Coastal Vulnerability Assessment
Env-Wt 603.05

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Stefanie M. Giallongo
Land Resources Management
Agenda

1) Vulnerability & Risk Tolerance

2) [The New] Env-Wt 603.05 Vulnerability Assessment

3) Additional Resources
What is Vulnerability?

“...the likelihood that an asset will experience harm due to exposure to coastal hazards...”

(NH Coastal Risk & Hazards Commission)
What is Risk Tolerance?

“...a project’s willingness to accept a higher or lower probability of flooding impacts.”

(NH Coastal Flood Risk Summary, Part II: Guidance, draft)

Low Risk Tolerance

Ex. Critical Infrastructure, historic sites, essential ecosystems, high value assets

Plan, design & construct using higher coastal flood risk projections

High Risk Tolerance

Ex. Sheds, pathways, small docks

Option to plan, design & construct for less protective coastal flood risk projections
(a) Determine the **time period**.

- **2050**: 25 years or less
  - Temporary projects

- **2100**: 50-100 years
  - Residential / Commercial Transportation Infrastructure

- **2150**: 100+ years
  - Critical Facilities, Infrastructure
### Env-Wt 603.05  Vulnerability Assessment & Risk Tolerance

**Determine the time period.**

**Identify the risk tolerance.**

<table>
<thead>
<tr>
<th>RISK TOLERANCE</th>
<th>HIGH</th>
<th>MEDIUM</th>
<th>LOW</th>
<th>EXTREMELY LOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESCRIPTION</td>
<td>A project that is willing to tolerate a high level of flood risk</td>
<td>A project that is willing to tolerate a medium level of flood risk</td>
<td>A project that is willing to tolerate a low level of flood risk</td>
<td>A project that is willing to tolerate an extremely low level of flood risk</td>
</tr>
<tr>
<td>POSSIBLE PROJECT CHARACTERISTICS</td>
<td>Low value or cost</td>
<td>Medium value or cost</td>
<td>High value or cost</td>
<td>Extremely high value or cost</td>
</tr>
<tr>
<td>Risk Tolerance will depend on the mix and importance of these characteristics to the project</td>
<td>Easy to modify</td>
<td>Moderately modifiable</td>
<td>Difficult to modify</td>
<td>Extremely difficult to modify</td>
</tr>
<tr>
<td>Little to no implications on public function and/or safety</td>
<td>Moderate implications for public function and/or safety</td>
<td>Critical to public function and/or safety</td>
<td>High risk of public harm if project fails</td>
<td></td>
</tr>
<tr>
<td>Low sensitivity to inundation</td>
<td>Moderate sensitivity to inundation</td>
<td>High sensitivity to inundation</td>
<td>Extremely high sensitivity to inundation</td>
<td></td>
</tr>
<tr>
<td>PROJECT EXAMPLE</td>
<td>walking trail</td>
<td>local road culvert</td>
<td>wastewater treatment facility</td>
<td>hospital</td>
</tr>
</tbody>
</table>

Env-Wt 603.05 **Vulnerability Assessment & Risk Tolerance**

(a) Determine the **time period**.

(b) Identify the **risk tolerance**.

(c) Assess relative **sea level rise (SLR)**.

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**Figure 4.5.** Observed and Projected Relative Sea-Level Rise for Seavey Island Tide Gauge K14 Projections | Stabilized Greenhouse Gas Concentrations (RCP 4.5).

- **1**: Historical data for Portland, ME (1912-2018, thin black line)
- **2**: Historical data for Seavey Island, ME (1927-1986; thick black line)
- **3**: Lower end of "likely range"
- **4**: Central estimate
- **5**: Upper end of "likely range"
- **6**: 1-in-20 chance estimate
- **7**: 1-in-100 chance estimate
- **8**: 1-in-200 chance estimate
- **9**: 1-in-1000 chance estimate

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Determine the **time period**.

Identify the **risk tolerance**.

Assess relative **sea level rise (SLR)**.

Identify areas subject to flooding from SLR and areas which are currently located within the 100-year flood plain and subject to coastal flood risk.

Determine the time period.

Identify the risk tolerance.

Assess relative sea level rise (SLR).

Identify areas subject to flooding from SLR and areas which are currently located within the 100-year flood plain and subject to coastal flood risk.

Assess and describe cumulative vulnerability and coastal flood risk with project design plans.
Determine the **time period**.

Identify the **risk tolerance**.

Assess relative **sea level rise (SLR)**.

Identify areas subject to flooding from SLR and areas which are currently located within the 100-year flood plain and subject to coastal flood risk.

Assess and describe **cumulative vulnerability** and coastal flood risk with project **design plans**.

When questions / conflicts arise, **let’s meet** to discuss.
Additional Coastal Resources

- NH Coastal Flood Risk Summary.
  Part I: Science.
  Part II: Guidance (draft).

New Hampshire Coastal Flood Risk Summary
Part 1: Science

DRAFT FOR PUBLIC REVIEW

APPENDIX 2 – WORKSHEET

NEW HAMPSHIRE COASTAL FLOOD RISK SUMMARY
PART II: GUIDANCE FOR USING COASTAL FLOOD RISK PROJECTIONS

WORKSHEET

This worksheet is intended to help you work through the seven steps associated with the New Hampshire Coastal Flood Risk Summary, Part II: Guidance (NHCRF Guidance) in Coastal Zone municipalities. The NHCRF Guidance data needed to fill out this worksheet.
Additional Coastal Resources

• NH Coastal Flood Risk Summary. Part I: Science. Part II: Guidance (draft).

• NH Coastal Viewer. Resilient Tidal Crossings Project.
Additional **Coastal** Resources

- NH Coastal Flood Risk Summary.
  Part I: Science.
  Part II: Guidance (draft).

- NH Coastal Viewer.
  Resilient Tidal Crossings Project.

- NH Coastal Program.
Summary

1) **Vulnerability & Risk Tolerance.**
   Likeliness to experience and willingness to accept coastal flooding hazards.

2) **Env-Wt 603.05 Vulnerability Assessment.**
   To protect and preserve natural resource function and,
   To plan, design and construct in the face of SLR.

3) **Additional Resources.**