

Kittery, ME Climate Frequently Asked Questions

What are Greenhouse Gases

Greenhouse gases (GHG), produced primarily from fossil fuel combustion, trap heat in the Earth's atmosphere and raise temperatures globally. The gases, mainly carbon dioxide and methane, result from fossil fuel extraction and burning in all aspects of our lives: vehicles, home heating systems, agriculture, and industrial processes. Increased global temperatures result in the melting of Arctic ice caps and glaciers and thermal expansion of the oceans. In combination, these forces raise sea levels and create weather instability.

What is the Science behind Climate Change Impacts in Maine

Maine's Climate Future: <https://climatechange.umaine.edu/climate-matters/maines-climate-future/>

Introduction to climate science and the impacts of climate change on Maine
<https://www.maineconservation.org/lunchnlearn/introduction-to-climate-science>

How to Reduce Greenhouse Gases

Energy:

Switch to renewable sources of energy: for example, solar, wind, and geothermal energy

Conserve energy through insulation and more efficient heating systems. These options reduce energy consumption and may also save money.

Get an energy audit (energy assessment and air sealing) at little or no cost:

<https://www.energymaine.com/at-home/vendor-locator/>

Replace your home heating system and water heater with energy efficient heat pumps and in some cases, receive a rebate: <https://www.energymaine.com>

Install solar panels and receive rebates: <https://www.energysage.com/solar-panels/solar-rebates-incentives/me/>

Switch residential power to a renewable source:

<https://www11.maine.gov/mpuc/greenpower/faq.shtml>

Transportation:

Transportation represents over 50% of the GHGs produced in the Seacoast region

https://southernmainepdc.govoffice3.com/vertical/Sites/%7B14E8B741-214C-42E2-BE74-5AA9EE0A3EFD%7D/uploads/Estimating_On-road_Transportation_Emissions_in_York_County_ME.pdf

Walk or bicycle, if you can, instead of using personal vehicles. Support local initiatives to build bike and pedestrian infrastructure, like bike lanes, sidewalks, and public transportation.

Purchase an electric vehicle (EV) with zero emissions. Check Efficiency Maine incentives:

<https://www.energymaine.com/ev/> And rebates for EV home chargers:

<https://www.energymaine.com/at-work/electric-vehicle-charging/>

Explore vacation options not reliant on planes - major GHG producers. If you do fly, purchase carbon offsets: <https://www.washingtonpost.com/travel/tips/questions-about-carbon-offsets-flights-answered/>

Food:

Switch to plant-based foods. Animal-based agriculture, through feed and transport, emits large amounts of GHGs. Animal waste also contributes to GHG, too and contaminates land and water. Animal waste pollution is often placed near poor, disenfranchised communities. {haven't found a recent citation for this}

Reduce, Reuse, and Shrink your Personal Carbon Footprint:

Learn how to shrink your personal reliance on GHGs:

<https://blogs.ei.columbia.edu/2018/12/27/35-ways-reduce-carbon-footprint/>

How to Reduce Energy Consumption and Air Out Your Home

Houses need to breathe, and doing that can reduce energy consumption:

https://www.youtube.com/watch?v=ClcrXut_EFA

Heat recovery ventilators such as heat pumps? take in outside fresh air as inside stale air goes out, thus transferring about 75% of the heat to the incoming fresh air:

<https://www.youtube.com/watch?v=i7US4TmyD6k>

How Kittery is Addressing Climate Change

The Town, based on recommendations from the Kittery Climate Adaptation Committee, is exploring renewable energy options, purchasing electric vehicles, and improving building insulation. It has already installed energy-saving LED streetlights. The School Department is installing LED lights. Kittery will be working with the Southern Maine Planning and Development to develop a region-wide greenhouse gas inventory. The Climate Adaptation Committee has conducted a flood risk assessment and has identified high-risk areas in Kittery.

Learn More about Climate Change

Scientific research on melting glaciers:

- <https://amp-smh-com-au.cdn.ampproject.org/c/s/amp.smh.com.au/world/north-america/this-is-a-big-deal-mighty-glacier-finally-succumbs-to-climate-change-20191108-p538kl.html>
- <https://www.npr.org/2019/06/19/733739909/i-spy-via-spy-satellite-melting-himalayan-glaciers>.

Measuring sea level rise:

- <https://science.sciencemag.org/content/351/6274/699>
- <https://www.pnas.org/content/115/9/2022.short>
- <https://www.nature.com/articles/s41598-019-54239-2>

Predicting the future relies on models. Current climate models point in the same direction-warmer with higher sea levels

Today's climate extremes, complicated by the extent of human settlement, is shown by these visuals to be a new phenomenon:

- https://climate.nasa.gov/climate_resources/24/graphic-the-relentless-rise-of-carbon-dioxide/
- <https://xkcd.com/1732/>

Kittery's Climate Adaptation Change Committee webpage has additional resources: www.kitteryme.gov/climate-adaptation-committee

How vulnerable is Kittery to Storms and Flooding Hazards

Kittery faces the ocean. Its rocky coast and conserved wetlands (Fort Forster, Seapoint/Crescent Beaches, Brave Boat Harbor Headlands) buffer it from major storms. But areas of Town remain vulnerable to flooding and coastal erosion from sea level rise amplified by storm surges. These coastal hazards put roads, building structures, and critical water and sewage infrastructure at risk.

Areas Vulnerable to Storm and Flooding Hazards

Maps of areas most affected by coastal hazards can be found at:

- <https://www.arcgis.com/apps/webappviewer/index.html?id=3c09351397764bd2aa9ba385d2e9efe7>
- https://www.maine.gov/dacf/mgs/hazards/slr_ss/index.shtml

Maine Nature Conservancy's state-wide hazard map: <https://maps.coastalresilience.org/maine/>

What is the Flood Risk for My Property

To view flood risk scenarios for your property: <https://floodfactor.com>

How is Maine's Climate Changing

Introduction to climate science and impacts of a warmer Maine:

<https://www.maineconservation.org/lunchnlearn/introduction-to-climate-science>

University of Maine's Climate Change Institute's (<https://climatechange.umaine.edu>) report Maine's Climate Future: a 2020 Update (<https://climatechange.umaine.edu/wp-content/uploads/sites/439/2020/02/Maines-Climate-Future-2020-Update-3.pdf>) documents hotter weather, p. 7; more intense rainfalls, p. 9; more droughts, p. 11; milder winters, p. 12; more arboviruses such as tick-borne, p. 14.

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A summary projected climate-related changes in Maine: <https://statesatrisk.org/maine>

How are the Gulf of Maine's and its Fisheries Changing

The Gulf of Maine is warming faster than the rest of the world's oceans. The warming appears to be associated with weakening of the Labrador Current in turn caused by the melting of Greenland's glaciers. <https://eos.org/features/why-is-the-gulf-of-maine-warming-faster-than-99-of-the-ocean>

A warming Gulf of Maine is changing our traditional fisheries. Many ground fish have migrated to colder waters. Further, acidification is increasing, affecting the ability of shellfish like lobsters to grow shells. <https://www.maineconservation.org/lunchnlearn/introduction-to-climate-science>

What Much will it Cost Kittery to Adapt

Preparing for effects of a much warmer Kittery, with more intense storms alternating with very hot and dry periods, may require additional Town funds. The Kittery Climate Adaptation committee is 1. assessing the vulnerability of Town infrastructure, including roads increasingly subject to flooding and 2. A measures to reduce the Town's and its residents carbon footprint. It is far less expense to invest in adaptations and mitigations now than after a major disaster.

Efficiency Maine (<https://www.energymaine.com>) offers many rebates and incentives to switch to more sustainable and cost-saving heat sources, appliances, and vehicles.

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