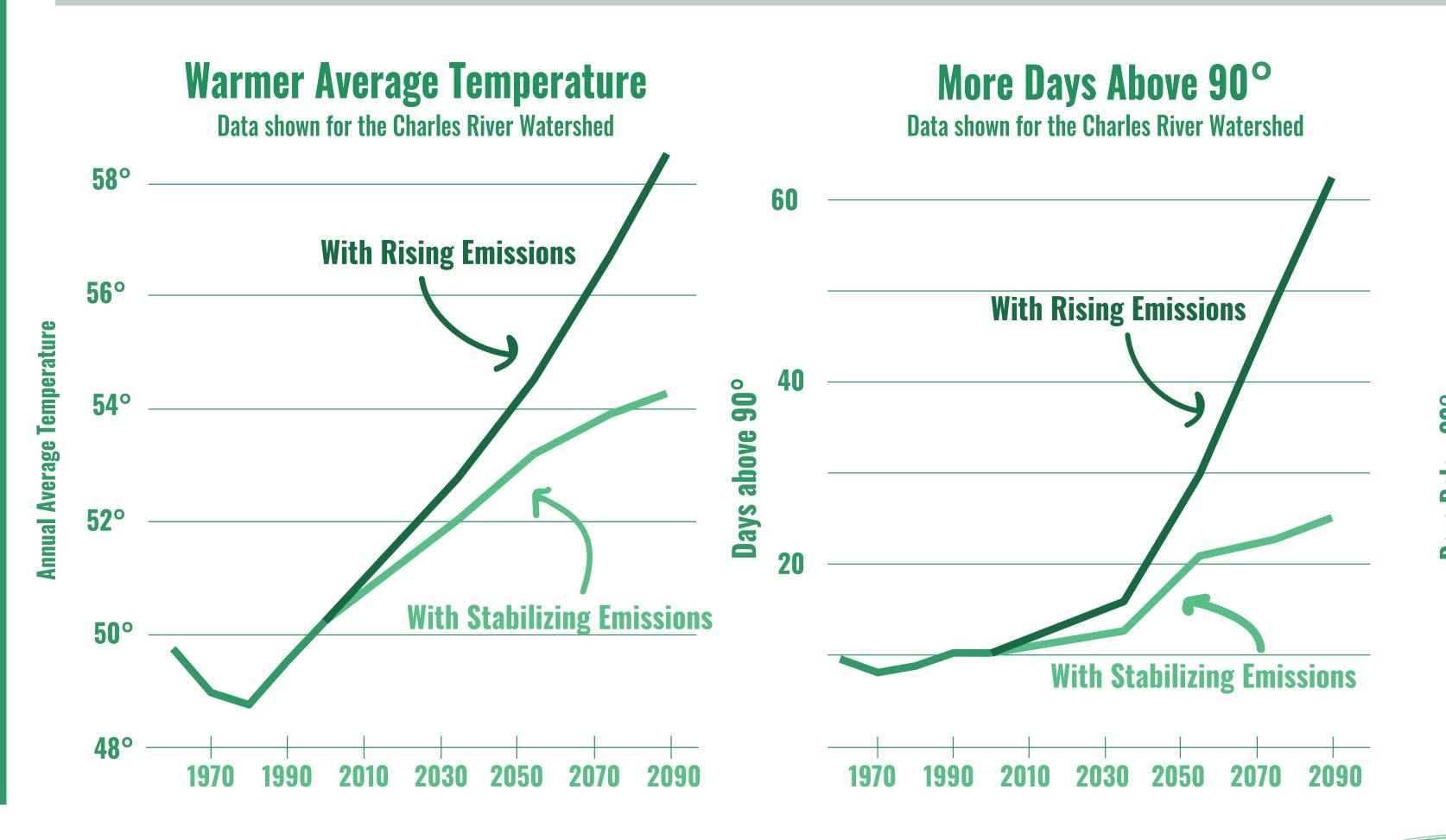
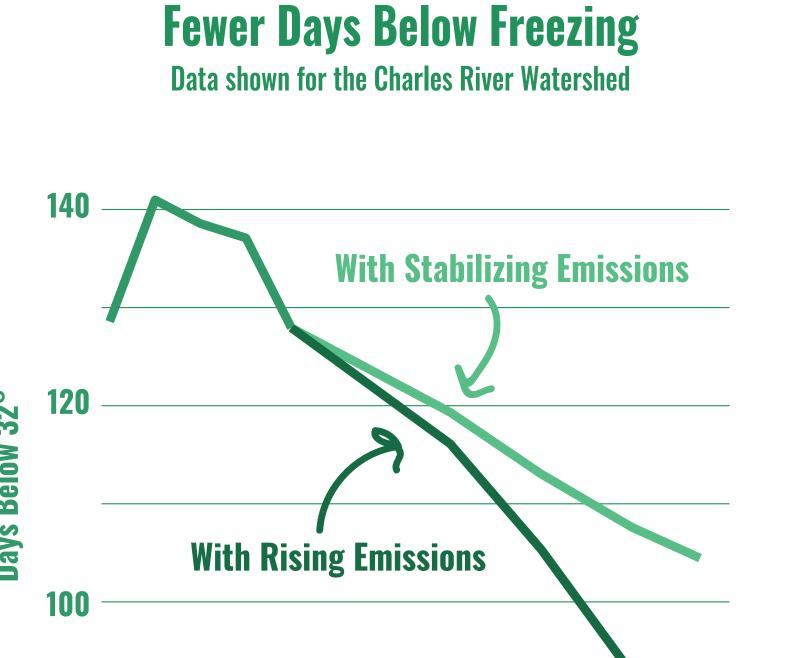
Wrentham and the Charles River Watershed

Our climate is regulated by "greenhouse gases (GHGs)" that trap heat, including carbon dioxide, methane, and nitrous oxide. In the past century, the combustion of fossil fuels, our primary energy source in the age of industrialization, has increased the concentration of GHGs in the atmosphere, which has caused global temperatures to rise. If people stabilize GHG emissions, global temperatures may rise more slowly. If emissions continue increasing at the same rate, we can expect more extreme changes in the climate.

Higher Temperatures





As the climate changes, Wrentham can expect...

Highest sea level rise scenario

2100 +82 inches

More Large Storm Events

In addition to increasing annual precipitation, climate change will bring more large rain and snow events.

This will lead to more stormwater flooding, as most stormwater drainage is not sized for larger rain events.

10-year, 24 hour storms refer to the 24-hour rainfall total for the biggest storm expected in a 10-year period.

Storm drains built for 1961 standards will be inadquate

Expected size of a 10-year, 24-hour storm

4.5 inches 1961 **Observed** Rainfall (NOAA) for **Eastern MA**

5.23 inches

2014 Observed Rainfall (NOAA) for Wrentham

5.6 inches

Cambridge Rainfall Projections, 2015 - 2044

Cambridge Rainfall Projections,

6.4 inches

More Annual Precipitation

But less in the summer and fall...



While total annual rainfall and rainfall events are projected to increase, summer and fall rain is projected to decrease slightly.

And more frequent droughts...

Due to the combined effects of earlier snowmelt, less rain, and higher temperatures, summer and fall droughts may become more frequent.

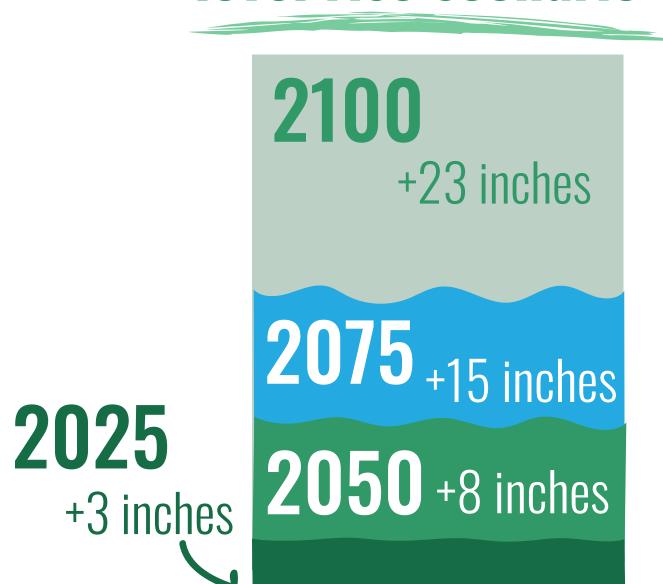


Rising Seas

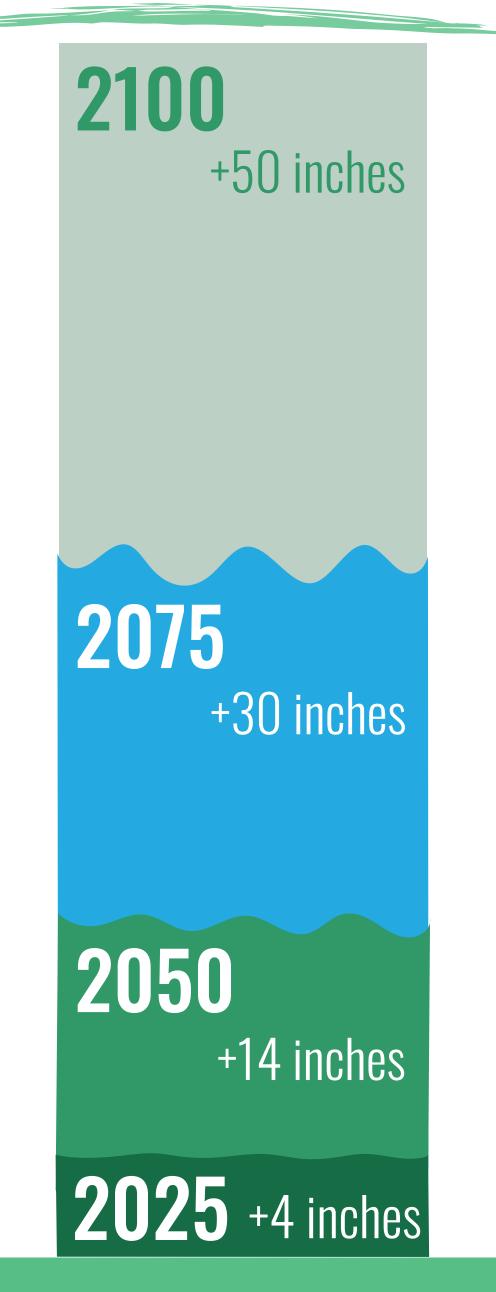
Projections for sea level rise vary dramatically depending on future greenhouse gas emissions, melting ice in the arctic, ocean currents, and other factors. The charts below represent intermediate low, intermediate high, and high scenarios.

*Sea level rise bars are 1/4 scale

Intermediate low sea level rise scenario



Intermediate high sea level rise scenario



+47 inches

2050

+22 inches

2025



Sources:

Massachusetts Executive Office of Energy and Environmental Affairs; Northeast Climate Science Center; National Ocean and Atmospheric Administration TP 40; National Ocean Atmospheric Administration TP 40; National Ocean Atmospheric Administratio Office of Coastal Zone Management, "Sea Level Rise: Understanding and Applying Trends and Future Scenarios for Analysis and Planning 2013