



SOLAR FOR REDEEMER LUTHERAN CHURCH

THE LOGIC FOR
SOLAR

CO₂ Emissions Equivalencies either Prevented or Sequestered

Benefit your environment



ADDRESSES OUR FOCUS
AREA OF EARTH CARE:
THROUGH CARING FOR
GOD'S GOOD GREEN
EARTH

Through Solar at Redeemer

- Takes care of the environment
- Achieves Significant Financial Benefit
- Obtain a reliable source of energy



COST OF ELECTRICITY 2022

Jan	\$ 5,147.96	
Feb	\$ 1,753.66	
March	\$ 1,137.97	
April	\$ 601.89	
May	\$ 191.51	
June	\$ 196.93	
July		
August		
September		
October	\$ 997.06	
November	\$ 2,011.68	
December		
TOTAL	\$ 12,038.66	\$ 1,003.22



FRAMING THE FINANCIAL DISCUSSION

The Issue: The cost for heating and cooling represents nearly half of building operating costs (not including staff time) for Redeemer.

The Rationale for Change:

- Lock in current electric bill rates from Central Hudson. We're doing it now and the church has remained financially viable.
- Buy a solar array from a solar provider and pay the current rate and be responsible socially.
- Make the upfront investment, take on a degree of financial risk, but be socially responsible, and most likely achieve significant financial savings.

ELECTRIC BILLS W 4% INFLATION RATE

YEAR	ELECTRIC COMPANY COST/YR	cost/month
2022	\$ 12,038.66	\$ 1,003.22
2023	\$ 12,520.21	\$ 1,043.35
2024	\$ 13,021.01	\$ 1,085.08
2025	\$ 13,541.86	\$ 1,128.49
2026	\$ 14,083.53	\$ 1,173.63
2027	\$ 14,646.87	\$ 1,220.57
2028	\$ 15,232.75	\$ 1,269.40
2029	\$ 15,842.06	\$ 1,320.17
2030	\$ 16,475.74	\$ 1,372.98
2031	\$ 17,134.77	\$ 1,427.90
2032	\$ 17,820.16	\$ 1,485.01
2033	\$ 18,532.96	\$ 1,544.41
2034	\$ 19,274.28	\$ 1,606.19
2035	\$ 20,045.25	\$ 1,670.44
2036	\$ 20,847.06	\$ 1,737.26
2037	\$ 21,680.95	\$ 1,806.75
2038	\$ 22,548.18	\$ 1,879.02
2039	\$ 23,450.11	\$ 1,954.18
2040	\$ 24,388.12	\$ 2,032.34
2041	\$ 25,363.64	\$ 2,113.64
2042	\$ 26,378.19	\$ 2,198.18
2043	\$ 27,433.31	\$ 2,286.11
2044	\$ 28,530.65	\$ 2,377.55
2045	\$ 29,671.87	\$ 2,472.66
2046	\$ 30,858.75	\$ 2,571.56
2047	\$ 32,093.10	\$ 2,674.42
2048	\$ 33,376.82	\$ 2,781.40

Operating Costs at Redeemer

- In 2023
 - Building Associated Costs are anticipated to be \$27000
 - \$14000 of the Building Costs are Energy Costs

FIXING ENERGY COSTS AT 2024 ESTIMATED RATE

- What if we could lock in the electrical cost at 2024 rates?
- In 2033, Redeemer owns the solar panels free and clear
- It is possible that we could save \$424,582.04 – 130,210.15 = \$294,371.89?

YEAR	ELECTRIC COMPANY COST/YR	cost/month	Savings using fixed costs 2024	Amortized Solar
2022	\$ 12,038.66	\$ 1,003.22		
2023	\$ 12,520.21	\$ 1,043.35	\$ (500.81)	\$ 13,021.01
2024	\$ 13,021.01	\$ 1,085.08	\$ -	\$ 13,021.01
2025	\$ 13,541.86	\$ 1,128.49	\$ 520.84	\$ 13,021.01
2026	\$ 14,083.53	\$ 1,173.63	\$ 1,062.51	\$ 13,021.01
2027	\$ 14,646.87	\$ 1,220.57	\$ 1,625.86	\$ 13,021.01
2028	\$ 15,232.75	\$ 1,269.40	\$ 2,211.73	\$ 13,021.01
2029	\$ 15,842.06	\$ 1,320.17	\$ 2,821.04	\$ 13,021.01
2030	\$ 16,475.74	\$ 1,372.98	\$ 3,454.72	\$ 13,021.01
2031	\$ 17,134.77	\$ 1,427.90	\$ 4,113.75	\$ 13,021.01
2032	\$ 17,820.16	\$ 1,485.01	\$ 4,799.14	\$ 13,021.01
2033	\$ 18,532.96	\$ 1,544.41	\$ 18,532.96	
2034	\$ 19,274.28	\$ 1,606.19	\$ 19,274.28	
2035	\$ 20,045.25	\$ 1,670.44	\$ 20,045.25	
2036	\$ 20,847.06	\$ 1,737.26	\$ 20,847.06	
2037	\$ 21,680.95	\$ 1,806.75	\$ 21,680.95	
2038	\$ 22,548.18	\$ 1,879.02	\$ 22,548.18	
2039	\$ 23,450.11	\$ 1,954.18	\$ 23,450.11	
2040	\$ 24,388.12	\$ 2,032.34	\$ 24,388.12	
2041	\$ 25,363.64	\$ 2,113.64	\$ 25,363.64	
2042	\$ 26,378.19	\$ 2,198.18	\$ 26,378.19	
2043	\$ 27,433.31	\$ 2,286.11	\$ 27,433.31	
2044	\$ 28,530.65	\$ 2,377.55	\$ 28,530.65	
2045	\$ 29,671.87	\$ 2,472.66	\$ 29,671.87	
2046	\$ 30,858.75	\$ 2,571.56	\$ 30,858.75	
2047	\$ 32,093.10	\$ 2,674.42	\$ 32,093.10	
2048	\$ 33,376.82	\$ 2,781.40	\$ 33,376.82	
			\$ 424,582.04	\$ 130,210.15

BENEFITS TO REDEEMER AND EFFORTS TO GOD'S HOUSE

- Estimated Solar Savings over 30 years:
 - \$294,371 assuming a 4% inflation rate
- Redeemer has already moved from heating from Natural Gas to heating and cooling with heat pumps; aka mini splits.
- Are we ready to proceed w Solar and source our own electricity?
 - Fossil fuel FREE!



ERRATIC ELECTRICITY SUPPLY 2022

Jan	\$ 5,147.96	
Feb	\$ 1,753.66	
March	\$ 1,137.97	
April	\$ 601.89	
May	\$ 191.51	
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July		
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TOTAL	\$ 12,038.66	\$ 1,003.22

WHY THE ERRATIC PAYMENTS?

- Central Hudson has had a new billing system that has been unreliable.
- NYS allows multiple independent companies to be electricity suppliers.
 - The one providing Redeemer with electricity went out of business forcing Central Hudson to be both provider and energy deliverer.
- Redeemer has always paid on time and in full as billed

LIGHTHOUSE SOLAR PROPOSAL

Project Overview



System Size
58.8 kW DC

Panels
Q Cell G10 400 Watt
Inverters
Enphase Microinverter System

Estimated First Year Production
56,009 kWh AC

Consumption Offset
86%

WHY THE OFFSET?

- The trees along the exit driveway require trimming.
- Once trimmed the panels will generate 100% of the power needed.
- This adds ~\$10,000 to the project



NEW YORK SOLAR FARM



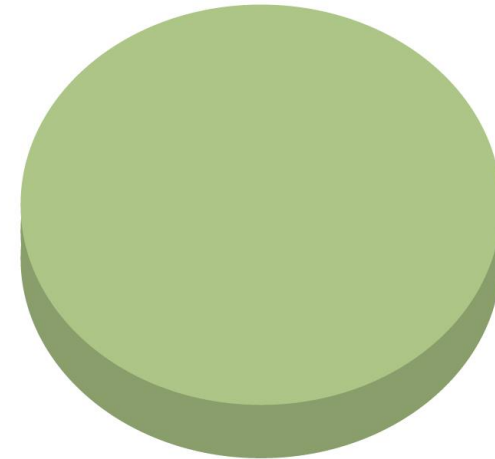
Solar PV System Rating

Power Rating: 60,260 W-DC

Power Rating: 52,490 W-AC-CEC

Energy Consumption Mix

Annual Energy Use: 68,002 kWh



Utility	-5,976 kWh (0.00%)
Solar PV	73,978 kWh (100.00%)

SOLAR PV SYSTEM COST AND INCENTIVE

LIGHTHOUSE SOLAR	
Solar Cost	\$184,950.00
NYSERDA Grant \$0.35/watt	-\$23,520.00
Direct pay - 30% ITC	-\$48,429.00
Net Solar PV System Cost	\$113,001

NEW YORK SOLAR FARM	
Solar Cost	\$198858
NYSERDA Grant \$0.35/watt	-\$21,091
Direct pay - 30% ITC	-\$53,330
Net Solar PV System Cost	\$124,437

ADDITIONAL PROJECT COST

- Tree Trimming to Eliminate any Offset - \$8-10,000

Federal Tax Credit - Opportunity & Complexity

- 30% Tax Credit or Direct Payment to Non-Profits
 - IRS Rules and Forms are yet to be written
 - Most likely new rules will be issued in February or March
 - If we charge “full steam ahead”
 - Advantage: Get in front of any new interest hikes
 - Disadvantage: May require additional financing until Federal Government issues direct payment

Financing through Mission Investment Fund, ELCA

- Loan Officer recommends loan approval for full funding including contingencies.
 - That doesn't mean we need to use all of it. The loan approval represents a line of credit.
- Initially only the amount necessary to initiate purchase and begin construction.
 - Interest only is paid during this period.
- When the project goes online:
 - the project is fully financed, amortized, and payments begin
- As additional monies become available and deposits are made; the remaining financing is re-amortized.

Financing the Project

LIGHTHOUSE SOLAR	
Base Price for Solar	\$ 184,950.00
NY Sun Incentive	\$ (23,520.00)
Total	\$ 161,430.00
30% Fed Credit	\$ (48,429.00)
	\$ 113,001.00
Down Payment	\$ (25,000.00)
	\$ 88,001.00

Lighthouse Solar					
Annual interest rate					
Annual interest rate			6.50%		
Loan term in years			10		
Payments per year			12		
% Govn't Payment			30		
Cost of Services		\$	88,001.00		
Down Payment			25000		
Period	Payment	Interest	Principal	Balance	
1	(\$999.23)	(\$476.67)	(\$522.56)	(\$999.23)	\$87,478.44
2	(\$999.23)	(\$473.84)	(\$525.39)	(\$999.23)	\$86,953.05
3	(\$999.23)	(\$471.00)	(\$528.24)	(\$999.23)	\$86,424.81
4	(\$999.23)	(\$468.13)	(\$531.10)	(\$999.23)	\$85,893.71
5	(\$999.23)	(\$465.26)	(\$533.98)	(\$999.23)	\$85,359.73
6	(\$999.23)	(\$462.37)	(\$536.87)	(\$999.23)	\$84,822.87
7	(\$999.23)	(\$459.46)	(\$539.78)	(\$999.23)	\$84,283.09
8	(\$999.23)	(\$456.53)	(\$542.70)	(\$999.23)	\$83,740.39
9	(\$999.23)	(\$453.59)	(\$545.64)	(\$999.23)	\$83,194.75
10	(\$999.23)	(\$450.64)	(\$548.60)	(\$999.23)	\$82,646.15
11	(\$999.23)	(\$447.67)	(\$551.57)	(\$999.23)	\$82,094.59
12	(\$999.23)	(\$444.68)	(\$554.55)	(\$999.23)	\$81,540.03
13	(\$999.23)	(\$441.68)	(\$557.56)	(\$999.23)	\$80,982.47
14	(\$999.23)	(\$438.66)	(\$560.58)	(\$999.23)	\$80,421.90

Add \$10000 for Tree Remediation

Lighthouse Solar					
Annual interest rate			6.50%		
Loan term in years			10		
Payments per year			12		
% Govn't Payment			30		
Cost of Services		\$	98,001.00		
Down Payment			25000		
Period	Payment	Interest	Principal	Balance	
1	(\$1,112.78)	(\$530.84)	(\$581.94)	(\$1,112.78)	\$ 97,419.06
2	(\$1,112.78)	(\$527.69)	(\$585.09)	(\$1,112.78)	\$96,833.96
3	(\$1,112.78)	(\$524.52)	(\$588.26)	(\$1,112.78)	\$96,245.70
4	(\$1,112.78)	(\$521.33)	(\$591.45)	(\$1,112.78)	\$95,654.25
5	(\$1,112.78)	(\$518.13)	(\$594.65)	(\$1,112.78)	\$95,059.59
6	(\$1,112.78)	(\$514.91)	(\$597.88)	(\$1,112.78)	\$94,461.72
7	(\$1,112.78)	(\$511.67)	(\$601.11)	(\$1,112.78)	\$93,860.60
8	(\$1,112.78)	(\$508.41)	(\$604.37)	(\$1,112.78)	\$93,256.23
9	(\$1,112.78)	(\$505.14)	(\$607.64)	(\$1,112.78)	\$92,648.59
10	(\$1,112.78)	(\$501.85)	(\$610.94)	(\$1,112.78)	\$92,037.66
11	(\$1,112.78)	(\$498.54)	(\$614.24)	(\$1,112.78)	\$91,423.41
12	(\$1,112.78)	(\$495.21)	(\$617.57)	(\$1,112.78)	\$90,805.84
13	(\$1,112.78)	(\$491.86)	(\$620.92)	(\$1,112.78)	\$90,184.92
14	(\$1,112.78)	(\$488.50)	(\$624.28)	(\$1,112.78)	\$89,560.64

Proposal: Fund Solar with a monthly cost of \$1200/month

- Obtain credit approval for a credit line including tree trimming, solar, and anticipated Federal direct payment
- Assuming an interest rate of 6.5%
 - Put \$25,000 down from the Weber Legacy Fund
- Borrow the necessary funds to jumpstart the project and avoid increases in interest
 - Pay down the loan as soon as the Federal Direct Payment is received
 - Pay down the loan with contributions for tree trimming and solar
 - Use contributions to pay interest costs for construction until full amortization kicks in

Questions and Discussions

- White board for ideas and next steps