

Vision Project Team Name:
Environmental Assessment Visioning Team (EAV Team)

The EAV Team's focus, as defined in the Vision Project Teams handout, includes safety; climate justice; infrastructure needs; solar panels; assessment and remediation (if needed) for mold, lead, and general air quality; and assessment for reduction of our carbon footprint. Four preliminary proposals were assigned to us:

- Climate Justice;
- Environmental Assessment of Building & Grounds;
- Capital Projects Endowment; and
- Building/Grounds/Infrastructure Assessment for Long-Range Planning & Budgeting.

We have evaluated these proposals and discuss our research, findings, recommendations, and cost estimates below. Our recommendations are based on the goal of fully realizing the proposals assigned to us, but they can be modified for partial realization depending on what priorities are chosen by the congregation.

Proposal Title: Climate Justice.

Focus:

Make changes to our practices and the land and facility we steward that do not contribute to the consumption of resources and climate warming and that are forward thinking demonstrations of sustainability in the face of climate changes.

Research:

- The EAV Team met with an employee from Burlington Electric Department (aka BED, surrogate for Efficiency Vermont in Burlington) to conduct an audit of First Church electricity consumption.
- This consisted of a walkthrough of the church and examination of mechanical systems.
- BED also has access to shared data from Vermont Gas Systems.
- The EAV Team also met with Vermont Gas Systems and Energy Cooperative of Vermont (VGS) representatives for walkthroughs of the church. They examined mechanicals, doors, windows, walls, and ceilings to ascertain the extent of modeling and testing necessary to determine the repairs needed to reduce air leaks through the building envelope.
- Additionally, the EAV Team consulted SunCommon, a business that works with non-profits to develop ways to finance projects, to discuss the installation of solar panels. SunCommon has all the resources needed to help us understand the economics of solar panels.
- The EAV Team utilized a roof conditions assessment from a roofer who recently repaired leaking seams in 2021 for us. EAV Team member Doug Viehmann reviewed existing structural conditions as well.

Findings:

- Both BED and VGS evaluated the efficiency of the "mechanicals" (2 gas-fired furnaces under the sanctuary and 4 gas-fired boilers adjacent to the Possibility Shop).
- They concluded that these mechanical systems are in very good condition and are highly efficient. With proper maintenance they should provide the service we need to heat the buildings for 10-15 years.
- According to the BED audit, First Church's electricity usage lighting, office equipment, dehumidifiers, space heaters, etc., consumed 37,625 KWH over the 365-day period 11/21 to 12/22 at a cost of \$7,579.
- Several inexpensive steps can be taken to reduce electricity consumption, such as installing motion detectors to turn off lights, use of humidity controls for dehumidifiers, automatic thermostats, and phone technology to manage more efficiently other devices such as the ice melt system.
- Natural gas usage was 12,078 CCF over the same period, at a cost of \$16,244. The key to reducing that figure and the resulting greenhouse gas emissions, given the efficiency of the heating system, is to reduce the cold air entering the building.
- Air leakages contribute heavily to energy expenses. However, sealing such leaks also limits the movement of fresh air and requires the installation of air handling systems to compensate for this.
- The savings and income generated by installing solar panels would recoup the costs in approximately 20 years.

Proposal:

The EAV Team proposes reducing FCC's energy consumption, thereby also reducing FCC's costs and pollution emissions, through the following 8 steps.

1. Using relatively inexpensive equipment such as motion detectors to reduce consumption of electricity by turning devices down or off when they are not needed.
2. Optimizing the efficiency of the equipment that we rely on for heating, including the boilers and furnaces. According to our consultations, improvements can be achieved by setting up the systems to more accurately track outside temperature and building usage.
 - a. BED indicates that steps 1 and 2 above could *significantly* reduce energy consumption.
3. Most significant and most costly is performing a thorough examination and modeling of the building envelope, conducting blower door and infrared camera tests to determine where the improvements are needed most (i.e., where are the greatest air leakages?).
4. Switching from gas to electric for lawn mowing.
5. Reviewing rooftop mounted ventilation fans for efficiency and operation. Air leaks need to be stopped, but intentional ventilation is necessary for a healthy building.
6. Replace 6 old window air conditioners with more efficient modern units. (See 16 or higher.)
7. Installing new air handling systems in the library, front office, and potentially the Possibility Shop as well to ensure proper ventilation and the delivery of fresh air after the air leakages are sealed.
8. Installing solar panels on the roof, which will involve structural analysis, replacement of the 30-year-old membrane, and installation of new solar panels and electronic components to tie the system into the grid and our electrical panels.

Resources:

- Continued consultations with BED and VGS are needed regarding the retention of an engineering firm to do modeling of our building envelope.
- FCC should also join, at no charge, the Burlington 2030 District and the Vermont Green Building Network (one of a nation-wide network operating in cities throughout the United States, operating in Burlington since 2017), which works as a Private/Public partnership providing technical assistance whose primary goal is building energy conservation.
- We will need volunteers to install motion detectors and check dehumidifier settings.
- We will need to retain Avonda (a company currently servicing boilers and furnaces) to adjust settings to operate with optimum efficiency.
- We will need to retain an engineering firm to conduct a building envelope survey, which includes blower door and other tests to determine the scope of remediation necessary.
- We will need to retain contractors and engineers as needed to correct the problems identified in the survey and testing, such as the installation of new air handling systems.
- For the solar panel installation, resources needed include a structural engineer to analyze the roof structure and recommend strengthening methods, a contractor for any structural changes, a roofing contractor, a solar installer for panels and electronic components, and a church member volunteer coordinator(s) to work with the parties listed above.

Breakdown of Costs:

- \$12,500 for efficiency improvement of lighting, dehumidifying, boilers, and building surveys/testing.
- \$2,000 for electric mowers with net rebates.
- \$3,500 for high efficiency air conditioners.
- Between \$100,000 and \$125,000 for building modifications.
- The installation of new air handling systems is roughly estimated to cost around \$40,000 due to ductwork requirements.
- Solar panel installation costs can be broken down as follows:
 - Structural engineer quote: \$1,400
 - Guestimate for structural upgrades: \$50,000
 - Roofing replacement est. (\$7.50/sf): \$75,000
 - Solar install estimate (120-190 panels): Between \$109,000 and \$179,000
 - Annual Savings/income: \$12,500

Grants:

Thanks to the federal infrastructure programs and concerns about climate change, money is available to reduce the outlay that First Church would otherwise face. BED and VGS have programs that can provide assistance. For example, a VGS representative has indicated that they might cover as much as 50% of the projects they're involved in. Burlington 2030 District also provides technical and planning assistance for projects such as this and doesn't charge for their tech planning assistance.

BED, meanwhile, offers rebates of up to \$3,500 for riding mowers and up to \$500 for push mowers. There is also a 30% federal tax credit available. Mowers can be charged on standard 110-120 volt outlets. Faster level 2 chargers have a \$900 BED rebate.

Federal solar panel grants for non-profits have already been included in the solar panel cost calculations.

Timeframe:

2 years for the energy efficiency improvements and non-solar building modifications. For solar panels, once a contract with a solar installation company is signed the project's estimated timeframe is between 6 and 8 months.

Vision Goals this project meets:

Climate justice. To be more specific, the investment in electrical efficiency will reduce electrical energy consumption and the investment in the building envelope that will reduce consumption of natural gas. Both of these investments will result in significant savings for First Church. And, more importantly for Climate Justice, they will reduce emissions of greenhouse gases and other pollutants emitted by the energy sources we now rely on. Switching to electric mowers will also eliminate all fossil fuel emissions from lawn care.

To put things into perspective, the 12,078 CCF of natural gas First Church burned for heating last year emitted more than 140,000 pounds of CO₂.

Measure of Success:

Success will be objectively measurable by the reduction of electricity and heating expenses and greatly reduced maintenance expenses of electric mowers. All efforts will result in significant reduction of greenhouse gas emissions. Additionally, the solar panel installation will be successful if it generates electrical income instead of electrical expenses in the long term.

Total Cost:

Excluding solar, the total estimated cost for this proposal is between \$158,000 and \$183,000. The total cost of the solar project by itself is estimated to be between \$210,000 and \$290,000 with an approximately 20-year payback, based on a calculated \$1,000 of electrical income per month generated by the solar panels.

Proposal Title: Environmental Assessment of Building & Grounds.

Original Charge/Focus:

Professional assessment of the building and grounds and, if needed, remediation and improvement. Specifically, there are concerns about the building's air quality and exposure to mold and lead.

Revised Focus:

After discussions, the EAV Team divided this focus into three projects for simplicity—lead and asbestos testing, mold testing, and polychlorinated biphenyls (PCBs) testing.

Project 1: Lead and Asbestos Testing.

Research and Findings:

- Clay Point Associates, Inc. ("Clay"), prepared a lead report for FCC back in June 2009.
- Clay took 32 surface dust wipe samples for their testing. 20 of these samples exceeded HUD federal standards for lead dust clearance levels, 5 were below, and 2 contained no lead at all.
- Despite the positive sample results, lead levels in the building were less than expected and did not exist in high enough concentrations to pose an active risk to the congregation.
- Alderson Environmental Contractor ("Alderson") performed asbestos testing for the church as a whole in February 2009 and for the upstairs kitchen specifically in March 2017.
- Alderson took 39 samples from all three floors, the 1960 addition, and the basement for their 2009 testing. 13 samples tested positive for asbestos, mostly in floor tiles and joint compounds.
- When Alderson tested the kitchen for asbestos in 2017, they took seven bulk samples. No asbestos was detected in any of these samples.
- Although the 2009 tests found materials that contained asbestos, these materials were intact and in good condition and thus not considered hazardous.
- Based on these lead and asbestos reports, there are no active risks for lead and asbestos in the church building for spaces as currently used. However, this could change if spaces are remodeled or put to new uses. For example, a licensed daycare facility may require its spaces to meet stricter standards than are currently required, and if tiles are removed or altered for other renovations there may be an asbestos risk.

Proposal:

After the congregation identifies its priorities in the March 26th meeting, the EAV Team will review those priorities and assess which ones (if any) have potential lead or asbestos risks. The EAV Team will then reach out to the Vision Project Groups those priorities fall under to discuss what future steps are appropriate.

Resources:

Time and manpower. Members of the EAV Team will need to intently evaluate the priorities chosen at the March 26th meeting to determine if they could potentially change the building's lead and asbestos risk levels and then coordinate with the Vision Project Groups responsible for those priorities to address these new risks.

Breakdown of Costs:

N/A. However, if additional lead testing is required, preliminary research indicates that the cost of professional lead paint inspections often ranges from \$500 to \$1,400 depending on the number of samples to be collected. Asbestos testing has a similar price range. However, due to the size of the building, such testing may cost more for FCC.

Grants: N/A.

The EAV Team will assess whether grants are needed and available at a later stage if remediation is required.

Timeframe:

The EAV Team will meet to evaluate the priorities identified by the congregation at the March 26th meeting for new potential lead and asbestos risks after the aforementioned meeting.

Vision Goals Met by Project 1:

- Renovations for functionality and service.
- Expand and improve use of physical space (access) with goal of increased use for all.

Measures of Success:

The EAV Team will assess the effectiveness of this project by whether we are able to use the past lead and asbestos reports to identify new potential risks that could arise from the priorities the congregation chooses at the March 26th meeting.

Total Cost:

N/A. However, if additional lead or asbestos testing is required, preliminary research indicates that the cost of such services often ranges from \$500 to \$1,400 depending on the number of samples to be collected. For a larger building like our church, the cost may be higher.

Project 2: Mold Testing.

Research and Findings:

- Mold is of particular concern to the church because of the flooding that has taken place on the basement level in the past.
- There have also been complaints of unpleasant odors and allergic reactions.
- The EAV Team searched for local environmental consulting companies specializing in indoor air testing and contacted K-D Associates, Inc. (KDA) for further information.
- Members of the EAV Team met with John Maddigan of KDA on December 2nd, 2022, at 1pm inside the church and gave him a tour of the building.
- Based on this tour, Mr. Maddigan recommended testing in the child occupied areas of the first and second floors and a full assessment of the basement crawlspace and utility space, with approximately 10 mold samples for air to be collected.

Proposal:

The EAV Team recommends hiring KDA to perform the proposed indoor mold testing. Once the written report and laboratory analysis for the test results are available, the EAV Team will reconvene to evaluate the severity of any identified problems and, if needed, research and propose steps for remediation and improvement.

Resources:

KDA will provide the mold sample collection kits and perform the testing. With that said, an escort might be needed to guide the KDA tester through the building, so we should be prepared to allocate the services of one of our members for a day.

Breakdown of Costs:

KDA provided an estimate of \$850 for this service. However, this quote was from December, and the price might have changed since then.

Grants:

N/A at this testing stage. However, if remediation needs are identified after the test results are provided, further research should be conducted to determine if grants are available to assist with remediation and improvement projects.

Timeframe:

Once the mold samples are collected, test results should be returned in less than a month.

Vision Goals Met by Project 2:

- Wider building use in general.
- Renovations for functionality and service.
- Safety of space (health risks).

Measures of Success:

The effectiveness of this project will be determined by whether accurate mold test results are obtained and if the EAV Team can agree on recommendations for remediation and improvement, if such efforts are needed.

Total Cost:

KDA's quoted price in December was \$850 for this service. However, this price might have changed in the intervening time.

Project 3: Polychlorinated Biphenyls (PCBs) Testing.

Research and Findings:

- PCBs have been in the news in the past few years due to remediation efforts in local school districts to remove them.
- Members of the EAV Team expressed concern about the possibility of dangerous levels of PCBs in the church.
- However, according to the Building & Grounds Team the risk of this is minimal.
- K-D Associates, Inc. (KDA) also indicated that the risk is minimal when the EAV Team met with their representative on December 2nd, 2022.
- Even so, KDA can perform tests for PCBs if we want to be thorough.

Proposal:

The EAV team recommends hiring KDA to test for PCBs in five locations where children spend the most time as well as an office area which may be used as a daycare space in the future. Once the final report for the test results is available, the EAV Team will reconvene to evaluate the severity of any identified problems and, if needed, research and propose steps for remediation and improvement.

Resources:

KDA will provide the sample collection kits and perform the testing. With that said, an escort might be needed to guide the KDA tester through the building, so we should be prepared to allocate the services of one of our members for a day.

Breakdown of Costs:

KDA provided an estimate of \$1,675 for this service. However, this quote was from December, and the price might have changed since then.

Grants:

N/A at this testing stage. However, if remediation needs are identified after the test results are provided, further research should be conducted to determine if grants are available to assist with remediation and improvement projects.

Timeframe:

Once the samples are collected, test results should be returned in less than a month.

Vision Goals Met by Project 3:

- Wider building use in general.
- Renovations for functionality and service.
- Safety of space (health risks).

Measures of Success:

The effectiveness of this project will be determined by whether accurate PCBs test results are obtained and if the EAV team can agree on recommendations for remediation and improvement, if such efforts are needed.

Total Cost:

KDA's quoted price in December was \$1,675 for this service. However, this price might have changed in the intervening time.

Proposal Title: Capital Projects Endowment.

Focus:

Fund an FCC endowment for on-going capital projects. Replacement of boilers, elevators, windows, roofs, et al, are costly and can play havoc with annual operating budgets. By setting aside monies for anticipated capital needs over the next decade, we should be able to insulate somewhat the church from sudden but necessary and expensive projects that we know are bound to occur.

Research and Findings:

We consulted the UCC Website for guidance on the amount to start and goal for a fund, as well as the Faith & Finance Website (faithfi.com) and AGFinancial's non-profit planning page.

Proposal:

Provide seed money from the RMD house proceeds and set aside an amount each year as part of the annual budget. These proceeds would fund projects up to a certain amount – we suggest \$50,000 – and could also be used in an emergency while a decision is made about funding for a larger amount if the need arises. Interest should accrue into the same account.

Note that the Possibility Shop is our current go-to source for funding capital needs when they arise. We also have been running our finances with a cash reserve that is intended to be used only for emergencies related to staffing or Operating budget. The sources consulted recommend a cash reserve of 30% to 50% of the annual budget. Our current operating cash reserves are closer to 25%. The Possibility shop balance is another 10 to 15%. With these two funds we are fairly well covered.

Cost that might be funded though this account include:

- Boiler replacement (\$15,000 every 5 years anticipated)
- Painting (Interior of Sanctuary \$30,000)
- Flooring replacement.
- Flood damage repairs.
- Roof replacement (\$80,000 for Sanctuary)

Resources:

The Possibility Shop is our current go-to source for funding capital needs when they arise. We also have been running our finances with a positive cash balance that is intended to be used only for emergencies related to the Operating budget. The sources consulted recommend a cash reserve of 30% to 50% of the annual budget. Our current operating cash reserves are closer to 25%. The Possibility shop balance is another 10 to 15%. With these two funds we are fairly well covered.

Breakdown of Costs:

If we were to fund an additional Capital Fund for Building related items, we would suggest starting with an initial deposit (RMD proceeds) of \pm \$ 35,000 and an annual contribution starting in 2024 of \pm \$ 6,500. (Annual contribution could come from Poss Shop?)

Grants:

Grants or rebates for any work done would be considered at the time that work is needed.

Timeframe:

This additional Capital Fund for Building related items can be started immediately if funding is authorized.

Vision Goals this project meets:

- Conserve resources while maintaining our building as a vital tool for all other work we do.

Measure of Success:

Ability to fund ongoing maintenance and emergency work without overtaxing the Possibility Shop.

Total Cost:

\$35,000 year one. Plus 1% of annual budget.

Proposal Title: Building/Grounds/Infrastructure Assessment for Long-Range Planning & Budgeting.

Focus:

Have a thorough assessment done of building/grounds/infrastructure needs, both maintenance and new work. This would include estimated timeframes when maintenance and other projects would need to be done as well as estimates of how much they would cost.

Research and Findings:

- Indoor spaces at First Congregational Church vary considerably in terms of their current physical state and their environmental footprint. To a lesser extent, the same can be said about their environmental risks.
- The Building & Grounds Team has a "punch list" spreadsheet listing various infrastructure projects they've identified. Similar projects are grouped under the categories of Paint, Clean, Repair, Renovate, and Miscellaneous.
- Some of these projects relate to environmental matters and the church's environmental footprint. Others have little to no bearing on the environment.
- If the tests recommended under the "Environmental Assessment of Building & Grounds" proposal and assessments recommended under the "Climate Justice" proposal are authorized, their results may change the order the projects in the "punch list" are prioritized in as well as create additional projects.
- There are pdf maps showing the layouts of the church's three floors and basement. The EAV Team has converted these maps into Excel spreadsheets for annotation and editing purposes.

Proposal:

The EAV Team proposes this focus be addressed through the following four steps.

1. The EAV team will review the test results and assessments authorized under our other proposals.
2. The EAV Team will discuss these test results and assessments with the Building & Grounds Team to determine if they effect any projects on the "punch list" and if the test results and assessments warrant the addition of new projects to the list.
3. The EAV Team will combine the projects in the "punch list" with the spreadsheet maps of the church's layout to create a single document that lists all identified projects by floor, room, and priority to allow for easy sorting and visualization of which areas of the church are most in need of work.
4. Once this consolidated spreadsheet is completed, the EAV Team will research options for hiring a professional for a full building assessment. The justification for doing this in a "second stage" is because any environmental risks the tests and assessments reveal could substantially impact the results of a professional building assessment and the long-term needs identified by one, so having this information beforehand is valuable.

Resources:

The cost estimates for tests and assessments are included under the EAV Team's other proposals. In the first stage, this specific proposal requires time and manpower. Members of the EAV Team

will need to set aside time to review the test and assessment results, discuss them with the Building & Grounds Team, and fill in information in the consolidated spreadsheet. In the second stage, we will need to hire and compensate a professional building assessor.

Breakdown of Costs:

N/A for the first stage. The cost estimates for tests and assessments are incorporated under the EAV Team's other proposals. In the second stage, preliminary research indicates that hiring a professional assessor may cost between \$7,000 and \$8,000.

Grants:

N/A for the first stage. However, depending on the nature and priority of projects in the "punch list" following the EAV Teams' discussion of test results and assessments with the Building & Grounds Team, further research should be conducted to determine if grants are available to assist with any of the projects. Additionally, for the fourth step of the proposal, we will research whether grants are available for a professional building assessment.

Timeframe:

Once the test results and assessments from the other proposals are received, the EAV Team's goal will be to review them and schedule a meeting with the Building & Grounds Team within 30 days. Once we've identified which—if any—projects on the punch list need to be revised or added, we will create the consolidated spreadsheet within 30 days. We will then evaluate options for hiring a professional building assessor.

Vision Goals Met by This Proposal:

- Renovations for functionality and service.
- Safety of space.

Measures of Success:

In the first stage, the success of this proposal will be measured by how clearly the consolidated spreadsheet conveys information about projects needed for the church and the reasonableness of how these projects are prioritized. In the second stage, success will be defined by the completion of a professional building assessment.

Total Cost:

N/A for the first stage. The estimated costs of the environmental test results and assessments are incorporated under the other proposals. For the second stage and hiring of a professional building assessor, initial estimates put the cost between \$7,000 and \$8,000.