

Project Proposal Name

Solar array, roof replacement and complete Air conditioning project

Brief, one sentence summary of the project proposal

Fund Part of the project to replace the flat roof, complete the air conditioning of the building and put a solar array on the new roof.

Total amount Requested

\$200,000

Other Funding Sources and Amounts to be Contributed

The total cost of this project is projected to be \$500,000. \$200,000 from Rose's gift; \$100,000 from the funds left in the previous capital improvement campaign; \$100,000 from a fund drive for these projects; and the remainder, \$100,000, to be borrowed from the church Endowment, which is being established. I suggest the loan be at a rate of 2% interest. This loan would be repaid by the reduced electric bill due to the solar array and the Xcel incentive paid to POP for the solar energy. I created a spread sheet showing that a loan of \$100,000 would be fully repaid in 17 years. The array has a 25-year warranty.

Detailed Description of Grant Proposal

A) The flat roof has reached the end of its life and is leaking. It needs to be replaced reasonably soon. It will be replaced with more insulation to adjust the pitch, for better drainage.

B) To complete the air conditioning of the building, I am quoting an email I received from Dan Neujahr:

"The last obstruction in the buildings conversion to a fully air conditioned building is the conditioning of the building corridors. The corridors have never had any HVAC as with heat it bleeds from the exterior rooms and heats the halls. You can't cool a building with the same strategy. So it's time to install a roof top HVAC unit above the hallways that intersect EW & NS outside the office ceiling. This is right in the middle of the "new Roof" and because of warranties can't really be added at a later date. And will change the solar layout. With a new HVAC unit comes ductwork down the two hallways. So this is also the time to address the 1950s look to the halls and upgrade to modern ceilings and modern lighting and code compliant smoke detectors. The other item is an interior roof stair. This is a life safety item that has been written into the code since our last major remodel. Our HVAC filters on roof top units need to be changed more often than they have been. But due to the challenge of hauling a ladder and the dangers in using ladders, maintenance has been suspect for some time now. Along with the corridor updates is the main Daycare/office entry doors. They were installed in 1986 and are completely worn out. They have been patched and repaired numerous times but they are no longer code compliant and are junk. And an energy saving vestibule is also a code issue that needs to be addressed at this time. These are all related and driven by "just installing a new roof" The vestibule would save considerably on wasted energy washing out the doors as well as keep all the dirt washing in from the parking lot from ending up in the HVAC unit filters in the West hall mechanical room."

C) When the roof is new there is potential to save energy and money by investing in a solar array for the flat roof. This is because you don't want to pay for the solar array to be moved when you replace the roof. Solar arrays on flat roofs are the most cost effective solar arrays. Solar arrays on flat roofs don't

penetrate the roof surface. There is a program with MN interfaith power and light, MNIPL, that will put a solar array on our roof that will save the church money and decrease our carbon footprint. They have negotiated a deal with Collective Sun that will pay for the solar array. The church will sign a contract at a fixed cost at about our current rate for electricity for the next 6 years after that the church will own the array. This is done by the church paying 88% of the cost of the array. All the energy from the array goes to the church at no cost. The roof and array have 25-year warranties. The inverters for the array have a 15-year warranty and cost about \$10,000 to replace. With the solar array, the cost for energy used each year would be \$1767 instead of \$6330. In addition, Xcel would pay us 0.034 cents per kwh or \$2375 per year. The cost for demand charges would go down by about 7% to \$4924. Thus the total electric bill would be about $\$1767 + \$4924 - \$2375 = \4316 . This decreases the electric bill by \$7309 for the first year.

Before the solar array can be installed, an engineering assessment of the roof and the current electrical system is needed. This is to insure that the roof can handle the additional weight and that the energy from the array can be fed to the current electrical system at the church.

Who is the "target community" being served?

Prince of peace members and the day-care are served by having a roof that doesn't leak and an air conditioned environment. Everyone in the world benefits from the reduced carbon foot print. The solar array will make a statement to members and visitors that POP takes seriously its responsibility to protect the environment. A solar array of this scale on a flat roof is much more cost effective when compared to arrays on individual houses. Also, many houses are not good candidates for solar because of the house orientation and/or shade trees. Thus, this project allows people a good way to invest in solar energy.

How can PoP members be involved?

This project is complicated, so it needs some oversight to insure it is successful. A capital improvement committee should be formed to oversee the project. Members should include Dan Neujahr, Russ Stolle, myself and one or two more volunteers.

We will have a fund drive if this is approved and I could lead that. I could use a couple of people to help with this. I am assuming it would be a low key drive. People who are interested in solar energy, a roof that doesn't leak and a comfortable environment would contribute what they can.