

# Texas Faces Chronic Inundation

In Texas and all along the US coastline, many cities and towns will experience high-tide flooding within the next few decades that will be chronic and extensive enough to force difficult choices. Because this persistent flooding can render neighborhoods, commercial districts, industrial zones, and recreational and other areas unusable, communities will face either major coastal defense investments or the prospect of retreat from affected places. The Union of Concerned Scientists (UCS) has identified hundreds of US communities at risk of this disruptive flooding as well as how much time remains before the flooding becomes chronic. UCS also recommends how to use this time wisely.

## “Chronic Inundation”

UCS analyzed the exposure of coastal communities to chronic flooding under three different sea level rise scenarios developed for the 2014 National Climate Assessment: intermediate-low (“low”), intermediate-high (“intermediate”), and highest (“high”) (see [www.ucsusa.org/RisingSeasHitHome](http://www.ucsusa.org/RisingSeasHitHome) for detailed information).

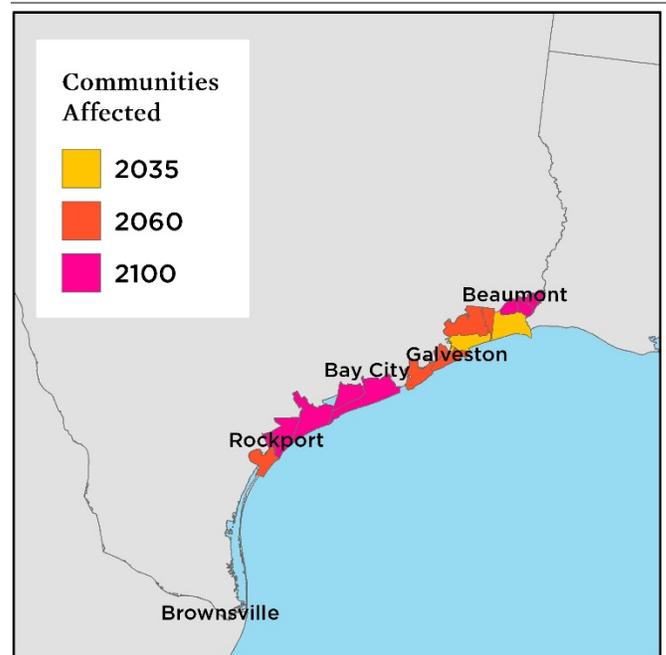
This analysis assumes that a community (defined as a US Census county subdivision) faces “chronic inundation” when high tide floods 10 percent or more of its usable, non-wetland area at least 26 times per year or, on average, every other week. Some cities, such as Annapolis, Maryland, and Miami Beach, Florida, currently experience flooding less extensive than this but are already investing heavily to cope with it.

UCS has identified two Texas communities that will face such chronic inundation by 2035 (the Bolivar Peninsula and Sabine Pass), given the intermediate scenario. Six additional communities along the northern Texas coast would experience chronic inundation by 2060, and communities farther south eventually join the ranks for a total of 17 communities by 2100. In the high scenario, Galveston faces chronic inundation by 2030, just 15 years from now; by 2070, so does Port Arthur, home to the nation’s largest oil refinery.

As sea level rises, chronically inundated areas expand. By 2060 in the high scenario, more than 60 percent of the Bolivar Peninsula would flood on average twice per month, as would roughly 45 percent of Galveston. Although sea walls protect large stretches of the Texas coast, such as Galveston, this

inundation encroaches from the bay side of the state’s barrier islands. Many of these communities are home to people who have limited resources to move or adapt. For a list of all inundated communities in Texas, visit [www.ucsusa.org/RisingSeasStateData](http://www.ucsusa.org/RisingSeasStateData).

**FIGURE 1. Texas Communities Facing Chronic Inundation in The Intermediate Scenario.** Roughly a quarter of the Bolivar Peninsula’s land area will flood twice monthly, on average, by 2035, as would roughly 30 percent of Galveston by 2060.

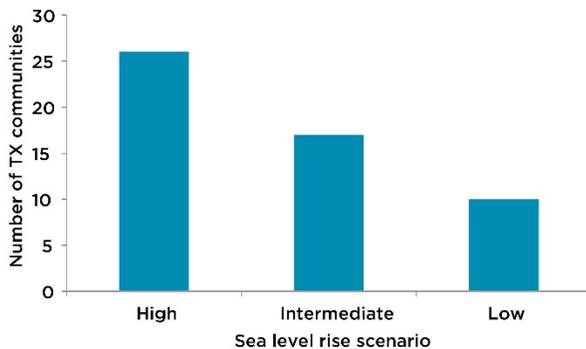


## A Chance for Some Texas Communities to Avoid Chronic Inundation

UCS used the low scenario as a proxy for sea level rise associated with a warming of about 1.8°C and found that curtailing future warming and sea level rise could spare three or more Texas communities from chronic inundation by 2060

and seven to 16 communities from chronic inundation by the end of the century. The Paris Climate Agreement, ratified by most countries in November 2016 (although the Trump administration has announced US withdrawal), aims to limit future warming to 2°C or less above preindustrial levels through large-scale reductions in global warming emissions.

FIGURE 2. **Number of Chronically-Inundated Communities In Texas In 2100 Under Three Scenarios.**



### Response Time: How to Use It Wisely

The limited time before chronic inundation sets in must be used to plan and prepare using a science-based approach that helps communities understand their risks, assess their choices, and implement adaptation plans while prioritizing equitable outcomes. Three categories of policy response are critical:

- **Halting or phasing out current policies that perpetuate risky coastal development.** We need to update flood risk maps using the latest climate science, limit development in flood-prone areas, safeguard flood-protective natural ecosystems, reform flood insurance premiums, and update building codes and infrastructure plans to reflect the latest projections of sea level rise.

- **Enhancing existing policy frameworks.** Current disaster response and predisaster investments—including FEMA’s Hazard Mitigation Grant Program, predisaster

mitigation grants, Flood Mitigation Assistance, and the Public and Individual Assistance Programs—must be adequately funded and must also take account of climate projections and emphasize advance actions to limit the impacts of flooding. We need to preserve existing budgets and increase investment in flood-risk mapping and flood-proofing measures, protection of natural ecosystems, large-scale home buyout programs, and implementation of robust flood-risk management standards and building codes. Other agencies that play important roles in our nation’s flood response (e.g., HUD, USACE, USDA, DOI, and DOT) must also be adequately resourced.

- **Creating bold new policies and measures adequate for the scale of coastal risks.** Pioneering, well-funded programs will be needed to assist, for example, with retreat and relocation from chronically inundated areas. New economic opportunities and infrastructure investments will be required in the safer locations to which people and businesses relocate. Policies must be designed to preserve natural ecosystems and cherished aspects of cultural heritage. And innovative governance models that enable effective decisionmaking amidst challenging tradeoffs will also be essential.

Coordinated action by households, local and state leadership, and businesses is required. Federal resources and policymakers’ decisions will help determine whether coastal communities are resilient and continue to thrive. And even as the Trump administration seeks to withdraw from the Paris Agreement, we must work at state and local levels and with other nations to cut global warming emissions aggressively in order to help slow the pace of sea level rise.

## Union of Concerned Scientists

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