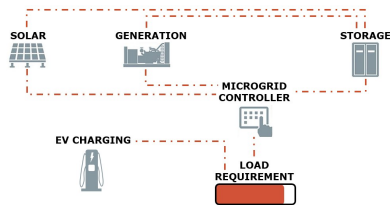


## Prepared For

East Grand Forks  
612-240-1321  
kgrover@egf.k12.mn.us



*"I would definitely recommend Ziegler and the equipment they sell and service. Once I found out Ziegler installed solar, I was in. Reliability is everything so that's why I choose Ziegler."*

**- Hagen Farms**

*"We were looking for a way to reduce our expenses. Ziegler came to me with an in-depth analysis of everything that needed to go on. Four months in we were already receiving credit balances on our electricity."*

**- Protech Automotive**

*"The concept of solar at a wastewater treatment plant makes complete sense. Our peak demand matches the solar production. Our solar array generates 70% of our energy. Ziegler took care of everything, making it seamless on our end."*

**- Iowa Great Lakes Sanitary**

## East Grand Forks Public Schools

## Prepared By

Andrew Fulton  
515-201-5834  
Andrew.Fulton@zieglercat.com



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# 1 Project Summary

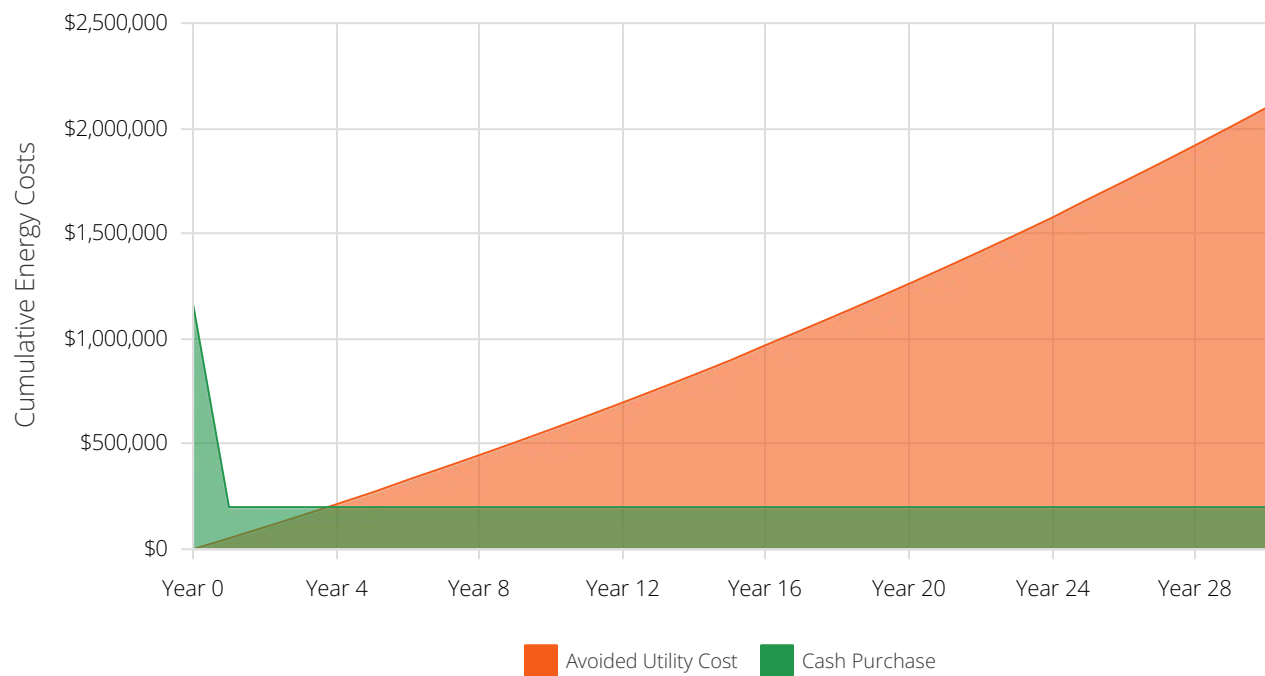
Payment Options	Cash Purchase
Upfront Payment	\$1,166,649
Total Incentives	\$966,660
Cost After Incentives	\$199,990
IRR - Term	17.0%
LCOE PV Generation	\$0.011 /kWh
Payback Period	3.7 Years
Electric Bill Savings - Term	\$2,099,278

## Combined Solar PV Rating

Power Rating: 558,540 W-DC

Power Rating: 486,522 W-AC-CEC

**Cumulative Energy Costs By Payment Option**



## 2.1.1 PV System Details

### General Information

Facility: Meter #1

Address: 1827 Bygland Rd SE East Grand Forks MN 56721

### Solar PV Equipment Description

Solar Panels: (1044) Heliene Inc 144HC-535 M10 SL Bifacial

Inverters: (3) Solectria Solar XGI 1500-150/166-UL

### Solar PV Equipment Typical Lifespan

Solar Panels: Greater than 30 Years

Inverters: 15 Years

### Solar PV System Cost and Incentives

Solar PV System Cost \$1,166,649

Direct pay - 30% ITC **-\$349,995**

Domestic Content **-\$116,665**

Incentive Amount **-\$500,000**

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**Net Solar PV System Cost \$199,990**

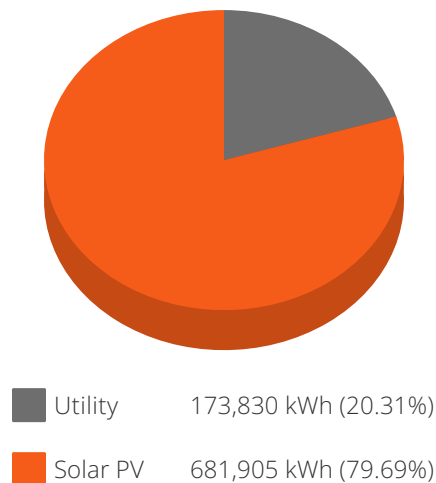
### Solar PV System Rating

Power Rating: 558,540 W-DC

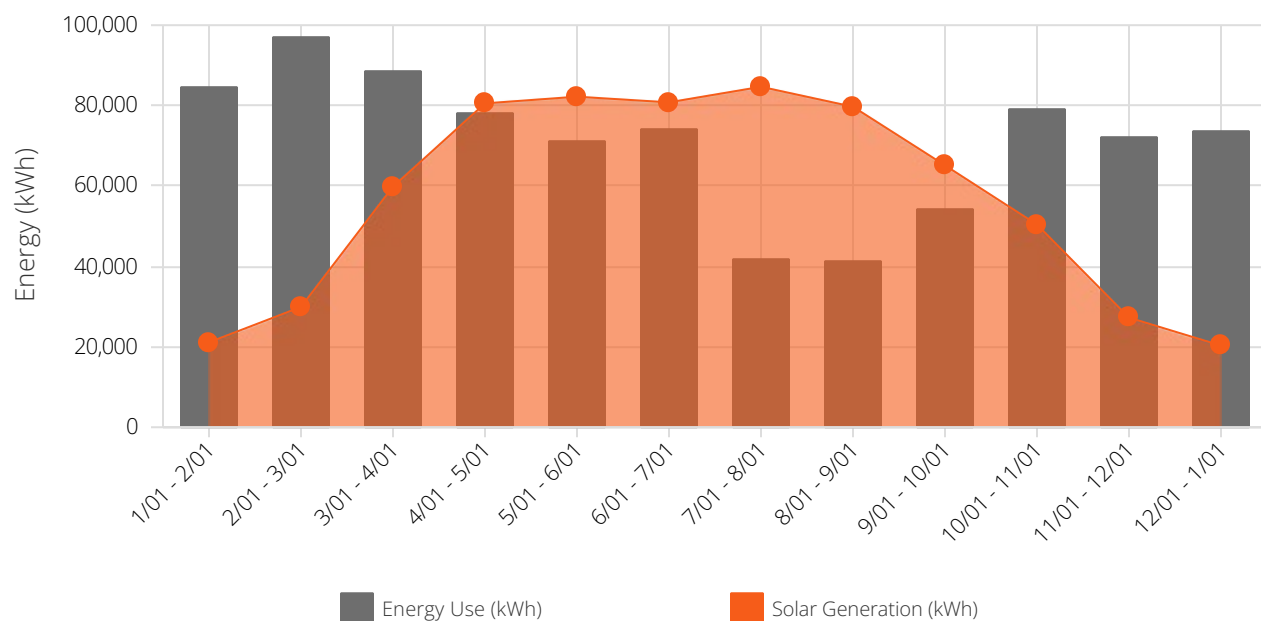
Power Rating: 486,522 W-AC-CEC

### Energy Consumption Mix

Annual Energy Use: 855,735 kWh



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%**

Entities that qualify for direct pay are eligible to receive a 30% direct payment, assuming they meet the established prevailing wage and apprenticeship requirements in order to qualify for the full 30% “increased rate”, rather than a 6% “base rate”.

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.

Total Incentive Value: \$349,995

### **Domestic Content (ITC Adder) - 10%**

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: \$116,665

### **Solar For Schools Grant**

500k Grant Solar For Schools

Total Incentive Value: \$500,000

## 2.1.3 Utility Rates

The table below shows the rates associated with your current utility rate schedule (Small Commercial). Your estimated electric bills after solar are shown on the following page.

Customer Charges				Energy Charges			
Season	Charge Type	Rate Type	Small Commercial	Season	Charge Type	Rate Type	Small Commercial
S1	Flat Rate	per billing period	\$9.75	S1	Flat Rate	Import	\$0.0855

## 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:** EGFWL - Small Commercial

Time Periods	Energy Use (kWh)	Charges		
Bill Ranges & Seasons	Total	Other	Energy	Total
1/1/2025 - 2/1/2025 S1	84,469	\$10	\$7,222	\$7,232
2/1/2025 - 3/1/2025 S1	97,012	\$10	\$8,295	\$8,304
3/1/2025 - 4/1/2025 S1	88,712	\$10	\$7,585	\$7,595
4/1/2025 - 5/1/2025 S1	78,163	\$10	\$6,683	\$6,693
5/1/2025 - 6/1/2025 S1	71,195	\$10	\$6,087	\$6,097
6/1/2025 - 7/1/2025 S1	74,218	\$10	\$6,346	\$6,355
7/1/2024 - 8/1/2024 S1	41,591	\$10	\$3,556	\$3,566
8/1/2024 - 9/1/2024 S1	41,251	\$10	\$3,527	\$3,537
9/1/2024 - 10/1/2024 S1	54,341	\$10	\$4,646	\$4,656
10/1/2024 - 11/1/2024 S1	79,089	\$10	\$6,762	\$6,772
11/1/2024 - 12/1/2024 S1	72,182	\$10	\$6,172	\$6,181
12/1/2024 - 1/1/2025 S1	73,512	\$10	\$6,285	\$6,295
Total	855,735	\$117	\$73,165	\$73,282

## 2.1.5 New Electric Bill

**Rate Schedule:** EGFWL - Small Commercial

Time Periods	Energy Use (kWh)	Charges		
Bill Ranges & Seasons	Total	Other	Energy	Total
1/1/2025 - 2/1/2025 S1	63,348	\$10	\$5,416	\$5,426
2/1/2025 - 3/1/2025 S1	67,096	\$10	\$5,737	\$5,746
3/1/2025 - 4/1/2025 S1	28,886	\$10	\$2,470	\$2,480
4/1/2025 - 5/1/2025 S1	-2,387	\$10	\$72	\$62
5/1/2025 - 6/1/2025 S1	-11,019	\$10	\$331	\$321
6/1/2025 - 7/1/2025 S1	-6,585	\$10	\$198	\$188
7/1/2024 - 8/1/2024 S1	-43,083	\$10	\$1,292	\$1,283
8/1/2024 - 9/1/2024 S1	-38,460	\$10	\$1,154	\$1,144
9/1/2024 - 10/1/2024 S1	-10,791	\$10	\$324	\$314
10/1/2024 - 11/1/2024 S1	28,695	\$10	\$2,453	\$2,463
11/1/2024 - 12/1/2024 S1	44,928	\$10	\$3,841	\$3,851
12/1/2024 - 1/1/2025 S1	53,202	\$10	\$4,549	\$4,559
Total	173,830	\$117	\$21,097	\$21,214

**Annual Electricity Savings: \$52,069**

## 3.1 Cash Purchase

### Assumptions and Key Financial Metrics

IRR - Term	17.0%	Net Present Value	\$1,086,383	Payback Period	3.7 Years
ROI	162.8%	PV Degradation Rate	0.50%	Discount Rate	3.0%
Energy Cost Escalation Rate	2.5%	Federal Income Tax Rate	0.0%	State Income Tax Rate	0.0%
Total Project Costs	\$1,166,649				

Years	Project Costs	Electric Bill Savings	Direct pay - 30% ITC	Incentive Amount	Federal Tax Effect	Total Cash Flow	Cumulative Cash Flow
Upfront	-\$1,166,649	-	-	-	-	-\$1,166,649	-\$1,166,649
1	-	\$52,069	\$349,995	\$500,000	\$116,665	\$1,018,729	-\$147,921
2	-	\$53,104	-	-	-	\$53,104	-\$94,817
3	-	\$54,158	-	-	-	\$54,158	-\$40,659
4	-	\$55,231	-	-	-	\$55,231	\$14,572
5	-	\$56,325	-	-	-	\$56,325	\$70,897
6	-	\$57,438	-	-	-	\$57,438	\$128,335
7	-	\$58,572	-	-	-	\$58,572	\$186,908
8	-	\$59,727	-	-	-	\$59,727	\$246,635
9	-	\$60,903	-	-	-	\$60,903	\$307,538
10	-	\$62,101	-	-	-	\$62,101	\$369,639
11	-	\$63,320	-	-	-	\$63,320	\$432,959
12	-	\$64,561	-	-	-	\$64,561	\$497,520
13	-	\$65,825	-	-	-	\$65,825	\$563,345
14	-	\$67,112	-	-	-	\$67,112	\$630,457
15	-	\$68,422	-	-	-	\$68,422	\$698,879
16	-	\$69,755	-	-	-	\$69,755	\$768,634
17	-	\$71,113	-	-	-	\$71,113	\$839,747
18	-	\$72,494	-	-	-	\$72,494	\$912,241
19	-	\$73,901	-	-	-	\$73,901	\$986,142
20	-	\$75,332	-	-	-	\$75,332	\$1,061,474
21	-	\$76,789	-	-	-	\$76,789	\$1,138,263
22	-	\$78,271	-	-	-	\$78,271	\$1,216,534
23	-	\$79,780	-	-	-	\$79,780	\$1,296,314
24	-	\$81,315	-	-	-	\$81,315	\$1,377,629
25	-	\$82,877	-	-	-	\$82,877	\$1,460,506
26	-	\$84,466	-	-	-	\$84,466	\$1,544,972
27	-	\$86,083	-	-	-	\$86,083	\$1,631,055
28	-	\$87,728	-	-	-	\$87,728	\$1,718,783
29	-	\$89,401	-	-	-	\$89,401	\$1,808,184
30	-	\$91,104	-	-	-	\$91,104	\$1,899,288
Totals:	-\$1,166,649	\$2,099,278	\$349,995	\$500,000	\$116,665	\$1,899,288	-



## 4.1 Cash Purchase

### Assumptions and Key Financial Metrics

IRR - Term	17.0%	Net Present Value	\$1,086,383	Payback Period	3.7 Years
ROI	162.8%	PV Degradation Rate	0.50%	Discount Rate	3.0%
Energy Cost Escalation Rate	2.5%	Federal Income Tax Rate	0.0%	State Income Tax Rate	0.0%
Total Project Costs	\$1,166,649				

Years	Upfront	1	2	3	4	5	6	7	8	9	10	11
<b>Cash</b>												
Project Costs	-\$1,166,649	-	-	-	-	-	-	-	-	-	-	-
Electric Bill Savings	-	\$52,069	\$53,104	\$54,158	\$55,231	\$56,325	\$57,438	\$58,572	\$59,727	\$60,903	\$62,101	\$63,320
Direct pay - 30% ITC	-	\$349,995	-	-	-	-	-	-	-	-	-	-
Incentive Amount	-	\$500,000	-	-	-	-	-	-	-	-	-	-
<b>Cash Total</b>	-\$1,166,649	\$902,064	\$53,104	\$54,158	\$55,231	\$56,325	\$57,438	\$58,572	\$59,727	\$60,903	\$62,101	\$63,320
<b>Federal Taxes</b>												
Domestic Content	-	\$116,665	-	-	-	-	-	-	-	-	-	-
<b>Change in Federal Tax Liability</b>	-	\$116,665	-	-	-	-	-	-	-	-	-	-
<b>Total Cash Flow</b>	-\$1,166,649	\$1,018,729	\$53,104	\$54,158	\$55,231	\$56,325	\$57,438	\$58,572	\$59,727	\$60,903	\$62,101	\$63,320
<b>Cumulative Cash Flow</b>	-\$1,166,649	-\$147,921	-\$94,817	-\$40,659	\$14,572	\$70,897	\$128,335	\$186,908	\$246,635	\$307,538	\$369,639	\$432,959

## 4.1 Cash Purchase

### Assumptions and Key Financial Metrics

IRR - Term	17.0%	Net Present Value	\$1,086,383	Payback Period	3.7 Years
ROI	162.8%	PV Degradation Rate	0.50%	Discount Rate	3.0%
Energy Cost Escalation Rate	2.5%	Federal Income Tax Rate	0.0%	State Income Tax Rate	0.0%
Total Project Costs	\$1,166,649				

Years	12	13	14	15	16	17	18	19	20	21	22	23
<b>Cash</b>												
Project Costs	-	-	-	-	-	-	-	-	-	-	-	-
Electric Bill Savings	\$64,561	\$65,825	\$67,112	\$68,422	\$69,755	\$71,113	\$72,494	\$73,901	\$75,332	\$76,789	\$78,271	\$79,780
Direct pay - 30% ITC	-	-	-	-	-	-	-	-	-	-	-	-
Incentive Amount	-	-	-	-	-	-	-	-	-	-	-	-
<b>Cash Total</b>	<b>\$64,561</b>	<b>\$65,825</b>	<b>\$67,112</b>	<b>\$68,422</b>	<b>\$69,755</b>	<b>\$71,113</b>	<b>\$72,494</b>	<b>\$73,901</b>	<b>\$75,332</b>	<b>\$76,789</b>	<b>\$78,271</b>	<b>\$79,780</b>
<b>Federal Taxes</b>												
Domestic Content	-	-	-	-	-	-	-	-	-	-	-	-
<b>Change in Federal Tax Liability</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Total Cash Flow</b>	<b>\$64,561</b>	<b>\$65,825</b>	<b>\$67,112</b>	<b>\$68,422</b>	<b>\$69,755</b>	<b>\$71,113</b>	<b>\$72,494</b>	<b>\$73,901</b>	<b>\$75,332</b>	<b>\$76,789</b>	<b>\$78,271</b>	<b>\$79,780</b>
<b>Cumulative Cash Flow</b>	<b>\$497,520</b>	<b>\$563,345</b>	<b>\$630,457</b>	<b>\$698,879</b>	<b>\$768,634</b>	<b>\$839,747</b>	<b>\$912,241</b>	<b>\$986,142</b>	<b>\$1,061,474</b>	<b>\$1,138,263</b>	<b>\$1,216,534</b>	<b>\$1,296,314</b>

## 4.1 Cash Purchase

### Assumptions and Key Financial Metrics

IRR - Term	17.0%	Net Present Value	\$1,086,383	Payback Period	3.7 Years
ROI	162.8%	PV Degradation Rate	0.50%	Discount Rate	3.0%
Energy Cost Escalation Rate	2.5%	Federal Income Tax Rate	0.0%	State Income Tax Rate	0.0%
Total Project Costs	\$1,166,649				

Years	24	25	26	27	28	29	30	Totals
<b>Cash</b>								
Project Costs	-	-	-	-	-	-	-	-\$1,166,649
Electric Bill Savings	\$81,315	\$82,877	\$84,466	\$86,083	\$87,728	\$89,401	\$91,104	\$2,099,278
Direct pay - 30% ITC	-	-	-	-	-	-	-	\$349,995
Incentive Amount	-	-	-	-	-	-	-	\$500,000
<b>Cash Total</b>	<b>\$81,315</b>	<b>\$82,877</b>	<b>\$84,466</b>	<b>\$86,083</b>	<b>\$87,728</b>	<b>\$89,401</b>	<b>\$91,104</b>	<b>\$1,782,623</b>
<b>Federal Taxes</b>								
Domestic Content	-	-	-	-	-	-	-	\$116,665
<b>Change in Federal Tax Liability</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>\$116,665</b>
<b>Total Cash Flow</b>	<b>\$81,315</b>	<b>\$82,877</b>	<b>\$84,466</b>	<b>\$86,083</b>	<b>\$87,728</b>	<b>\$89,401</b>	<b>\$91,104</b>	<b>\$1,899,288</b>
<b>Cumulative Cash Flow</b>	<b>\$1,377,629</b>	<b>\$1,460,506</b>	<b>\$1,544,972</b>	<b>\$1,631,055</b>	<b>\$1,718,783</b>	<b>\$1,808,184</b>	<b>\$1,899,288</b>	<b>-</b>