Q&A 4 Solar@BLC

Question and Answer Session **Sunday, Feb. 11 – 11:30am**

In 2012 Bethlehem created a new vision with 5 vision focus areas. The fifth and final of those areas, "Creation Care and Outdoor Ministry," has not yet been actualized in significant fashion. In October of last year, Bethlehem got connected with an organization called Solar Faithful from a synod webinar. Ever since, a **BLC "Solar Subcommittee" (consisting of Norm Fred, Scott Farley, Dale Wentzloff, Pastor Paul and Paul Wiemerslage)** has been working with Solar Faithful, church Council, and a local roofing company to explore rooftop solar power to (1) improve our building, (2) save money and (3) bring home our Creation Care vision. **We believe now is our chance to do just that.**

Simply put: at a time when BLC needs a new roof, this roof-and-solar project could do something important AND save more than any other capital improvement or investment we could make. We hope you will explore this with us!

Key talking points for our meeting at BLC:

- For **Care of Creation** (God asks us to honor creation, honor our neighbors and kids, also in our strategic plan and vision from 2012)
- For **Deferred Maintenance** (we need a roof)
- For **Fiscal Responsibility** (cheaper in the short term (rebates) and long term (energy savings))

Supporting Info:

- **Testimonials** (also found inside this handout)
- Responses to questions about roof integrity, insurance, and panel quality, etc
- **Q & A with Rob Rafson from Solar Faithful, virtually or in-person**

Budget Breakdown of 1 (our preferred) or 2 options.

Who Are Solar Faithful and Chart House Energy (CHE)?

Chart House Energy is an independent power producer providing discounted, emission-free electricity to governmental, commercial, and private customers, through developing, owning, and operating sustainable clean on-site energy generation systems, an alternative to fossil-fuel systems, thus creating value to the consumers and the environment. Distributed sustainable power generation stabilizes grid power, reduces peak power demand, and reduces line losses of remote generation facilities.

Solar Faithful is a subsidiary of CHE whose mission is to provide solar to churches and nonprofits with a similar care for Creation. (See other handouts for more info.)

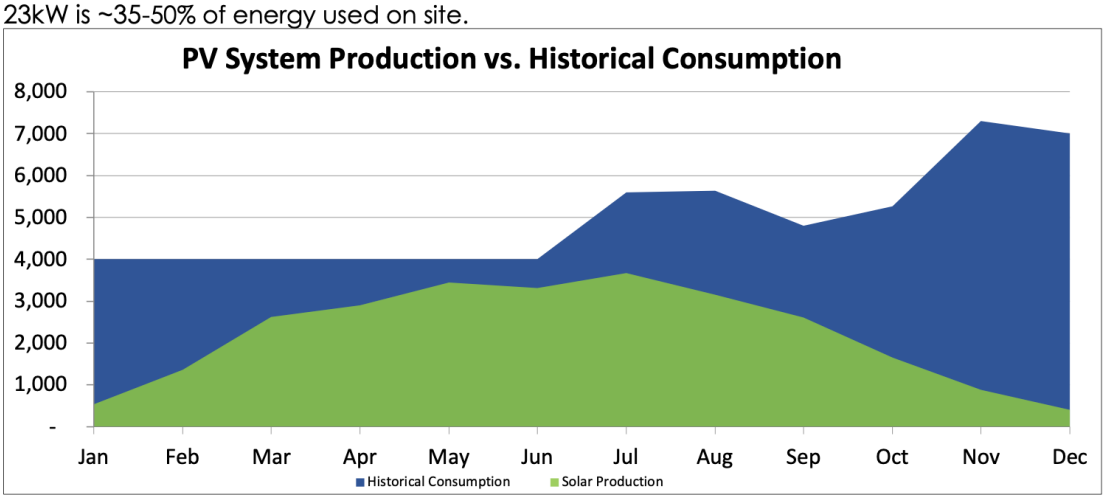
Additional supporting materials are available for:

- *Make/model of solar panels (made in the U.S.A.)*
- *Q & A thus far between the solar team and Solar Faithful*
- *Information about the history and mission of Chart House Energy and Solar Faithful*

Proposed 23kW Solar Array

How much energy is 23kW?

23kW is ~35-50% of energy used on site.



Testimonials (from other Solar Faithful Churches)

Gathered by Norm Fred*

Notes of interviews with Michigan Churches with SOLAR Installation by Solar Faithful

Five Questions we asked each church:

1.) Did you purchase the panels or make a Power Purchase Agreement (host the panels)?
2.) How would you rate the solar process, and have you seen a noticeable reduction in utilities?
3.) What additional costs (e.g. insurance) or benefits (e.g. leadership, creation care) did you consider or experience?
4.) What advise would you pass along to our church looking to work with Solar Faithful?
5.) Is there anything else you would add that might help us make our decision about Solar?

Trinity Church (AME) - Rev. Lila Rose

Martin-Lansing, MI 48911 - via Power Purchase Agreement (PPA)

1. They did not purchase the panels at all. It cost them ZERO dollars. ZERO!!! He is on the Church's BOD and when he heard about it, it seemed like a "No Brainer" They can purchase the panels in 5 years for 75K but he doubts they will. They have 56 panels on a flat roof that are hidden from view. They have been there for 4 months. They have saved about $70 / month so far. Not great but ok. It's free money. Their biggest concern is that it's a 25 year contract and no one knows what the future holds.

2. Installation did not affect the church's function at all. No problems so far. Rob Rafson worked with them and was great. Rated A1+. Very good. They used Charter House Energy to install the panels. Good job. No problems. They worked with their power company Lansing Board of Water and Light. They had no problems with the permitting process. They had a special church service and dedication of the solar panels and made a big deal out of it. Good idea!

3. It was Zero cost to them – Nothing! **Their motivation was simply that it was a good idea**. To help, they got all LED lights for the church and energy efficient appliances where possible. They are not a rich church. Their insurance did not go up.

4. He suggested we do it as soon as possible because there will be delays and we need to have it installed and up and running for the summer months. Otherwise the results will be disappointing the first year like theirs. Getting a new roof could delay our installation of the panels.

5. They ordered the panels at the end of Covid and supply chain problems delayed the installation for a long time. The panels have been up and running for only 4 months. That's mostly Winter and late Fall months. That's a year or more delay. Hopefully we will do better. They had a lawyer read the contract and approve it before signing. Norm's note: **That's the second church I have interviewed that suggested having a lawyer involved.**

First Lutheran (ELCA) - Pastor Bill Uetricht*

1206 Whitehall Rd, Muskegon, MI 49445, 231-744-1522 (PPA)

**Talked to Pastor Paul*

First Lutheran has done a PPA (Power Purchase Agreement) with no money down. "When all is said and done, we see 7-8% off our electricity bills [thus far, since September 2023 install]" First Lutheran's panels cost about $175k and can provide 87% of the power the church needs. From a previous conversation, Bill told [Pr. Paul] if they would have purchased the panels=, the church would have saved about $500 on utilities in September (for example), and their total monthly bill is usually $1,100-1,200.

Ferry Memorial Reformed (RCA) - Pastor Raully Donahue

Montague, MI 49437 - via Direct Purchase (DP)

1. **They purchased their panels outright with a 50% rebate from the Federal Government with the help of Solar Faithful.** They DID NOT get a new roof.
2. **Their Utility costs are zero right now** but they are into it full time for only 4 months. They have 3 buildings and the panels provide the electricity for all three. *Their biggest problem was that having three buildings*, the balancing of the needs of each building was a problem and they had to have special work done to do that right. And every time they made a change, the power company had to inspect the work and sign off on it which took a lot of time. *We won't be bothered by that.*
3. **There was a slight increase in their insurance.** But they figure it will take 6 years to start to pay for themselves. I didn't understand why that was but I wrote it down anyway. Seems to me that the first time the bill is lower it was paying for itself. Maybe he meant the additional cost of all the changes to accommodate three buildings increased the cost enough to take six years to recoup. The City Manager is a solar engineer and he is a member of the church. He also brought solar to the entire town of Montague, MI and many of the members have solar homes. So their decision was easier than ours will be. They were sold on it 100%.
4. **Solar Faithful was very helpful and did a good job and the members were happy** with how they handled the installations.
5. **It was a positive experience.** Their only problem was the delays with changes and inspections because they have three buildings which slowed benefiting from the panels a few months. Every new adjustment and small change required a new inspection which took a lot of time.

Faith Lutheran Church (ELCA) - Pastor Bruce Thorsen

Okemos, MI 48864 via Power Purchase Agreement

1. **They did NOT purchase their panels but are buying the energy at reduced cost from the installer.** The panels were free for them. They DID get a NEW roof which they were planning on anyway and they did NOT get a reduction in the cost of the roof. 42 panels on a 40 x 40 roof. It took Consumers Energy 6 months to complete the inspection and sign off on the panels to be connected to the grid. That was a big problem for them.
2. They have only had the panels up and running since November 2023. So no improvements in the utility bills yet. They do **work well on sunny days and supply almost all the needs of the church on sunny days.**
3. **Insurance did go up, but the Solar Company absorbed that added expense.**
4. The installation was smooth and the function of the church was not interrupted.
5. Added **advice is to have a lawyer** be on the committee or be available to the committee because the quote and the final fees were not the same. We don't want to have to sue the Solar Company to hold them to their quote.

Pastor Bill Uetricht of First Lutheran in Muskegon says installing solar panels is one way of fulfilling their mission.

"What we say is that the world is not ours, that the world is a gift," he said. "And if it's a gift, then our call is to care for it, and it's clear that we haven't been caring for it very well. And old technologies have contributed to that lack of care. So it only makes sense that we would be at the forefront of encouraging alternative energy sources."

Proposal & Cost

To the right is the latest proposal by Solar Faithful, plugging in the cost quoted to Bethlehem by Northshore Roofing for the Fellowship Hall (FH) roof ($31,314) and the cost of the solar panel array ($76,424). Both are before the 30-40% government rebates. The first 30% of the Federal rebate is guaranteed, and the additional 10% is essentially first-come, first-serve each year, inspiring BLC not to delay.

Additional context for each proposed option plus other costs (in our own spreadsheet) below:

•**Option 1 essentially costs BLC nothing,** providing TC Light and Power free real estate for its panels on our roof (and allowing investors to finance and profit instead of BLC)*...**Pro** - it's free for BLC; **Con** - we save only about 8-10% on power/year for the life of the roof and panels)*

•**Option 2 has Bethlehem purchasing the panel array outright...** ***Pro*** *- we save 40-50% on power for the projected 35-40-year life of the roof and panels;* ***Con*** *- BLC provides $106k upfront for roof and panels, receiving 30-40% of that back in a few months from rebates.* (With the sale of the rental house last year, we have the liquidity to do this. The rebates are impressive, and ***this option is the strong "best option" recommendation of the BLC Solar Subcommittee.****)*

•**Option 3 is somewhere in-between,** where Bethlehem decides to finance the panel installation, paying more in interest for the array...***Pros*** *- we still benefit from solar and roof rebates and need to pay very little upfront unless we make a healthy down payment;* ***Con -*** *we save about $18k less overall than Option 2, but still save much more than Option 1.* This is probably the 2nd-best option.

Plan/Option	Cost w/Rebate	Antic. 25-yr savings	*40-yr sav.
1. Power Purchase Agreement (PPA)	$0	$32,332	41,384.96
2. Direct Purchase (DP) w/40% Rebate	33,328	$109,414	140,049.92
$ factoring $225/yr ins & O&M		$103,789	131,049.92
***DP w/30% Rebate**	44,102	$98,640	129,275.92
$ factoring $225/yr ins & O&M		$93,015	120,275.92
3. Direct Purchase (w/borrowed funds 40%Rebate)**	51,787	90,955	116,422.40
$ factoring $225/yr ins & O&M		$85,330	107,422.40

SOLAR FAITHFUL

Solar Project Proposal – Bethlehem Lutheran Church

Solar Faithful is proposing the development of a **23 kilowatt (kW) solar system with roof**. There are two options: Power Purchase Agreement (PPA) or Direct Purchase.

Power Purchase Agreement (PPA)	
Up Front Cost	$0
First Year savings	$476
25-Year Savings	$32,332

Direct Purchase	
Total Project Cost	$107,738
Roof Cost	<$31,314>
40% Investment Tax Credit* (Rebate through Direct Pay Option)	<$43,095>
Net Project Cost	**$33,328**
First Year Savings (inc. O&M costs)**	$4,246
Anticipated 25-Year Energy Savings***	$109,414

Direct Purchase (using borrowed funds)	
Total Project Cost	$107,738
Roof Cost	<$31,314>
40% Investment Tax Credit* (Rebate through Direct Pay Option)	<$43,095>
Net Project Cost	**$33,328**
Total Interest (solar project cost at 7.5% for 10 years)	$18,459
Total Project Cost (inc. financing)	**$51,787**
First Year Savings (inc. O&M costs)**	$4,246
Anticipated 25-Year Savings (inc. all financing + O&M costs)****	$90,955

**Project should qualify for 30% tax credit plus an additional 10% from the Energy Community Bonus Credit*
***Assumes post-solar switch to General Services rate. With only 4 months of usage provided, savings are a very rough estimate.*
****$142,742 25-year energy savings - $33,328 net project costs*
*****$142,742 25-year energy savings - $51,787 fully financed net costs*

Solar Team Update: 2.20.24 (New Q&A results on reverse side) – Rev2

Additional solar testimonial (with a different vendor) from Norm Fred:

“Today I talked to Fred Elmore, the Solar Coordinator for Keswick United Methodist Church in Sutton's Bay. They are a small rural church on Center Hwy, at the top of a high hill, SE of Suttons Bay.

They have a 42 panel array that was placed in 2017.

They purchased their panels in an odd way since Rebates were not available to Non-profits back then.

They started a company owned by one of their Counsel Members who bought the panels and who got the Rebates. He sells energy directly to the Church at his cost and they benefit.

In 3 more years (10 years total), the panels will have paid for themselves and he will (by contract) turn over ownership to the church. That is legal and no laws were broken.

In 7 years, they have had 1 failed panel and one lightening strike which caused damage. Both were repaired free of charge by the company.

They worked with Consumers that allowed up to 100% of their power needs to be provided by the panels.

They are thinking about placing solar charging stations for EVs some day. No decisions have been made on that yet.

He mentioned REAP Grant Rebates but I think we are not eligible for REAP Grants. Someone else can check on that if they want to.

https://www.rd.usda.gov/programs-services/energy-programs/rural-energy-america-program-renewable-energy-systems-energy-efficiency-improvement-guaranteed-loans

He also gave me the Contact info for a business here that brokers CARBON CREDIT sales. That could make us a small amount of money every year if we are interested in investigating that avenue. They make about 200.00 a year on theirs.

https://carboncredits.com/the-ultimate-guide-to-understanding-carbon-credits/

He was very helpful and a pleasure to talk to and offered to help us if he could.”

Norm Fred
BRCS

(See reverse side for Q and A updates from the February 11th session.)

Question and Answer content from Feb. 11th Meeting

(adding to the 11 questions & answers already in print from previous meetings with the team)

Q12: Where are the solar panels manufactured?
A12: The Mission Solar Energy 430Watt panels are made in Texas, with almost all of its components made in the U.S. (there are some pieces from Taiwan, but those, too, might be made domestically soon.)

Q13: Can the solar panels be recycled when they reach the end of their life?
A13: Yes. Right now, 85-90% of the panel contents can be recycled. They're warrantied for 25 years with an expected life of 40-50 years. Solar Faithful can remove or replace panels as needed. There is an associated cost with removal beyond the warranty.

Q14: How do the panels do vs. hail?
A14: The panels typically fare well vs. hail, partly because of their slope (hail not hitting them directly/head-on) and because they can withstand up to golf ball-sized hail without substantial cracking (sometimes "microcracks" occur.)

Q15: How much will the panels degrade over time?
A15: By the end of the solar panels' life (~40 years or so), the panel usually functions at about 80% of its original efficiency, which is about ½ of a percent of degradation/year.

Q16: Can we upgrade our panels at some point in the life of the array?
A16: While the technology of the panels industry has improved over the last 50+ years, the efficiency of the Mission Solar Energy models installed by Solar Fatihful and Chart House Energy (CHE) is about as high as you can buy commercially. If/when any panels need replacing over the next 25-40 years (and statistically, at least 4 or 5 out of the 54-panel array will), new/replacement panels will be more efficient as technology improves.

Q17: How much of the south-facing FH roof surface would be covered by panels?
A17: Panels would cover a large portion of the surface, starting roughly 1.5 to 2 feet below the apex of the roof, extending to about 3 ft from the other edges (South, East & West). The array would be 54 panels, or 3 rows of 18, with each panel 41" wide x 82" tall (see spec sheet.)

Q18: Would our array be serviceable if Solar Faithful / CHE goes out of business?
A18: Yes. There are already hundreds of contractors in Michigan alone who can service solar panel arrays. Rob is already working with others to pass along his company when he retires, but doesn't foresee any issues with his company or this growing industry.

Q19: Does the quoted cost in the large 11x17 handout accurately reflect the costs BLC will have with the panels?
A19: The small spreadsheet the team made at the bottom of the back page (called "Proposal and Cost") attempts to include more than just the net cost provided by Solar Faithful in their proposal sheet, namely: (A) the church insurance costs of roughly $150-200/year and O & M maintenance predictions of service needed every 5 years to check fastening of bolts, etc. We attempted to predict that cost as roughly $225/year based on the information we had.

<u>NEW</u> Q & A from Solar Faithful w/ Solar Committee since Feb. STAR publication

Q7. Do we have a say in the brand, model/quality of the solar panels and frames?
A7. You definitely do. We model Mission Solar Panels- 425W which are not technically listed as Tier 1- I think mainly because they are a smaller manufacturer, but they make a great quality panel here in the US. But at the end of the day, you tell us, and I will come back with what we can get them for- to see if we need to change the price.

Q8. What happens beyond the 1-year warranty?
A8. CHE provides one year of workmanship/services. After the first year, CHE provides an operations and maintenance contract for review to the facility. The materials are warrantied themselves (25 years for panels, 12 years inverters and ops, 25 years for racking), but our work to service them is not. So we typically charge $20/kW per year for an O&M contract. I have attached that scope of services for you.

Q9. Who covers the installers of the panels for workers comp should they have a fall / accident - is that Bethlehem or CHE?
A9. CHE covers our installation team. I will provide insurance documentation upon request.

Q10. What is the actual panel install duration? (Other churches we spoke to said it took 4 to 5 days)
A10. That is accurate. Once we get all the permitting and interconnection paperwork sorted [that could take upwards of 4-6 weeks] and materials delivered, and we are actually on the roof, a project of [Bethlehem's] size at most will take 5 days to install. Likely less time. Then the electrical contractor needs to complete their work, which at times he works at the same time our guys are installing.

Q11. If solar is a "go" at Bethlehem, should we prep our congregation for possible certification and inspection delays, which could take 6 months? (our guess is yes, but hoping for a timely install...)
A11. Right now, I'm estimating that you would need to prepare yourselves for an all in installation of 3 months from contract signing. That gives me time to submit permits, interconnection, and order materials, plus installation. This also gives me wiggle room for weather delays and in case our electrical contractor is tied up. We'll say 3 months is our target time frame.

+ + +

Additional Qs to take away from this session:

Fact Sheet for Solar Possibilities at Bethlehem

Updated since FEBRUARY STAR

- **Our new boiler cost $32,500. Solar panels could cost about the same, saving BLC money for decades.**
- New sloped roofs (over sanctuary, FH), if bought *without* solar incentives, would cost approx. $110,000.
- **New roofs, if Fellowship Hall (FH) roof is bought w/a solar rebate, could cost ~ $97,000** ($13k saved)
- **Only if the panels are Direct Purchased (DP) or DP w/borrowed funds can we get a FH roof rebate.**

- **Electric bill savings**: though there are three different options for investing in panels through Solar Faithful, **the Solar Subcommittee strongly recommends the second option**, which requires **a net investment of as low as $33,000, yielding more than $100,000 in NET energy savings** over the next 25 years or more. (See separate sheet from Solar Faithful for details.)

- Current proceeds from house sale on Peninsula are $305k, held in a fully liquid, interest-bearing money market account. Even after purchasing a new boiler ($32,500) and roofs (~97,000) we'd have enough liquidity to purchase a solar array outright, receiving 30-40% rebates, OR finance w/a loan.

Some of the Q and A Council asked Rob Rafson from Solar Faithful at their 12/19/23 mtg:

Q1. Will the Bethlehem Fellowship Hall (FH) roof withstand the added weight of solar panels?
A1. Yes. The average pound per square foot load of a northern Michigan roof (beyond the roof shingles themselves) is at least 60lbs/square foot. Solar panels only add a weight of about 2.5 lb/sqft.

Q2. The roof we want to install has a 40-year-rated shingle. What is the average lifespan of a solar panel?
A2. The actual lifespan of both a high quality new roof and the panels can be as long as 40+ years, not the standard 25 often listed for either. For "Tier 2" (high quality) panels, panel efficiency degradation is roughly one-half of one-percent per year or about 12.5% after 25 years. So, even if you count for some degradation of equipment with a very conservative estimate, the "savings above investment" will likely be far greater than $100-110k after 25 years, with panels functioning above 85% efficiency even after the 25-yr mark.

Q3. Does Bethlehem have a straightforward building and roof setup for panel usage?
A3. Yes, Bethlehem has in many ways an ideal setup for a solar array with a roughly 15-20-degree south-facing roof of the Fellowship Hall (max. efficiency directional placement and slope) and a short distance from the roof to the main circuit box in the boiler room below for wiring.

Q4. Would a "Direct Purchase (using borrowed funds)" plan be tied to a mortgage for Bethlehem?
A4. No, any borrowed funds (if we chose to finance through Solar Faithful) would be leveraged only against the materials of the solar array and inverter setup, not via mortgage lien against our church property.

Q5. Are there other churches in Michigan who have installed this type of setup with whom we can speak about their experience?
A5. Yes, there are several. Rob Rafson has provided contact information for the Solar Faithful install sites, and all three of the sites already contacted have positive stories, to be shared at Feb. 11 Q& A or sooner.

Q6. Is now a good time to do this roof/solar upgrade?
A6. Yes. Bethlehem needs a new roof, and incentives for combined roofing/solar installs have never been better. Large-scale government incentives for petroleum-based and other/older sources of energy have been provided at the state and national levels for nearly a century. A 30-40% rebate on both panels AND roofs is new, and there is no guarantee that next years' leaders will keep incentives the way they are. In order to get the full rebates on panels and the Fellowship Hall roof, both would need to be installed within months of each other, preferably within the same calendar year, according to Solar Faithful.

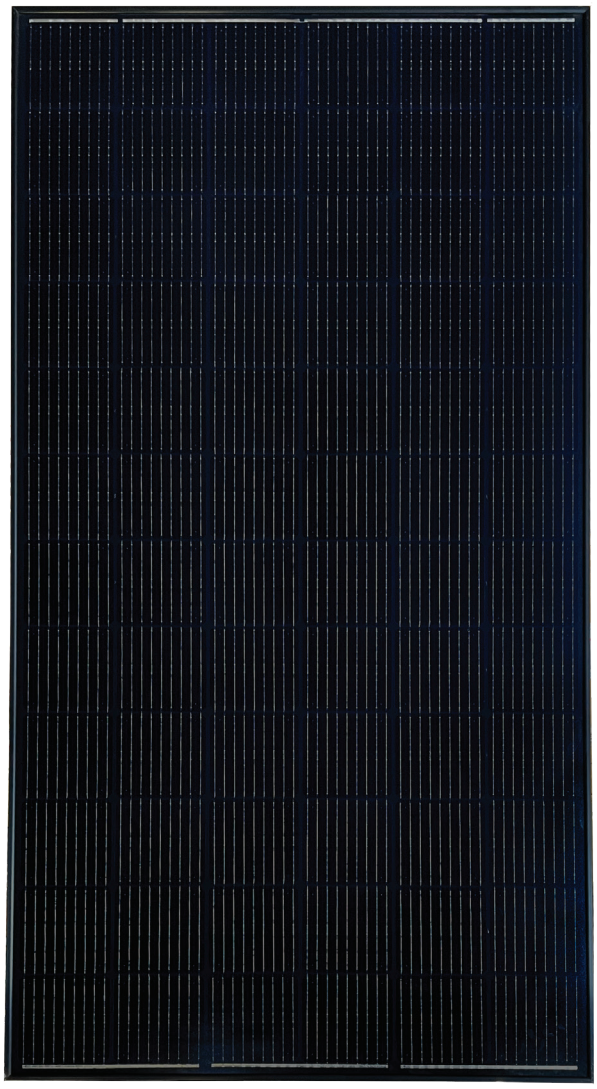
MSE PERC 72

MISSION SOLAR ENERGY

430W

Class leading power output

Positive Power Tolerance -0 to +3%



FRAME-TO-FRAME WARRANTY

Degradation guaranteed not to exceed 2% in year one and 0.58% annually from years two to 30 with 84.08% capacity guaranteed in year 25.
For more information, visit www.missionsolar.com/warranty

CERTIFICATIONS

CEC

UL 61730 / IEC 61215 / IEC 61730 / IEC 61701

If you have questions or concerns about certification of our products in your area, please contact Mission Solar Energy.

True American Quality
True American Brand

Mission Solar Energy is headquartered in San Antonio, Texas where we manufacture our modules. We produce American, high-quality solar modules ensuring the highest-in-class power output and best-in-class reliability. Our product line is tailored for residential, commercial and utility applications. Every Mission Solar Energy solar module is certified and surpasses industry standard regulations, proving excellent performance over the long term.

Demand the best. Demand Mission Solar Energy.

Certified Reliability

- Tested to UL 61730 & IEC Standards
- PID resistant
- Resistance to salt mist corrosion

Advanced Technology

- 9 Busbar
- Passivated Emitter Rear Contact
- Ideal for all applications

Extreme Weather Resilience

- Up to 5,400 Pa front load & 3,600 Pa back load
- Tested load to UL 61730
- 40 mm frame

BAA Compliant for Government Projects

- Buy American Act
- American Recovery & Reinvestment Act

MADE: Modules Assembled Designed & Engineered IN THE USA of U.S. and non-U.S. parts

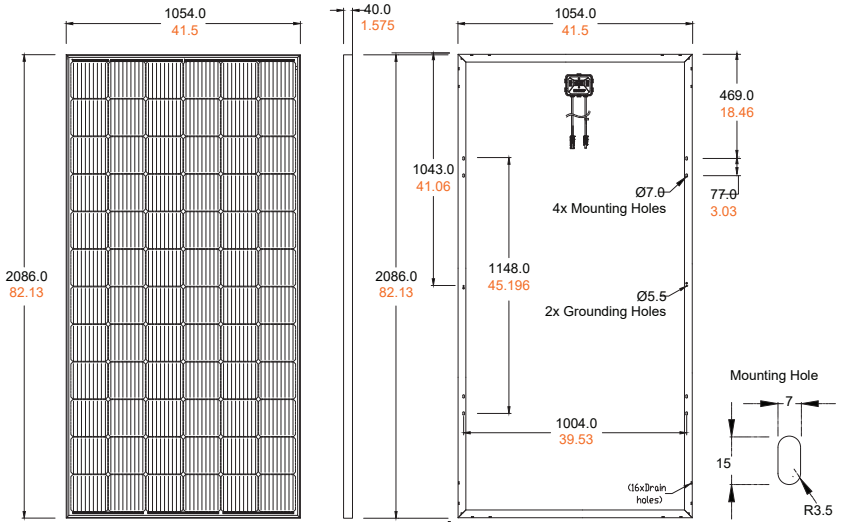
25 YEAR FRAME-TO-FRAME WARRANTY

Class Leading
425-435W

MSE PERC 72

BASIC DIMENSIONS

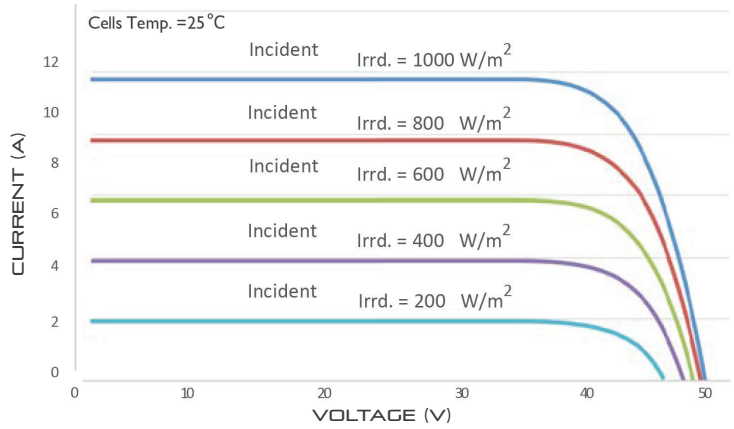
[UNITS: MM/IN]



CURRENT-VOLTAGE CURVE

MSE425SX9Z: 425WP, 72 CELL SOLAR MODULE

Current-voltage characteristics with dependence on irradiance and module temperature



CERTIFICATIONS AND TESTS

IEC	**61215, 61730, 61701**
UL	**61730**

ELECTRICAL SPECIFICATION

PRODUCT TYPE	MSExxxSX9Z (xxx = P_{max})				
Power Output	P_{max}	W_p	425	430	435
Module Efficiency		%	19.3	19.6	19.8
Tolerance		%	-0/+3	-0/+3	-0/+3
Short Circuit Current	I_{sc}	A	11.42	11.47	11.50
Open Circuit Voltage	V_{oc}	V	49.04	49.26	49.40
Rated Current	I_{mp}	A	10.78	10.86	10.90
Rated Voltage	V_{mp}	V	39.44	39.59	39.92
Fuse Rating		A	20	20	20
System Voltage		V	1500	1500	1500

TEMPERATURE COEFFICIENTS

Normal Operating Cell Temperature (NOCT)	46.08°C (±3.7%)
Temperature Coefficient of Pmax	-0.347%/°C
Temperature Coefficient of Voc	-0.261%/°C
Temperature Coefficient of Isc	0.043%/°C

OPERATING CONDITIONS

Maximum System Voltage	1,500Vdc
Operating Temperature Range	-40°F to 185°F (-40°C to +85°C)
Maximum Series Fuse Rating	20A
Fire Safety Classification	Type 1*
Front & Back Load (UL Standard)	5400 Pa front and 3600 Pa back load Tested to UL 61730
Hail Safety Impact Velocity	25mm at 23 m/s

**Mission Solar Energy uses quality sourced materials that result in a Type 1 fire rating. Please note, the 'Fire Class' Rating is designated for the fully-installed PV system, which includes, but is not limited to, the module, the type of mounting used, pitch and roof composition.*

MECHANICAL DATA

Solar Cells	P-type mono-crystalline silicon
Cell Orientation	72 cells (6x12)
Module Dimension	2,086mm x 1,054mm x 40mm
Weight	51.6 lbs. (23.4 kg)
Front Glass	3.2mm tempered, low-iron, anti-reflective
Frame	40mm Anodized
Encapsulant	Ethylene vinyl acetate (EVA)
Junction Box	Protection class IP67 with 3 bypass-diodes
Cable	1.4m, Wire 4mm2 (12AWG)
Connector	MC4 Staubli PV-KBT4-EV0 2/6II-UR and PV-KST4-EVO 2/6II-UR, Renhe RHC2xMzC

SHIPPING INFORMATION

Container Feet	Ship To	Pallet	Panels	425W Bin
53'	Most States	28	728	309.40 kW
Double Stack	CA	25	650	276.25 kW

PALLET [26 PANELS]

Weight	Height	Width	Length
1,450 lbs. (657 kg)	47.5 in (120.65 cm)	46 in (116.84 cm)	83.75 in (212.72 cm)

Mission Solar Energy
8303 S. New Braunfels Ave., San Antonio, Texas 78235
www.missionsolar.com | info@missionsolar.com

INFORMATION ON CHART HOUSE ENERGY & SOLAR FAITHFUL

(FOUND ON THEIR WEBSITES)

About Us

Chart House Energy is an independent power producer providing discounted, emission-free electricity to governmental, commercial, and private customers, through developing, owning, and operating sustainable clean on-site energy generation systems, an alternative to fossil-fuel systems, thus creating value to the consumers and the environment. Distributed sustainable power generation stabilizes grid power, reduces peak power demand, and reduces line losses of remote generation facilities.

Company History

Chart House Energy was founded in 2009 as a renewable energy independent power production company. It is Chart House Energy's goal to become the premier mid-sized REIPP. The company has completed almost 2 MW Solar PV projects, including the largest PV project in Michigan and Iowa. Before the formation of Chart House Energy, Rob Rafson, under Rafson Engineering had completed fifteen Solar projects including the largest (200kW) Solar thermal project in Illinois.

Our Business

As with mariners navigating uncertain waters, Chart House Energy will take best advantage of the winds of government initiatives including incentives, waves of technological changes, and currents of utility costs, and avoid the rocky shores of our uncertain economic times. Our goal is to chart a path through all of these changing technical, environmental and financial pressures to create an optimal blend of economic return and environmental impact, creating a pool of renewable energy properties that will produce a stable cash flow long into the future.

As an Independent Power Producer (IPP), Chart House Energy provides distributed grid-tie electric power from renewable energy sources, such as solar and wind to governmental, commercial, and private consumers. Chart House Energy business model is based on the Power Purchase Agreement, which secures electricity sales for a term of forty years, (depending on the individual agreement, thus ensuring steady cash flows from electric power sales for the period of the agreement. The renewable power systems currently used by Chart House Energy consist of PV (Photovoltaic) solar panel systems and in the near future will expand to wind turbines. In order to develop renewable energy systems, Chart House Energy leases real estate (roofs and/or land) from property owners, installs solar PV panels (or other renewable energy technologies) and sells generated electric power to the property owner, the tenant, or local power company.

Our Goal

Our goal is to provide clean, emission-free electricity tailored to the customers economic, environmental, and social goals. We strive for continued job growth in the solar and clean energy industries. We seek to empower individuals from distressed communities to obtain jobs that pay a living wage. We wish to create a pool of solar energy property which will provide ample benefits long into the future.

Our Mission

To be the premier, small-medium capacity independent power producer. To provide discounted, emission-free electricity from renewable energy sources to commercial and private customers, through developing sustainable clean energy generation systems, an alternative to fossil-fuel systems, thus creating value to the consumers and the environment. To provide jobs and energy to help develop local economies.

Where We've Been

Chart House Energy has grown steadily since its beginning in 2009 with two small projects. To date, we have installed over 4MW of solar capacity and continue to grow.We take great pride in the quality of our installations. Our goal is perfection in our systems, all while using the best quality modules, optimizers, and inverters in the industry. We strongly believe in US made products and services. Not only does the investment in US made products multiply the economic impact of solar investments, we have seen higher performance, lower failure rates, and better warranty service. We have tested US panels against other countries' panels and found the US panels outperform others. We will work with you to achieve your goals as a solar energy adopter.

Where We're Headed

Chart House Energy believes in increasing access and affordability to solar for all. Not only do we work with commercial and industrial consumers to achieve this goal, we also work directly with non-profits and municipalities.

- **Non-profits:** We offer special pricing or financing options for non-profit organizations. so making solar solutions financially feasible are a big help.
- **Municipalities and Government:** we work with local governments to implement solar projects for public buildings and spaces. This not only reduces energy costs but also sets a great example for the community.
- **Schools:** We partner with educational institutions to install solar panels on their campuses. It's a fantastic learning opportunity for students, and the schools can benefit from long-term energy savings.
- **Commercial Solar:** We collaborate with businesses to assess their energy needs and design custom solar solutions. Many companies are looking to go green, and solar power is an excellent way to do that.

Solar Faithful: Our Faith Based Projects

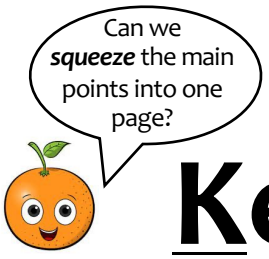
It's an interesting proposal that was brought to the church. How do we love our neighbors, love our community, love our world? How do we make things better? And this was an opportunity for us to see a couple benefits," said Colyn. "We can reduce our operating expenses a little bit, and reduce the pollution that goes in the world. That's kind of what we are as a church, trying to make the world a better place through everything in creation.

'Helpful to the environment and God's creation': Church in Grandville operates on donated solar panels

Solar Faithful aims to increase solar access among houses of worship and faith-based nonprofits. A key program objective is to build a more inclusive movement for climate justice and to tell a new story about who can access and benefit from energy transformation (energy efficiency and renewable energy). We educate staff and congregants, helping to make the connection between creation care and faith. Our educational offering builds an inclusive job training component to engage People of Color in the trades and lift people out of poverty in the communities where these projects take place.

Testamonial: As we at First Lutheran in North Muskegon dealt with Solar Faithful, we discovered that sometimes what seems to be too good to be true can be true. Their efforts to provide solar panels to faith communities has enabled us to make a dream come true, in a way that requires no money from us and in the long run will save us money on our energy bills.

- Pastor Bill Uetricht – First Lutheran Church | Muskegon, MI



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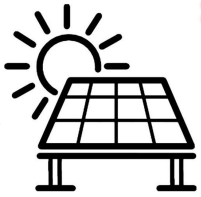
Keep It Simple Solar



Bethlehem needs a new roof on both the Sanctuary and Fellowship Hall (FH). Those roofs are over 25-30 years old and will cost less if replaced at the same time. BLC Council has voted to replace both roofs this year. A company recommended by several churches in Michigan (Solar Faithful, a subsidiary of Chart House Energy) can help us install atop the new FH roof **a 23-Kilowatt solar panel array to save BLC as much as $3500-4500/year in electricity, or upwards of $100,000 *or more* total** for the life of the FH roof and solar panels. The panels are made in the U.S.A. and rated to last 40+ years, the same lifespan of the highest quality roof shingle option selected by Council, from Northshore Roofing in Traverse City.

Bethlehem Council created a **"Solar Subcommittee" in the fall of 2023 (Dale Wentzloff, Norm Fred, Pastor Paul, Scott Farley and Paul Wiemerslage.)** The Subcommittee has researched Solar Faithful and its offerings for months, has gathered positive testimonials from other churches who partnered with Solar Faithful and Chart House, and sought the advice of an attorney to examine the vendor contract provided to Bethlehem and assess the feasibility of each of the solar options. If BLC votes to go solar, two options the solar committee and attorney recommends are listed below. We ask that you consider this opportunity.

•**Option 1** would **essentially cost BLC nothing.** This is called a **Power Purchase Agreement (PPA)** because while we benefit from a small percentage of power savings, investors will actually purchase the panels. In short, the PPA provides Chart House Energy free real estate for its panels on our roof… allowing outside investors to absorb our risk, insure the materials, and finance and profit from rebates and a larger portion of the electricity savings. ***Pro*** *– The PPA is free for BLC, and we do reap some solar savings here;* ***Con*** *- We save only about 8-10% on power/year, roughly $32,000 total for the life of the FH roof and panels.*

•**Option 2** would have **Bethlehem purchase the panel array outright,** called a **Direct Purchase option.** ***Pro*** *– With BLC owning the panels, we would save 40-45% on power for the projected 40-year life of the FH roof and panels. Though BLC would spend an additional $75k upfront, we would recoup as much as $42k of costs from federal rebates, making the solar panel array net cost as low as $33,000;* ***Con*** *- BLC spends $33+k more than we would have on the FH roof alone.* (With the sale of the rental house last year, we have the liquidity to do this and still have significant funds left over.) The rebates are impressive, the timing is right, and **this investment is emphatically considered the "best option" by the Solar Subcommittee.**

What might a vote/ballot(s) look like at our February 25th Congregational Meeting?

Here again, we want to "Keep It Simple, Solar." When we meet on the 25th, we plan to spend just a few minutes going over the basics above, then have the **president of Solar Faithful, Rob Rafson, available in-person** to answer any remaining questions. We will conclude with **one or two rounds of voting.**

The first ballot question may be something like:

Should Bethlehem Lutheran Church install solar panels on the fellowship hall roof? Yes or No

If the first ballot results in a Yes, we would proceed to a second ballot with this question:

Should Bethlehem move forward with Option 2 to purchase solar panels outright? Yes or No

Any necessary details on the second ballot/question can be put up on the screen at this meeting.

Additional solar project information is available in the STAR, church emails and the BLC Gathering Space.
Thank you for your time and consideration*… for stewardship, care of Creation, and financial sustainability.*

- Your BLC Solar Subcommittee (Norm, Dale, Paul, Scott and Pr. Paul)