



Twin Cities Church Caring for Creation Through Reduction in Energy Use

Clark-Grace UCC Energy Efficiency Case Study
April 2022

Sustainability is a Priority

Clark-Grace United Church of Christ believes it is important to care for creation and to act as good stewards and preserve life for future generations. Climate change is one of the biggest threats facing humanity today (<https://www.un.org/en/global-issues/climate-change>) and the church is “walking the talk” by reducing their carbon footprint, thus helping to reduce carbon emissions. Members are encouraged to model the same energy saving behavior at home that they see at their congregation.

A Green Team started in 2008 with the intention of “caring for creation.” The group secured a grant to regrade the parking lot, built a rain garden and planted a native garden to support pollinators. They had an Xcel Energy audit completed, and a “green” theme was used for

vacation bible school. As a result of the audit, the church added weatherstripping to the windows, installed LED exit lights, and upgraded to some programmable thermostats. In 2009, a Macalester student calculated the first greenhouse gas emissions inventory for the congregation. As a follow up, PhD student Jennifer Schmitt wrote an extensive sustainability audit of the church. Her audit included energy, greenhouse gas emissions, landscaping, waste, and connecting sustainability to the mission of the church.

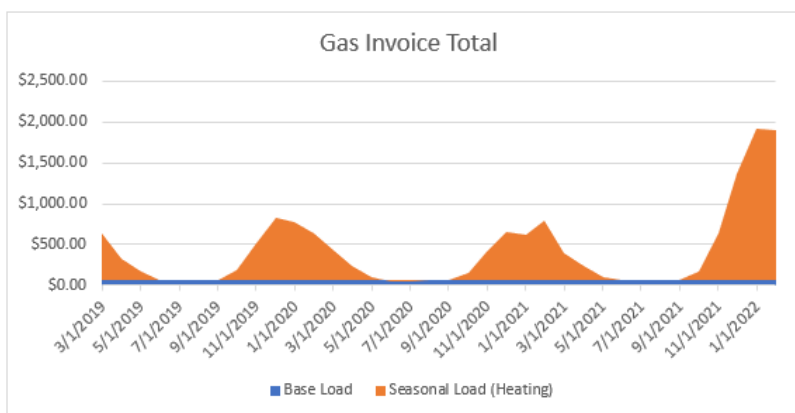
In 2021, one of the older furnaces in the church failed, leaving the church with no heat in the social hall with winter looming. Because of the way the furnaces were configured, an additional furnace from 1989 would need to be moved to replace the broken one. Two more furnaces date from the same time. Clark-Grace UCC is a small church and a new furnace is expensive, much less two! The church reached out to both the Center for Energy and Environment (CEE) and EnergySmart to find out options for saving money on the new furnaces and what other options the church has for saving money and the environment through energy efficiency.

The church started a “miraculous” capital campaign and was able to fund two of the furnaces. Because of supply chain issues and lack of local contractors willing to install the high efficiency models, the church installed more efficient (80% efficiency), but not the most efficient furnaces and agreed to an energy audit from Energy Smart to find more energy efficiency options. The utility bill analysis showed a slight decrease in energy use over the past three years. The recommendations were to upgrade to programmable thermostats, add LED lights and upgrade the furnaces and air conditioning units to high efficiency models.

Thermostat Issues Discovered

When the new furnaces were installed in the fall, a main thermostat was left at 71 degrees without a set back in order to keep the pipes from freezing. Because each degree of heat turned back saves 1% on heat, the high set point caused a large increase in energy use that was not found until the heat bill arrived and it was nearly double what it was the previous year. Even with the increase in natural gas costs, this was an extreme bill (see Figure 1).

Figure 1: Clark Grace Gas Invoices 2019-2022

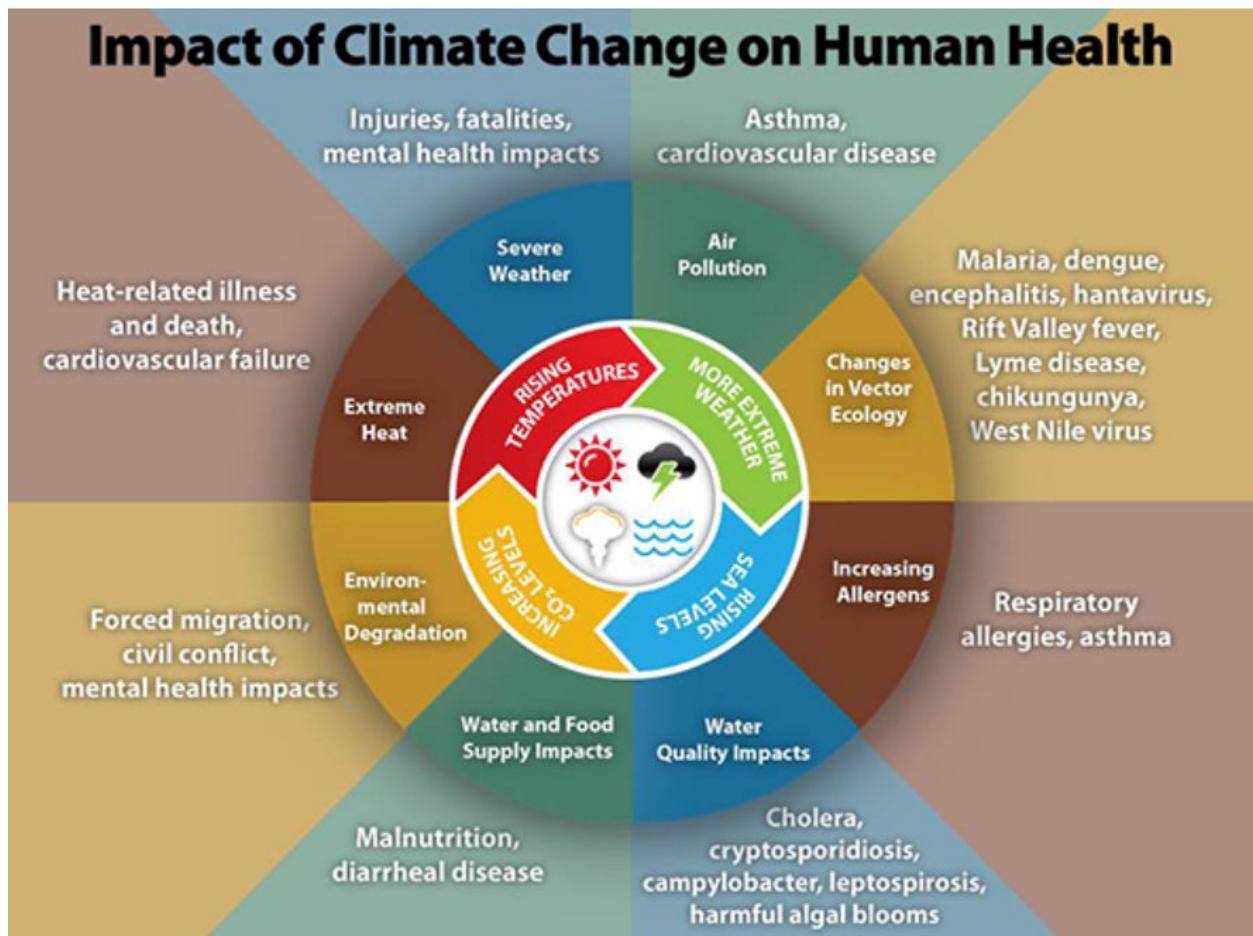


Thermostats are a challenge for the church because they get set incorrectly by well-meaning congregants trying to make the space more comfortable and not set back after an event (or after a new furnace is installed). With several versions of thermostats, it is difficult to train all the people who use the space. WiFi doesn't reach all the thermostats because of the age of the building and the thickness of the walls so internet-connected options are limited for those areas.

Climate Change Connection

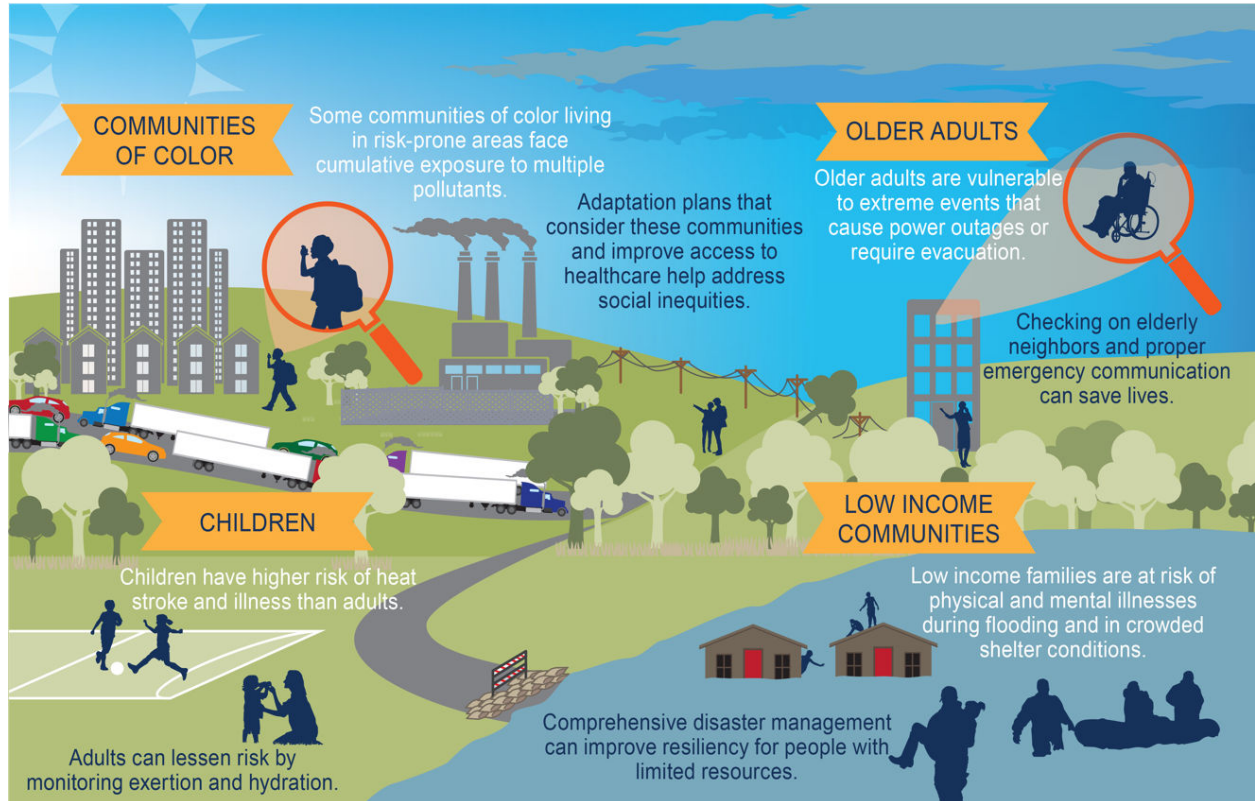
Thermostats control how much energy is used to heat or cool space in a congregation. This is usually seen as a human comfort issue. But it goes beyond that. The thermostats have a direct connection to how much gas is burned in the on-site furnace and how much coal, natural gas, and nuclear energy is used by the utility company, Xcel Energy. Burning fossil fuels for heat and electricity emits greenhouse gas emission which contributes to climate change. Climate change is causing human health impacts (fig 2).

Fig 2: Impact of Climate Change on Human Health.



Climate change is affecting everyone. However, the poor, young, old, and people of color are impacted disproportionately (fig 3).

Fig 3: Vulnerable Population with in a Changing Climate



Source: <https://nca2018.globalchange.gov/chapter/14/>

Greenhouse gas emissions from the church, as well as the rest of the worlds' fossil fuel use, is changing the climate. The thermostats are not just pieces of technology: how these devices are operated in buildings, including churches, impacts the environment.

Action Steps Planned

In 2022, the Green Team will be taking the following action steps:

- Upgrading all the thermostats to programmable versions offered by Xcel Energy that are very easy to use and default back to the settings after 4 hours of changing them for an event. In addition, these thermostats can be checked remotely. The WiFi in the church needs to be upgraded to do this and is currently in process.

- Printing and displaying a graph of the energy use in the social hall and track the savings - in BTUs and greenhouse gas emissions - by using the Interfaith Power and Light Cool Congregations guide.
- Upgrading LED lighting in the social hall and sanctuary to use electricity more efficiently.
- Put stickers on all light switches to remind people to turn off the lights when they leave the room.

The way thermostats and heating use are interconnected is not easily understood by the entire congregation since the bills are only seen by a few people. The church will connect how they heat and cool the building with their stewardship mission of caring for creation and communicate this to the church leadership and the congregation as a whole.

Advice for other Congregations

- Get an energy audit. EnergySmart offers energy audits in Xcel Energy territory. Grants are available for energy efficiency upgrades from EnergySmart too.
- Calculate your greenhouse gas emissions. Cool Congregations (<https://www.coolcongregations.org/>) has a congregational greenhouse gas emissions calculator.
- Make your church more efficient. Any funds used for utilities are funds that can't be used for supporting the church mission. Energy efficiency can save money and the environment.
- Educate your congregation. Interfaith Power and Light (<https://www.mnipl.org/>) works with congregations to address climate change. They have educational materials. All the main world religions have a statement about caring for creation. Your denomination is likely to have one too.
- Students often need internships. Maybe a young person in your congregation would be interested or someone at a local school. List your project at "www.projectsthatmatter.org". They are trying to connect people with projects and students that need them.

We gratefully acknowledge the Clean Energy Resource Teams for funding that made this case study possible. Thank you to Madeline Hansen for the church photo.