

The City of Whitehall's Climate Mobilization Action Plan

In our current age, Earth's climate is changing more rapidly than ever before. If action is not prioritized and immediately taken, drastic and detrimental effects will become very apparent in the upcoming years. Striving to do our part for the environment is essential in these times.

As a city, there are direct actions that we can take in the fight against climate change but there is also the potential for individuals to get involved in the fight by dedicating themselves to be educated, informed, and once understanding how big of a difference their actions can make, contributing citizens. Throughout this climate report, you will find the direct actions outlined that the City of Whitehall is taking but also how the City of Whitehall plans to assist the community through providing various education programs. This is in hopes that we can help residents to take action to better not only our direct community, but for the greater good of our climate and the planet that we call home.

What are Greenhouse Gases and How do they Promote Climate Change?

In general, greenhouse gases are gases that trap heat in our atmosphere. Larger amounts of emissions produced by human activities lead to higher concentrations in our atmosphere-also known as the enhanced greenhouse effect. In other words, these extra emissions being added by humans cause us to advance from the natural greenhouse effect, essentially amplifying it, and we see greater amounts of heat being produced. There are an assortment of human activities that release greenhouse gases into the atmosphere, with some producing more than others and each gas remains in the atmosphere for varying times ranging from a few to thousands of years. Overall, this extra production of heat is gradually promoting the heating of our Earth or what is otherwise known as climate change.

A Few of the Main Greenhouse Gases Present in our Atmosphere

Carbon Dioxide (CO₂) – Carbon dioxide is the primary gas that is emitted through human activities. In 2021, carbon dioxide made up 79% of all U.S. greenhouse gas emissions formed from human activities¹. Carbon dioxide naturally appears in our environment through Earth's carbon cycle. The carbon cycle is a continually functioning process where carbon travels out of the atmosphere to the Earth, where it is stored in carbon sinks or reservoirs-primary examples include rocks, sediments, and the ocean, and then eventually, cycles back into the atmosphere through various processes including volcanic eruptions, organisms that die, fires and the burning of fossil fuels among many other processes². This natural process is seen to balance over time. However, human activities are having a major effect on the functioning of Earth's carbon cycle through the significant addition of CO₂ to our atmosphere. This great influx ultimately affects the process of removal and even the process of storing CO₂ in natural reservoirs. The main source of CO₂ produced by human activities is through the burning of fossil fuels (coal, natural gas, and oil) typically for energy or transportation systems¹.

Methane (CH₄) – In 2021, methane made up 12% of all U.S. greenhouse gas emissions formed from human activities¹. Methane is primarily emitted through the production and transport of natural gas, coal and oil. Methane is also produced through livestock and other

agricultural practices, land use, and when organic waste decays in municipal landfills¹. Globally, human activities account for 50-65% of methane emissions³.

Nitrous Oxide (N₂O) – In 2021, nitrous oxide made up 6% of all U.S. greenhouse gas emissions formed from human activities¹. Nitrous oxide is primarily emitted through agricultural practices, land use, and industrial activities. It is also emitted during the combustion of fossil fuels and during the treatment of wastewater. Similar to the carbon cycle, nitrous oxide is also a natural part of our atmosphere that is seen functioning in Earth's nitrogen cycle. Globally, human activities account for 40% of nitrous oxide emissions³.

What is a Carbon Footprint?

A carbon footprint is a measurement of the total amount of greenhouse gases that are generated by our actions. In other words, a carbon footprint is a measurement of one's impact. The "size" of someone's carbon footprint depends on many different factors-taking into account emissions from various sources in your life, the food you eat, clothing you buy, the waste you produce, and an assortment of other components. In the United States, the average carbon footprint per person is 16 tons, which is one of the highest rates in the world. Worldwide, we see an average carbon footprint of 4.8 metric tons⁴.

The Paris Agreement

In 2016, the Paris Agreement was signed which is an international treaty adopted by 196 nations to limit global warming. The treaty urges countries to achieve climate neutrality by 2050. The United Nations Framework Convention on Climate Change defines climate neutrality as achieving net zero greenhouse gas emissions – where total emissions are equal to or less than emissions removed through Earth's natural absorption. The concept of climate neutrality is the standard that has been adopted by the State of Michigan. The central goal of the Paris Agreement is to limit global warming to 1.5° C. To do this, lifestyle carbon footprints should be no more than 2.5 tons of greenhouse gas emissions per person per year by 2030 and further reduced to 0.7 tons by 2050.

Why We Need to take Immediate Action

As the Paris Agreement, the State of Michigan and now the City of Whitehall recognize, urgent action is needed to combat negative climate change. Possible negative consequences include increasing intensity of extreme weather events that cause the loss of homes and property, jeopardize livelihoods, damage crops, impact travel and supply corridors, increase soil erosion and vegetation loss, decrease access to water, and damage public infrastructure. Furthermore, we see stresses placed on the ecological community which include the extinction of species, loss of habitat, decreased water quality, and increases in detrimental organisms. These consequences listed are only the beginning of detrimental repercussions to be seen from the warming of the Earth/climate change.

Climate Mobilization Action Plan

Existing Reductions and Future Reduction Plans: City and Community-Wide

Whitehall City Council Resolution 21 declared a climate emergency. The Resolution was predicated by the 2016 Paris Agreement. The resolution calls for the citywide elimination of greenhouse gas emissions; implementation of projects to decrease carbon levels; submittal of a report detailing reductions by 2022, 2030, and 2040; development of a Climate Mobilization Action Plan; and submittal of a report on opportunities in the ordinances and the Master Plan to address climate change and ecological impacts.

Greatest Sources of Emissions and Recommended Points of Reduction

-Green Space

Existing Reductions

- Lawn mowing and trimming in city parks has been reduced. Areas not mowed have been planted with native species or left to grow wild.
- Routinely plants up to ten trees annually.

Future Reduction Plans

City-Wide Focus

- Increased tree planting in greenspaces throughout Whitehall to increase Whitehall's tree canopy.
 - Trees are a part of the carbon capture and sequestration system. By nourishing these ecosystems through tree planting and increasing Whitehall's tree canopy, we will increasingly be removing more greenhouse gases from the atmosphere.
- Further incorporation of native species throughout Whitehall with a focus on eliminating and removing any invasive species present.
- Incorporate alternative lawn and garden chemicals in the parks department to reduce the use of commercial pesticides.
- Research viable alternative options to work towards reducing salt usage.

Community Focus

- Provide community wide education on the benefits and basics of incorporating native plants into household gardens and the elimination of invasive species.
- Provide education on alternatives to standard lawn care and garden chemicals typically used with hopes of reducing the use of commercial pesticides community wide.
- Provide education on alternative and viable options that residents can substitute for salt.
- Provide education on home gardening/homegrown food methods-how to implement, nourish and maintain the growth of one's own food.

- This education and sense of independence helps to promote food security.

-Waste Reduction

Existing Reductions

- Recycling of office paper, plastic, glass, and metal is done on a weekly basis.

Future Reduction Plans

City-Wide Focus

- Expand the recycling of office paper, plastic, glass, metal and all other recyclable materials to be conducted on a weekly basis at all city buildings/locations.
- Develop and implement a composting system at all city buildings/locations.
- Develop and implement waste reduction and management policies in all city buildings/locations

Community Focus

- Research the viability of a community recycling drop-off site.
 - If community recycling drop-off site is implemented, provide education on proper recycling methods (what is allowed to be recycled and what to sort out).
- Provide information community wide on how to build, operate and maintain a composting system along with the various benefits.
- Provide education on water conservation measures with emphasis on the significant difference that can be achieved (quantity and cost savings) through small changes in one's daily routine.
- Research the viability and then work with restaurants and grocery stores on developing a composting program at city-wide sites.

-Transportation

Existing Reductions

- In 2022, purchased a Ford Hybrid Police Interceptor.
- Installed an electric vehicle charging station at 111 N. Mears St.

Future Reduction Plans

City-Wide Focus

- Through the years, continue to research the development of alternative fuel, hybrid, and electric vehicles in hopes of rotating them into the fleet as it comes time for older units to be replaced.
- Expand the locations of electric vehicle charging stations.

- Research the possibility of a community-wide car-sharing platform.
- Research and develop plans for further sidewalk construction to create a more walkable community-look into areas without current sidewalks.
- Continue with sidewalk and bike trail repairs to maintain the upkeep of current sidewalks and bike trails.
- Research the viability of constructing a bike lane.

Community Focus

- Provide education in hopes of promoting the purchase of electric vehicles-including long term associated cost benefits.
- Provide education on all alternative transportation options and how these alternative transportation options can be utilized throughout Whitehall.

-Energy, Electricity and Buildings

Existing Reductions

- Lights at city hall, the public works department, the downtown streetscape, and the holiday lights have all been converted to LED.
- The zoning ordinance was amended in 2010 to allow the use of private renewable energy sources.
- Exterior windows, walls, and insulation at city hall have been replaced for energy conservation purposes.

Future Reduction Plans

City-Wide Focus

- Continue the partnership with Consumers Energy to convert streetlights to LED.
- Continue to improve municipal building energy efficiency while also continuing research on viable renewable energy sources in hopes of a slow incorporation and transition throughout the future.
- Continue to gather research on the viability of transitioning city maintenance equipment (such as mowers and trimmers) to more energy efficient vessels.

Community Focus

- Provide education on how to make the transition to energy efficient upgrades in households to overall reduce residential electricity and the associated expenses.
- Provide education on various ways to save energy throughout households and the associated benefits from adopting conservative energy behaviors.

References

1. Environmental Protection Agency. (2023, April 13). *Overview of Greenhouse Gases*. EPA. <https://www.epa.gov/ghgemissions/overview-greenhouse-gases>
2. US Department of Commerce, N. O. and A. A. (2019, April 2). *What is the carbon cycle?*. NOAA's National Ocean Service. <https://oceanservice.noaa.gov/facts/carbon-cycle.html#transcript>
3. IPCC (2021). *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2391 pp.
4. *What is a carbon footprint?*. What is a carbon footprint. (n.d.). <https://www.conservation.org/stories/what-is-a-carbon-footprint>