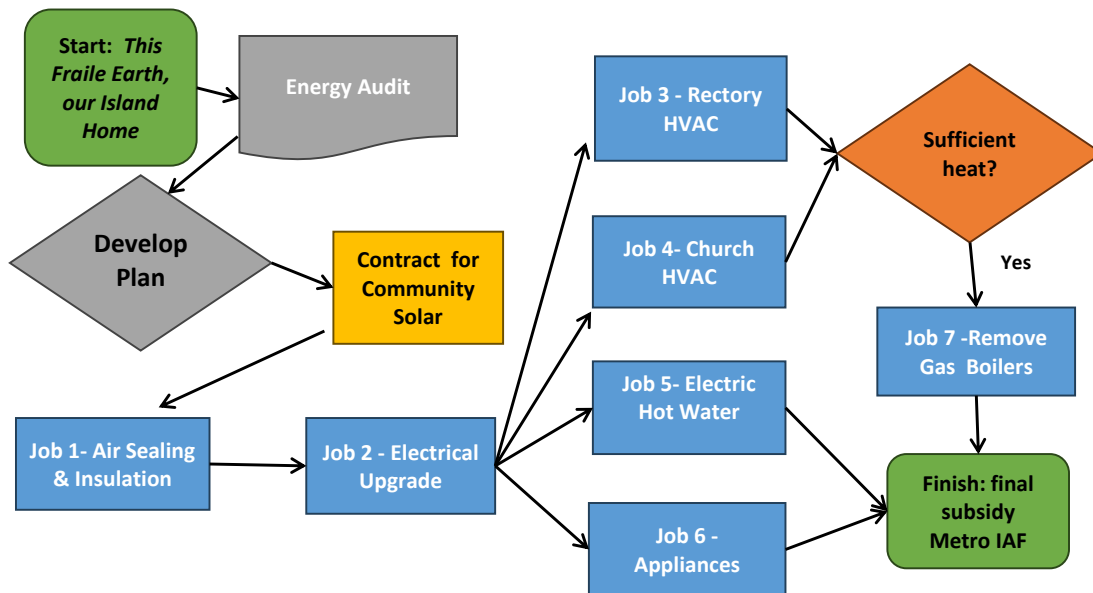


St. James of Jerusalem - Final Report on Emissions Project

Prepared by William (Coty) Keller, Emission Project Manager

June 19, 2026



Overview

We believe that we have been called to be stewards of God’s creation. This project is one way we have pursued that mission.

The goal of the project was to have zero greenhouse gas emissions from our buildings. A secondary objective is resilience in the form of protection from flooding. This report tells the story of the project, provides details of the financial aspects, describes problems, discusses the opportunity of rooftop solar, and perhaps most importantly it offers insights into what it will take to make our creation care work an enduring legacy.

The table of contents and list of figures & tables – beginning on the next page- shows how this report is organized.

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The Story

As told in the Dioceses creation care newsletter

This section is adapted from the article, "[St. James of Jerusalem: Zeroing our Buildings' carbon footprint](#)" published in the Creation Care Newsletter, Dioceses of Long Island, November 2025.



St. James of Jerusalem: Zeroing our Buildings' carbon footprint

By Wendy L. Goldstein, MPA, Warden & William (Coty) Keller, Ph.D., Emissions Project Manager

St. James of Jerusalem Episcopal Church, Long Beach, recently completed a five-year, eight-part, \$98,000 project to reduce – and ultimately eliminate – the church's emission of greenhouse gases. And therein lies a tale.

When the Interfaith Association of Greater Long Beach met in the garden of St. James in fall of 2020, the Protestant, Roman Catholic, Jewish and Islamic faith leaders agreed that action on the climate crisis is a moral imperative. Following deep and enthusiastic discussion about their shared responsibility to be good stewards of God's creation, the group committed to raising awareness of Creation Care, and the need to turn away from behavior that alters the Earth's climate.

The group of faith leaders launched a series of weekly webinars, [This Fragile Earth, our Island Home](#), to help people learn about the climate crisis- its causes, solutions, and actions they could take to reduce the amount of heat trapping gas in the atmosphere, at

St. James of Jerusalem Emission Project: Final Report

home, in their workplaces and their respective houses of worship. Each faith leader invited their people, and the wheels were set in motion.

Simultaneously teaching and learning, St. James' leadership team set about securing a professional [Energy Audit](#) -- a comprehensive assessment of energy use aimed at identifying inefficiencies and suggesting improvements.

“St. James Episcopal church and rectory were built in the mid-1930s and have not been upgraded with insulation or air sealing to improve energy efficiency,” the report stated. “The gas boiler remains approximately the same as the original in operation and efficiency...” The church and rectory were putting out roughly 17 tons of carbon dioxide each year.

We had our work cut out for us.

St. James' eight-part project was based on the strategy presented at the Episcopal Diocese of Long Island [2022 Creation Care Retreat](#): stop using fossil fuels by electrifying everything and then generate or purchase your electricity from zero emission sources. Meanwhile, conserve energy. The steps were:

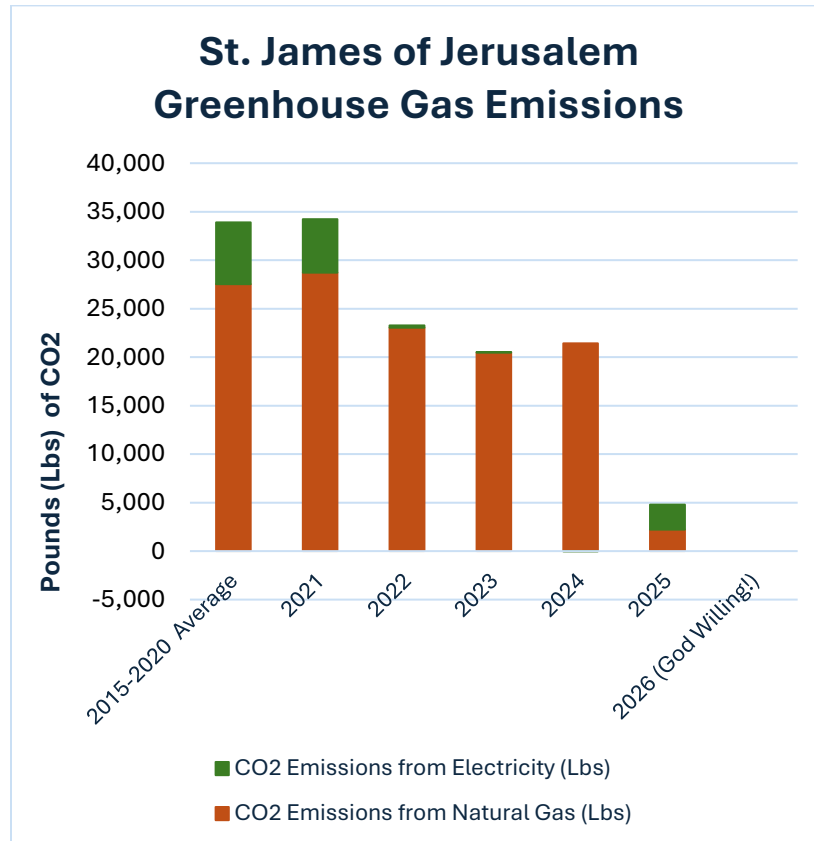
1. Secure electricity from a clean source: St. James contracted with [Harvest Power](#) for solar-generated electricity via the [community solar program](#).
2. Air seal and insulate the church and rectory to keep drafts out and heat and cooling in;
3. Convert the rectory Heating, Ventilation and Air Conditioning (HVAC), and
4. the church HVAC from natural gas to electric;
5. Install electric hot water heaters in the church and rectory;
6. Replace all gas appliances – two stoves and a laundry dryer – with electric appliances,
7. An electrical upgrade to support the increased demand for electricity created by the complete conversion, and finally
8. Remove the natural gas equipment.

All new equipment was installed above the level of flood risk, providing resilience in the event of storm surge or flooding.

The funding came from various sources. The [Metro IAF](#) provided \$38,000; the parish committed \$34,000 from our Building Fund; and the Diocese contributed almost \$23,000. In addition, National Grid did about \$16,000 worth of insulation work at no cost to the church, and the project qualified St. James for \$4,000 in rebates from PSEG. Total: almost \$98,000.

Energy conservation, through behavior modification, continues to be an essential element in achieving then maintaining our goal of being among the first – and indeed a model – emissions-free church. This is fitting, as Creation Care’s essential element is turning away from behavior that alters the Earth’s climate.

Figure 1- St James Greenhouse Gas Emissions



Source of bar graph: St. James of Jerusalem 2025 Emissions Report (available on request)

Scope of the Work, Timing

In the fall of 2021, we used the [Energy Audit](#) to develop our plan. We contracted with Harvest Power and began immediately getting zero emission electricity from the community solar program,

In March 2024, the Rectory was insulated and air sealed at no cost to the parish, under the HEAT (Heat Energy Affordability Team) program funded by National Grid. We organized the rest of the project into seven jobs shown in the table on the next page.

Table 1- Seven Project Jobs

Seven Project Jobs
Job 1- More insulation and Air Sealing
Job 2- Electrical Upgrade
Job 3- Heating, Ventilation and Air Conditioning (HVAC) Rectory
Job 4 – HVAC Church
Job 5 – Electric Hot Water
Job 6 – Appliances
Job 7 – Removal of Gas Boilers

The Dioceses (Construction Manager) approved the scope of the project work – the seven jobs- in June 2024 and we began soliciting contractors. Graciously, the Diocese offered to contribute \$15,000 for the resilience portion of the Electrical Upgrade and pay half the cost of the Air Sealing and Insulation job.

The Bishop’s Committee approved the use of \$34,000 from the Building Fund for the project. The Bishop’s Committee also approved an additional \$37,000 in a cash flow loan from the Building Fund to cover work that would eventually be reimbursed from other contributors (Metro IAF and PSEG).

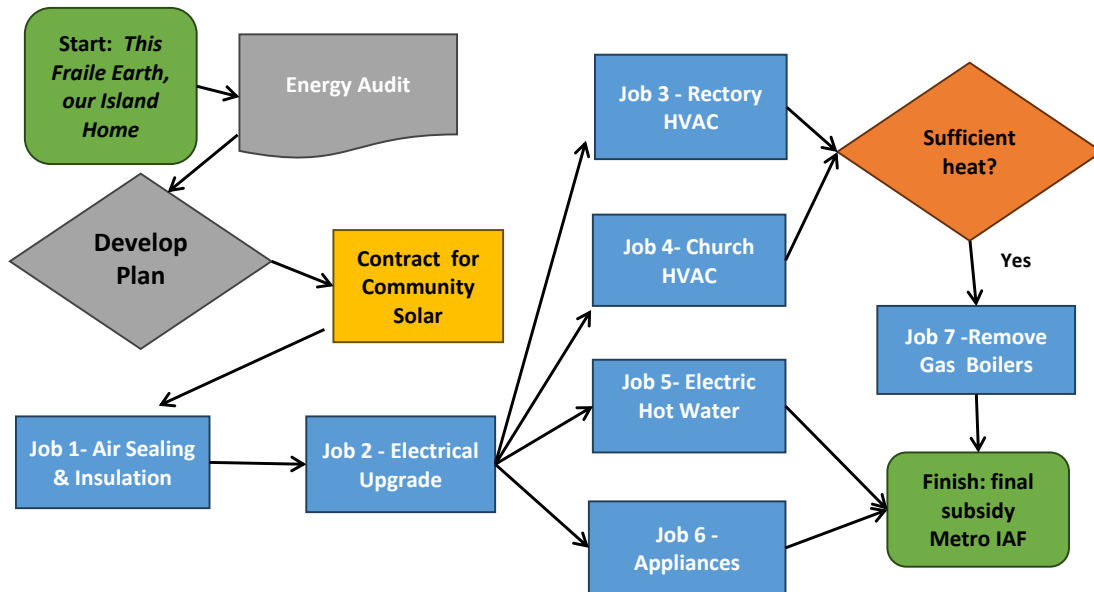
The details of the scope of each of the jobs are shown in the Appendix at the end of this report. It involves more than construction. In several cases, particularly the HVAC jobs, it included behavioral work like how to operate the systems and organize the preventive maintenance process.

Once the bids were received and evaluated, we selected our vendors and created contracts, which were subject to approval by the Diocese.

Construction began in August 2024 with more insulation work on the Rectory and air sealing the Church.

The project flow chart in the figure on the next page shows the whole thing, starting in the fall of 2020 with the Interfaith inspiration of the [This Fragile Earth](#) program and the 2021 assessment of the [Energy Audit](#), which gave us the wherewithal to develop a plan to get us to zero emissions. We started using solar electricity immediately and then created and implemented the 7 job “project” shown as the blue activities in the illustration.

Figure 2- Project Flow Chart



Construction was completed in September 2025 with the removal of the gas boilers. The books were closed in April 2026 after the final subsidy was received from Metro IAF.

Financials

Summary

Project overall financials are summarized in the table below:

Table 2-Overall Financial Information

Total Project Cost	\$ 116,718
Outlays by St James	\$ 74,668
Reimbursements	\$41,216
Net Cost to St James	\$33,452
Project net spending Authorized by the Bishop’s Committee	\$34,000
Under budget	\$548

The \$116+k total cost is different from the \$98k project cost noted in the Creation Care newsletter article because it did not include over \$19,000 in kind donations that are not shown on the project ledger.

Table 3-In Kind Donations

Item	Estimated Value	Notes
Initial Rectory Insulation	\$ 16,000	Performed by Econo-Therm, spring 2024. Funded by National Grid's HEAT program, Managed by CLEARResult.
Additional Insulation, air sealing Remediation	\$2,000	Donation by Econo Therm, Inc
Electric heat pump drier	\$600	Donated by parishioner Sean Parlakian
Platform, stairs to access LIPA	\$703	Labor and material donated by project manager
Electric meter		
	\$19,303	Total In Kind Donations

Reimbursements to St. James are summarized in the table:

Table 4-Reimbursements to St James

Benefactor	Detail	Amount
PSEG	Heat Pump Rebate Rectory HVAC	\$2,500
PSEG	Heat Pump rebate hot water	\$1,200
Metro IAF	Phase 1 subsidy	\$22,226
Metro IAF	Phase 2 subsidy	\$10,142
Metro IAF	Reimburse boiler decommission	\$5,148
		\$41,216

Cost and Payment Summary by Job

Table 5-Cost Summary and Payments by Job

Job	Cost Detail	Cost amount	Payer	Payment Amount	Sub Total
Air Sealing & Insulation	HEAT Program	\$16,000	National Grid	\$16,000	
	Econo-Therm under contract	\$15,494	St James	\$ 7,747.00	
			Dioceses	\$7,747	
	Econo-Therm Donation	\$2,000	Econo-Therm	\$2,000	\$33,494
Electrical Upgrade	Contract Bob Fink	\$35,875	St James	\$20,875	
			Dioceses	\$15,000	

	2nd Interior Meter	\$500	St James	\$ 500	
	Meter Platform	\$703	Coty Keller	\$703	\$37,078
Rectory HVAC	Contract Cooling Company	\$18,200	St James	\$18,200	
	En-Power tech advice	\$3,500	St James	\$3,500	\$21,700
Church HVAC	Contract Cooling Company	\$975	St James	\$975	
	Additional smart thermostats	\$198	St James	\$198	\$1,173
Electric Hot Water	Contract AWS Plumbing	\$14,750	St James	\$14,750	\$14,750
Appliances	Electric heat pump drier	\$600	Sean Parlakian	\$600	
	Two Induction stoves	\$2,723	St James	\$2,723	\$3,323
Remove gas boilers	Contract AWS Plumbing	\$5,200	St James	\$5,200	\$5,200
	Total Project Cost				\$116,718

Cost Sharing

Our project is a case of “it takes a village,” as shown in the table.

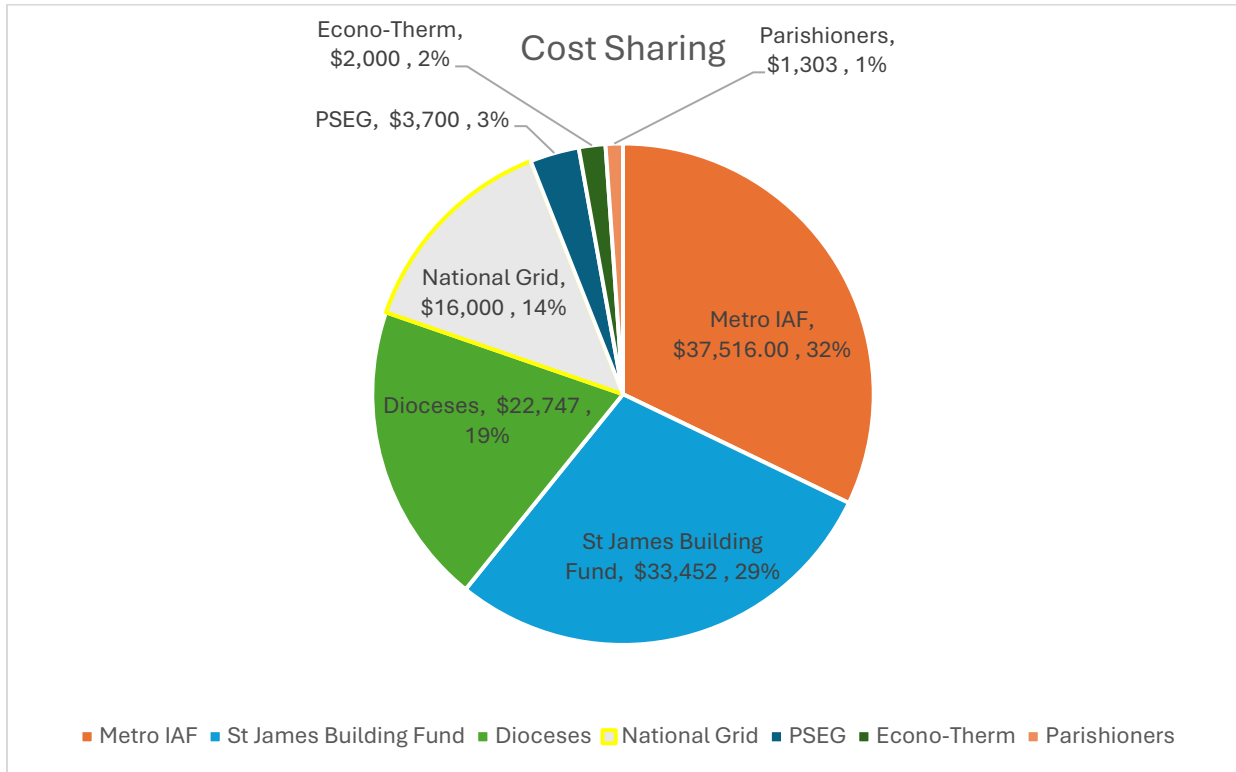
Table 6-Cost Sharing by Contributor

Metro IAF	\$37,516	32%
St James Building Fund	\$33,452*	29%
Dioceses	\$22,747	19%
National Grid	\$16,000	14%
PSEG	\$3,700	3%
Econo-Therm	\$2,000	2%
Parishioners	\$1,303	1%
	\$116,718	100%

*St. James Building Fund also provided \$27,000 in a cash flow loan that the project repaid once all other contributions were received.

The pie chart puts the cost sharing in graphic perspective.

Figure 3-Cost Sharing Pie Chart



Project Ledger

Here is a blow by blow, dollar by dollar history of the project.

Table 7-Project Ledger

As of 6/13/2026, verified by Treasurer

Date	Payee	Debit	Credit	Balance	Note
8/17/2024	Building Fund		\$26,000	\$26,000	Initial deposit from Building fund
23-Aug	Econo-Therm	\$7,747.00		\$18,253	Completion of Insulation and air sealing
5-Sep	Bob Fink Electric	\$15,000		\$3,253	Deposit Electrical Upgrade Job
6-Sep	En-Power	\$ 1,750		\$1,503	Half of \$3,500 Tech advisor fee
10/7/2024	Building Fund		\$35,000	\$36,503	Balance of \$34k obligation, plus &27k cash flow loan
10/10/2025	AWS Plumbing	\$5,000		\$31,503	Deposit Electric Hot Water Job
11/15/2024	AWS Plumbing	\$2,800		\$28,703	Deposit Removal of gas boilers job
10/19/2024	Lowe's	\$2,722.98		\$25,980	Purchase electric induction stoves

11/15/2024	The Cooling Company	\$975		\$25,005	Church HVAC job payment in full
12/2/2024	The Cooling Company	\$9,100		\$15,905	Deposit HVAC Rectory Job
12/12/2024	Metro IAF		\$22,226	\$38,131	Phase 1 Subsidy
1/17/2025	Bob Fink Electric	\$5,875		\$32,256	Balance due electrical upgrade job
2/23/2025	The Cooling Company	\$9,100		\$23,156	Balance Rectory HVAC job
3/15/2015	Bob Fink	\$ 500		\$22,656	2nd sub meter for Rectory
3/24/2025	AWS Plumbing	\$9,750		\$12,906	Balance due Hot Water job
4/15/2025	En-Power	\$ 1,750		\$11,156	Balance of tech advisor fee
5/14/2025	PSEG		\$1,200	\$12,356	PSEG rebate Hot Water Heat Pump
6/13/2025	PSEG		\$2,500	\$14,856	PSEG rebate Rectory HVAC
9/25/2025	AWS Plumbing	\$2,400		\$12,456	Balance due on Removal gas boilers
10/2/2025	Metro IAF		\$10,142	\$22,598	Phase 2 Subsidy
11/5/2025	Amazon	\$198		\$22,400	Church HVAC smart thermostats
4/7/2026	Metro IAF		\$5,148	\$27,548	Reimbursement boiler removal
4/10/2026	Building Fund	\$27,548		(\$0)	Pay \$27k cash flow loan to Building Fund plus \$548 surplus.

The \$2,850 cost of the Energy Audit Fall of 2021 was incurred before the project was conceived. It is not tallied here.

Cost Comparison

It's been argued that renewable energy is cheaper than fossil fuels, and vice versa that good old natural gas is cheaper than solar. We would like to know: is our project saving money by shifting to zero emission energy?

We will find out, given time. Metro IAF and us are both working on this analysis. For our part, the Treasurer will use a decade of historical data, and two more years data on our new system, adjust for inflation. and compare the energy costs through 2027.

Problems

In this section of the report, we will discuss four problems. Each of them is a situation, question, or matter that presents difficulty, uncertainty, or a challenge that needs to be understood and resolved. Each problem represents an obstacle between a current state and a desired goal. Each of these four dilemmas are cause for concern.

We will define the three problems by identifying the issues and begin to analyze them in terms of their underlying causes and identifying some possible solutions. After that a creative problem-solving process and suggestions will be presented.

Church Heat Pumps

A blessing and a curse.

As described in chapter 3 of the [Owner's Manual](#), the Church HVAC system is a blessing and a curse. We do not have a record of the decision-making process when it was installed after Superstorm Sandy, but we can imagine there were not many thoughts of using the mini splits to heat as well as cool the Church. It was not until we began our Creation Care problem solving process, with the energy audit, that we realized the opportunity these old HVAC units provided: the ability to heat the church with electricity from the sun and eliminate the use of fossil fuels.

The curse is that the Church HVAC design process in 2012 & 13 did not assure sufficient heating capacity for the Church building for the worst case (really cold days). We have inherited a limited electric heat pump heating system, a “chilly” one, but a “free” one. It did not cost us more than a thousand dollars for an updated control system, and we are able to experience near zero emission heating as a result.

Before we disabled the gas boiler, we tested the ability of the Church mini splits to heat the Sanctuary and the Undercroft in the winters of 2023-24 and 2024-25, with favorable results. They did not provide the same heat as the radiators from the gas boiler, but it was considered acceptable. Our thinking then was that when the Church heat pumps reach the end of their service life, we can replace them with units of higher capacity. While it's uncertain how long the existing units will continue to function, the Cooling Company estimates they could last until the coming year or 2, or as long as 5 more years.

The winter of 2025-2026 caused us to look at the Church HVAC situation differently. AI tells us that the winter of 2025–2026 on Long Island was the coldest and snowiest the region had experienced in 11 years. Overall, the season averaged about 4 degrees below normal, featuring a brutally cold January and February that included severe cold snaps and massive winter storms. The old mini splits did not provide a comfortable temperature, especially in the Sanctuary. The Vicar says something must be done.

How we operate the Church HVAC makes a difference

There is no denying that our Church HVAC is under-capacity for a comfortable experience in a historic cold spell. As explained earlier, it was not designed with near zero wind-chill in mind. But, from personal experience on February 1, 2026, during the cold spell, it is clear there is room for improvement in the way we operate the system. In my memo to the Vicar and BC member Deborah Smith (who has been working with HVAC maintenance), I explained how I was sitting in the left rear of the Sanctuary under the northeast mini-split. Cold air was coming out. I checked the thermostat settings and determined they were not in accordance with our prescribed protocol. I made the appropriate change to the settings¹; hot air came out and the temperature in the area increased 10 degrees (from 45 to 55) by

¹ Setting changes (1) Set temperature from 72 to 68 degrees and (2) Set fan from high to auto. Both settings are in our protocol.

the end of the mass. I made the same changes to the other mini splits. At the end of mass, Deborah and I confirmed the warm air.

Another point struck Deborah and I as we walked around the Sanctuary: We need to remember the difference in the displays between the Cielo Breeze Max (the new units) and the Cielo Breezed Plus (the original) smart thermostat, so we can make good judgements. The Max is the newer one used in the Overcroft and the NE of the Sanctuary, The Sacristy, the Undercroft and the West side of the Sanctuay use the original Breeze plus. The difference is **the big number** in the middle of the display. In the Max, the big number is Room Temperature (Set temperature is the little number under it). In the Plus, the big number is Set Temperature. (Room temperature is the little number under it). If we don't know what we are looking at, we can't make good judgements.

We must understand the displays and operate the system as per our protocol to get good results.

Alternatives

We have, subject to more brainstorming, at least four possible courses of action:

- a. Live with the existing system, *taking care to operate it as per our protocol*, until the old Mini- splits die. Then replace them with higher capacity units. Once the units are upgraded, we will (*if we operate it correctly*) have quicker heating response, and there will be less anxiety about being too chilly in the Church.
- b. Upgrade now- before the winter of 2026- 27, with higher heating capacity units *and foolproof controls*.
- c. Install an electric heating system to work with the existing radiators and baseboards.
- d. Do nothing. This is the same as “a” above, without taking care to operate the system properly. The outcome of this course of action will likely be uncomfortable room temperatures and high electrical consumption. More consumption will result in the purchase of more electricity, which unless we can increase our allocation from community solar, will cause us to use dirty power from the grid and fail to meet our zero-emission goal. **We must avoid this alternative.**

This Church HVAC problem is related to the “Human Behavior- Thermostat Control” problem discussed later in this section.

An ill-advised solution

At the April Bishop's Committee meeting 4/14/2026, the Vicar made a comment about using the old boiler room for an electric boiler.

Based on the brochure Fr. Michael shared with me last year, the electric boiler uses electric resistance heating technology. According to the [Department of Energy](#), electric resistance heating is more expensive to operate than heat pumps. Heat pumps are preferable in most climates, as they easily cut electricity use by 50% when compared with electric resistance heating. The idea of using an electric boiler with electric resistance heating technology is

not consistent with our commitment to energy conservation -the device could use twice as much electricity as a heat pump.

The former boiler room is below design flood elevation. Installing an electric boiler there would violate our policy not to install any essential equipment in an area subject to flooding and could impact our flood policy premium.

Using the radiators and/or baseboards would require heating the Sanctuary to keep the pipes from freezing during cold spells, even when unoccupied. This would be an extra use of electricity.

Another negative about this idea is the extra cost to install and maintain a redundant heating system.

If we feel we must have radiator/baseboard heat, we could consider using a heat pump Instead of a resistance heater to work with our existing radiators and baseboard heaters. The heat pump could be installed outside, above design flood elevation. [This is an evolving concept](#). While still involving the extra cost of a redundant system, and the need to heat the Sanctuary to keep the pipes freezing, it would be more efficient than an electric resistance heater and would be resilient against the risk of flooding.

We need to engage in the Church HVAC problem now. Doing nothing will be costly.

Sanctuary Insulation

We were able to achieve our zero-emission goal without insulating the walls and ceiling of the Sanctuary. Considering that the Sanctuary was only occupied for a few hours each week, and the high cost involved in insulating the walls and ceiling (over \$27,000, see the Environmental Conservation Measures in the [Energy Audit](#)), it was deemed not to be cost effective when the project was created.

Several factors give cause for concern about continuing to live without an insulated Sanctuary:

- We are using the Sanctuary more than for Sunday worship. We now have services during the week, plus weddings and funerals. The sanctuary is used for meetings when the Undercroft is occupied by an increasing list of tenants. Wednesday the church is unlocked and open to the community,
- The way the Church HVAC struggles to keep us comfortable during cold spells makes us think it would be easier to heat this space if the heat didn't pass so quickly through the uninsulated walls and ceiling.
- We are considering rooftop solar panels, which makes it time to consider the age and condition of our roof. If we need a new roof, we should consider insulating the Sanctuary ceiling on the outside. This concept is described on page 16 of the [Energy Audit](#):

Adding insulation to the outside consists of adding sheets of foam board (ideally 4 inches) over the ceiling boards, adding another layer of plywood to hold the new shingles, and

adding roofing paper (this is trending towards Tyvek®-type breathable roofing paper), and then the shingles. Fasteners for the outer layer of plywood must be carefully selected to ensure structural integrity of the assembly. If the roof is redone this is also an opportunity to consider two other opportunities: lighter color roofing to reduce heat absorption; and alternate materials, such as metal that are more environmentally-friendly (metal roofs last much longer and the materials are recyclable versus composite shingles, and they absorb less heat). An alternative to the foam board is Structural Integrated Panels (SIP) which are manufactured panels made from outside layers of strand board with foam insulation sandwiched between. The panels have excellent structural properties, form better seams than the foam board and can be purchased in variety of thicknesses to obtain the desired level of insulation. Unfortunately, they are also expensive and have long lead times. (Pg 16)

The benefits of insulating the Sanctuary are clear: more comfort, less load on the HVAC, and less electricity consumed. **This does not mean we have to insulate the Sanctuary.** But if we do not choose to, we need to consider the consequences: less comfort, more electricity consumed and more cost when it comes time to replace the Church HVAC.

ERV

The health benefits of having fresh air in a full-time residence, the Rectory, motivated us to include installing an energy recovery ventilator (ERV) with the HVAC upgrade. We recognized that there would be a trade-off in energy consumption to power the ERV, and the heat pump (which would be working extra to heat/cool the additional fresh air that would be continually drawn into the residence when the HVAC is in operation).

To ensure our operation of this system would be as efficient as possible, we included the ERV in the development of the operating protocol. As described in the [Owner's Manual](#), here are the procedures we established:

- **Spring and Fall**, when no heating or cooling is needed: HVAC Set system status to Off. Open windows for fresh air, as ERV will not be providing fresh air.
- **Unoccupied during heating season:** When there is no threat of freezing: Set system status to Off. When there is a threat of freezing: Set system status to Heat mode ON. Set temperature to 40 degrees to keep pipes from freezing while consuming minimal energy. Shut off the ERV breaker at the electric panel in the dining room.
- **Unoccupied during cooling season.** Set system status to Off. If there is a threat of damage from humidity, from prolonged absence, set system status to Cool, and set temperature to 82 degrees, and shut off the ERV breaker at the electric panel in the dining room.

The Cooling Company verified that this use of the ERV is consistent with the system design.

This winter during the cold snap, the Vicar reported that he shut off the ERV because the HVAC system was blowing cold air all the time. This raises two concerns:

- a. The ERV may not be efficient during extreme cold, and/or

- b. Operation of the heating system without the ERV energized may cause an imbalance in the system's performance.

An alternative to examine is only using the ERV during the cooling season. It's time to review the system design and operation protocol, to **determine when (if at all) and how to use the ERV.**

Human Behavior- Thermostat Control

Consistent and effective control of the HVAC is a concern. Inappropriate use of HVAC controls can lead to (a) degraded capability of the system. This is especially harmful when we don't get enough heat during cold spells or enough cooling when it is very hot. (b) Loss of efficiency which is costly in terms of increased electrical consumption.

- An example of **capability degraded** with improper control use happened during the Jan/Feb 2026 cold spell. As explained earlier in the Church Heat Pump problem, this system was not designed for maximum comfort with near zero wind-chill conditions. But it can provide a reasonable amount of heat as demonstrated on February 1. I was sitting in the left rear of the Sanctuary under the northeast mini split. Cold air was coming out. I checked the thermostat settings and determined they were not in accordance with our prescribed protocol (Click here for [Chapter 3, Owner's Manual](#)). I made the appropriate changes to the settings²; hot air came out and the temperature in the area increased 10 degrees (from 45 to 55) by the end of the mass. I made the same changes to the other sanctuary mini splits, and by the end of mass, all the units were putting out warm air.
- **Inefficiency and increased electrical consumption** can be another consequence of not following our prescribed protocol. A recent example was June 6 and 7, 2026. The consumption report issued June 6th, showed we used 58% more electricity this May than we did in 2025. This is the second month in a row we are trending higher in our consumption. There may be many reasons for these higher usages, for example the [NE Regional Climate Center](#) reports that while April 2026 was actually warmer overall than April 2025 on Long Island, it felt noticeably colder to residents due to an unusual frequency of freezing mornings and persistent damp, raw afternoons. May 2026 was demonstrably cooler than May 2025, featuring a significantly colder first half of the month. We also have more tenants using the Undercroft this year, so the space is occupied more often, causing more use of the HVAC system.

On the other hand, there is evidence that our use of the thermostat controls is somewhat at fault. Generally, at this time of year, between the heating and cooling seasons, we expect to use less electricity because by our HVAC protocol, our windows should be opened for fresh air, and the HVAC systems should be off. I did a random, remote check on the setting on our Church HVAC on the late afternoon June 6. The Undercroft was occupied, hosting a Tag Sale. Room temperature was 69, with the units

² Setting changes: (1) Set temperature from 72 to 68 degrees and (2) Set fan from high to auto. Both settings are presecibed in our protocol for the cooling season.

set to achieve 68 which is 10 degrees lower than protocol (78) for the cooling season. The fan was set for high, instead of the prescribed auto. The Sanctuary was occupied by an AA group, displaced by the Tag Sale. One thermostat was set for 70, the other for 66 instead of the prescribed 78 for the cooling season. In between heating and cooling season, protocol suggests keeping the HVAC off. Both Sanctuary thermostats had fan set on hi instead of the prescribed auto.

On the morning of June 7, I did a remote check on the Rectory thermostat. It was 65 degrees outside, so our protocol prescribes opening the windows for fresh air and setting the HVAC to off. The HVAC was on, set for cooling to 65 degrees.

This time of year, between the heating and cooling seasons, is when, by our HVAC protocol, our windows should be opened for fresh air, and the HVAC systems should be off. It was 65 degrees the morning of June 7 when the Rectory HVAC was on and calling for a temperature of 65. That's clearly a case of using electricity when nature could have been doing just fine if given the chance with open windows. The case of chilling the Undercroft for the Tag Sale (and the AA group in the Sanctuary) may be considered special occasions. Indeed, we could debate the tradeoff between impressing the guests at the expense of creation care and our budget. In any event, the settings were not getting efficient use of the systems.

These are two examples of not sticking to our protocol and causing our HVAC systems to be degraded (not putting out the heat or cooling as best that they can) and using more electricity than needed.

Managing the HVAC controls is not easy.

- It's not a simple one step matter if making things warmer or cooler. There are several settings to be understood and employed correctly. We must consider:
 1. The mode of operation (off, heating, cooling, auto)
 2. Fan setting (the speed, continuous, auto). This is especially complicated in the Rectory where the ERV is designed to run continuously)
 3. The set point (desired temperature)
- Feelings (it's too warm, I'm cold) can drive one to change the thermostat to seek immediate gratification. When we are in the car, we tend to turn up the fan speed to get an immediate response. For our Church HVAC system, it doesn't work like that. Using anything but auto mode usually results in the opposite result as too much air flowing over the heating/cooling coil reduces the ability of the unit to transfer warm or cool air. That's why "auto" fan is ALWAYS the best setting for our Church mini spits. Likewise turning the set point too high or too low can cause the Church units to be unable to respond at all.

The HVAC control protocol has been carefully thought out to provide the best heating and cooling our systems can provide, as efficiently as possible. They are enumerated in the Operation Section of Chapter 3 of the [Owner's Manual](#) with the hope that we can learn and follow them.

Alternatives?

We need to resolve this problem **for the sake of comfort, creation care** (maintaining zero building emissions) **and our budget**. Several solutions for consideration, none being mutually exclusive, are: more training; review, refine, and simplify the protocol. Another alternative is more foolproof controls.

Problem Solving Process

Resolving complex problems like these require [a creative and structured approach](#) to ensure we address the root causes rather than just the symptoms, and to ensure that possible solutions (alternatives) are carefully evaluated so that consequences are considered. One way to describe this process is like this:

1. **Define:** Formulate a clear problem statement that keeps us focused on the actual issue rather than its symptoms. Identify the exact issue and separate facts from assumptions.
2. **Analyze:** Determine the underlying causes.
3. **Brainstorm:** Generate potential solutions. Generate as many ideas as possible. Build on wild ideas and challenge imaginary rules.
4. **Assess alternatives:** in terms of their benefits and costs.
5. **Decide:** on a strategy and a course of action
6. **Execute:** Implement the best strategy and evaluate the outcome by following up to ensure the problem has been solved.

Suggestion:

It is recommended that the Bishop's Committee acknowledge these four problems, put them on the "to do list." Then dedicate time and energy, engage experts, and use the creative problem-solving process described in the previous paragraph.

Opportunity

Rooftop solar with or without Sanctuary Insulation

Rooftop solar has the potential to

- Provide us with zero emission energy for "free" instead of us paying for it from Harvest Power's solar farm.
- Free us from fear of losing our contract with Harvest Power and being stuck with "dirty" electricity from PSEG. This is a significant risk as loss of our community solar power would ruin our zero-emission capability.
- Provide electricity to our buildings in the event of grid failure, if we also purchase batteries. It would be our "back up generator."

Additional benefits are possible if we (a) install the solar on a new roof, one that insulates the Sanctuary ceiling “from the outside” as described in an earlier section, “Sanctuary Insulation:”

- Increased comfort in the Sanctuary by decreasing heat loss
- Less load on the Church HVAC system results in it being able to heat and cool better. It will also reduce the size of the upgraded replacement system.
- Reduced electrical consumption. Our [energy audit](#) estimates that we would save about 14,000 kWh annually with an insulated roof, and another 13,000 kWh by insulating the Church walls. (See the Environmental Conservation Measures at the end of the [Energy Audit](#)). To put this estimated savings in perspective, that combined 27,000 kWh is 2/3 of the amount of electricity (40,000 kWh) we have contracted annually with Harvest Power. If that estimate proves to be true, we could reduce the size of our rooftop solar by 67%.

Suggestion

Let’s evaluate the solar option. It is recommended that the Bishop committee add to the “to do” list:

1. Gather cost estimates for
 - a. Rooftop solar with and without batteries
 - b. Outside insulation of Sacristy roof
 - c. Insulation of Sacristy walls
2. Research programs subsidizing these kinds of jobs
3. Perform benefit and cost analysis including calculation of return on investment with and with and without insulation of the Sanctuary and with and without batteries. The analysis should include sensitivity analysis for uncertain variables such as kWh savings.

This information can help us determine if we want to invest from our building fund in exchange for more security of our zero emissions plan, more comfort in the Sanctuary and saving on future utility costs.

Time is of the essence- Resonant Energy advises that “[The Time is Now: Rising Electricity Rates, Declining Solar Costs, and Limited-Time Incentives.](#)” With the passage of the One Big Beautiful Bill Act, these federal incentives are scheduled to phase out under the current law. Nonprofits must either complete their solar projects by December 31, 2027, or make a commitment (through a process known as “Safe Harbor”) by July 4, 2026, which then extends the deadline for installation to 2030.

We should gather and assess this information no later than this summer. I would like to volunteer to gather and present this information.

An Enduring Legacy

Vision

Imagine it is 2046, two decades from now. Our parishioners and the community at large, are celebrating the success of St. James of Jerusalem’s creation care mission. They will say they are proud and impressed by the facts: the data in the records show the parish’s buildings have not polluted the atmosphere with greenhouse gases for 20 years. Plus, our gardens and landscape have served as natural habitats for dozens of wildlife and taken tons of carbon out of the atmosphere. It is an amazing achievement to commemorate.

When our heirs look back, some will say, how did we do it? Others, in the know, will credit the way the parish was motivated and managed:

- We empowered ourselves by creating and presenting the [This Fragile Earth, our Island Home](#) series. While teaching others, we learned what our role was in fighting the climate crisis, which we referred to as “Caring for God’s Creation.” Caring for God’s creation became a mission of the parish.
- We set goals and measured their achievement. When barriers were encountered, we used a creative and structured problem-solving process to overcome them.
- We operated in the black- we lived within our means, we did not create deficits. Our Building Fund (our endowment) was untouched by operations and preserved for capital projects and emergencies.
- We took good care of our stuff. We worked in a hard and smart way to understand our buildings and grounds; we trained ourselves to operate and maintain them in a disciplined and efficient manner.

The Means

What can we do to have a good chance for an enduring legacy? We should reinforce the sound practices our Bishop’s Committee has engaged in the past and add additional routines to manage our buildings and grounds in a forward thinking and responsible way.

Suggestions:

1. **Measure and document** our creation care legacy. For example:
 - a. Continue the practices of reporting **greenhouse gas emissions** annually, and **electrical consumption** monthly. Codify this practice in the Owner’s Manual and hold the Buildings and Ground committee responsible for data collection and reporting. **Follow through** to make sure we are **conserving energy** like we explain in Chapter 1 in the [Owner’s Manual](#).
 - b. Add an annual report on the **amount of carbon taken from the atmosphere and stored in our landscape and gardens** during the previous year. In the “Livable World” section of chapter 1 of the Owner’s Manual, we explain the importance using photosynthesis to take carbon out of the atmosphere, and how we can use the iTree tool. You tell the program about your tree, and iTree

estimates the carbon dioxide and air pollution it removes plus stormwater impacts.

- c. Add an **annual** (or semi-annual) **bird count** to our routine. This could serve as a measure of the effectiveness of our grounds as natural habitat. As explained in the “Livable World” section of chapter 1 of the [Owner’s Manual](#), our grounds at St James of Jerusalem offer a great opportunity to rebuild habitat and food sources for insects, birds, and other wildlife. Counting the birds each year would give us feedback, and a record of our bird population.

Kathryn D’Amico from NY/CT Audubon suggests we do a breeding bird survey each spring. We could also participate in the [Great Backyard Bird Count](#) or [Christmas Bird Count](#) too. Kathryn, who also participated in the This Fragile Earth series, would support these counts for the first year and give us some training.

- d. Let’s require these reports at BC meetings. And as a matter of routine to present these measures to the parish at the **annual meeting**.

2. **Balance the operating budget.** In the past, from my experience serving on the bishop’s committee, we have budgeted to live within our limited means. We have only allowed the interest from the Building Fund to be used for operations. The principle in the Building Fund has been untouchable. This year we are not only tolerating the idea of a deficit, but our budget was created with a \$12,000 deficit built in. This will deplete the building fund by about \$12,000.

The true cost of an operating budget deficit is in the opportunity lost. To put this year’s planned deficit in perspective, \$12k could be a downpayment on rooftop solar, or perhaps half the cost of upgrading the Church HVAC system

We must get strict so we can achieve a balanced budget. For example, here are suggestions to make matters of policy and action:

- a. In our Budget, only authorize expenses that can be met with our expected income.
- b. Let’s only allow the purchase of what we have money in the bank to cover. For example, let’s not authorize expenses (such as leasing a copier) for which the planned supporting income (bulletin ads) is not yet a reality.
- c. Clarify a and b in writing for the Bishop’s Committee guidance and state that our policy is that only “interest” (realized gains) from the Building Fund is authorized for transfer to, and use in, the Operating Fund.

3. **Clarify in writing the purpose and limits on the Building Fund.** For example, it is recommended that we put in writing that:
 - a. The Building Fund Invests in projects that enhance our missions such accessibility and worship upgrades.

- b. The Building Fund Pays for the “depreciation” of our assets such as roof replacement, appliances, heating and cooling systems when they wear out. This is different from preventive maintenance and repairs which are paid for by the Operating Fund.
- c. The Building Fund covers the insurance deductible for natural disasters or fires. It also serves as a cash flow reserve to pay for damages and losses while we wait for the insurance to pay,
- d. The Building Fund invests in projects that will pay a return on investment, such as roof mounted solar panels and insulation that would save future energy bills.

We will likely not succeed at maintaining our buildings and grounds without commitment to a sacred building fund.

It has always been our practice, but let’s make sure that it is in writing that expenditures from the Building Fund must be approved by a vote of the bishop’s committee.

4. **Document and report the maintenance** (preventive and corrective) **of key systems.** The Bishop’s Committee should evaluate our maintenance effort 4 times a year – We need to know: is it happening? How much does it cost? What’s missing?
5. Prove now (this summer in 2026) that we can **solve the four (4) challenging problems described in the section, “Problems.”** Let’s dedicate time, energy and brain power to work together using the creative structured problem-solving process and resolve these 4 issues.

St James of Jerusalem’s creation care legacy will not happen if left to chance. We have the capacity and the duty to secure our legacy with proactive management of our buildings and grounds.

More importantly we need to do this as our parish’s contribution to a living world: to perpetuate zero building emissions, sequester carbon and restore natural habitat for ourselves and wildlife.

Conclusions and Recommendations

The project is completed but the work has just begun

St. James of Jerusalem is capable of zero building emissions, although it has not yet been proven we are able to achieve that goal. The buildings are also resilient to flooding in that all major systems are above design flood level.

It took a village. We are grateful to those who contributed to the project:

- Metro IAF
- The Episcopal Dioceses of Long Island
- National Grid

- PSEG
- Econo-Therm Insulation Co.
- Parishioners (Sean Parlakian and Coty Keller) who donated material and labor for the project.

Four problems and one opportunity need the immediate attention of the Bishop's Committee to avoid decision-making by omission, which can lead to missed opportunities and sub-optimum results. The problems are:

1. Church heat pumps
2. Sanctuary insulation, which is related to the opportunity for rooftop solar.
3. The Rectory ERV
4. Human behavior-thermostat control

Summary of suggestions

The Bishop's Committee should use the creative problem-solving process, described earlier, to resolve these four dilemmas.

The opportunity of rooftop solar is time-sensitive because of the timing of the elimination of federal incentives. The rooftop solar is also related to the Sanctuary insulation problem.

This project has been a lot of work. And it will take more work: a disciplined and well-managed effort to make our creation care work endure as a legacy. It is recommended that the Bishop's Committee put these suggestions on the "to do" list.

Table 8-Suggested "To Do" items

Bishop's Committee "to do" list.
1. Measure and document our creation care legacy. For example: Continue the practice of reporting greenhouse gas emissions annually, and electrical consumption monthly. Add to our routine (a) an annual report of the amount of carbon stored in our landscape and gardens and (b) an annual (or semi-annual) bird count to measure the effectiveness of our efforts to restore and preserve natural habitat.
2. Balance the operating budget, so we can preserve the Building Fund for its intended use.
3. Clarify in writing the purpose and limits on the Building Fund.
4. Document and report the maintenance (preventive and corrective) of key systems each quarter.
5. Prove now (this summer in 2026) that we can resolve the four challenging problems described in the section, "Problems." Let's dedicate time, energy and brain power to work together using the creative structured problem-solving process and resolve these 4 issues.
6. Gather and assess information on Rooftop Solar no later than this summer.

The project is completed, with a few problems to solve. Our legacy of caring for God's creation can endure, with attention. We must follow up, diligently, if we are to succeed in the long run. Business as usual will not be sufficient to have an enduring legacy.

God has called us to be stewards of his creation, and we have made this a mission of our parish. We can answer the call with recognition that in many ways, our work has just begun.

Report Distribution

To:

- Anthony Natale, Senior Construction Manager, Diocese of Long Island
- Bishop's committee (Vicar Michael Delany, Warden Wendy Goldstein, Warden Elizabeth Hill, Treasurer Laura Winter, Catherine Thomas, Deborah Smith, William (Coty) Keller)

Copy to

- Paster Susan Bock –Former Priest in charge. St. James of Jerusalem.
- Joe Morris- Lead Organizer, Metro IAF Clean Energy Initiative
- Philip Jones – Energy audit author
- Adam Tabrys - Field supervisor for CLEAResults, the agent for National Grid's HEAT (Heat Energy Affordability Team) program
- Rev. Matthew Moore, Missioner for Environmental Justice. Diocese of Long Island.
- Vincent Palmieri, Founder and CEO, Sustainergy
- Louis Eisenberg, President, Econo-Therm Insulation Co.
- Donald Fraser, Verger, St. James of Jerusalem.
- Kathryn D'Amico, Audubon Senior Director of Conservation Action Centers, Connecticut & New York
- Chris Sanzone, President, The Cooling Company

Appendix – Scope of Work

Job 1- Insulation and Air Sealing

3 parts

1. **HEAT** (Heat Energy Affordability Team) program) **Program** – At no cost to the parish, National Grid paid Econo-Therm, Inc. to do the following work in the Rectory:
 - a. They air-sealed the attic and improved the attic insulation, installed baffles so the soffits can “breathe, and created a path to service the HVAC equipment located up there.
 - b. They insulated the walls, blowing in between the bricks and under the siding. They also went into the upstairs dormer- creatively finding ways to access nooks and crannies in places we didn’t even know existed.
 - c. The basement rim joists were insulated.
 - d. The bathroom got a super-efficient and insulated fan!
 - e. The entry doors are weather stripped.
 - f. Heating and hot water pipes are insulated.
 - g. Blower door tests were done, before and after.

2. **Econo-Therm under contract:**
 - a. Provide and install Dense Pack fiberglass to the closed cavity ceiling in the Church Undercroft (basement) including the meeting room, kitchen, bathrooms, and hallway. R-48
 - b. Conduct blower door test and air seal the Church.
 - c. Weather strip Church Doors.
 - d. Fabricate a closure for the attic fan in the Overcroft (office). R-60.
 - e. Dense Pack the ceiling over the Rectory garage. R-40.
 - f. Insulate the Rectory basement ceiling with Kraft faced fiberglass insulation. R-19

3. **Econo-Therm Donation/Restoration work:**
 - a. Repack insulation to basement ceiling adjacent to bathrooms, areas disturbed by electrical upgrade job. Also patch two holes in women’s bathroom.
 - b. Install sheet metal around Overcroft roof top fan, to keep wind driven rain from entering.
 - c. Re-blow the Rectory attic with L-77 fiberglass (area disturbed by HVAC installation). R-60
 - d. Install a door sweep to front door of Rectory.
 - e. Fill void in the wall on top of old electric panel in the Church kitchen.
 - f. Pull out Rectory oven, seal holes, and repack insulation.
 - g. Insulate the Sacristy storage area (home to the new hot water heater and new Church electric panel and meter). R-24 on slopes. R-15 Walls

- h. Fix and add new Tyvek to Rectory basement ceiling that has been damaged by electrical work.
- i. Extended the existing access platform to the new air handler and ERV in Rectory attic.
- j. Air seal any areas disturbed by other trades.

Job 2- Electrical Upgrade

Basic Job contracted to Bob Fink Electric Inc

There are three components to this job: (1) provide 400 amp service to switch to all electric appliances and support the ADA lift elevator, (2) elevate all electrical distribution components above design flood level, and (3) sub metering so we can determine the amount of electrical power being used in the Rectory and Church as if they were two separate entities.

1. Additional loads to be accommodated include:
 - a. For the Rectory
 - i. Replacing the Rectory gas hot water heater with a high efficiency electric heat pump water heater. (240 V, 30 Amps according to [Brookline.](#)) which will be located in the Church Sacristy.
 - ii. Addition of electric stove and dryer in the Rectory (the Dryer wiring and receptacle has already been installed).
 - iii. Addition of an Electric Vehicle (EV) charger for the Rectory driveway. 50 amp is ideal. Can be as small as 40 amp if that would allow us to stay at 200-amp service overall.
 - i. HVAC. The existing AC will be replaced by a 3 or 4 ton heat pump. But the addition of an Energy Recovery Ventilator (ERV) in Rectory will require an additional 125v circuit requiring about 40 watts of electricity per hour.
 - b. For the Church, new loads include:
 - i. Replacing the gas hot water heater in Church with four on demand, under sink, hot water heaters (sacristy, bathrooms, kitchen for dishwasher, sinks)
 - ii. Addition of ADA lift elevator (30 AMP 120 v service)
 - iii. Addition of electric stove in the church kitchen.
2. Design flood elevation has been determined to be 2'2" above the first floor of the Rectory and 8" above the church's first floor. Any electrical distribution components that are not waterproof must be elevated above this level.

Scope of Work

- Determine if we need to upgrade to 400-amp service. (It was determined that 400 amp service is required).

- Create a new distribution system to accommodate existing loads and the new loads described above.
- Provide internal sub-meters to monitor the kWh use between the Rectory and Church.
- System should be compatible with possible future installation of rooftop solar with batteries.
- Please include in your proposal the restoration of any dangerous or unserviceable wiring.

Extra work – Stairs and Platform to service new meter.

When it came time to connect the new 400-amp service, PSEG required a platform to provide access to service and read the new meter.

The project manager purchased the material and provided the labor to build the platform, shown in the image.

Figure 4-Meter Platform



Job 3- HVAC Rectory

Basic Job contracted to The Cooling Company, Inc

The electric heat pump is necessary to replace the gas boiler. The Energy Recovery Ventilator (ERV), while not required for emissions elimination, has been determined to be a health imperative. The ERV replaces stale indoor air with fresh air from outside.

Scope of Work

1. Replace existing Rectory A/C with a heat pump model to heat and cool. Include back-up heat for emergency heat. Ensure heat pump is sized to cover the entire heating and cooling loads of the space it's serving.
2. Replace the air handler to meet heating needs and insulate sufficiently, including existing and new ductwork within the attic so the unit is not an energy bleed – given its location in the attic, outside the thermal envelope. Provide alternate pricing to relocate the air handler to inside the thermal envelope – perhaps a closet in the rectory so long as it is above the design flood elevation (see #5) or in the Sacristy storage area.
3. Install an Energy Recovery Ventilator (ERV) to provide 5+ air exchanges per hour, with MERV 13 filtration.³
4. Restore (recently installed) attic insulation and air sealing after ERV/air-handler/duct work is completed.
5. All equipment must be located at or above design flood elevation (DFE). The DFE is 2'8" above the first floor of the Rectory.

Important contractor stipulations:

We need to comply with requirements specified by PSEG and Metro IAF/NYSERDA:

- The HVAC contractor must be a PSEG qualified contractor for us to be eligible for the PSEG rebate. Certification involves providing heating and cooling load (“Manual J”) calculations to assure the unit is sized correctly given current insulation and space heating/cooling needs.
- To qualify for NYSERDA rebates, HVAC contractors must agree to comply with [contractor requirements](#) for workforce development, living wage, and evaluation. The contractor must also agree to the [Owner's Project Requirements \(OPR\)](#). The OPR is a detailed list of Metro IAF requirement that includes but is not limited to, providing the following:
 - As-built drawings of the system including ducting, and a full and accurate refrigerant piping diagram.
 - Provide operation and maintenance training to include providing all installation, operation, and maintenance manuals for any equipment installed. Provide a training session to train the Rectory tenant and church personnel in operation and maintenance of the system.
 - Assistance for us applying for the NYSERDA rebate.

A **Tech Adviser** was required by Metro IAF. En-Power Group was contracted to provide the following services:

- Review background documents, including relevant sections of the church's energy audit, draft OPR, and contractor quote
- Initial consultation with the church's point person to clarify OPRs

³ The [CDC's latest healthy building recommendations](#) include the need to exchange indoor air with a certain amount of fresh air and filter it to a certain standard.

- Brief memo providing guidance prior to contractor selection, including potential system performance specifications
- Review of contractor bids received and consultation with St. James on any additional clarifications needed
- Review of contractor designs, including up to three (3) online meetings with St. James and/or contractor.

Behavioral Work

An ad-hoc committee on HVAC operation met in the summer of 2025 to formalize the underlying principles of energy conservation and building heating/cooling envelopes. The committee also develop operating guidelines (a protocol) for how the HVAC should be set during the heating, cooling seasons, and in between.

The principles and protocols are published in the [Owner's Manual](#).

The project manager organized the maintenance schedules for the new systems also, and they are published in the [Owner's Manual](#).

Job 4 – HVAC Church

Basic Job contracted to The Cooling Company, Inc

An important ingredient of our zero-emission plan is using and maintaining the already installed heat pumps to heat the Church building, thereby allowing us to eliminate the use of the natural gas boiler.

Operation of the church heat-pumps is troublesome. They don't work with regular thermostats, which allow for programming of heating and/or cooling. The remote controls offer limited programmability with no ability to set a schedule. This means that church personnel must go on site in advance of events (whether it be a church service in the Sanctuary or an AA meeting in the Undercroft) to turn the heat or A/C on, which is not only an inconvenience – it is not possible at times because we are (to say the least), short staffed. We don't have paid staff.

The plan to overcome these operations issues is to:

- a. Invest in a technical solution that enables our remotes to act as state-of-the-art thermostats with programming functions and remote (offsite) control features. This will allow us to make the transition from the gas-fired boiler to all electric heat.
- b. Adopt a training plan that teaches church personnel, and tenants (AA, other users of the facilities) what our heating cooling policy is and how to use the controls.

Scope of Work

1. Retrofit the existing mini-splits (Church Sanctuary, Undercroft, Sacristy, and Overcroft/office) with programable and remote (offsite) controls. Possible sources of this equipment are [Flair controls](#). and [Cielo smart thermostats for mini-split](#).
2. Provide operation and maintenance training to include providing all installation, operation, and maintenance manuals for any equipment installed. Provide a training session to train the church personnel and tenants in operation and maintenance of the system.

Additional installations: After a year of operating the Church HVAC, we determined we needed more thermostats. Additional smart thermostats were purchased from Amazon and installed by the project manager. The current configuration of the smart thermostats is described in the [Owner's Manual](#).

Behavioral Work

An ad-hoc committee on HVAC operation met in the summer of 2025 to formalize the underlying principles of energy conservation and building heating/cooling envelopes. The committee also developed operating guidelines (a set of protocols) for how the HVAC should be set during the heating, cooling seasons, and in between.

The principles and protocols are published in the [Owner's Manual](#).

We are having difficulty complying with the protocols. Please see the Thermostat Control problem in the “Problems” section of this report.

The project manager organized the maintenance schedules for the new systems. They are published in the [Owner's Manual](#).

Job 5 – Electric Hot Water

This Job was contracted to AWS Plumbing.

We plan to provide hot water to the Rectory with a high efficiency heat pump water heater. The Church's infrequent need for hot water will be provided by small, on demand, tankless units.

Scope of Work

Contractor work:

1. Furnish and install a 50-gallon high efficiency heat pump water heater to be installed in the utility room/Sacristy of the Church and plumbed to provide hot water to the Rectory. The equipment should be raised at least 14” above the floor of the Church, to be above design flood elevation.

- a. Ensure the new heat pump water heater has adequate ventilation per manufacturer's installation instructions.
 - b. Ensure condensate drain is installed per manufacturer's installation instructions and piped to existing building drain by gravity via new funnel drain or with a condensate pump.
2. Remove two (2) gas fired hot water heaters, associated piping, and equipment and legally dispose of.
3. Furnish and install on-demand electric hot water heaters in the Church:
 - a. Sacristy
 - b. Bathrooms
 - c. Kitchen to service the sinks and the dishwasher.
4. Provide operation and maintenance training to include providing all installation, operation, and maintenance manuals for any equipment installed. Provide a training session to train church personnel and tenants in operation and maintenance of the systems.

St. James Work

The project manager organized the maintenance schedules for the new systems. They are published in the [Owner's Manual](#).

Job 6- Appliances

A parishioner donated the electric heat pump clothes drier for the Rectory. We shopped and compared for the Induction stoves.

Work in progress: developing maintenance processes

Job 7- Removal of Gas Equipment

This Job was contracted to AWS Plumbing.

Gas hot water heaters were removed by the plumbers for the Electric hot water job. The scope of work for Boiler removal:

We plan to switch from gas to electric heat.

Scope of Work

Remove natural gas boilers and associated piping from the Church and Rectory.

Time frame

After we are assured that electric heat pumps are sufficient for heating the buildings.