

Massachusetts Ocean Plan: Data integration and management options

Ocean Advisory Commission

May 28, 2009

Purpose of workshops

To present and discuss spatial material and management options for the ocean plan:

- preliminary screening of ocean data based on goals and strategies
- conceptual management measures considered
- Conceptual management approach

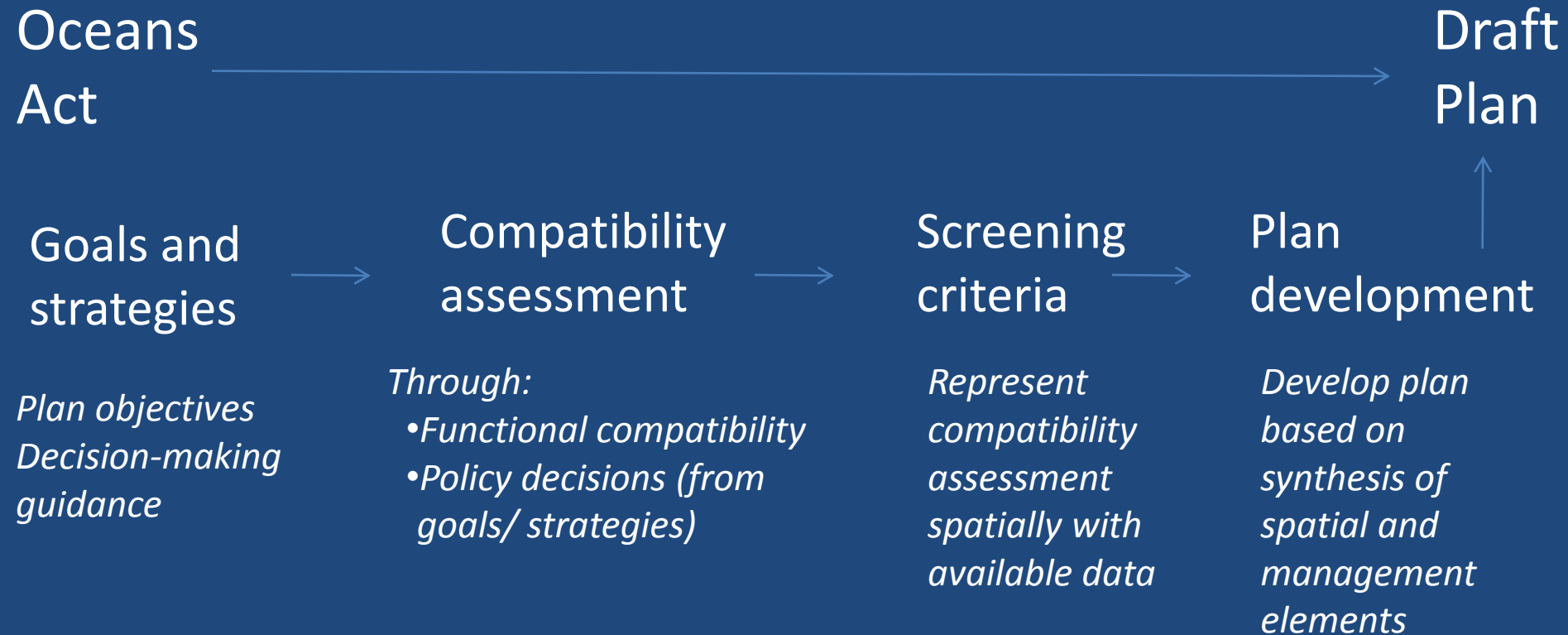
Outline of presentation

- Introduction – process to date, next steps
- Framework – translating the Oceans Act through spatial data
- Use screening
- Use management options
- SSU screening
- SSU management options

Process to date/next steps

- Public/stakeholder comment and information, workgroup data, research
- Goals/strategies/outcomes, data acquisition and development, public workshops, ecological valuation index, interagency planning and regulatory teams
- Develop and review planning options, public workshops, and final OAC meeting end of May, draft plan June 30

Translating the Oceans Act into an ocean plan through spatial data



The plan shall:

- I. 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;
- II. adhere to sound management practices, taking into account the existing natural, social, cultural, historic and economic characteristics of the planning areas;
- III. preserve and protect the public trust;
- IV. reflect the importance of the waters of the Commonwealth to its citizens who derive livelihoods and recreational benefits from fishing;
- V. value biodiversity and ecosystem health;
- VI. identify and protect special, sensitive or unique estuarine and marine life and habitats;
- VII. address climate change and sea-level rise;
- VIII. respect the interdependence of ecosystems;
- IX. coordinate uses that include international, federal, state and local jurisdictions;
- X. foster sustainable uses that capitalize on economic opportunity without significant detriment to the ecology or natural beauty of the ocean;
- XI. preserve and enhance public access;
- XII. support the infrastructure necessary to sustain the economy and quality of life for the citizens of the commonwealth;
- XIII. encourage public participation in decision-making;
- XIV. adapt to evolving knowledge and understanding of the ocean environment; and
- XV. identify appropriate locations and performance standards for activities, uses and facilities allowed under the Ocean Sanctuaries Act, including but not limited to renewable energy facilities, aquaculture, sand mining for beach nourishment, cables, and pipelines.

15 requirements of the Act

GOALS

STRATEGIES

OUTCOMES

Integrated management



Integrated ocean management plan

Effective stewardship
(protection, use)



Special, sensitive,
unique areas identified
and protected



Areas for development of
renewables and other uses
identified w/ performance
standards

Adaptive framework



Plan for Plan 2.0:
science, stakeholder, policy

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Strategy for effective stewardship: use

Specifically applicable requirements of the Act:

- preserve and protect the public trust;
- preserve and enhance public access;
- reflect the importance of the waters of the commonwealth to its citizens who derive livelihoods and recreational benefits from fishing;
- foster sustainable uses that capitalize on economic opportunity without significant detriment to the ecology or natural beauty of the ocean;
- support the infrastructure necessary to sustain the economy and quality of life for the citizens of the Commonwealth;
- identify appropriate locations and performance standards for activities, uses and facilities allowed in Ocean Sanctuaries;
- address climate change and sea level rise

Strategy for effective stewardship: use

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Strategy for effective stewardship: use

- Strategy:

spatial

- Minimize conflict with commercial fishing by siting incompatible uses outside areas of significant fishing effort and value
- Minimize conflict with recreational fishing by siting incompatible uses outside areas of concentrated recreational fishing activity
- Minimize conflict with significant interconnections between homeports and grounds
- For specific projects developed pursuant to the ocean management plan, develop methodology to identify impacted fishery and assess economic impact of specific development projects
- For specific projects developed pursuant to the ocean management plan, develop framework for mitigation

Strategy for effective stewardship: use

- Screening criteria and data:

policy + data

- Areas of significant commercial fishing effort and value: high fishing activity by effort and value

- Data: Fisheries Workgroup

- Areas of concentrated recreational fishing activity

- Data: MMTA recreational fishing/boating survey, DMF recreational fishing survey

- Direct transit navigation routes for shipping and

- Data: AIS, VMS

Compatibility assessment and screening criteria: wind

Notes:

- Use screening does not incorporate EVI/SSU
- SSU will be exclusionary layer for uses depending on how they are managed
- Note that environmental data layers used for screening includes data that inform EVI/SSU

Compatibility assessment and screening criteria: wind

- Working concept for appropriate scale:
 - Larger projects in designated areas only
 - Ocean plan data/screening addresses:
 - protection of the public trust
 - compatibility with existing uses
 - environmental protection
 - public safety
 - proximity to the shoreline
 - appropriateness of technology and scale
 - Develop performance standards to address:
 - community benefit
 - Smaller community project (<10? Turbines) overlay
 - Intended to support community/regional initiative (opt-in)

Compatibility/screening: wind

- Siting criteria: water depth (20 meters monopile/60 meters jacket truss), wind speed, sub-bottom geology
- Exclusionary (avoid)
 - Areas within 1 mile of shoreline (MLW) of inhabited land [*Develop performance standard to address... proximity to the shoreline*]
 - Data: GIS
 - Coast Guard –designated navigation areas (shipping channels and traffic lanes, precautionary areas, anchorage areas, pilot boarding areas)
 - Data: Navigation Workgroup
 - Ferry routes
 - Data: Navigation Workgroup
 - High concentrations of avian resources: nesting, staging, and critical foraging areas for roseate tern; nesting, staging and core foraging areas for long-tail duck, colonial coastal waterbirds, special concern tern species (arctic, least, common)
 - Data: Habitat Workgroup, NHESP

Compatibility/screening: wind

- Exclusionary (avoid)
 - High concentrations of whale populations: Right whale core habitat
 - Data: Habitat Workgroup, NHESP
 - Areas of significant commercial fishing effort and value: high fishing activity by effort and value [*Minimize conflict with commercial fishing by siting development areas outside areas of significant fishing effort and value*]
 - Data: Fisheries Workgroup
 - Direct transit navigation routes for shipping and fishing [*Minimize conflict with significant interconnections between homeports and grounds*]
 - Data: AIS, VMS
 - Regulated airspace
 - Data: FAA/MAC aviation buffers

Compatibility/screening: wind

- Constraints (avoid or minimize)
 - Areas of medium fishing activity by effort and value [*evaluate conflict with mobile gear in potential wind development areas*]
 - Data: Fisheries Workgroup, qualitative maps from commercial fishermen
 - High concentrations of avian resources: Leach's storm petrel
 - Data: Habitat Workgroup; NHESP
 - High concentrations of whale populations: fin and humpback whales
 - Data: Habitat Workgroup, NHESP
 - Direct-transit recreational navigation routes [*Consider impacts to significant interconnections between shore access points and destination areas.*]
 - Data: MMTA recreational fishing/boating survey, DMF recreational fishing survey

Compatibility/screening: wind

- Constraints (avoid or minimize)
 - Areas of concentrated recreational fishing activity
[Minimize conflict with recreational fishing by siting incompatible uses outside areas of concentrated recreational fishing activity]
 - Data: MMTA recreational fishing/boating survey, DMF recreational fishing survey
 - Concentrations of recreational uses *[Preserve/enhance public access by siting use areas to minimize impacts to concentrations of recreational uses]*
 - Data: MMTA recreational fishing/boating survey, DMF recreational fishing survey
 - Known historic / archaeological resources
 - Data: AWOIS (?), BUAR d-base

Management options for uses

- Goal: protect ecosystem functions and values by avoiding and/or minimizing impacts
- Objective: Organize uses to avoid and/or minimize impacts
- Options:
 1. Regulate as now, use ocean data for alternatives analysis and performance standards in permit conditions
 2. Uses allowed in designated use areas based on ocean data and screening
 3. Areas for uses with potential significant impacts (scale) for which we have good data; exclusionary areas for spatially indeterminate uses or uses with potential less significant impacts

Management options for uses

- Regulate as now, use ocean data for alternatives analysis and performance standards in permit conditions:
 - Status quo +
 - Advances management from current process with better information
 - Maximizes flexibility for future changes to management based on new data, changing values, technological change
 - Minimizes artificial constraints of inadequate/imperfect base data
 - » Ad hoc avoid, minimize, mitigate
 - » Not an integrated 'plan'
 - » Does not achieve organizational benefits of planning
 - » Cumulative impacts difficult to address
 - » Minimal additional OSA protection

Management options for uses

- Uses allowed in designated use areas based on ocean data and screening
 - Use Areas
 - Highly organized spatially
 - Significantly increased OSA protection (uses limited to identified area)
 - For many uses, not substantiated by amount/quality of data – designated areas may not support desired uses
 - Limited flexibility to respond to future change based on new data, changing values, technological change
 - Overly conservative through artificial spatial limit on allowable uses – social benefits foregone

Management options for uses

- Areas for uses with potential significant impacts (scale) for which we have good data; exclusionary areas for spatially indeterminate uses or uses with potential less significant impacts.
 - Variation on use areas
 - Appropriate level of management supported by currently available data
 - Balances protection and use
 - Responsive to level of data
 - Preserves flexibility for change new data, changing values, technological change

Special, sensitive and unique estuarine and marine life and habitat

- Oceans Act requires plan to:
 - value biodiversity and ecosystem health
 - Identify and protect special, sensitive, or unique estuarine and marine life and habitats
 - respect the interdependence of ecosystems
- EVI, rugosity, CWA 404 SAS, and special status species comprise data set to identify ecologically significant areas

Special, sensitive and unique estuarine and marine life and habitat

- Ecological valuation process
 - Compile and analyze spatial data:
 - Marine mammals (4 species)
 - Birds (5 species)
 - Crustaceans (5 species)
 - Mollusks (8 species)
 - Fish (22 species)
 - Score individual datasets using a standard set of criteria:
 - Major contribution to fitness of population
 - Spatial rarity
 - Global and regional population importance
 - Combine individual dataset scores for each grid cell

Special, sensitive and unique estuarine and marine life and habitat

- Benefits of EVI
 - Differentiates areas in terms of their ecological value, using data on marine organisms
 - Help identify areas suitable for use or protection
 - Is a 1st step toward managing based on ecosystem perspective
- Limitations:
 - Data availability
 - Spatial resolution of available data
 - Evolving understanding of ocean ecosystem
 - Difficulty correlating biotic and abiotic data

Special, sensitive and unique estuarine and marine life and habitat

- Management options:
 - What values for which the SSU was identified are not currently adequately protected?
 - SSUs to protect specific values and functions by limiting impacts from specific uses (targeted additional protection); OR
 - SSUs to protect a complex of values that we think are represented by the limited data we have (comprehensive protection)

Goals of management

- Protect the marine environment
- Avoid and minimize conflict with existing water-dependent uses
- Foster sustainable uses, allow necessary infrastructure, support mixed-uses, provide flexibility for future changes to management based on an increasing understanding of the marine environment, new technologies, and evolving social values
- Apply management and regulatory limits that can be substantiated by current data
- Apply level of management/review commensurate with scale of project

Challenges to defining terms of management

- Application illustrated limitations of exclusionary criteria for uses:
 - Projects within each category of uses allowed under the OSA have varying levels of siting requirements, size, and impact, and potential impacts to different uses and resources
 - Compatibility assessments from which criteria are derived only go so far as helpful tool – lots of “potentially compatible, depending on size, configuration, and location of project”
 - Desire to provide flexibility/opportunity for new uses and mixed uses
 - Differing levels of data certainty (high commercial v high recreational fish, for example) for similar exclusionary value

Challenges to defining terms of management

- Intent is to identify SSUs based on ID of number of ecological components, and establish protective standard through WQ standard, but –
- EEA and SAC have determined that data limitations limit utility of EVI as basis for legal/regulatory determination of area-wide protective standard (however...)

Siting criteria and factors

- Addressed by using exclusionary criteria as:
 - Exclusionary siting criteria for commercial and community-scale wind
 - Appropriate given known commodity (siting requirements, size, and impacts)
 - Siting factors for all other uses
 - Identifies SSU resources from which uses are presumptively excluded and SSU resources and uses of high significance to be avoided
 - Specifics of given project define applicable factors based on siting requirements, size, and impacts
 - Uses MEPA EIR threshold as trigger for more rigorous standard of avoidance

OSA management framework

- Three categories of siting standards:
 1. Prohibited by law (CC OS) or plan (1 mile buffer for community wind)
 2. Presumptively excluded (right whales and roseate terns)
 3. Resources and uses to avoid – SSU resources (individual components of EVI, roughly by guild/abiotic feature), and existing uses and derivatives recognized by the Act (commercial/recreational fishing, commercial and recreational thoroughfares, concentration of recreational areas)
- Apply #2 and #3 (effectively, apply ocean management) to MEPA EIR only OR require that all levels of government demonstrate consistency with the factors in their approvals.

OSA management framework

- Prohibited – fixed standard
- Presumptively excluded – presumption can be rebutted by demonstration that proposed use would have no/only temporary adverse impact; cannot mitigate to meet standard
- Avoid – proposed use must demonstrate no feasible alternative with less impact to uses or resources; characterization of existing uses, resources and economic impacts governed by standardized methodology

Areas presumptively excluded and areas to avoid for wave and tidal

- Presumptively excluded:
 - Right whale/roseate tern areas
- Exclusionary (**avoid**)
 - Coast Guard–designated navigation areas (shipping channels and traffic lanes, precautionary areas, anchorage areas, pilot boarding areas)
 - Data: Navigation Workgroup
 - High demersal fish
 - Data: DMF Workgroup
 - Direct-transit recreational navigation routes *[Preserve/enhance public access by siting use areas to minimize impacts to concentrations of recreational uses. Consider impacts to significant interconnections between shore access points and destination areas.]*
 - Data: MMTA recreational fishing/boating survey, DMF recreational fishing survey

Areas presumptively excluded and areas to avoid for wave and tidal

- Exclusionary (**avoid**)
 - **Direct transit navigation routes for shipping and fishing** *[Minimize conflict with significant interconnections between homeports and grounds]*
 - Data: AIS, VMS, ferry routes
 - **Areas of significant commercial fishing effort and value: high fishing activity by effort and value** *[Minimize conflict with commercial fishing by siting development areas outside areas of significant fishing effort and value]*
 - Data: Fisheries Workgroup
 - **Areas of concentrated recreational fishing activity** *[Minimize conflict with recreational fishing by siting incompatible uses outside areas of concentrated recreational fishing activity]*
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Summary - Identify and protect SSUs

- Two tiers
 - Presumptively excluded:
 - Core habitat for roseate terns, right whales
 - To be avoided:
 - High demersal fish
 - Complex benthic habitat
 - Eelgrass
 - Special concern terns
 - Long-tailed ducks
 - Leach's storm petrels
 - Colonial waterbirds
 - Humpback and fin whales

Summary – Identify appropriate locations for uses

- Three tiers
 - Prohibited areas:
 - CC OS; 1 mile buffer for community wind
 - Areas to avoid
 - existing uses and derivatives recognized by the Act
 - Renewable Energy Areas (wind)
 - Commercial-scale wind allowed only in designated area