C-RiSe:
Climate Risk in the Seacoast (2017)

Summary:

The C-RiSe vulnerability assessment documents potential impacts from sea-level rise and coastal storm surge to infrastructure, critical facilities, transportation systems, and natural resources for the areas subject to tidal influence (i.e. downstream of the String Bridge). Three sea-level rise scenarios – 1.7', 4.0' and 6.3'– were used to evaluate impacts with and without coastal storm surge (the areas flooded by a 100-year/1% chance storm event).

Keywords:

- Vulnerability assessment
- Sea-level rise
- Coastal storm surge
- Infrastructure and road flooding
- Historic structure impacts
- Natural resource impacts
- Critical facilities
- Culvert assessment

Key Points:

- Specific areas of Exeter are at high risk for flooding from sea-level rise and storm surge, including Swasey Parkway and adjacent properties, the Exeter Waterfront Commercial Historic District, the lower Wheelwright Creek drainage, among others (maps pp. 6-7).
- Of 15 culverts assessed, 11 were given a fail rating under a 100-year storm condition (e.g. the culvert could not accommodate the flow and the road will be overtopped). Thirteen of the 15 culverts evaluated had reduced or no aquatic organism passage capability (p. 14).
- Critical facilities and infrastructure are impacted at the highest sea-level rise scenario evaluated (p. 15).
- Exeter has preserved riparian corridors and shoreland buffers that will serve to reduce impacts to public and private assets; however, significant acres of salt marsh, high-quality habitat and natural resources may be impacted by future flooding (pp. 17-19).
- As sea and groundwater levels rise, saltwater intrusion may pose a threat to drinking water source areas including wellhead protection areas for facilities such as the Exeter Hospital, Exeter Public Works Complex, and the Exeter Water Department and other community and private wells (p. 18).

Suggested Uses:

Consult the recommendations for ideas of how to strengthen municipal policy and plans to increase Exeter's resilience to flooding associated with sea-level rise and coastal storm surge (pp. 23-30). The vulnerability assessment report and map set can be consulted to identify specific areas in greatest need of infrastructure planning and protection, zoning ordinance revisions, hazard mitigation planning and preparedness, or master plan updates.

Link to Exeter Climate Resources Page with C-RiSe Reports and Maps

Example Map & Table:

Figure 7: Sea Level Rise Scenarios 1.7 feet, 4.0 feet, and 6.3 feet + storm surge at year 2100.
Note: Storm surge = 100-year/1% chance storm event and flood elevation.

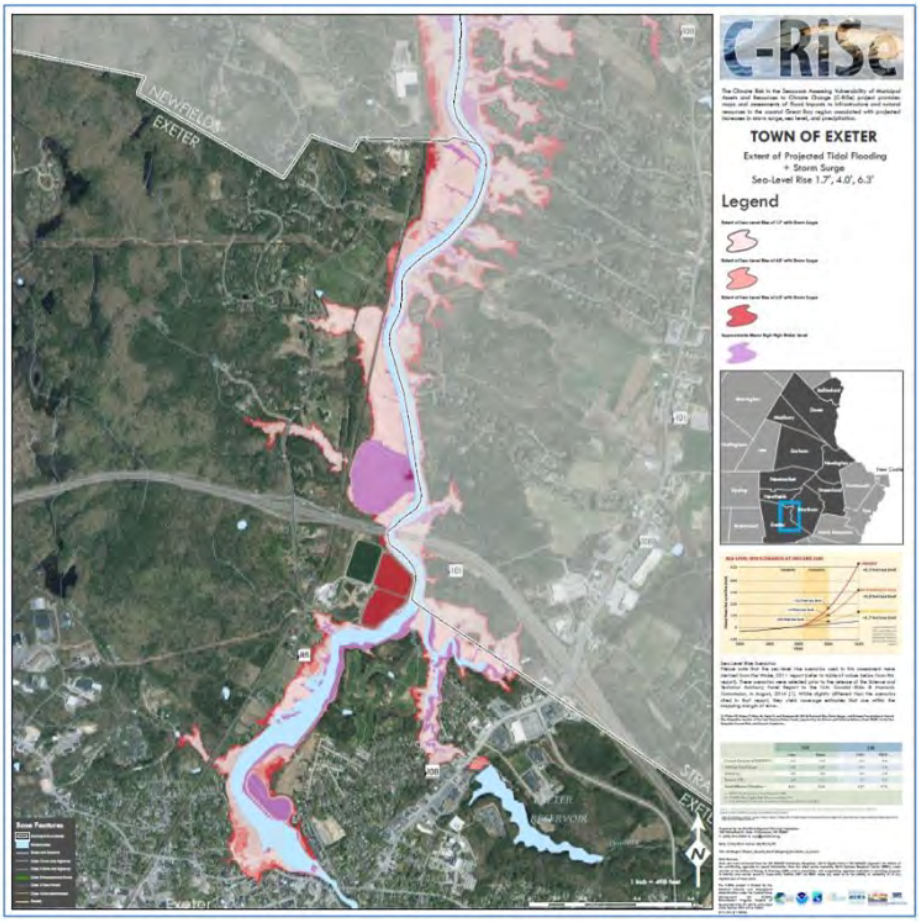

FIGURE 10: Summary of Asset and Resources Impact Data

Sea Level Rise (SLR) Scenarios	SLR 1.7 feet	SLR 4.0 feet	SLR 6.3 feet	SLR 1.7 feet + storm surge	SLR 4.0 feet + storm surge	SLR 6.3 feet + storm surge
State, Municipal and Private Assets						
Infrastructure (# of sites)	na	na	8	na	na	8
Residential Structures (# of homes)	na	na	16	na	na	26
Water/Sewer/Transmission lines (miles)	0.32	1.05	2.35	1.53	2.68	3.39
Roadways (miles)	.03	.55	1.07	.76	1.16	1.40
Assessed Value - Parcels Impacted	$559,200	$1,048,300	$5,273,700	$4,120,600	$27,638,000	$32,480,100
Historic/Recreation Sites	na	na	3	na	na	3
Natural Resource Assets						
Freshwater Wetlands (acres)	3.6	6.2	9.8	8.4	10.3	27.5
Tidal Wetlands (acres)	218.8	232.2	233.6	232.8	233.8	234.1
Aquifers (acres)	0	0	0	0	0	0
Wellhead Protection Areas (acres)	31.5	42.1	49.4	44.7	51.1	61.4
Conserved and Public Lands (acres)	58.09	74.23	89.24	81.15	92.82	102.93
Coastal Conservation Plan-focus areas	123.69	135.81	145.45	140.01	147.91	155.18
Wildlife Action Plan (acres)	175.14	196.35	208.45	202.27	211.36	221.42
100-year Floodplain (acres)	88.9	128.4	137.5	134.6	138.0	138.6

Notes: Storm surge is the area flooded by the 100-year/1% chance storm event. "na" = not assessed

Report Authors: Rockingham Planning Commission
Photo Credit: Jonas Procton; Rockingham Planning Commission

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