

City of Grand Rapids Climate Action Plan



October 2024



Introduction

Climate Emergency Resolution

On January 24, 2022, the City of Grand Rapids adopted a resolution that declared a climate emergency. The city resolved to work for “a just transition and climate emergency mobilization effort” and:

- Complete and Implement a Climate Action Plan.
- Fully implement our autonomous vehicle shuttle program.
- Continue serving as a regional leader and share our experience with the Grand Rapids Solar Garden project and autonomous electric vehicle project so that other communities may learn from us and implement similar ideas.

This document fulfills those resolutions by describing how the city is planning to address the challenges ahead. This document does not propose requirements, prescriptions, or mandates. There's a good reason for that: much of this work is under development. Today's technological advances may improve old solutions. And the challenges ahead are uncertain. Drought and wildfires were concerns when the resolution was passed nearly three years ago. This past year has brought record rain events. The committee recognizes that there are many climate challenges.

About the Grand Rapids Climate Action Planning Process

The City Council established its Climate Action Advisory Committee in April 2024, appointing Amy Blomquist, Simon Gretton, Garrett Holl, and Bill Schnell to the committee. Amber Smith joined the committee and became a valued member. Sam Friesen introduced the committee to the concept of operational and embodied carbon and suggested several ideas for implementation.

City Councilor Molly MacGregor represented the council. City Administrator Tom Pagel, Public Works Director Matt Wegwerth, Assistant Community Development Director Dan Swenson, and Public Utilities Manager Julie Kennedy were assigned to support the committee. The committee met six times to review materials and draft this report.

Public comment was requested by Monday, September 16th. Those comments and the draft report were presented to the City Council at its September 23rd work session and scheduled for final approval at the October 14th meeting of the City Council.

Resilience is the Goal

Some community-based climate action plans start with a statement of greenhouse gases produced and emitted in the city, and then set forth strategies to reduce greenhouse gases, sector by sector. The Grand Rapids Climate Action Advisory Committee reviewed this approach for its climate action plan and decided to focus on specific projects that the city has identified for climate action rather than committing to specific reductions in greenhouse gases.

This approach is practical: the City of Grand Rapids does not have the capacity to calculate greenhouse gases generated within the city. Assigning a reduction goal would be arbitrary and potentially divisive, pitting sector against sector.

The committee decided instead to focus its efforts on preparing for resiliency, which it defined as the ability to thrive in the face of change. Resilience is the ability to anticipate, prepare for, and adapt to changing conditions and respond to, withstand, and recover from disruptions through planning and technical solutions. The committee agreed that resiliency should:

- 1) Assure that the City's buildings can accommodate variability in climate, that is, able to withstand heat, cold, floods and drought.
- 2) Assure that the City's infrastructure can withstand variability in climate, so that interruptions to electrical, water, waste services are minimized.
- 3) Work to reduce carbon-based fuels used in city operations.
- 4) Work to reduce carbon emissions embodied in city buildings and fleets.
- 5) Support healthy air, land and water, diverse recreation opportunities, and community events that build pride of place.

What are others doing?

The committee reviewed climate action plans from several small cities: including Bemidji, Grand Marais, Northfield, and Faribault. These plans proposed ways to reduce dependence on fossil fuels, one (Faribault) by reducing the amount the city spends on fossil fuels. Below is the link to those plans:

BEMIDJI

<https://www.ci.bemidji.mn.us/index.asp?SEC=A5D5A529-B582-4BE4-A34E-76BOA43E3A06>

FAIRBAULT

<https://www.ci.faribault.mn.us/DocumentCenter/View/6437/Faribault-Climate-Adaptation-Plan-120620?bidId=>

GRAND MARAIS

<https://www.ci.grandmarais.mn.us/cap#:~:text=In%20response%2C%20the%20Grand%20Marais,climate%20change.%20In%202018%20a>

NORTHFIELD

<https://www.northfieldmn.gov/1306/Sustainability>

The State of Minnesota pledged to reduce Greenhouse Gas (GHG) emissions by half by 2030. Learn more about how that goal was reached by linking to the State's Climate Action Framework here:

<https://climate.state.mn.us/minnesotas-climate-action-framework>

According to the State, the largest sources of greenhouse gases in Minnesota are transportation and building operations, which both rely on the use of fossil fuels. Learn more about how the State calculated the sources of greenhouse gases and set goals for reduction at this link:

<https://climate.state.mn.us/sites/climate-action/files/Greenhouse%20gas%20emissions%20analysis.pdf>

The State's plan has goals for clean transportation, climate-smart lands, resilient communities, clean energy buildings, healthy communities, and clean economy. The City of Grand Rapids plan

proposes goals in the areas of rain gardens, solar power, transportation, and waste. The city has already made accomplishments in these areas; the collective effect of adding new goals will strengthen the resilience of the City to climate challenges.

The Plan

What the City of Grand Rapids has done and what this plan proposes to do...

The City of Grand Rapids has taken steps to prepare for climate resiliency in multiple ways. The following is a summary of what has been done, a link for more information and the proposed action for maintaining or achieving the accomplishment. These are actions that the city is committed to which advance public health, safety and welfare and help achieve resilience for climate challenges. The projects of this plan are intended to be resilient responses to today's challenges consistent with the City's track record of developing positive solutions to municipal challenges in northern Minnesota.

These accomplishments and proposals are presented in the following categories:

- 1) Rain Gardens, enhancing resiliency of urban lands.
- 2) Solar Power, providing clean power.
- 3) Transportation, reducing greenhouse gases.
- 4) Waste, finding new ways to recycle and reuse.

Rain Gardens – advancing resiliency of urban lands

The City has used rain gardens to filter sediment and pollutants for more than 15 years. Rain gardens need to be maintained over time. A rain garden is, at its core, a garden that collects rainwater, holds it for a limited amount of time, and filters it before slowly releasing the water into the ground. It collects rainwater from impervious surfaces like roofs, pavements, driveways, patios, parking lots, or waterlogged yards, allowing the water to slowly seep back into the ground, preventing runoff from reaching local waterways.

The installation of rain gardens can be essential for the health of our waterways. Rain gardens guard our waterways against nonpoint source pollutants contained in runoff water. By gathering and filtering stormwater, rain gardens also reduce the flashiness of storm events. That protects water quality and reduces downstream erosion.

The City of Grand Rapids currently has twenty-nine rain gardens in its inventory. It began constructing modified rain gardens as part of a 2008 street reconstruction project on First Avenue Northwest. Since the rain gardens are not large enough to be used solely as infiltration basins, they are connected and allowed to discharge to the city's storm sewer system.

Link to a report of the original rain garden project:

<https://mnlrap.umn.edu/sites/cts.umn.edu/files/2023-09/mnlrap-operastormwaterpollutantremoval-2011.pdf>

PROPOSED ACTION RAIN GARDENS

The city continues to install, clean, and maintain rain gardens throughout the community. This will be an ongoing effort to:

- Identify rain gardens that need maintenance.
- Discuss with neighborhoods the feasibility of neighborhoods adopting a rain garden to maintaining it.

Solar Power: providing clean power

In 2022, the Itasca Clean Energy Solar Plus Battery Storage Project started operating. This is a large solar array south of town, near the airport. It currently supplies about 10 percent of the electricity used in the community. <https://cityofgrandrapidsmn.com/utilities/page/itasca-clean-energy-solar-plus-battery-storage-project>

The solar array is located on 15 acres of City land, and within the GPZ airport zone B. Development of this property is restricted due to the proximity to the airport, so the project doesn't compete with economic development.

The solar power flows directly into the grid unless it is being used to charge the battery. A typical household uses approximately 886 kWh per month. The solar array produces 63 MWh to 553 MWh per month, enough to power about 10 percent of the city's needs, year-round. The Heliene bi-facial panels also generate from the underside of the panels, so power is generated even when covered with snow.

This project is possible because of the work of volunteers from the Itasca Clean Energy Team, leadership of the Grand Rapids Public Utilities Commission, and assistance from Minnesota Power. The site operator pays about \$5,000 a year to the City of Grand Rapids to produce energy on the site.

Lighting at Grand Rapids Area Library

Three solar panels were installed at the Grand Rapids Area Library in 2016, intended to provide part of the power the library needs. https://www.grandrapidsmn.com/news/here-comes-the-sun/article_18225982-d758-11e5-8949-23872b941182.html

This solar installation was part of the 2016 Riverfront Energy Project. The panels were removed in 2022. Another 2016 project was the partnership of the City, UPM Paper Mill to use steam heat for the Grand Rapids Area Library and the swimming pool in the Itasca County YMCA. That project has been extremely successful and has reduced the city's use of fossil fuels for heat, as nearly 90 percent of the library's heat is steam from the paper mill. The City's bill for the remaining 10 percent is less than \$4,000 per year. However, the library spends about \$33,000 annually on electricity. Restoring solar panels to the library could provide a low-cost source and low carbon source of electricity for the building.

Solar canopies and battery storage at parking lots

Solar Panels in parking lots help produce clean energy close to where it's needed, reducing our dependence on polluting fossil fuels and the need for costly transmission lines. Solar canopies can also power EV charging infrastructure. Parking lot solar panels also conserves open space directing development to the built environment, protecting open space areas and habitat.

PROPOSED ACTION SOLAR

- The City of Grand Rapids supports development of non-carbon-based power sources, including solar power at its parking lots, public buildings and neighborhoods.
- The City of Grand Rapids will explore restoring solar panels to the Grand Rapids Area Library and swap out the library's lightbulbs for LED lights to reduce its electric bill.

Manage Transportation to Reduce Greenhouse Gases

Transportation contributes to greenhouse gas emissions due to fossil fuels that power personal vehicles as well as vehicle fleets. Grand Rapids maintains:

- 93 miles of paved streets in the city,
- 13 miles of alleys
- 49 miles of sidewalks
- 21 miles of trails

Daily traffic on these streets is the equivalent of one million vehicle miles per day. The city's ability to reduce greenhouse gases from vehicle traffic is accomplished by providing alternate forms of transportation, including walking, bicycling, transit, and autonomous vehicles.

And there are ways to encourage changes in vehicle use, such as replacing intersections with roundabouts. Roundabouts and other traffic management activities have reduced carbon emissions due to idling.

Reducing Idling

The City of Grand Rapids manages traffic to reduce stops and idling by reviewing patterns and use, removing stop signs, and adding compact roundabouts or full roundabouts. Idling reduces the vehicle's fuel economy, costs, and creates pollution. Idling for more than 10 seconds uses more fuel and produces more emissions than stopping and restarting the car.

Researchers estimate that idling from heavy-duty and light-duty vehicles combined wastes about six billion gallons of fuel annually. About half of that is attributable to personal vehicles, which generate around 30 million tons of carbon dioxide every year just by idling.

Installing roundabouts in place of traffic signals or stop signs has been found to reduce carbon monoxide emissions by 15-45 percent, nitrous oxide emissions by 21-44 percent, carbon dioxide emissions by 23-34 percent and hydrocarbon emissions by up to 40 percent (Hu et al., 2014; Várhelyi, 2002).

Constructing roundabouts in place of traffic signals or stop signs reduced fuel consumption by an estimated 23-34 percent (Hu et al., 2014; Várhelyi, 2002; Höglund & Niittymäki, 1999).

While the impact of idling may be small on a per-car basis, the impact of the 250 million personal vehicles in the U.S. adds up. For saving fuel and reducing emissions, eliminating the unnecessary idling of personal vehicles is the same as taking 5 million vehicles off the roads.

https://afdc.energy.gov/files/u/publication/idling_personal_vehicles.pdf

<https://cleancities.energy.gov/technical-assistance/idlebox/>

Becoming EV Friendly

The City of Grand Rapids is becoming EV-friendly, by providing multiple and convenient opportunities for EV chargers, which have been installed with assistance from GM car dealership; the system enables the city to collect information on use of the EV chargers. There are 24 chargers in town, located in NW sector and downtown Grand Rapids. These chargers are available for use by residents and visitors.

Adding Autonomous Vehicles

Encouraging the use of Autonomous Vehicles also has the potential to reduce greenhouse gases. GoMarti is an autonomous vehicle pilot project serving a 17 square mile area. This project continues through 2026; the City can sustain it beyond that date.

Converting to LED Lights for Streets and Buildings

The city has been changing out its incandescent bulbs with LED bulbs over the past 10 years. Doing so has reduced costs as well as reduced carbon emissions. Many cities are doing the same: Xcel Energy has switched out incandescent bulbs with streetlights in the 350 communities it serves in Minnesota.

LED fixtures use approximately 40-60 percent less electricity than HPS lights and have a longer life, which means less maintenance and fewer replacements. Moreover, the replacement lights are Dark Sky compliant. Dark sky compliance refers to outdoor lighting installations that reduce light pollution, avoid disrupting natural ecosystems, and promote a generally safe and healthy night environment.

Being dark sky compliant involves installing light fixtures that:

- Restrict light directed toward the night sky.
- Reduce or avoid glare.
- Reduce or avoid over-lighting.
- Have customization options such as dimmers or related controls; and
- Lessen blue light that appears at nighttime.
- Moreover, dark sky-compliant fixtures must be fully covered with a specific color temperature no higher than 3,000 Kelvin (K) and must be bound by specific wattage requirements.

The International Dark Sky Association suggests Five Principles for Responsible Outdoor Lighting, which are useful, targeted, low level, controlled and warm colored. Link here to learn more about dark skies: <https://darksky.org/resources/guides-and-how-tos/lighting-principles/>

Information about the City of Grand Marais's 2023 proclamation to become a Dark Sky city link: <https://wtip.org/city-council-makes-dark-sky-proclamation-and-continues-eda-hra-merger-discussions/>

PROPOSED ACTION TRANSPORTATION

- The City is committed to reducing carbon emissions by reducing opportunities for carbon emissions from idling vehicles. Roundabouts will be reviewed where appropriate for future street and development projects.
- The City has a Complete Street Plan that guides all street, trail and transit projects. Update this plan to assure that climate resilience is considered in implementation.
- The City should continue the practice of replacing incandescent bulbs with LEDs and should investigate how to receive the Dark Sky Compliance ranking, which is available for small cities. This designation has been an attraction for tourists from other small cities in northern Minnesota.

Waste: Finding new ways to recycle and reuse

In 2025, the City of Grand Rapids can reduce carbon and methane emissions from waste by convening a work group to consider alternatives to the current city garbage hauling contract, including adding management of recycling, organics composting and yard waste composting, as well as addressing the need for reducing truck transport of the city waste.

The City supports the establishment of the Keewatin Municipal Solid Waste Facility. Historically, Itasca County has transported solid waste to a location approximately 150 miles away. Transport of waste resulted in 886 metric tons of carbon dioxide emitted annually. Disposing at Keewatin would have eliminated nearly 800 tons of metric carbon dioxide from transportation.

<https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references>.

The General Waste and Recycling industrial landfill outside of Keewatin is currently permitted for four unlined Class II C&D landfill cells and two lined industrial landfill cells. Class II C&D landfills are permitted to accept incidental nonrecyclable packaging consisting of paper, cardboard, and plastic, and demo-like industrial wastes comprised of wood, concrete, porcelain fixtures, shingles, and window glass.

Converting the Keewatin Landfill to a municipal solid waste (MSW) landfill will require Certificate of Need (CON) approval from the Commissioner of the Minnesota Pollution Control Agency (MPCA). Potential MSW landfills are required to undergo an environmental review that analyzes such items as endangered species, archeologic impacts, surface water impacts, and groundwater impacts, as well as specifying the design technologies being presented to mitigate those potential impacts.

The climate action plan is supportive of the Itasca County Solid Waste Management Plan and finding a local option for the solid waste management needs of the city, that will reduce the cost per ton savings, estimated fuel usage, greenhouse gas, and total fuel cost. Link here for the Itasca Solid Management Plan and ordinance:

<https://www.co.itasca.mn.us/568/SolidWaste#:~:text=The%20County's%20Solid%20Waste%20Program.residential%20garbage%20and%20recycling%20collection.>

The report on Minnesota's solid waste management program:
<https://www.pca.state.mn.us/sites/default/files/lrw-sw-1sy23.pdf>

PROPOSED ACTION WASTE

- The City of Grand Rapids supports a garbage hauling contract that reflects the goal of climate resiliency by reducing transportation costs, recycling all materials, and providing composting of organics.
- The City of Grand Rapids supports converting the existing Keewatin facility to a municipal solid waste facility. The city further supports development of ancillary businesses at the site, including recycling of a full range of products.

Implementing Climate Action

Identifying sources of carbon: operational and embodied

There is a difference between carbon emissions resulting from operations and carbon embodied in buildings and operations. Here's a link to help explain this concept:

<https://www.istructe.org/resources/guidance/carbon-embodied-operational/>

There are specific solutions for each.

Operational carbon is emitted in the heating and cooling of buildings; the resilient response is to weatherize the building and to use equipment for heating and cooling that reduces the need for fossil fuels.

Operational carbon results from a building's electrical load; the resilient response is to install smart controls that reduce the use of fossil fuels.

Operational carbon is emitted by automobiles, trucks and other vehicles, some used by residents or visitors, others necessary for commerce or trade. Resilient responses are 1. Develop efficiency standards for vehicles that reduce use of fossil fuels 2. Develop transportation infrastructure that reduces idling, such as replacing stop lights with roundabouts. 3. Additional reductions are achieved by increasing opportunities for electric vehicles throughout the community, including visitors, tradespeople as well as residents.

Embodied carbon is found in buildings, streets, sidewalks and operations of city services. Embodied carbon can be reduced by use of low carbon materials, decreasing the width of streets and areas adjacent to roads, increasing locations for storm surge and plan for "craft" transportation.

The City can reduce carbon in its operations by increasing non-carbon sources of electrification through policy and projects.

The City Council recommends that the Grand Rapids Public Utility Commission (GRPUC) adopt a policy to support wholesale electric providers that prioritize carbon-free energy generation.

For example, the Grand Rapids Public Utilities Commission is exploring how the City can mesh its electric loads with capital improvements to reduce carbon-based sources of electricity. To support this goal, the Public Utilities Commission is mapping its load distribution and updating its electric distribution system. The process starts in October 2024, as the Public Utilities Commission begins to review and update its strategic plan.

The City can reduce embodied sources of carbon by helping organizations and residents choose resiliency in housing.

The City of Grand Rapids will work with Kootasca, the Itasca County HRA, housing developers and other stakeholders to encourage the building of affordable, low carbon, climate resilient housing, and as appropriate implement a local zoning, permitting, and regulatory process that encourages these efforts.

Provide outreach about the use of green materials in newly built or renovated housing in the City of Grand Rapids, per the state building code. The goal is a series of fact sheets about green or climate resilient building materials to be provided to those receiving permits from the city. The Grand Rapids Public Utilities Commission is expanding its information and outreach activities to provide residents guidance on choosing green building materials and achieving climate resilience.

Healthy Materials Lab has a variety of resources for people interested in healthy building design.

https://link.edgepilot.com/s/40c033b8/_QThB6mvC0KrOVEQ0k9QTA?u=https://healthymaterialslab.org/

Builders for Climate Action has a variety of tools for helping builders, architects, city planners and policy makers work towards net zero and low carbon building reduction.

https://link.edgepilot.com/s/3e248c6b/OB252qaH_0OFbxjaWyGeJw?u=https://www.buildersforclimateaction.org/

The work of preparing for and implementing measures to be resilient begins with this plan. The six steps below are a model for identifying and reviewing climate resiliency. The committee recommends that the City of Grand Rapids take the following steps:

1. Inventory energy use of all city buildings.
2. Starting with the largest loads in city buildings, identify the equipment needing to be replaced and set goals for updating it.
3. Ensure relevant people in the city are up to speed on these concepts to maximize opportunities and know which resources are available to implement this plan.
4. Outreach should be done to help city residents become aware of the need for climate resiliency.
5. Offer local educational opportunities about the concepts and resources of climate resiliency.
6. Identify ways to inform residents about options for resilient building when they apply for permits for new construction.

The Grand Rapids Climate Action Advisory committee believes outreach is one of the most effective strategies for educating its citizens about the opportunities to promote climate resilience. Some of this outreach will be provided by the Public Utilities commission which plans to hire a staff person next year. Outreach will help residents navigate the process of adding solar panels or buying an EV, and to show them how to apply for solar or EV rebates as well as streamlining any permitting that may be needed.

Monitor and report on Progress:

Task city staff to report on progress to City Council annually AND as needed through 2027 and update the plan in 2027.

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