



Committee on Environment and Natural Resources
c/o Legislative Information Office
100 State House Station
Augusta, ME 04333

May 5, 2021

RE: LD 1572: Resolve, To Analyze the Impact of Sea Level Rise

Dear Senator Brenner, Representative Tucker, and Members of the Committee: My name is Roger Stephenson, and I am offering this testimony in support of LD 1572 on behalf of the Union of Concerned Scientists.

The Union of Concerned Scientists puts rigorous, independent science to work to solve our planet's most pressing problems. Joining with people across the country, we combine technical analysis and effective advocacy to create innovative, practical solutions for a healthy, safe, and sustainable future. In Maine UCS has 2500 supporters as well as 247 technical experts and research scientists in our Science Network.

UCS supports LD 1572 for two reasons. First, the Resolve recognizes the latest science for the future benefit and protection of the state and municipalities. Second, the bill recognizes the systematic, integrated approach necessary to prepare Maine and Maine communities for the present and future challenges.

Author John Barry recently said, "When you mix science with politics, you get politics." Barry's assertion may seem cynical on its face, but sometimes when you mix science with politics, you get sound environmental policy. There are instances over the past fifty years where people use science to unleash forces for positive change. In the decades prior to the passage of state and federal laws to address acid rain, this complex phenomena of atmospheric chemistry and acid deposition had been the focus of widespread scientific research. By the mid-eighties state legislatures, including Maine's, passed laws intended to curb or address sulfur dioxide pollution. In 1990 Congress passed amendments to the Clean Air Act, championed by Senator George Mitchell, to reduce acid rain-sulfur emissions from power plants by 50 percent.

The issue of sea level rise has followed a similar trajectory. For decades scientists and analysts have been documenting sea level rise: the Portsmouth tidal gauge has measured sea level rise since 1926; NASA has used satellites since 1992. Today global mean sea level rise (GMSLR) is calculated with precision by averaging sea surface height data from a series of satellites (specifically TOPEX/Poseidon, Jason-1, OSTM/Jason-2 and Jason-3).

Global mean sea level (GMSL) has increased by 8–9 inches since 1880, with about 3 inches occurring since 1993.¹ An engineer at the Portsmouth Naval Shipyard once told me that the base was spending

¹ Church, J. A., and N. J. White (2011), Sea-Level Rise from the Late 19th to the Early 21st Century, Surveys in Geophysics, 32(4-5), 585-602, doi: <http://dx.doi.org/10.1007/s10712-011-9119-1>.

Commented [AC1]: "expectations use science" does not sound right to me

Commented [KD2]: Just something to consider: I wonder if it might be useful here to make a distinction between politics and policy. The former has negative connotations and brings to mind backroom deals, etc., but the example you give here is one where science played a heavy role in setting policy. Maybe some sentence that contrasts with Barry's quote, such as "But sometimes when you mix science with politics, you get effective environmental policy," would be a useful addition.

Commented [RS3R2]: really good

considerable funds to raise a temporary cofferdam by two inches. “To most people two inches does not sound like much, but behind those two inches is an infinite amount of water,” he explained.

Commented [KD4]: You might want to define this—I had to look it up.

In their report to the Maine Climate Council the Science and Technical Subcommittee (STS) reviewed and synthesized the best available science and recommended Maine commit to managing for 1.5 feet of relative sea level rise by 2050, and 3.9 feet of sea level rise by the year 2100.² The Science and Technical Subcommittee is comprised of 28 scientists widely recognized in their fields with specializations related to climate change and deep commitments and experiences in Maine.

Commented [KD5]: If you could move this up a bit so that it's in more direct contrast to the two inches referred to above, I think it would be more effective. If PNS is spending considerably to cope with two inches, imagine what will be needed for 1.5 feet...

Coastal municipalities have withstood storms for hundreds of years. Kittery was incorporated in 1647, Stonington in 1897. In between there was Camden in 1791 and Belfast in 1850. All of these political subdivisions were built to last. But science tells us that there will be significant sea level rise this century, no matter what is done with greenhouse gas emissions. Higher sea levels worsen the impacts of storm surge, high tides and wave action. Chronic flooding (defined as 26 floods per year or more) will force communities to make hard choices decades before they are permanently underwater.

Maine coastal communities are already facing difficult challenges related to chronic flooding. In 2017, using peer-reviewed methodology developed by UCS for assessing areas at risk of frequent flooding, we released a report analyzing the threat of sea level rise and tidal flooding to East and Gulf Coast communities; in the report we project flooding frequency for Portland to increase from the present 11 events per year to 30 events per year in 2030 and 65 in 2045.³

Commented [KD6]: I think this should be capitalized, but am not totally sure.

Commented [AC7]: it was to lower 48 coast. The way it is written seems we just evaluated east coast

In a subsequent report titled Underwater, UCS combined the same methodology with property data from the online real estate company Zillow. Accelerating sea level rise is projected to put as many as 311,000 coastal homes in the lower 48 states at risk of chronic flooding within the next 30 years; these homes have a collective market value of about \$117.5 billion (2018 dollars).⁴

Using three sea level rise scenarios developed by the National Oceanic and Atmospheric Administration and localized for the Underwater analysis, UCS determined how many residential and commercial properties along the coastline are at risk of becoming chronically inundated from high tides in the coming decades, even in the absence of major storms. The core results in the report are from the high sea level rise scenario—an appropriately conservative projection to use when estimating risk to homes, which are often the owner's single biggest asset.

The results for Maine are quite sobering. The analysis finds that without additional measures to adapt to rising seas:

- By 2045, 1,207 of today's homes are at risk of becoming chronically inundated in Maine.
- Those homes are worth (2018 \$\$) a collective \$532 million, house nearly 1,600 people, and contribute \$6.3 million to the local property tax base.

It is important to note that the 2018 results do not include future development or new homes, nor do they include critical infrastructure such as roads, bridges, power plants, airports, ports, public

² MCC STS. 2020. Scientific Assessment of Climate Change and Its Effects in Maine. A Report by the Scientific and Technical Subcommittee (STS) of the Maine Climate Council (MCC). Augusta, Maine. 370 pp.

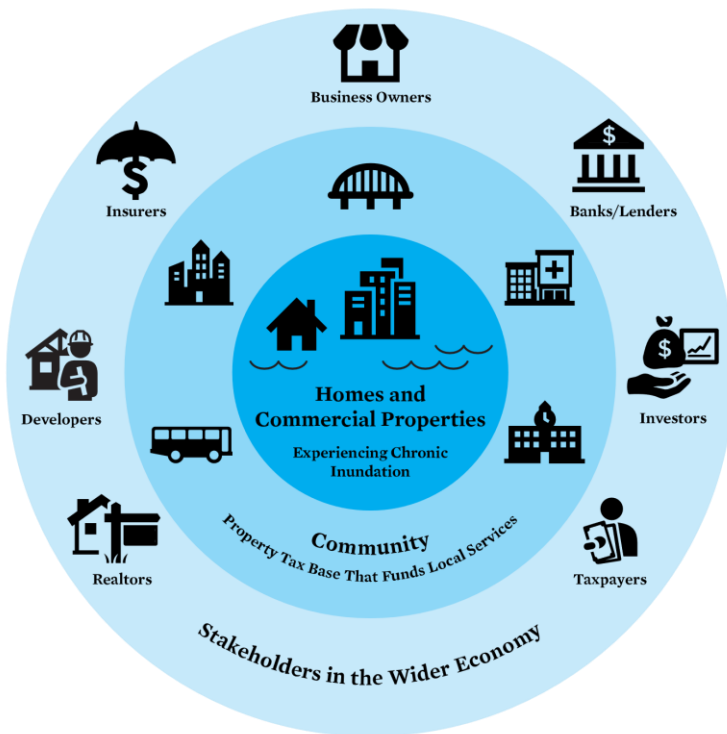
³ When Rising Tides Hit Home: Hard Choices Ahead for Hundreds of US Coastal Communities. 2017. This report is available online www.ucsusa.org/RisingSeasHitHome

⁴ For more details on this analysis, see www.ucsusa.org/underwater.

buildings, and military bases. When all of these are taken together, the effects of chronic flooding could have staggering economic impacts.

People are beginning to ask who will pay for the impacts today and how to plan to live with the cascading impacts expected before the end of the century. All coastal communities will need technical assistance, training, and incentives to plan effectively for resilience and protection of communications, water, transportation, and natural resources. Moreover, no two communities are the same; some are more elevated or have protective coastline while others are more vulnerable geographically and economically; each community will need to identify and prioritize actions.

Accordingly, an all-of-government approach is necessary, and it is altogether prudent that the nine state agencies named in LD 1572 should review the laws and rules they are charged with administering under the scenarios of 1.5 feet of relative sea level rise by 2050 and 3.9 feet by 2100.



The Potential Economic Reverberations of Chronically Inundated Properties (from [Underwater](#))