

Mt Zion solar energy system fact sheet

Components:

Photovoltaic modules: 74 Tier 1 Philadelphia 540 bifacial panels (540 W each)
Power optimizers: 37 SolarEdge P1100 units
Inverters: 2 SolarEdge 17.3KUS units
Rack system: TerraGen ballasted non-penetrating (fixed, south-facing, 20° tilt)

Performance:

Total power: 39.96 kW DC (34.6 kW AC)
Est. annual production: 52,437 kWh
Predicted performance: (if this system had been installed)

Year	Predicted production (kWh)	Actual usage (kWh)	Renewable offset (would have been)
2022	52,437	156,363	34%
2023	52,437	104,802	50%
2024	52,437	119,213	44%

Actual performance: (from 12/23/2024 to 6/24/2025)

Time Period	Actual production (kWh)	Actual usage (kWh)	Actual renewable offset
Q1 2025	8,773	30,853	28%
Q2 2025	17,072	28,673	60%
Lifetime	25,845	59,529	43%

Financial:

Total system cost: \$ 115,450 (all parts and labor and utility fees)
Solar for Good grant: 10,490 (value of 37 solar panels donated)
Focus on Energy rebate: 5,495 (solar PV incentive for businesses)
IRS direct payment: – 41,984 (30% of installed system cost + 10% energy community add-on)
Net cost: \$ 57,481 (financed by Legacy Solar Co-op 12-yr loan at 6.75%)
Est. annual savings: \$ 8,337.48 (estimated using average utility rate = \$0.159/kWh for 2023 and 2024)
Annual payments: – 7,028.76 (first year amortization: \$3232.72 principal + 3796.04 interest)
Net 1st year savings: \$ 1,308.72 (subsequent years should be greater, because utility rates will rise)

Actual savings: (from 12/23/2024 to 6/24/2025)

Time Period	Savings on electricity bills	Payments on loan	Net savings for time period
Q1 2025	\$1,453	\$1,171	\$317
Q2 2025	\$2,769	\$1,757	\$1,012
Lifetime	\$4,222	\$2,929	\$1,293

Est. 30-year savings: \$ 213,334 (assumes 52 MWh/yr, utility rate increase 3%/yr, panel degradation 0.5%/yr)
Est. 30-year cost: – 90,869 (net cost plus financing fees, assuming 12-yr amortization)
Net 30-year savings: \$ 122,465 (minimum amount saved by avoiding purchase of electricity produced onsite)
Return on investment: 135% (ratio of net savings to cost)

Timeline:

Contract signed: 05/10/2024
Construction began: 11/20/2024
System commissioned: 12/13/2024
Inspection passed: 12/16/2024
First loan payment: 02/01/2025
Est. final loan payment: 01/01/2037 (will be earlier due to extra principal payments from congregational donations)

Project partners:

System design/install: Endries Solar Electric LLC (200 S Business Park Dr #5, Oostburg, WI 53070)
Financing: Legacy Solar Wisconsin Co-operative (PO Box 7622, Madison, WI 53707)
Solar for Good grant: RENEW Wisconsin (214 N Hamilton St #300, Madison, WI 53703) and Couillard Solar Foundation (PO Box 382, Deerfield, WI 53531)