



Parkways Climate Change Vulnerability Assessment

Protect. Promote. Enhance.

DCR Parkways CCVA Municipal + Nonprofit Virtual

Open House

May 27th, 2025



Commonwealth of Massachusetts

Governor

Maura Healey

Lieutenant Governor

Kim Driscoll

Energy and Environmental Secretary

Rebecca Tepper

Department of Conservation and Recreation Commissioner

Brian Arrigo



DCR Mission

**To protect, promote and enhance our common wealth of
natural, cultural and recreational resources for
the well-being of all.**

Project Team Introduction





Acknowledgement

A special thank you to the **DCR Operations Staff** for their time, and knowledge shared during the Flood History Workshops that helped inform the assessment. We would especially like to thank staff at Revere, Winthrop, Quincy, Blue Hills, Neponset, Nantasket, Nahant, Mystic Valley, Charles River, Stoneham, Stoneybrook, and Alewife.

Thank you to **the Adaptation Workgroup** members for reviewing many iterations of this report and offering ways to make it better.

Thank You to EEA Climate Team for funding this effort over the last few years.

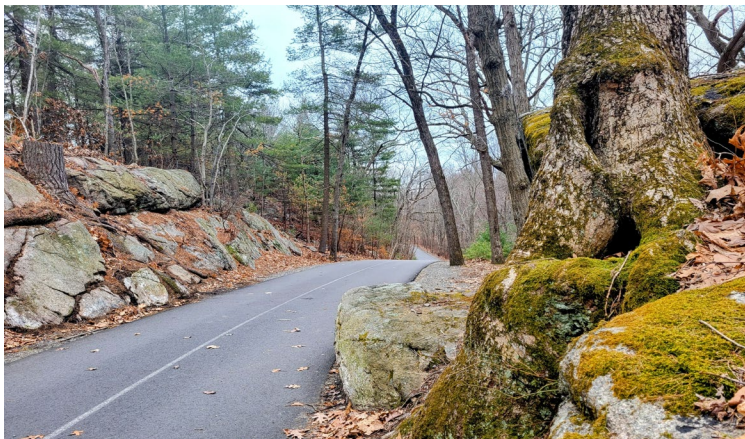




What is a Parkway?



Blue Hills – Chickatawbut Road



Lynn Fells and Breakheart



Revere Beach Blvd



William Day Blvd



Storror Drive



Fellsway West



What is a Parkway?



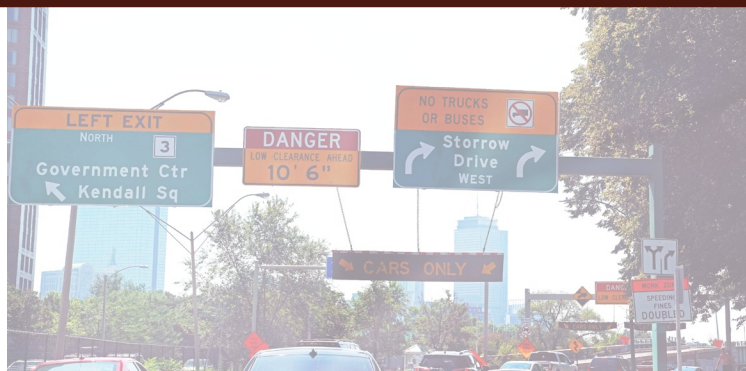
Blue Hills – Chick



“A parkway is not a road, but a park with a road in it.”



William Day Blvd



Storrow Drive



Fellsway West



Climate Change Vulnerability Assessment (CCVA) Goals

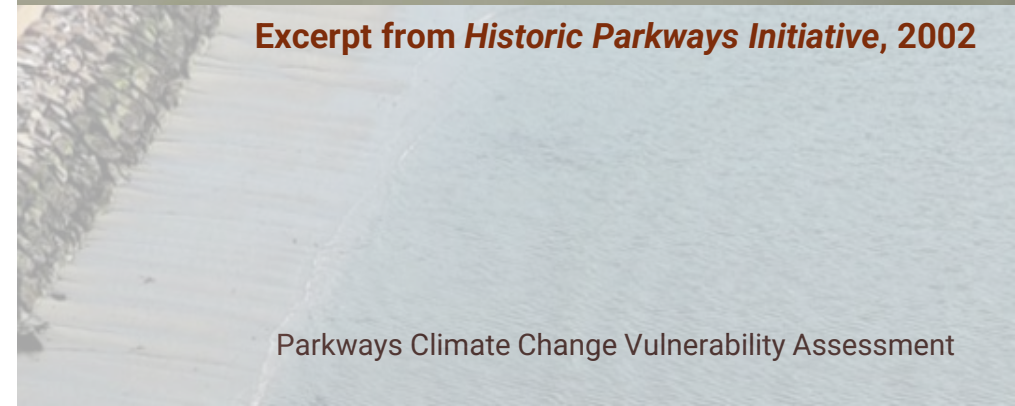
Identify parkway flood vulnerability to:

- Inform project investment prioritization
- Guide decision-making around preventative maintenance and interventions



Much of what makes a parkway like Memorial Drive beautiful and functional is hidden from view. Although a parkway may appear as a pristine natural area, it is actually a complex engineered and structured environment of bridges, drainage, lighting, and signage. Memorial Drive even has a seawall! The “hidden” work often requires the lion’s share of the budget, which leaves less funds for the more visible, scenic, or recreational work. But if the underlying issues are not properly addressed, the parkway can become dangerous to users and hazardous to its landscape and the surrounding environment.

Excerpt from *Historic Parkway Initiative*, 2002





Climate Adaptation Goals



DCR's Climate Adaptation Goals

- Protect visitors and prioritize infrastructure for access and safety for all.
- Protect Our Shared Heritage.
- Protect Biodiversity and Build Ecosystem Resilience.
- Implement Agency Policies and Procedures to Ensure Success.





Right: DCR Parkways within 2025 CCVA Study Area symbolized by Focus Area designations



Vulnerability Metrics

Adaptive Capacity

Ability to cope with climate variability (now and future) (FHWA). A high adaptive capacity score represents a lower adaptive capacity of asset.



Sensitivity

How the system fares when exposed to a climate variable (FHWA).



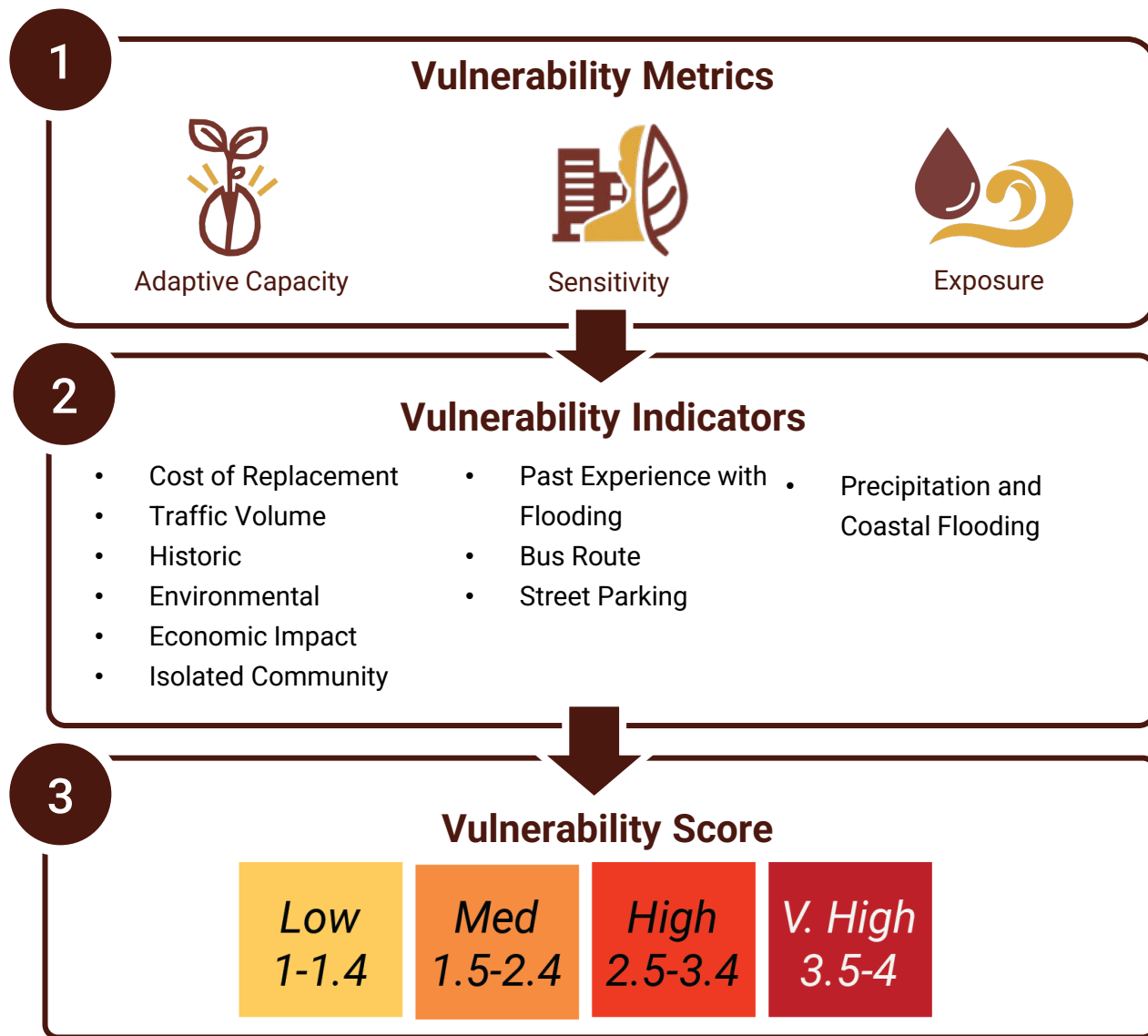
Exposure

Whether an asset or system is located in an area experiencing direct effects of climate change (FHWA).





How Was Vulnerability Assessed?



Following the Federal Highway Administration (FHWA) Vulnerability Assessment framework, **three data-gathering methods** were implied:

1. Desktop review of vulnerability indicators.
2. Collection of stakeholder experiences.
3. Engineering-informed analysis for specific locations.

For the assessment, the first two methods were utilized for a **system-level analysis**, while the third was **applied selectively for low-lying areas**.

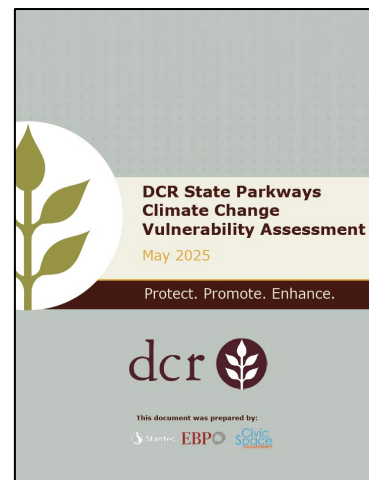


What the Parkways CCVA includes?

- **2030 and 2070 Exposure, Sensitivity, Adaptive Capacity, 2030 and 2070 Vulnerability scores** for 12,000 100-foot segments
- **System Wide Traffic Count Program** spanning July 2023 to October 2023.
- Completed a **final draft report** (200 pages)
- **Economic Impact Assessment** including first known valuation of recreational visits in Massachusetts
- An early **Stakeholder workshop**
- Distilled report into a public-facing **StoryMap**
- **Project website** on <https://www.mass.gov/info-details/dcrs-parkways-climate-change-vulnerability-assessment>

Right Above: DCR CCVA draft report

Right below: Aerial of Nahant Road and Nahant Beach, Nahant MA

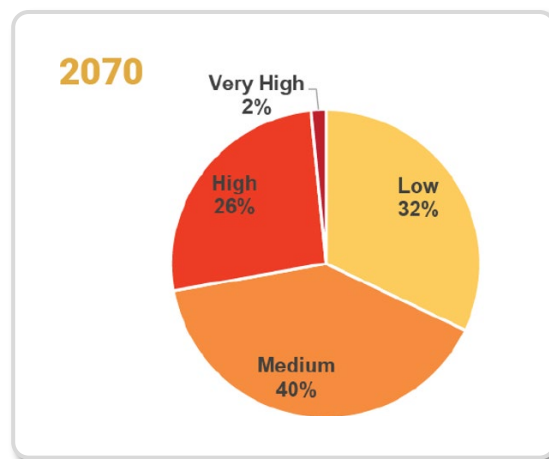
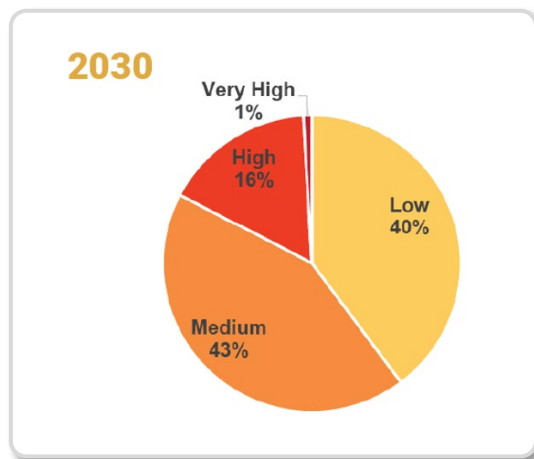




Results Overview

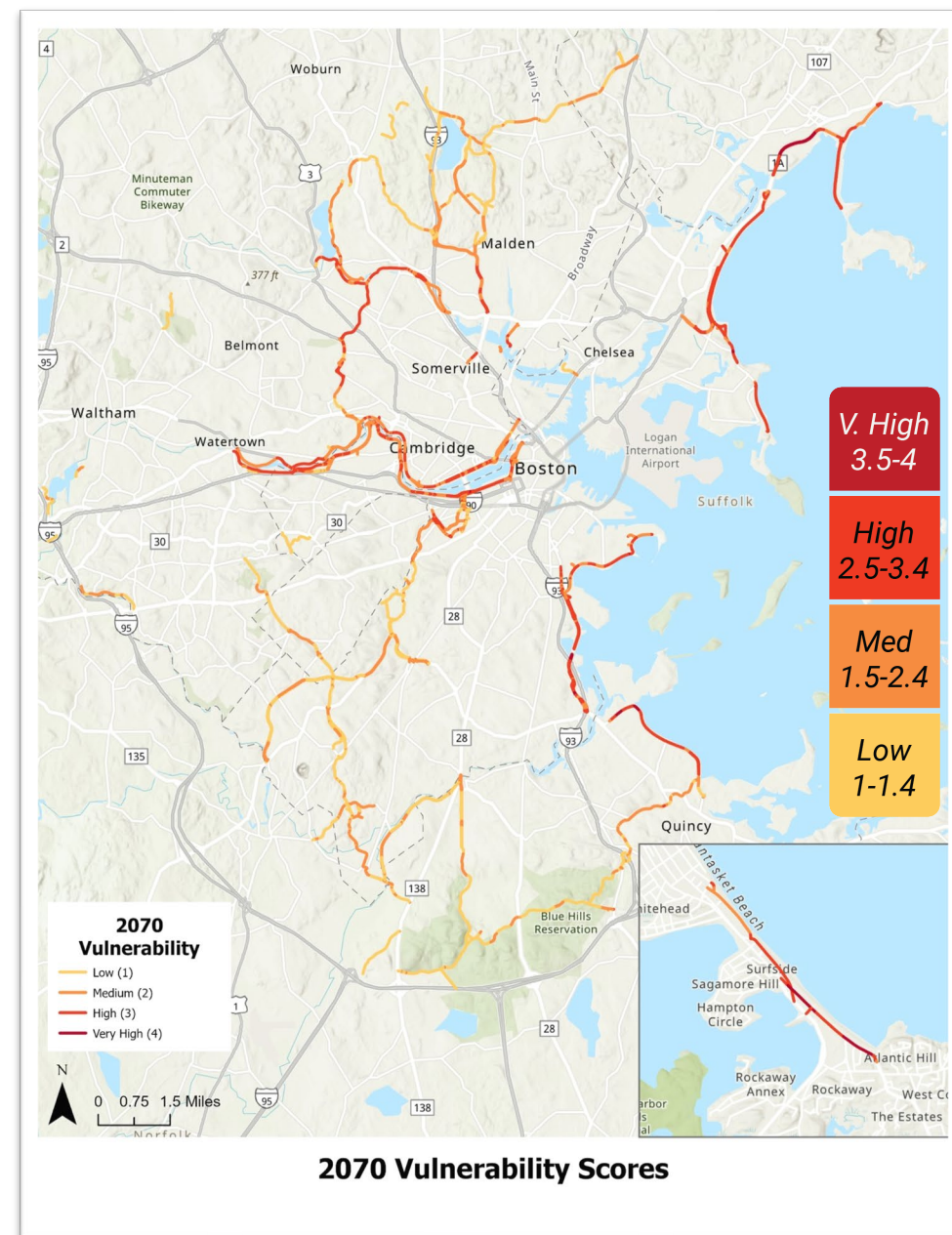
5 Sub-Sections:

1. Study Area Summary
2. Most Vulnerable Parkways by 2070
3. Isolated Communities
4. Economic impacts of flooded parkways
5. Focus Area Vulnerability, Hot Spots, and Community impacts of flooded parkways



Right Above: Parkway Vulnerability in 2030 and 2070

Right below: DCR Parkways within 2025 CCVA Study Area symbolized by 2070 vulnerability scores



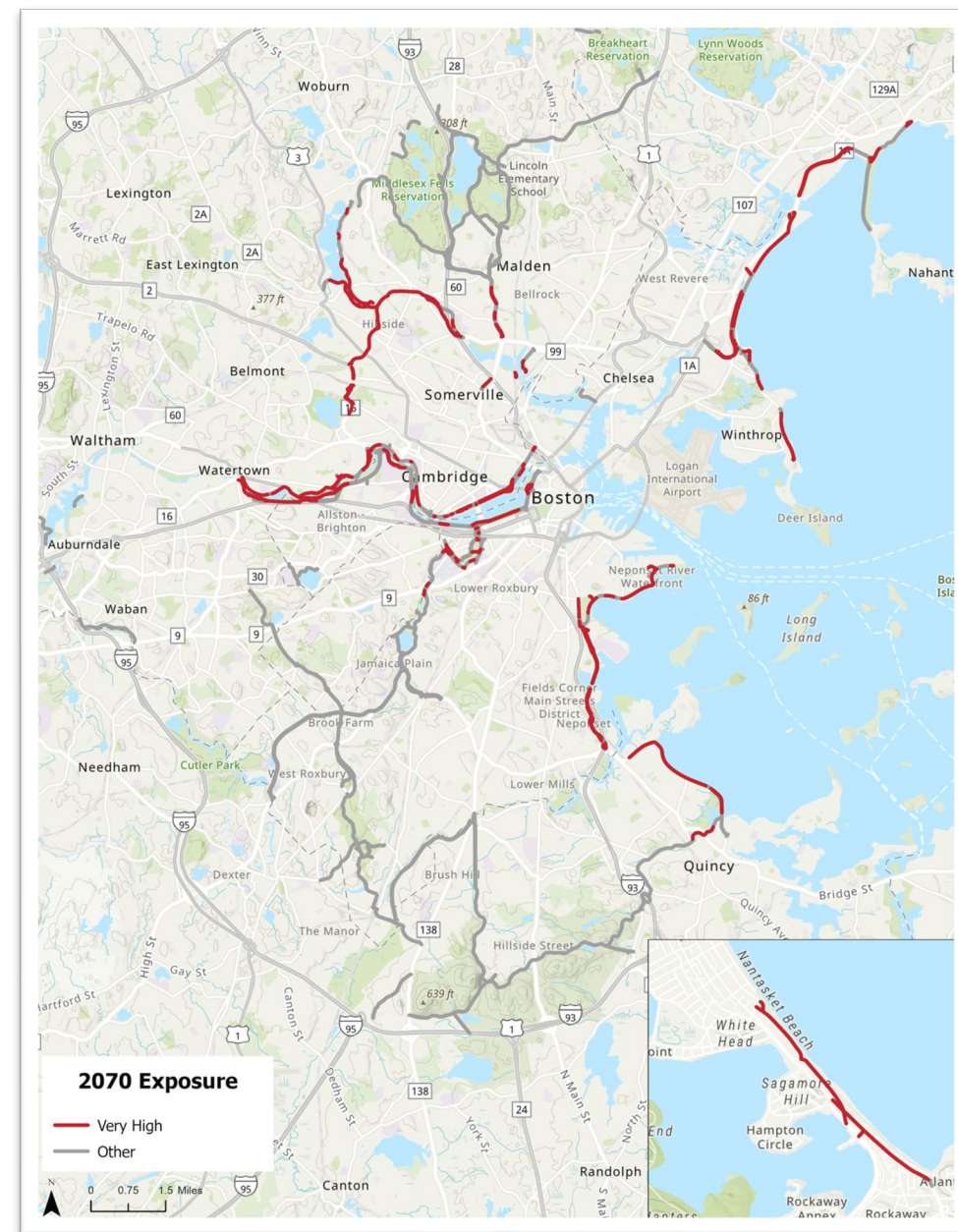


Results: 2070 Very High Exposure

- **55.63 miles (28%)** of parkway have a **very high (3.5-4.0)** exposure score.
- Predicted to experience coastal and precipitation-based flooding in each scenario analyzed.



Above: Waves crashing along Nantasket Avenue, Hull MA
Right: 2070 Parkways Very High Vulnerability Map



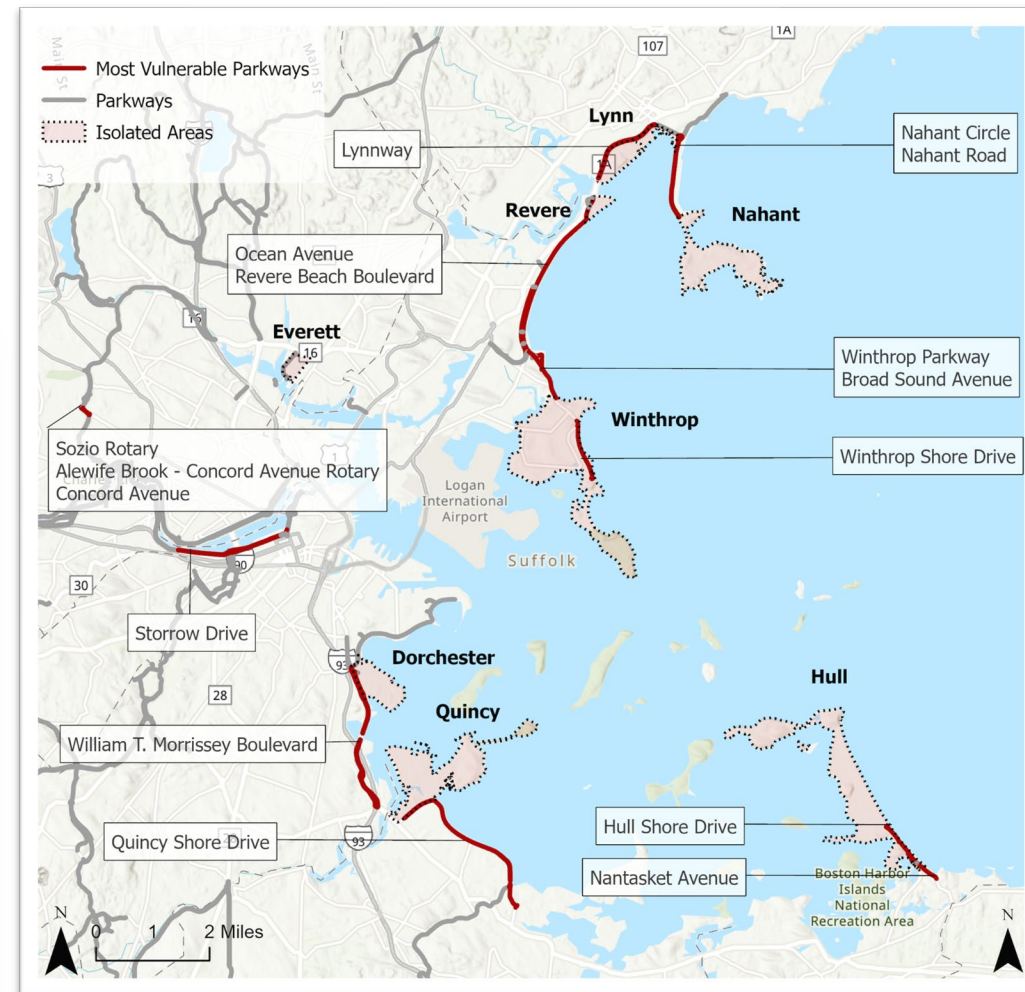


Results: Most Vulnerable Parkway

- Hull Shore Drive
- Lynnway
- Nahant Circle and Nahant Road
- Nantasket Avenue
- Ocean Avenue and Revere Beach
- Quincy Shore Drive
- Sozio Rotary, Alewife Brook-Concord Avenue Rotary, and Concord Avenue
- Storrow Drive
- Morrissey Boulevard



Above: Aerial of Quincy Shore Drive, Quincy MA



Above: Most Vulnerable Parkway and Isolated Areas

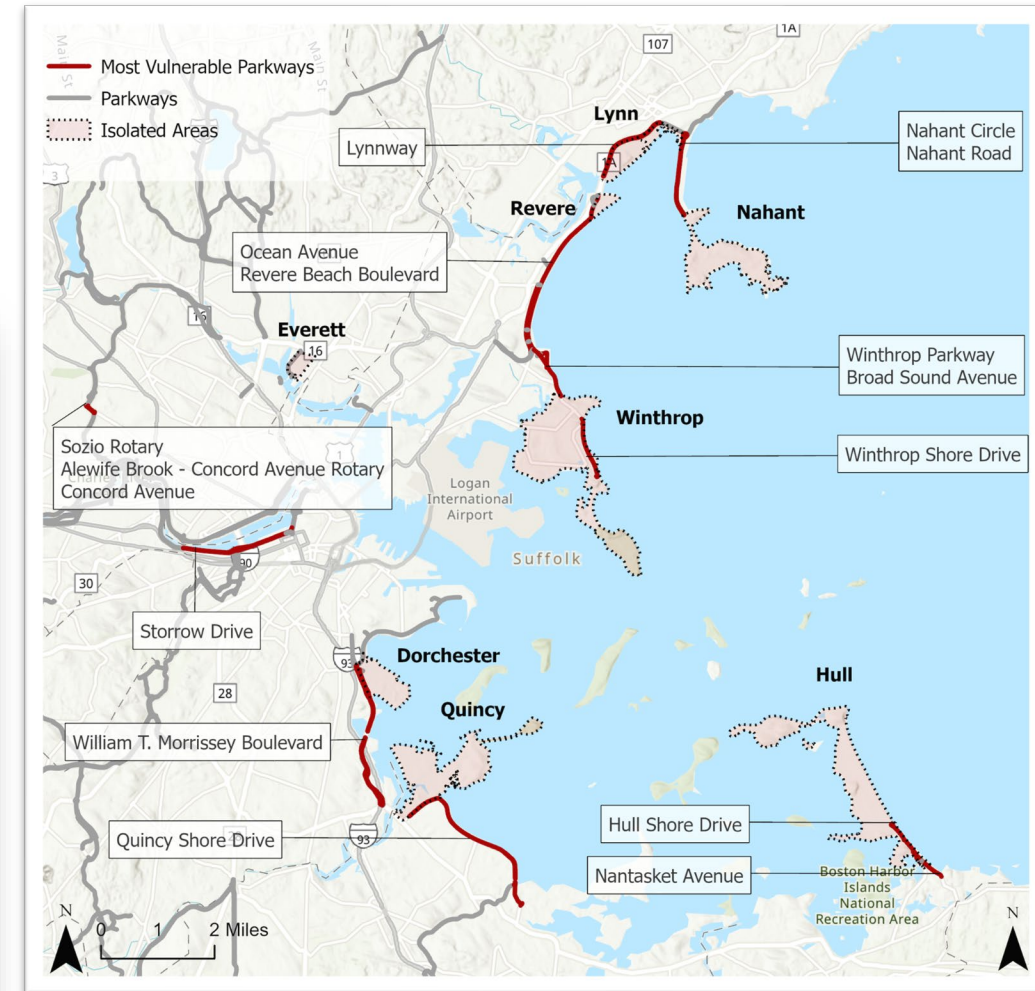


Results: Isolated Communities

- Hull, Quincy and Squantum
- Dorchester near UMASS Boston
- Lynn
- Nahant
- Everett
- Revere
- Winthrop



Above: Aerial of Hull Shore Drive and Nantasket Avenue, Hull MA



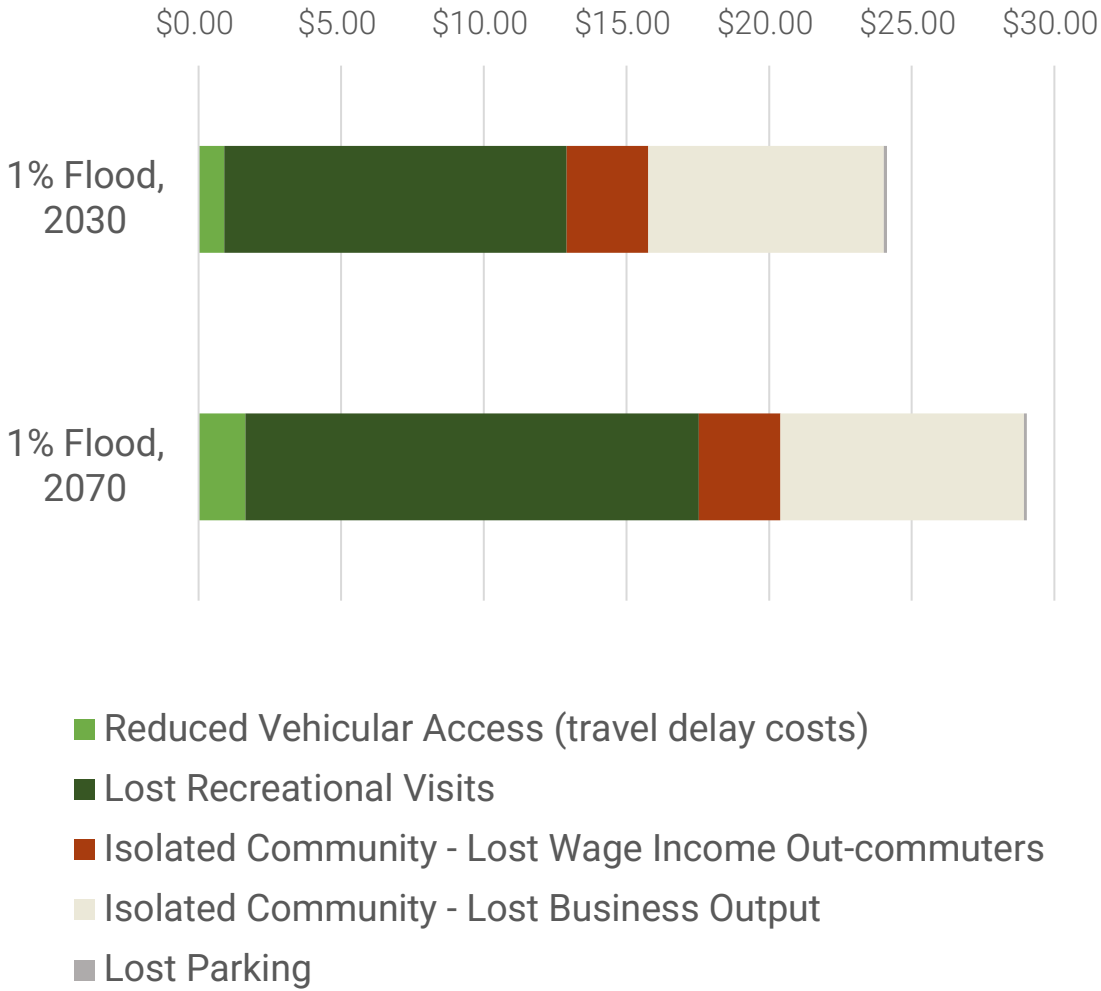
Above: Most Vulnerable Parkways and Isolated Areas



Economic Results for Impacted Parkways

- Roadway closures due to storms and flooding in 2070 could cost **\$24.77 million** system wide
- **Lost recreational visits** make up the **largest cost** in both scenarios studied
 - **\$12 million** in 2030
 - **\$15.9 million** in 2070
- Lost activity from businesses that cannot be accessed in isolated communities could be **up to \$8.53 million** in 2070 1% storm event

Summary Impacts by Scenario and Time Period
(Millions of \$)

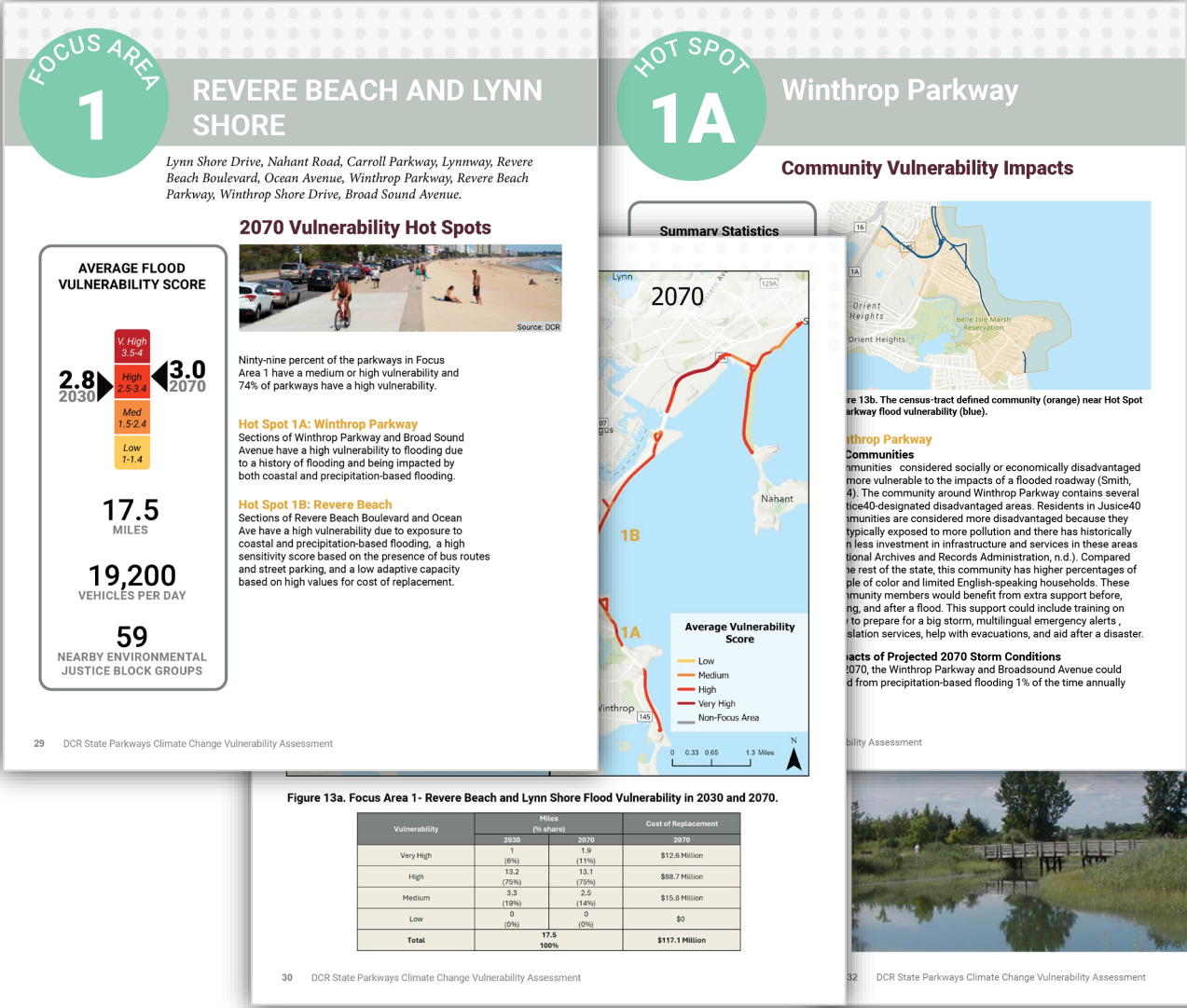




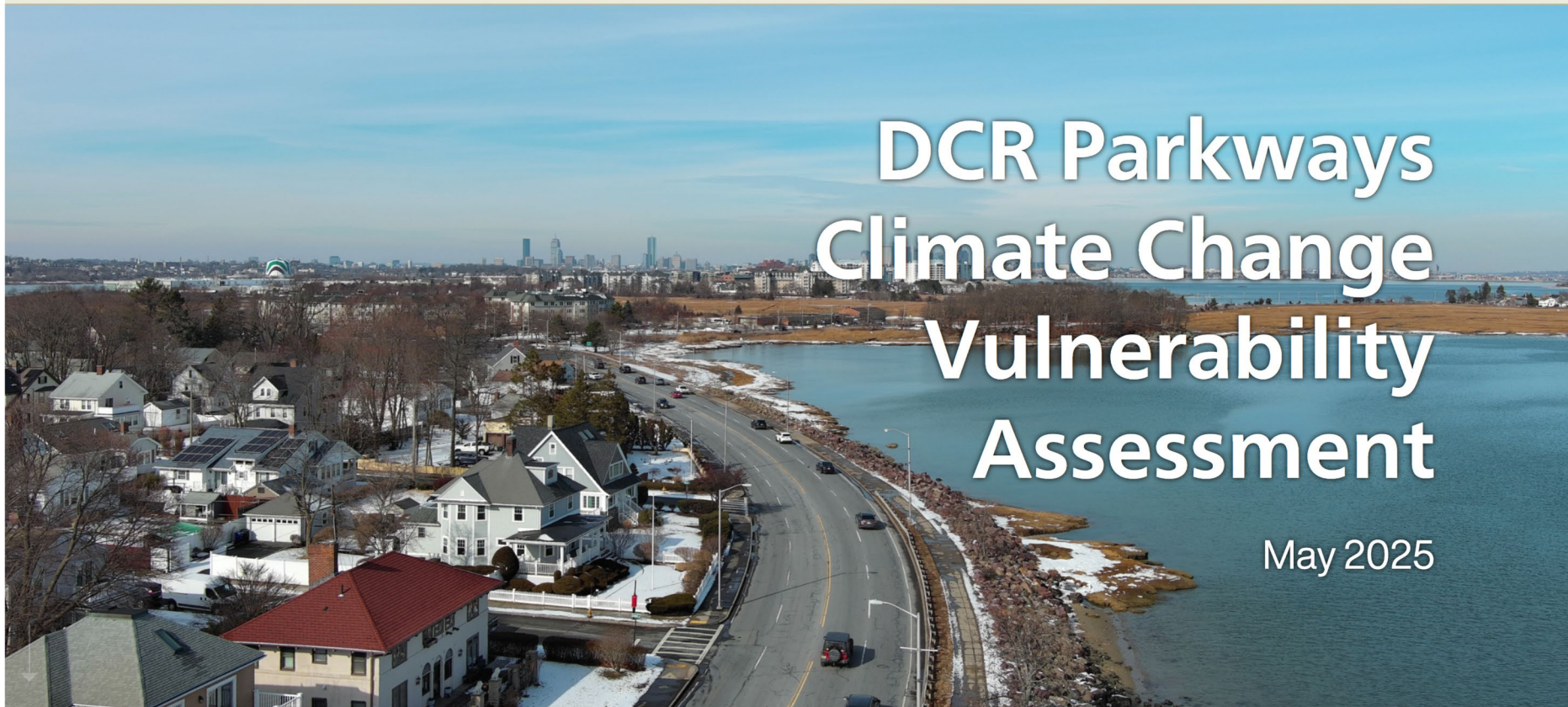
Focus Areas and Community Impacts

Each Focus Area includes:

- 1. Average Vulnerability
- 2. Vulnerability Hot Spots
- 3. Community Vulnerability Impacts
- 4. Key Parkland Features



Right: Sample pages for focus areas and community impacts analysis





Six Key Takeaways

1. By 2070 **59%** of parkways have **medium or high vulnerability to flooding**.
2. Parkway with higher traffic volumes, bus routes with high ridership, and high costs of replacement increase their vulnerability.
3. Vulnerability Impact Summary provides a broader narrative for the Parkway as a critical community asset.
4. **Eight (8)** of the most vulnerable parkways cause isolated communities.
5. Economic assessment is the first time we have a value for recreation visits, this could have benefits to other cost analysis.
6. Parkway with high or very high adaptive capacity are prime candidates for successful adaptation strategies.



Above: Aerial of Revere Beach and Revere Beach Boulevard



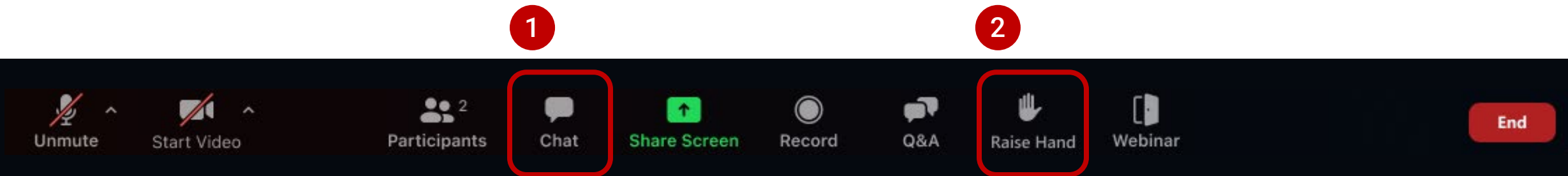
Comments and Feedback

Thank you for joining



Two ways to make a comment during the meeting:

1. Use the chat feature.
2. Raise your hand using the zoom function, and you will be given permissions to unmute and speak.





Additional Information

Please visit the project page for updates: <https://www.mass.gov/info-details/dcrs-parkways-climate-change-vulnerability-assessment>

If you have comments on this project:

Submit online: www.mass.gov/dcr/public-comment

Deadline: Friday, June 13th, 2025

**Please note: the contents of comments submitted to DCR, including your name, town and zip code, will be posted on DCR's website. Additional contact information provided, notably email address, will only be used for outreach on future updates to the subject project or property.*

If you wish to subscribe to a DCR general information or project-related listserv:

contact DCR's Office of Community Relations via email at mass.parks@mass.gov