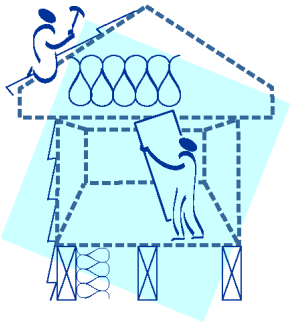

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To:	Ed Polus
Cc:	Dan Huntsha
From:	Jim Cavallo
Date:	November 29, 2018
Subject:	Level 1 Audit of the Community Presbyterian Church of Clarendon Hills

Thank you for showing us your lovely church on November 21st. We appreciate that you were able to meet with us and share your thoughts on the opportunities for energy conservation and efficiency at your beautiful facility.

As I mentioned in our discussion, the purpose of the Level 1 Energy Audits that Faith in Place provides is to identify likely energy improvement measures that either the congregation can capture within its own green team and maintenance staff or that the congregation can undertake through utility energy programs or directly with contractors. In all cases, we try to find actions which will save the congregation money that can then be used for purposes more closely tied to the congregation's primary mission, rather than high utility bills.

At Faith in Place, we view this energy audit as a starting point for a continuing process during which the congregation discusses what can be done in terms of energy efficiency and decides on energy efficiency actions to pursue. We hope that we can assist you throughout the process and serve as a resource to you and your green team. We would also like to help you communicate your successes to other congregations so that they can follow your good examples as a steward of our shared environmental resources.

During our visit, we discussed a number of energy measures for improved comfort, greater efficiency, and better energy control. I want to list those measures that we discussed and perhaps a few more that may be useful. Here they are:

1. Continue replacing the remaining older fluorescent lighting with LEDs: Replacing fluorescent tubes is often the greatest energy efficiency opportunity in houses of worship. Your church has replaced the older T-12 fluorescent lights with the better T-5s. You mentioned that you are in the process of taking the next step to better and more efficient lighting by switching to LED tubes. LED tubes have a couple of

advantages. Not only do they use about 30 percent less electricity of T-5 lights, LED lights last longer. And even more important from an environmental point of view, LEDs do not include the mercury that is essential to the operation of fluorescent lighting. Faith in Place works with a trade ally of Commonwealth Edison and can help you identify incentives that may apply to your lighting choices.

2. Eggcrate diffusers for ceiling panel lighting: When you are replacing ceiling light fixtures, you may want to consider eggcrate diffusers as an alternative to solid plastic diffusers. Eggcrate diffusers will direct more light on the surfaces or areas to be lit and there will be less heat build-up within the light fixture. With less heat build-up, the life of the tubes will be extended. The only place where eggcrate diffusers are not appropriate is in kitchen areas.

3. Bulbs in the sanctuary: We discussed the non-CFL lights in the sanctuary. Efficient bulbs for sanctuary lighting often are hard to find at most lighting supply stores. However we have found a source for energy efficient sanctuary lights that your congregation may want to consider. It is Church Interiors, Inc. They are located in North Carolina, but have a good web site at http://www.churchinteriors.com/retro-fit-lighting/.

4. Install occupancy sensors: Because many rooms in houses of worship are not used throughout the week, a problem will often arise in which lights will be left on for long periods of time. Occupancy sensors can be a great solution. Occupancy sensors work well in conference rooms, classrooms, and washrooms. They can also work well in some offices. Often congregations have members who are comfortable working with electricity and who can remove light switches and install occupancy sensors. This can be a simple, low-cost task that saves money.

5. Monitoring and reducing the energy usage of electric appliances: We spoke about the energy usage of small refrigerators and other electric appliances. A good way to find out how much electricity is used (and thus can be reduced) is to meter the electricity usage of the devices. If the congregation's green team purchased a watt-meter, like the "Kill A Watt" watt-meter, the congregation could measure the electricity usage of different electricity using devices in classrooms and around the building and discover which equipment is using high levels of electricity. After the green team has metered all of the devices in the facility, the green team could lend out the watt-meter to members of the congregation so that the congregants could improve the efficiency of their own homes. Watt-meter can be purchased for under $20.

6. Install programmable or web-accessible thermostats: We observed that some of your thermostats are not programmable. Programmable thermostats are particularly useful in houses of worship because energy can be saved during periods when the building is not in use but the temperature can be brought back up to a comfortable

level an hour or two before services or other regular activities. The newer web-accessible thermostats have a nice additional feature in that the temperature in a space can be monitored while you are away from the building and the thermostats can be changed remotely. Thus if an event is held at the church and someone inadvertently leaves the heat up or the AC on, you can change the setting to capture savings without actually being on site. ComEd or Nicor may have incentives for the purchase of new thermostats.

7. Box in the window air conditioners: We talked about the window air conditioners. It was said that the window air conditioners are left in the windows throughout the year. This can lead to discomfort and higher energy bills. If possible, the air conditioners should be removed from the windows and stored for the winters. If the air conditioners cannot be removed from the windows, a good option is to enclose the window units each winter with a tight-fitting, insulated box. The boxes should be insulated with one-inch thick rigid insulation.

8. Plans for replacing the boiler: The main boiler in the church appears to have received good maintenance over the years. It is, however, aging and will at some point need to be replaced. A plan for replacing your boiler would be a judicious action. Such a plan should include the type of boiler that you will install and the contractor who will install it. A good replacement option would be to have two or even three smaller high efficiency boilers replace the current large boiler. With two or three small boilers, the heating plant can better match the load during milder parts of the winter rather than always firing the one large boiler. Also with a high efficiency boiler, you will have an AFUE of 90 percent or greater. A 90 AFUE boiler will capture more of the heat content of the fuel that you purchase. Your current boiler has an AFUE between 78 and 80 percent. That means that 20 to 22 percent of the heat content of the natural gas purchased from the gas company goes up the chimney as waste heat. A 90 AFUE boiler would only waste 10 percent of the heat content of the fuel purchased.

9. Balancing your system: A current problem that you have appears to be related to balancing the space heating in the facility. It was mentioned several times that some areas of the church are excessively hot while others are cool. This should be investigated at your earliest opportunity by your heating contractor because when a facility is not correctly balanced it will both lack appropriate comfort and over use energy.

10. Installing a tankless hot water system: Tank water heaters often can place a heavy and unnecessary burden on houses of worship because hot water is used infrequently at some sinks or washrooms during the week. In a tank water heater, the water is repeatedly heated and cooled between calls for hot water. A good alternative is to replace any tank water heater when it finishes its normal useful life with a tankless, or

on-demand, water heater. A tankless water heater will only heat water when there is a demand for hot water. Some congregations have replaced their central hot water tank with a central tankless, natural gas water heater. Others have installed small, 120V electric tankless water heaters in washrooms near the point of hot water use. Both choices would be a good alternative to the older water heater that is currently in the church.

11. Caulk leaky windows: Your church has beautiful windows. Some of the windows, however, are inefficient and leaky. We have found that windows often do not need to be replaced to improve their performance. Many times, windows can be caulked at the perimeters and at the meeting rails to reduce air infiltration. The caulk that should be used is removable clear caulk, such as the caulk sold under the brand name Seal 'N Peel. One virtue of removable caulk is that it can be applied as cold weather arrives in the fall and peeled off when spring brings warmer weather.

12. Replacing the Weather stripping on exterior doors: As with leaky windows, doors can allow cold air to infiltrate and run up energy bills. We noticed that a few doors needed new weatherstripping around the perimeters. This will tighten the door, reduce cold air infiltration, and will improve comfort.

13. Opportunities for renewable energy: We briefly discussed the opportunity presented by installing photovoltaic panels on the flat portions of the roof of the church. This could be an excellent opportunity for energy savings. Faith in Place has worked with several congregations in the Chicago area that have had success with cost-effective solar projects. We would be very happy to introduce you to other congregations that have had good experiences with solar projects.

I hope these ideas are useful. I'd be happy to discuss them in more detail if you decide to pursue any of the actions.