



# Emergent Solar Energy

## Town of Dayton - Town Hall

### Prepared For

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*Emergent Solar Energy provides comprehensive design-build, and financial analysis for commercial, municipal, and agricultural solar energy projects. We provide in-depth cost / return analytics needed to accurately determine a solar energy project's economic feasibility by leveraging our years of experience developing and financing solar energy projects. Emergent Solar Energy offers best-in-class commercial solar solutions by using exclusively American-Made solar components and only certified energy professionals with the highest level of solar PV industry credentials. We have designed and built some of the largest solar projects in Indiana for the C&I, and Agricultural sectors.*



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# 1 Project Summary

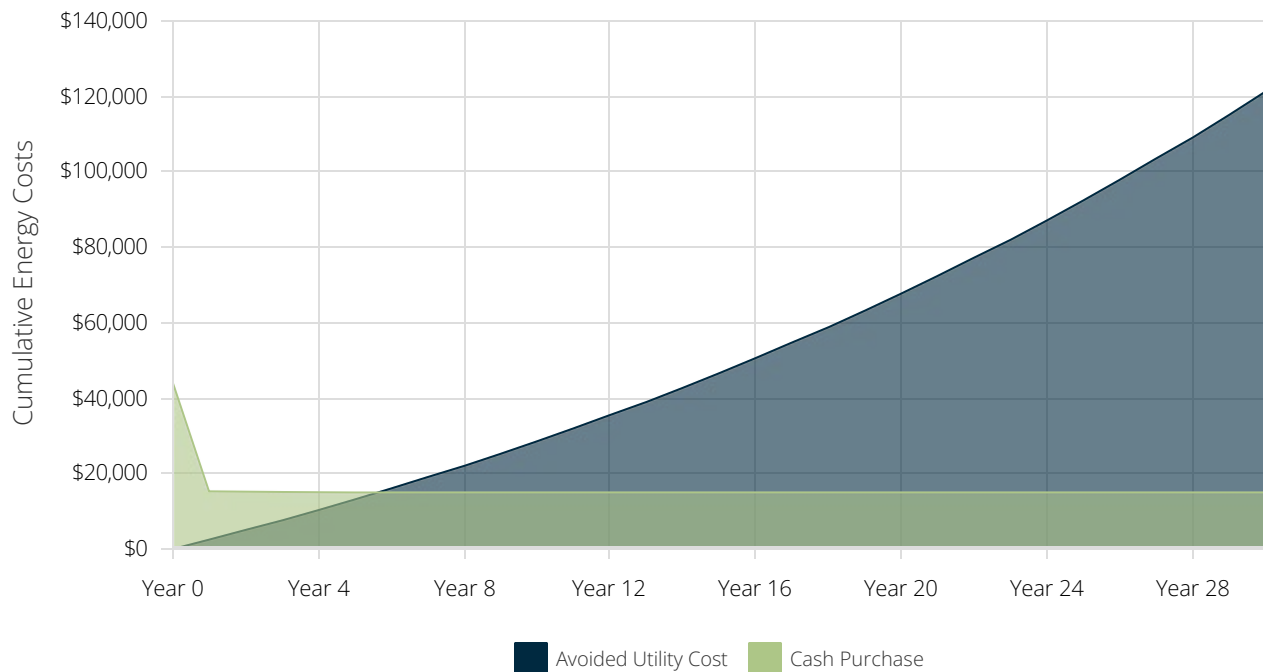
Payment Options	Cash Purchase
IRR - Term	15.8%
LCOE PV Generation	\$0.025 /kWh
Net Present Value	\$39,074
Payback Period	5.6 Years
Total Payments	\$43,934
Total Incentives	\$28,949
Net Payments	\$14,985
Electric Bill Savings - Term	\$121,201
Upfront Payment	\$43,934

## Combined Solar PV Rating

Power Rating: 14,630 W-DC

Power Rating: 12,481 W-AC-CEC

## Cumulative Energy Costs By Payment Option



## 2.1.1 PV System Details

### General Information

Facility: Town Hall  
 Address: 721 Walnut St Dayton IN 47941

### Solar PV System Rating

Power Rating: 14,630 W-DC  
 Power Rating: 12,481 W-AC-CEC

### Solar PV Equipment Description

Solar Panels: (38) Heliene 72M 385 Bifacial (1000V)  
 Inverters: (1) Fronius Primo 15.0-1 (2019)

### Energy Consumption Mix

Annual Energy Use: 20,538 kWh

### Solar PV Equipment Typical Lifespan

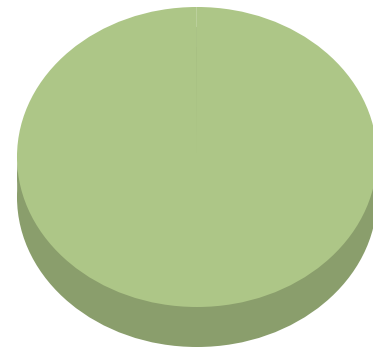
Solar Panels: Greater than 30 Years  
 Inverters: 15 Years

### Solar PV System Cost and Incentives

Solar PV System Cost	\$43,934
Direct Pay ITC	-\$17,574
USDA - REAP grant	-\$10,983
REC	-\$391

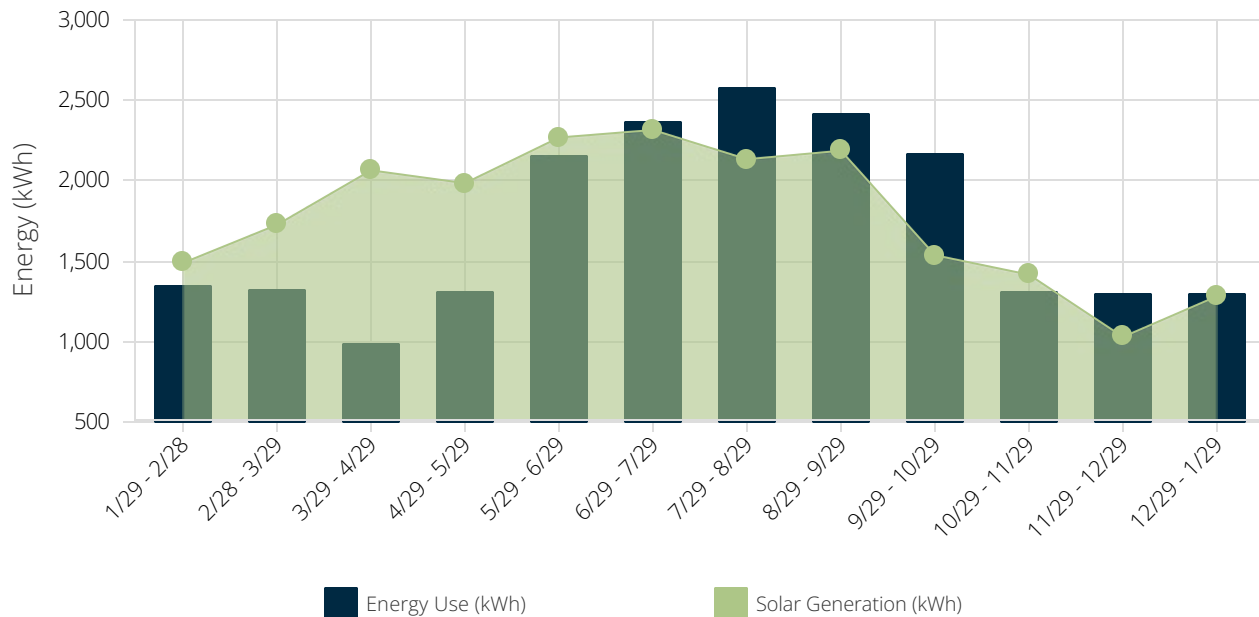
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**Net Solar PV System Cost \$14,985**



Utility	-897 kWh (0.00%)
Solar PV	21,435 kWh (100.00%)

Monthly Energy Use vs Solar Generation



## 2.1.2 Rebates and Incentives

This section summarizes all incentives available for this project. The actual rebate and incentive amounts for this project are shown in each example.

### **Direct Pay, Investment Tax Credit (ITC) - 30% (with Adders)**

The Inflation Reduction Act (IRA) of 2022 contains a "direct pay" provision that enables certain tax-exempt customers, including state and local government, to receive a direct cash payment in lieu of an investment tax credit (ITC). Entities that qualify for direct pay are eligible to receive a 30% direct payment, assuming they meet the IRA established prevailing wage and apprenticeship requirements in order to qualify for the full 30% "increased rate", rather than a 6% "base rate". The IRA states that direct pay is only available for entities, including: an entity exempt from the tax, any State government (or political subdivision thereof), the Tennessee Valley Authority, an Indian tribal government, an Alaska Native Corporation, any corporation operating on a cooperative basis which is engaged in furnishing electric energy to persons in rural areas. These entities may take direct pay for solar and storage in the ITC and PTC as well as the ITC/PTC when tech neutral starts after 2025. In addition to the 30% ITC, the IRA establishes three different types of ITC "Adders", which provide additional tax credits of up to 10% each, for projects that meet specified requirements. (1) Energy Community, projects sited in an "energy community", which includes brownfield sites, census tracts where a coal mine closed after 1999 or a coal-fired power plant was retired after 2009, or areas where 25% of local tax revenues are related to the extraction, processing or storage of coal, oil, or natural gas at any time beginning in 2010. (2) Low-income, projects located in a qualified "low-income community", which is defined as a census tract with a poverty rate of at least 20%, as well as a census tract where the median family income (MFI) is 80% or less of statewide MFI, or on "Indian land", which is defined as land located within the boundaries of an Indian reservation or lands held by a tribe. (3) Domestic Content, for projects that meet specified domestic content requirements which will be set by Treasury, including 100% steel/iron for manufactured products with a 40% requirement through 2024 followed by 45% in 2025, 50% in 2026, and 55% in 2027 and beyond. Manufactured content is further explained: the products which are components of a qualified facility upon completion will be deemed to have been produced in the United States if the adjusted percentage of the total costs of all such manufactured products of the facility are attributable to manufactured products which are mined, produced, or manufactured in the United States.

Total Incentive Value: \$17,574

### **USDA - Rural Energy for America Program (REAP) grant**

The Rural Energy for America Program (REAP) provides financial assistance to agricultural producers and rural small businesses to purchase, install, and construct renewable energy systems. The 2014-2015 REAP grant solicitation states that to be eligible, an applicant must have a satisfactory revenue stream and be in control the budget, operations, and maintenance of a project for the entire duration of the loan or grant. Rural small businesses must be located in rural areas, but agricultural producers may be located in non-rural areas. The maximum grant amount is \$500,000, for up to 25 percent of total project costs.

Total Incentive Value: \$10,983



## Renewable Energy Credits (REC) Indiana

Assumptions: \$12.00/REC, 5-year term, 10% de-escalation rate. A REC represents the property rights to the environmental, social, and other nonpower qualities of renewable electricity generation. A REC, and its associated attributes and benefits, can be sold separately from the underlying physical electricity associated with a renewable-based generation source. As renewable generators produce electricity, they create one REC for every 1,000 kilowatt-hours (or 1 megawatt-hour) of electricity placed on the grid.

Total Incentive Value: \$391



## 2.1.3 Utility Rates

The table below shows the rates associate with your current utility rate schedule (Municipal - Town Hall of Dayton). Your estimated electric bills after solar are shown on the following page.

Energy Charges			
Season	Charge Type	Rate Type	Municipal - Town Hall of Dayton
S1	Flat Rate	Import	\$0.17483

## 2.1.4 Current Electric Bill

The table below shows your annual electricity costs based on the most current utility rates and your previous 12 months of electrical usage.

**Rate Schedule:** Duke - Municipal - Town Hall of Dayton

Time Periods	Energy Use (kWh)	Charges	
		Energy	Total
Bill Ranges & Seasons	Total		
1/29/2022 - 2/28/2022 S1	1,346	\$235	\$235
2/28/2022 - 3/29/2022 S1	1,317	\$230	\$230
3/29/2022 - 4/29/2022 S1	981	\$172	\$172
4/29/2022 - 5/29/2022 S1	1,307	\$229	\$229
5/29/2022 - 6/29/2022 S1	2,157	\$377	\$377
6/29/2022 - 7/29/2022 S1	2,369	\$414	\$414
7/29/2022 - 8/29/2022 S1	2,576	\$450	\$450
8/29/2021 - 9/29/2021 S1	2,415	\$422	\$422
9/29/2021 - 10/29/2021 S1	2,169	\$379	\$379
10/29/2021 - 11/29/2021 S1	1,308	\$229	\$229
11/29/2021 - 12/29/2021 S1	1,302	\$228	\$228
12/29/2021 - 1/29/2022 S1	1,291	\$226	\$226
Total	20,538	\$3,591	\$3,591



## 2.1.5 New Electric Bill

**Rate Schedule:** Duke - Municipal - Town Hall of Dayton

Time Periods Bill Ranges & Seasons	Energy Use (kWh)	Charges	
	Total	Energy	Total
1/29/2022 - 2/28/2022 S1	-143	\$87	\$87
2/28/2022 - 3/29/2022 S1	-409	\$54	\$54
3/29/2022 - 4/29/2022 S1	-1,084	\$54	\$54
4/29/2022 - 5/29/2022 S1	-678	\$23	\$23
5/29/2022 - 6/29/2022 S1	-112	\$101	\$101
6/29/2022 - 7/29/2022 S1	53	\$114	\$114
7/29/2022 - 8/29/2022 S1	442	\$162	\$162
8/29/2021 - 9/29/2021 S1	228	\$145	\$145
9/29/2021 - 10/29/2021 S1	632	\$187	\$187
10/29/2021 - 11/29/2021 S1	-108	\$87	\$87
11/29/2021 - 12/29/2021 S1	273	\$120	\$120
12/29/2021 - 1/29/2022 S1	9	\$97	\$97
Total	-897	\$1,126	\$1,126

**Annual Electricity Savings: \$2,465**





# 3.1 Cash Purchase

## Assumptions and Key Financial Metrics

IRR - Term	15.8%	Net Present Value	\$39,074	Payback Period	5.6 Years
ROI	241.8%	PV Degradation Rate	0.50%	Discount Rate	5.0%
Energy Cost Escalation Rate	3.8%	Federal Income Tax Rate	30.0%	State Income Tax Rate	2.2%
Total Project Costs	\$43,934				

Years	Project Costs	Direct Pay ITC	USDA - REAP grant	REC	Electric Bill Savings	Total Cash Flow	Cumulative Cash Flow
Upfront	<b>-\$43,934</b>	-	-	-	-	<b>-\$43,934</b>	<b>-\$43,934</b>
1	-	\$17,574	\$10,983	\$96	\$2,465	\$31,118	<b>-\$12,816</b>
2	-	-	-	\$86	\$2,544	\$2,631	<b>-\$10,185</b>
3	-	-	-	\$77	\$2,627	\$2,704	<b>-\$7,481</b>
4	-	-	-	\$69	\$2,711	\$2,781	<b>-\$4,700</b>
5	-	-	-	\$62	\$2,799	\$2,861	<b>-\$1,839</b>
6	-	-	-	-	\$2,889	\$2,889	\$1,050
7	-	-	-	-	\$2,982	\$2,982	\$4,032
8	-	-	-	-	\$3,078	\$3,078	\$7,109
9	-	-	-	-	\$3,177	\$3,177	\$10,286
10	-	-	-	-	\$3,279	\$3,279	\$13,565
11	-	-	-	-	\$3,384	\$3,384	\$16,948
12	-	-	-	-	\$3,492	\$3,492	\$20,440
13	-	-	-	-	\$3,604	\$3,604	\$24,044
14	-	-	-	-	\$3,719	\$3,719	\$27,764
15	-	-	-	-	\$3,838	\$3,838	\$31,602
16	-	-	-	-	\$3,961	\$3,961	\$35,562
17	-	-	-	-	\$4,087	\$4,087	\$39,649
18	-	-	-	-	\$4,217	\$4,217	\$43,866
19	-	-	-	-	\$4,351	\$4,351	\$48,217
20	-	-	-	-	\$4,490	\$4,490	\$52,707
21	-	-	-	-	\$4,632	\$4,632	\$57,339
22	-	-	-	-	\$4,779	\$4,779	\$62,118
23	-	-	-	-	\$4,931	\$4,931	\$67,049
24	-	-	-	-	\$5,087	\$5,087	\$72,136
25	-	-	-	-	\$5,248	\$5,248	\$77,384
26	-	-	-	-	\$5,414	\$5,414	\$82,798
27	-	-	-	-	\$5,585	\$5,585	\$88,383
28	-	-	-	-	\$5,761	\$5,761	\$94,144
29	-	-	-	-	\$5,942	\$5,942	\$100,086
30	-	-	-	-	\$6,129	\$6,129	\$106,215
Totals:	<b>-\$43,934</b>	\$17,574	\$10,983	\$391	\$121,201	\$106,215	-



## 4.1 Cash Purchase

### Assumptions and Key Financial Metrics

IRR - Term	15.8%	Net Present Value	\$39,074	Payback Period	5.6 Years
ROI	241.8%	PV Degradation Rate	0.50%	Discount Rate	5.0%
Energy Cost Escalation Rate	3.8%	Federal Income Tax Rate	30.0%	State Income Tax Rate	2.2%
Total Project Costs	\$43,934				

Years	Upfront	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>Cash</b>															
Project Costs	-\$43,934	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Pay ITC	-	\$17,574	-	-	-	-	-	-	-	-	-	-	-	-	-
USDA - REAP grant	-	\$10,983	-	-	-	-	-	-	-	-	-	-	-	-	-
REC	-	\$96	\$86	\$77	\$69	\$62	-	-	-	-	-	-	-	-	-
Electric Bill Savings	-	\$2,465	\$2,544	\$2,627	\$2,711	\$2,799	\$2,889	\$2,982	\$3,078	\$3,177	\$3,279	\$3,384	\$3,492	\$3,604	\$3,719
<b>Cash Total</b>	-\$43,934	\$31,118	\$2,631	\$2,704	\$2,781	\$2,861	\$2,889	\$2,982	\$3,078	\$3,177	\$3,279	\$3,384	\$3,492	\$3,604	\$3,719
<b>Total Cash Flow</b>	-\$43,934	\$31,118	\$2,631	\$2,704	\$2,781	\$2,861	\$2,889	\$2,982	\$3,078	\$3,177	\$3,279	\$3,384	\$3,492	\$3,604	\$3,719
<b>Cumulative Cash Flow</b>	-\$43,934	-\$12,816	-\$10,185	-\$7,481	-\$4,700	-\$1,839	\$1,050	\$4,032	\$7,109	\$10,286	\$13,565	\$16,948	\$20,440	\$24,044	\$27,764

## 4.1 Cash Purchase

### Assumptions and Key Financial Metrics

IRR - Term	15.8%	Net Present Value	\$39,074	Payback Period	5.6 Years
ROI	241.8%	PV Degradation Rate	0.50%	Discount Rate	5.0%
Energy Cost Escalation Rate	3.8%	Federal Income Tax Rate	30.0%	State Income Tax Rate	2.2%
Total Project Costs	\$43,934				

Years	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
<b>Cash</b>															
Project Costs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Direct Pay ITC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
USDA - REAP grant	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
REC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electric Bill Savings	\$3,838	\$3,961	\$4,087	\$4,217	\$4,351	\$4,490	\$4,632	\$4,779	\$4,931	\$5,087	\$5,248	\$5,414	\$5,585	\$5,761	\$5,942
<b>Cash Total</b>	\$3,838	\$3,961	\$4,087	\$4,217	\$4,351	\$4,490	\$4,632	\$4,779	\$4,931	\$5,087	\$5,248	\$5,414	\$5,585	\$5,761	\$5,942
<b>Total Cash Flow</b>	\$3,838	\$3,961	\$4,087	\$4,217	\$4,351	\$4,490	\$4,632	\$4,779	\$4,931	\$5,087	\$5,248	\$5,414	\$5,585	\$5,761	\$5,942
<b>Cumulative Cash Flow</b>	\$31,602	\$35,562	\$39,649	\$43,866	\$48,217	\$52,707	\$57,339	\$62,118	\$67,049	\$72,136	\$77,384	\$82,798	\$88,383	\$94,144	\$100,086

## 4.1 Cash Purchase

### Assumptions and Key Financial Metrics

IRR - Term	15.8%	Net Present Value	\$39,074	Payback Period	5.6 Years
ROI	241.8%	PV Degradation Rate	0.50%	Discount Rate	5.0%
Energy Cost Escalation Rate	3.8%	Federal Income Tax Rate	30.0%	State Income Tax Rate	2.2%
Total Project Costs	\$43,934				

Years	30	Totals
<b>Cash</b>		
Project Costs	-	-\$43,934
Direct Pay ITC	-	\$17,574
USDA - REAP grant	-	\$10,983
REC	-	\$391
Electric Bill Savings	\$6,129	\$121,201
<b>Cash Total</b>	<b>\$6,129</b>	<b>\$106,215</b>
<b>Total Cash Flow</b>	<b>\$6,129</b>	<b>\$106,215</b>
<b>Cumulative Cash Flow</b>	<b>\$106,215</b>	<b>-</b>