

Bethany Beach Christian Church (Disciples Of Christ)

Bethany Beach, Delaware

GREEN CHALICE ACTIONS

Description of Facility Our small rectangular church building is comprised of over 90% open space for worship. In addition, there are 3 small separate rooms: office, kitchen and restroom.

Implemented Before Learning of the Green Chalice Program

- Well insulated walls
- Cathedral type ceiling is not insulated, but there is a 3.25" thickness of wood beneath the roofing materials. Although the R-value of wood is low compared to other insulators in the industry, it is not completely void of energy-saving abilities. One factor overlooked about wood as an insulator is the fact that it performs like a thermal battery. Since its mass is so large, it can store heat from the sun during the daytime and discharge this heat when it gets colder.
- Well insulated ceilings over the restroom and kitchen
- Double paned windows
- Programmable thermostats with lockable covers to prevent tampering. The building is routinely only used on Sunday mornings, three hours every Thursday for talking with the minister, two hours one Tuesday evening per month for board meetings and two hours two Tuesdays per month for Socrates Café, so it is not heated or cooled the rest of the time.
- Sanctuary ceiling lights can be turned on individually or in small banks over particular areas to avoid turning on lights which are not needed.
- Office, kitchen and restroom lights have individual switches and LED bulbs.
- A separate small electrical heating unit keeps the kitchen and restroom pipes from freezing in case the main heating system fails for some reason (such as our propane supplier not delivering soon enough).
- A 2015 Energy Audit of the Bethany Beach Conference Center by the University of Delaware included the church building; the audit found that the programmable thermostats were not optimally set.

Carbon Footprint

Using the EPA's online calculator, the BBCC carbon footprint (equivalent pounds of CO₂) has been determined for four key years:

- 2012 – last full year of heating with electricity: 19,628
- 2014 – first full year of heating with propane: 12,658

- 2016 – first full year with the programmable thermostats optimally set: 12,084
- 2017 – after a couple of months of improved procedures: 10,735

Implemented Since Learning of the Green Chalice Program mid-2017

(Note: comments in bold about items which were completed after we received recognition as a Green Chalice Mission.)

- Analyzed the settings on the programmable thermostats and determined that we could safely lower the off-hours winter heat setting from 55 to 50 degrees. This should reduce our propane consumption 34 percent based on the monthly average outside temperatures during heating season.
- Moved 18 gatherings/year from the church building to a meeting room in a Conference Center building so we no longer need to heat the entire worship space for several hours just to hold a two-hour meeting.
 - Nov. through April Board meetings
 - Mid-Nov through mid- April Socrates Café meetings
- Replaced our old unrepairable copier with a “green” copier. It has large plastic ink bottles which are recyclable when they are empty.
- Posted an “Exiting Checklist” so the last person leaving an event can ensure that all lights and equipment are turned off and all interior doors are closed to minimize the area heated when the building is not being used.
- Posted instructions on how to minimize the number of lights and fans used for specific events.
- Labeled all light and fan switches to prevent tuning on ones which are not needed.
- Removed the 150W floodlight bulb from the ceiling light in the office so nobody will turn on a whole bank of lights just to illuminate the office
- Segregated recyclable trash from non-recyclable trash according to the Delaware Solid Waste Authority (DSWA) guidelines and properly dispose of each.
- Essentially eliminated the use of non-recyclable coated paper/Styrofoam cups by encouraging congregants to keep personal washable coffee cups at church. **Storage shelf installed Feb. 2018 for the personal cups.**
- Reduced paper usage by the church and congregants by sending digital documents to congregants and encouraging them to read and file them in digital form.
- Since the sanctuary’s cathedral ceiling is not insulated, we investigated the possibility of putting insulating material beneath the roof shingles when they are replaced in the spring of 2018. We found that this was not recommended for a high wind environment such as ours.
- **2017 Results – our carbon footprint was reduced from 12,084 in 2016 to 10,735 (-11%) for 2017.** 2018 should show further improvement due to changes implemented in late 2017 plus other planned changes.

- Window candles - 7W C7 bulbs (26) – since these bulbs are in photo - sensor fixtures, they burn all night and collectively use about \$135 of electricity per year. Replacing them with LED bulbs will yield a 7-month payback. **Replaced Feb. 2018**
- Ceiling fan lights – 40W B10 bulbs (16) – these lights are only used about 2 hours each Sunday, so they collectively only use about \$11 of electricity per year. Replacing them with LED bulbs would take 4.5 years to break even – we will use up our inventory of incandescent bulbs first and then replace future burnouts with LEDs. LED bulb prices will probably decline over time, and they may also become more efficient, so inventories should be minimized.
- Dimmable ceiling flood lights - 150W bulbs (14) separated into 3 banks of 4 and 1 bank of 2; replacing all of them with equivalent LED flood lights would cost \$292 at Jan. 2018 prices. In addition, the 4 dimmer light switches would need to be replaced with ones designed for use with dimmable LED bulbs at a cost of \$320. The flood lights are seldom needed for Sunday mornings and the building is rarely used at night. We will use up our inventory of incandescent bulbs first, and then convert the north front bank of 4 lights to LEDs (and buy one dimming switch) – this bank of lights are the ones which illuminate the pulpit and are needed the most on “gray” days by the pianist, lay Worship Leader and Pastor.
- Fluorescent tubes above windows – 34W bulbs (20) - – these lights are only used about 2 hours each Sunday, so they collectively only use about \$12 of electricity per year. Replacing them with LED bulbs would take 21 years to break even – we will use up our inventory of incandescent bulbs first and then replace future burnouts with LEDs.
- Installed solar-powered LED lights to illuminate the church’s sign rather than repair/replace the hard-wired fixtures after they were flood-damaged. **Feb 2018**

Path Forward

- Provide each congregant with the DSWA guidelines for their home use.
- Add Green Chalice info to BBCC web site
- Provide members/friends with information to help them go “green”.

Further Study Needed

- The Conference Center Management Committee investigated adding solar panels to the optimally positioned south-facing roof of the church building. Such an array of solar panels would produce much more electricity than the church building consumes (\$1,000 per year). Since Delmarva Power treats each building of the Conference Center as a separate entity, the excess electricity which would be generated by the church building solar panels could not be used to offset the electricity used by other on-site buildings. This makes the project uneconomical. We will look into other routes such as:

- getting Delmarva Power to change their seemingly obstructionist rules re conversion to renewable energy sources by contacting our state representatives or by filing a complaint with the PSC or just describing our situation to Delmarva Power and asking them how we can make this good thing happen
- getting Delmarva Power's approval to install solar panels on the church building and let them provide electricity only to the Tabernacle (dining hall, kitchen, office, restrooms and meeting room), or
- determining if a ground mounted solar panel array could be used to provide electricity to multiple buildings. Finding appropriate ground space for such an installation may not be possible.

Communications

Glenn Chisholm has subscribed to the Green Chalice monthly newsletter.

Bethany Beach Christian Church

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