

Plan to refurbish the Meetinghouse

Two intertwined needs have led to the current planning to refurbish the Meetinghouse: 1) The need to meet health standards before we can return to our building, and 2) The need to address infrastructure issues that have been identified (which are to be expected in a 25-year-old structure).

Genesis of the plan:

I. Health concerns:

At the start of the pandemic about a year ago, Fellowship leadership struggled with how to handle the dangerous but barely understood danger to our congregation from the unfolding pandemic. The decision was made to temporarily suspend in-person meetings, including Sunday services at the Meetinghouse. The Waldorf School, which was renting space, was also advised to suspend their activities at the Meetinghouse. At that point, we were naively thinking in terms of weeks rather than years. As the weeks and months have unfolded without gathering at the Meetinghouse, the intense desire of our congregation to return to normalcy has increased. The Board has received constant guidance from our Coronavirus task force. A number of months ago, we asked them to monitor evolving conditions, and help us develop a strategy to plan the timing and the criteria that would need to be met for us to responsibly return in person to the Meetinghouse. The task force put in major hours scouring the literature to get up to speed on current recommendations. The task force identified ventilation as one key to re-entry. Bruce Bell and I attended a symposium identifying humidity as a major determinant of viral spread. The Board is examining possibilities for in-person meetings outside, or some other alternative to being in the Meetinghouse. But a return to normalcy requires us to be able to resume services in our familiar and beloved building.

II. Infrastructure

The Fellowship is at a critical juncture in our evolution and growth. Soon our existing equipment will become unreliable and begin to cost us more than a new system. It is time to look ahead to a sustainable future and live the values that we proclaim. The meetinghouse is heated by seven individual furnaces, which have

reached the end of their useful life. Our ductwork is failing and contains unhealthy materials, and will need replacement. We do not have central air conditioning, and most importantly, we have neither adequate ventilation with fresh air, nor controlled humidity, both of which are necessary to minimize viral spread. Our carbon footprint is not currently in keeping with the congregation's desire to foster a healthy planet. We would like to limit our dependence on fossil fuels to the gas stove in the kitchen, and to be net-zero by the elimination of gas heat, the use of more efficient equipment, and the purchase of electricity from renewable sources.

Feasibility Report

As it became clear that we needed professional expertise and advice, Bruce Bell searched for a consulting firm to help us. The Board received a number of recommendations for an appropriate consulting firm. Bruce recommended NV-5, an internationally respected firm in HVAC engineering, and we authorized a Feasibility Study of the Meetinghouse. Their study would document the current status of the building, and provide us with options, including equipment costs, for bringing our space up to current standards of health safety and energy efficiency. We contracted NV-5 for \$7500 to produce the Feasibility Study. Members of the congregation who had familiarity with our building, including Dave Dimmick, Bob Sabin, Phil Zimmerman and I were present when Josh Smith, NV5's Senior Engineer and project manager, did a site visit to the Meetinghouse, and heard firsthand, his initial impressions, later amplified by additional information, and written up in great detail.

The Board (+Bruce Bell) was able to assemble via Zoom to discuss the report a couple of weeks ago and met with NV-5 via Zoom this past Thursday, to address a number of questions from the Board.

The Feasibility Report

The report is attached. It is dense, and requires some technical expertise to fully understand. However, the summary provided by NV-5 on pages 2-5 are understandable to most of us. We asked NV-5 to provide us with three options to

meet our goals, and they provided five. Below, we provide a summary gleaned from the report.

Our paraphrasing of the Report Summary:

Option	Estimated Cost for Design and Construction	Estimated Annual Energy Cost	Estimated Annual CO2 Emissions (Metric Tons)	% Reduction in Estimated Annual CO2 Emissions (Metric Tons)	On-Site Fossil Fuel Free?
Existing System	-	\$11,147	39.81	0%	No
Option A – New Gas Furnaces and Electric Air Conditioners	\$137,000	\$9,130	33.84	15%	No
Option B – Hybrid Furnaces and Heat Pump	\$149,000	\$9,914	33.78	15%	No
Option C – Full Heat Pump	\$132,000	\$10,754	33.88	15%	Yes
Option D – Air Source VRF	\$180,000 to \$240,000	\$9,524	30.01	25%	Yes
Option E – Ground Source VRF	\$764,000 to \$917,000	\$9,158	28.86	28%	Yes

Option A

Would meet our need for a clean building but not do anything for us to become net-zero or cut our carbon footprint by replacing our old gas burners with an efficient, solar-powered, electric heating/cooling system. The estimated cost of the equipment for this option is \$83,000. It would replace our current gas

furnaces with new gas furnaces and put in new central air conditioning for the sanctuary. Window air conditioning units would for cooling in the other parts of the building. It would provide air exchange, purification, and humidity control. The new federal and state climate-emergency standards require that we be net-zero in a much shorter time frame of probably ten years.

Option B

Does what Option A does with a hybrid gas and electric heating/cooling system. It does very little to achieve our net-zero goal and commits us to using fossil fuel for the future. The estimated cost of the equipment is \$90,000.

Option C

Uses a heat pump to heat and cool the building electrically but lacks additional emissions reduction as well as the new technology that allows each part of the building to heat or cool independently, reducing efficiency. With option B or C the heating and cooling are either on or off, and the whole building is heated or cooled. The estimated cost for equipment is \$80,000.

Option D

This option meets all of our requirements at just a little more cost than the first three options. It uses heat pumps with VRF (Variable Refrigerant Flow) technology. This option confers the ability to heat or cool any room as much as needed, allowing one room to be cooled as another is heated. That is especially important for us since we have significant heating from the sun in our sanctuary while other rooms may need heating since they have little natural heating from the sun. "Refrigerant" refers to the liquid refrigerant that flows in the tubes of the system and allows it to bring heat in or out depending on what is called for in any room. This is all controlled by a computerized system along with air exchange and humidity. The estimated cost for this equipment is \$109,000.

Option E

This Option does what Option D does but, instead of drawing the heat from the air outside, it uses the heat from the refrigerant that is in pipes sunk underground where the base temperature is always about 55 degrees. This reduces the amount of energy to heat or cool the refrigerant since it starts at 55 degrees regardless of the air temperature outside. That is more efficient but requires much more equipment and a significant installation cost to dig up a large area of ground to

run all the piping. That's the major reason why the equipment cost for this option is \$278,000. If we had all the money in the world we would probably pick this option except that it would probably require us to dig up and disturb the meadow/ground behind the meetinghouse.

Expand the size of the Meetinghouse?

Expanding the size of the Meetinghouse has been a topic of discussion for a long time, and we examined whether this possibility should be folded into the renovation discussions. It was concluded that the most efficient and cost-effective expansion plan would incorporate a separate HVAC system for the additional space. This would prevent an inevitable long delay while debating whether or not, and how to expand. During this time, ventilation in the Meetinghouse wouldn't be improved, and we would not be able to meet there.

Board Action

After extensive discussion and input from the Building and Grounds Committee, The Board voted unanimously and enthusiastically to pursue Option D. This option adequately addresses both our health and energy requirements, and should provide us with 20-25 years of useful life. The entire renovation process requires three phases: 1) Feasibility (completed), 2) Design, and 3) Contracting and performing the work. The Board voted to extend an RFP (request for proposal) to identify a firm to perform the Design phase. We will be contacting various contractors known to us as well, to solicit their thoughts on the Feasibility study, and to preemptively provide input in advance of moving to Contracting and Execution. Final pricing for each of the options cannot be determined until completion of the Design phase, at which point it will be possible to provide enough information to the congregation to allow decision-making on the project by the entire congregation. A rough estimate is that design and construction will be 1.5-2.0 times the equipment cost.

Next Steps

NV-5 has provided us with a rough timetable for the next steps toward completion of the project:

1-2 Months Design
1 Month of permitting
1-3 Months construction

Thus, assuming that all moves forward without complications, we could envision our return to a healthy and energy/ecology efficient Meetinghouse approximately six months after we initiate the Design phase. Thus, ideally, the work could be completed before the onset of the cold season. In the interim, we will explore ways to gather safely, such as outdoors possibly with hybrid zoom/in-person formats.

Final Thoughts

UU Falmouth is ready for our next chapter, and our next challenges. We are strong, loving, and smart. A great combination for growth and fulfillment. One of the pieces of our future must include the stewardship of our building. It symbolizes our commitment to each other, to the community, and to our planet. I hope that this letter provides some insight into the hard work that your Board has invested in our future. We are planning a chance for dialogue in the very near future. Meanwhile, please don't hesitate to send me questions and comments, which I will share with the Board. Good health and a small carbon footprint to all!

In Fellowship,
Steve Treistman,
On behalf of your Governing Board