Storm Response + Preparedness in Maine's Working Waterfront Communities

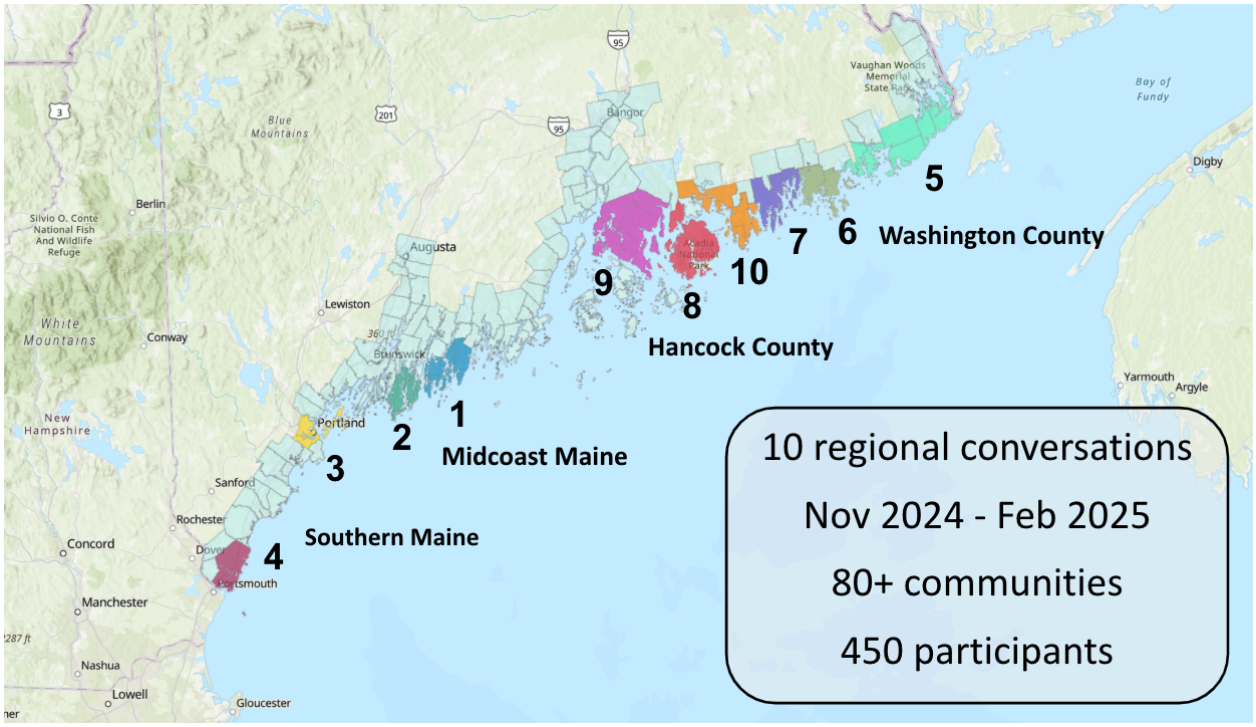
Summary & Key Takeaways

10 Community Conversations Reveal Local Heroes and Statewide Needs

November 2024 to February 2025

Sea Grant MAINE | The University of Maine | The University of Maine Cooperative Extension | Marine Research, Innovation, Education | NOAA | Maine Coastal Program | Island Institute

Convenings were hosted in the following regions:



1. **Southport/Boothbay/Boothbay Harbor/Bristol/South Bristol** (November 18, 2024, Coastal Rivers Land Trust, Damariscotta)
2. **Phippsburg/Georgetown/Arrowsic** (November 20, 2024, The Grant Building, Bath)
3. **Portland/South Portland/Casco Bay Islands** (December 3, 2024, Gulf of Maine Research Institute, Portland)
4. **Kittery** (December 5, 2024, Kittery Community Center, Kittery)
5. **Roque Bluffs/Machias/Machiasport/Whiting/Cutler/Trescott/Eastport/Lubec** (December 10, 2024, Washington Academy, East Machias)
6. **Jonesport/Addison/Beals** (December 12, 2024, Peabody Library, Jonesport)
7. **Milbridge/Steuben/Harrington** (December 16, 2024, Steuben Fire Hall, Steuben)
8. **Mount Desert Island/Cranberry Isles/Trenton** (January 27, 2025, Neighborhood House, Northeast Harbor)
9. **Blue Hill/Brooklin/Brooksville/Castine/Penobscot/Sedgwick/Surry** (January 29, 2025, Blue Hill Public Library, Blue Hill)
10. **Sullivan/Sorrento/Hancock/Gouldsboro/Winter Harbor** (February 11, 2025, Charles M. Sumner Learning Campus, Sullivan)

Maine Sea Grant, working in partnership with Maine Coastal Program, Island Institute and UMaine MARINE, received funding from the National Sea Grant office to plan these conversations in response to the 2023-2024 winter storms. Each convening was organized collaboratively with local leaders and contacts and we are grateful for their help. **All of the information referenced in this report is available on the series website:** [Storm Response and Preparedness in Working Waterfront Communities](#)**.**

TABLE OF CONTENTS

The following materials are available on the series website (Storm Response and Preparedness in Working Waterfront Communities) including:

- **One-pager**
- **Regional convening notes**
- **Sea level rise projection map**
- **Resource document**

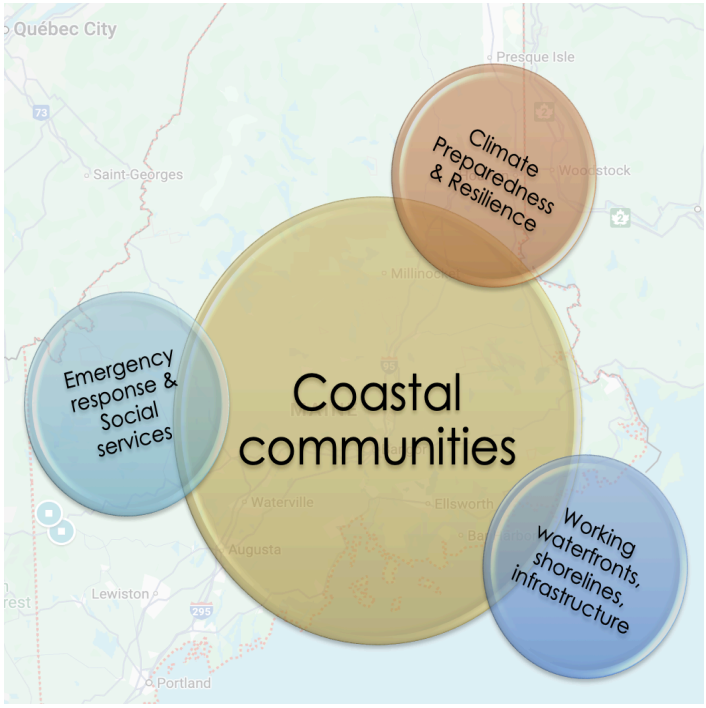


Figure 1: The image on the right was used in each convening to illustrate the multiple sectors whose input is critical for storm response and preparedness in working waterfront and coastal communities.

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SECTION 1: INTRODUCING THIS SERIES

GOALS of this SERIES

- Create space for community members across diverse sectors to take stock of their working waterfronts within the context of the community's resilience since the storms.
- Share resilience and working waterfront planning work across the region: recent, underway, or planned.
- Learn about resources for public and private working waterfront resilience.
- Identify systems and networks that would be useful to have in place locally to support working waterfronts in anticipation of future storms.

ABOUT THIS SERIES

The winter 2023-2024 storms

During the winter of 2023-2024, a stream of photos filled newspapers, broadcast news, and social media depicting stark destruction of the state's waterfront infrastructure. People throughout the state's coastal and working waterfront communities saw their businesses, bluffs, shorelines, wharves, piers, docks, and homes turned upside down by the sea. More than a year later, the impacts are ongoing, as people and institutions grapple with how to rebuild, rethink, and prepare for future storms.

In the aftermath of the storms, the state's working waterfront community members, emergency responders, the Governor's office, state agencies, the legislature, and nonprofits, stepped into action with manual labor, short term funding, impact inventories, and more. The level of statewide and local activity related to working waterfronts and storm response was unprecedented. And yet, one important gap emerged: space for community members to come together and discuss what happened, how they responded, and how to prepare for the next storms.

Within weeks of the storms, Maine Sea Grant sought counsel from colleagues around the nation who had also faced acute natural hazard events in Alabama, North Carolina, Puerto Rico, New York, Connecticut, Guam and others. To help communities respond to and prepare for future storms, Sea Grant staff around the nation offered three kernels of advice: 1) Let the emergency responders do their job and support them when you can, 2) Create space for people to come together as a community to talk about how to respond and how to prepare, and 3) Stay in it for the long haul – needs don't vanish overnight and it is valuable to continue to create space a year and longer after the event.

Creating space for local and regional conversations

In spring 2024, Maine Sea Grant applied for and received "Rapid Response Funding" from the NOAA Sea Grant office to focus specifically on the second recommendation from Sea Grant's colleagues: create space for people to come together and talk about how to respond and how to prepare. Maine Sea Grant and three partner organizations (Island Institute, UMaine MARINE & Maine Coastal Program) began

seeking guidance from local networks, such as members of Maine's Working Waterfront Coalition and members of the Maine Climate Council, industry leaders, state agency representatives, and non-government organizations, about how to achieve that goal. Approximately 60 people helped think through how local and regional-scale conversations across multiple sectors could help communities learn from each other and begin to implement regional solutions in anticipation of future storms.

The planning team also started reaching out to on-the-ground leaders (some of whom were the same people) in towns, industries and organizations around the coast and, in just a few months, a long list of potential regions to target convenings was narrowed to ten. Criteria included: local people who could help spread the word, a need expressed by local leaders for regional conversations, and (importantly) whether there was a risk of muddying the waters in areas where local efforts were already underway and this conversation would not be additive. Hard decisions were made about which regions to skip. With more capacity and funding, this group would have gladly included more communities in Southern Maine, Mid-coast Maine, the islands, and other obvious geographic holes in the map.

The statewide context

In the midst of this project getting off the ground at the local and regional levels, the state was acting swiftly to bring capacity, funding, and policy analysis forward at the statewide level. An important development occurred in May of 2024 when the Governor created the Maine Infrastructure Rebuilding and Resilience Commission to analyze state policy priorities to address barriers to rebuilding and resilience. (This unprecedented action by the state is well documented elsewhere; see the Governor's press release).

An opportunity was emerging for this series to not only make space for regional conversations but help inform the higher level policy analysis underway with the Commission. The Commission issued its preliminary recommendations in November 2024. Based on their recommendations, they, along with the Governor, supported bipartisan law-makers drafting of LD 1, *An Act to Increase Storm Preparedness for Maine's Communities, Homes and Infrastructure.* This act, the first bill of the 2025 state legislature, aims to implement the Commission's highest priority recommendations. As the Commission finalizes their work by May 2025, time is of the essence for reporting out the summarized voices of the hundreds of people who attended the 10 Storm Response and Preparedness convenings.

A snapshot of the series

The intent of this series was to create space for community members across diverse sectors to take stock of their working waterfronts and community resilience since the storms. People shared their experiences, responses, and actions in the moment of the storms and since, and how these actions fit into community resilience efforts underway. They learned about resources and identified gaps and needs in anticipation of future storms. Most importantly, they made connections that helped them feel better prepared.

Spanning coastal Maine from Kittery to eastern Washington County, these community conversations brought together selectboard members; municipal staff; town committee volunteers; water-dependent business owners such as fishermen, wharf owners, and boat builders; emergency response personnel; social services providers; Community Resilience Partnership volunteers & providers; and countless residents from 10 coastal Maine regions. Ultimately, 450 people with addresses in 83 municipalities were engaged in one or more of the conversations.

This report is meant to share back what we heard from the 450 people who participated in the series. We aim to summarize the high level takeaways and offer some statewide and regional context on the topics that were raised throughout the series. We also share a few action ideas that emerged from the conversations, as opportunities that towns and organizations could pursue, some of which could be implemented relatively swiftly. In addition to sharing this document back with all participants, informal advisors and community leaders, we are presenting (and in some cases already have presented) these key takeaways with various groups, including state agency staff, Infrastructure Rebuilding and Resilience Commission members and staff, and participants at the 2025 Maine Fishermen's Forum. (We are also open to presenting this information to other interested groups upon request!).

The series website (Storm Response and Preparedness in Working Waterfront Communities) serves as a repository for these notes and related materials.

Participants and series engagement

Convening	# Participants
Kittery	38
Portland, South Portland, Casco Bay Islands	58
Phippsburg, Georgetown, Arrowsic	41
Southport, Boothbay, Boothbay Harbor, Bristol, South Bristol	44
Blue Hill, Brooklin, Brooksville, Castine, Penobscot, Sedgwick, Surry	40
Mount Desert Island, Cranberry Isles, Trenton	73
Sullivan, Sorrento, Hancock, Gouldsboro, Winter Harbor	40
Milbridge, Steuben, Harrington	14
Jonesport, Addison, Beals	18
Roque Bluffs, Machias, Machiasport, Whiting, Cutler, Trescott, Eastport, Lubec	22
Grand Total	**388**

Table 1: Number of participants in each convening from west to east. Totals from all 10 event sign-in sheets are shown here. A complete count of series engagement is likely closer to 450 when we add the 60 or so project advisors, planners, helpers, note-takers, and hosts, local leaders and committee members, and people who wanted to be kept informed but could not attend. These additional people are involved in important ways that are not necessarily reflected in the attendance totals.

Sector	# Participants
Consulting *(e.g. engineering firms or environmental consultants)*	7
Education/Research *(e.g. UMaine, Bowdoin College)*	20
Elected Official & Staff *(e.g state representatives and senators; Congressional staffers)*	11
Non-profit *(e.g Maine Coast Heritage Trust, Gulf of Maine Research Institute, A Climate to Thrive)*	47
Other *(e.g. local news, Portsmouth Naval Shipyard, local realtors)*	17
Public Safety *(e.g. local fire departments, emergency management service providers, county Emergency Management Agencies)*	21
Resident *(e.g. local residents without other affiliations)*	42
Service provider *(e.g. Hancock County Planning Commission [and other Regional Councils], Spiritual Care Services of Maine, Blue Hill Tomorrow)*	61
Municipal Committee *(e.g. planning boards, shellfish committees, climate committees)*	62
Municipal Elected *(e.g. selectboard or council members)*	16
Municipal Staff *(e.g. harbor masters, town managers, recreation department staff)*	34
Unknown *(no affiliation given)*	30
Working Waterfront *(e.g. boat builders, aquaculturists, fishermen)*	20
Grand Total	**388**

Table 2: Storm response convening attendees by sector.

Methods: How this document was assembled

In order to analyze statewide and regional themes (as reported here), the following methods were employed and can be viewed at a glance in Figure 2.

- First, extensive notes were taken at each individual convening and shared back with all participants. Those detailed notes include a summary of that meeting's key takeaways organized into four categories: Community Assets, Things to Improve, Gaps/Needs (Local), Gaps/Needs (Statewide). Section 2 presents the summary of these key takeaways.
- Next, the key takeaways from all 10 meetings were lumped into four larger geographies (Southern Maine and Portland, Mid-Coast Maine, Hancock County, and Washington County).
- Finally, through analysis of all these notes (comprising over 125 pages of material and reams of flipchart notes), a series of common themes and topics emerged. Topics like permitting, communications, insurance, and local heroes came up again and again. Those lead topics, 17 in total, became codes by which the insights shared by participants were analyzed. Section 3 contains context about each of these 17 topics, drawn directly from the convening notes, and

Section 4 contains context about how the topics play out within the four larger geographies of Southern Maine and Portland, Mid-Coast Maine, Hancock County, and Washington County.

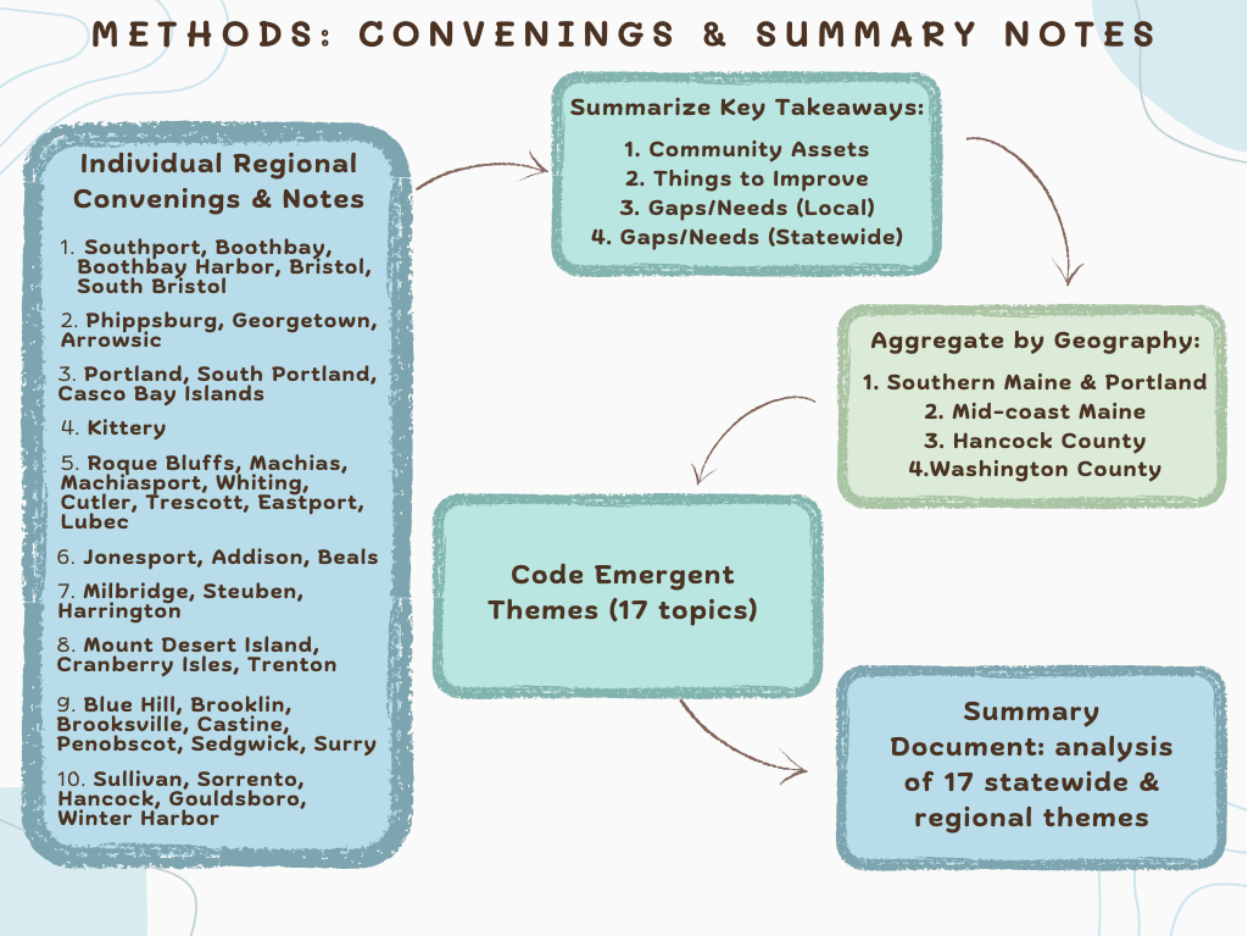

Figure 2: Flowchart of the methods utilized to generate summary notes for the series.

While this method of data analysis was relatively rapid and provided a fairly comprehensive look at the highest priority needs and gaps mentioned by participants in the community meetings, not all data points mentioned in each meeting made their way into the list of key takeaways. A more exhaustive analysis would be useful and could be conducted, but for now, the partners were committed to reporting back quickly in order for this effort to be useful to the many discussions about storm response underway in Maine. **The partners recognize that this effort contains a treasure trove of valuable input from real people; it is critical to document and share their insights.** That said, anyone who would like to dive deeper into the analysis or explore the notes from each of the meetings individually is welcome to reach out to any of the partners.

SECTION 2: HIGH-LEVEL SUMMARY OF KEY FINDINGS FROM ALL CONVERSATIONS

Summary of All Convening Notes and Takeaways

High-level summaries are shared here in Section 2. Later sections explore these topics in more detail.

While the bulk of this document focuses on statewide and regional topics, it felt important to first share a compiled summary of the brief takeaways as they were presented in each convening's notes.As described in the methods above, takeaways from the 10 regional conversations were documented and shared back with participants to serve as a resource for Maine's coastal communities as they prepare for the future. Those takeaways were organized into four categories:

1. Community Assets (recognizing what is already in place and works)
2. Things to Improve (efforts underway locally that need a boost)
3. Gaps/Needs (local)
4. Gaps/Needs (statewide)

While many more details were discussed (see each convening's full notes at the series website: Storm Response and Preparedness in Working Waterfront Communities), the graphic below summarizes those key takeaways.

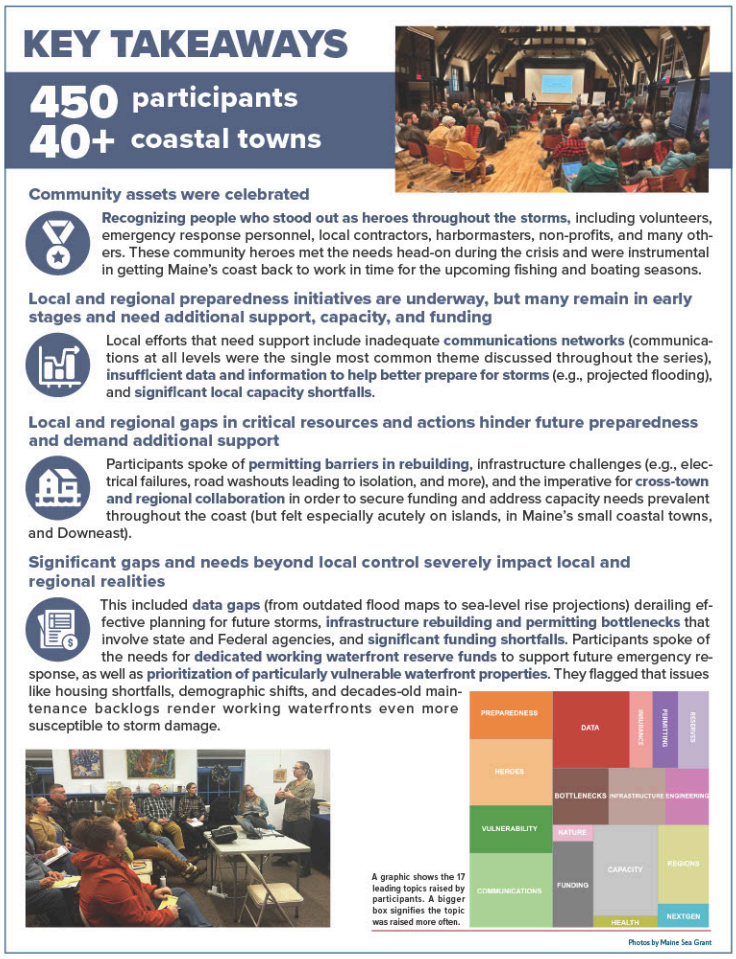

Figure 3: This graphic was shared at the Storm Response session at the Maine Fishermen's Forum on February 28, 2025. It offers a high-level overview of key takeaways from the ten convenings. This graphic is part of a fact sheet that can be accessed on the series website. (Note: the box at the bottom right is reproduced and easier to read in Section 3).

Summary of Statewide Themes

While the key takeaways organized into four categories offer a simple way to summarize each individual convening, it was clear after the series was over that a deeper analysis would be useful to better understand the themes and topics that emerged statewide. **Section 3: Discussion of Statewide Themes** will provide a deep dive into the 17 lead topics that were raised by participants throughout the series. (Section 1 has information about the process to identify these topics). Below is a list of the lead topics, with a brief description of what will be discussed in detail in Section 3.

Lead topics

(**Bold** = the simple code for this category)

1. **Preparedness -** Awareness around existing disaster protocols or the need to make a plan.
2. **Heroes**, responders, and planners - Heroes stepped up during the storms and throughout recovery and rebuilding.
3. Community and infrastructure **vulnerability** - Essential coastal access points and infrastructure are vulnerable to physical and social pressures.
4. **Communications** - Ineffective communications channels during disasters need to be addressed.
5. **Data** and information sharing - Accessible and accurate information is imperative for effective planning and decision making.
6. Disaster Support and **Insurance** for working waterfronts - Existing insurance programs do not cover damages experienced on working waterfront properties.
7. **Permitting -** Lengthy permitting processes hinder the timely implementation of critical projects.
8. Emergency **reserves** for working waterfront / shoreline protection - Varied sources of funding are required and should be set aside to meet proactive and reactive needs in coastal communities.
9. Rebuilding costs and **bottlenecks -** Current insurance, permitting, design, and construction systems are incompatible with working waterfront realities.
10. **Infrastructure -** Intentional investment is needed for ongoing maintenance, disaster rebuilding, and upgrades for long-term resilience.
11. **Engineering** solutions - There is a large focus on innovative coastal solutions, but availability of engineering services is currently a big challenge.
12. **Nature**-based solutions - green infrastructure is becoming a larger part of the coastal resilience conversation.
13. **Funding** barriers - Inaccessible funding stalls progress.
14. **Capacity** building and planning - People-power, brain-power, expertise, time, etc. are needed at every level
15. Mental, physical, and spiritual **health** - Mental, spiritual, and physical health are front and center for living through natural disasters and general uncertainty
16. Regions, geography and culture (**Regions**) - Thinking on a regional level can support learning, collaboration, and enhance networks critical for solving coastal problems.
17. The next generation (**Nextgen**) - Engaging younger generations in current issues is paramount for continued learning and innovation

Summary of Regional Themes

Differences in regional geography were apparent throughout the coast. These differences reflect local culture and capacity and should be taken into consideration in storm response and preparedness efforts. At the same time, comments in every conversation stressed that regional approaches to problem-solving are critical for affordable and implementable preparedness and response efforts. This and more will be in covered in Section 4, including:

- The role of geography and culture in regional storm response
- Cultural approaches and local heroes
- Strengthening regional planning and problem solving
- Reflecting on regional differences

Summary of Looking Forward

We will continue to share takeaways from these conversations with partners across sectors and geographies in Maine. Some ideas that arose as potential next steps include improving: resources and communication; community engagement and regional collaboration; and enhancing capacity building and communication infrastructure. These will be covered in Section 5.

SECTION 3: DISCUSSION OF STATEWIDE THEMES

Many themes emerged statewide. Below is a deep dive into the 17 lead topics, which were identified from the key themes discussed throughout the conversations. (Refer to Section 1 regarding the process to identify these topics).

Topics that were raised most often during the ten convenings:
(*__Bold__ = the word used to code for this category)

- **Preparedness**
- **Heroes**, responders, and planners
- Community and infrastructure **vulnerability**
- **Communications**
- **Data** and information sharing
- Disaster support and **insurance** for working waterfronts
- **Permitting**
- Emergency **reserves** for working waterfront / shoreline protection
- Rebuilding costs and **bottlenecks**
- **Infrastructure**
- **Engineering** solutions
- **Nature**-based solutions
- **Funding** barriers
- **Capacity** building and planning
- Mental, physical, and spiritual **health**
- Regions, geography, and culture (**Regions**)
- The next generation (**Nextgen**)

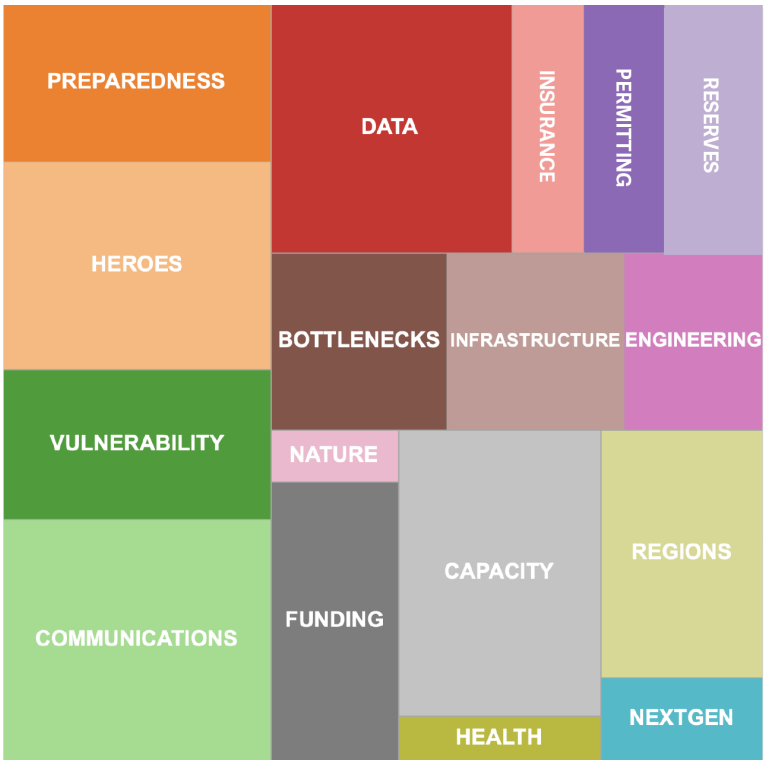

Figure 4: 17 leading topics raised by participants. A larger box signifies the topic was raised more frequently.

Below is a discussion about each of the topics, to provide context for comments heard during the convenings. Many topics overlap and these connections are mentioned throughout.

1. Preparedness

Preparedness was brought up in a variety of ways throughout the meetings. A common thread was the need to be ready for major storms and the response to those events. Some preparedness needs are related to planning for future storms, others for the response during storms, and finally others for the clean-up after a storm event happens. Many preparedness needs are closely connected to communications and infrastructure needs (i.e. having a plan to check in on elderly residents or rebuilding culverts to handle heavy rainfall and avoid road washouts).

This topic intersects with: **Communications, Capacity**

Key Points:

Preparedness & Planning

- Participants noted that many preparations can be taken before an event occurs. These include identifying available resources and their locations (shelters, warming centers, generators, home and business planning to reduce damage and impacts, etc.) as well as the responsibilities for staff, volunteers, and other groups like churches or non-profits to put those plans into place.
    - The American Red Cross trains local volunteers to respond after storms or other disasters and more local volunteers are always needed.
    - Clarifying the state agencies that provide assistance, the type of available assistance, and who is responsible for contacting them and sharing resources will reduce duplication and confusion.
    - Educating residents about preparing for storms or evacuations by creating go bags and having important medicines and documents on hand would help, too.
    - One issue that was mentioned was that the blankets in a town's emergency supply had moths and were unusable. Having materials available is important, as is making sure they are usable.
- **Communication** is important and directly connected to preparedness. Many participants noted that educating new residents will need to be an ongoing effort, as is identifying the communication channels all residents utilize in order to ensure they receive timely and essential information. Power outages are dangerous in winter or for those who need certain medical devices, so having a plan to alert people to power outage resources and check on vulnerable citizens is essential. Ensuring residents are aware of these plans and their options if they need help is critical.
- Participants noted that planning for hazards is part of this, including different scenarios and getting involved in the emergency management agency-led Hazard Mitigation Planning Process. Municipalities also need to have a "Plan B" in case the primary plan doesn't work. If communities want to do their own plan, having materials available to guide the process will speed it up and ensure plans are adequate. Likewise, identifying models for community response networks during and after storms will be important to establish those where they are needed.
    - Checklists could help people and businesses prepare for storms and potential evacuations.
- Transportation and evacuation plans need to be prepared and communicated. Vulnerable locations should be identified and improved whenever possible. In some cases, sheltering in place is best, and clarifying when people need to stay put or evacuate is a major preparedness and communications need.

- Transportation plans are especially important for island communities. If the ferry terminal is damaged or the ferry can't access the island for another reason, what options are available?

Preparedness & Actions During Storms

- Ensuring that residents are aware of impending storms so they can move valuables and secure equipment.
- Emergency responders may not be available during a storm. Checking on vulnerable people and locations during a storm may have to happen locally, and putting these networks in place in advance and making sure they are clear will help this happen smoothly during a storm.

Preparedness & Actions After Storms

- After a storm, preparedness efforts will ensure that shelters are functional and clean up happens smoothly. Prioritizing needs, like accessing stranded residents, will be critical.

> "It is critically important for towns, businesses and property owners to report damages quickly, so that the threshold requirements for assistance get met for the region."

Preparedness and planning is relevant even after storms end. Reporting damages promptly is essential, but a process is needed to do it well, and having pictures of infrastructure before storm damage occurred is important. After the meeting in Phippsburg, Georgetown, and Arrowsic, each of the towns requested that the American Red Cross continue to assist with their preparedness planning for future storms. Preparedness is also being prioritized at the statewide level by the Governor's Infrastructure Rebuilding and Resilience Commission in a variety of ways.

2. Heroes, responders, and planners

Many people are working tirelessly across the state to prepare for and respond to storms and other natural disasters. These include federal, state, and local staff, and volunteers from all walks of life. Much work was already underway before the 2023-2024 winter storms, and even more has started since. The storms emphasized the need for action and galvanized interest in coastal resilience and the many ways in which our coastal communities are vulnerable. Local heroes were mentioned at every meeting. They include first responders, municipal staff doing debris cleanup, existing groups, and people who have stepped up to coordinate storm response and future planning efforts.

This topic intersects with: **Communications, Funding, Capacity**

Key Points:

Planning and Coordination

- Some groups are already working regionally to plan and coordinate at a larger scale. These groups have the opportunity to engage additional organizations, like the Department of

Transportation, the Coast Guard, or the American Red Cross, who bring resources that can't be provided locally.
    - These include: all of the Regional Planning Organizations and County Emergency Management Agencies (EMAs), Blue Hill Peninsula Tomorrow, Mount Desert Island Historical Society, A Climate to Thrive, Gulf of Maine Research Institute, the Schoodic Area League of Towns, Landscape of Change, and many more.
    - An outstanding question is how to harness the people who want to help (they may have generators or certain skills) but don't have a path to do so. Participants wanted to know how to coordinate and get the word out about opportunities to help. The American Red Cross may be able to help with this and is already coordinating with Phippsburg and Georgetown following that regional convening.
- Local heroes can help **communicate** with and identify groups that may become isolated or need to be checked in on and supported during and after storms, like new Mainers or elderly residents. Small towns thrive on strong community connections and shared concerns, making grassroots efforts and local organizing a major asset.
- Organized committees, citizen science, and photo exhibits are helping to document climate impacts, engage residents, and inspire action in these communities.
- Some island communities and neighborhoods are pulling together to self-fund their infrastructure needs, and are exploring how to set up mutual aid networks and help one another at a small scale. Some examples are establishing general assistance funds at the municipal level and removing barriers to access to emergency funds.

Heroes who responded to the storms

- Local heroes cleaned up and got things running - waterfronts are so crucial to the economy, whether commercial fishing, aquaculture, or tourism/recreational boating focused. Some community members physically saved waterfront areas from damage, including sandbagging that protected sewer systems, and conducted immediate repairs on damaged wharves and piers to save the upcoming fishing/tourism season.
- Local leadership has helped advance storm response efforts and inspire action in other places. However, there is still a need for shared learning within and across governments and regions.
- Sharing information about rebuilding and resources after storm events is needed. Having information already available and easy to locate will help individuals and groups recover quickly.

> "Fishermen and local selectmen jumped in to do repairs because people needed to get back to work."

Participants mentioned **capacity** limitations at every meeting. Given how critical of a role local heroes played in responding to the storms, if more capacity was available much more work could be done. Figuring out how to acquire more capacity - and put it to work - is a major challenge for all of the themes mentioned in this document.

3. Community and infrastructure vulnerability

Participants throughout the convenings had examples demonstrating the vulnerability of Maine's working waterfront properties and how it was an existing challenge that was exacerbated by the 2023-2024 winter storms. Participants from East to West reported damage to and loss of infrastructure, such as piers, wharves, decks, seawalls, low lying coastal and peninsular roads, as well as erosion of shorelines and bluffs and siltation of mudflats. With the widespread reality of deferred maintenance and limited funding for repairs, these vulnerabilities were worrisome to many participants. Both in the private and public sector lacked the necessary data about status of the properties (and their vulnerabilities), rendering prioritization difficult.

This topic intersects with: **Data**, **Infrastructure**, **Reserves**

Key Points:

Addressing vulnerabilities in working waterfront properties and businesses

- Community and infrastructure vulnerability was raised across a diversity of issues, from the physical (e.g. impacts of waves on wharves weakened by deferred maintenance, impacts of flooding on electrical grids, vulnerability of culverts, sewage and water systems), to the financial (e.g. sale and conversion of properties to non-working waterfront uses), to the social (e.g. isolation of community members during floods).
- Communities and businesses need resources, guidance, and data for how to address these vulnerabilities.
- It was also acknowledged in several meetings that private pier owners have less access to support than municipal piers, and that the decline of private access leads to increased pressure on public access.
- Multiple participants mentioned that gentrification and other seemingly ancillary issues increase working waterfront vulnerability.
- Finally, several participants wanted to understand why some properties withstood storm impacts and what it was about their construction that made them more resilient.

Inventorying vulnerable working waterfront properties and businesses

- Many participants talked of the need for regional working waterfront inventories, to document vulnerability, loss, damage, and value of properties to the local economy, to help with planning, and to determine which properties should receive highest priority and/or emergency protection. (See more in the topic #8 section about emergency funding **Reserves**).
- Communities are often well aware of where their region's physical vulnerabilities are located, but doing a vulnerability assessment helps confirm and provides data and justification for funding proposals. In a few towns that have conducted working waterfront vulnerability assessments, local knowledge has been born out. The roads and wharves that were expected to be impacted, were.

Intertidal and clam flat access vulnerabilities

- Many participants, especially but not exclusively Downeast, emphasized that threats like storm-driven shoreline erosion and mudflat siltation affect clamming and other work-related activities in the intertidal zone, as much as the disappearance of a wooden dock might impact of the

ability of a lobsterman to go to work. Infrastructure vulnerability includes loss of access to the shore to those who rely on that access to make a living.
- Some towns and non-profits have begun to work together, and with local land trusts, to address access issues for intertidal fisheries.

Separate from these convenings, there is a conversation underway among state agencies and several working waterfront support organizations (including those who hosted this series) about moving forward the concept of a working waterfront inventory and vulnerability risk assessment tool for property owners and businesses. The inventory efforts carried out by Sunrise County Economic Council (in Washington County) and Maine Coast Fishermen's Association are good models to help with planning and prioritizing infrastructure protection needs.

4. Communications

Communications needs were the most discussed issue during the 10 convenings. Participants stressed that it is essential to build stronger connections between support organizations and the people who need support (both in the crisis/immediate support phase and recovery phase). People are often unaware of what support is available or how to access it. There is a range of communications needs, including: educating residents on systems that are available and how to engage with them; having coordinated, state-wide systems as well as locally-led ones; and two-way communication between government/emergency responders and residents on the ground (for example - alerts about washed out roads or downed power lines and methods so residents can report local damage or people in need to help emergency responders). Community voices need to be loud and build support to get people involved, and it's important to have fun along the way!

This topic intersects with: **Data, Preparedness, Infrastructure**

Key Points:

Communications Networks
- Neighborhood or village communications networks are needed, and they need to connect to state and municipal systems. These networks need to cross multiple groups, such as summer and year-round residents. It is also important to help local groups understand where they can go to get help building communications networks, and what resources are available.
- Communications networks need to be available in many ways, not just on computers.

Communication Methods
- Listservs, news and info clearinghouses, social media and other networks (e.g. NextDoor neighborhood app), or broader email alerts.
- Different types of media, including in-person events for planning and education.
- Increase mainstream news coverage of storm events.
- Increased communication with/for/among residents/businesses, e.g. online landing pad/central info clearing houses for local storm information.
- Work with cell companies for emergency alert systems during storms.

Emergency Communication Needs

- Work with propane companies to install remote sensors on propane tanks that will help with advance planning to fill tanks before storms.
- Major communications gaps exist related to emergency alert systems, data, and funding portals, and emergency alert systems.
- Outreach to create lists of people who want to be checked on during or after storms.

Communication Planning Efforts, Opportunities, and Needs

- Towns and islands are continuing to increase communication, co-learning, and collaboration.
- Education about how to prepare and implement emergency plans.
- Education about storm tourism, not impeding responders, and staying out of harm's way.
- How to communicate when the power is out.
- Sharing information about who is responsible for what aspects of response and rebuilding.
- Sharing knowledge about available resources, like the emergency housing at UMaine Machias.
- Communities struggle with accessing and coordinating with agencies like DOT for proper infrastructure repair which requires improved communication channels.

> "Education is needed that addresses growing interest and curiosity in 'storm tourism' during major storm events (and how to safely view storms without getting in the way of emergency response)."

Participants stressed the importance of communicating among complex networks of people using different devices. Tools like VHF marine radios still have a role to play, especially when the power is out. Improving statewide communications networks is a major part of LD 1, *An Act to Increase Storm Preparedness for Maine's Communities, Homes and Infrastructure*, which was introduced during the 2025 state legislative session. The Governor's Infrastructure Rebuilding and Resilience Commission also emphasized needed improvements to communications systems and about climate risks. Improvements to emergency communication networks are expected, but much work will have to happen locally as well.

5. Data and information sharing

Data needs came up often during these conversations, but are diverse. Communities need access to high-quality data, but also need help interpreting and using the data that is available to them. **Capacity** needs are intertwined with data needs, especially in smaller communities. In Washington County, Sunrise County Economic Council offers grant writing, community planning, hazard mitigation planning, mapping support, and resilience-focused tools, and can train communities in using these tools. Other regional planning organizations can likely do similar trainings. A desire for local data was emphasized, especially with respect to river flooding and sea level rise predictions. Sunrise County Economic Council's working waterfront inventory (including storm damage) is a model, and a tide gauge was recently added in Machias that is helping the town plan for severe flooding in the vulnerable downtown; Milbridge is installing a similar gauge in the Narraguagus River. Additionally, models that predict the impact of storm surge along with sea level rise are needed. The Maine Department of Transportation is expected to release a model in 2026.

This topic intersects with: **Capacity, Communications, Preparedness, Vulnerability**

Key Points:

Desired Tools, Guidance, and Data

- Use creative tools like tax bills to gather property owner information about storm preparedness
- Data collection is essential for planning and understanding future impacts of Sea Level Rise (SLR) and flooding risk.
- We need better data on the rate of change for sea level rise as this affects our ability to plan the future infrastructure.
- Accessing technical tools has been key - towns are using drones, modeling, and support from UMaine, to provide critical insights for vulnerability assessments and resilience planning.
- Guidance needs include: community education about the impacts of flooded basements or other property-level issues on town resources; resources for long-term retreat away from coastal areas; and clarifying responsibilities for preparedness, response, and rebuilding at the local, statewide, and federal levels. Guidance for creating a community response network and addressing coastal flooding was also requested.

Data and Communications Needs

- Improving communication and collaboration with state agencies was mentioned as a need, as well as helping communities understand the roles of (and how to work with) various state agencies involved in response and rebuilding, including Department of Environmental Protection, Department of Transportation, and general assistance through the Maine Department of Health and Human Services.
- It would be helpful to have a centralized location to find information and resources after storms to assist with quick actions for recovery (e.g. applying for timely grants) - this challenge is even greater for island residents/communities.
- Need to connect local issues and projects with other examples across the state, so that municipalities, volunteers and members of the public can learn from communities farther afield who are facing similar challenges.
- Transportation plans are needed for people, equipment, and supplies, especially in emergencies and instances where roads, ferries, or other infrastructure are disrupted. This is especially true for islands.

> "[We need] better outreach and support for residents and businesses specifically about documenting damage; documentation helps attain regional thresholds needed to unlock funding."

> "Sea level rise maps and projections that do not take into account wave and wind energy may be insufficient for predicting a lot of storm-related damage; there is a need for more dynamic models to be made available to the public."

Data and capacity needs are closely intertwined. LD 1*, An Act to Increase Storm Preparedness for Maine's Communities, Homes and Infrastructure,* and the Governor's Infrastructure Rebuilding and Resilience

Commission are making recommendations that should help address both of these needs. The fourth recommendation from the Infrastructure Rebuilding and Resilience Commission report is to "improve data and information sharing to help leaders make informed decisions about risk." The report encourages the creation of an online data service to curate and share data statewide, which was requested during the convenings. The tenth recommendation to "build long-term analytical capabilities for understanding and communicating about risk" encourages data analysis and the creation and maintenance of tools over time. Likewise, the 2026 release of Maine Department of Transportation's dynamic sea level rise model that accounts for storm surge will be helpful to these efforts.

6. Disaster support and insurance for working waterfronts

The winter storms illuminated major gaps in insurance coverage for working waterfront owners. Firstly, Federal Emergency Management Agency (FEMA) disaster funding is only available if there is a presidential disaster declaration. In order for there to be a disaster declaration, damages from the event need to 1) be reported in a set window (usually two weeks) following the event, and 2) pass certain monetary thresholds at both the state and county levels. If damages reported exceed the county threshold, the county will be eligible for disaster response funding for individuals and public entities. At that point, individuals and public entities would apply for federal disaster aid.

This topic intersects with: **Bottlenecks, Vulnerability, Funding**

Key Points:

General challenges accessing federal disaster aid

- County Emergency Management Agency directors joined most convenings. Some directors shared that it is difficult to meet their county disaster threshold because of the lack of damage reports.
- Even in counties that met their thresholds and qualified for disaster aid, towns that applied for public disaster aid are still waiting to receive their funding, about a year later.
- Most of the time, disaster funds can only be used to build infrastructure back to its former condition, although some declarations give additional funding to improve infrastructure. Maine Emergency Management Agency (MEMA) posts these grants, and their eligibility criteria, on their website.

Challenges specific to private businesses

Private businesses are not able to access FEMA disaster aid, but can apply for Small Business Administration (SBA) disaster loans and receive insurance payments for damage (if applicable). Yet, current insurance systems insufficiently cover working waterfront assets: FEMA Flood Insurance (which is required in order to obtain certain permits and loans) does not cover damage to over-the-water structures. To adequately cover storm-related damage (from wind, flooding, waves, etc.) to private working waterfront infrastructure, the following needs were voiced at multiple convenings:

- A policy-driven approach to adjust current insurance structures.
- Creation of a new working waterfront-specific insurance program.

The Infrastructure Rebuilding and Resilience Commission's Interim Report outlines the following recommendations, "Analyze flood insurance data to develop a more accurate assessment of flood risk

and mitigation opportunities," (pages 36 and 37), and "Evaluate a statewide disaster insurance program for public infrastructure," (page 38). Based on the need voiced during the convenings, including private WWF infrastructure in this work could prove helpful.

7. Permitting

In most regions, the general feeling about permitting is frustration. The process for applying for and receiving permits for infrastructure projects can slow down project implementation and completion. Like engineering design and construction, acquiring permits requires knowledge of the application systems, regulations and rules, and a lot of time. Without this capacity, permitting can be a huge barrier for completing infrastructure projects and pursuing resilience projects and adaptation solutions.

This topic intersects with: **Infrastructure, Engineering, Capacity**

Key Points:

Common challenges faced

- Delays in communication from state and federal regulatory agencies.
- Prolonged permitting processes delay timely rebuilding needs ahead of fishing seasons (specific challenge faced in the 2023/2024 storm recovery).
- Resilience and adaptation projects sometimes require more complex permitting structures.

Ideas for improving systems

- "Streamline and expedite permitting requirements for resilience measures" (seawall repairs called out).
- Effective communication and guidance around these changes, to raise awareness and ultimately increase implementation.
- Communities can consider adjusting local permitting processes to expedite timelines (ex: Kittery Conservation Commission looking into making recommendations to their planning board).

> "Statewide permitting processes need to be expedited for raising working structures as well as processes that enable building back better, higher, stronger."

Excitingly, this is the focus of some state-funded resilience work. Through a NOAA grant received by the Governor's Office of Innovation Policy and the Future (GOPIF), a group of state regulatory agency representatives are seeking input on current challenges with permitting coastal projects, and possible solutions (i.e. regulatory changes, improved guidance documents, and more).

One example of how regulations could change to allow for quicker deployment of resilience measures is LD 2030: *An Act to Amend the Natural Resources Protection Act to Enhance the State's Ability to Respond to and Prepare for Significant Flood Events and Storm Surge*. These amendments were proposed as an emergency act to make it easier for wharf owners to raise their wharves while rebuilding following the

winter storms. The amendments allow for increasing the height of a pier, wharf or dock by 4ft or less above the base flood elevation (using the FEMA flood elevation) when replacing the structure under Permit-by-Rule.

8. Emergency reserves for working waterfront / shoreline protection

The term emergency **reserves** here means any type of mechanism suggested by participants to allocate **funding** that enables municipalities and private property owners to respond quickly (and with minimal red tape) to unexpected needs for repairs/rebuilding and/or protecting working waterfront properties. The needs for emergency reserves can be driven by storm events and damage that prevent or erode use of the property (be it wharves, clam flats or other), as well as potentially imminent sales that would take the property out of working waterfront status. There was also some interest expressed in flexibility around what properties would qualify for such reserves, with examples shared of vulnerable properties that may not meet traditional definitions of working waterfront but are critical for the region's economy and culture, such as cultural institutions and recreational assets (examples were the Downeast Sunrise Trail and waterfront museums).

This topic intersects with: **Funding**, **Vulnerability**

Key Points:

Reserves for emergency storm response at the town level

- Some participating municipal officials shared that having emergency reserves in place, or having the flexibility built into their budgets to divert funds to storm response, made all the difference after the 2023/2024 winter storms. Many other towns struggled with budget shortfalls limiting their capacity to create such reserves.
- Some towns are beginning to save money to use as matching funds or for emergencies and are focusing on getting projects shovel ready to take advantage of construction funding when it becomes available.

Reserves for rapid protection of working waterfront

- Participants said there is a need for dedicated statewide working waterfront reserve funds, with limited barriers and red tape. Rapid action funds to purchase and/or protect working waterfronts were identified as essential to address the growing instances of working waterfront property sales that lead to conversion to uses outside of working waterfronts. While this is not per se a storm driven issue, storm damage compounds the problem, potentially leading to property sale and conversion to non-working waterfront compatible uses.
- Various mechanisms for building such a fund were mentioned, including things like revolving loan funds, a state bank, easements and covenants, a non-profit, or a land trust model.
- The philanthropic community came up in multiple conversations as being an untapped resource. Members of the philanthropic community in attendance asserted there is interest in helping but also a need for guidance about how to set such mechanisms into place.

As of winter 2025, there are conversations underway among non-profit, land trust, and philanthropic representatives exploring how to move the ideas forward to set up reserves for rapid protection of working waterfronts. The implementation of an inventory (see topic #3, Community and infrastructure

vulnerability) would help identify what properties might be most at risk of conversion, sale, or damage. Either way, this will be an ongoing discussion.

> "The estimated repair cost of the road to Roque Bluffs' municipal pier is $4 million (which is equivalent to eight years of the town's budget)."

9. Rebuilding, costs and bottlenecks

Addressing the following bottlenecks can reduce challenges and unintended consequences felt on the ground.

This topic intersects with: **Capacity, Funding, Infrastructure, Vulnerability**

Key Points:

Workforce and Capacity

- Lack of available contractors, engineering firms, and other critical services (total numbers, geographic availability).
- Getting bids for larger municipal projects in rural areas is difficult.
- State agency capacity hinders effective program roll-out.

Guidance and Expertise

- Expensive to hire engineering services.
- Lack of consensus for WWF resilience building best practices.

Funding Source Eligibility

- Match requirements can limit communities' ability to apply for grants.
- FEMA funding currently can only be used to build back/replace it to its former condition (process has begun to adjust this), which prevents resilience improvements to damaged infrastructure.

Time Constraints

- Roads are critical to repair first (to access isolated homes, other infrastructure projects) but hinge on State agency timelines.
- Wharf owners often can't wait for funding or engineering services to rebuild.
- Can't take the time away from day-to-day job to seek out and apply for grants.
- Work schedule conflicts with construction schedule.

The bottlenecks described above can result in

- Piecemeal or "bandaid" infrastructure fixes that may not improve long-term resiliency
- Financial burden (i.e. lost income, pressure to take out loans, go into debt).
- Overall apprehension around the feasibility of achieving "resilience" into the future when it comes to infrastructure, business planning, or other.

For public infrastructure projects, this scenario was described in a few different ways. Delays in road repairs can hinder disaster response efforts: the ability for disaster response groups (public works groups and fire departments) to effectively respond and quickly move people, gear, equipment, and supplies.

For working waterfront infrastructure, participants said that: delays in rebuilding private wharves can result in users shifting to public wharves (if public services are available), which causes increased congestion and decreased efficiency. In some towns or regions, public working waterfront services weren't available, which led users to engage in riskier or more costly situations (i.e. operating wharves without electricity, traveling longer distances to access fuel and other resources).

10. Infrastructure

Participants called for a multifaceted strategy for addressing infrastructure vulnerabilities and enhancing community resilience in the face of natural disasters and long-term environmental changes. The need was stressed for both immediate preparedness—like emergency transportation and rapid damage assessments—and longer-term infrastructure improvements to cope with heavy rainfall, sea level rise, coastal erosion, and unreliable electrical systems. The recommendations span from technical solutions (such as living shoreline support and remote sensors) to funding strategies and improved coordination between local agencies and contractors.

This section intersects with: **Engineering, Nature-based Solutions, Capacity**

Key Points:

Emergency Preparedness

- Develop robust transportation and evacuation plans for when critical pier, ferry, or barge landing infrastructure is compromised.
- Ensure prompt completion of damage assessments to qualify for disaster assistance.

Infrastructure and Environmental Resilience

- Maintain and upgrade culverts, wetlands, and coastal defenses to mitigate heavy rainfall, sea level rise, and storm-associated erosion.
- Address shoreline erosion challenges through engaging in initiatives like the Shore Corps Stewards program, which provides technical assistance for living shorelines.

Working Waterfronts and Community Needs

- Enhance access to and maintenance of commercial fishing areas and other working waterfront infrastructure.
- Improve grid resilience to support vital services and protect against outages during storms.

Technical and Funding Support

- Secure support and funding to work with engineering firms for necessary infrastructure improvements.
- Explore innovative solutions such as remote sensors on propane tanks and coordinated tree trimming with power companies.

Grid and Energy Considerations

- Tackle the high rate of electrical grid unreliability (particularly in Washington County), which hinders both recovery efforts and the adoption of green energy solutions.
- Address limited access to 3-phase power that restricts the expansion of solar projects and other energy-intensive industries.

Overall, these takeaways call for an integrated approach that combines immediate disaster response with strategic investments in resilient and modern infrastructure systems.

11. Engineering solutions

One common theme throughout the series was around the need for support with engineering solutions. The needs are evident at every step of the engineering cycle (from initial consultation to site visit, planning, securing funding, match and permits, doing the work, project management, etc.). A number of engineers and related professions like landscape architects and others attended some of the sessions. Many, especially the ones connected to academic institutions and larger firms, were eager to be called for initial consults, to better understand the need. Municipalities, wharf managers, business owners and property owners all identified the shortage of capacity to work with engineers, and of contract labor to do the work, along with the significant and expensive delays that ensue.

The University of Maine was present at most events, James Bryce, the Senior Program Manager for UMaine's Transportation Infrastructure Durability Center, was on hand to listen to the engineering needs. He is bringing these needs back to the engineering and research community at the University, to spark ideas for how to address issues like wharf damage, bridge damage, culvert blow out, road flooding, and erosion. The university is constantly experimenting with new technology and interested in being in touch with businesses and waterfront property owners about experimenting with infrastructure and material alternatives.

This section intersects with: **Infrastructure, Nature-based Solutions, Communications, Capacity**

Key Points:

Full-Cycle Engineering Support

- Need for assistance at every step—from initial consults to project management and permitting.

University and Professional Partnerships

- UMaine is leveraging research to address issues such as bridge damage, culvert failures, and road flooding.
- Engineering firms and academic institutions are encouraged to work together to develop new materials and innovative solutions.

Infrastructure Focus

- Emphasis on maintaining and upgrading critical infrastructure including culverts, wharves, and roads.

- Addressing challenges like coastal erosion, flooding, and storm damage through better engineering practices.

Capacity and Communication Gaps
- Identifying a shortage in engineering capacity and technical support for towns and businesses.
- Calling for improved systems for communication, coordination, and shared expertise.

Permitting and Funding Challenges
- The need for streamlined permitting processes and dedicated funding for engineering studies and feasibility assessments.

Collaborative Partnerships
- Strong partnerships among local governments, academic institutions, and engineering firms are essential to tackle large-scale challenges efficiently.

The overarching theme is that a lack of engineering capacity and streamlined processes has led to significant delays and challenges, and that strengthening partnerships and support networks is essential for effective, timely responses.

12. Nature-based solutions

There was growing interest in using nature-based solutions to enhance infrastructure resilience. The potential benefits of incorporating vegetation barriers and salt-tolerant species as part of an integrated strategy to mitigate natural hazards was discussed. By combining these ecological approaches with traditional engineering studies and coordinated maintenance efforts—such as targeted tree trimming in partnership with power companies—communities can protect both critical infrastructure and natural resources.

This section intersects with: **Infrastructure, Engineering**

Key Points:

Vegetation Barriers and Salt-Tolerant Species
- Emphasis on using salt-tolerant species to establish resilient vegetation barriers that can protect against coastal erosion and flooding.
- A broader desire to incorporate nature-based solutions into infrastructure planning.

Integrated Maintenance Strategies
- Collaboration with power companies on tree trimming to prevent power outages.
- The importance of continuous engineering studies to develop better materials and site plans that integrate natural elements.

Engineering and Nature Synergy
- Focus on enhancing shoreline landscaping and protecting drinking water resources through innovative, ecologically informed engineering approaches.

13. Funding barriers

Available, accessible, and sufficient funding is required to move the needle in preparedness and response work. Concerns around these three factors were voiced at every convening. These concerns have only increased throughout the first few months of 2025 as the current federal administration makes changes to federal funding resources. There is growing uncertainty around availability of existing funding sources, including larger grants that can fund major infrastructure projects, grants to implement and complete existing project plans, and reimbursements for already awarded grants.

For a coastal municipality, preparing for storms can look like: completing a hazard mitigation plan to identify risks and a comprehensive plan to identify community needs and priorities, securing funding (grants or loans) to hire engineers to create a project plan and design, and securing more funding to hire construction firms to implement the plan. All of these steps require capacity at the town-level (familiarity with grants and the funding sources, people power and time to fill out the application, and project management to see the work through), available engineers and contracts, materials, and available funding through loans or grants.

For a private business, there are far fewer resources available for mitigation and preparedness work. Low interest loans, which often mean taking on debt, are one of the only sources of funding available to engage in infrastructure projects.

Furthermore, keeping up with wear and tear over the years can help mitigate damage from storms and other events, but maintaining infrastructure requires consistent funding over time. Working waterfronts already operate on slim margins, and expenses are increasing.

This section intersects with: **Infrastructure, Reserves, Capacity, Preparedness**

Key Points:

- The level of available funding does not even come close to meeting the need that exists (at all levels).
- There are limited options for funding recovery and preparedness projects for private WWF infrastructure. This adds to already stressed operating budgets.
- Although municipalities have access to a larger pool of grants, already slim budgets make it difficult to pivot and find alternative sources for funding critical infrastructure and other projects. While some towns are able to set funds aside to create **reserve** funds for emergencies, some towns are not able to do so, or aren't able to do so without raising taxes or cutting other services.
- Some towns have found it helpful to create project "wish lists" so they are able to more quickly respond when funding opportunities do arise. Yet, the ability to do this type of planning requires planning capacity.
- State grant program structures pose challenges to applicants: match requirements, extensive and complex applications.
- Federally, FEMA disaster funding is very slow to reach pockets (some towns and individuals are still waiting one year after the storms), and there is increasing uncertainty around availability of disaster and non-disaster funding.

> "Every number referenced for adaptation funding is missing a zero. One given project for a bridge in Kittery alone could cost $30 million, which is half of the Governor's entire $60 million infrastructure and storm response initiative."

14. Capacity building and planning

Capacity challenges were prevalent throughout the series. More capacity is needed at the municipal, regional, and state levels to address storm response and planning as well as a host of other issues like housing shortages. Capacity is needed for emergency response and firefighting, grant writing, grant management, communications, and many other things. Capacity needs are closely connected to many other issues described during the convenings and are most acute in smaller communities and on islands. Many efforts to build local capacity and also local resilience have started strong, for example through the Community Resilience Partnership, but long-term strategies are needed to ensure that progress continues. Supporting the staff and volunteers who are working on resilience is critical. Participants noted that some capacity might very well exist in many communities and part of the challenge is connecting with those sources so they can be put to work. Many communities mentioned that resilience is a long game and progress takes time.

This topic intersects with: **Preparedness, Data, Infrastructure, Engineering, Bottlenecks**

Key Points:

Capacity needed to plan

- Participants stressed the need to increase community involvement in hazard mitigation planning processes.
- In Cobscook Bay, the need for planning, outreach, and regional coordination related to increased numbers of cruise ships was mentioned, as well as a general need for regional planning and improved communication for comprehensive planning processes to ensure all residents and sectors are engaged.
- Communities also need better emergency transportation plans and preparedness to address when infrastructure becomes inaccessible during storms.
- Maps are critical for planning efforts. Sunrise County Economic Council can use data to create parcel maps showing sea level rise, flood risks, and critical infrastructure for Washington County. They have created maps for Machias, Milbridge, and other towns, and would like to support other communities as well, and can train communities to interpret the maps.
- Small towns struggle with limited resources and staff/volunteers to secure grants and funding for long-term resilience efforts.

Capacity needed to report

- Promptly reporting damages to public and private infrastructure is essential. Local communities need to report damages to their county Emergency Management Agencies (EMAs) within a week of a storm event to meet cost thresholds and unlock federal and state disaster relief funding. However, there is a need to support communities, especially in Washington County, so they can

meet those reporting requirements. Washington County has lost out on funds because of a lack of disaster assistance submissions.

- Being proactive about documentation and taking photos of infrastructure before damage occurs is critical.
- Participants noted that better outreach and support is needed for residents and businesses about how to document and report damage to attain thresholds and unlock funding. Under-reporting damages caused by storms leads to less emergency funding.

Capacity needs related to rebuilding, engineering, and permitting

- Participants noted that communities need a variety of support related to engineering, permitting, and rebuilding. Communities need support and funding to access and work with engineering firms, including identifying the skills and knowledge needed for a particular project. Communities also need help creating RFPs, hiring, and managing companies, and with overall project management and implementation from conceptual designs to implementation. As discussed elsewhere, funding is also needed.
- Having the capacity, time, and expertise to navigate design, permitting, and construction processes is critical. Paperwork, administrative work, and outreach to permitting agencies were challenges that were mentioned.
- The processes for completing infrastructure projects feel burdensome and state agency capacity limitations also hinder project implementation.
- Strong partnerships are essential. Collaborations across towns and partnerships with engineering and environmental firms can help small towns tackle major challenges that they don't have the capacity to address on their own.

Capacity needs related to acquiring and managing funding

- Communities need capacity and support for writing grants and managing funded projects. Individual property owners applying for assistance need help too, especially those that do not use computers regularly or that have other limitations.

Capacity opportunities

- There may be an opportunity to address shoreline erosion through the new Shore Corps Stewards program which will provide technical assistance for living shorelines on public property.
- Data collection to help assess Sea Level Rise (SLR) and flooding risk and to support planning.
- The creation of tools to support damage evaluation would be helpful, too.

> "Timely and thorough damage documentation is critical to unlocking federal and state disaster relief funding. Many municipalities struggle with the submission process due to a lack of experience or capacity."

Capacity is a major challenge for Maine's coastal communities, and capacity limitations influence all of the themes outlined here. Multiple efforts are underway to improve capacity at the community and regional levels. These include the recommendations from the Maine Climate Council and the Community Resilience Partnership, which coordinates a network of regional service providers to help communities apply for and successfully implement resilience efforts. The Community Resilience Partnership now has 219 enrolled communities. The Resilient Maine grant is further bolstering regional capacity and planning efforts.

15. Mental, physical, and spiritual health

Participants noted the importance of mental, physical, and spiritual health in communities facing the impacts of extreme weather and isolation. They pointed out that natural disasters and infrastructure challenges, like washed-out roads, often lead to significant isolation, especially among the elderly or new community members. To address these issues, there was a call for enhanced support systems that proactively reach out to those who might not ask for help, including expanded access to chaplain services, mental health resources, and programs to address climate anxiety.

This section intersects with: **Vulnerability, Preparedness, Heroes**

Key Points:

Addressing Isolation

- Tackle the isolation experienced by the elderly individuals impacted by events like road washouts.
- Develop strategies to support those who may not actively seek help.
- Set plans for how to get isolated people out.

Enhanced Support Services

- Increase access to chaplain and mental health resources for affected community members.
- Create better support structures for socially isolated groups, including new Mainers.

Programs for Climate Anxiety

- Initiate programs designed to help communities manage and alleviate climate-related anxiety.

Representatives from StrengthenME and Spiritual Care Services of Maine were present at almost every convening to spread awareness and share about the services they offer. StrengthenME is a federally funded program that was created in response to the 2023/2024 winter storms to connect communities and individuals with resources to support the impacts of severe weather including: classes, individual resource navigation, youth engagement, and emergency preparedness support. Organizations like Maine Coast Fishermen's Association and Healthy Acadia were service providers for this program, and offered specific fishing and aquaculture resources. As a part of the StrengthenME program, Spiritual Care Services of Maine chaplains offer free, anonymous emotional and spiritual support for recovery and resilience preparedness. The program concluded in March 2025, but more information and resources can be found on the StrengthenME website and in the Resources Document created for this series.

16. Regions, geography and culture

[See **Section 4: Discussion of Regional Themes** where this topic will be discussed in more detail]

17. The next generation

Participants highlighted the importance of engaging the next generation in coastal resilience and emergency preparedness efforts. There was a focus on equipping youth with the knowledge and skills to understand coastal flooding impacts and to be active participants in emergency planning and response. Educational institutions, from colleges and universities to science teachers in schools, are seen as key partners in fostering this engagement. Moreover, innovative ideas like creating a Storm Corps highlight the drive to involve young people directly in storm response, ensuring that their voices are heard and that they are well-prepared to take on future challenges.

This section intersects with: **Communications**

Key Points:

Education on Coastal Impacts

- Emphasis on understanding coastal flooding, flash flooding, and how to mitigate these impacts on infrastructure.

Emergency Preparedness

- Focus on educating students and communities about how to prepare for and implement effective emergency plans.

Youth Engagement

- Recognize the need to involve young voices more actively in discussions and decision-making processes, given regional demographics and current gaps in emergency response capacity. Youth are not often included in these discussions and decision making, though they will inherit these communities.

Academic and Community Involvement

- Leverage the expertise of colleges, universities, and science educators to workshop solutions and increase youth participation.

Innovative Initiatives

- Support ideas such as a Storm Corps to engage youth directly in storm response efforts.

SECTION 4: DISCUSSION OF REGIONAL THEMES

Regional differences were apparent throughout the coast. These differences are important as they reflect local culture and capacity and should be taken into consideration in storm response and preparedness planning. At the same time, comments in every conversation stressed that regional approaches to problem-solving are critical for affordable and implementable preparedness and response efforts.

The role of geography and culture in regional storm response

The geography of a region is the backdrop of people's interactions with storms. The impact of storms may vary, whether a region is dotted with islands (like Portland/Casco Bay Islands or Mount Desert Island/Cranberry Isles/Trenton) or dominated by peninsulas (like Mid-coast and eastern Hancock County). Regarding islands, participants explained that the proportional exposure to storms is far greater than on the mainland because shorelines surround entire towns, while the capacity to respond is much lower because of smaller populations and remoteness. In peninsula-dominated geographies, residents and businesses expressed concern about isolation due to flooded access roads, which tend to be low-lying along narrow shorelines that are especially vulnerable to washing out in waves and storm surges, rendering emergency response more difficult.

Cultural approaches and local heroes

One theme that was strongly echoed in all geographies was the appreciation of local heroes, the people who sand-bagged the eroding banks, who back-hoed the boulders off road ways, and who cleaned up the shoreline debris, enabling neighbors to get back to work.

Culturally speaking, participants reflected on the nature of Maine people, capable of facing harsh conditions and fiercely loyal to their communities. People felt grateful for their neighbors. Examples of neighbors helping neighbors were widely appreciated, and mutual aid was something that residents wanted to contribute to, but weren't always sure how. There was also the acknowledgement that some people are not accustomed to asking for help, but deserve to be supported nonetheless.

There was often a desire to develop more robust communications networks to better connect with and support one another in future storms. People wanted to learn from each other, be able to easily share information, and build relationships at the regional level. People expressed wanting space (in person, online, on phones and devices) to connect, to hear from each other, to learn how the next town over is shoring up the docks and roads and local infrastructure.

> "This is cultural, you want to unify with neighbors."

Strengthening regional planning and problem solving

There was widespread support among participants statewide for a regional approach to storm response and preparedness. The importance of regional collaboration, resource sharing, and problem solving were major themes. Participants reflected that each community making individual funding applications or conducting individual infrastructure inventories can lead to unnecessary duplication of effort and competition for limited grant funding. Similarly, decisions made in one communitycan impact (or support) what happens in neighboring communities. Participants were grateful to learn more about actions underway across municipal borders, and wanted more. Collaboration was emphasized as effective for all levels of action, from response to preparedness to long-term planning.

Some additional examples highlighted include:

- Communities felt they need to work together to maximize impact, including, for example, sharing resources like drone technology and collaborating on applications to larger funding opportunities.
- Some participants shared the need for regional education for FEMA officials and site visit staff regarding local knowledge of working waterfronts, which is critical for understanding real needs on the ground (for example, island-specific situations).
- Creative ideas for regional responses were shared, such as: regions should invest in amphibious vehicles that can be used peninsula-wide for emergency rescues.

> "We need a long-term retreat plan for the region. What are we going to be doing in 30 years?"

Reflecting on regional differences

Section 3 (Discussion of Statewide Themes) provides context for the 17 topic areas most commonly raised in regional conversations (with the relative weight of each topic statewide presented in a "word box" image). Below, the statewide topics are further broken down to the regional level, with "word bubbles" (rather than boxes) presented for each of the four regions covered in this series (Southern Maine and Portland, Mic-coast, Hancock County, and Washington County).

A quick look at the four word bubbles demonstrates that **the topics that were top of mind in each region had some important nuances** which we will explore in more detail below.

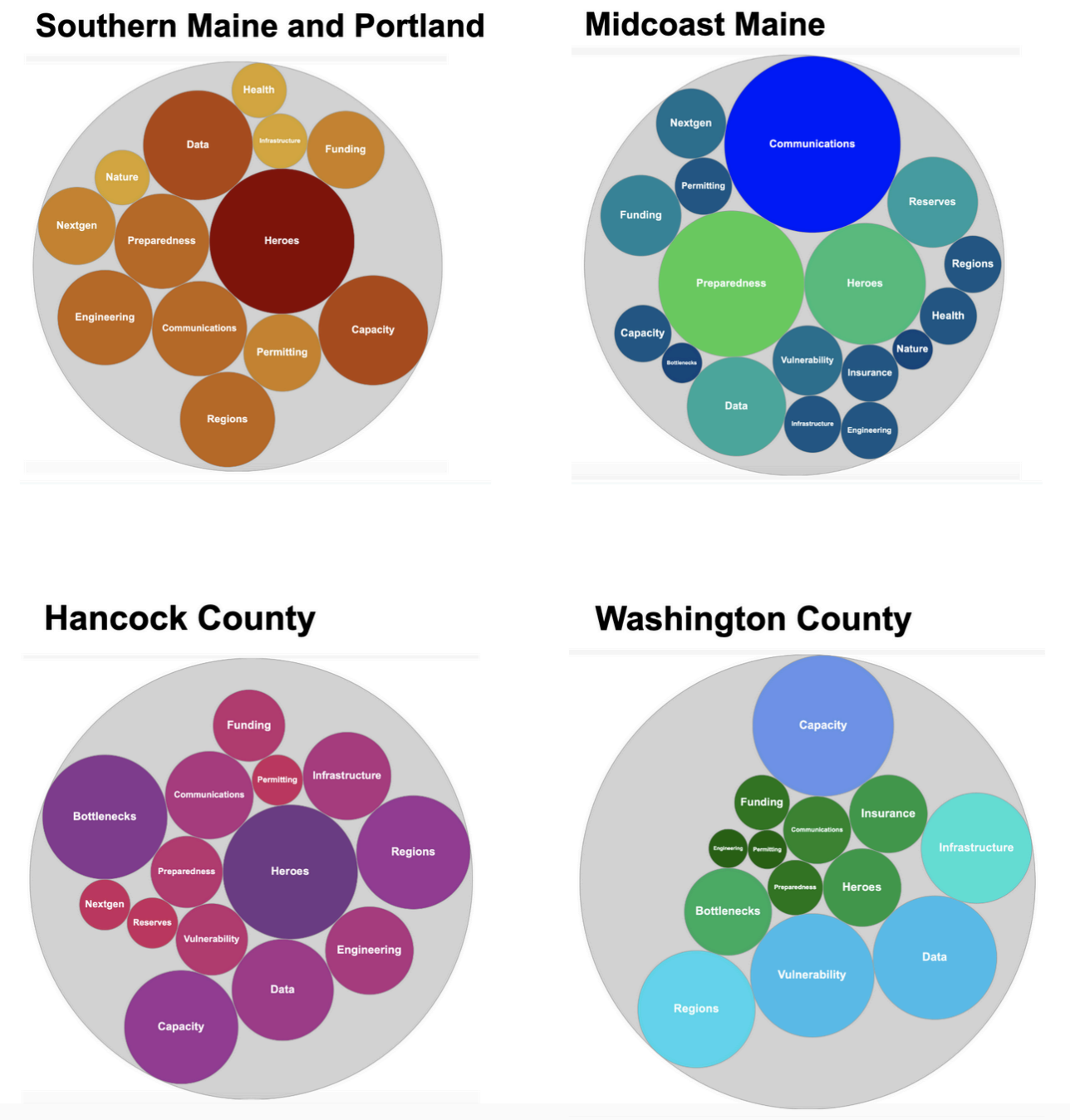

Figure 5: These word bubbles, initially created for the 2025 Maine Fishermen's Forum, present an at-a-glance summary of what was most talked about in each region. The bigger the bubble, the more the theme was covered. (Find a higher resolution version of these graphics on the series website: [Storm Response and Preparedness in Working Waterfront Communities])

Some additional themes heard from participants in each of the four regions include:

Southern Maine and Portland

Lead topics discussed in this region (from word bubbles):

1. Heroes
2. Data, Capacity
3. Preparedness, Communication, Regions, Engineering

A few key takeaways from this region

- Islands have heightened needs (capacity, sources of support, grant writing, fiscal sponsorship, securing match, communications, etc.) and heightened impacts (shoreline impacts proportional to town size, number of shoreline roads etc.) compared to mainland communities.
- Communities in this region need emergency transportation plans during natural disasters, if pier/ferry/barge landing infrastructure is damaged or inaccessible (which happened during these winter storms).
- The region needs help working with engineers (identifying who can help, what engineering skills/knowledge are needed, systems for communication and coordination, funding for engineering consultants at research, planning and implementation stages, sharing out experiences, etc.)
- Colleges and universities in the region can be put to work to help identify solutions.
- Communities that have not yet done so can simplify local permitting processes. The Kittery Conservation Commission is considering recommending actions to the planning board that will streamline the process and make dealing with storms simpler in the future.

Relevant quotes from participants in this region

> "We should think about the idea of neighborhood networks and mutual aid - how can we better help one another?"

> "We need education that addresses growing interest and curiosity in "storm tourism" during major storm events (how to safely view storms without getting in the way of emergency response)."

> "Rapid action funds to purchase and protect working waterfronts are essential to protect damaged properties that are sold; this is also an opportunity to increase working waterfronts by acquiring damaged non-working properties and converting them to working waterfronts."

Midcoast Maine

Lead topics discussed in this region (from word bubbles):

1. Communications
2. Preparedness, Heroes
3. Data, Reserves, Funding

A few key takeaways from this region

- In Mid-coast Maine, the storms demonstrated that one-on-one interactions were necessary to check on people during and immediately after storms. Storm-driven isolation was a top concern.
- Support is needed for increased general preparedness (e.g. a plan for housing displaced people), better communications systems, making community emergency and evacuation plans available to all, and increasing clarity on the role of (and how to work with) various state agencies, including Department of Environmental Protection, Department of Transportation, and general assistance through Department of Health and Human Services.
- There is interest and action in this region to engage with students and to provide education about how to prepare and implement emergency plans.
- Communities need to establish general assistance funds at town level, remove barriers of access to emergency funds, and build flexibility to divert funds to storm response when needed.
- Participants stated there is a need for policy level change on insurance, that we need a "state mandate" to ensure insurance covers storm/flood damage on waterfront infrastructure.
- Similarly, participants stressed the need for permitting processes that are faster, streamlined and more efficient.
- This region had good examples of working waterfront and public access inventories underway.

Relevant quotes from participants in this region

"People are ready to help but are not sure how. For example, local conservation organizations and land trust groups train volunteers in chainsaw use, they can help with clean up; or summer people can make their generators available in a winter emergency."

"We need to support those who do not ask for help and people who experience social isolation."

"It would be great to support a 'storm corps' to engage youth in storm response."

Hancock County

Lead topics discussed in this region (from word bubbles):

1. Heroes, Bottlenecks
2. Regions, Capacity
3. Data, Communications, Infrastructure, Engineering

A few key takeaways from this region

- Small towns in this region struggle with limited resources and staff or volunteers to secure grants and funding for long-term resilience efforts. Many challenges exist around capacity building, though some efforts are underway through the Hancock County Planning Commission.
- Accessing technical tools has been key here - towns are using drones, modeling, and support from UMaine, to provide critical insights for vulnerability assessments and resilience planning.
- Local preparedness planning is needed around how to move people, gear, equipment, and supplies when roadways are disrupted; in an island setting, there are not always other ways to get from Point A to Point B.
- Regional collaboration and resource sharing was a major theme in this region. Towns need to work together to maximize impact, including sharing resources like drone technology and collaborating on applying to larger funding opportunities.
- Communities are often well aware of where their region's physical vulnerabilities are located, but doing a vulnerability assessment helps confirm this and provides data and justification for funding proposals.
- Participants shared they are impressed by the incredible collaborative work already happening in this region on storm response and preparedness, especially by Blue Hill Peninsula Tomorrow, the Schoodic League of Towns, and among many partners on Mount Desert Island, In rural towns, people's power matters. These small towns thrive on strong community connections and shared concerns, making grassroots efforts and local organizing a major asset.

Relevant quotes from participants in this region

> "When local businesses lose access and infrastructure in the storms, it results in increased pressure on the towns' public wharves."

> "There is a need for several regional inventories to help with planning, such as: places that get cut off from flooding and isolated from possibility of emergency help; culvert locations, sizes, and status; vulnerability of sewage and water systems."

"Changes happening in real time at the Federal government level will soon start affecting access to funds for local municipalities."

"Sea level rise maps and projections that do not take into account wave and wind energy may be insufficient for predicting a lot of storm-related damage; there is a need for more dynamic models to be made available to the public."

"There is significant movement happening on most of the issues raised today at the state level through the Governor's Infrastructure Rebuilding and Resilience Commission."

Washington County

Lead topics discussed in this region (from word bubbles):

1. Capacity
2. Vulnerability, Data
3. Regions, Infrastructure, Bottlenecks

A few key takeaways from this region

- Insurance is a challenge in this region. Not many businesses had flood insurance, but even then, most insurances exclude any infrastructure over the water.
- The tide gauge in Machias is helping this region prepare for flood events and understand impacts of storms, which enables data driven flood modeling and decision-making for resilience planning.
- Sunrise County Economic Council (SCEC) has many services that support this region and is widely viewed as critical for grant writing, community planning, hazard mitigation planning, mapping support, and resilience-focused tools. The working waterfront inventory map (including damage reports) created by SCEC would be useful to scale out to the whole coast to help with planning and prioritizing infrastructure protection needs.
- Local efforts to secure access to mudflats are important as they are subject to storm damage leading to loss of access.
- Capacity for working with engineers is needed. Engineering design, construction, permitting, etc. require knowledge of these systems and a lot of time (for paperwork, administration, outreach to FEMA and DEP).
- Participants felt that lengthy and rigid permitting processes hinder the timely implementation of resilience projects and adaptation solutions.
- Participants shared that private pier owners have less access to support than municipal piers.

Relevant quotes from participants in this region

> "Washington County has lost out on emergency response (FEMA) funds because of a lack of disaster assistance submissions."

> "Washington County has one of the highest rates of outages (measured by time without power) in the entire country. Need to focus on grid reliability before funding new electricity saving tools such as heat pumps."

> "Many properties in Lubec are losing significant amounts of shoreline due to erosion. To fix the erosion issues, you need 1) Money, and 2) People to do the work. There are not enough contractors to currently fix these erosion problems in this area."

SECTION 5: LOOKING FORWARD

Looking forward, we will continue to share the takeaways from these conversations with the Infrastructure Rebuilding and Resilience Commission, the Governor's Office of Policy Innovation and the Future, American Red Cross, elected officials, local officials, community partners and planning organizations, partners who contributed to the convenings, and others. The following ideas are presented as potential next step actions that were suggested at meetings and could be taken to continue the progress of this series.

Next Step Ideas

Resources and Communication

- Share and keep the resource document up to date. This document was created by the planning team to aggregate existing resources and include additional ones mentioned during the series.
- Develop or leverage an existing newsletter to sustain the exchange of ideas and knowledge about storm response and preparedness in coastal and working waterfront communities. Potentially run by the Working Waterfront Coalition.

Community Engagement and Regional Collaboration

- Organize regional meetings and conferences for working waterfront communities.
- Schedule follow-up engagements by circling back with participants in 6 months to a year.
- Schedule additional conversations in communities not covered by the original series.
- Create additional spaces for localized conversations, addressing the disconnect between statewide efforts and community-specific needs.
- Enhance the integration of statewide policy work with local feedback loops to streamline communication and action.

Capacity Building and Communication Infrastructure

- Strengthen the capacity of key partners such as the Working Waterfront Coalition, Regional Planning Organizations, municipalities, and other groups supporting communities.
- Support communication strategies that serve both municipal and private business interests.
- Explore the development of a multi-level communications app and/or cell phone notification system that supports:
    - Two-way communication for emergency response (e.g., real-time alerts for issues like flooding or access to medical help) and neighbor-neighbor communication.
    - Neighborhood-level support, akin to a modern, cell-phone-based version of VHF communications.
    - Integration of state information with localized networks to ensure comprehensive coverage.

Conclusion

Statewide efforts to support storm response and preparedness in Maine's working waterfronts and coastal communities are already underway, including: Maine Infrastructure Rebuilding and Resilience Commission, Maine Office of Community Affairs, Resilient Maine, the Storm Preparedness Bill (LD 1), the Working Waterfront Coalition, and the Community Resilience Partnership. To support these efforts, creating the space for community and regional conversations remains crucial. This series has

demonstrated that providing a dedicated space for dialogue builds connections and strengthens action plans. As we look forward, it is essential to continue nurturing these communication channels and explore new ideas that respond to both immediate community needs and long-term strategic goals, and to expand these efforts to regions that this project did not have the capacity to reach.