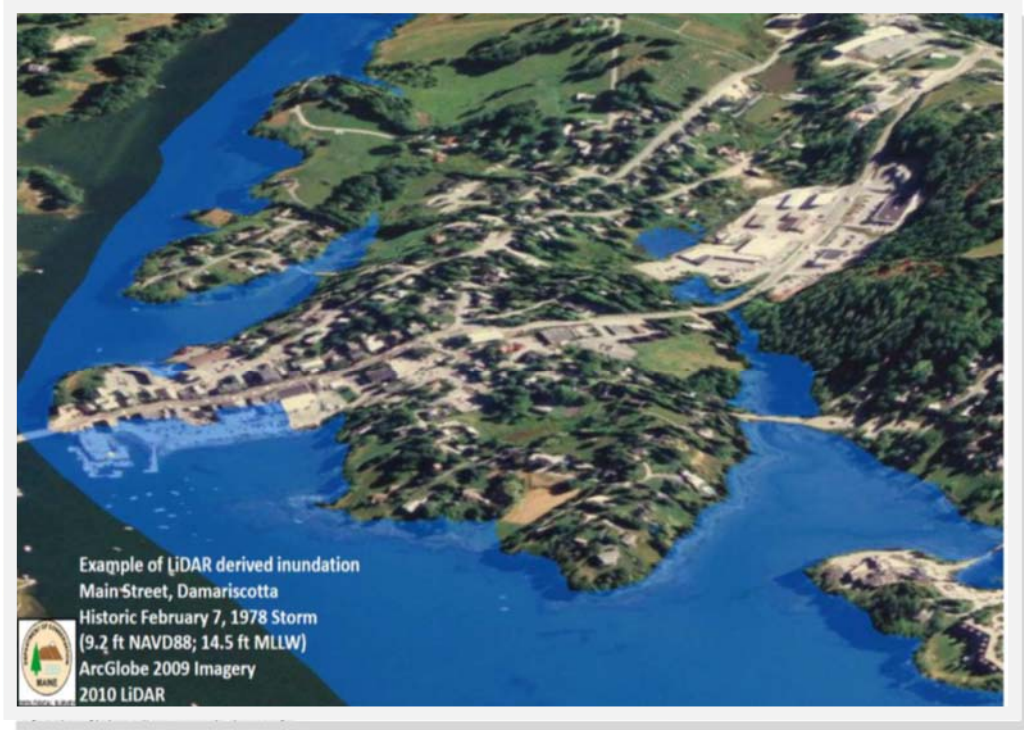




## Lincoln County Regional Planning Commission Sea Level Rise Coastal Hazards Study



*“The Sea Level Rise project arrived at about the right time – a teachable moment for many coastal constituencies. The vulnerability of the marine commercial infrastructure, primary roads, and high value coastal residences in the zone proximate to the shore will clearly be driven home by project results, especially the town-by-town mapping of at-risk structures.”*

Mal Carey, LCRPC Board, Coastal Hazards Project Oversight Committee  
and Newcastle Planning Board

### **PARTNERS**

Maine Geologic Survey, Lincoln County and the 16 coastal towns within the county: Waldoboro, Bremen, Bristol, South Bristol, Damariscotta, Newcastle, Edgecomb, Westport Island, Boothbay, Boothbay Harbor, Southport, Monhegan Island, Nobleboro, Alna, Jefferson and Wiscasset

**PROJECT DESCRIPTION** (completed June 2013; updated 2016  
with new FEMA flood maps)

The Coastal Hazard Resilience Project evaluated the potential impact of 1 ft (0.3m), 2 ft (0.6 m), 3.3 ft (1 m) and 6 ft (1.8 m) sea level rise on the coastal areas of Lincoln County.

**APPROACH**

There were 3 phases of the project. The focus of community engagement efforts was to solicit support from the Lincoln County Commissioners, Lincoln County Regional Planning Commission (LCRCP) Board, and the boards of selectmen from each coastal community by illustrating the areas sensitive to rising sea levels. Data development involved collection and processing of spatial data for each community including: mean sea level, mean high water, highest astronomical tide, LiDAR, coastal wetlands, historical storm elevations, road infrastructure, building footprints, bluff stability and Shoreland Zoning boundaries. These data were used to map the effects of each sea level rise scenario. The final phase of the project involved development of education and outreach materials for each community, and presentation of results online and in person.

**RESULTS**

The Maine Geological Survey generated sea level rise scenarios and provided technical support. LCRPC developed Google Earth-based scenarios for each community, as well as site-specific inundation graphics allowing staff, town officials, and the public to explore sea level rise impacts on a town-wide basis. LCRPC evaluated impacts on wastewater treatment plants, public and private roads, and produced impact summaries for each community. LiDAR derived buildings layers were created for the county's full 450-mile coastal shoreline to a depth of 280 feet from the high tide line. This greatly expanded the utility of the project by demonstrating the potential impact of sea level rise on public and private buildings. An extensive search of municipal regulations and ordinances addressing coastal hazards and sea level rise was completed. Results were presented to communities, the LCRPC Board of Directors, the Lincoln County Emergency Management Agency and the LCRPC Oversight Committee. It was not possible to present the results of all scenarios to each community; full results are posted on LCRPC's website at <http://lcrpc.org/coastal-projects-planning/sea-level-rise-scenarios>. The project has received extensive coverage in local newspapers.

**NEXT STEPS AND OPPORTUNITIES**

Meet with the Department of Transportation to review the impact of sea level rise on state transportation facilities. Discuss municipalities' interest in addressing local responses to sea level rise. The potential impact of erosion, accretion and wave action were not included in this analysis, but additional analyses are warranted.

**LESSONS LEARNED**

Utilize the knowledge base of local municipal officials, many of whom have lived and worked in their communities for years and have observed the increasing ferocity of coastal storms and impacts of sea level rise. While there is much evidence that sea level will rise more than 1 ft in the next 100



## COASTAL COMMUNITY GRANTS: Coastal Hazards Resiliency

years, including this conservative scenario demonstrated caution in our assumptions. The initial focus was the impacts of sea level rise on public infrastructure, but determining the impact on private buildings increased the project relevance for the public. Focusing on the documented sea level rise along the county shoreline and the increasing rate of that rise, rather than on the causes of the rise increased acceptance of our analyses.

### APPLICABILITY FOR OTHER MUNICIPALITIES

Most coastal communities in Maine have access to new LiDAR data, extracting a buildings layer from LiDAR data represents a cost effective way to increase the utility of, and interest in, coastal hazards projects. The project was designed to require only the affirmative vote of the county and the regional planning commission with the county providing the cash match rather than requiring votes and cash matches from each community.

### RECOMMENDATIONS

Some Lincoln County communities are expected to be severely impacted by even small increases in sea level during severe storm conditions. Adapting the multitude of local roads is well beyond the financial capacity of county communities that have an average population of less than 2,000. It is recommended that state agencies work with the county and towns to identify sources of funding to assist towns in adaption activities. The impact of wave action is a critical gap in understanding the true impact of sea level rise in the county. Technical assistance and funding from state and federal sources to complete a bathymetric analysis of especially susceptible areas is recommended. The project demonstrated that most of downtown Damariscotta and the Boothbay Harbor waterfront are susceptible to even small increases in sea level under both highest annual tide and storm conditions. The Damariscotta downtown consists of very old, historic structures that cannot be moved or raised while the Boothbay Harbor waterfront supports a very active boating and tourist industry. Both communities would greatly benefit from state or federal funding to retain experts to advise municipal leaders on adaption strategies. Both communities have subsequently received Coastal Community Grants.

### ADDITIONAL INFORMATION

[http://lcrpc.org/uploads/visual\\_edit/coastalhazards-1.pdf](http://lcrpc.org/uploads/visual_edit/coastalhazards-1.pdf).

### CONTACT

Lincoln County Regional Planning Commission  
Robert Faunce, Regional Planner [rfaunce@lcrpc.org](mailto:rfaunce@lcrpc.org)

FY12 CCG - 07  
12.7.17

Financial assistance provided by the National Oceanic and Atmospheric Administration, U.S. Department of Commerce Grant CZM NA10NOS4190188 to the Maine Coastal Program. Coastal Community Grants are awarded and administered by the Maine Department of Agriculture, Conservation and Forestry Municipal Planning Assistance Program.

