

Handout: "Keeping History Above Water"

Highlights – Jayne Begala

Key Data:

- 16 – 18" standing groundwater in cellars along Puddledock (many homeowners in the South End keep their sump pumps running 24/7) and tremendous tidal vulnerability all along the river with 13.5' flood potential by 2050 (Rodney Rowland, Director of Facilities and Environmental Sustainability at Strawberry Banke Museum)
- EPA's CREAT Tool (see reference below) provided these central model projections:
 - Historically total annual precipitation is 46.79 inches – projected to be 50.12 inches by 2050
 - Historical 100-year storm brought 7.36" – projected to bring 8.53" by 2050
 - Sea level rise (SLR) projected to be 30 – 36" by 2050
 - The projections show "very high" utility equipment damage and "low" resilience; "high" source/receiving water impacts and community/public health impacts and "low" resilience
 - Recommendations include that the City develop new groundwater sources; and to address impacts of coastal storm surges on each water pumping station
- NOAA has a "Digital Coast/SLR Viewer" Tool – it includes a "Digital Coast Coastal County" link that aggregates county-specific data (Rockingham County is one of 37 counties included) – provides snapshots of marine economy; total coastal economy; sea level rise; special flood hazard
- NOAA emphasized that the "window of opportunity" for action is 2020-2050 during which time sea level rise will be over 16" in Portsmouth
- Cameron Wake/UNH – 67% probability prediction of 1' SLR for Portsmouth by 2050; 1 – 2.9' by 2100. Estimates of storm surge for the next 100 years range from 4" (FEMA) to 5.3' (NACCS, USACE). Simulations also suggest currents will increase under storm surge and groundwater will rise (under the pressure of building SLR); this will extend inland; it will affect both drinking water and sewage. Occurrence of "extreme precipitation events" is up 15 – 38% since the 1950's.
- Hartford, CT overhauled its zoning codes to plan for 20" of SLR by 2050 (and to ensure EV stations)

Available Grant Resources:

- Apply (in two-year cycles) to NH Dept of Safety – Emergency Response and Preparedness grants (HMBP) – for impact at community level
- BRIC (Building Restoration Infrastructure and Community) annual grants for flood mitigation (FMA grants) - \$2.1B available including technical assistance for project development

Key Planning-Related Points/Questions:

- "Coastal Resilience Initiative: Climate Change Vulnerability Assessment and Adaptation Plan/2013 and a Study Circle on climate change both recommend adding a new functional element, "Community Resiliency to Climate Change" to Portsmouth's Master Plan – are we in fact ensuring we have building codes, permit processes, zoning codes and land use regulations that incorporate standards for "building for the inevitable" and "building sustainably"?
- Unclear about whether the "25% efficiency" realized through reduced water consumption ("Think Blue" program, Brian Goetz/DPW) includes commercial or industrial data
- Water capacity (current and future) is needed as part of an assessment of growth management
- Water usage (current and future) needs to be assessed for discussion of "impact fees" as part of review/revision of Master Plan
- Need for a citywide Storm Management Plan considering the effects of climate change and how to prepare – in conjunction with DPW
- CUPs for wetland buffers and wetlands removes naturally-occurring "flood storage"; discussions among experts included that these exemptions should document rebuilding wetlands elsewhere – implications for modifying zoning ordinances
- The Inflation Reduction Act of 2022 includes \$2.6B for "coastal resilience" planning – there is both NOAA data and this funding available to support a Portsmouth-specific coast resilience implementation plan

- Should NH Flood Risk Summary (CFRS) be incorporated as part of site plan and subdivision review checklists? Do they warrant changes in zoning in any part/s of Portsmouth? (Note: Hampton is adopting ordinances related to SLR)
- City should designate a floodplain overlay district with requirements for building resiliently and sustainably?
- City needs a floodplain management plan that also includes effects of coastal storms – we need to develop and apply “protection standards” to protect against rising sea level and predicted effects of groundwater level rise **as much as 3 miles from the coast**
- Need to require pervious surfaces as part of site plan and subdivision checklists in order to counter extreme precipitation events
- The current “Resilience” chapter of the Master Plan should be revised/updated to also incorporate: the Climate Action Plan (being shepherded by the City of Portsmouth’s Sustainability Committee); the Market Square Master Plan (funds set aside in the CIP); and the Historic District Vulnerability Assessment
- Portsmouth’s Hazard Mitigation Plan (produced by Emergency Management) needs to reflect SLR and other potential flooding data (FEMA provides guidance documents for developing this)
- (Review the NH Zoning Atlas (May 2023) – tool with key findings about the power of zoning regulations down to the district level, with impact on types of housing with implications for future planning, including of affordable housing by community. Can be used to determine intended housing mix and how to ease zoning to encourage more affordable housing.)

Key Resources:

City of Portsmouth, NH “Coastal Resilience Initiative: Climate Change Vulnerability Assessment and Adaptation Plan”, April, 2013 – funded by Gulf of Maine Council through grant from NOAA

- Pg. 39 – 43 – Recommendations for Zoning Ordinances, Floodplain Standards, Setbacks and Buffers, Redevelopment Standards, Resilient Design of Buildings and Infrastructure, Shoreland Protection Options
- Pg. 43 – 45 – Recommendations for the Master Plan
- Pg. 46 – 47 – Recommendations for Coastal Wetlands
- Pg. 47 - Recommendations for Public Health
- Pg. 47 – 48 – Recommendations for Emergency Management and Hazard Mitigation Planning

Climate Resilience and Awareness Tool (CREAT) Exercise Report of 2015 – City of Portsmouth used EPA CREAT tool.

“Preparing New Hampshire for Projected Storm Surge, Sea-Level Rise, and Extreme Precipitation”, New Hampshire Coastal Risk and Hazards Commission, 2016

City of Portsmouth Prescott Park – Phase I Report of June 2022, Prescott Park Policy Advisory Committee

- Concept of “resiliency engineering” and “resiliency interventions” (developed with Weston & Sampson)
- Adaptations include a boardwalk and sea wall, adding tide gates, managing on-site stormwater, creating above ground stormwater holding areas, etc.

Interagency Sea Level Rise Technical Report with an “Application Guide” for laypersons (will be completed by NOAA by the end of 2023) – useful for modeling different scenarios of SLR and high tide flooding (even apart from king tides) which is specific to anticipated impacts on Portsmouth; meant to be used to “make risk-informed management decisions, including flood mitigation actions for vulnerable infrastructure”

<https://www.des.nh.gov/about/boards-and-committees/coastal-flood-risk>

NH Coastal Flood Risk Summary (CFRS) – Part I: Science; Part II: Guidance for Using Scientific Projections

Funded by NOAA in conjunction with NHDES Coastal Program – projections to be used for private, local, state and federal project planning and regulatory processes

<https://www.cityofportsmouth.com/sustainability/sustainable-practices-blue-ribbon-committee>

City of Portsmouth Sustainable Practices Blue Ribbon Committee – has been focused on reducing greenhouse gases but is now working on the Climate Action Plan (see below)

<https://files.cityofportsmouth.com/finance/bids/fy22/13-23RFP.pdf>

RFP for Climate Action Plan, deadline was October 2022 – to create a plan that will serve as the foundation for all climate resilience projects and goals for the next 50 years; “it should integrate climate resilience planning into the City’s local planning and regulatory framework”. It is intended that the Climate Action Plan be submitted to the city council by the end of 2023.

https://prd.blogs.nh.gov/dos/hsem/wp-content/uploads/2015/11/State-of-New-Hampshire-Multi-Hazard-Mitigation-Plan-Update-2018_FINAL.pdf

Homeland Security Emergency Management/ State of New Hampshire Multi-Hazard Mitigation Plan, updated 2018

<https://www.nps.gov/orgs/1739/upload/flood-adaptation-guidelines-2021.pdf>

National Park Service

Secretary of the Interior’s Standards for Rehabilitation and Guidelines for Flood Adaptation for Rehabilitating Historic Buildings

<https://www.nhcaw.org/explore/resource-library/>

“A Selection of Resources About Coastal Resilience Planning that CAW Members Find Useful for Municipal Decision-makers”, New Hampshire Climate Adaptation Workgroup (CAW)