Chapter 1 - Introduction

In Massachusetts, rich ocean waters and a spectacular coastline have shaped our history, economy, and way of life. Today, these ecologically and economically vital public resources face unprecedented development pressure and represent potential solutions for new challenges, such as climate change. In addition to traditional ocean uses—recreation and tourism, fishing and shellfishing, and shipping and trade—new proposals for energy, aquaculture, off-shore sand mining, and other activities highlight the need for a comprehensive ocean management strategy.

In response to these challenges, Governor Deval Patrick signed the Oceans Act on May 28, 2008. This ground-breaking legislation requires Secretary of Energy and Environmental Affairs Ian Bowles to develop a comprehensive ocean management plan that balances natural resource preservation with traditional and new uses, including renewable energy. This document presents the draft Massachusetts Ocean Management Plan for public, stakeholder, and Legislative review.

The Call for Comprehensive Ocean Planning in Massachusetts

In 2003, the Massachusetts Ocean Management Task Force was appointed to examine evolving ocean uses and develop a comprehensive approach to managing ocean resources. Chaired by Susan Tierney, PhD, a former Secretary of Environmental Affairs in Massachusetts and former Assistant Secretary for Policy in the U.S. Department of Energy, the Task Force included 23 private and public sector individuals representing a range of interests, along with representatives of the state Legislature and federal Congressional delegation who participated as ex-officio members.

In March 2004, the Task Force released its final recommendations in the *Waves of Change* report. These recommendations focused on: strengthening state agencies to address environmental, planning, and public trust issues in both state and federal waters; establishing an ecosystem-based protocol to improve management of federal waters; and initiating ocean education and stewardship initiatives.

The Task Force's top recommendation was legislation to require the development of comprehensive ocean resource management plans for Massachusetts ocean waters. This recommendation and the cooperative efforts that followed led to the passage of the Oceans Act of 2008.

Overview of the Oceans Act

The Oceans Act of 2008 requires the Secretary of the Executive Office of Energy and Environmental Affairs (EEA) to develop an integrated ocean management plan. The following is a summary of the major components of the Act.

Plan Principles - The "Oceans 15"

The Oceans Act includes 15 directives for plan development, collectively referred to as the Oceans 15. Chapter 3 discusses these directives in more detail. Specifically, the Oceans 15 require that the plan shall:

1. Set forth the Commonwealth's goals, siting priorities, and standards for ensuring effective stewardship of its ocean waters held in trust for the benefit of the public.
2. Adhere to sound management practices, taking into account the existing natural, social, cultural, historic, and economic characteristics of the planning areas.
3. Preserve and protect the public trust.
4. Reflect the importance of the waters of the Commonwealth to its citizens who derive livelihoods and recreational benefits from fishing.
5. Value biodiversity and ecosystem health.
6. Identify and protect special, sensitive, or unique estuarine and marine life and habitats.
7. Address climate change and sea-level rise.
8. Respect the interdependence of ecosystems.
9. Coordinate uses that include international, federal, state, and local jurisdictions.
10. Foster sustainable uses that capitalize on economic opportunity without significant detriment to the ecology or natural beauty of the ocean.
11. Preserve and enhance public access.
12. Support the infrastructure necessary to sustain the economy and quality of life for the citizens of the Commonwealth.
13. Encourage public participation in decision-making.
14. Adapt to evolving knowledge and understanding of the ocean environment.
15. Identify appropriate locations and performance standards for activities, uses, and facilities allowed under the Oceans Sanctuaries Act.

In addition to these provisions, the Oceans Act contains other substantive requirements as discussed below.

Government Coordination

According to the Act, all state certificates, licenses, permits and approvals for any proposed structures, uses, or activities must be consistent with the plan to the maximum extent practicable. Additionally, the ocean management plan must be incorporated into the Massachusetts Coastal Zone Management Plan. Once incorporated, Massachusetts will have the authority to ensure that federal actions, including permitting decisions, are consistent to the maximum extent practicable with the ocean management plan through the federal consistency requirements of the federal Coastal Zone Management Act. Therefore, in addressing the requirements of the Oceans Act, the ocean management plan must take an integrated approach across levels of government, both in its development as well as its implementation.

Fisheries Issues

The Act stipulates that the Division of Marine Fisheries (DMF) shall have sole responsibility for developing and implementing any fisheries management plans or fisheries regulations. Furthermore, commercial and recreational fishing shall be allowable uses subject to the exclusive jurisdiction of DMF. In addition, to ensure that the ocean management plan and fisheries management are complementary:

- Plan elements that impact fishing shall minimize negative economic impacts and be reviewed by DMF to develop and recommend to the Secretary of Energy and Environmental Affairs any suggestions or alternatives to mitigate or eliminate any adverse impacts.
- Fisheries management shall be integrated, to the maximum extent practicable, into the plan.

Appropriate Scale

The Oceans Act amends the Ocean Sanctuaries Act to allow the development of "appropriate scale" renewable energy facilities in ocean sanctuaries (except for the Cape Cod Ocean Sanctuary, where such facilities are not allowed), provided such facilities are also consistent with the Massachusetts Ocean Management Plan. (See Chapter 4 for a definition of "appropriate scale.")

Mitigation Fees/Trust Fund

The Act establishes an Ocean Resources and Waterways Trust Fund ("the Fund") that is to be funded by mitigation fees assessed to ocean development projects,

> grants, Legislative appropriations, and income from the investment of amounts credited to the Fund. The fund is intended to restore or enhance marine habitat and resources or compensate for navigational impacts resulting from an ocean development.

Finally, the Oceans Act includes several process-related provisions: It sets the schedule for promulgation of draft and final versions of the plan; includes requirements for formal public review of the draft plan; and provides for an Ocean Advisory Commission and Ocean Science Advisory Committee to assist the Secretary in developing the ocean management plan.

Marine Spatial Planning and Ecosystem-Based Management

Aspects of two formal methods for developing and organizing information and making management decisions about human uses in the marine environment were used in the development of the Massachusetts Ocean Management Plan: marine spatial planning and ecosystem-based management. The United Nations Educational, Scientific, and Cultural Organization web page on marine spatial planning (http://www.unesco-ioc-marinesp.be/) explains that:

> Marine spatial planning is a public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that usually have been specified through a political process. Characteristics of marine spatial planning include ecosystem-based, area-based, integrated, adaptive, strategic and participatory.
>
> Marine spatial planning is not an end in itself, but a practical way to create and establish a more rational use of marine space and the interactions between its uses, to balance demands for development with the need to protect the environment, and to achieve social and economic objectives in an open and planned way.

More than 220 academic scientists and policy experts with relevant expertise signed the *Scientific Consensus Statement on Marine Ecosystem-Based Management*, which was published in 2005 by Communication Partnership for Science and the Sea and written by K.L. McLeod, J. Lubchenco, S.R. Palumbi, and A.A. Rosenberg. This statement defines ecosystem-based management as:

> . . . an integrated approach to management that considers the entire ecosystem, including humans. The goal of ecosystem-based management is to maintain an ecosystem in a healthy, productive and resilient condition so that it can provide the services humans want and need. Ecosystem-based management differs from current

approaches that usually focus on a single species, sector, activity or concern; it considers the cumulative impacts of different sectors.

Specifically, ecosystem-based management:

- emphasizes the protection of ecosystem structure, functioning, and key processes;
- is place-based in focusing on a specific ecosystem and the range of activities affecting it;
- explicitly accounts for the interconnectedness within systems, recognizing the importance of interactions between many target species or key services and other non-target species;
- acknowledges interconnectedness among systems, such as between air, land and sea; and
- integrates ecological, social, economic, and institutional perspectives, recognizing their strong interdependences.

As planning and management disciplines, marine spatial planning and ecosystem-based management have been advanced in alternative configurations that share the common elements of a formalized and iterative process that applies specified deliberative methodologies and information requirements. Principles and practices of marine spatial planning and ecosystem-based management, whether derived from academic expression, conceptual models, or specific application in other ocean management plans, provided one aspect of the basic foundation for the Massachusetts Ocean Management Plan. The plan considered marine spatial planning and ecosystem-based management principles through the prism of other elements of the planning context, including:

- The Oceans Act as a source for siting priorities and standards.
- Existing state law, particularly the Massachusetts Environmental Policy Act, for siting thresholds and standards.
- Performance standards in Massachusetts agencies' resource and regulatory programs.

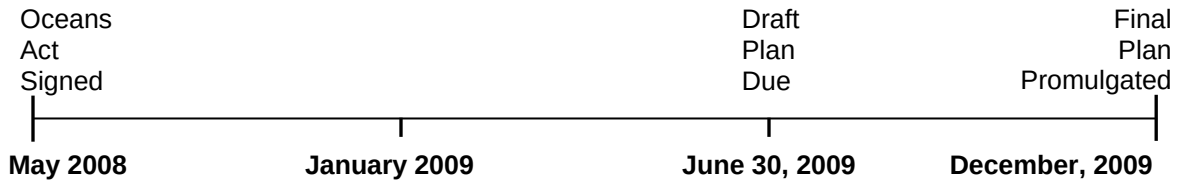
Thus, the structure and content of the ocean plan is consistent with, and has been framed carefully to allow for, ongoing incorporation of new knowledge and refined methods relevant to marine spatial planning and ecosystem-based management.

Overview of the Planning Process

Embracing the charge and intent of the Oceans Act of 2008, EEA developed an inclusive approach to ensure plan development was based on expert input, extensive public

participation, and the best science, data, and information available. The timeline below illustrates the phases and major components of Massachusetts Ocean Management Plan development.

Timeline of Massachusetts Ocean Management Plan Development



Phase I: Information Gathering

- Public Input
- Data Development
- Conceptual Framework
- OAC/SAC Review

Phase II: Draft Plan Development

- Public Input
- OAC/SAC Review
- Draft Plan Development

Phase III: Formal Public Review of Draft Plan

- Public Hearings
- Plan Revisions/Finalization

The remainder of this section summarizes the following components of plan development: expert input, state planning staff, public participation, and technical information development.

Expert Input

The Oceans Act requires the involvement of two separate panels of experts:

- Ocean Advisory Commission (OAC) - The Oceans Act charged the OAC with assisting the Secretary of Energy and Environmental Affairs in developing the ocean management plan by holding public meetings and making recommendations for the proper management and development of the plan. As directed by the Oceans Act, this 17-member commission includes legislators, agency heads, representatives from a commercial fishing organization and an environmental organization, an expert in offshore renewable energy, and representatives from the coastal Regional Planning Agencies. The OAC provided valuable support in analyzing comments generated through the public participation process; establishing the goals,

strategies, and outcomes for the plan; and reviewing the management approach presented in Chapter 5.

- Science Advisory Council (SAC) - The SAC is made up of nine scientists with expertise in the marine sciences and data management. The SAC was tasked with: reviewing data sources and identifying other viable data, assisting in the development of the baseline assessment and characterization of the ocean planning area, assisting in the development of a set of core indicators of ocean environmental health and plan progress, identifying "big picture" questions to improve understanding of the natural systems and/or human uses and influences, and helping to formulate a long-term strategy for addressing information gaps.

Along with the direct expert input provided to EEA, the open meetings held by the OAC and SAC provided an opportunity for public input into the planning process.

State Planning Staff

Staff from EEA and EEA line agencies (Massachusetts Office of Coastal Zone Management, Division of Marine Fisheries, Department of Fish and Game, and Department of Environmental Protection) formed a core group at the state agency level to provide input and feedback during the ocean planning process. A subset of this group focused on developing the management and regulatory measures of the Massachusetts Ocean Management Plan.

Public Participation

In addition to the open OAC and SAC meetings, EEA conducted an ambitious public information and participation campaign that included the following:

- Web Sites and Electronic Updates - To provide the public with the necessary information to effectively participate in plan development, EEA launched the Massachusetts Ocean Plan web site. In addition, EEA developed the Public Input Portal for Massachusetts Ocean Planning to provide direct access to video/transcripts of public meetings, an online commenting form, and a log of the public comments submitted. EEA also distributed periodic Ocean Planning Alert emails, available both electronically and in print.

- Public Listening Sessions - In September and October of 2008, EEA held 18 public Listening Sessions in Boston, Eastham, Fall River, Gloucester,

Lowell, Nantucket, New Bedford, Norwell, Oak Bluffs, Pittsfield, Plymouth, Salem, Salisbury, Springfield, West Barnstable, Weymouth, Woods Hole, and Worcester. More than 300 people turned out to give their input on the goals for the ocean management plan. Videos and transcripts of these Listening Sessions were posted on the Public Input Portal to support further public participation, and summaries of the comments provided at the meetings were posted to the EEA Ocean Plan website.

- Ocean Management Planning Principles Workshop - In November 2008, the OAC and SAC held a joint workshop to discuss various aspects of the general practice of marine spatial planning. In addition to OAC and SAC members, 30 individuals participated.

- Data Workshops - In February 2009, twin workshops were held by EEA in Sandwich and Boston to for the public to review draft work group (see below for a description of the work groups) maps and products. More than 40 people participated in the Sandwich workshop and almost 60 participated in Boston.

- Stakeholder Meetings - During the development of the draft plan, EEA held more than 80 meetings with individual interest groups, advocates, industry representatives, and others to answer their questions and solicit their direct input. More than 110 people were interviewed through these meeting and summary reports of their comments were posted on the EEA Ocean Plan website.

- OAC Workshop on Preliminary Plan Components - In May 2009, the OAC held twin workshops in Woods Hole and Boston to discuss preliminary spatial analysis of existing ocean management data, compatibility and impact analysis of ocean uses, and conceptual management measures to be used in the Massachusetts Ocean Management Plan. More than 130 stakeholder representatives attended these workshops.

Development of Technical Information

The EEA planning team and agency work groups expended extensive effort in identifying and acquiring available data for plan development. The accuracy, precision, and robustness of these data were continually assessed. A repeatedly asked question was: "Does our level of confidence in these data justify and correlate to the decision we are making?" This rigorous approach allowed all data to be thoroughly vetted and for best professional judgment to be applied in its use.

Much of the existing data was already available through the MORIS, the Massachusetts Ocean Resource Information System, available at www.mass.gov/czm/mapping/index.htm. Certain data were available through other agencies and non-governmental organizations; see Appendix 4 for a list of data incorporated into the ocean management plan.

Additional data acquisition efforts, particularly related to recreational activity and commercial and recreational fishing, provided further data for incorporation into the ocean management plan. To collect and analyze this additional information, EEA worked with state agency staff and the Massachusetts Ocean Partnership. Reports stemming from these efforts and detailing their results are available electronically at www.mass.gov/czm/oceanplan/index.htm and summarized below.

- Technical Work Group Reports - Work groups made up of state agency staff and members from federal agencies, academia, the renewable energy industry, and non-governmental organizations were charged with assembling available natural resource and human use data to be used in plan development. These work groups were organized topically and covered: habitat; fisheries; transportation, navigation, and infrastructure; sediment; recreation and cultural services; and renewable energy. Much of the data used in the plan stemmed from these work group reports, and members of the habitat and fisheries work groups formed the core staff that worked on the Ecological Valuation Index (described more fully in Chapter 3).

- Qualitative Commercial Fishing Information - EEA staff met with commercial fishermen in meetings up and down the coast to discuss the development of the ocean management plan and concerns of fishermen. At several of these meetings, fishermen used maps and National Oceanic and Atmospheric Administration charts to provide information regarding the locations of particular fisheries in the planning area, type of gear used, and seasonal restrictions.

- Qualitative Recreational Fishing Information - The Division of Marine Fisheries performed a coast-wide survey of recreational fishing interests to identify areas of concentrated recreational fishing activity. While this survey was not designed to be statistically accurate, it provided useful information for planning purposes.

- Qualitative Recreational Use Information - The Massachusetts Marine Trades Association developed a series of maps indicating areas of concentrated recreational activity throughout the planning area.

- Automated Information System (AIS) - The Stellwagen Bank National Marine Sanctuary provided AIS information for the planning area and adjacent federal waters. This data captures the tracks of commercial vessels 300 tons and up. This information was digitized with the assistance of the Massachusetts Ocean Partnership and used to identify areas of the planning area used by commercial vessel traffic.

- Vessel Monitoring System (VMS) - The Gloucester office of the National Marine Fisheries Service provided VMS information for the planning area and adjacent federal waters, which indicates the tracks of commercial fishing vessels that are fishing in federal waters. This information was digitized with the assistance of the Massachusetts Ocean Partnership and used to identify areas of the planning area traversed by commercial fishing vessels fishing in federal waters.

- Assessment of Human Activities in the Planning Area - Through funding provided by the Massachusetts Ocean Partnership, scientists from the National Center for Ecological Analysis and Synthesis at the University of California-Santa Barbara mapped the footprint and preliminarily assessed the impact of certain human activities in the planning area.

- Science Tools to Implement Ecosystem-Based Management in Massachusetts - Through funding provided by the Massachusetts Ocean Partnership, the consulting firm MRAG Americas provided an overview and recommendations regarding the application of ecosystem-based management principles to the Massachusetts Ocean Management Plan. This report also provided an overview of decision support tools and ecosystem models.

- Planning Framework Review - The Massachusetts Ocean Partnership funded a team of consultants to review ocean management efforts outside of Massachusetts to identify applicable aspects for the approach to the ocean management plan. This team provided recommendations for the overall framework for the ocean management plan.

- Development of Mitigation Framework Options - Through funding provided by the Massachusetts Ocean Partnership, the firm IEc reviewed previous ocean development projects in Massachusetts and interviewed involved parties. The purpose of this study was to provide recommendations for developing a framework for how to develop an approach to mitigation for ocean development in the future.