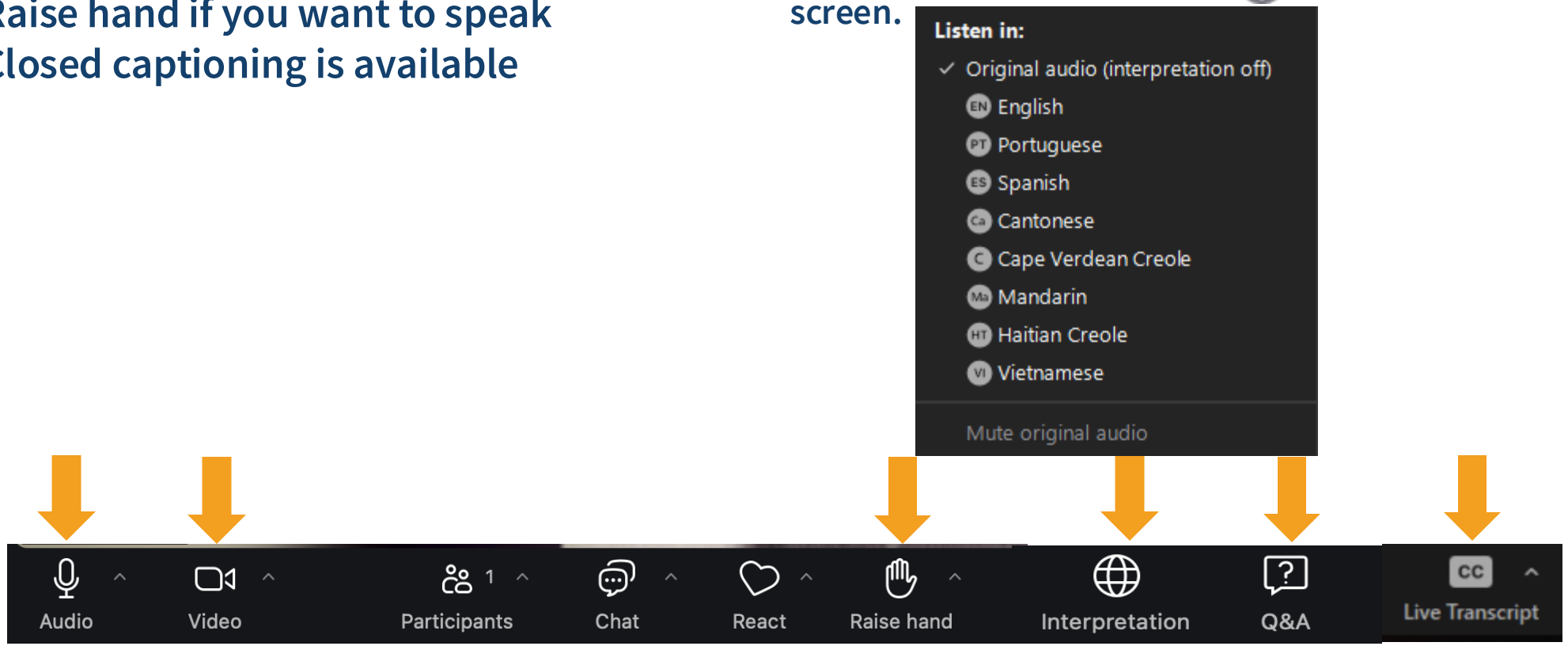
Welcome! We'll get started in a few moments...

ZOOM LOGISTICS

- Stay muted.
- Use video if you like.
- Use Q&A function ask questions.
- Raise hand if you want to speak
- Closed captioning is available

INTERPRETATION

We will turn on interpretation channels in a moment. At that point, please select your preferred language by clicking on the interpretation icon on at the bottom of your screen.



ResilientCoasts

Managing impacts of coastal hazards across the Commonwealth

CZM

ResilientCoasts

May 21, 2025
Public Information Session

AGENDA

- **WELCOME & UPDATES**

- **OVERVIEW OF DRAFT PLAN**
  - Recap of planning process
  - Key themes for coastal resilience
  - Draft content and purpose

- **COMMENT PERIOD AND NEXT STEPS**
  - Draft Plan – Review and Comment Period
  - Timeline for finalizing plan
  - Q&A

GUIDING PRINCIPLES FOR TODAY'S DISCUSSION

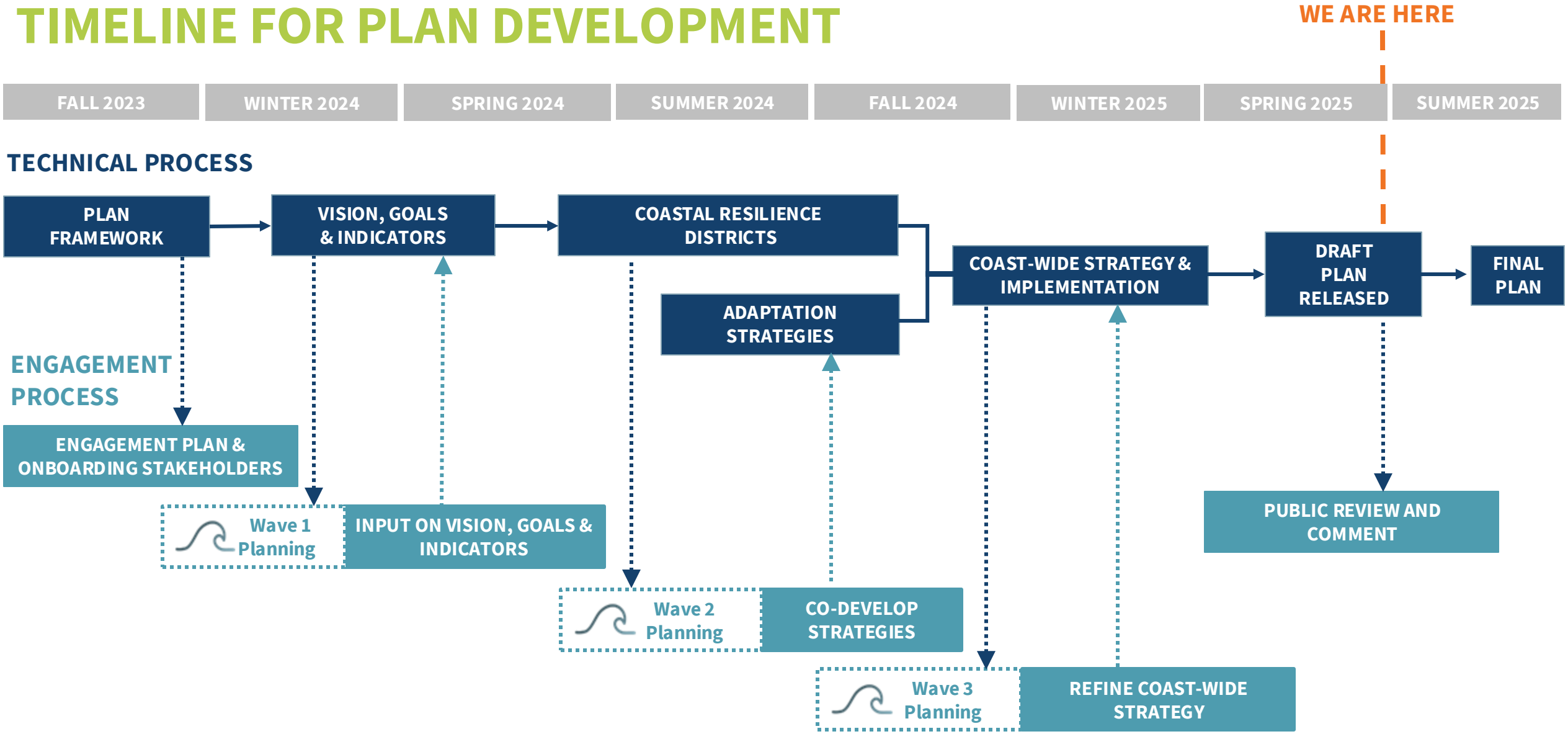
- **Be present**
- **Assume good intentions and be mindful of impact**
- **Be open to another perspective**
- **Make space/take space**
- **No technical expertise needed to participate. No question is bad or silly to ask.**

ASK QUESTIONS IN Q&A AT ANY TIME (WE'LL RESPOND AS WE ARE ABLE)!

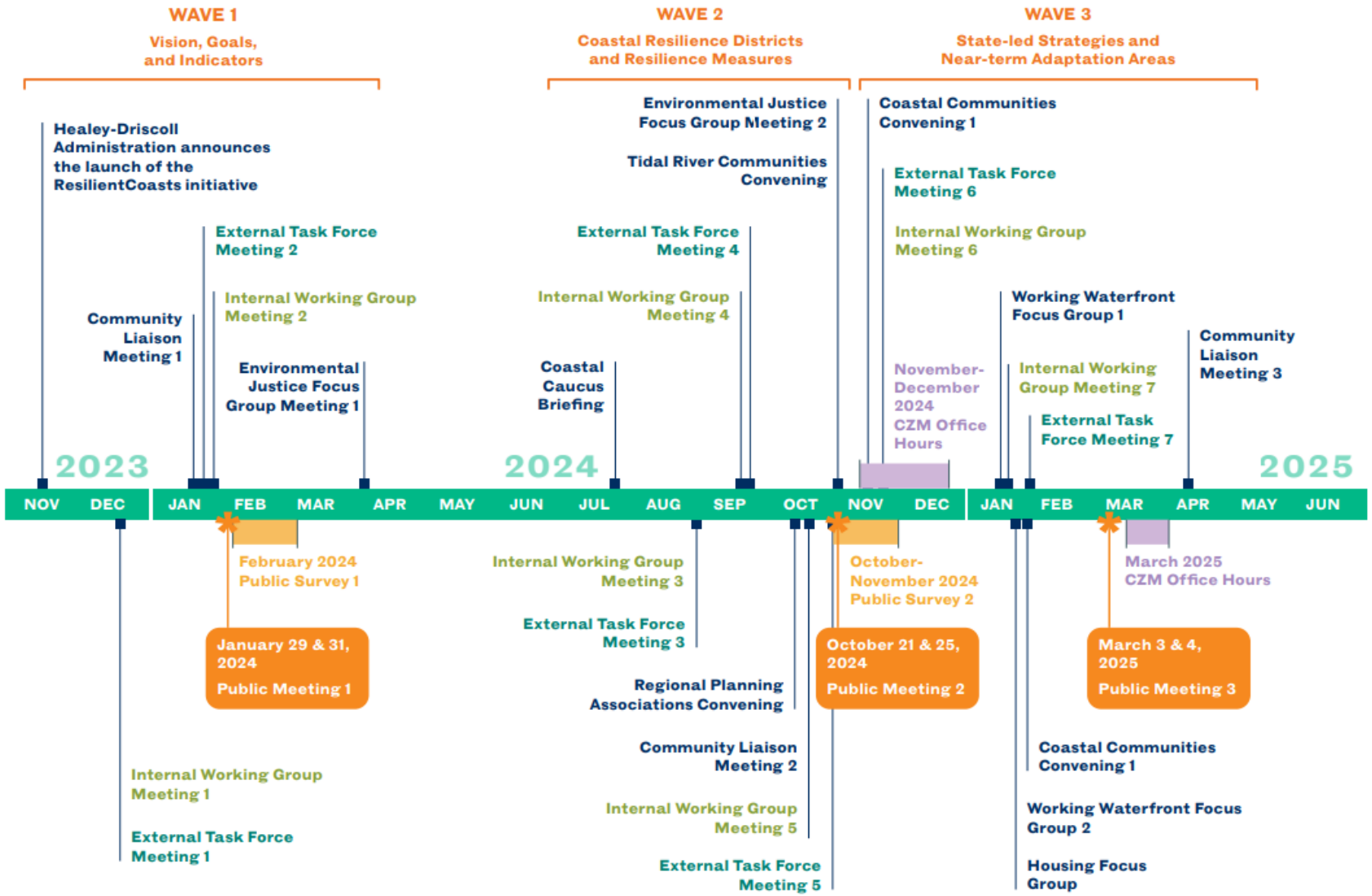
RESILIENTCOASTS PLAN OVERVIEW

- **Goal:** Develop a comprehensive statewide strategy for coastal resilience to guide state & local policy & and management actions on the coast
- **Responsible for advancing:** EEA - Executive Office of Energy & Environmental Affairs & CZM - Office of Coastal Zone Management
- **Process:**
  - ***Describe a vision/goals*** & metrics for a resilient coast
  - ***Map geographic zones*** of climate vulnerability - “coastal resilience districts” (long term) and "community risk hot spots" (near-term)
  - ***Evaluate current & new strategies*** and how they could be applied at different scales – local, regional/district, coast-wide
  - ***Develop recommendations*** to guide resilience action in vulnerable areas at state & local levels

TIMELINE FOR PLAN DEVELOPMENT



ENGAGEMENT PROCESS



- More than **65 hours** of stakeholder engagement
- **6 public meetings** across **3 waves** of engagement
- **30** focus groups, community consultations, and external task force meetings
- **Over 190 survey respondents** across 2 online public surveys

KEY THEMES FOR COASTAL RESILIENCE

- **Evolving challenges will require new approaches.**
  Past approaches to coastal management relied on stable rates of sea level rise and reliable patterns of tides, storms, and flooding. Climate change requires a new approach.

- **Proactive planning and investment will help reduce costs and damage.**
  Avoiding risk is the most cost-effective approach. To reduce existing risks, we must plan for long-term solutions that account for future conditions and consider the benefit-cost and design life of various resilience measures and other trade-offs.

- **Managing the coast requires collective action and planning for a range of scenarios and time horizons.**
  There is no one-size-fits-all approach to resilience. Different stakeholders will have different needs and risk tolerances requiring interventions at a variety of scales and time horizons

- **It will not be possible to completely eliminate all risks, but they can be significantly reduced.**

  Shifting toward long-term resilience requires making smart, and often hard, decisions to ensure a more sustainable and prosperous community and coast for tomorrow and future generations.

WHAT'S IN THE PLAN

LAYERS OF INFORMATION AND GUIDANCE FOR LOCAL AND REGIONAL EFFORTS

Coastal Resilience Districts

To inform regional collaboration.

Near-term Adaptation Areas

To inform where to prioritize taking action.

Coastal Typologies and Coastal Resilience Measures

To inform how to take action to increase coastal resilience.

WHAT'S IN THE PLAN

IMPLEMENTATION AND MONITORING SUCCESS

- **Goals, Indicators, and Metrics**

6 Goals **35** Indicators **24** Metrics

- **State-led Strategies for Coastal Resilience**

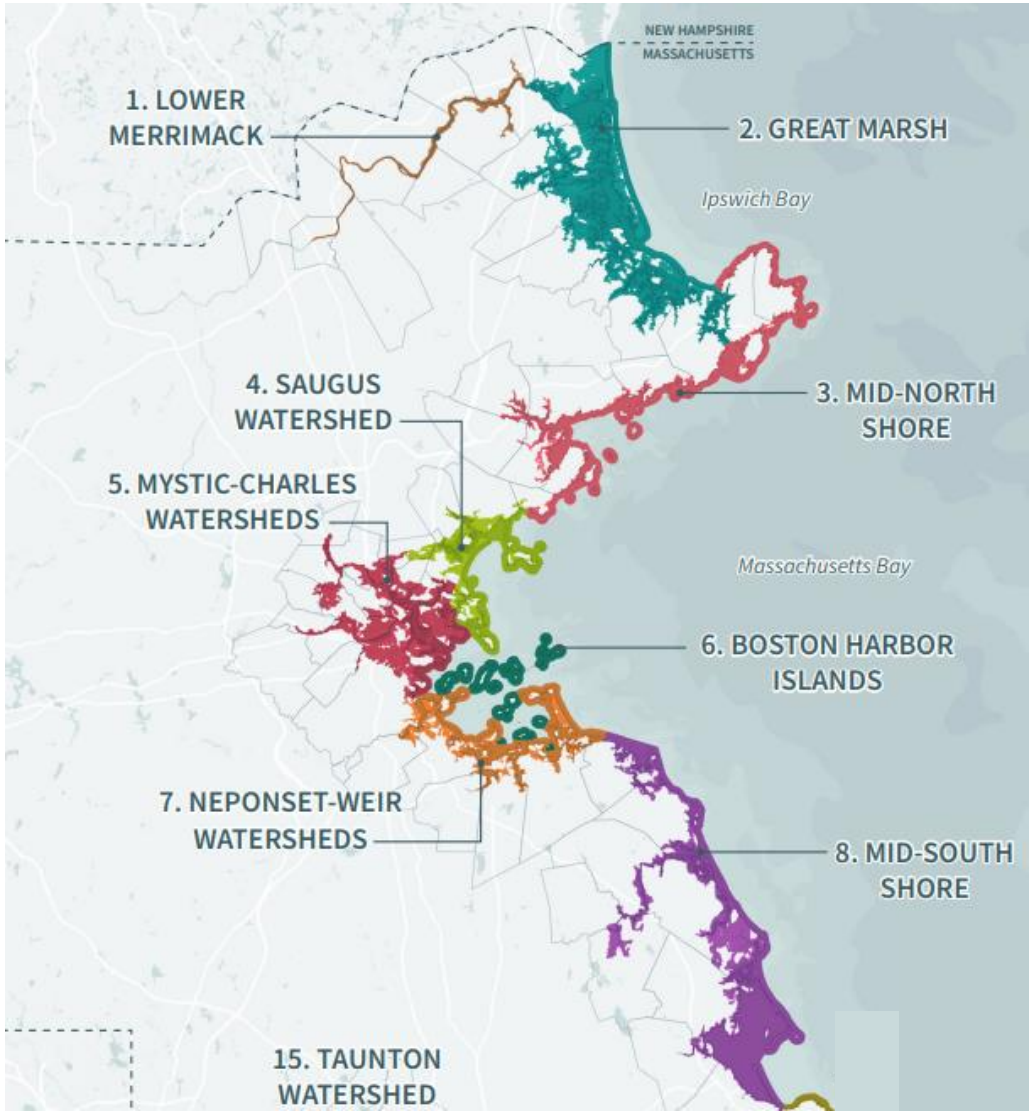
10 Proposed State Strategies

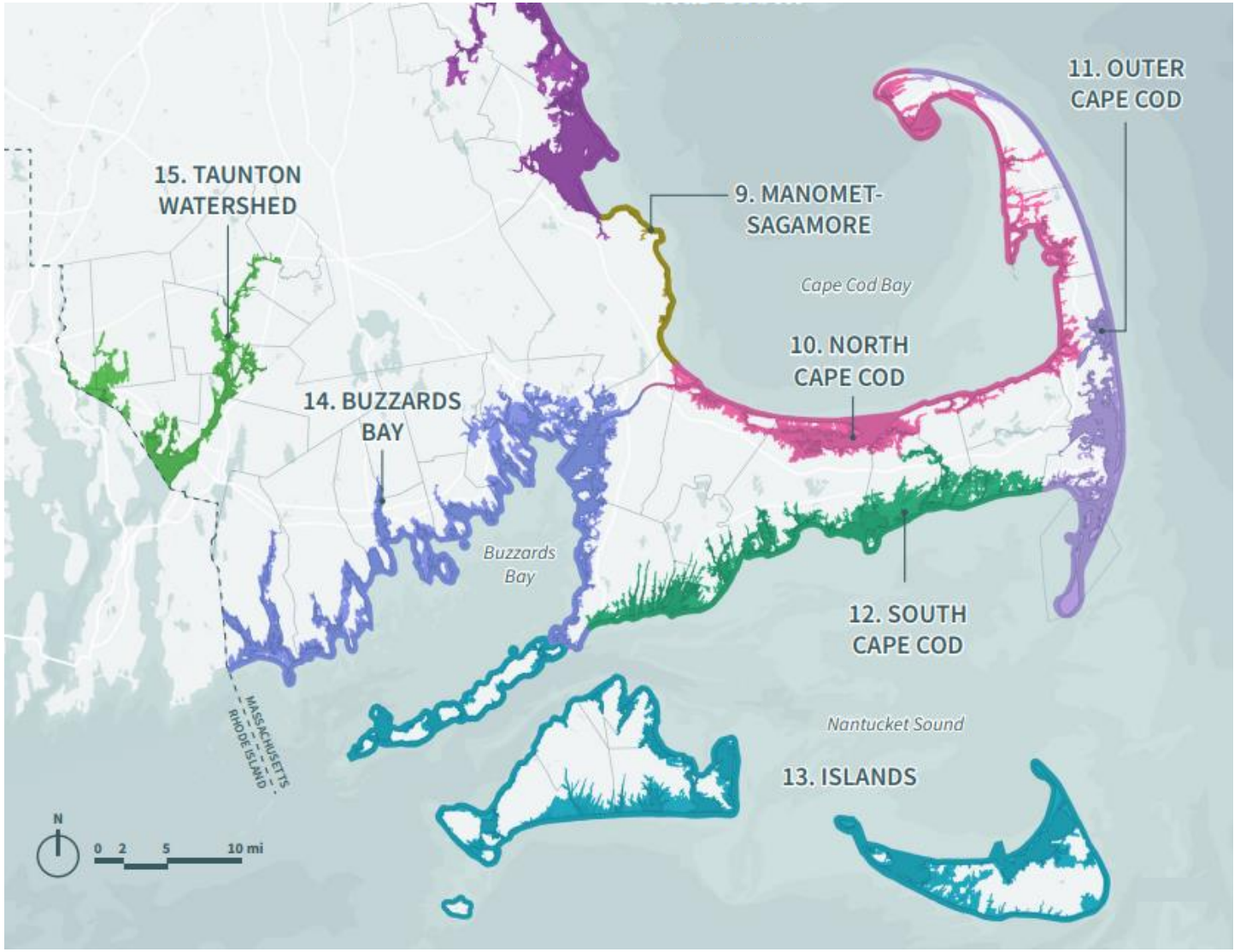
70 Proposed Near, Medium, and Long-term Actions

To be implemented across state government by various agencies/secretariats

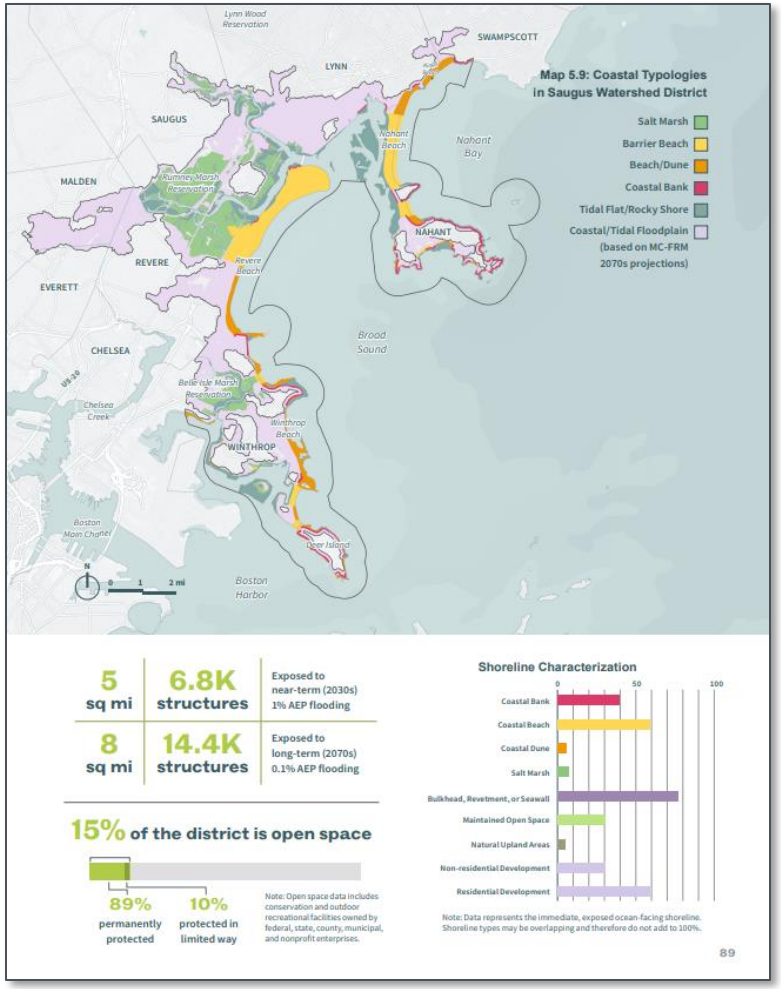
Coastal Resilience Districts

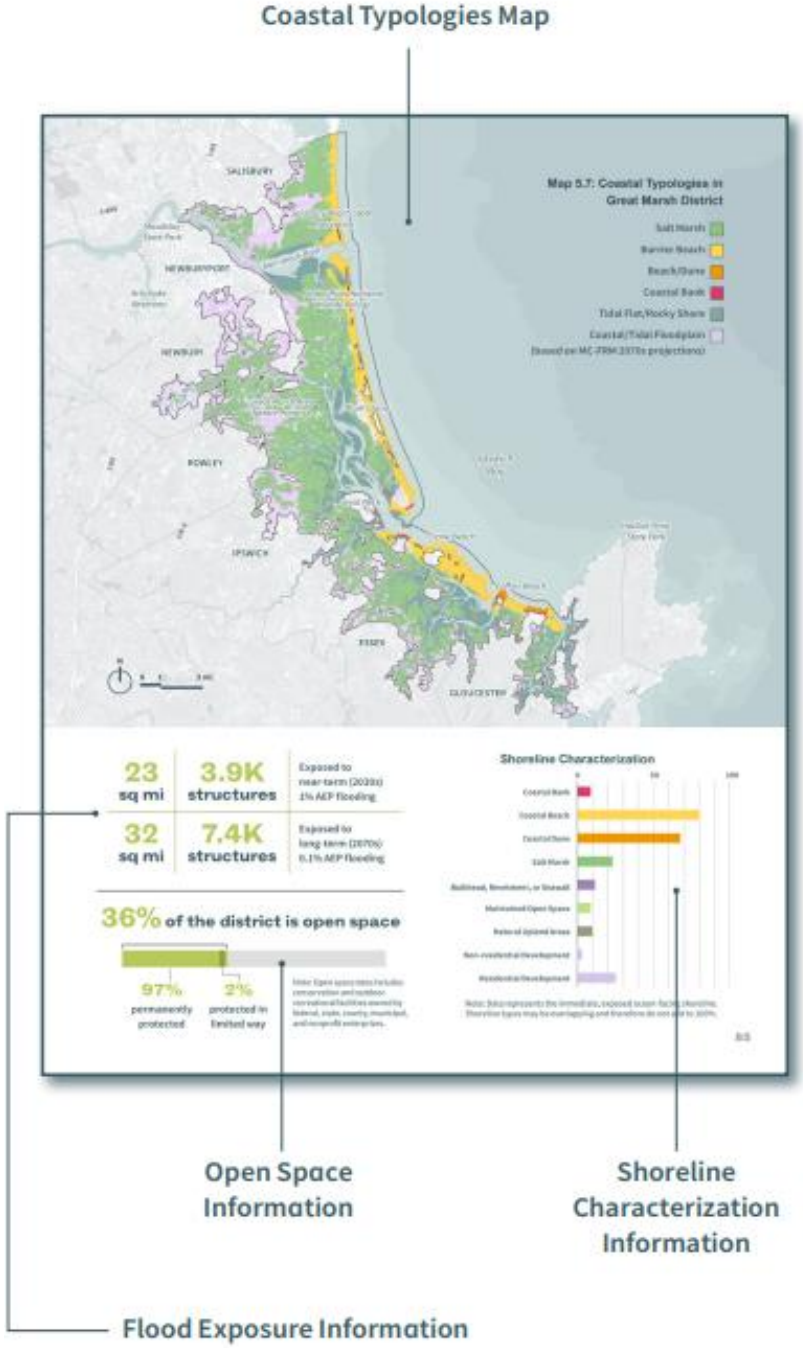
COASTAL RESILIENCE DISTRICTS





DISTRICT SUMMARIES





Near-Term Adaptation Areas

NEAR-TERM ADAPTATION AREAS

Maps highlighting areas with high near-term risks to people, infrastructure, and economic resources

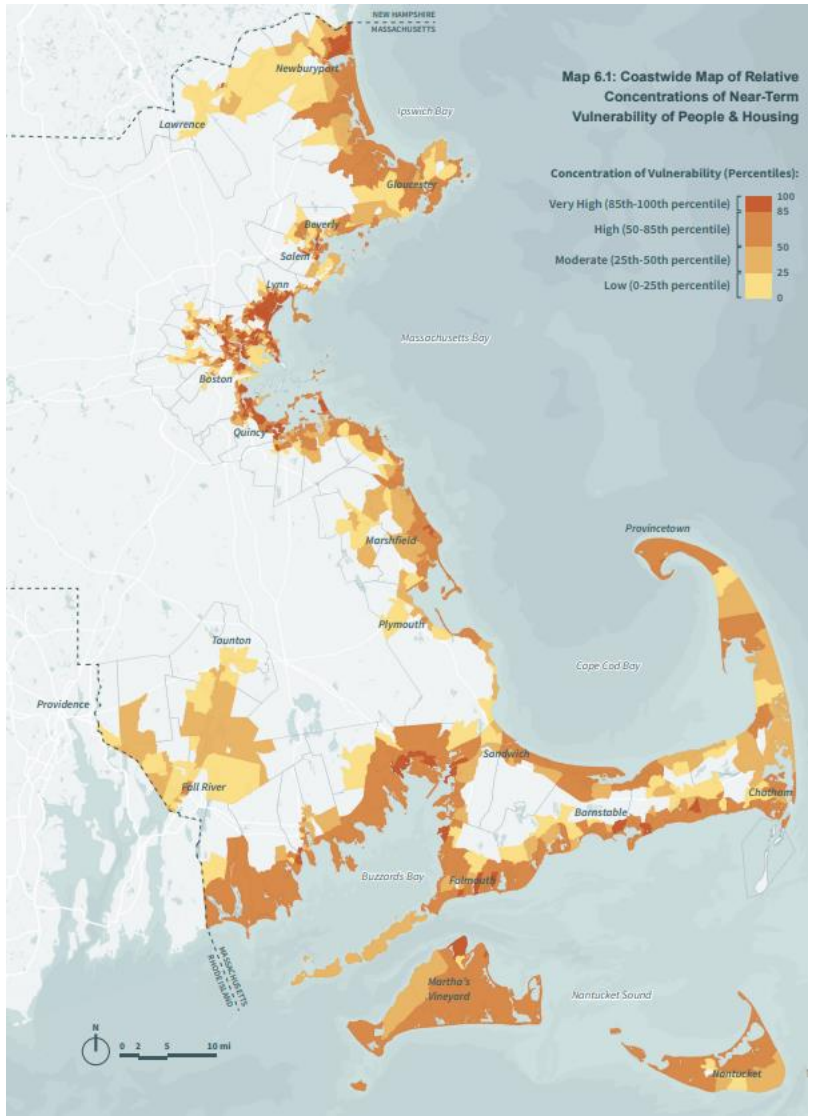
PEOPLE & HOUSING

PUBLIC FACILITIES & INFRASTRUCTURE

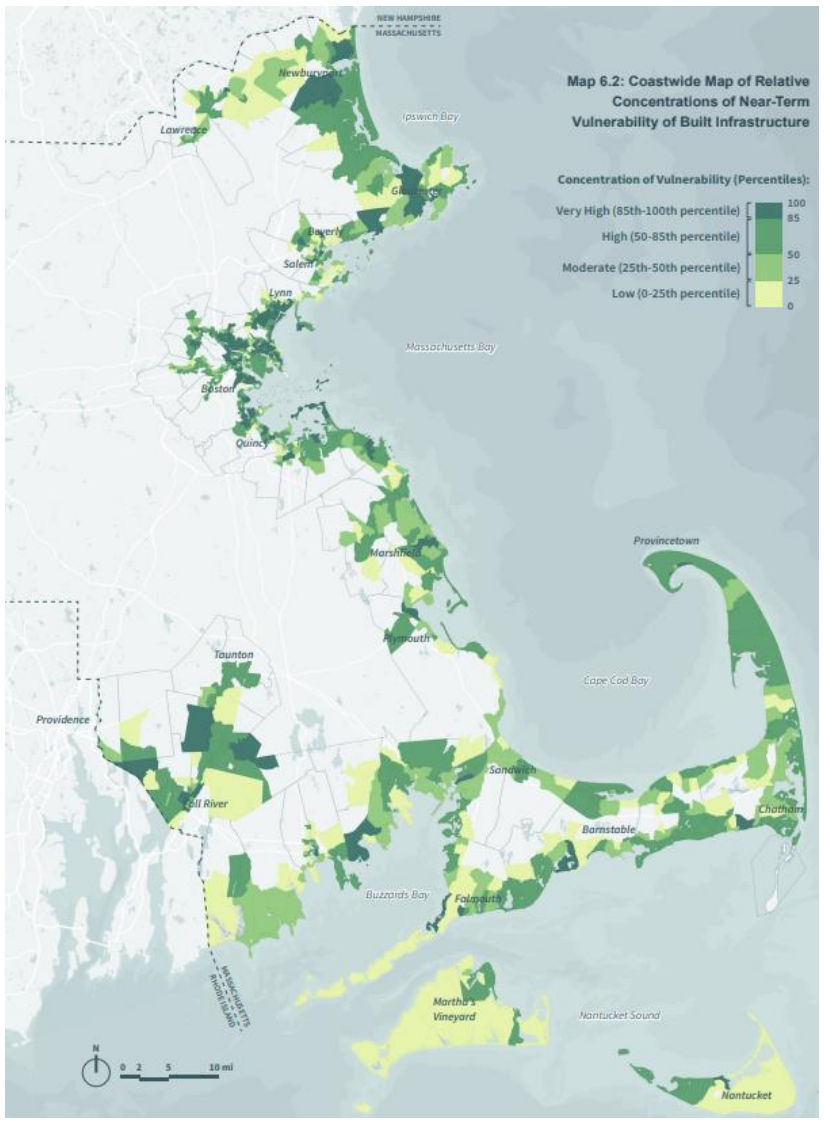
ECONOMY

SECTOR-BASED NEAR-TERM ADAPTATION AREAS

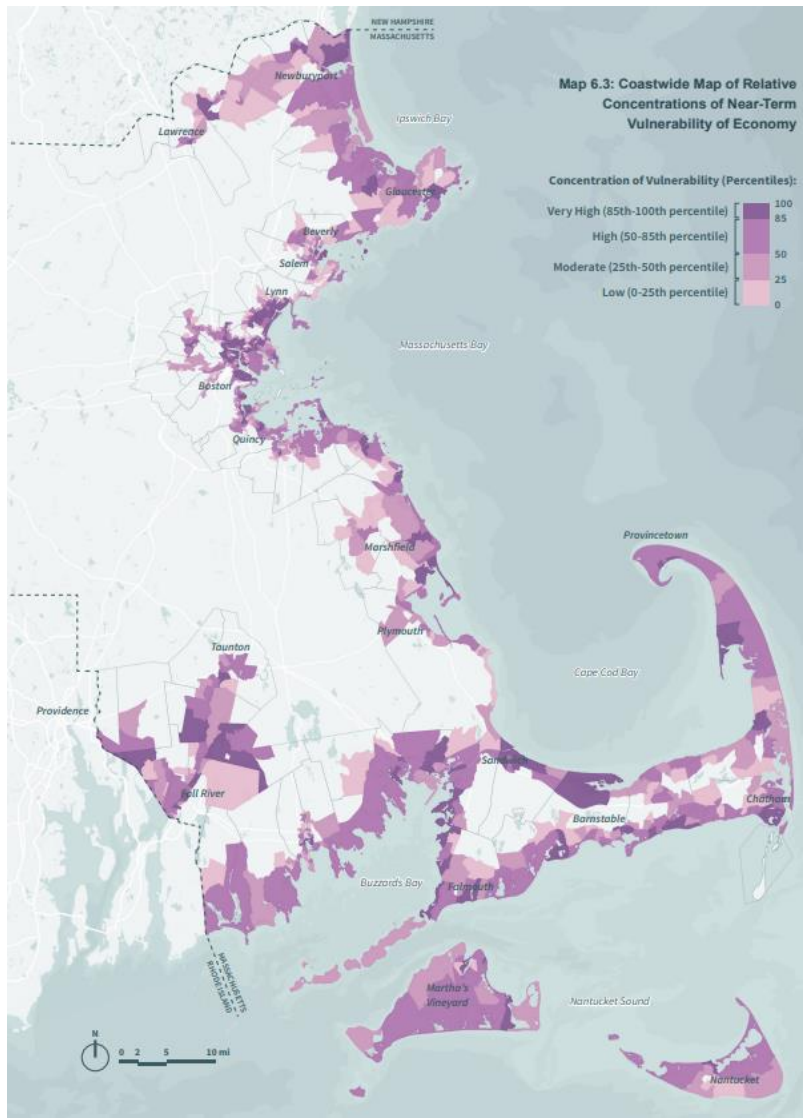
PEOPLE & HOUSING



BUILT INFRASTRUCTURE



ECONOMY

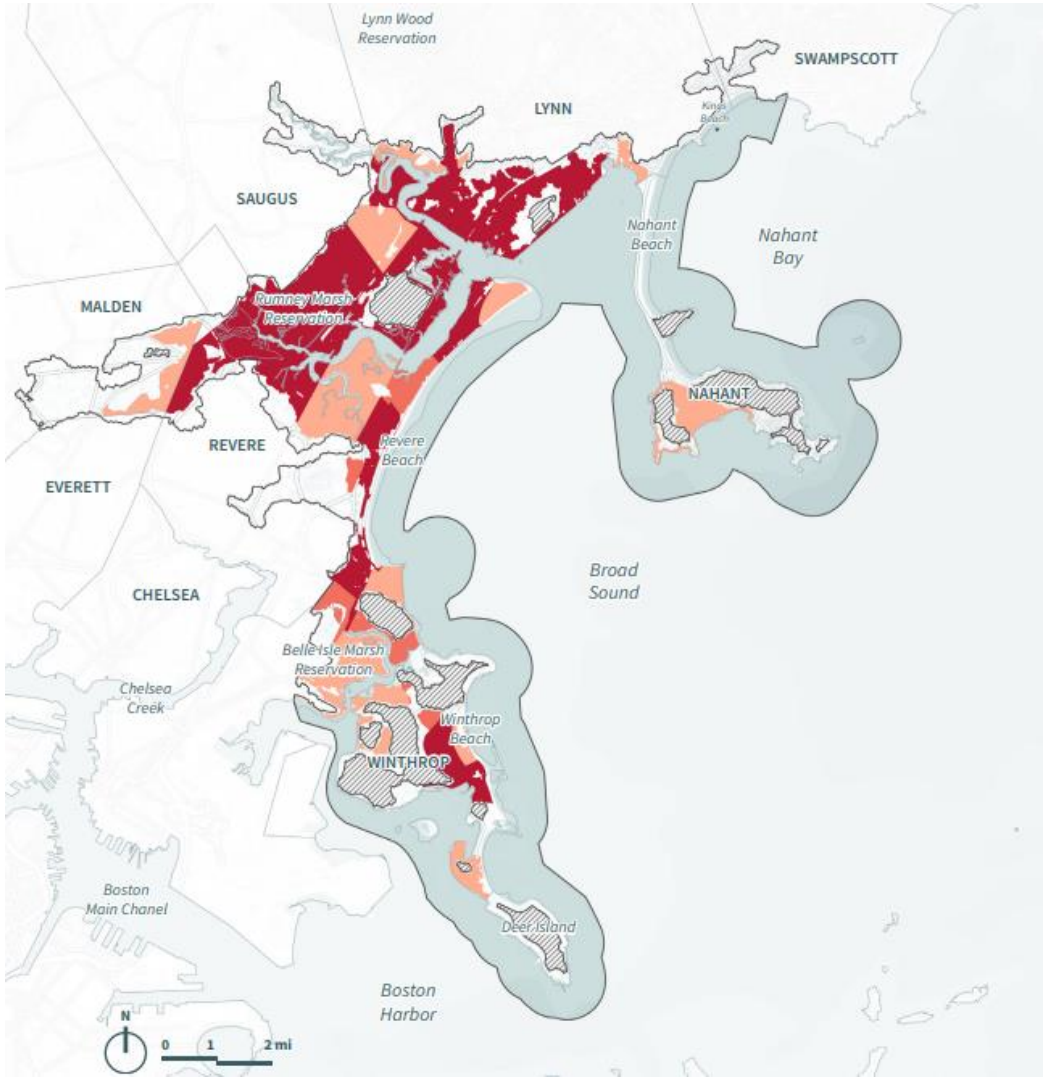


NEAR-TERM CROSS-SECTOR VULNERABILITY

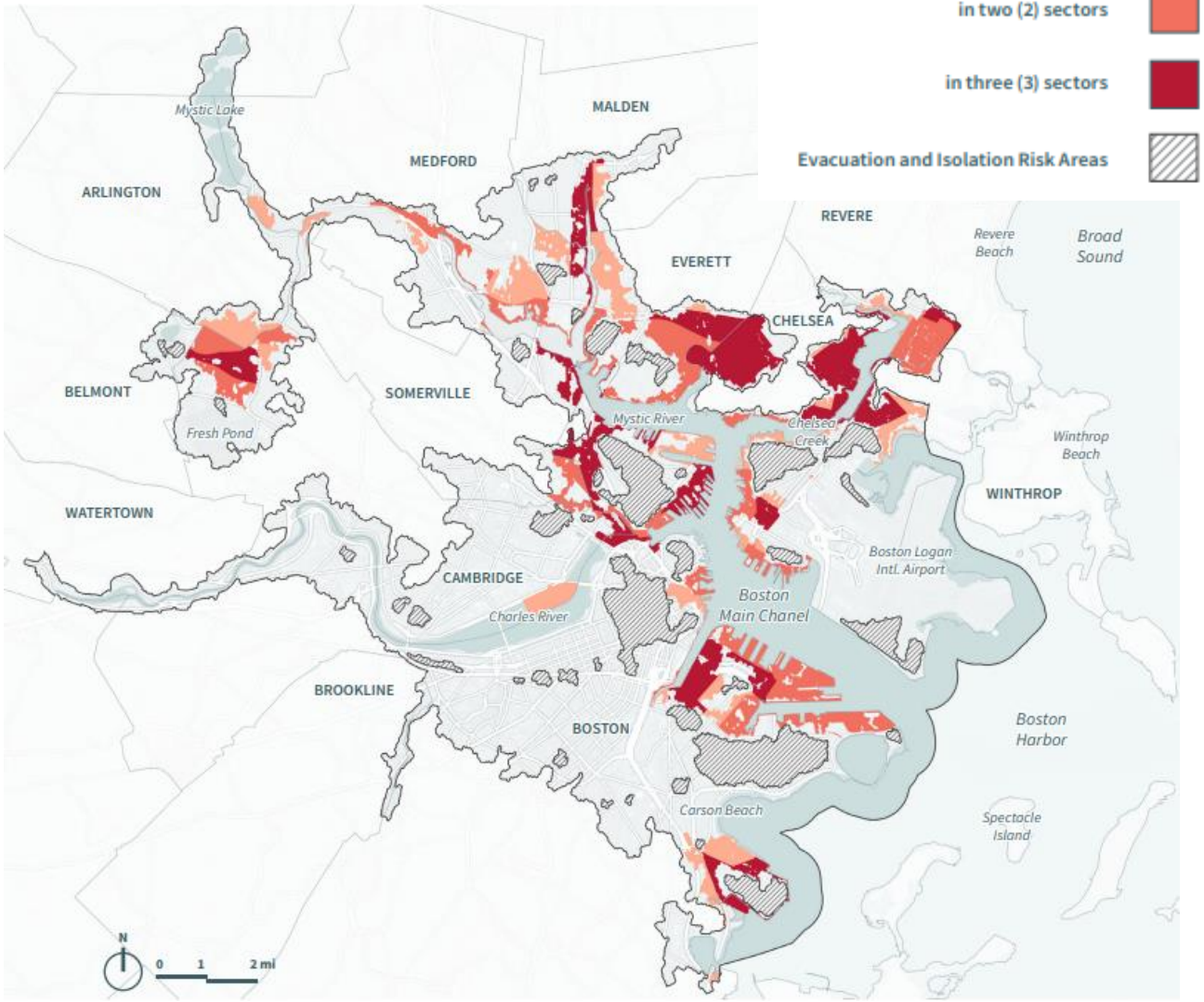
Very High Concentration of Vulnerability:

- in one (1) sector
- in two (2) sectors
- in three (3) sectors
- Evacuation and Isolation Risk Areas

SAUGUS WATERSHED CRD



MYSTIC-CHARLES WATERSHEDS CRD



Place-based Guidance on Resilience Measures

KEY COASTAL TYPOLOGIES ON THE MA COAST

COASTAL FLOODPLAINS

BARRIER BEACHES

SALT MARSHES

COASTAL BANKS

TIDAL RIVER FLOODPLAINS

BEACHES/DUNES

PORTS & WORKING WATERFRONTS

TYPES OF STRATEGIES FOR COASTAL RESILIENCE

Plan provides guidance for communities on the most suitable strategies for different coastal typologies

AVOID

Avoid coastal hazard risk by proactively intervening in an area to prevent putting people, homes, critical facilities, and infrastructure at risk. This may include measures like zoning regulations and criteria for infrastructure siting

RESTORE

Restore and enhance the functioning of natural systems to protect natural resource areas from coastal hazards and leverage them as natural protection for people and property. This may include measures like wetland restoration, bank stabilization, and removal or relocation from floodplains.

ACCOMMODATE

Accommodate coastal hazards like flooding by using adaptive measures designed to allow continued use of flood-prone areas and improving the ability of people, communities, and infrastructure to experience occasional flooding or limit damage from flooding.

PROTECT

Protect people and assets from risk by keeping flood waters away from homes, communities, critical facilities and infrastructure.

RETREAT

Reduce or eliminate exposure to coastal hazards by enabling relocation of people, property, and critical infrastructure, and sites of historic or cultural significance out of areas vulnerable to recurrent hazards.

SUITABILITY Poor Limited High

TYPOLOGY AND RESILIENCE MEASURE SUMMARIES

SALT MARSHES

Salt marshes are coastal wetlands that extend landward up to the highest high tide line, that is, the highest spring tide of the year. They are characterized by salt tolerant plants and may contain tidal creeks, ditches, and pools. Salt marshes range from broad meadows where the topography is relatively flat to narrow patchy fringes along the shoreline. Brackish wetlands are generally found in areas influenced both by marine tidal waters and fresh waters, like at the upper reaches of estuaries and tidal rivers or along the coastal shoreline in areas with significant fresh groundwater seeps or stormwater runoff. In addition, restrictions to tidal flow, such as berms or roadway culverts, can restrict the extent of the tide and lead to the formation of a brackish wetland that would otherwise be salt marsh.

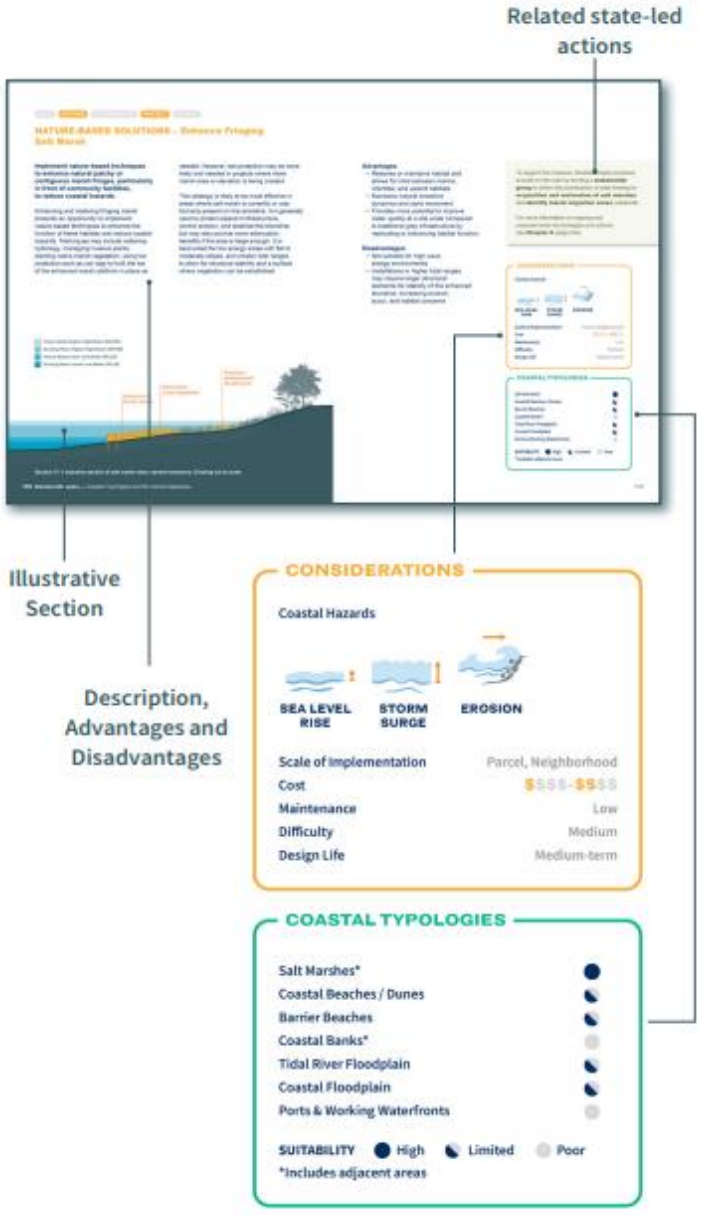
Salt marshes are among the most productive ecosystems on earth and serve as vital habitat for various life stages of fish, shellfish, and other wildlife. A buffer between land and sea, they provide an important water quality function by intercepting and retaining nutrient pollution, protecting habitat quality for seagrasses and associated wildlife. The platform of grasses and soil within salt marshes also decrease wave energy, capture and store carbon, provide flood storage, and protect life and property from coastal hazards.

Sea level rise threatens to upset the delicate balance that allows salt marshes to occupy the space between land and sea. Long term studies have observed losses and other ecological changes within salt marshes as a result of sea level rise. As sea level increases, a greater proportion of the marsh may receive more frequent tidal flow (inundation) and for longer periods of time, including areas that are typically flooded only at the highest tides.

Not all salt marshes in Massachusetts will be affected in the same way, or in the same timeframe. The distribution of many species that live within and on the marsh depend on the level and frequency of fresh and tidal water reaching the marsh platform, including plants key to the salt marsh ecosystem. In turn, salt marsh plants produce organic material and trap sediments brought in from the tides to build and maintain elevation of the marsh relative to sea level.

Salt marsh plants that are less tolerant to tidal inundation may shift landward towards the upland, while salt marsh plants that tolerate higher levels and longer periods of inundation may expand farther from the seaward edge of the marsh into the marsh platform. Areas that are more regularly flooded close to tidal creeks and the marsh-sea edge may begin to die back if water levels are greater than vegetation can handle. Salt marsh plants may also die back in areas where tidal waters do not effectively drain from the marsh surface. If sea level rises beyond the capacity of the salt marsh to maintain elevation, and tidal water on the platform is at a level and duration beyond what the plants have adapted to tolerate, the marsh will begin to break down and change to mudflat or open water. These conditions are expected to continue to deteriorate with increased sea level rise and inundation.

If suitable conditions exist, salt tolerant plants may begin to encroach landward into the upland and into other wetlands in a process called marsh migration. However, in many coastal areas the presence of development such



Coastal Typologies and Resilience Measures Suitability Matrix

List of Coastal Resilience Measures

		SALT MARSHES*	COASTAL BEACHES / DUNES	BARRIER BEACHES	COASTAL BANKS*	TIDAL RIVER FLOODPLAIN	COASTAL FLOODPLAIN	PORTS & WORKING WATERFRONTS
Zoning and Regulations	Land Use Management AVOID RETREAT	●	●	●	●	●	●	○
	Transfer of Development Rights AVOID RETREAT	●	●	●	●	●	●	○
New Building Standards	Build to Design Flood Elevation ACCOMMODATE	◔	◔	●	◔	●	◔	◔
Building Retrofits	Wet Floodproofing ACCOMMODATE	○	○	○	○	●	◔	◔
	Dry Floodproofing PROTECT	○	○	○	○	●	◔	◔
	Elevate on Piers or Pilings ACCOMMODATE	◔	◔	●	◔	●	◔	◔
Voluntary Acquisition	Relocate People and Housing RESTORE RETREAT	●	●	●	●	●	●	○
Road Infrastructure	Elevate and Right-Size Infrastructure ACCOMMODATE	◔	◔	◔	○	●	◔	◔
	Relocate or Reroute RESTORE RETREAT	●	●	◔	●	●	●	◔
Critical Public Infrastructure	Elevate ACCOMMODATE	◔	◔	◔	○	●	◔	●
	Relocate RESTORE RETREAT	●	●	◔	●	◔	◔	◔
	Harden / Floodproof PROTECT	○	○	○	○	●	◔	●
Land Protection	Protect Natural Resource Migration Pathways and Enhance Buffers RESTORE RETREAT	●	●	●	◔	●	◔	○
Nature-Based Solutions	Waterfront Parks and Open Spaces ACCOMMODATE RETREAT	◔	●	●	●	●	●	◔
	Beach and Dune Restoration RESTORE PROTECT	◔	●	●	◔	○	○	○
	Bank Stabilization RESTORE PROTECT	○	○	○	●	●	●	○
	Enhance Fringing Salt Marsh RESTORE PROTECT	●	◔	◔	○	◔	◔	○
	Cobble Berms RESTORE PROTECT	○	●	◔	●	◔	◔	○
	Other Restoration and Enhancement RESTORE RETREAT	●	◔	◔	◔	●	●	○
Hybrid Solutions	Floodwalls and Berms PROTECT	○	○	○	○	◔	●	●
Coastal Engineering Structures	Retrofit and Redesign Seawalls PROTECT	○	◔	○	◔	●	●	●
	Retrofit and Redesign Breakwaters PROTECT	○	◔	◔	◔	○	◔	●
	Retrofit and Redesign Revetments PROTECT	○	○	○	◔	◔	◔	●

SUITABILITY ● High ◔ Limited ○ Poor

*Includes adjacent areas

Proposed State-led Strategies and Actions

STATE-LED STRATEGIES FOR COASTAL RESILIENCE

1. Identify and invest in **district- and regional-scale projects and partnerships**, tailored where necessary to region-specific needs and circumstances.
2. Increase the resilience of **new and re-development** by integrating best available data on current and future coastal hazards.
3. Require **state investments** to be informed by future climate conditions and avoid increasing unnecessary physical and financial exposure to coastal hazards.
4. Acknowledge the fiscal realities of addressing coastal hazards by **prioritizing** resilience actions that have the highest impact and maximize long-term reduction of risk.
5. Support communities in identifying and **reducing physical and financial risks** to people, buildings and infrastructure and **educate** residents and property owners about risks.

STATE-LED STRATEGIES FOR COASTAL RESILIENCE

6. Build the **science and evidence base** for effective coastal resilience projects and techniques and facilitate use of best practices.
7. Invest in protection, restoration, enhancement, and/or management of **natural and cultural resources** and **public access** to the shoreline.
8. Invest in **emergency preparedness and response** based on current and future coastal hazards and ensure new and existing critical infrastructure can withstand coastal impacts to provide safe and reliable services to residents before, during, and/or after storms.
9. Support and incentivize **voluntary relocation** of people, infrastructure, and other assets in areas currently or projected to be subject to repetitive flooding, inundation, and/or erosion.
10. Secure a **thriving coastal economy** by facilitating and investing in the resilience of water-dependent industries, businesses, and recreational resources where appropriate.

STATE-LED STRATEGIES FOR COASTAL RESILIENCE

Need for strategy and ongoing work to support

STRATEGY 01

Identify and invest in district- and regional-scale projects and partnerships, tailored where necessary to region-specific needs and circumstances.

The scale of need coupled with limited resources necessitates prioritizing state investments in coastal resilience that are high-impact and cost-effective. District- or regional-scale projects are those that leverage the collective capacity and resources of neighborhoods and communities to address shared coastal vulnerabilities often across municipal boundaries. Designing, permitting, and constructing projects at this scale can stretch limited dollars further for greater impact and help avoid the redundancy and/or inconsistency that often results from a piecemeal approach along shared shorelines. Coastal Resilience Districts are one such scale for project implementation.

Massachusetts is already encouraging regional projects through existing climate resilience grant programs. A centralized "one stop" grant portal with a streamlined application process for climate, conservation, and biodiversity grants at EEA is slated to be launched. The state is also undertaking the ResilientMass Finance and Investment Study to identify new ways to grow funding and finance opportunities for local resilience projects. However, more can be done to support and incentivize communities to work collaboratively at the district- and regional-scale, identify priorities, and finance projects that protect people, infrastructure, and coastal ecosystems.

The state can build on these efforts by prioritizing district- and regional-scale projects in existing grant programs; creating new and multi-year funding opportunities specifically for these projects; offering technical assistance to coordinate among communities and with state agencies; creating streamlined funding application processes for high priority projects; coordinating with the private sector; and identifying local options for district-scale assessments and revenue sources.

Proposed State Actions

NEAR-TERM (1-2 years)

1.1 – Support and incentivize collaboration within and between Coastal Resilience Districts, including the development and implementation of district-wide coastal resilience capital and infrastructure plans. [COASTWIDE]

1.2 – Support design, permitting, and construction of district-scale coastal resilience projects and measures with multi-year state funding, technical assistance, and cross-agency coordination. [COASTWIDE]

1.3 – Establish a new "Regional Priority Projects" designation within the Climate and Nature One Stop portal to fast track high-impact projects that meet certain criteria. [STATEWIDE]

1.4 – Work with coastal communities to pilot district-level financing options identified in the ResilientMass Finance and Investment study. [STATEWIDE]

1.5 – Coordinate with the private sector on their role in participating in and funding district-scale and regional-scale projects through public-private partnerships. [STATEWIDE]

MEDIUM-TERM (3-5 years)

1.6 – Increase funding and technical support for developing and implementing regional sediment management plans, which guide coordination and prioritization for sediment placement. Cost-effective and resource-protective sediment management can help sustain recreation and tourism; enhance public safety; and restore coastal sandy habitats. [COASTWIDE]

1.7 – Update state statutes that give municipalities the authority to establish local funding streams through district improvement financing and special tax assessments to ensure that funding can be used for coastal resilience projects. [STATEWIDE]

Summary of near, medium, and long-term actions to implement strategy

Next Steps

Next Steps

- **Public Review and Comment**
  - CZM is accepting comments on the draft plan.
  - All comments must be received **by 5:00 pm on June 12, 2025.**
  - Comments can be submitted by email to: **deanna.moran@mass.gov** or can be mailed to:

Massachusetts Office of Coastal Zone Management
100 Cambridge Street, Suite 900
Boston, MA 02114
Attention: Deanna Moran

- **Final Plan**
  - The final plan will be published in late summer/early fall 2025

Q&A