

Energy Check-Up

Hamline United Methodist Church

Prepared for
Miriam Friesen
Facilities Manager

Assessment Date
November 18, 2022

Property
1514 Englewood Ave,
St. Paul, MN 55104



Prepared by:



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EnerChange.org

Executive Summary

An energy assessment was performed at the Hamline United Methodist Church on November 18, 2022, by Gregg Shane from EnerChange and Miriam Friesen Facilities Manager accompanied by several church members.

You are already saving money by:

- Having solar panels installed
- Having upgraded some of your lighting to LED

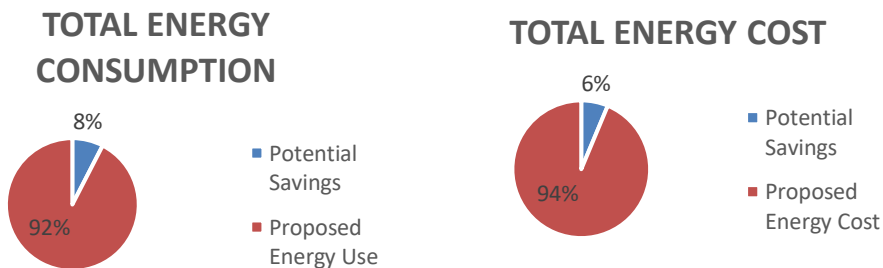
Energy budget:

- \$46,000 annual total
 - \$12,000 Electric
 - \$34,000 Natural Gas

Assessment results:

To maximize rebates as well as allowing us to fulfill our requirement to report energy savings –
*** Please contact EnerChange before implementing or contracting to implement these measures. ***

- 4 energy saving measures were identified
- \$2,891 per year estimated cost savings for all measures
- \$4,366 investment estimated to implement all measures
 - \$1,091 in Rebates will reduce the first cost amount
 - 0% or low interest loans are available for the remainder
- 1.1-year average payback on all evaluated measures



Prescription

To maximize rebates as well as allowing us to fulfill our requirement to report energy savings –

*** Please contact EnerChange before implementing or contracting to implement these measures. ***

1 - MAKE BEHAVIORAL AND OPERATIONAL IMPROVEMENTS

Annual Savings \$1254 - Payback 0 years

The way people interact with their facility can make a big difference in energy consumption. Here were some of the observations and opportunities identified for your facility:

- Most of the facility was in an unoccupied state when we did the walkthrough. We encourage you to do an After-Hours Energy Treasure Hunt to expose another set of energy saving opportunities. For more information visit our website EnerChange.org and watch the Energy Treasure Hunt Webinar.

- Post the desired occupied and unoccupied settings at each thermostat.
- Encourage people to turn off the lights when they leave a room unoccupied.
- Label light switches so that people know what fixtures they are for.
- Replace leaking or damaged weather-stripping on exterior door and windows.

2 - PERFORM A BOILER TUNE-UP THAT INCLUDES A COMBUSTION TEST

Annual Savings \$1637 - Payback 2 years

Tune-up the hot water boilers to improve energy efficiency. Cleaning and adjusting the combustion system can improve efficiency by about 3%. A rebate is available every two years.

3 - UPGRADE LIGHTING TO LED

Annual Savings \$NE - Payback NE years

Have a lighting professional give you a quote to upgrade remaining lighting to LED. Installing LED lighting saves money two ways. It reduces energy use and the more the lights are used, the more energy is saved. The second, and sometimes more beneficial way, is a reduction in demand charges which is more about when the lighting is used than how much it is used. We will be happy to calculate the savings of proposed upgrades or double check the ones you are giving by the installer. Financing with no-out-of-pocket costs is available.

4 - REPLACE HEATING PLANT

Annual Savings \$NE - Payback NE years

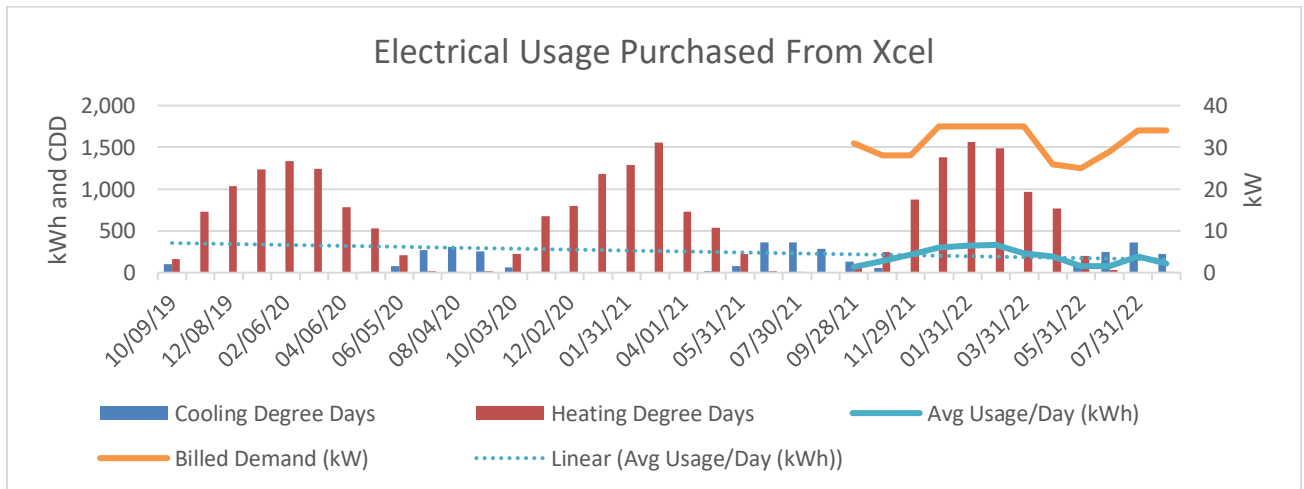
Your low-pressure steam heating plant is due for replacement. Replace your low-pressure steam heating plant with hot water heat. Hot water operates at a lower temperature than steam, meaning less temp difference between the boiler and the environment, so less heat transfer to the environment where not needed and less energy wasted. Steam distribution systems require steam traps which require regular maintenance. Modern hydronic pumps (hot water heat pumps) are very compact, reliable, and efficient. Your pneumatic thermostat control system offers limited control options and requires a control air supply, so replacing will provide much more building control and monitoring capabilities with less equipment to break down. Improved pipe insulation will save you additional energy. Savings up to half your present yearly heating cost may be possible. We'll help you make the right decision.

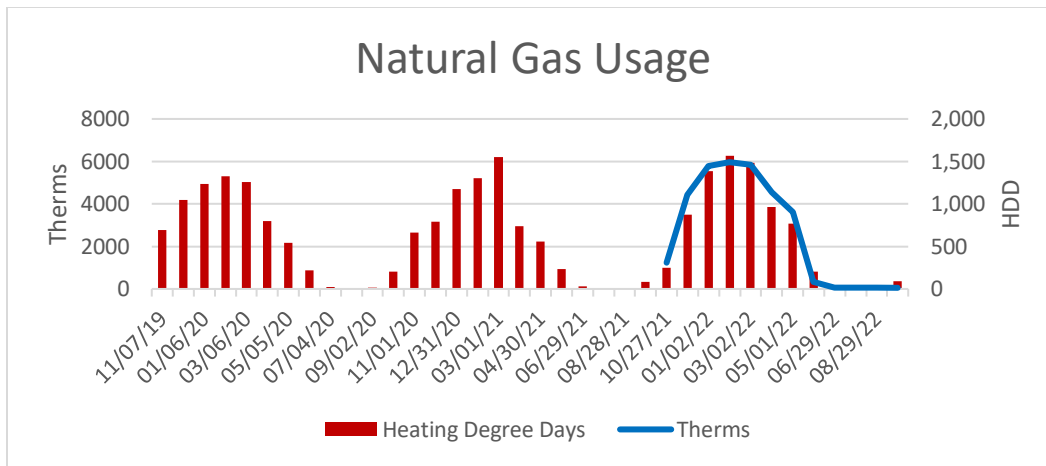
Prescription Savings Table:

ECO #	Energy Conservation Opportunity	Estimated Total Cost Savings (\$/Year)	Estimated Rebates (\$)	Estimated Installed Cost (\$)	Payback (Years)
1	MAKE BEHAVIORAL AND OPERATIONAL IMPROVEMENTS	\$1,254	\$0	\$0	0.0
2	PERFORM A BOILER TUNE-UP THAT INCLUDES A COMBUSTION TEST	\$1,637	\$1,091	\$4,366	2.0
3	UPGRADE LIGHTING TO LED	NE	NE	NE	NE
4	REPLACE HEATING PLANT	NE	NE	NE	NE
Totals		\$2,891	\$1,091	\$4,366	2.0

Utility Summary

From September 2021 to August 2022	Electricity	Natural Gas
Energy Provider	Xcel Energy	Xcel Energy
Rate Category	Net Energy Billing Service	Sm Comm Firm Svc
Energy Consumption per Year Includes Solar	94,485 kWh	31,982 Therms
Energy Cost Per Year	\$12,135	\$33,720
Combined Electrical Energy & Demand Cost	\$0.179 per kWh	\$1.045 per Therm
Energy Use Intensity Typical for Worship Facilities	3 to 6 kWh per SqFt	0.3 to 0.6 Therms per Sqft
Your CURRENT Energy Use Intensity	4.1 kWh per SqFt	1.39 Therms per SqFt
Your PROPOSED Energy Use Intensity	4.0 kWh per SqFt	1.28 Therms per SqFt
Electrical Demand per Year	375 kW	
Unit Energy Cost	\$0.107 per kWh	
Electrical Demand Cost	\$11.980 per kW	





Building Overview and Operation

The Hamline United Methodist Church was built in the 1920s and the education wing was added in the 1980s bringing the total size of the facility to about 23000 square feet. The sanctuary is used mainly on Sundays and for special events. The remainder of the building is used by various groups 5 days a week from about 9am to 9pm.

The building is of stone construction with the sanctuary having a slate roof and the education wing a built-up roof.

Electrical service is provided by Xcel Energy at the General Service Rate. Natural gas is provided by CenterPoint Energy through two meters, Small Commercial Firm, and a Large Commercial Firm, dedicated to the boilers. Electrical usage is about average for a worship facility in The Twin Cities area, but natural gas usage is relatively high. The Energy Star Energy Use Index is 153 kBtu per square foot per year, or 149 kBtu per square foot per year if the electricity produced by the solar array is not counted. This compares to 60 kBtu per square foot on average for houses of worship in Minnesota. The building is heated with two 420 MBH low pressure steam boilers. The boilers are over 90 years old. Heating control is provided by a Johnson Controls pneumatic control system with limited flexibility.

Air conditioning for a limited number of areas is provided by split systems and window air conditioning units

Domestic hot water is provided by a 75 MBH gas water heater and a small auxiliary electric heater.

The lighting has been partially converted to LED.

The facility has a solar array which generates an average of 2200 KWH per month of electricity.

There are two kitchens the large one is used twice a week the small one daily.

Join the EnerChange Alumni Club!

You know first-hand about the economic and environmental benefits gained by saving money while saving energy through the services provided by EnerChange. Your peer organizations could most assuredly benefit from these same services.

In Our 10 years, EnerChange has:

- 700+ Clients and over 1,000 buildings
- \$3,600 average annual/perpetual savings
- Save over 17 Million in energy costs

EnerChange Can Help With:

- Equipment Recommendations – Retrofit or New Construction
 - Fits your needs
 - Maximize energy efficiency
 - Determine the best utility rebate and facilitate the process
 - Payback analysis to allow “apples to apples” comparison of quotes
- Behavioral & Operational Recommendations
 - Low to no-cost options, i.e. programming existing thermostats with setbacks
 - After Hours Audit
 - Forming a Green Team
- Finding Financing:
 - Low or no interest loans, Grant, and Cost Share opportunities
 - Cash neutral terms – where upgrades are paid for from energy cost savings

You Can Help EnerChange by:

- Calling us when you are thinking about doing anything that can save energy!
 - Buying LED light bulbs
 - Tuning up a boiler
 - Replacing HVAC equipment
 - Upgrading equipment
 - Installing automation
 - Building expansion
 - Installing insulation
 - Replacing motors
- Calling us when you have completed an energy efficiency project

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