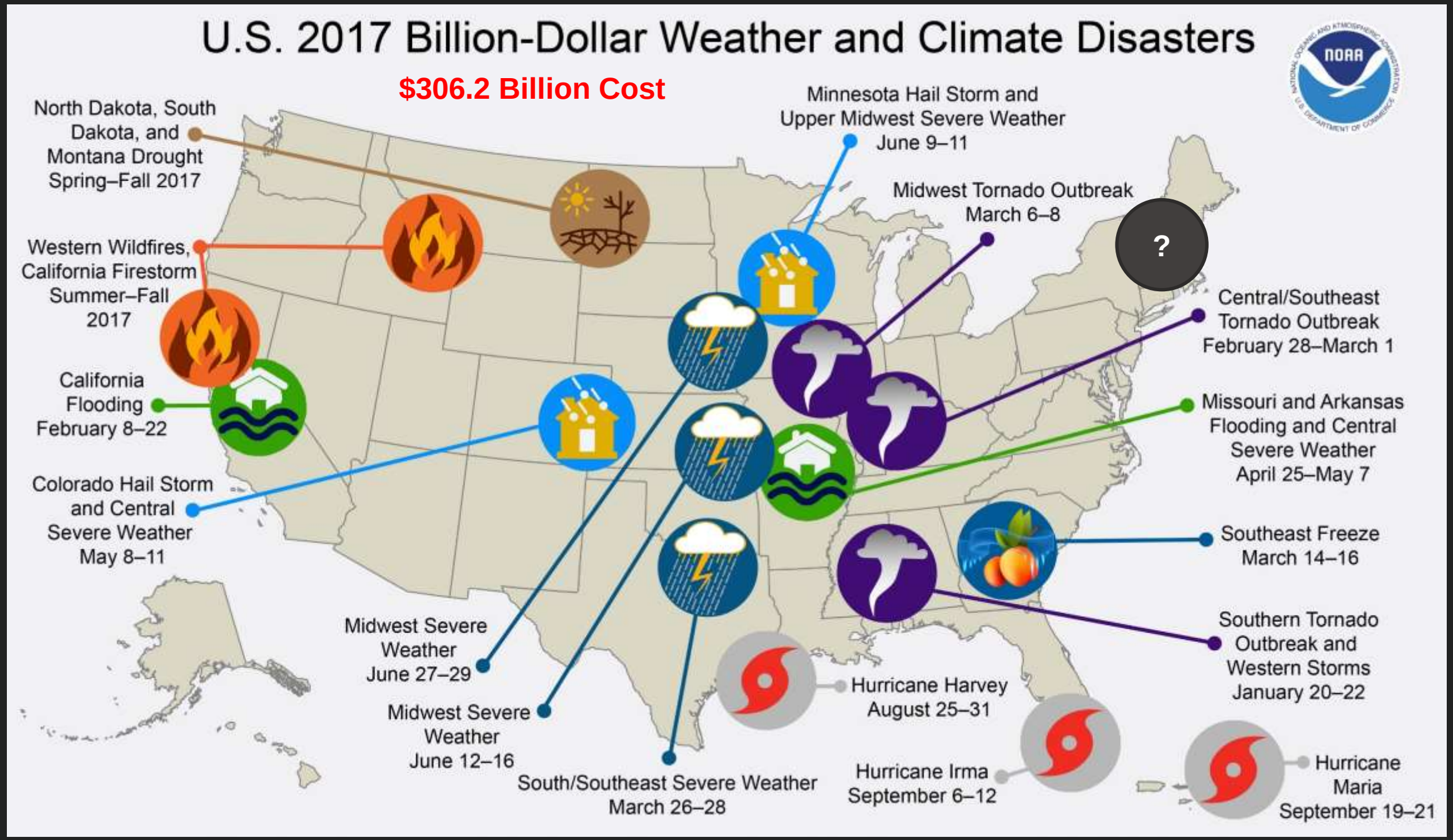
Frank Singleton
Bob Luongo
Mary Ellen Schloss

MVP Working Group

Representatives of:
City Staff
Boards and Commissions
Environmental Groups
Other Stakeholders

Stantec Consulting

Larissa Brown
Nels Nelson



https://www.washingtonpost.com/news/energy-environment/wp/2018/01/08/hurricanes-wildfires-made-2017-the-most-costly-u-s-disaster-year-on-record

What do we mean by “resilience”?

- The ability of a community to **adapt and thrive in the face of extreme events and stresses**.
  - **Anticipate risk**
  - **Plan to limit impacts**
  - **Implement adaptation strategies**
    - integrating all community systems – civic, environmental, social and economic – to support recovery and growth
- Resilience is not the same thing as sustainability, although they are related.

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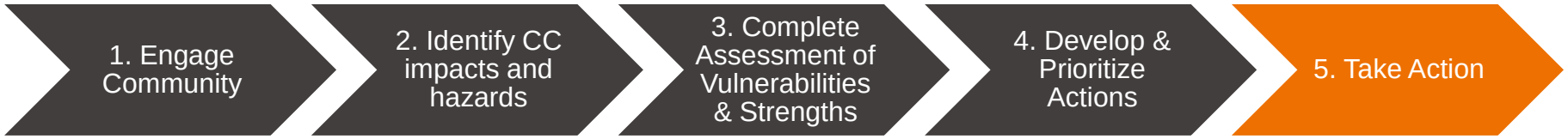
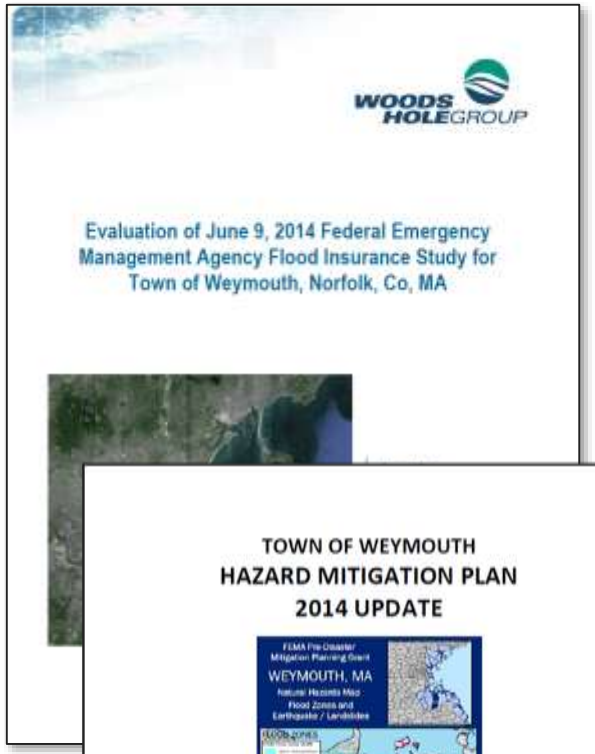
Municipal Vulnerability Preparedness (MVP) Executive Order 569

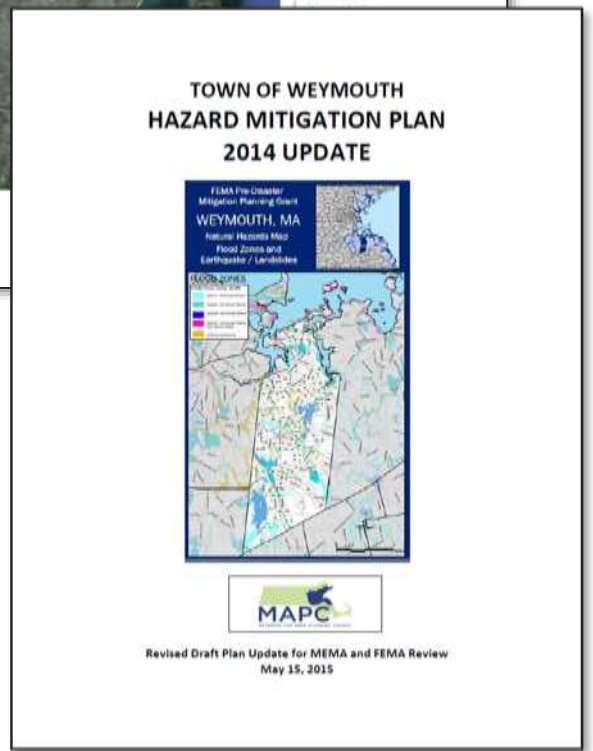
Empowering Communities and Informing Statewide Action

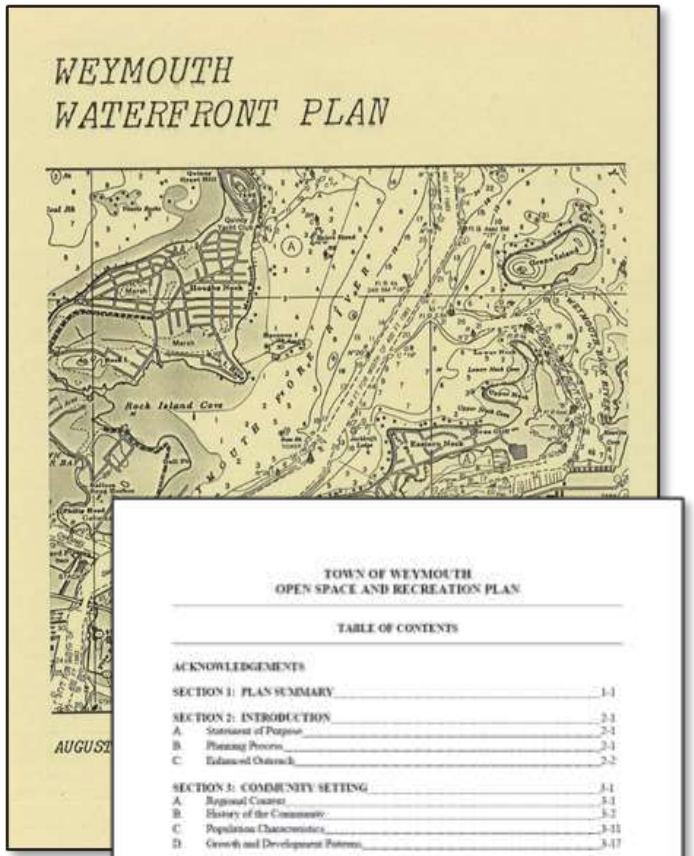
- **Community-led process**
- **Partnerships** and leveraging existing efforts
- **Communities** as local innovators
- **Frame** coordinated statewide efforts.
- **MVP-certified communities** become eligible for project funding from the state

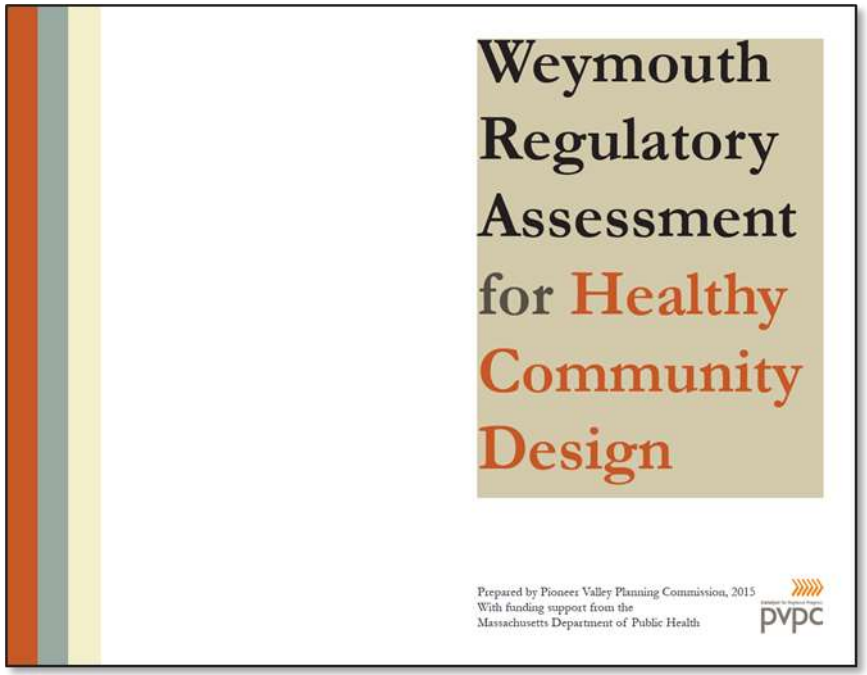


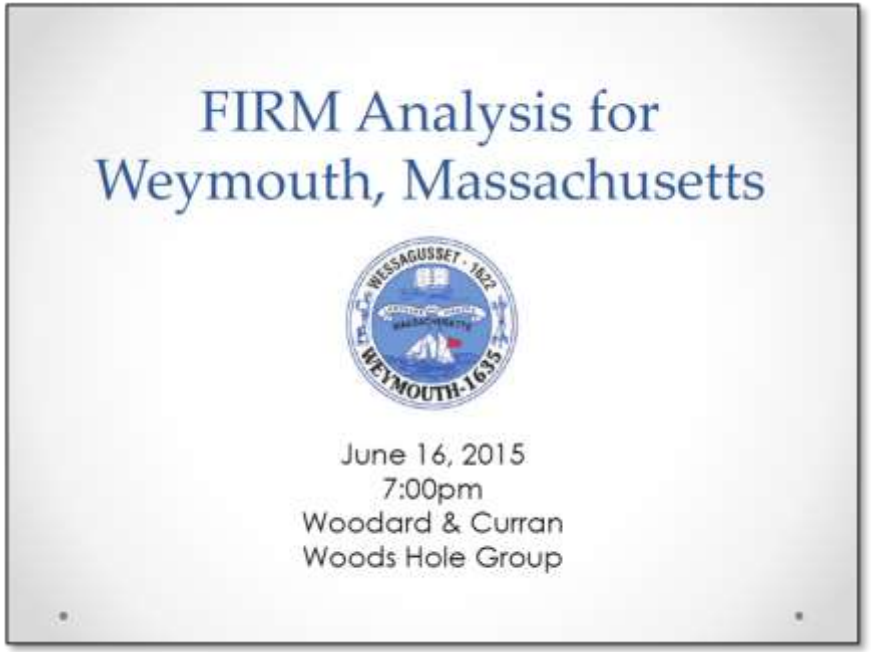
Previous Weymouth plans







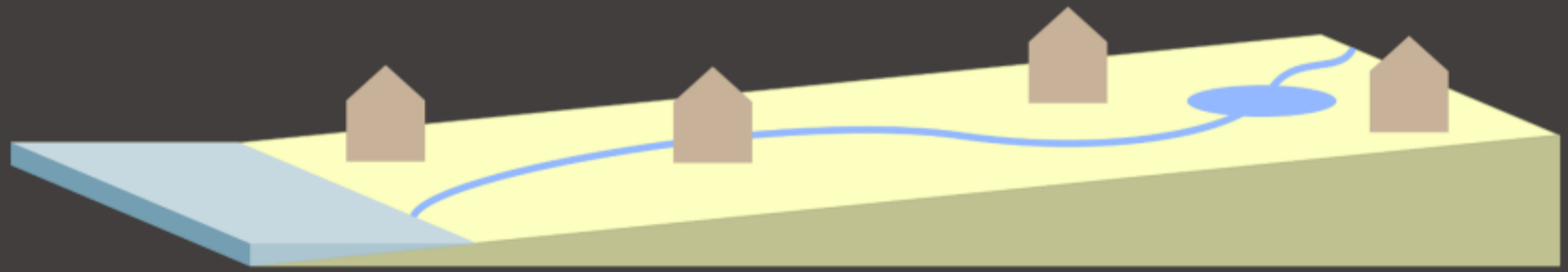




Weymouth MVP Workshop

- February 8, 2018
- Review Weymouth's top four natural hazards related to climate change
- Discuss Weymouth's assets, vulnerabilities and actions
- Identify priority strategies to improve resilience
- Identify priority actions/projects to improve resilience

Top four natural hazards for Weymouth

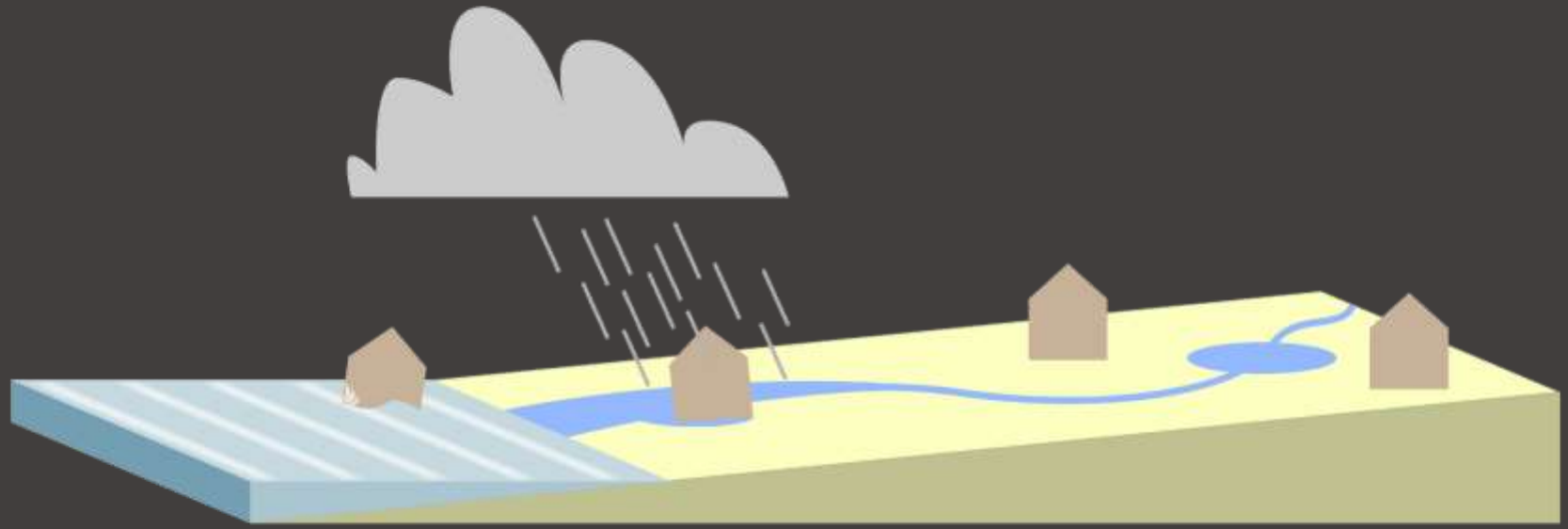


1 Coastal flooding and sea level rise

3 feet of sea level rise by 2100

2 Extreme storms

More days with over 1 inch of precipitation



1 Coastal flooding and sea level rise

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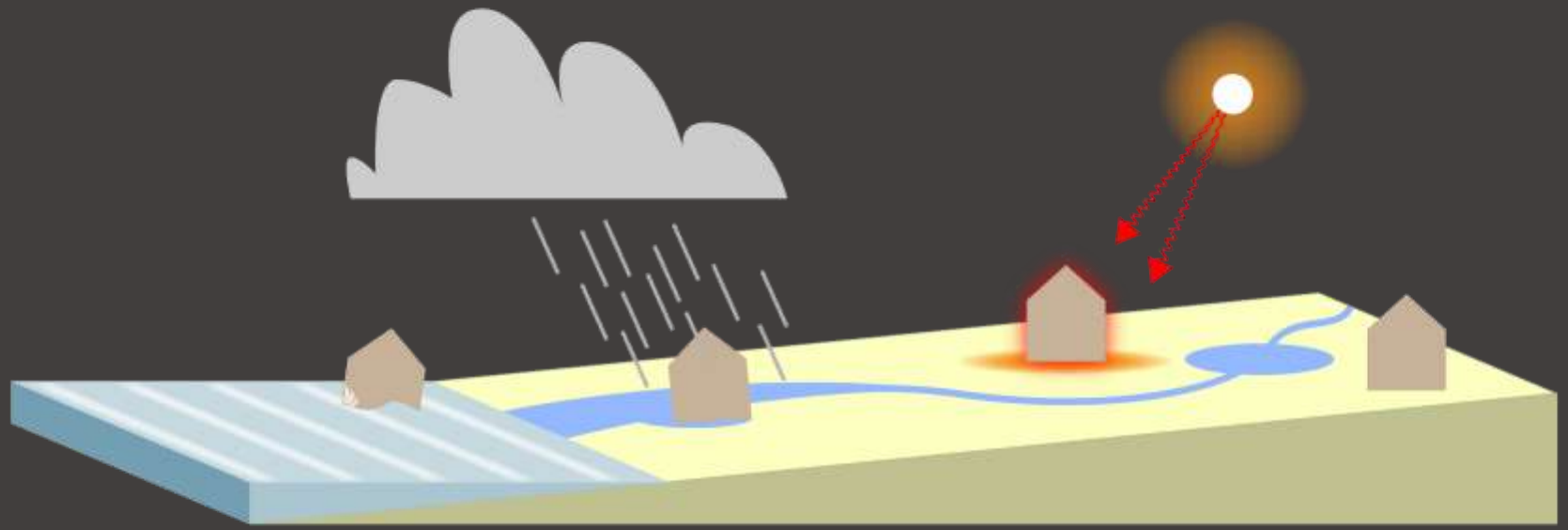
2 **Extreme storms**
More days with over 1 inch of precipitation

3 **Extreme temperatures**
More days with over 90 °F
(and fewer under 32 °F)



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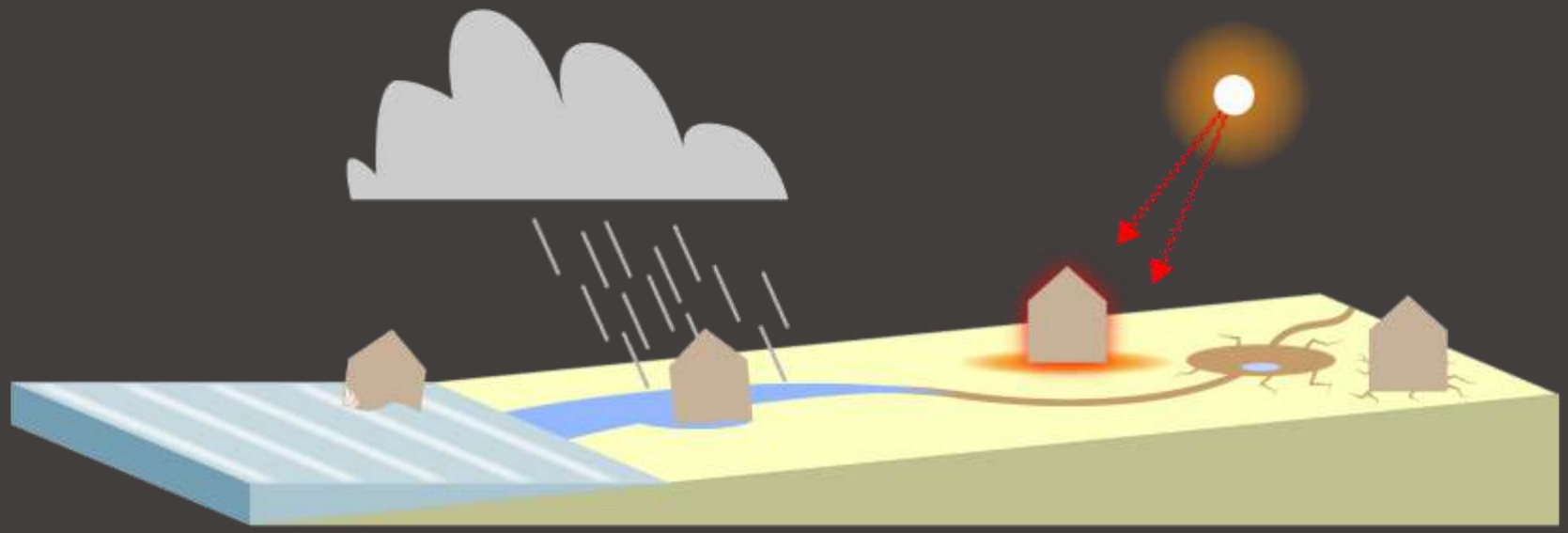
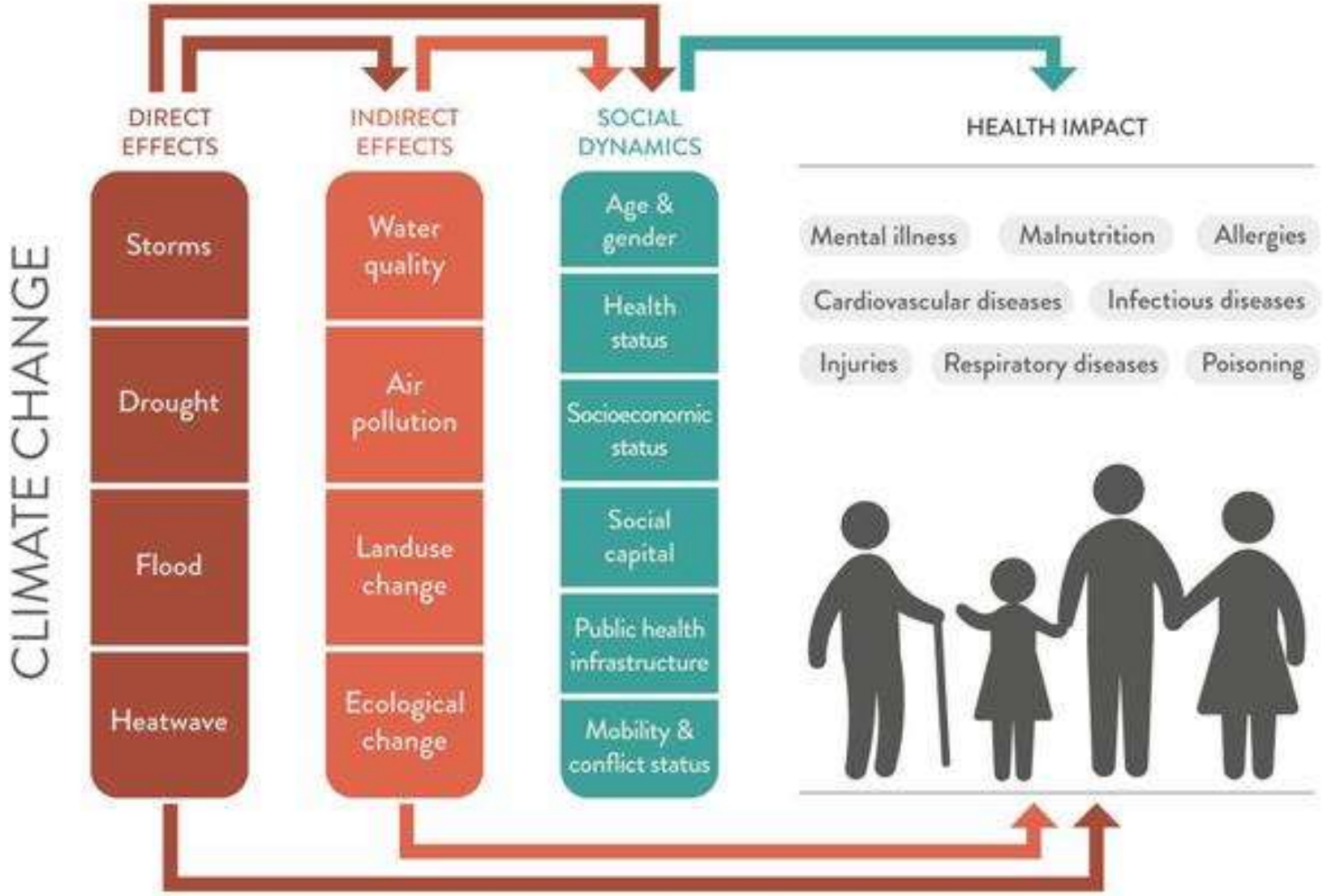


1 **Coastal flooding and sea level rise**
3 feet of sea level rise by 2100

4 **Drought**
More consecutive dry days in the fall

What are the climate change risks to Weymouth's infrastructure, society, and environment?



Societal Features

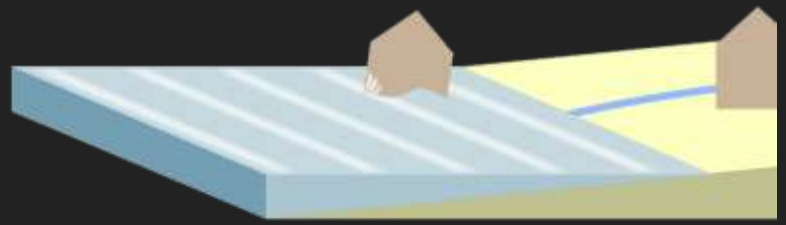
- Availability of services
- Vulnerable populations, elderly, disabled, low income, etc.
- Response personnel
- Community networks
- Civic groups

Infrastructural Features

- Housing
- Schools
- Roads
- Bridges
- Utilities
- Shoreline protection
- Docks

Environmental Features

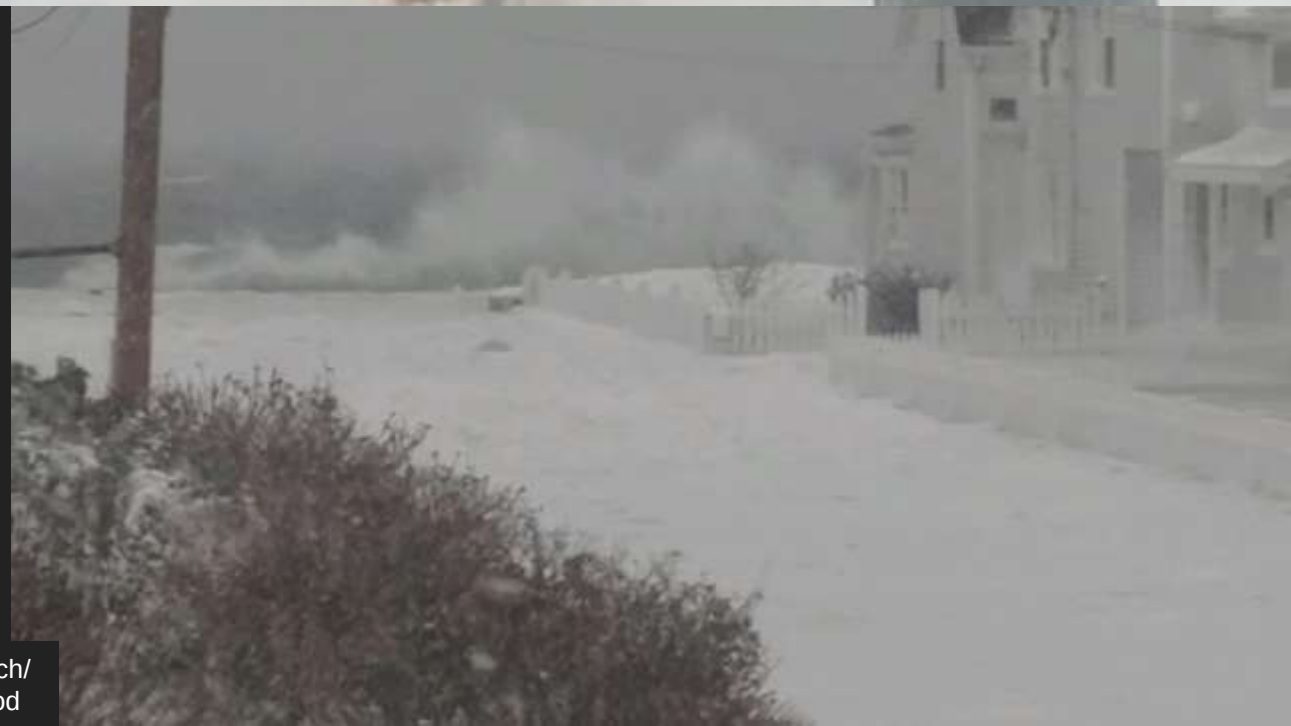
- Wetlands
- Reservoirs
- Rivers
- Salt marshes
- Fish runs
- Aquifers
- Conservation areas
- Dunes



1. Coastal flooding and sea level rise

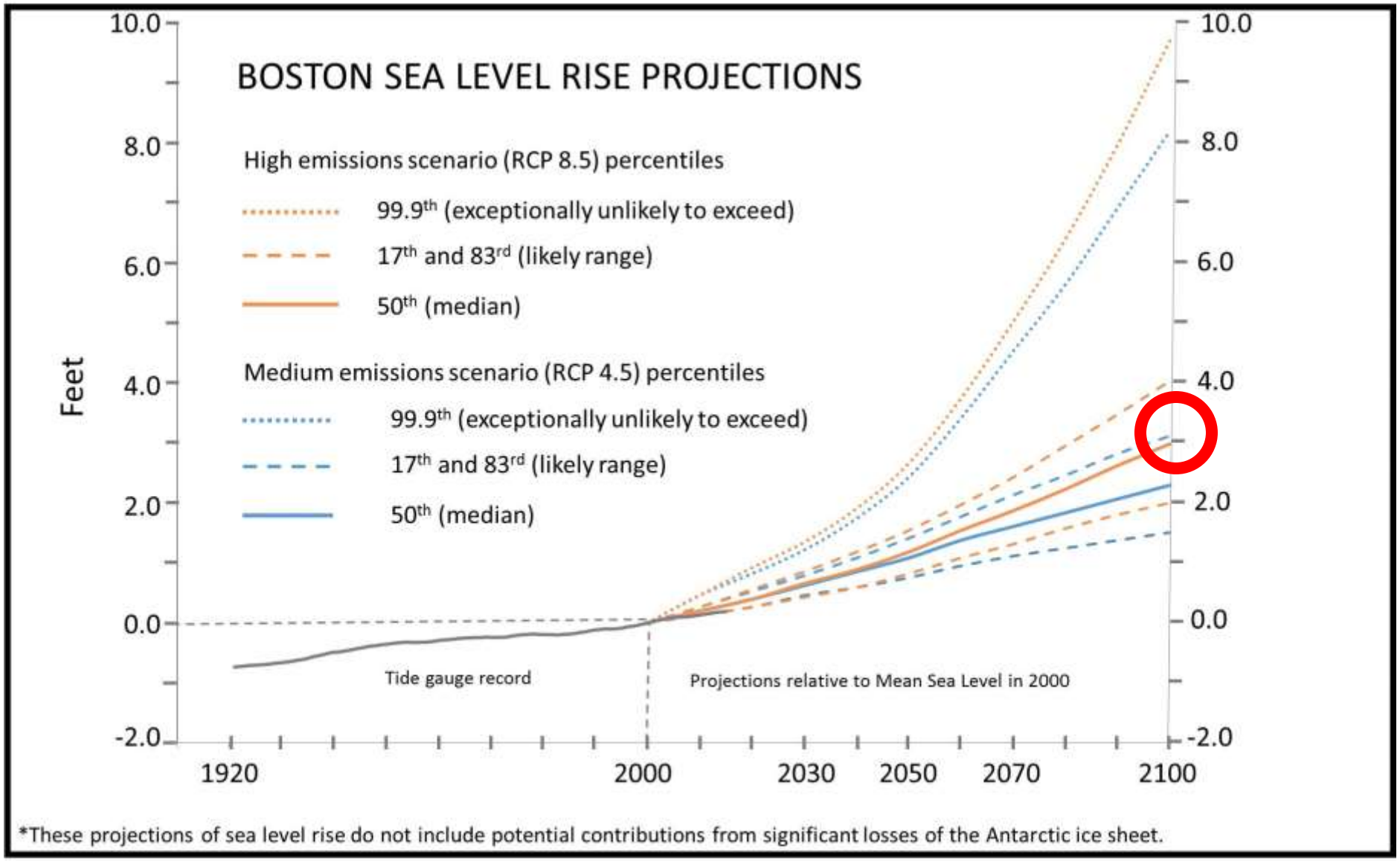
☝ Residents being carried by firefighters through icy flood waters to safety in Weymouth during the height of the January 4, 2018 storm

Waves crashing over Fort Point Road 👉



http://boston.cbslocal.com/2018/01/04/weymouth-flood-rescue-blizzard-2018-firefighters-wessagusset-beach/
http://weymouth.wickedlocal.com/news/20180105/flooding-leaves-its-mark-in-north-weymouth-neighborhood

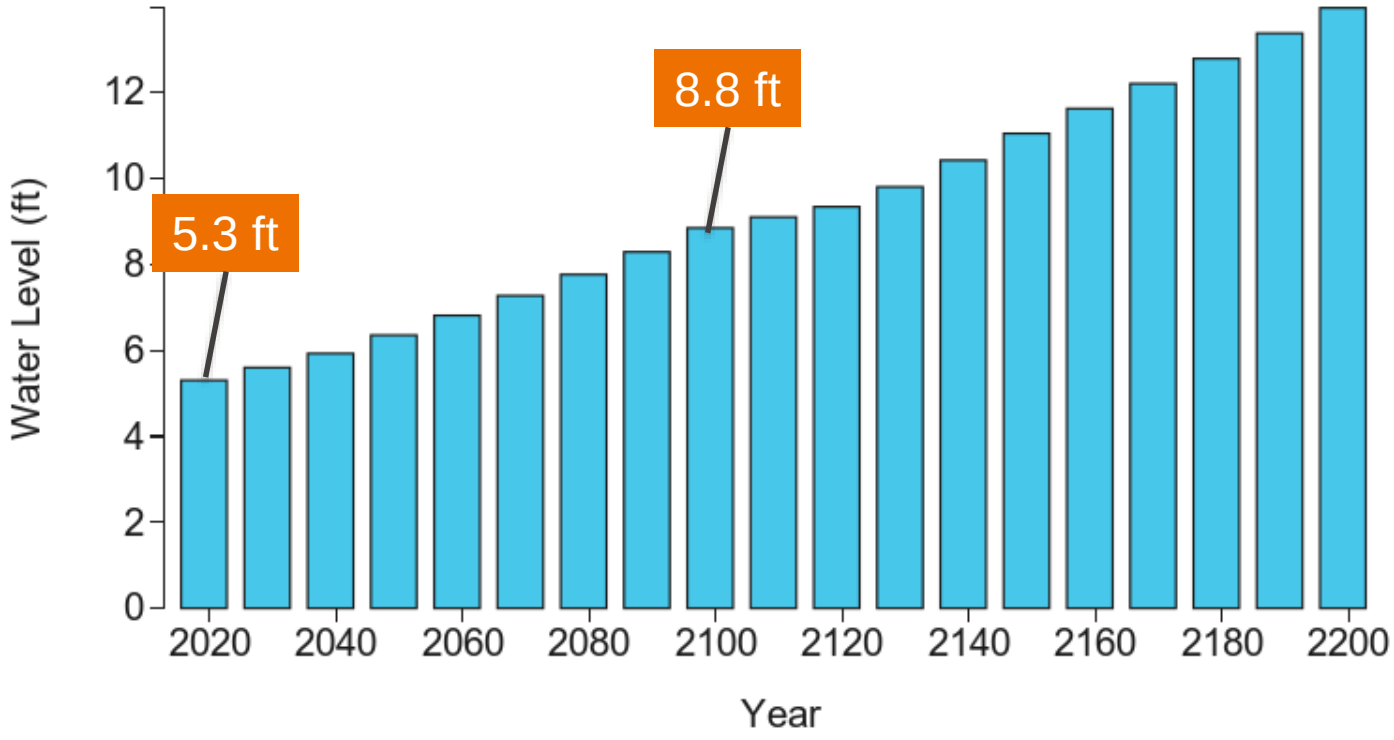
State's estimate of likely SLR between 2000 and 2100 is 3 feet



WEYMOUTH TOWN AREA*

Projected sea level rise + major flood level

A “major flood” has a roughly 1% chance per year

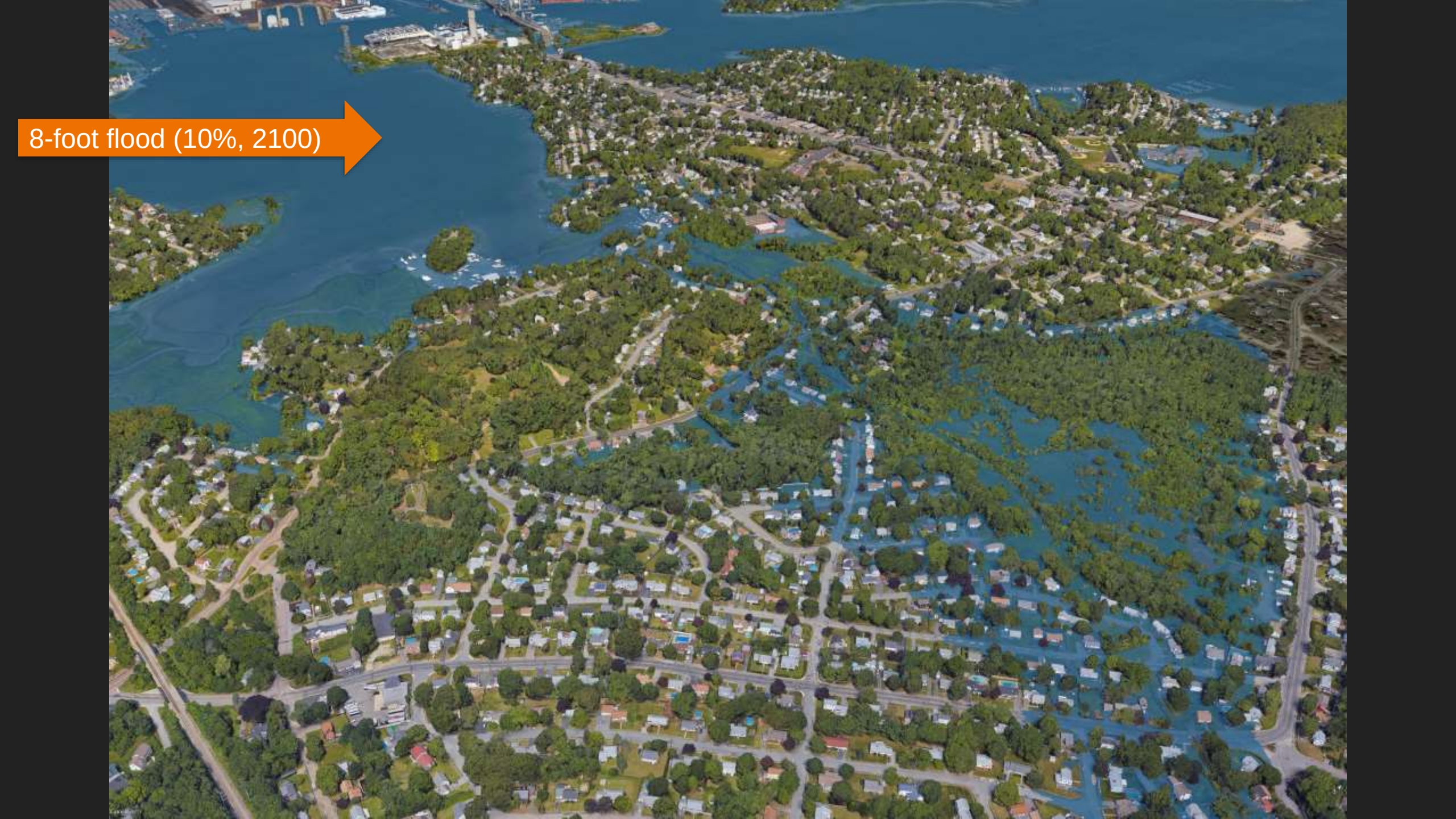


A 5.3’ extreme flood today becomes an 8.8’ flood in 2100 with sea level rise

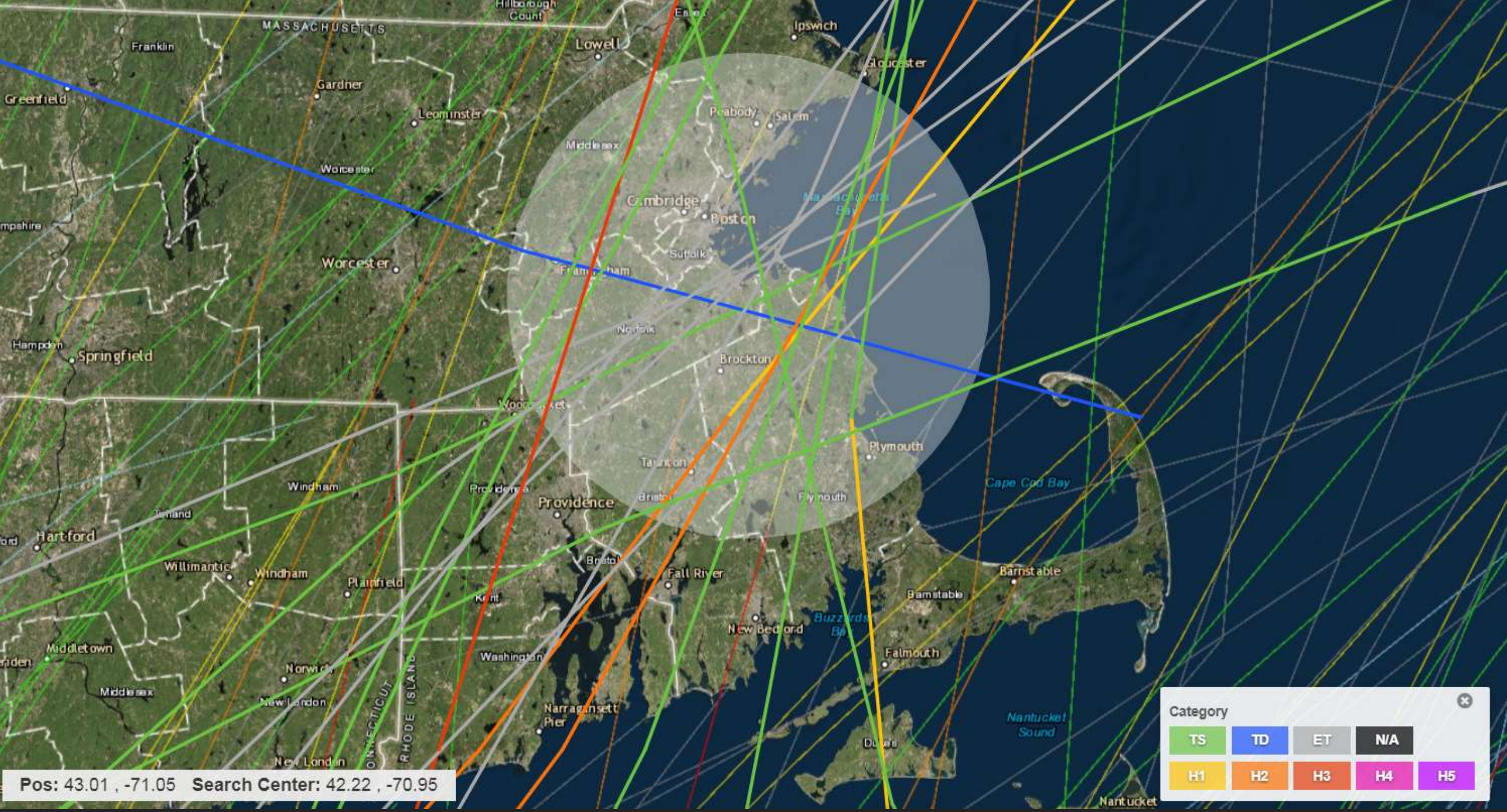
**At Boston water level station, 12 miles from Weymouth Town*

Analysis uses median local sea level projections based on the intermediate scenario from NOAA Technical Report NOS CO-OPS 083 (2017), intended for the 2018 U.S. National Climate Assessment. Source: Climate Central Risk Finder, 2018. http://www.riskfinder.org/

Sea level rise is relative to a 1992 baseline. A “major flood” is locally defined as 4.5 ft above the high tide line in the year it occurs.


8-foot flood (10%, 2100)

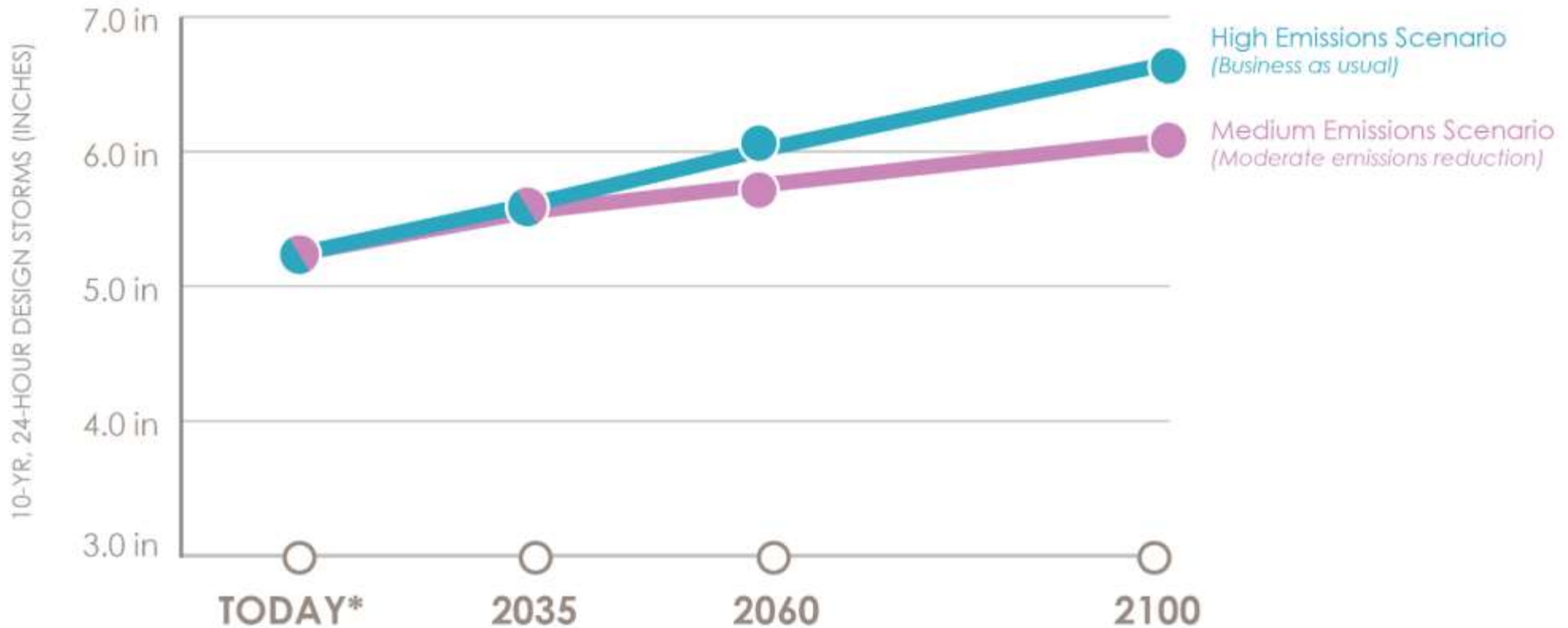
2. Extreme storms



https://coast.noaa.gov/hurricanes/

Hurricanes since 1850. Ex: Andrea 2013, Hanna 2008, Barry 2007, Hermine 2004, Bob 1991

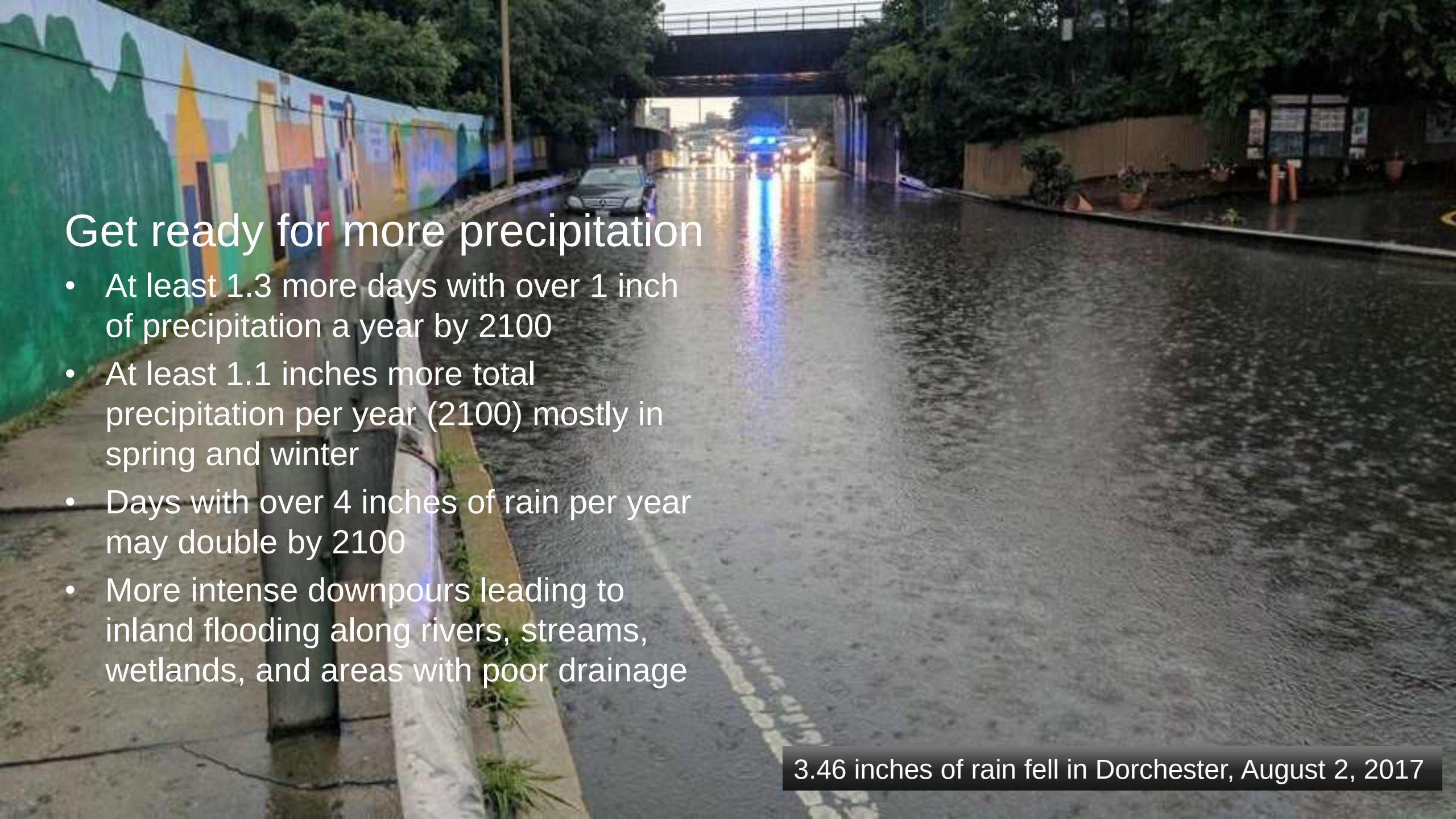
RAINFALL FROM STORMS WILL INCREASE



* "Today" baseline represents historical average from 1948-2012
Confidence intervals are not available for these projections but are likely large, so these numbers should be considered as the middle of a large range

Data Source:
Boston Water & Sewer Commission

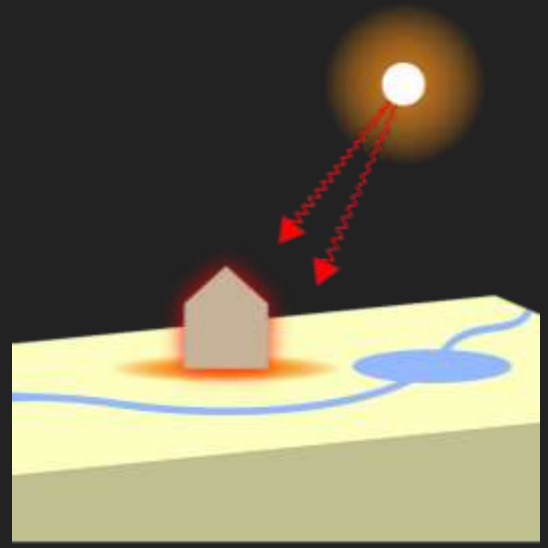
https://keepcool.mapc.org/info/why-is-it-so-hot



Get ready for more precipitation

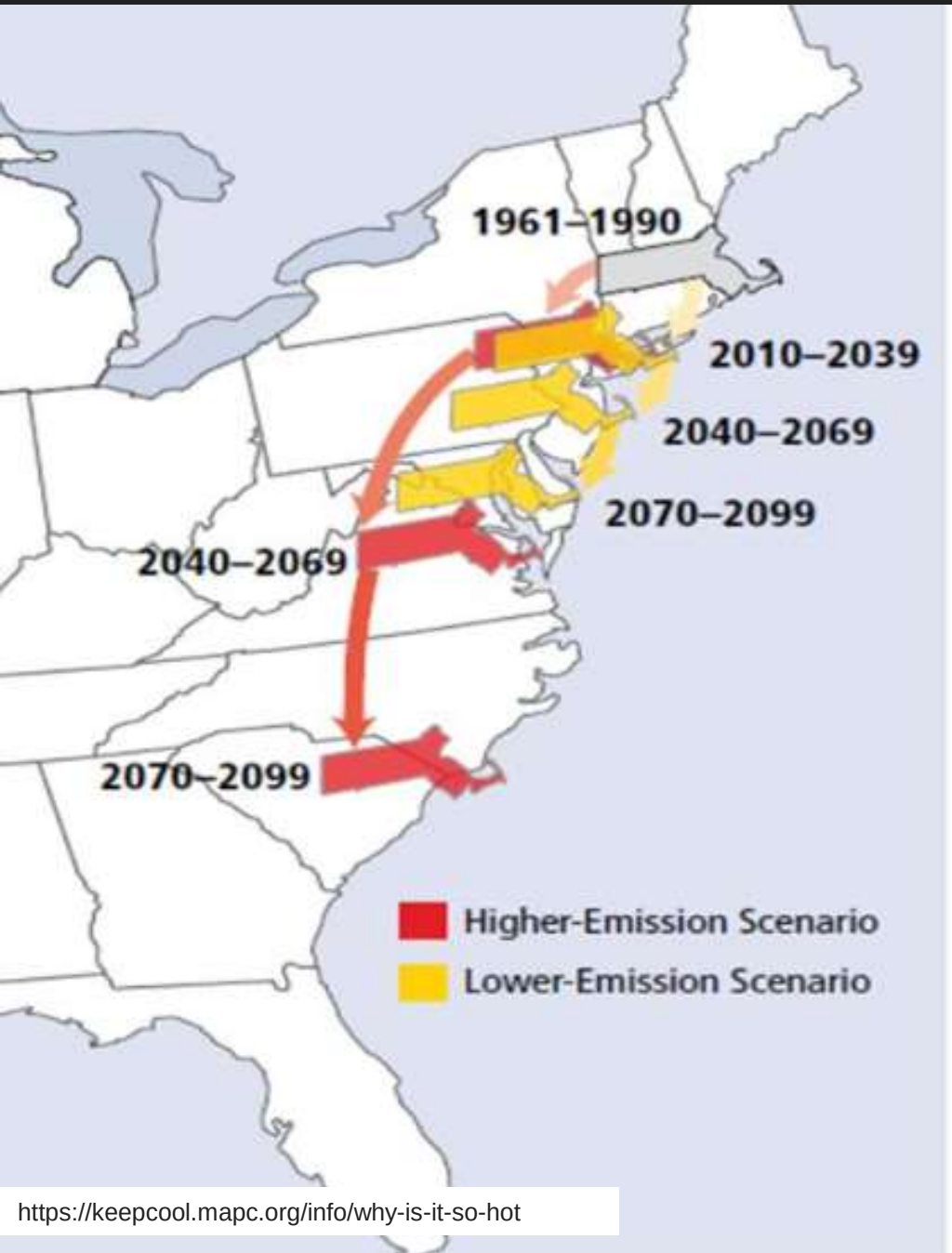
- At least 1.3 more days with over 1 inch of precipitation a year by 2100
- At least 1.1 inches more total precipitation per year (2100) mostly in spring and winter
- Days with over 4 inches of rain per year may double by 2100
- More intense downpours leading to inland flooding along rivers, streams, wetlands, and areas with poor drainage

3.46 inches of rain fell in Dorchester, August 2, 2017



3. Extreme heat

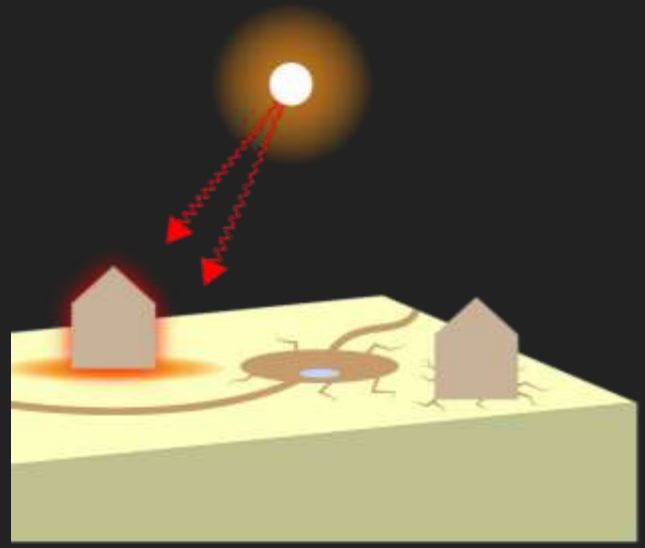
What will the weather feel like in the future?



https://keepcool.mapc.org/info/why-is-it-so-hot

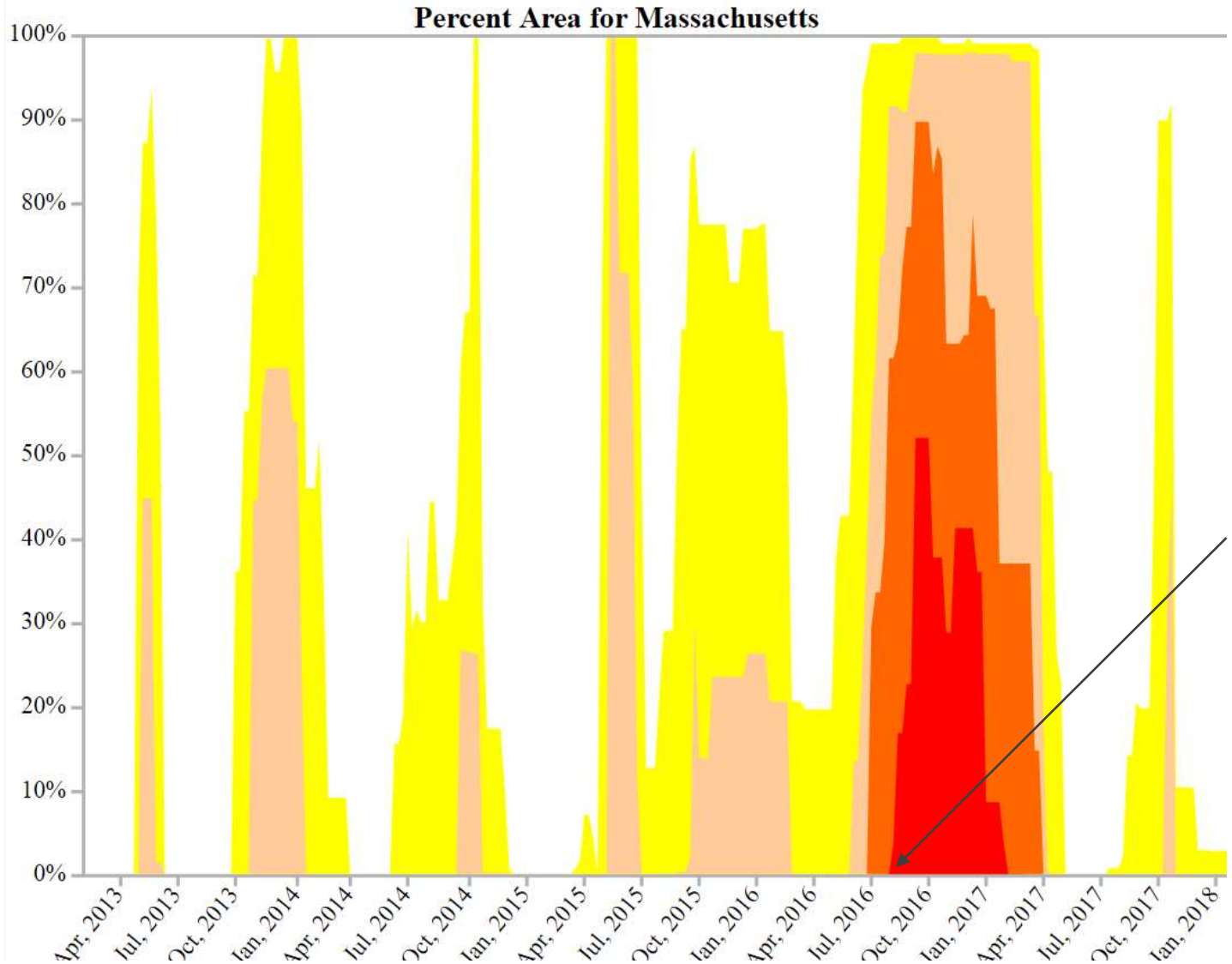
By 2100

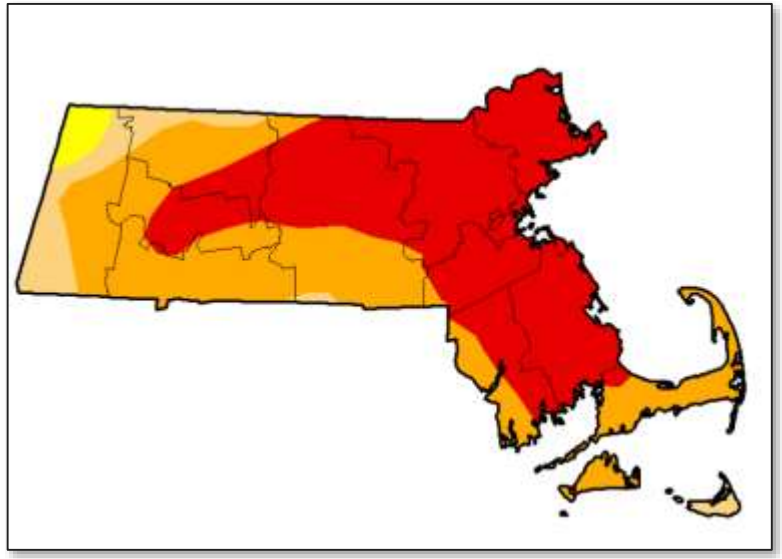
- Massachusetts' climate could be like Myrtle Beach, SC, today
- At least 11 more days a year with termperatures over 90 degrees F
- At least 22 fewer days a year with temperature below 32 degrees F
- More days with cooling needs
- Fewer days with heating needs
- Increase in the urban heat island impact



4. Drought

More extended drought in the fall

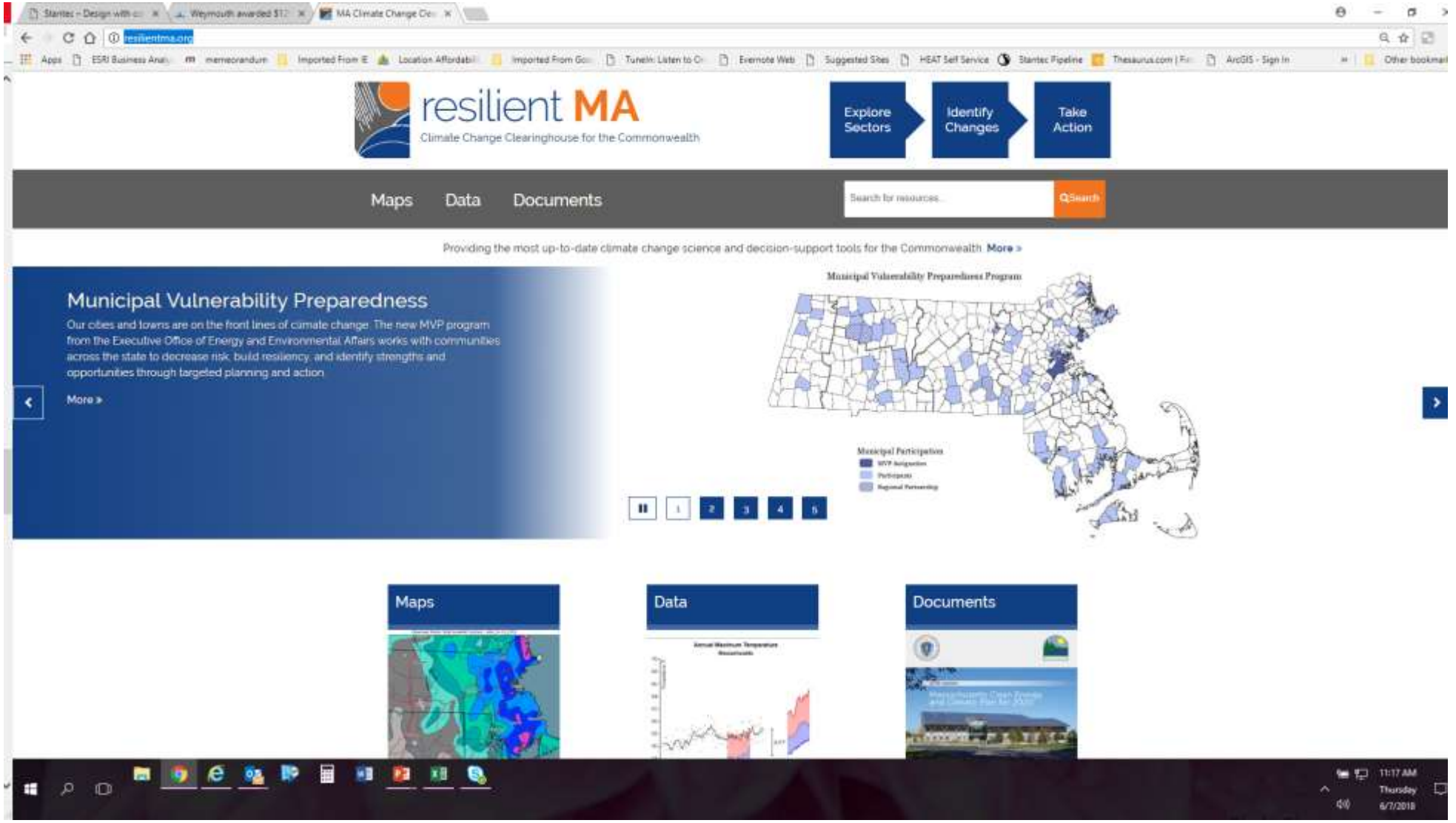




Jul 29, 2016: The Weymouth Department of Public Works asks residents to limit outdoor water use due to a drought watch. Great Pond falls within 1 foot of a water ban.

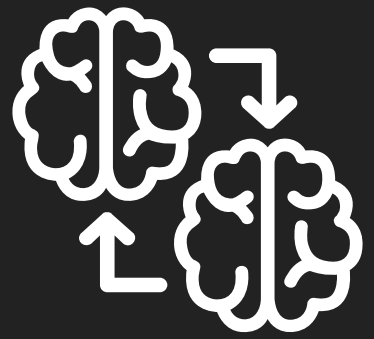
None | D0 (Abnormally Dry) | D1 (Moderate Drought) | D2 (Severe Drought) | D3 (Extreme Drought) | D4 (Exceptional Drought)

Source of online maps and data: resilientma.org



The MVP Workshop

Identify Community Strengths & Vulnerabilities



Develop Community Actions

Identify Highest Priority Actions

Top Weymouth assets from the workshop

- **Infrastructure assets**: transportation, South Shore Hospital, senior housing and senior center, established emergency shelters, regional infrastructure
- **Social assets**: capacity to respond to emergencies through the emergency management system, National Guard support, civic groups and faith-based communities
- **Environmental assets**: parks and conservation areas in flood prone areas, such as Back River ACEC, Webb Memorial State Park, Back River and Fore River saltmarshes

Top concerns from the workshop

- **Deteriorating sea walls**
- **Ability of existing infrastructure to adapt** to sea level rise and extreme storms
  - Weymouth as a regional hub for evacuation routes (MA 3 and 3A) and infrastructure (power, natural gas, sewage pumping)
  - Local infrastructure: dams, flood controls, roadways
- **Drainage system cannot handle current needs**, does not have a dedicated funding mechanism for capital improvements or maintenance, and does not regulate for best management practices or green infrastructure
- **Risk and emergency communications**: need for better outreach to public
- **Drinking water supply and watershed protection**: drought periods may create conflicts between recharging Great Pond from South Cove and herring run dependence on South cove

Top recommendations for improving resilience in Weymouth

1. **Restoring and expanding aging coastal protection**, such as sea walls, with further study of the level of protection, flood potential, and coastal land use.
2. **Assessing threatened infrastructure** in relation to storms and sea level rise, including sewage pump stations, evacuation routes, storm gates, and low-lying roadways.
3. **Investing in improved storm water management** and addressing areas with poor drainage.
4. **Town communications plan** for raising awareness about the climate change risks combined with emergency communication.
5. **Protecting the public water supply and critical environmental resources** through conservation tools is a top priority for building resilience.

Restoring and expanding aging coastal protection

- Potential risks and issues:
  - Aging sea walls and revetments mostly built in the 1950s and 1960s
  - Sea walls on Fort Point Road and Fore River Avenue were overtopped in 2018 winter storms
  - Resident concerns about blocking views of the water
  - Short- and long-term sustainability of sea walls in light of sea level rise, erosion
- **Top priority: Fort Point Road seawall**
  - Rated in poor condition
  - Repeated failure to ensure safe conditions behind the wall during major coastal storms
  - Inadequate drainage structures in the Fort Point Road area experience backflow during astronomical high tides and extreme storms.

Assessing threatened infrastructure.

- Potential risks:
  - Flooded sewage pump stations
  - Flooded evacuation routes and critical roads (e.g., access to Weymouth Neck)
  - Failure of storm gates
  - Inadequate drainage systems
- **Top priority: Conduct an infrastructure vulnerability assessment study**

Investing in improved storm water management

- Potential risks:
  - Inland flooding in areas with poor drainage
  - Salt intrusion from road salt into aquifers
  - Drainage concern areas are located throughout town
- **Top priority: Implement a stormwater utility to create dedicated funding to fund projects and manage change**
  - Municipalities under state law are authorized to establish a stormwater utility as an enterprise fund (like water and sewer) to fund the costs of stormwater management.
  - Fees are typically linked to the amount of stormwater runoff produced by the impervious surfaces on the property. Credits are given for reducing impervious cover, conserving natural land, water harvesting and reuse, groundwater recharge, Low Impact Development, and other measures.

Town communications plan.

- Potential risks:
  - Need to increase awareness of vulnerabilities at the very local level
  - Need to give practical information – “what can I do?” “where are the emergency shelters?”
- **Top priority: Comprehensive Climate Change Awareness, Risk, and Adaptation Communications Plan**.

Protecting the public water supply and critical environmental resources

- Potential risks:
  - Competing demands for water supply sources
  - Degradation of environmental resources from impacts of extremes in precipation and temperature, drought
- **Top priorities: New protocols for balancing and optimizing water needs and use; expanding the ACEC**

Weymouth has already won an MVP Action Grant

- **Fort Point Road Coastal Infrastructure Resilience Project - $129, 557**
- Holistic approach to redesign and permit development of the Fort Point Road seawall and associated coastal infrastructure
- Improve performance and resilience to climate change over the life of the structure
- Design goals for the length of the sea wall and drainage structures along Fort Point Road, Birch Road, Bacon Road, Wolcott Street, Sawtelle Street, Harlem Road, Parnell Street, Caldwell Street, and Mayflower Avenue
  - Raise height of sea wall
  - Replace and enhance existing rock armor
  - Maintain public access to the beach
  - Install water-tight outflow pipes and stormwater separators for better drainage and pretreatment of flood waters.
  - The scope of the redesign will include the length of the seawall, as well as drainage structures along.

Questions and Comments?