

Overview

The Climate Action Group (CAG) has begun working on a long-term goal to “decarbonize” (wean from fossil fuels) our church building to whatever extent practicable, in the most expedient timeframe possible. We anticipate that some aspects of this will be harder and more expensive than others, but we’re committed to doing what we can along this pathway.

Previous activities along these lines have been successful and were robustly supported by many CAG members and others in the congregation, including:

- *A Building Envelope Performance Evaluation was conducted by Cozyhomes Performance on March 3, 2016. Further envelope insulation was recommended, only partially completed.*
- *A large and successful congregational effort was undertaken to install solar panels on the building, yielding a significant reduction in energy bills and GHG emissions.*
- *(other efforts worthy of mention?)*

Discussions began this spring within CAG on whether and how we can increase building efficiency and replace existing gas-fired systems in the building. There are 5 gas-fired furnaces and a gas-fired water heater. We decided an updated energy audit would make sense, given new high efficiency equipment and new incentives from utilities and government programs.

CAG engaged with the Housing & Property Committee (H&P) to discuss our overall goals on decarbonization, and sought their advice on whether an updated energy audit might be a first step. H&P agreed, but had questions on how this could be achieved given certain challenging aspects/areas of the building. H&P members wanted to be involved in decisions, but didn’t have the bandwidth for planning or other administrative work along the way. H&P’s knowledge and past experience are critical to any future energy efficiency or decarbonization work. CAG recognizes this has dedicated members to take the lead on these efforts while keeping in close communications with H&P, seeking approval on next steps, etc.

CAG members then engaged with the Center for EcoTechnology in Florence MA (CET - *a highly qualified MassSave contractor with deep experience in energy efficient buildings*) to schedule an audit, to be followed with a menu of energy efficiency improvements that would both be backed by incentives and meaningfully reduce the energy used in our church building. First order of business is enhancing insulation and reduce energy needs before replacing fossil-fuel based HVAC systems or updating equipment. CET produced an “Energy Action Plan”, outlined below.

CAG members also engaged with Jim Nail, President of Mass Interfaith Power & Light, (MIPL) a membership organization serving congregations across Massachusetts seeking to engage in similar efforts to decarbonize and reduce the environmental footprint of church buildings, which tend to be both older and have challenges when it comes to energy use. MIPL has published some helpful guidelines for congregations seeking to improve church building efficiency and decarbonize, including how to establish and fund a budget for ongoing work:

CET Audit & Near-term Plans

A CET sustainability analyst (Karina Gaft Azcue) met CAG and H&P members John Poirier and Alan Dorman at the church on the morning of July 26th, along with our administrator Michael Taylor. We toured the building with John explaining building/space characteristics and HVAC system components. As in most churches, the large sanctuary space is hard to heat & cool efficiently, so we focused on enhancing the efficiency of our remaining spaces, identifying any “low hanging fruit” qualifying for incentives. We requested a comprehensive plan, and our CET analyst Karina outlined the cost/carbon benefits of replacing our gas-fired furnaces and water heaters with heat-pumps. Our initial focus is on reducing the energy required for heating/cooling by improving its thermal envelope, followed by evaluations of more capital-intensive investments required to decarbonize. On July 27 we received an “Energy Action Plan” from CET, with the following components:

Energy Efficiency Measure	Description	Approximate Payback	Incentive Available
Low-flow water faucet aerators	Where possible / practical	N/A	Yes
Pipe Insulation	A few exposed pipes should be wrapped with foam	6 - 24 months	Yes
Attic, Wall, and Floor Insulation	Office/parlor attic spaces	TBD (<i>see note</i>)	Yes
Heating/Cooling System Retrofit/Replacement	Replace gas-fired units with heat pumps	TBD (<i>see note</i>)	Yes
Energy Management System	Programmable thermostats	TBD (<i>see note</i>)	Yes

Notes

- CAG / H&P to take on pipe insulation and faucets (low-cost and easy to install).
- The large attic space above the main sanctuary has roughly 12” of cellulose insulation with a total thermal insulation value of ~R-40, within the recommended range for such spaces. Adding insulation to this space would be costly and difficult, and in the opinion of H&P would likely require structural augmentations to ensure our ceiling joists can bear additional weight of any insulation. Therefore we did not pursue this further, our focus is on other attic spaces.
- Payback notes from form: “CET will assist you with bringing a contractor on site who will provide pricing and the scope of work, at which point, CET will provide the engineering review for the contractor’s proposal and provide a more detailed payback estimate.”
- The option of an EMS was discussed with H&P. Their preference is to hold off on this.
- Most of our lighting (with the exception of some hard-to-reach ceiling fixture bulbs) is already LED, so lighting was not addressed.

The next step was for Karina/CET to engage with qualified HVAC and building insulation contractors and get quotes for these measures. We suggested Karina reach out to Cozyhome Performance for insulation and Pioneer Heating and Cooling - our current HVAC contractor.

CAG then met with Mark Lanza of Cozyhome (who performed previous building audit), to survey the attic spaces. Mark developed and delivered a proposal to insulate/seal the spaces, outlined in the next section. Following this insulation project, the next step will be to pursue quotes for heat pumps to replace gas-fired furnaces, evaluate paybacks, seek funding, and schedule/coordinate installation. We plan to begin this process in earnest this fall and winter.

Attic Insulation Project Proposal & Contract

Mark Lanza of Cozyhomes Performance worked with CET to develop a proposal to insulate the attic spaces above the parlor and office, in the form of a contract with costs and applicable utility incentives. We received this proposal on August 29th, 2022 and have since been seeking guidance and assistance in our effort to get the contract signed and the project started.

The work to be performed is as follows:

- Install dense-packed cellulose in rafter bays over stairwell leading up to attic.
- Install dense-packed cellulose in roof slope rafter bays over office space.
- Install closed cell foam insulation (R50) in main attic space rafter bays, fireproof-coated.
- Install same on upper portions of brick wall between attic spaces (hall and parlor).
- Air-seal and vapor-seal existing exhaust vent from the inside with foam (board and spray).

One of the benefits of this project will be improved efficiency of a gas-fired furnace housed in this space (serving parlor/office) due to decreased thermal losses.

Before the work can begin, we must clear out floor areas around much of the perimeter of the space, and the contents of all upper shelves. One shelf bay may need to be moved toward the center of the attic.

The contract has this information on the total costs, incentives, and the amount USNF would commit to pay, as follows:

1. The total cost will be: \$ **28,750.00**
2. The Customer is responsible for the amount of: \$ **2,875.00** (*10% of total*)
3. The Incentive amount will be: \$ **25,875.00** (*90% of total*)
4. Compensation for the Contractor may consist of:
 - a) Eversource Incentive \$ 25,875.00
 - b) Customer Portion (total price less Eversource Incentive) \$ 2,875.00

Upon contract signing, a 30% (of our cost) deposit check is due to Cozy Home Performance. The proposal fine-print states it is only valid for 30 days, however upon inquiry we were told that we can still sign and get the incentives but were also told that the project should begin before the end of the year to guarantee them. Many utility incentive contracts expire at the end of the year and we are now at risk of a schedule crunch keeping us from qualifying.

The contract was sent to our congressional administrator for signature. CAG requests that the board (or other appropriate agent) approve signature so we can move forward, and appreciate your support. Please advise us of any questions or concerns, and suggestions. Thank-you.

Longer-Term Steps, Goals, and Vision

The Decarbonization Pathway will last over the next seven to ten years. We plan to reduce our energy usage through improvements to our building's envelope, and then replace our use of fossil fuel by acquiring equipment that uses renewable energy sources. As we reduce our energy needs and pivot to renewables we will realize savings in our fuel costs which will help to offset the capital expenses necessary to realize decarbonization.

The CAG will develop this pathway, its tasks and its timeline, in conjunction with the House and Property Committee over the next 4 -5 months. We will also begin a congregation-wide Initiative/Project proposal which we hope will culminate in a congregation vote to approve the Decarbonization Pathway. As we seek to raise funds through a capital campaign and also find a place for this ongoing work in the annual budget, it is important that the whole congregation understands the scope of this work and has an opportunity to participate in it. There are a number of steps for developing a congregation-wide project which help to disseminate information to the congregation and for gathering feedback from the congregation. We have moved other social justice projects forward using this set of tools and it is a comprehensive means for engaging the whole Society.

This work is a crucial social justice project that the Society can engage in for the next decade. The injustice of our fossil fuel use in the face of vulnerable people's suffering is intolerable. Literally millions of people will suffer if we continue to indulge in the use of fossil fuels.