



WOODS HOLE RESEARCH CENTER

ASSESSMENT OF PHYSICAL CLIMATE RISKS FOR DUKES COUNTY, MA

Statement of need

The seven towns of Dukes County, MA – Tisbury, Oak Bluffs, Edgartown, West Tisbury, Chilmark, Aquinnah, and Gosnold – are unified by the county government and a centralized planning agency, the Martha’s Vineyard Commission. The Commission has been discussing climate change mitigation and adaptation measures for years, and the commissioners passed a “Climate Emergency Declaration” in December 2019.

Dukes County faces multiple climate-related hazards that will worsen in coming decades. A recent climate change hazard analysis – completed for the region by the Martha’s Vineyard Commission – identified sea level rise, flooding, and extreme precipitation as three growing and interrelated threats. Like many counties and small municipalities around the United States, government leaders in Dukes County would benefit from improved understanding of the nature and severity of these threats as they make decisions involving resilience planning, infrastructure siting and design, zoning and development, etc. Many of these decisions involve substantial financial commitments and have significant societal ramifications with consequences that last decades. It is therefore essential that any decisions made be based upon best-available science.

Institutional Context

Recent scientific advances allow us to understand, model, and anticipate the risks of climate change with unprecedented fidelity and geospatial specificity. The Woods Hole Research Center (WHRC) generates robust, clear projections of climate-related hazards at spatial resolutions and over time horizons relevant to societal decision-making. WHRC aims to make these projections not just publicly available, but a standard, common input into decisions in societal sectors from business and finance to local, regional, and national governments. This work is supported by philanthropy and a small group of forward-looking corporations.

Pilot Project

WHRC’s capabilities for assessing physical climate risk have been developed in collaboration with leaders in the world of business and finance. These same capabilities can be used to conduct physical climate risk assessments for cities and towns. As an initial effort in that direction, we propose a pilot project focused on the towns of Dukes County, MA, in collaboration with the Martha’s Vineyard Commission. The research that would provide near-term climate risk information that would inform resilience and planning measures.

This project will focus not only on physical modeling but also on effectively translating the results of that modeling into insights useful to county and local officials. Our experience working with private



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sector partners shows that this requires substantial and sustained engagement between scientists and decision-makers. One can consider this engagement as having sequential phases, which in reality overlap to a significant degree:

Scoping: We will work closely with local and county officials to develop a research agenda – i.e. to identify hazards, locations, and time horizons of interest.

Investigation: As initial risk modeling results become available we will confer with decision-makers to allow assumptions and other aspects of the analysis to be adjusted to more closely meet their needs.

Handoff: The project will produce probabilistic projections and maps of a variety of climate-related hazards, such as heat, precipitation, drought, extreme weather, sea level rise, and flooding. These will be provided to local and county officials along with documentation about how they were produced. We will provide results in written form, and in addition will work with our partners at Probable Futures to produce an interactive digital platform allowing the results to be searched and visualized,

Public communication: WHRC scientists and community officials will together present findings to members of the public at town meetings and other appropriate fora.

Budget

While larger city governments can often afford to pay for climate risk assessments, many small or mid-sized municipalities cannot. We are therefore seeking philanthropic funding to support this work.