

**MASSACHUSETTS COASTAL EROSION COMMISSION:  
SUMMARY OF PUBLIC WORKSHOPS  
MAY – JUNE 2014**

Prepared by the Consensus Building Institute



July 29, 2014

*DRAFT FINAL*

## EXECUTIVE SUMMARY

The Massachusetts Coastal Erosion Commission was established with the purpose of investigating and documenting the levels and impacts of coastal erosion in the Commonwealth and developing strategies and recommendations to reduce, minimize, or eliminate the magnitude and frequency of coastal erosion and its adverse impacts on property, infrastructure, public safety, and beaches and dunes.

In May-June 2014, the Commission held five regional workshops to solicit public input to inform the Commission's work. The workshops were held in New Bedford, Boston, Gloucester, Marshfield, and Barnstable. This report summarizes public comments and feedback received verbally and in writing, both in hard copy and electronically, from the regional workshops.

Broadly, participants expressed significant concern about coastal erosion affecting residents and communities throughout coastal Massachusetts. Workshop attendees identified a number of specific geographic areas of particular concern, which are listed in the report. Workshop participants shared many suggestions about scientific, information, and mapping needs; regulations and state involvement; what kinds of local assistance they feel are needed; best management practices and approaches the Commission should support; and offshore beach nourishment. Overarching themes from the workshops included:

- Support for the ongoing science, data and information and a need for additional locally relevant information, modeling, and technical support to assist communities in managing erosion. Participants were especially interested in better understanding beach nourishment dynamics and the costs and benefits of different erosion management approaches over time. They hope for additional science and mapping that is accessible to laypeople and can be shared across communities.
- The desire to explore ways to allow for flexibility in regulations and policies that would enable locally-appropriate coastal erosion management approaches. In particular, people requested support to make beach nourishment easier to pursue at a local level.
- The need for additional state-level guidance, financial resources, and support of pilot projects for erosion management. Participants expressed a desire for guidance on how municipalities should manage erosion and focused on the idea of grants and low cost loans to support both standard and innovative management approaches.
- A request for more stakeholder education and outreach to ensure that municipal officials, conservation commissioners and others are knowledgeable about current erosion management opportunities and approaches.
- A call for greater coordination and dovetailing among agencies working on and policies relevant to coastal erosion. This could include regional coordination or resources such as regional sand borrow sites.

The report contains detailed information on the varied and thoughtful input provided by participants during the public workshops, organized by the following topic areas: geographic

areas of particular concern; scientific, information, and mapping needs; regulations and state involvement; local assistance; best management practices and approaches ; and offshore beach nourishment. The report also captures additional challenges and opportunities for the Commission raised during the workshops.

## Table of Contents

EXECUTIVE SUMMARY.....	1
I. INTRODUCTION.....	5
II. REGIONAL WORKSHOP OVERVIEW.....	6
i. WORKSHOP INTRODUCTION.....	6
ii. COASTAL GEOLOGY, PROCESSES, AND MANAGEMENT OVERVIEW .....	6
iii. COASTAL EROSION COMMISSION: CONTEXT, EXAMPLES, AND NEXT STEPS .....	6
III. SUMMARY OF PUBLIC COMMENTS AND FEEDBACK .....	7
i. GEOGRAPHIC AREAS OF PARTICULAR CONCERN .....	7
ii. SCIENTIFIC, INFORMATION, AND MAPPING NEEDS.....	8
iii. REGULATIONS AND STATE INVOLVEMENT .....	10
iv. WHAT KINDS OF LOCAL ASSISTANCE ARE NEEDED? .....	12
v. BEST MANAGEMENT PRACTICES AND APPROACHES THE COMMISSION SHOULD SUPPORT.....	13
vi. OFFSHORE BEACH NOURISHMENT.....	15
viii. ADDITIONAL CHALLENGES AND CONCERNS.....	17
APPENDIX: COMMISSION MEMBERS, DELEGATES, AND STAFF IN ATTENDANCE .....	20



## I. INTRODUCTION

The Massachusetts Coastal Erosion Commission was established by the 2014 Massachusetts Budget Bill with the purpose of investigating and documenting the levels and impacts of coastal erosion in the Commonwealth and developing strategies and recommendations to reduce, minimize, or eliminate the magnitude and frequency of coastal erosion and its adverse impacts on property, infrastructure, public safety, and beaches and dunes. Specifically, the Commission was asked to evaluate erosion levels since 1978 and assess the resulting financial damage to property, infrastructure, and beach and dune resources. It was also asked to estimate the likely cost of damages over the next ten years under current conditions, regulations, and laws. Based on those assessments, the Commission will evaluate all current rules, regulations, and laws governing the materials, methodologies, and means that may be used to guard against and reduce or eliminate the impacts of coastal erosion. The Commission will also examine any possible changes, expansions, reductions, and laws that would improve the ability of municipalities and private property owners to guard against or reduce or eliminate the impacts of coastal erosion without undue adverse environmental impacts.

As part of its work, the Commission held five regional workshops in May and June 2014. The first meeting was held in New Bedford; the second in Boston; the third in Gloucester; the fourth in Barnstable; and the fifth in Marshfield. The intent of the workshops was to present information related to coastal erosion and shoreline management approaches; to seek public and stakeholder input, especially with respect to suggestions for Commission recommendations and strategies; and to communicate the Commission's process and next steps. Meetings were open to the public. Participation varied from meeting to meeting, with the largest meeting including about 40 people. Workshop participants typically included a mix of local public officials and agency personnel, state agency representatives, environmental consultants, and residents. Every meeting was attended by members of the Commission and technical support staff. See Appendix A for a list of Commission members and their delegates and/or staff who attended the meetings. Further information about these meetings, including presentations, handouts, and other materials, as well as information about the Commission's continuing work, can be found on the Coastal Zone Management website: <http://www.mass.gov/eea/waste-mgmt-recycling/coasts-and-oceans/coastal-erosion-commission.html>.

At each meeting, feedback and comments from participants were solicited through a variety of approaches. As information was presented in two presentations (see below), participants were encouraged to ask questions and provide comments. Following the presentation session, participants were engaged in a 45-minute group discussion centered on four guiding questions:

- What science and mapping is most needed?
- What best management practices should the Commission support and promote?
- What assistance is needed to support local planning and action, given state regulations and local needs?
- Do you have any other input for the Commission recommendations?

Participants were also asked to provide feedback and guidance for the Commission through a short survey administered during the meetings. Finally, they were encouraged to write down any additional thoughts or ideas they wanted to share with the Commission on notecards available on each participant table.

The Consensus Building Institute (CBI) facilitated the workshops.<sup>1</sup> CBI is a nonprofit organization that empowers public, private, government and community stakeholders to resolve issues, reach better, more durable agreements, and build stronger relationships. CBI staff prepared this summary, which includes input provided by participants verbally and in written form, such as through surveys completed at the workshops and via email during the period of the public workshops. The summary is not intended to capture every statement made, but rather to distill key feedback for the Commission's consideration. This summary will inform the work of Commission members and will be made available to the public.

## II. REGIONAL WORKSHOP OVERVIEW

This section describes the general structure followed at each of the regional workshops.

### i. WORKSHOP INTRODUCTION

Each workshop began with a Bruce Carlisle, Director of the Massachusetts Office of Coastal Zone Management (CZM), welcoming participants and introducing the Coastal Erosion Commission members in attendance. Mr. Carlisle then described the Commission and communicated the goals of the workshop. Participants were given an opportunity to ask questions about the Commission and the intent of the workshop.

### ii. COASTAL GEOLOGY, PROCESSES, AND MANAGEMENT OVERVIEW

Following the introduction, a presentation on coastal geology, processes, and management was provided by Commission members Rob Thieler (USGS Scientist) or Rick Murray (Boston University Professor and Town of Scituate Selectman), except for in Gloucester, where Mark Borelli (Provincetown Center for Coastal Studies Marine Geology Director) gave the presentation. The presentation covered the scientific and management dimensions of coastal change; beach and coast fundamentals; shoreline management strategies and their potential impacts; and the results of recent sea level rise assessments.

Participants were then invited to ask questions and share comments. They asked mainly clarifying questions, but a few participants raised substantive questions about things like the uncertainty associated with sea level rise projections. One participant reminded the Commission to explicitly consider wildlife impacts. Another noted that a number of groups, such as the Woods Hole Group, have done a lot of research on coastal erosion in Massachusetts and cautioned the Commission against "reinventing the wheel."

### iii. COASTAL EROSION COMMISSION: CONTEXT, EXAMPLES, AND NEXT STEPS

Mr. Carlisle gave the second presentation at each workshop, describing the context of the Coastal Erosion Commission, examples of the Commission's work, and next steps. The presentation explained that this Commission is not the first commission or task force on coastal erosion in Massachusetts or elsewhere in the U.S., and discussed key themes and findings from similar efforts. These lessons include the need to: improve mapping of erosion hazard zones; promote better building practices; consider new policies such as one that requires "beneficial reuse" of dredged clean sand; and improve communication, education, and outreach. Mr. Carlisle then gave an overview of the Massachusetts Coastal Hazards Commission (2006-2007) and progress since its work. He then discussed best practices for and examples of different approaches for managing coastal erosion, such as bio-engineering for shoreline stabilization and

---

<sup>1</sup> The CBI team was comprised of Ona Ferguson, Patrick Field, Griffin Smith and Danya Rumore.

beach and dune restoration and management. The presentation also reviewed financial and technical assistance available for communities and landowners. He then explained the Coastal Erosion Commission's current efforts and next steps and noted that while the Commission is focused on erosion, erosion cannot be entirely separated from storm impacts (including wave energy, storm surge and flooding). The Commission's next steps include: reviewing public input and feedback solicited through the regional workshops; developing working group information and materials; conducting Commission meetings (there will be three meetings of the Commission during the summer and fall); and drafting a report and recommendations in the fall. The Commission includes a science and technical working group; an erosion impacts working group; and a legal and regulatory working group. The Commission plans to release its final report in winter 2014-2015.

Participants were invited to ask questions and provide comments during and following the presentation. There were a few clarifying questions. One participant asked whether the Massachusetts congressional delegation supports the Commission's work. Commission staff responded that the Commission is the result of a state statute, and said they will be mindful of keeping the federal delegation updated on their work.

### *III. SUMMARY OF PUBLIC COMMENTS AND FEEDBACK*

This section captures the input and feedback participants provided during the workshops, through their surveys, and through other forms of written communication. In light of very low participant numbers at the New Bedford meeting, no comments are recorded from that region. Broadly, participants expressed significant concern about coastal erosion, seeing the problem as affecting coastal residents and communities throughout Massachusetts. Their comments and feedback on specific issues are organized by subcategory below.

#### i. GEOGRAPHIC AREAS OF PARTICULAR CONCERN

On the survey administered at the workshops, participants were asked whether erosion is a priority for their community as a whole, or more of an issue specifically for those living on the shoreline. They were also asked to identify areas of specific concern within their region.

Participants seemed to agree that, in the Boston area, erosion is mostly an issue for coastal communities as well as communities along the Charles River. Areas of particular concern that were identified included along the Charles River; the Boston Harbor area; Winthrop-Revere; and Hull. One participant noted that much of the waterfront in the Boston region is a working waterfront, with many sites already having seawalls; hence, erosion is not a significant problem in these areas.

In Gloucester, participants indicated that the shoreline is the main area of concern for erosion. Sites of high concern that were identified by participants included: the Fort Green proposed hotel site, the west half of Coffins Beach East; Crane Beach; Salisbury Beach State Park and private homes in the area; Plum Island (particularly sewer and homes in the area); and the Haverhill Merrimack River sewer line. One participant indicated that protecting coastal infrastructure and property should be a main concern.

In the Barnstable region, there were mixed opinions about whether erosion was a problem only for those living on the shoreline or for the community as a whole. A little more than half of the

people in Barnstable who completed surveys indicated they think the problem is a concern for the entire community, with some explaining they think coastal erosion will have community-wide economic, environmental, and recreational effects. One of these participants indicated erosion is a problem for the community as a whole but private landowners on the coast tend to be the most vocal about it. Another participant said that erosion is a community issue, but feels that until erosion's impacts on resources and amenities become more visible, the public will likely remain largely unaware. While many people in Barnstable see erosion as a community-wide issue, a number of others think it is mainly a problem on the shoreline. Specific sites of concern in the Barnstable region identified by participants included: public beaches and beach access in general; Town Neck Beach (identified as very important by a number of participants and as "critical" by one participant); Spring Hill Beach; Sandy Neck; Blush Point; Dead Neck/Sampsons Island; East Sandwich Beach; Sandwich Downs/Scorton Neck; Sandwich Village; Nauset Bay, Pleasant Bay; Town Cove; Cape Cod Bay; Chapoquoit Beach; most beaches on the sound; and developed private shorelines, specifically in North Chatham, Pleasant Bay, and Chatham Harbor.

In Marshfield, more than half of the participants said they think erosion is a problem for the entire community because local businesses along the shoreline are affected; and because in some communities, barrier beaches protect the entire community. Areas of specific concern identified by participants included: Duxbury Beach; Central Avenue; North Scituate; Minot; Peggotty; the Fort Point Road area in Weymouth; the dock and town beach in Hingham; Ocean Bluff; Green Harbor; Brant Rock; and Plymouth Long Beach. A number of participants said that all beaches in the area are areas of major concern.

## ii. SCIENTIFIC, INFORMATION, AND MAPPING NEEDS

During the workshops and on surveys, participants were asked about the adequacy of information related to the nature of coastal erosion hazards and potential responses. They were also asked to provide input on scientific, mapping, and information needs. A number of participants stated that existing information on coastal erosion is adequate and that information is not a limiting factor. However, a number of other participants stated that information is not adequate, with this sentiment being most prevalent in Barnstable and Marshfield. Participants shared the following suggestions for how to improve science, mapping and information.

*Make information more accessible:* Many participants stated that CZM provides good guidance and information but that existing information is not easily accessible for the "layperson" and that it needs to be more easy to find. They also indicated that information should be made more understandable to the public.

*Facilitate information sharing:* Participants said it would be helpful to have a better way for communities to share information with each other. One suggestion was to create a database that aggregates existing information of things like erosion rates and helps communities and organizations share the results of their projects and research with each other.

*Help communities understand existing models and how to use them:* A number of participants indicated that communities find it challenging to understand the many different coastal erosion and sea level rise models that exist and how best to use them. They suggested that the Commission could produce a fact sheet on useful beach erosion and sea level rise models that explains each model's purpose and how it can be used.

*Develop other tools to help conservation commissions:* A few participants suggested the Commission should develop tools to help conservation commissions tackle the coastal erosion problem. Participants were vague about what kinds of tools would be useful, but people from all workshops agreed that conservation commissions would benefit from additional support on the coastal erosion issue.

*Map shoreline change more often in areas with higher rates of change:* Several participants would like more shoreline change mapping, particularly in areas with higher rates of change.

*Additional mapping needs:* A suggestion was made to start routine mapping of the top of banks/bluffs/dunes as a great tool to compliment tracking shoreline change at the high water mark. Another suggestion was for applied science and mapping to determine volume estimates of regional and local sediment budgets.

*Research on beach nourishment dynamics and related concerns:* Many participants described a need for more information and research on beach nourishment. Specifically, they mentioned the need for a better understanding of the long-term dynamics of beach nourishment (e.g., how long the sand stays, where it goes, etc.); the effectiveness and long-term benefits of nourishment; and the costs associated with nourishment (including impacts on fisheries, bird habitat, and other environmental systems), both in terms of sand extraction and placement. They mentioned that some research has been done that can be leveraged, but that site-specific studies are needed. They also mentioned that communities typically do not have the resources to do this kind of research. Related to this, a number of people indicated that communities need information on where to find usable sand, which is currently a significant challenge. One participant also said that her community was told by DCR that it was possible to pump sand from below without affecting fisheries, but she has not heard anything about this since; she thought more information on this would be helpful to communities. Participants generally felt more research and information on the specifics of beach nourishment would help coastal communities make informed decisions about whether and how to nourish beaches.

*Provide cost/benefit analysis information at the local scale:* Many participants emphasized the importance of cost/benefit analysis, indicating that, to make good decisions, communities need to have a good idea of the costs, how long something will last, what kinds of effects the approach might have, and what the negative impacts might be. They generally emphasized that cost/benefit analyses need to be done at the local scale, since the costs and benefits of an approach will vary by community. One participant emphasized that such analysis needs to look at the costs of inaction and the costs and benefits over time (for example, the cost of maintaining beach nourishment and benefits to down-shore communities as the sand moves).

*Locally relevant information and models:* The need for locally relevant information and models was a theme that emerged across all workshops. Related to this, one participant at the Marshfield workshop mentioned that the nearest long-term gauge is in Boston, making it hard to do locally relevant modeling on the South Shore.

*More information and research on innovative approaches:* People at several workshops brought up the need for more information about innovative approaches for addressing coastal erosion,

such as offshore breakwaters, with many indicating the need to learn from pilot projects that could be monitored.

*Other:* Participants also felt the following would be helpful: more information on the effect of climate change on coastal bird habitat; a map of shoreline structures that can be removed to restore coastal processes; and, better documentation of the storms that occur and the impacts they cause. Finally, a couple of participants raised questions about the trustworthiness of science, information, and mapping. In particular, they said that, in light of recent concern with the latest FEMA flood map updates, many communities do not feel they can trust information and maps, particularly from FEMA.

### iii. REGULATIONS AND STATE INVOLVEMENT

Through comments shared during workshops and on surveys, participants voiced a number of thoughts about state and federal regulations and perspectives on what role the state should play in managing coastal erosion. Themes that emerged include the following:

*Review regulations for beach nourishment and erosion control:* Broadly, many participants said that existing regulations for erosion control, specifically for beach nourishment, are challenging for this type of erosion management. They suggested the Commission review existing regulations and try to make them more supportive of, or less prohibitive of, effective local action.

*Ensure consistency and compatibility across regulations and requirements:* A number of participants indicated that there is a need to review regulations at the state and federal level and to ensure consistency of regulations and requirements from various departments and agencies. Related to this, one participant suggested coastal erosion regulations should be coordinated with the NOAA fisheries/NEFMC Omnibus Habitat Amendment, which will be released this summer.

*Allow for more locally appropriate solutions:* A number of participants emphasized the need for regulations to be modified to allow for more locally appropriate solutions. Generally, these participants expressed concern about one-size-fits all regulations and restrictions, which they indicated prevent common sense solutions in localities and inhibit innovation. While many people said the solution to this problem is to relax regulations, particularly for beach nourishment, others provided a more nuanced perspective, saying that the goal should be to build in more flexibility to allow for site-specific responses. In a similar vein, a number of participants pushed for more local control over policy and management practices. One participant suggested the state should take the same approach to coastal erosion as it has taken for beach access and plover issues, which the participant said allows for greater local autonomy.

*Provide a state-level mandate and guidance:* Many participants said they would welcome more state guidance, involvement (and maybe regulations) in dealing with coastal erosion. They said that more regional vision and influence might help get local decision-makers and stakeholders on board. They commonly felt this guidance should provide direction to communities while accounting for the fact that communities have different biophysical dynamics, contexts, and resources.

*Pair mandates with financial support for implementation:* Related to the above point, a few participants mentioned that, if the state is going to impose regulations, any mandates should come with financial support for implementation. One participant said that often regulations are put in place before the financial support for implementation, and he encouraged the state to be mindful of putting in place support for implementation before imposing regulations on communities.

*Provide resources and technical support:* At all workshops, participants suggested that the state should provide more resources to communities dealing with coastal erosion, saying there is no way towns can afford to address erosion issues on their own. The need for technical assistance was emphasized across meetings, as was desire for more grants, low cost loans, and matching funds for communities. Some also suggested that the state should support experimentation with new, innovative ideas, and that grant programs seem to stimulate action.

*Support experimentation, pilot projects, and learning-by-doing:* A common sentiment across all workshops was the desire for the Commission and the state at large to support more experimentation in erosion management approaches; to cultivate and support pilot projects, particularly for innovative solutions; and to encourage learning-by-doing. For example, a number of people suggested the state experiment with a breakwater somewhere along the coastline.

*Require maintenance:* One participant mentioned that the maintenance of coastal protection should be explicitly required. He said that, too often, people build coastal protection and then forget about it for decades.

*Rethink sand borrow regulations:* A couple participants mentioned Massachusetts needs to update its policies on sand borrow pits. One suggestion was for the state to create regional sand borrow site regulations. As part of this, participants suggested the state might support studies to identify where sand resources are and make sand available for use by a range of stakeholders, both public and private. Participants suggested the Commission look at the Cape Cod Commission's regulations for sand borrow sites as an example.

*Support programs for buy back of hazard properties:* A couple of participants expressed support for a policy or program that facilitates the buy back of high hazard or storm-damaged properties, especially in cases where cost/benefit analysis shows that this makes good economic sense. A few participants noted that the requirements to receive federal monies available for buy-back are so onerous as to make the program unusable.

*Give conservation commissions leeway to make decisions on a case-by-case situation:* A few participants indicated that conservation commissions should be given leeway to make decisions on a case-by-case situation to allow them to support erosion management measures that are most appropriate in the specific case. Participants felt that a certain approach may be harmful on some beaches and not on others, and that conservation commissions should be able to make decisions accordingly.

*General concerns about federal regulations:* A few participants said that federal regulations hamper coordination and make planning difficult. They fear these will inhibit the development of a holistic coastal erosion strategy. They did not have any suggestions about how to improve

this, but their comments generally indicated that the Commission should consider how to help communities manage coastal erosion amid existing federal regulations and requirements. Participants raised a number of concerns related to US Army Corps of Engineers policies and laws. One participant mentioned that the Corps has to dispose of sand in the cheapest way possible, which often precludes better uses of the dredged material for beach nourishment.

*National Flood Insurance concerns:* Participants mentioned that the National Flood Insurance Program has been an important factor in supporting continued coastal development in high hazard areas. Participants suggested the Commission might need to look at how public policy encourages building in problematic areas and what needs to change to support communities in preparing for sea level rise.

*Wetlands Protection Act:* A participant said that the Commission should look at the Wetlands Protection Act to understand the ambiguity in the law and clarify the law as it relates to coastal erosion. Another participant expressed concern that the Wetland Protection Act could be weakened due to coastal erosion concerns and that this would undermine the work that local conservation commissions do. This participant felt that scientific recommendations about how to best manage wetlands should take priority over private property concerns. Other participants suggested that, if the Commission looks at the Wetlands Protection Act, it may want to involve the Massachusetts Association of Conservation Commissions (MACC) and local conservation commissions in its review.

Additional specific regulatory changes suggested include:

- Allow appropriate dredged spoil and sand to be placed in the near-shore and intertidal zone;
- Pass the Cape Cod Ocean Management District of Critical Planning Concern regulations;
- When hard engineering solutions are put in place, better enforce follow-through with required beach nourishment to aid in maintaining beach levels. This would enable local conservation commissions to approve these projects;
- Allow for “resource banking”—an approach that would aggregate smaller, individual site nourishment requirements to allow for more meaningful regional beach restoration;
- Consider allowing rock sill and similar engineering approaches to support the creation of fringing salt marshes in higher energy areas.

#### iv. WHAT KINDS OF LOCAL ASSISTANCE ARE NEEDED?

When asked specifically about what kinds of local assistance are needed, as well as in comments made throughout the workshops and in written form, participants identified the following local assistance needs.

*Financial resources:* Participants broadly stated that communities need financial assistance to help them deal with the coastal erosion problem. When encouraged to be specific about what kinds of financial resources and for what purposes, people put forward a number of suggestions. Many indicated that funds for more local research and technical analysis would be helpful. A number of participants indicated that regulations and mandates, if imposed, should be preceded or accompanied by funds to help communities fulfill the mandates. Many mentioned a desire for state matching funds to help secure federal grants. One person said that since beach nourishment projects will benefit other communities as sand moves down shore, the state should provide some matching funds or support for communities investing in beach

nourishment. A few participants referenced the recent community grants from CZM and supported this type of approach.

*Technical assistance:* Many people said that it would be helpful to have additional technical assistance to help communities evaluate different erosion control measures, decide whether and how to rebuild existing erosion control structures, and understand the impacts of different approaches. This could come in the form of state-provided technical support, or as funding to help communities undertake their own analyses. Related to this, several participants indicated that it would be helpful to develop tools that allow communities, groups, and individuals to more easily assess the cost and effectiveness of different erosion management strategies.

*Planning support:* A couple of participants indicated that, since communities are already overwhelmed by their current concerns, planning support to assist communities in thinking ahead despite their current constraints would be helpful.

*Forums for information sharing and joint learning:* A couple participants indicated that it would be helpful to communities to have organized forums where people doing coastal erosion projects, using best management practices, and undertaking pilot projects can easily and effectively communicate with and learn from each other. Some people indicated this might take the form of workshops; others suggested some form of online database.

*Help communities identify appropriate sand sources:* A few participants said that communities have a hard time figuring out where appropriate sand sources are, and that they need help figuring out where the sand is and how they can use it.

*Help communities think about relocation, or “retreat”:* A few participants brought up the subject of retreat from sea level rise, indicating that it would be helpful to provide communities with guidance and support regarding when and how to consider this approach. One participant said it would be useful to have a cost/benefit analysis study looking at relocation as compared to a hard coastline approach. Retreat-related topics participants suggested should be looked at include: at what point does it make sense to not rebuild the seawall that your community has invested in for decades? At what point do you retreat? Under what conditions do you retreat? How do you reallocate the money that goes into building and maintaining sea walls into the acquisition of vulnerable properties? Given that this is an extremely challenging problem for communities, participants suggested some thought and planning need to go into this now to be implemented in the future.

v. BEST MANAGEMENT PRACTICES AND APPROACHES THE COMMISSION SHOULD SUPPORT

During the workshops, participants were asked to reflect on what kinds of best management practices and approaches the Commission should support. In response to this question and through comments provided during the meetings and on surveys, participants suggested a number of best practices and general approaches they would like to see.

*Proactive management:* A number of participants emphasized that coastal erosion should be proactively rather than reactively managed to maximize efficiency and lower costs.

*Invest in experimentation, pilot projects, and learning by doing:* A large number of participants across the workshops expressed interest in experimentation and support for pilot projects. They

generally felt that it is important for the Commission to invest in pilot projects and support experimentation and learning from pilot projects rather than just moving ahead with a particular regulatory approach or set of management strategies.

*Experiment with offshore breakwaters:* A number of participants expressed support for offshore breakwaters, as well as innovative offshore structures (such as floating tire structures) that can disturb waves. A couple people indicated they would like to see the state experiment with offshore breakwaters by doing test projects in a few places.

*Build flexibility into regulations:* As indicated above, many participants feel strongly that there needs to be more flexibility in the application of regulations. They think some flexibility is needed to allow communities to pursue locally appropriate approaches and make decisions about balancing resource area trade-offs. The “cookie cutter” or “one-size-fits-all” regulatory approach, participants said, can cause problems, rather than solving them.

*When evaluating projects, look at the entire affected area:* A few people said that, when looking at coastal erosion projects and management approaches, the entire profile of the effected area needs to be considered. They said there are effects and tradeoffs that must be considered within a management zone, and these need to be looked at and weighed before pursuing a management approach.

*Conduct more holistic cost/benefit analysis:* A couple of participants indicated that, when evaluating options, people need to look at the pros and cons of the approach and weigh them against each other, rather than simply looking at impacts. Similarly, participants said that cost/benefit analyses should consider the implications of doing nothing, as well as the costs and benefits of maintaining a management strategy over time. As indicated above, people also felt that cost/benefit analyses should be done at the local level to provide a sense of whether strategies make sense given local context and considerations.

*Develop best practices for urban areas:* A participant in Boston noted that the Commission has a strong focus on sub-urban areas and needs to develop best practices for urban areas. Related to this, one participant suggested that the Commission add a member who specifically represents an urban area, since all members are currently representatives of suburban communities.

*Frame the coastal erosion conversation around “management” and not “solutions”:* One participant from Barnstable suggested that, when talking about erosion, the conversation should be framed around “management” rather than “solutions.” She feels this is important to make sure people understand that we are talking about managing ongoing impacts and risks, not fixing the problem.

*Make it easier for communities to pursue beach nourishment:* The topic of beach nourishment and sand mining was important for many participants, particularly in Marshfield and Barnstable. As one participant in Marshfield said, “It all comes down to sand.” While some participants expressed concern about the potential ecological impacts of dredging and beach nourishment, many people expressed their support for beach nourishment and indicated they would like to see the state make it easier for communities to evaluate the effectiveness of and pursue nourishment as an erosion management approach. One participant suggested that the

regulatory process should be streamlined for several soft solutions, including for beach nourishment. A few participants indicated they would like to see the state relax requirements for beach nourishment; for example, coarse sand is currently not allowed for beaches with fine grain material, but perhaps coarse sand might be preferable, because it stays on site longer.

*Consider offshore sand:* A number of participants expressed interest in offshore sand for beach nourishment, indicating this approach has been used in other regions and that Massachusetts should consider this method of beach replenishment.

*Consider a broader beach nourishment strategy rather than parcel by parcel:* Several people said that beach nourishment should be considered as a broad community strategy, rather than being considered parcel-by-parcel. In response to this, a conservation agent noted that it is not clear how to accomplish this. She said people have suggested creating a fund that would be paid into by applicants so that a larger sand fill project addressing a more appropriate area might be undertaken, but this would be challenging to implement.

*Discourage dune damage:* One participant said that, given how important dunes are to community resilience, there should be a policy or system for making people liable for damage to dunes. He would like to see a policy or program that discourages people treating dunes poorly.

*Look at the Cape Cod Commission's work on coastal erosion as a possible model:* Someone suggested that the Commission look at what the Cape Cod Commission is doing to address coastal erosion. These efforts, according to an email from a Cape Cod Commission representative, include developing a floodplain bylaw, investigating the viability of establishing a District of Critical Planning Concern; considering "undevelopment" in the floodplain through acquisition and removal of vulnerable structures and properties; implementing minimum performance standards; and establishing setbacks based on long-term erosion rates. A representative from the Cape Cod Commission encouraged the Commission to adopt the Cape Cod Oceans Management plan recommendations for sand mining and beach nourishment.

#### vi. OFFSHORE BEACH NOURISHMENT

On the survey administered at workshops, participants were asked: "What are your thoughts or concerns about the use of offshore (ocean) sand for beach nourishment?" There were a number of participants who said they are opposed to the idea of using offshore sand for nourishment. However, the majority of participants expressed support for this option, although most of their responses were caveated with questions about impacts and indicated the need for more information. Participants in Marshfield were particularly supportive of this option, with many responding along the lines of "Let's do it!" A number of participants said they do not know enough about this approach to have an opinion or to comment.

Participant comments in response to this question generally fit into the below categories:

*Concern about impact on ocean habitat and wildlife at the source area:* Many participants indicated that they are concerned about potential effects on ocean habitat, fisheries, and other marine wildlife at large. They are concerned that the process of mining sand offshore will destroy habitat and that the entire process could negatively affect fish and mammals. Some participants simply wanted more information and research on the potential impacts; others do not support this approach due to their concern.

*Concern about possibility of introducing contamination at receiving areas:* A few participants expressed concern about the possibility of offshore sand mining introducing contamination into receiving areas.

*Concern about the disruption of the offshore sediment budget:* A few participants expressed concern about offshore sand mining disrupting the sediment budget and interfering with natural replenishment.

*Concern about unanticipated impacts and consequences:* One participant cautioned that offshore sand mining could have unanticipated consequences that would far outweigh the benefits, and that these potential impacts should be seriously considered and investigated before this approach is pursued.

*Concern about the sustainability of this approach:* One participant expressed concern about the sustainability of offshore sand mining, suggesting it will be necessary to regularly re-borrow sand from offshore to maintain the nourishment area, particularly as sea level rises and storm intensity increases.

*Concern about the cost:* A few participants expressed concern about the cost of this process. One person felt that pursuing offshore sand borrowing would cause a lot of local budget stress for the benefit of only a few people. An individual from Barnstable indicated that soft solutions such as beach nourishment are very costly and do not appear to be holding up well on Cape Cod Bay due to the strong winds and 11 foot tides.

*A viable option needing appropriate regulatory framework:* A few participants said they think using offshore sand is a viable and realistic option, and that they think a regulatory framework allowing and facilitating nourishing beaches with offshore sand should be put in place. Participants indicated regulation should allow for the process to move forward in a timely manner. One participant would like to see the regulations include reasonable compensation to the Commonwealth, since offshore sand is a public resource.

*Other places are doing it:* A couple of participants said the method is used in other states and/or throughout the world, and that they would like to see Massachusetts use it as well.

*Appropriate if no other options exist:* Some participants indicated they think offshore mining is appropriate only if no other viable sand borrowing options exist.

*Can be appropriate, but sound assessments and surveys must be done first:* A few participants said they think nourishment with offshore sand could be appropriate, but that it should only be done following thorough assessments and surveys.

*Beneficial to use sand within the coastal system rather than trucking in terrestrial sand:* A couple participants expressed support for this approach as it will reduce the need to truck in sand from upland sites, which they suggested is costly and has an impact on communities.

*Specific places to dredge from:* One participant from the Cape said that a shoal off of the east end of the channel and a near shore shoal near Scusset beach could be used as sand borrow

pits, saying these deposits were not there 50 years ago and have the right grain distribution for beach sand.

vii. ADDITIONAL CHALLENGES AND CONCERNS

In their verbal and written comments, participants mentioned the following challenges and concerns:

*Dealing with the question of retreat:* A number of participants at different workshops noted that, for many communities and in particularly vulnerable sites, retreat may be the only viable long term way to deal with sea level rise. These participants generally wondered what role the Commission and the state will play in helping communities begin a conversation about retreat and manage retreat going forward. Some participants encouraged the state to create regulations to facilitate retreat, or at least prevent further development on the coastline. As indicated above, others thought a first step would be in helping communities understand and evaluate the costs of continued development and rebuilding coastal infrastructure versus retreat, as well as providing guidance and resources to help communities begin to transition their development away from the coastline.

*Environmental justice:* One participant noted that environmental justice is a concern on the Cape. They said there are a number of people with limited income, and given beach erosion control projects require a lot of money, many people cannot afford the erosion management that needs to be done.

*Implementing the Commission's plan:* One participant explicitly asked the Commission to have an implementation plan, indicating that the 2007 plan has largely not been implemented.

*Need to protect offshore sandbars:* A few participants mentioned that management strategies ought to consider both what is on the beach and offshore habitat. Offshore sandbars are important habitat for flounder and other fish species.

*Balancing private property rights and public interests:* A number of participants alluded to the challenge of balancing private property rights with public interests. These people often indicated that, when looking at individual coastal erosion projects, private rights tend to trump public interests, and that small private projects are often approved without consideration of broader impacts and whether they fit within a larger strategy.

viii. ADDITIONAL OPPORTUNITIES

In the course of the workshops and through surveys and other written feedback, participants shared the below thoughts on additional opportunities for improving coastal erosion management.

*Education and outreach, particularly for key stakeholders:* Numerous participants at all workshops emphasized the importance of education and outreach as a way to improve coastal erosion management throughout Massachusetts. In particular, they emphasized the need for more education and outreach targeted at zoning boards, conservation commissions, planning staff, harbor masters, harbor commissions, and other similar stakeholders involved in or affected by coastal erosion management decisions. They suggested this could include alerting stakeholders about state agency programs, resources, and technical expertise, as well as

bringing experts to key organizational meetings. Since staff in conservation commissions and boards turn over fairly frequently, workshop participants suggested outreach should be ongoing.

*Align stakeholders working on erosion-related issues:* On a related note, one participant suggested that one of the most helpful things the Commission could do is to clarify who is working on this issue, and to help get these bodies working on erosion-related issues pointing their goals in the same direction and supporting communities in implementing effective coastal erosion management.

*Public engagement:* Many participants said that, in addition to focusing more on education and outreach for key stakeholders, the state should invest more in public engagement. Some people thought this would simply be helpful whereas others said it is necessary. In addition to calling for more public engagement in general, people suggested there is a specific need to engage politicians, young people, and people living away from the coast. One participant suggested that many towns have health and safety fairs and these fairs might provide a good opportunity to do public engagement around erosion issues. Another participant felt that figuring out how to give people a tangible sense of current and future coastal erosion risks would be helpful for engaging the public in the erosion conversation.

Related to the above point, a number of participants—particularly in Gloucester—expressed frustration with the lack of public outreach conducted for the Commission’s regional workshops, which some felt is reflective of state public engagement in general. These participants said that the Commission’s meeting should have been much better advertised. They emphasized that, to be effective, public engagement needs to be meaningful and events must be well advertised and well attended, perhaps by using local partners and their networks to improve attendance.

*Experimentation and pilot programs:* As indicated above, many participants see a great opportunity for learning from experimentation and building support for management efforts through investing in pilot programs. It was suggested that pilot programs in particularly high impact areas would be very beneficial. Related to this idea, one participant asked whether there is any venture capital-like money from CZM or elsewhere that could be used to foster innovation and the development of new approaches.

*Innovative ideas competition:* One participant suggested that an agency like CZM could host a competition to help people come up with innovative ideas about how to address coastal erosion. Within the competition, there could be a professional category, a student category, and other categories. The winning idea or ideas could be implemented as a pilot project.

*Derive state benefit from dredging:* A participant suggested that it might be worth exploring ways that the state can benefit from all dredging projects. For example, if a private entity mines sand offshore, perhaps they should pay a fee for using the public resource, and this money could be paid to the Commonwealth for the public benefit. According to participants, some states are apparently already doing this.

*Make use of existing resources:* Participants mentioned the following existing resources that could be helpful for advancing coastal erosion management in Massachusetts.

- The Massachusetts Ocean Resource Information Systems (MORIS) website is a resource for communities: <http://www.mass.gov/eea/agencies/czm/program-areas/mapping-and-data-management/moris/>
- Cape Cod Community College has an environmental technology program that might be interested in assisting with coastal erosion management, such as helping develop innovative approaches.

## APPENDIX: COMMISSION MEMBERS, DELEGATES, AND STAFF IN ATTENDANCE

Name	Title	Affiliation
Maeve Bartlett	Secretary, Executive Office of Energy and Environmental Affairs (EEA)	Commission member
Bruce Carlisle	Director, Office of Coastal Zone Management (CZM)	Commission member
David Cash	Commissioner, Department of Environmental Protection (DEP)	Commission member
Jack Clarke	Director of Public Policy & Government Relations, Mass Audubon	Commission member
Anne Herbst	Conservation Administrator, Town of Hull	Commission member
Patricia Hughes	Selectwoman, Town of Brewster	Commission member
Jack Murray	Commissioner, Department of Conservation and Recreation (DCR)	Commission member
Rick Murray	Selectman, Town of Scituate and Professor, Boston University	Commission member
Doug Packer	Conservation Agent, Town of Newbury	Commission member
Marty Suuberg	Undersecretary, EEA	Commission member
Rob Thieler	Geologist, U.S. Geological Survey	Commission member
Jim Baecker	Regional Planner, DCR	Delegate or staff
Bob Boeri	Project Review Coordinator, CZM	Delegate or staff
Jason Burtner	Boston Harbor Regional Coordinator, CZM	Delegate or staff
Gary Davis	General Counsel, EEA	Delegate or staff
Valerie Gingrich	Boston Harbor Regional Coordinator, CZM	Delegate or staff
Kathryn Glenn	North Shore Regional Coordinator, CZM	Delegate or staff
Rebecca Haney	Geologist, CZM	Delegate or staff
Liz Hanson	Policy Advisor for Climate Preparedness, EEA	Delegate or staff
Julia Knisel	Coastal Shoreline and Floodplain Manager, CZM	Delegate or staff
Liz Kouloheras	Wetlands Section Chief, Southeast, DEP	Delegate or staff
Lealdon Langley	Director, Wetlands and Waterways Program, DEP	Delegate or staff
Margot Mansfield	Coastal Management Fellow, CZM	Delegate or staff
Steve McKenna	Cape and Islands Regional Coordinator, CZM	Delegate or staff
Kevin Mooney	Senior Waterways Engineer, DCR	Delegate or staff
Joe Orfant	Bureau of Planning & Resource Protection Chief, DCR	Delegate or staff
Mike Stroman	Wetlands Program Chief, DEP	Delegate or staff
Brad Washburn	Assistant Director, CZM	Delegate or staff