

RESILIENT RING'S ISLAND

CLIMATE CHANGE IMPACTS

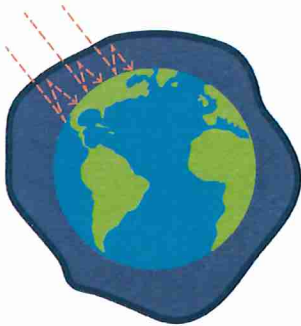


What is Climate Change?

Definition

Climate is the pattern of weather events observed over time.

Climate Change is a phenomenon caused by the increase of greenhouse gases in the Earth's atmosphere, which results in a warmer global temperature. Global temperatures impact air currents and patterns of weather.



Burning fossil fuels adds carbon dioxide to the atmosphere. The atmosphere is like a blanket that surrounds the Earth. Carbon dioxide makes the blanket thicker and traps heat that warms the planet. In Massachusetts, anticipated impacts of global warming include higher temperatures, sea level rise, and increased precipitation.

What Does Climate Change Look Like in Salisbury?



The region is planning for 40" of sea level rise by 2070



Increased flooding will lead to increased erosion



Rain during heavy events in the Northeast increased by more than 70% between 1958-2010



The blizzard of 2013 left nearly 400,000 Massachusetts residents without power



The chance of droughts could increase by 75% by 2100



The average temperature could increase by 10°F by 2100

Inundation & Coastal Storm Surge in Salisbury

Definition

Coastal **storm surge** is the abnormal rise of water generated by a storm's winds (NOAA 2019)

A **King Tide** is the highest high tide, which coincides with the full moon



43%

43% of the Town is within the 100-year floodplain, which includes 1,710 buildings



\$418M

Buildings in the 100-year floodplain have a combined property value of \$418 million



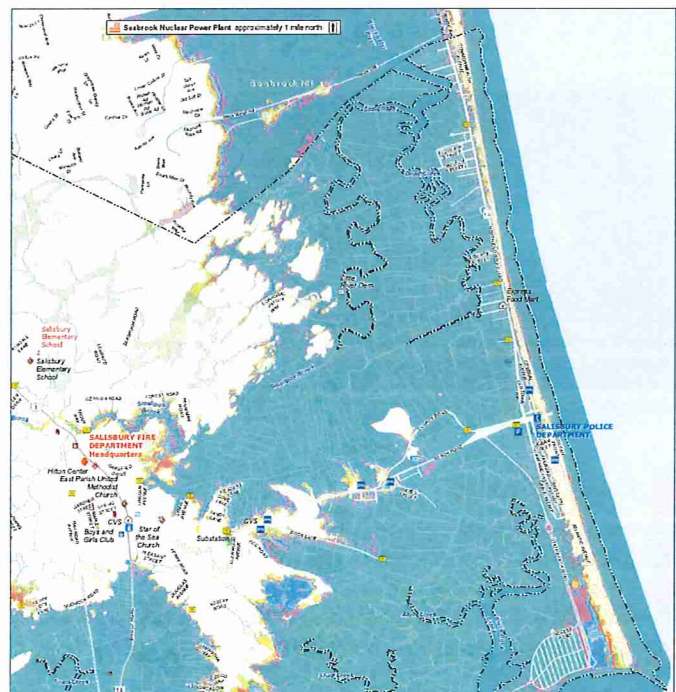
3.8mi

The Town has 3.8 miles of beaches and is experiencing erosion



37

37 sites in Salisbury have had 114 payouts from the NFIP totaling \$2.9 million



A map of inundation probability in Salisbury by 2070

RESILIENT RING'S ISLAND

DESIGN STRATEGY



MVP Program & Proposal

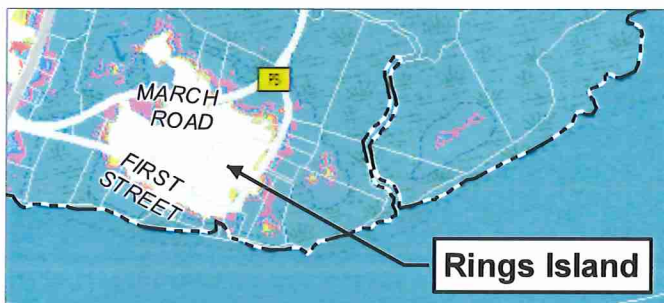
The Massachusetts Executive Office of Energy & Environmental Affairs' Municipal Vulnerability Preparedness (MVP) grant program provides support for cities and towns to begin planning for climate change resiliency, and to implement priority resiliency projects.

\$ Salisbury was awarded \$157,500 in MVP Action Grant Funding to improve the resilience of the coastal neighborhood of Ring's Island

The Resilient Ring's Island Project aims to decrease the impact of floods in the area and improve the coastal neighborhood's public safety by raising the access roads and increasing the tidal flushing through culvert replacements at 1st Street, March Road and Ferry Road.



Flooding occurs at Ring Island's southwest evacuation route about 8-10 times per year. The neighborhood's northern evacuation route also floods during King Tides and significant storms. Flood conditions are expected to significantly worsen under climate change, which may cause between 4-10 feet of sea level rise by 2100.



A map of inundation probability in Ring's Island by 2070

Definitions

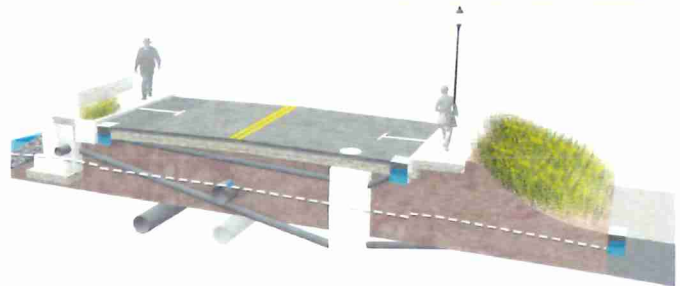
Tidal flushing is the variable flow of water during rising and falling tides

A **culvert** is an underground conduit that allows water to flow beneath a road or similar built infrastructure

Tide gates allow for either tidal flushing or flood control under different conditions.

Project Components

Elevated Roadway



A rendering of an elevated street that incorporates sidewalks and a landscaped slope connecting to existing grade. The Resilient Ring's Island project proposes elevating Ferry Road, March Road, and 1st Street. The project will also add a sidewalk along one travel lane of Ferry Road.

Culvert Improvement



Culvert replacement by Weston & Sampson in Wenham, Massachusetts.



Tide gate inspections in Quincy, Massachusetts. The Resilient Ring's Island project proposes replacing up to three stormwater culverts and designing tide gates.