D R A F T MEETING MINUTES
NEW HAMPSHIRE COASTAL RISKS AND HAZARDS COMMISSION
(RSA 483-E)

June 20, 2014
10:00 AM - 12:00 Noon
BROWN'S LOBSTER POUND
407 NH Highway 286, Seabrook, NH June 20, 2014

Members Present

Name	Representation
Becker, Dr. Mimi	Town of Exeter
Bird, Steve	City of Dover
Bowman, Peter	Alternate, NH DRED – Division of Forests and Lands
Feighner, Edna	NH Division of Historical Resources
Fitzgerald, Brian	Alternate, Town of Rye
Godlewski, Sherry	Alternate, NH Department of Environmental Services
Kinner, Peter	Town Greenland/UNH Coastal Response Research
Kirshen,Dr. Paul	University of NH
Kupper, Theodore	NH DAS – Bureau of Public Works, Design & Construction
Morgan, Thomas	Town of Newington
Melanson, Paul	Town of Hampton Falls
Muns, Rep. Chris	Representative, District 21
Nyhan, Kevin	NH Department of Transportation
O'Sullivan, Michael	Town of Madbury
Pimental, Kyle	Strafford Regional Planning Commission
Rice, Rep. Fred	Representative, District 21
Rice, John	Seacoast Board of Realtors
Riley, Cory	NH Fish & Game, Great Bay NERR
Ryan, Mary Kate	Alternate, NH Division of Historical Resources
Sinnott, Cliff (Chairman)	Rockingham Planning Commission
Stiles, Nancy	Senator, NH District 24
Smith, Raymond	Town of Seabrook
Stephenson, Roger	Town of Stratham
Watters, David	Senator, NH District 4
Wolek, Gail	NH DRED – Division of Parks and Recreation

Members Absent

Name	Representation
Borden, Rep. David	Town of New Castle
Cormier, Robert	Homebuilders and Remodelers Association of NH
Caron, David	NH Municipal Association
Carroll, Patrick	Town of Rollinsford
Gilbert, Jennifer (Clerk)	NH Office of Enewrgy and Planning
Houle, Jamie	Town of Durham
Miller, Steve	City of Portsmouth
Nyhan, Kevin	NH Department of Transportation
Pennock, Jonathan	UNH Marine Program & NH Sea Grant Program
Quiram, Vicki	NH Department of Environmental Services
Stanwood, Sabrina	NH DRED – Division of Forests and Lands
Winslow, Phil	Town of Rye
Wood, David	Town of Hampton

Others Present

Name	Representation
Bashline, Kate	Seabrook resident
Burdick, Dr. David	UNH Jackson Marine Lab
LaBranche, Julie	Rockingham Planning Commission Sen. Planner
Stampone, Mary	Science Advisory Panel
Wake, Dr. Cameron	Science Advisory Panel
Wysmuller, Tom	Member of CRHC Science Advisory Panel

1. **Welcome/Introductions**

   Chairman Sinnott called the meeting to order at 10:05. He thanked Senator Stiles for arranging Brown's Lobster Pound as the meeting location. Senator Stiles welcomed members and guests and thank the Browns for their hospitality. In the interest of time, individual member introductions were dispensed with.

2. **Approval of Draft Minutes of May 16, 2014**

   The minutes of May 16th, prepared by Jennifer

3. **Science and Technical Advisory Panel Draft Report**

   A. Doctors Paul Kirshen, Cameron Wake and Mary Stampone provided an overview presentation of the report thus far. Topics discussed included the processes that contribute to global and regional sea-level rise, sea-level rise in the past and projected sea-level rise as well as storm surge and precipitation. (see executive summary in 'draft' report). There was emphasis on the fact that some data is uncertain which, is why ranges are given as opposed to exact numbers (i.e. sea-level rise table in Exec. Summary). The draft report underwent peer review by several outside experts whose comments and edits, which were relatively minor, are incorporated in to the draft. There was high agreement among the Science Advisory Panel and the external reviewers.

B. Comments / Questions / Discussion

- Question: Is storm surge data discussed in this report considered or accounted for in the recent FEMA maps?
  Answer: Storm surge is incorporated into the flood models used to developed the new FEMA DFIRM maps. The draft report does not explicitly project a change in the storm surge In the future from that assumed in the FEMA maps. There is not yet a clear consensus about how the frequency or severity of coastal storms may effect New Hampshire. What is clear is that the the area flooded in a future 100 year storm today will be flooded more frequently as sea level rises.
- Question: Presenters were asked to explain the recommendation about how to manage for sea level rise.
- Answer: Dr. Kirshen summarized the guidance given in the report about how to use the sea level rise ranges: For facilities with low risk tolerance (e.g expensive, long-lived infrastructure, critical infrastructure, etc.) those facilities should be constructed assuming the "intermediate high" estimates, but with the ability to respond or adapt to the "high" sea level rise scenario. How facilities/public utilities infrastructure are affected within communities due to sea-level rise. Infrastructure that is costly and a great investment for communities is best to address as low-risk intolerant facilities (prepare for worst case scenario/highest sea level rise projections). For facilities, or other assets that have a higher tolerance for risk, low sea level rise estimates can be used, but with the understanding that these assets may be lost if the predicted levels of sea level occur.
- Comment: Commission member suggested that not just 'new' but 'existing' infrastructure be included in this guidance. Consensus was that this should be added
- Comment: Rep. Rice expressed skepticism regarding the research and data included in draft report. He refered to souces and reports that indicate the ice caps are expanding and that the rates of sea level rise has ot changed in 135 years. T. Wysmuller complemented the quality of the report and said he had not had the opportunity to fully comment on the report but that on the subject of sea level rise acceleration especially his views differ from other Panel members. He promised to submit sources of information refuting some of the Reports conclusions. Comment made regarding the rate of sea-level not having changed past 135 years.
- Response: Panel members responded to these comment: (1) The Commissions charge to the Panel was to review the peer reviewed science pertaining to increased flood risk in the coastal area. The Panel has done that very thoroughly and found virtually no credible disagreement about the basic conclusions reached. It was further explained that a primary sources for the sea level rise scenarios chosen was the National Climate Assessment report which examined the rates of sea level rise for 1900 to present which show accelerating rates of global SLR.
- The panel members further responded saying that additional changes will be made in the report before it is final . They welcome comments from Commission members and reiterated that scientific information included is limited to peer-reviewed scientific resources which will be evaluated by the SAP for inclusion in the draft report. are still welcome. The SAP recognizes that this is not the final assessment that will be made for New Hamsphire and recommends the report be evaluated at a minimum of every few years. welcoming responded
- Realtor question - wanted to know more about FEMA maps and sea level rise predictions so he may be more educated/educate potential buyers in seacoast area – stated he has already lost sales due to new FEMA maps.
- Question about FEMA's methodology used to redefine the new 100-year floodplain and storm surge height in the updated FIRMs. Jen Gilbert will provide FEMA Fact sheet about FEMA's New England coastal mapping effort.

C. Consensus on basic report findings & next steps for report adoption

At the next meeting the report will be discussed again and voted on for adoption. Between now and then it will be sent our by the Panel to peer review by other climate scientists. The revised final draft report will address three items: 1) lines 139-150 on page 4 will be revised to include emphasis on existing and new infrastructure and that current science and estimates will be updated in the report periodically; 2) clarification of why the 1992 MSL is used/referenced (see table ES-1); and 3) clarification of FEMA's 100-year storm surge elevation/height and add the reference.

The following motion was made by Senator Watters and seconded by Senator Stiles (?): *To accept the draft science advisory panel's report and to support moving forward with peer review to prepare for a vote on adoption of the full report at the July meeting.* **MOTION ADOPTED, 1 Opposed.**

4. Working group discussion & formation

Cory Riley reviewed her handout pertaining to the proposed working groups discussed and 'brainstormed' at the May meeting in Newington. She reviewed proposed "Charges" to the committees as well as a suggested process to the working groups. (See attached 'Proposed workgroups and draft charges' June 20, 2014). She said this is not ready to be adopted or used as the basis for workgroup assisngments and needs further input from Commission members and discussion at the Steering Committee. She asked each member to review the handout nd respond with any comments on or before July 8th

5. Meeting schedule for July & August

Next meeting: July 18th, location TBD; no meeting in August

6. Presentation: Salt Marshes are Responding to Sea Level Rise. Can We?

Dr. David Burdick, Research Assoc. Professor, Coastal Ecology and Restoration, UNH
See presentation handouts

7. Member Communications – tabled

8. Public Comment – None

9. Adjourn.

The meeting was adjourned at approximately 11:55. Commission members were served Brown's clam chowder, courtesy of Senator Stiles and Watters. Following the meeting, Commission members were shown the salt marsh monitoring station adjacent to Brown's by Dr. Burdick.

Compiled and submitted by:

Kellie Walsh, NHOEP
Julie LaBranche, RPC
Cliff Sinnott, RPC/CRHC Chair

Proposed Workgroups and draft charges June 20, 2014

1. Coastal Communities:
    a. Complete background research and collect local knowledge about the vulnerabilities, risks, and resulting challenges that coastal hazards and risks pose to Coastal Community economies, natural and cultural resources, and infrastructure.
    b. Use this information to complete a template/outline to be used to draft the interim and final reports of the Coastal Hazards and Risks Commission. Elements of this template will include: articulating and describing specific challenges that can be addressed by the commission, recommending solutions, identifying responsible parties, timeliness of addressing the issue (short-term, mid-term, long-term), estimated costs and potential funding sources.

2. Great Bay Communities:
    a. Complete background research and collect local knowledge about the vulnerabilities, risks, and resulting challenges that coastal hazards and risks pose to Great Bay Community economies, natural and cultural resources, and infrastructure.
    b. Use this information to complete a template/outline to be used to draft the interim and final reports of the Coastal Hazards and Risks Commission. Elements of this template will include: articulating and describing specific challenges that can be addressed by the commission to help local communities prepare for future conditions , recommending solutions, identifying responsible parties, timeliness of addressing the issue (short-term, mid-term, long term), estimated costs and potential funding sources.

3. State Authorities. The purpose of this workgroup is to:
    a. Evaluate state assets and vulnerabilities associated with coastal hazards and risks.
    b. Evaluate the recommendations of the Coastal and Great Bay Communities to assess potential legislative or regulatory adjustments.
    c. Assess current state agency policy to ensure that current policy does not impede the state's or municipality's ability to act and plan with climate impacts in mind.
    d. Use this information to provide policy and regulatory recommendations that will help communities and the state prepare for future conditions.

Process recommendations

- Elect a chair, a co-chair, and a note taker/secretary.
- Plan a meeting schedule for the group as soon as possible.
- Think about how you want to get other groups, organizations, community members involved in your work as early as possible and secure dates to gather information and feedback from them.
- Assign clear roles and create sub-committees if needed to complete the work.
- Make sure to use complete citations whenever the workgroup is using information from another report or source.
- Schedule time for discussion and for exchange between sub-committees.

Timeline

- Commission workgroups are expected to start meeting in July.
- Commission workgroups will produce a draft document summarizing their initial findings and recommendations and will be ready to share this information and receive comment from the full commission in September-October.

Proposed Outline

I. **Identify Vulnerabilities**

A. Given what we know about current and future conditions (sea level rise, storm surge, precipitation), how are these/will these impact:

i. Infrastructure
ii. Economies
iii. Natural Resources
iv. Cultural Resources

II. Identify the Challenge: Which impacts are the highest priority for this work?

A. Are some of these impacts a higher priority…

i. Because the impact/challenge is very likely to happen (less speculative)?
ii. Because the threat or potential loss is very great?
iii. Because the impact will come sooner?
iv. Because this impact will cause a cascading effect on other resources or assets?

B. What existing information, reports, examples can inform how we understand this vulnerability?

i. What do the people who live here know or notice about this issue?
ii. Is there NH or New England specific information available?
iii. National or regional reports or guidance documents
iv. Previous commission reports
v. Coastal Adaptation Workgroup materials, etc.

C. Based on the analysis done under (A) and (B), what are the most critical vulnerabilities or impacts that the commission should address?

III. Identify the Solutions: How can municipal or state action help facilitate adaptation to the impacts?

A. Consider all of the impacts discussed under section (II). Which challenges can be addressed with little cost, effort or burden to government and citizens?

i. Are there existing agency, municipal, etc. planning activities that can incorporate adaptation principles in the future?
ii. What are the "low-hanging fruit"- easy to implement and effective in addressing the impact/challenges?

B. Which challenges will require new guidance, legislation, municipal or state regulation, etc.?

C. What are those municipal or state actions that would need to change to minimize this challenge?

i. Are there some actions or recommendations that address multiple challenges? Which ones?
ii. Are there examples of this being done in other places?
iii. What level of action is most appropriate to address this impact? (legislative, agency, local, regional planning, etc.)
iv. Do we have information on short and long term costs?

D. What are the critical information or knowledge gaps that could inform how we adapt?

III. Moving Forward/Discussion

A. How often do you believe the recommendations and findings need to be updated to account for new information and new lessons learned?

B. This commission is designed to address coastal hazards and risks through governmental action.

i. Did your findings point to recommendations for other sectors?

ii. Did your findings point to impacts outside the scope of this commission that warrant further attention from state and local officials?

RiskMAP

Increasing Resilience Together

NEW ENGLAND COASTAL MAPPING

Analyzing coastal hazards is a high priority for FEMA because of increasing population and development pressures in most coastal areas. Advances in data collection and the modeling of flood risk in coastal areas are also reasons why FEMA is conducting new coastal studies.

Why is FEMA conducting new coastal flood hazard studies in New England?

The data and methodologies used in producing Flood Insurance Rate Maps (FIRMs) in many New England coastal areas (CT, ME, MA, NH, RI) date back to the mid-to-late 1970s. Since that time, the science of coastal risk analysis and the data to support it have improved significantly. Land use and coastal development have evolved and changes to the National Flood Insurance Program (NFIP) have created the need for FIRM updates to reflect more detailed and complete coastal flood hazard information.

How does FEMA determine the coastal flood hazard risk, flood insurance rates, and other requirements for communities?

FEMA works with scientists and engineers from other Federal agencies; State, regional, community, Tribal, non-profit, nongovernmental, and private-sector partners; and contractors to analyze flood hazards for coastal communities using scientifically credible methodologies. By building on data that reflects current conditions and working with local community officials, FEMA produces new hazard mitigation tools and updated coastal maps. The results are more accurate FIRMs, risk assessment tools, and outreach support for communities. The effective FIRMs for each community drive flood insurance requirements, flood insurance premiums, and the requirements for new and improved buildings.

The coastal flood hazard analyses being applied in New England are the result of a decade-long effort by FEMA and national experts from academia, government, and the private sector to incorporate advances in coastal hazard analysis into recommended approaches for improved coastal flood hazard mapping.

FEMA

Benefits of Coastal Flood Hazard Mapping Studies

- Updated flood hazard data and maps to help coastal communities understand their risk
- Improved risk assessment tools and hazard mitigation planning assistance to help communities reduce their risk
- Compiled data, tools, and resources for coastal outreach and mitigation

Additional Resources

FEMA maintains a variety of resources to assist coastal communities and property owners in better understanding their flood risk and taking steps to protect themselves from loss of life and property.

For more information, please visit FEMA's Coastal website:
www.FEMA.gov/coastal-flood-risks

For answers to questions about new FIRMs, the status of a request, or other mapping issues:

FEMA Map Information eXchange:
1-877-FEMA-MAP (1-877-336-2627)

FEMA Map Service Center:
www.msc.fema.gov

For answers to questions about flood insurance:
The NFIP Call Center
1-888-379-9531

FloodSmart:
www.FloodSmart.gov

For general information on FEMA and its programs:
www.FEMA.gov

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What methods did FEMA select for the coastal flood hazard mapping studies in New England?

FEMA employed the following methodologies for coastal flood hazard analyses and mapping in New England.

Storm Surge Analysis – Storm surge analysis is performed to determine the 1-percent-annual-chance stillwater elevation. For coastal flood insurance studies in New England, storm surge analyses were determined through statistical analyses on long-term historical storm data and local tidal information throughout the study area. This methodology was selected based on the prevalence of long-term observed historical records for the coastal New England area and is consistent with methodologies previously used by FEMA in New England. By working with other Federal agencies, FEMA's statistical analysis incorporates an additional 20+ years of storm records since the previous storm surge analysis.

Wave Setup Analysis – Wave setup analysis is performed to simulate waves as they travel from deep water offshore to the nearshore and to account for the increase in water levels as waves break. Wave setup, which can be a factor in determining coastal flood elevations, is affected by the height of the waves, the speed at which waves approach the shore, and the slope of the ground near the shore. For coastal flood insurance studies in New England, wave setup was calculated using the Direct Integration Method (DIM).

The DIM is an equation to estimate wave setup based on wave characteristics and ground (or bathymetric) profile. Although the DIM was initially developed for application in the Pacific coast environment, research performed by coastal engineering experts determined that the DIM was also appropriate for application along the Atlantic and Gulf of Mexico coastal environments. Therefore FEMA incorporated this methodology into the Atlantic Ocean and Gulf of Mexico Coastal Guidelines Update (2007) guidance document.

Overland Waves, Wave Runup, and Overtopping – For coastal flood insurance studies and FIRM updates in New England, overland wave modeling has been performed using FEMA's Wave Height Analysis for Flood Insurance Studies (WHAFIS) model. Determining the wave height is a function of many factors including water depth, topography, vegetation, and storm characteristics. In New England, wave runup is a dominant hazard that FEMA assesses using methods based on the nature of the landform, such as vertical wall, steep sloping shore protection structure, or gently sloping beach. The impacts of waves and runup throughout the flood hazard areas are used in combination with the storm surge to determine the flood elevation during the 1-percent-annual-chance flood.

Coastal Flood Hazard Mapping – After the appropriate storm surge and wave analyses are completed, FEMA performs coastal flood hazard mapping. The Base Flood Elevation (BFE) is the elevation of the 1-percent-annual chance storm surge, plus wave setup, plus overland wave heights or runup elevations (whichever is greater). The Special Flood Hazard Area (SFHA) extent is determined based on the elevation of the land in relation to the BFE (areas below the BFE are included in the SFHA). The flood hazard zone designation within each SFHA is determined based on the wave height, wave runup, and other factors such as the presence of primary frontal dunes. VE Zones, or Coastal High Hazard Areas (CHHA), are areas where waves are 3-feet or greater, the depth of wave runup is 3-feet or greater, or where the primary frontal dune is present. AE Zones are areas subject to waves less than 3-feet in height. The Limit of Moderate Wave Action (LiMWA) is a line shown on a FIRM within the AE Zone to distinguish areas where waves are 1.5 feet or higher.

FEMA

Glossary of Terms

1-Percent-Annual-Chance Flood: A flood that has a 1-percent chance of being equaled or exceeded in any given year. It is also referred to as the base flood or 100-year flood.

Base Flood Elevation (BFE): The computed elevation to which floodwater is anticipated to rise during the base flood with wave effects included in coastal areas. The BFE, flood hazard zone, and a structure's elevation are factors in determining the flood insurance premium.

Coastal High Hazard Area (CHHA) or VE Zone: An SFHA extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high-velocity wave action from storms or tsunamis.

Flood Insurance Rate Map (FIRM): The official map of a community showing the BFEs, Special Flood Hazard Areas and the flood insurance premium zones.

Limit of Moderate Wave Action (LiMWA): The line on a FIRM that identifies the 1.5 foot wave height and the landward limit of the "Coastal A Zone" (CAZ). Some building codes require VE Zone design and construction standards be met in the CAZ, thus, some communities use the LiMWA to determine building requirements.

Overland Wave Modeling: The process of simulating a wave as it travels inland during a storm event.

Special Flood Hazard Area (SFHA): The area shown as inundated by the floodwaters of the base flood on FIRMs where floodplain management regulations must be enforced and mandatory flood insurance purchase requirements apply.

Storm Surge: The rise of water generated by a storm, over and above the predicted astronomical tides.

Wave Runup: The rush of water up a barrier, such as a dune, seawall or other steep shoreline feature that occurs when waves come ashore. If the wave runup exceeds the elevation of the barrier, overtopping will occur.

Wave Setup: The increase in the stillwater surface near the shoreline, due to the presence of breaking waves. Wave setup is affected by the wave height, the speed at which waves approach shore, and the nearshore slope.