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Former Pittsburgh Bishop Dorsey W.M. McConnell and Rev. Noah H. Evans bless the solar panels installed at St. Paul’s Episcopal Church in Mt. Lebanon, Pennsylvania. (Courtesy St. Paul’s Episcopal)



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GROWING A GREEN CHURCH

Editor's note: *This story, originally published by Sojourners, is part of "Growing a Green Church," an ongoing series focused on churches' efforts to steward their buildings and land effectively in the context of a changing climate. The project is produced in collaboration with The Christian Century, Episcopal News Service, Faithfully Magazine, National Catholic Reporter, and Sojourners, with support from the Solutions Journalism Network and funding from the Fetzer Institute. Find more stories in the series here.*

In 2014, Shepherdstown Presbyterian Church in West Virginia installed an array of 60 solar panels with a scrappy financial model, hoping to lead by example and inspire other communities in Appalachia to transition to solar energy as well.

Five years later, across the West Virginia border, the congregation at St. Paul's Episcopal Church in Mt. Lebanon, Pennsylania, also wanted to take a climate action with community impacts. Their building is located on the ridge of a hill with great sun exposure. So, in 2019, the church installed a solar array. Church rector Rev. Noah H. Evans and the bishop of Pittsburgh blessed the solar array.

"Our congregation decided to go solar in order to be an inspiration to other communities to pursue solar," Evans told Sojourners.

Nationally, churches install an outsized share of the solar market — houses of worship host a solar array at three times the rate of other non-residential buildings, according to a report by the Lawrence Berkeley National Lab. Across the country, nearly 2 percent of congregational buildings have installed a solar energy system.

But in the region where coal has permeated identity for over a century, churches are slower to buy in. The challenges of getting solar adoption in Appalachia are manifold. Experts have found that politicization of green energy, concerns for the employment of coal workers, and lack of policy incentives that assist low-income areas all reduce the spread of solar. In Appalachia, less than 1 percent of houses of worship have solar.

When it pursued a solar project, Shepherdstown Presbyterian Church congregant Dan Conant, imagined the church would use a third-party ownership model — where a solar company owns the system and receives the 30 percent tax credit to bring the cost down for the church. The model is common in other states; in Illinois, 45 percent of houses of worship used the model for their installation. But West Virginia's regulatory landscape didn't allow for it at the time.

So, the church had to get creative. Instead, the church set out to own the panels outright. To raise money, about 100 homes and businesses in the community volunteered to install smart-control water heater devices which reduces the use of the power grid during peak usage hours. Mosaic Power, where Conant worked, installed the devices at no cost. The energy saved paid for the cost of the devices and earned money for home and business owners. The volunteers in turn donated that money to the church, which paid for the 60 solar panels in less than a year. The church paid $1 (a formality), and homeowners saw no cost increase in their bill or a noticeable effect on their hot water supply.

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Since then, the Shepherdstown Presbyterian solar panels have generated enough electricity to prevent 14.8 tons of carbon dioxide emissions annually. Furthermore, the water heater devices save on average about 1.5 tons of CO_2 emissions per

household, which means the community impact of the church's project is even greater — equaling about 167,000 pounds of coal that would have been burned each year, according to the EPA's greenhouse emission calculator. (The calculator uses national averages.)

With the experience, Conant launched Solar Holler, which today is the state's largest solar panel installer.

"A central goal for this work was to build community — among church members and with the larger community — and I think we did so," Than Hitt, the chair of the church's earth care team, told Sojourners.

Back in Pennsylvania, St. Paul's used its position in the community to garner attention for solar.

The blessing of the array aired on the local CBS news station and appeared in the Pittsburgh Post-Gazette and Mt. Lebanon Magazine. The church also hosted a forum on solar, including a state representative — one of its members — as well as advocates and industry representatives to discuss policy incentives for solar.

Evans said he has seen the community impact of adding solar to their church.

Once the church did it, three parishioners were inspired to add it to their homes, including the assistant rector.

Recently, the municipality has begun adding solar panels to government buildings; Mt. Lebanon Public Library just installed one array. Though no one on the city staff remembers discussing the church directly, Ian McMeans, city assistant manager and planner, pointed out that the church itself is located on a highly traveled road in a large, nationally registered historic district. While many people see the church, the solar panels are on a section of the roof not visible from the road.

Evans has done six presentations on solar for local synagogues and churches, mostly through Interfaith Power & Light. Though, he said so far none of the faith communities he's spoken with have completed a solar installation.

For churches that can find the initial capital needed to fund the project, the financial benefits often pay off. The solar array on Shepherdstown Presbyterian supplies about a third of the church's electricity needs. St. Paul's Episcopal Church said it saves about $1,000 per month in electricity.

Challenge and opportunity for churches

Bolstered by new federal incentives in the 2022 Inflation Reduction Act, researchers Galen Barbose and Sydney Forrester want to leverage the potential for more churches to seed communities with solar, particularly in communities that are lagging behind. Their study with the Lawrence Berkeley National Laboratory found that, of the 2,509 U.S. houses of worship that host a solar array, most are in neighborhoods with higher income and higher educational attainment.

Unlike the Shepherdstown church, the Mt. Lebanon church paid $48,000 for 51 panels, raising the funds through a capital campaign.

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Katie Ruth, the executive director at Pennsylvania Interfaith Power & Light, said that cost is still the biggest challenge for many congregations, who do not have large assets or high-income earners in their congregation.

Further, many older buildings may need a new roof before they can even consider adding an array. "Roof repairs are very rarely covered by funding [opportunities]," said Ruth.

But the financial feasibility of solar has changed dramatically since Shepherdstown Presbyterian scrapped together their array. If the church did the project today, they'd qualify for a 30 percent direct payment from the federal government — an IRA provision that allows nonprofits access to the same amount as a tax credit benefit for other entities. Furthermore, under environmental justice provisions, an entity could receive an extra 10 percent if the project is in a low-income community and an additional 10 percent if the project is in an "energy community," such as places with closed coal mines or plants.

Conant lobbied for the provision for the last nine years. For most churches where Solar Holler works, he anticipates they will likely be able to receive all the incentives and cover 50 percent of their costs. Congregations will have to find the rest of the funding, through fundraising, special offerings, or loans.

"The IRA is the single most important piece of legislation to date for solar development, particularly in Appalachia," he said. "There's literally never been a

better time for a church in Appalachia to transition to solar."

Studies have found solar adoption is contagious. There's a ripple effect in communities adopting solar following a referral by a neighbor or friend. Research on residential solar shows that adoption of the technology spreads in two ways: word of mouth and visibility. This week at a science conference, Tufts students presented a finding that solar grows faster in communities where a house of worship has adopted solar, though the researchers haven't yet established why.

Eric O'Shaughnessy, an independent renewable energy researcher and consultant, is examining how solar adoption might spread from non-residential buildings to communities, and he's particularly interested in churches. If congregations tell their communities about solar will more residents choose to install as well?

Plus, churches are often ideally located with large roofs. "There's good reason to believe if you're a homeowner and you see [solar panels] on a business or a church, maybe that could influence you," O'Shaughnessy said.

In Appalachian states, with over 54,000 churches, that's a lot of potential growth.

Solar Holler has installed 1,300 projects in other churches, nonprofits, homes, and businesses throughout West Virginia, but the company has shifted its focus to growing the workforce of electricians trained as solar installers. Based on the predicted uptake of solar, Conant estimates West Virginia will need 7,000 more electricians trained in solar installation in the next 10 years.

"West Virginia has given everything to power the rest of the country for the last 150 years," Conant said. "We want to make sure that as we build out clean energy for this century, that we're not leaving behind our entire swath of the nation."

This story appears in the **Growing a Green Church** feature series. View the full series.