Coastal Erosion Commission: context, examples, and next steps
Overview

• Themes from other national and state level reports
• 2007 MA Coastal Hazards Commission
• Best practices and examples
• Financial and technical assistance
• Current efforts and next steps for Coastal Erosion Commission
Themes from similar national and state level reports
National and state level reports

- National Research Council: Managing Coastal Erosion - 1990
- New York - Governor's Coastal Erosion Task Force - 1994
- Heinz Center: Evaluation of Erosion Hazards - 2000
- Delaware: Striking A Balance - 2005
- NRC: Mitigating Erosion on Sheltered Coasts - 2007
- USGS: Historical Shoreline Change along the New England and Mid-Atlantic Coasts - 2010
- North Carolina: Beach and Inlet Management Plan - 2011
- NOAA: How Coastal States and Territories Use No-Build Areas along Ocean and Great Lake Shorefronts - 2012
- Connecticut: Shoreline Preservation Task Force - 2013
- Virginia Institute of Marine Science: Living Shoreline Guidance - 2013
National and state level reports: themes

• Improve mapping of erosion hazard zones
  – State and local decision makers and others need accurate information on erosion for land-use planning, erosion hazard mitigation, and general awareness
  – Utilize historical shoreline change methodology
  – FEMA's coastal hazard mapping should include erosion hazard delineations

• Promote better building practices
  – Limit development in high erosion hazard zones
  – Develop guidance on proper procedures to mitigate negative effects of existing and planned structures that cause adverse effects on the adjacent property owners
  – Conduct technical evaluations of new shore protection products and methods
National and state level reports: themes

• Policy development and implementation
  – Require placement of compatible sand, dredged from harbors and channels, on beaches
  – About 1/3 states have erosion hazard area management programs that specifically include the establishment of erosion setbacks for new construction
  – Transfer economic costs of erosion losses from federal taxpayers (NFIP) to property owners via premiums that approximate the risks of loss

• Improve communication, education, outreach
  – Enhance notice to land-owners on erosion hazards (insurance premium notices, deeds/title)
  – Information for general public on risks associated with development on/near coastal shorelines and floodplains
Coastal Hazards Commission - 2007
MA Coastal Hazards Commission

- Commission charge:
  - Characterize vulnerability to coastal erosion, flooding, and sea-level rise
  - Evaluate data, tools, regulations and management approaches
  - Develop recommendations

- May 2007 report:
  - 29 recommendations on hazards information, policy and regulations, planning, and protection
  - Recommendations included actions for state as well as other entities
  - Pilot South Shore coastal infrastructure inventory
MA Coastal Hazards Commission: Progress on recommendations

• Development and implementation of StormSmart Coasts Program:
  – Information, tools, and strategies to address erosion, flooding, and sea level rise
  – Targeted, hands-on assistance to communities

• Advancing hazard mapping and identification:
  – Shoreline change: maps and statistical analysis of historic shoreline locations from mid-1800s to 2008/2009
  – Sea level rise mapping and online viewers
MA Coastal Hazards Commission: Progress on recommendations

- Risk and vulnerability assessment and coastal planning:
  - Direct work with coastal cities and towns: Boston, Hull, Falmouth, Oak Bluffs, Scituate, Marshfield, Duxbury, Nantucket, etc.

- State building code:
  - New design and construction requirements for buildings and structures located in hazard zones

- Wetlands Protection Act: Land Subject to Coastal Storm Flowage
  - DEP Advisory Group convened to develop draft regulations
MA Coastal Hazards Commission: Progress on recommendations

- **Sea level rise guidance**
  - Summarize trends, provides best available projections, application

- **Coastal land conservation**
  - 37 linear miles of coastal shoreline land protected

- **Regional sediment management**
  - New studies of sediment budget
  - Ongoing beach nourishment projects

- **Documenting storm impacts**
  - Storm Reporter: on-line and mobile tool for rapid delivery of damage information to decision makers and emergency management personnel
Best practices and examples
Best practices and examples: Bio-engineering for shoreline stabilization

- Combination of natural, biodegradable erosion-control products and deep-rooted plants
  - Coir rolls provide stability and protection while vegetation is planted and becomes established
  - As coir rolls disintegrate (typically over 5-7 years) plants provide stabilization through both dense root systems and above-ground biomass

- Examples:
  - Private properties in Barnstable, Chatham, Orleans, Wellfleet
Best practices and examples: Repair/reconstruction of revetments, seawalls, groins

- Design improvements to reduce impacts, improve longevity and minimize maintenance costs
  - Locate structure as far landward as possible
  - Restore fronting beach
  - Careful design for “end effects”
  - Address erosion and runoff issues
  - Build stairs into structure

- Examples:
  - Winthrop Shores
  - Centerville Beach, Barnstable
Best practices examples: Beach and dune nourishment

• Beach and dune nourishment:
  – Adding compatible sediment to beach/dune system
  – Increased volume protects landward areas without reflecting wave energy

• Example (large scale):
  – Merrimack River dredge beneficial re-use: Newburyport, Newbury, Salisbury

• Example (small-medium scale):
  – Barnstable County Dredge
  – Salisbury State Park dune enhancement
Notes:
- From a database in development
- Public projects only
- Only completed projects
- Projects > 1,000 yd3
### Barnstable County Dredge Activity (1986-2014)

<table>
<thead>
<tr>
<th>TOWN</th>
<th>PROJECT COUNT</th>
<th>AVG VOL (CY)</th>
<th>MIN VOL (CY)</th>
<th>MAX VOL (CY)</th>
<th>MOST FREQUENT RECIPIENT BEACH</th>
</tr>
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<tbody>
<tr>
<td>Falmouth</td>
<td>51</td>
<td>2,648</td>
<td>1,000</td>
<td>20,000</td>
<td>Menauhant Beach (19)</td>
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<tr>
<td>Chatham</td>
<td>38</td>
<td>13,847</td>
<td>1,000</td>
<td>120,000</td>
<td>Andrew Harding Lane Beach (10), Cockle Cove (10)</td>
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<tr>
<td>Harwich</td>
<td>29</td>
<td>7,020</td>
<td>1,118</td>
<td>19,984</td>
<td>Wah Wah Taysee Road (10)</td>
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<tr>
<td>Mashpee</td>
<td>24</td>
<td>4,634</td>
<td>1,377</td>
<td>10,000</td>
<td>Popponesset Spit Beach (14)</td>
</tr>
<tr>
<td>Yarmouth</td>
<td>24</td>
<td>4,342</td>
<td>1,200</td>
<td>9,286</td>
<td>Smuggler's Beach (9)</td>
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<tr>
<td>Barnstable</td>
<td>18</td>
<td>8,507</td>
<td>1,000</td>
<td>23,938</td>
<td>Dead Neck (9)</td>
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<tr>
<td>Dennis</td>
<td>17</td>
<td>40,381</td>
<td>2,700</td>
<td>23,300</td>
<td>Cold Storage Beach (8)</td>
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<tr>
<td>Truro</td>
<td>16</td>
<td>13,007</td>
<td>11,000</td>
<td>24,339</td>
<td>Corn Hill Beach (16)</td>
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<tr>
<td>Bourne</td>
<td>8</td>
<td>7,672</td>
<td>1,410</td>
<td>17,000</td>
<td>Bassetts Island (4)</td>
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<tr>
<td>Tisbury</td>
<td>6</td>
<td>16,670</td>
<td>11,000</td>
<td>33,362</td>
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<tr>
<td>Eastham</td>
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<td>8,259</td>
<td>2,000</td>
<td>19,061</td>
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<tr>
<td>Nantucket</td>
<td>3</td>
<td>3,333</td>
<td>1,000</td>
<td>7,000</td>
<td>Pocomo Head Beach (3)</td>
</tr>
</tbody>
</table>

*Note: Projects with volumes < 1,000 CY omitted*
Best practices examples: Elevating buildings

- Reduces damage to building, adjacent property and infrastructure
- Open pilings without footings
- Allows over-wash and wave energy to dissipate naturally over wide area
- Reduces channelization of water flow around foundations
- Eligible for lower flood insurance rate above base flood elevation (BFE)
- Example:
  - Hull freeboard incentive program: encourage elevation of flood-prone buildings 2’ above BFE
Best practices examples: Relocating facilities

• Reduce risk and cost of repeated impacts and losses by moving facilities from high-hazard areas
  – Requires available space and willingness to move
  – Can be eligible for hazard mitigation assistance

• Examples:
  – Brewster Paine’s Creek Landing
  – Siasconset, Nantucket
  – Cape Cod National Seashore: Provincetown Herring Cove bathhouse relocation and elevation (2012) and parking lot relocation (2014)
Best practices examples: Beach and dune management

- Management plans and actions to build and protect landforms
- Dune nourishment
- Consolidated access with best practice designs
- Beach grass and native salt-tolerant plantings
- Sand fencing

Examples:
- Duxbury Beach
- North Nantasket Beach
- Sylvia State Beach
- Salisbury Beach State DCR Park
Financial and technical assistance for communities and landowners
Financial assistance for communities and landowners

- Coastal Community Resilience Grants (EEA/CZM)
  - Projects to assess vulnerability and risk; implement management measures or policies; redesigns for enhanced resilience; natural storm-damage protection
  - 2014: 10 communities for $1M in awards

- Green Infrastructure Grants (EEA/CZM)
  - Projects for planning, feasibility assessment, design, permitting, construction, and monitoring/evaluation of natural or living shoreline approaches
  - 2014: awards to be announced soon

- Hazard Mitigation and Flood Mitigation Grants (MEMA/DCR)
  - Hazard mitigation plans and projects that reduce or eliminate risk/damage to people and property
  - 2013: over $11.8 M to local communities
Technical assistance for communities and landowners

• Hands-on technical support:
  – State agencies: CZM, DEP, DCR & MEMA
  – Regional Planning Agencies
  – NGOs: WHOI Sea Grant, Provincetown Center for Coastal Studies
  – Natural Resources Conservation Service
  – Local conservation commissions and town planning offices
  – Private consultants

• Online technical resources
Coastal Erosion Commission
Coastal Erosion Commission: current efforts and next steps

• Review public input and feedback
• Working group information & materials
  – Science and Technical
    ▪ Reasonable assessment of coastal erosion rates and areas of high hazard
    ▪ Evaluating methodologies and means
  – Erosion Impacts
    ▪ Appraisal of damage since 1978
    ▪ Estimate of damages in next 10 years
  – Legal and Regulatory Working Group
    ▪ Evaluating current regs and laws
    ▪ Suggestions related to possible changes
• Commission meetings:
  – ~3 meetings through Summer and Fall
• Draft report and recommendations
Spring 2014
- 1st commission meeting
- Working groups established

Summer 2014
- Public workshops
- Working groups underway
- 2nd commission meeting

Fall 2014
- Info and material from working groups
- 3rd commission meeting
- Development and drafting of report and recommendations

Winter 2015
- 4th commission meeting
- Finalize report and recommendations
Coastal Erosion Commission:

StormSmart Coasts:
http://www.mass.gov/eea/agencies/czm/program-areas/stormsmart-coasts/

http://www.mass.gov/eea/agencies/czm/program-areas/stormsmart-coasts/coastal-hazards-commission/