Coastal and Marine Working Group
Strategies and Actions for the Maine Climate Council

**Strategy 1 - Enhance mitigation by conserving and restoring wetlands that naturally store carbon (blue carbon optimization).**

Healthy coastal and marine areas provide vital benefits to the community, ecosystem, and economy, while performing long term carbon storage and sequestration of GHGs and ameliorating coastal acidification. Essential strategy components include inventorying Maine’s blue carbon resources to inform baseline estimates of current storage and sequestration, tracking changes in sequestration/emissions over time, and increasing conservation and restoration of coastal ecosystems to optimize carbon burial and obtain climate mitigation benefits.

**Actions:**

*Determine blue carbon stocks and mitigation values by:*

1. Conduct a comprehensive, coast-wide inventory of coastal blue carbon resources* to inform baseline estimates of current storage and sequestration. Track changes in sequestration/emissions over time.
2. Determine the role that strategic management of seaweed aquaculture plays in long term carbon burial and in locally reducing coastal acidification impacts.

*Blue carbon mitigation potential must be achieved by conserving and restoring:*

3. *Tidal marshes:* Identifying priorities to secure greenhouse gas stores from tidal marshes and create stable and permanently funded program(s) to coordinate and integrate current restoration approaches.
4. *Eelgrass habitat:* Protect current and historically-mapped eelgrass habitat from direct and indirect impacts of shoreline development, commercial harvesting activities, and aquaculture operations through informed lease siting and by enhancing local and state regulations to restrict fishing methods and reduce impacts. Restore eelgrass by improving water quality and promoting transplanting and/or seeding.
5. *Seaweed:* Manage the harvest of subtidal and intertidal species of seaweed through the DMR and sector-based management developed with the Seaweed Fisheries Advisory Council and use aquaculture techniques to restore kelp.

*“Coastal Blue Carbon” is a term that refers to the carbon that is sequestered by coastal ecosystems like salt marshes and seagrass beds.*

**Strategy 2 - Promote climate-adaptive ecosystem planning and management using nature-based solutions**

This Ecosystem-based Adaptation Strategy identifies actions that leverage a range of tools (regulatory, voluntary, incentive-based, best management practice) which are demonstrated to promote ecosystem resiliency and protect vital functions while adapting to changing environmental conditions, harnessing our natural resources, and protecting communities and biodiversity.

**Actions:**

1. *Foster climate-adaptive planning* in marine, coastal, and inland areas for the State and municipalities. Improve tools used for planning and make them more widely accessible for this
suite of planners, regulators, landowners, and resource managers, including municipalities and regional Councils of Government.

2. **Promote nature-based solutions** (also known as natural infrastructure or green infrastructure) for climate change related challenges that impact non-tidal and coastal rivers, shorelines, and coastal and marine habitats, that foster the value of Maine’s natural resources, and proactively mitigate risk for the state’s citizens and infrastructure often with less expense.

3. **Promote ecosystem conservation and restoration**: Protect ecosystems and restore degraded habitats to benefit biodiversity, rare species, and species most vulnerable to climate change using a variety of tools including voluntary, management, incentive-based, or regulatory. This includes the use of “Living Shorelines” (LS) to address coastal erosion issues. LS uses organic materials, plantings and oyster shells as an alternative to more traditionally used rip-rap or sea walls to protect infrastructure.

4. **Restore hydrological connectivity** in coastal watershed freshwater streams and tidal systems: Use climate-adaptive upgrades to road crossing infrastructure to improve our climate adaptation and benefit communities, habitats, fish, and other aquatic animal life.

5. **Beach and sand dune management, restoration and protection**: Help coastal marshes, beaches and dunes to migrate inland with sea level rise in order to persist and continue to support both biodiversity and community resilience. To keep beaches healthy for storm protection, habitat, and recreational uses, consider the use of selective and/or proactive beach nourishment to help manage coastal erosion while also protecting crucial habitat for rare species.

6. **Characterize and map marine and coastal habitats** to inform coastal and marine planning. SEE 3.3

7. **Strengthen protections of inland natural resources** to detain storm flows and recharge groundwater, decrease nearshore nitrification, reduce flood risks, protect aquifers, and maintain habitat connectivity and climate refugia.

8. **Improve regulatory approaches** to protect coastal areas from development that will impede marsh migration, impact water quality, and directly or indirectly affect the function and viability of coastal habitats to include impacts from coastal acidification.

9. **Stormwater Management**: Strengthen tools to reduce nitrogen and pollutant input, through improved stormwater management, to improve the quality of stormwater runoff.

10. **Municipal and Regional Planning Support**: MERGED WITH 2.1

### Strategy 3 - Track coastal and ocean climate impacts to support adaptive decision making.

Establish a state-level strategy and coordinating body (the “Climate Collaborative for Coastal and Ocean Monitoring” or C2COM) to support adaptive decision making in the public and private sectors by collecting, assessing, and disseminating data and information on how climate change is affecting Maine’s coastal and marine areas.

**Actions:**

1. **Leverage existing state monitoring programs** via sustainable state funding, shared data infrastructure and coordinated leadership. State agencies include (*inter alia*) DEP, DMR, IF&W and DACF.

2. **Expand monitoring of coastal water quality**, including nutrients, and acidification to provide actionable information on water quality risks statewide.
3. **Characterize, map, and track marine and coastal habitats**, including economically important and at-risk species.

4. **Enhance invasive species monitoring and management**.

5. **Improve tracking of economic and social conditions** in Maine’s coastal communities.

6. **Enhance and coordinate tracking and modeling of future changes** to the extent of intertidal habitats and beaches including tidal marshes, mudflats, dunes, and beaches (See Strategy 1.1)

7. **Develop and implement a coordinated funding strategy** that leverages federal, state, foundation, and private sources towards an integrated monitoring system.

**Strategy 4 - Provide technical assistance on climate adaptation and mitigation to marine-dependent businesses and outreach networks for practitioners, industry, and the public.**

Maine’s coastal and marine stakeholders want climate information that is relevant to their needs - their communities, their economies, and their natural resources. While some climate information and decision-support tools exist, they can be hard to access or easily use for mitigation and adaptation projects in Maine’s coastal and marine areas. Maine’s coastal and marine resource managers, communities, fisheries, aquaculturists, businesses, and residents would benefit from tailored information exchange to guide effective mitigation and adaptation strategies and share innovation projects as they confront the opportunities and challenges of climate change, climate-related impacts, and the transition to a low-carbon economy.

**Actions:**

1. Create a **Coastal and Marine Information Exchange** to provide informational and decision support for private, non-profit and public sectors to facilitate climate mitigation and adaptation in Maine’s coastal communities and industries. The **Marine Information Exchange** in coordination with the **Climate Collaborative for Coastal and Ocean Monitoring** and the **Marine Seafood Business Council** will improve integration of environmental, economic, and social data to advance understanding of the consequences of climate change and cultivate sustained innovations such as technology change, social learning, and tailored decision-support tools to help support and accelerate mitigation and adaptation actions by coastal and marine stakeholders.
   - Establish an oversight panel of experts from the private, nonprofit and public sectors to serve as an advisory board and raise dedicated funds to support implementation.
   - Develop and implement a clearinghouse for best scientific information monitoring data, and other decision-support tools, including a web/digital platform for disseminating data and other information and targeted support of a coastal and marine digital exchange community.
   - Create new systems for storing and accessing data and serving it in web/digital platforms.
   - Catalyze the development of tailored coastal/marine mitigation and adaptation decision-support tools based on stakeholder collaborations and feedback and improved access to information and data
   - Engage with coastal and marine stakeholders & provide outreach and education via targeted symposia/workshops for different marine and coastal stakeholders and policy briefings for policy makers.

2. Establish a **Maine Marine Business Council** to provide Maine’s seafood harvesters, shoreside businesses, and working waterfronts with access to information and tools that can support
operational decisions, capital investments, and long-range planning to implement climate adaptation and mitigation strategies.

- **Information Exchange**: Establish effective means for two-way communication with businesses; Assemble pertinent information from the Maine Information Exchange for each sector and provide information translation so that it is easily accessible to businesses in the seafood sector;
- **Business Planning**: Conduct analyses of existing and emerging markets as needed to identify trends and opportunities for growth and assess infrastructure needs and opportunities to align with future business directions and link to programs that support business improvements (e.g. efficiency and renewable programs);
- **Technical Assistance**: Gather and organize information about business financing for startup, growth, mitigation and adaptation projects and support implementation of pilot adaptation and mitigation projects in marine businesses;
- **Communication**: Establish an effective means to communicate with businesses in each sector on a regular basis and advise government entities on the needs of marine businesses as they attempt to implement mitigation or adaptation measures.

**Strategy 5 – Manage for resiliency of Maine’s marine fisheries and aquaculture industries in the context of climate change adaptation.**

This strategy delineates ways to strengthen fishery management information streams to ensure sustainable fisheries and new opportunities as fisheries adapt to climate change. Further, it highlights market support and business resilience needs, as well as regulatory and policy objectives that are necessary to enable Maine’s fisheries and aquaculture operations to remain reliable economic contributors as they adapt to climate change. This strategy relies on and complements the Maine Information Exchange and Maine Seafood Business Council strategies emerging from the Coastal and Marine Working Group.

**Actions:**

**Information support**

1. **Enhance (and provide sustainable funding for) marine resource monitoring programs** to better detect changes in ecosystem conditions, including the composition and distribution of species along Maine’s coast, as well as socio-economic conditions related to fisheries and aquaculture.

2. **Develop stock assessment, risk management, and harvest strategies that account for ecosystem changes**, including shifts in species-environment relationships and in productivity and distribution of species along the coast.

3. **Implement forecasts for key environmental parameters at spatial and temporal scales** that are relevant to business planning, operations, and management of Maine’s fisheries and aquaculture sectors. (See Strategy 3 – Tracking coastal and ocean impacts)

**Market support and business resilience**

4. **Evaluate and implement ways to expand local and direct marketing opportunities** for sustainably produced Maine seafood.

5. **Support the growing aquaculture sector** as a means to increase Maine seafood production, provide important economic opportunities for coastal communities, and harness potential acidification mitigation and other environmental services.
6. **Develop technical assistance, financing tools, and policy strategies** to help fishing and aquaculture businesses plan for and transition activities in a changing ocean ecosystem. (See Strategy 4.2 – Maine Marine Business Council)

**Regulatory and Policy**

7. **Evaluate and implement ways in which Maine’s fishery and aquaculture laws and regulations can provide flexibility** to address environmental change while recognizing both the need for regulatory stability and the potential to achieve multiple objectives through the use of public resources.

**Strategy 6 – Target specific efforts to assist Maine’s working waterways and ports in their transition to climate preparedness**

Maine’s coastal and marine economy, and the cultural and economic identity of its coastal communities, depends in large part on thriving ports and working waterfronts (WWFs) -- small and large, public and private. These facilities provide access and associated facilities for our commercial fishing fleets and aquaculturists, recreational fishing fleets and recreational boaters, marinas and boatyards, and boatbuilders, maritime security, marine transportation of seafood and goods and services, transportation for Maine’s islands residents and tourists, and support for other heritage industries. WWFs and Ports need to be prioritized in climate-ready planning, land use planning, infrastructure funding support, and resilience guidance and conservation efforts.

**Actions:**

1. **Develop innovative funding mechanisms:** Infrastructure Trust Fund, Revolving Loan Fund, Fish Pier Bond, or similar mechanism to provide funding for small to medium sized wharf and pier owners to plan for and install resilient infrastructure.

2. **Improve Guidance and Technical Assistance** for municipalities and business owners regarding conducting vulnerability assessments, feasibility and design of resiliency measures, and information on funding sources.

3. **Reform and improve regulatory and non-regulatory approaches to development** and redevelopment of WWFs to:
   a. reduce redundant and confusing statutes and rules,
   b. address challenges associated with increased flood insurance costs,
   c. and pass regulations that address sea-level rise, flooding, and storm surge as part of a simplified regulatory scheme.

4. **Publicize case studies of successful examples of mitigation and adaptation** already happening at Maine’s ports and WWFs. Incentivize this work through business recognition programs. Conduct additional education and outreach about the importance of WWFs and Ports to Maine’s economy and culture. (See Strategy 4.2 – Maine Marine Business Council)

5. **Continue discussions in summer 2020 with the MCC CMWG WWF and Ports subcommittee,** the MCC Transportation Committee, and a wider circle of port and ferry managers, harvesters and business owners/managers of small to midsize WWFs, cruise ship representatives and NGOs, with the objective of assessing opportunities for reducing emissions at ports and WWFs and associated industries. This includes:
   a. potential for a pilot Green Port project to showcase resilient waterways,
   b. development of best practices,
   c. and improved understanding of local and regional threats and opportunities.