Performance & Financial Analysis

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Executive Summary

Electric Utility Savings: Anticipate a savings of approximately $1,786 in electric bills (97%) at current utility rates in the first year. Savings will grow as electric utility rates are expected to rise 3.78% a year. The purchase of electric energy (kWh) from your utility is expected to be reduced by 97%.

Over 30 years, annual utility savings are anticipated to average $3,327, for a total utility savings of $99,805. In gross income (pre-tax) dollars, savings average $5,118 annually or $153,545 over the system life.

Performance Summary

Solar Electric (PV) System: 10 kW DC (9.65 kW AC) producing 15,000 kWh/Year.

Purchase Price & Net Cost

Contract Price: **$25,900**
Incentives to Customer: ($7,770)
Net Purchase Cost: $18,130

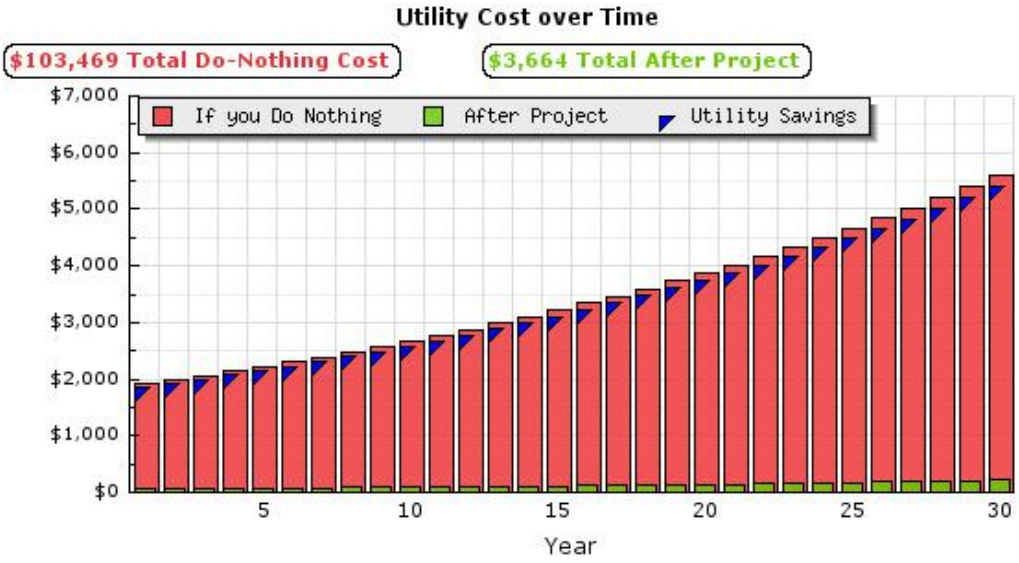
Financial Ratios

Customer`s Profitability Index: 3.3
Cashflow Payback: 5.9 years
7.6 years (modified)
Internal Rate of Return (IRR): 18%
Modified IRR (MIRR): 10.7%
Net Present Value (NPV): $42,463
Cash Gained over Life: $115,686

- Property Value Appreciation: $37,080 (first-year utility savings x 20 years)
- CO2 Saved over System Life: 369 tons. Equivalent to driving 738,000 auto miles

Finance: Cash

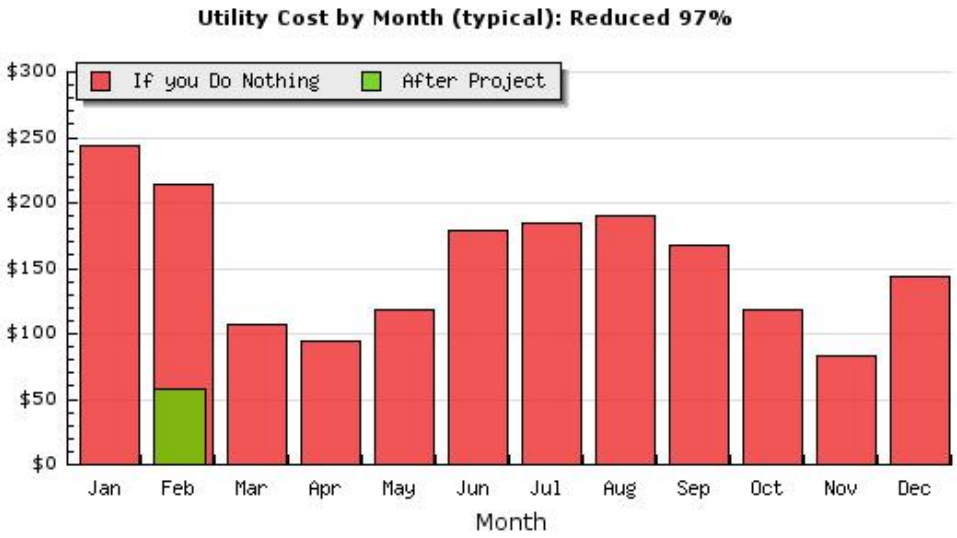
The Cost of Doing Nothing



Your Hedge Against Utility Inflation: Your investment in this project will protect you from utility rate inflation.

Utility Cost by Month

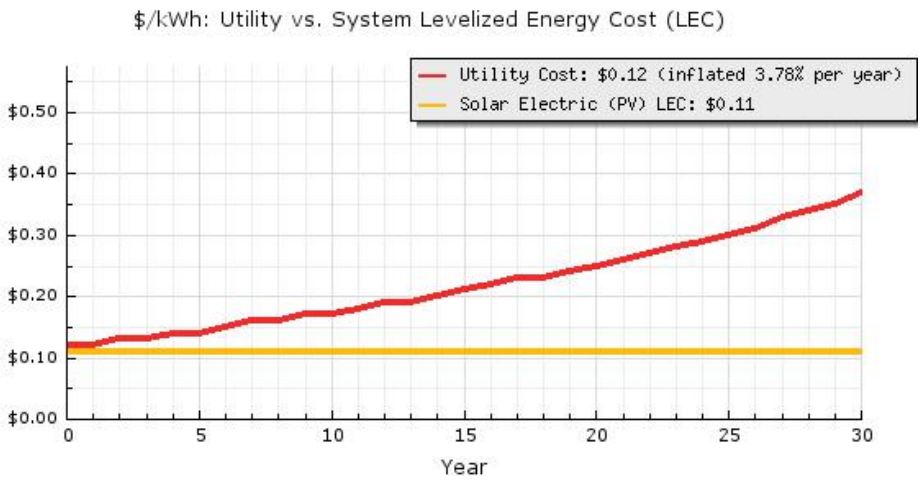
Includes monthly Net-Metering "True-Up" to reconcile any net-meter credits accumulated in prior month(s).



Levelized Energy Cost (LEC)

Your Hedge Against Utility Inflation: Your investment in this project will protect you from utility rate inflation. Levelized Energy Cost (LEC) analysis provides us with a "hurdle rate" (the levelized energy cost) which can be compared to the expected change in utility rates (by way of utility rate inflation). LEC is the average lifetime cost of energy produced by a particular system. We can compare the LEC to the current utility rate and its expected change in price as time goes on. In this manner one can judge the investment as a "better bet" than utility rates to contain energy costs. Represented below is the average cost of utility energy versus the cost of energy produced (LEC) by your system over time.

Electric: Levelized Energy Cost (LEC)



Carbon Footprint

Your carbon footprint will be reduced.

Over the life of your system 369 tons of carbon dioxide (CO2) will be eliminated from your footprint.

369 Tons of CO2 is Equivalent to:

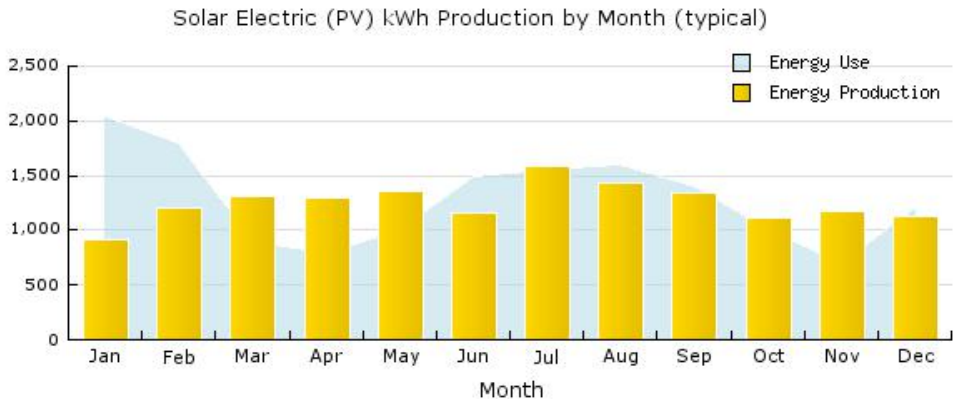
Planting 8,598 trees.

Driving reduced by 738,000 auto miles, or 37,638 gallons of gasoline.

Recycling 1,166 tons of waste instead of sending it to landfill.

359,562 pounds (179.8 tons) of coal burned.

Solar Electric (PV) System Summary



Tilt: 30° Azimuth: 180° 3" Standoff
Shade reduces production: 0%

PV Panels: 40 x REC Solar, Model: REC250PE-US

Inverters: 2 x Power-One (ABB), Model: PVI-5000-OUTD-US (240 V)

Total Panel Area: 683 sq-ft

System Peak Power: 10 kW DC (9.65 kW AC, 8.778 kW CEC)

Annual Production: 15,000 kWh. Supplying 97% of annual electric use

Contract Price Summary: Solar Electric (PV) System

Contract Amount: **$25,900** ($2.59 per watt DC)

Incentives available to Customer in 1st Year

Federal Tax Credit (30% of Net Cost at Installation): ($7,770)

Net Cost at Install (after incentives): **$18,130**

Net Installed Price per Watt: $1.81 per watt DC ($1.88 per watt AC)

How to Interpret Financial Ratios and Measures

A Measure of Security: Cashflow Payback: 5.9 years - 7.6 years (modified)

The most common measure of the security of a proposed investment is its payback, defined as the length of time until one gets one`s money back. Cashflow Payback is when cumulative cash flow stays positive for good. Modified Cashflow Payback is when the cumulative cash in-flows exceed the total of all cash out-flows over the system life; future maintenance expenses are accommodated.

Profitability Index: 3.3

What PI Means: Generally, if PI > 1 then accept the project. If PI < 1 then "qualitative" factors may justify the project.

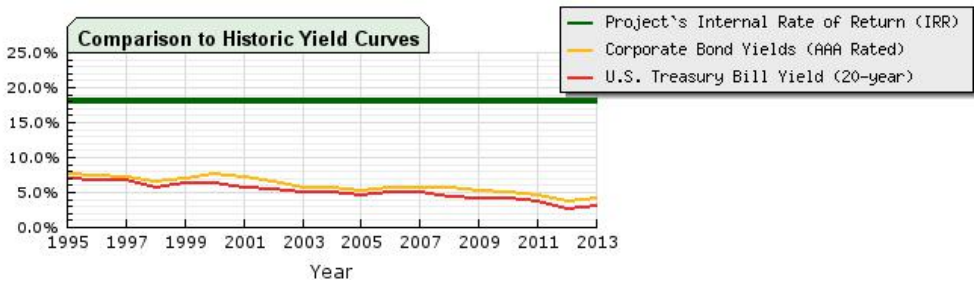
Profitability Index (PI) is a measure of investment efficiency. It identifies the relationship of investment to its return. Profitability Index (PI) is calculated as: (Net-Present Value of the Returns plus the Initial Investment) divided by the Initial Investment. For example: $18,130 is invested and the NPV of the returns is $42,463, then the PI = ($18,130 + $42,463)/$18,130 = 3.3, or more generically, for every $1 invested you received $3.3 in return.

Net Present Value (NPV): $42,463.

What NPV Means: NPV is an indicator of how much value (wealth) an investment adds to the customer. If NPV is positive then the investment would add value. If NPV is zero or negative then other "qualitative" factors may be of adequate value to justify the project (for example, lengthening a swimming pool season). *Net Present Value (NPV)* is one way to account for the time value of money. NPV calculates the current value of each future cash flow. For example, $1.00 received two years from now is equivalent to something less today, if it can be invested now at some interest rate. This allows us to "discount" the cash flows (whether positive or negative) that the proposed investment is expected to generate at various times in the future back to their equivalent value today (that is, their "present value"). If one then subtracts the cost of the proposed investment from the sum of the present values of the ongoing cash inflows, one obtains the net present value (NPV) of the investment.

Internal Rate of Return (IRR): 18%

Internal Rate of Return (IRR) is a common measure of investment efficiency. Equivalent to the yield to maturity of a bond. The internal rate of return (IRR) is the annualized effective compounded rate of return earned on the invested capital.



Modified Internal Rate of Return (MIRR): 10.7% -- *Modified Internal Rate of Return (MIRR)*, as the name implies, is a modification of the internal rate of return (IRR) and as such aims to resolve some problems with the IRR. First, IRR assumes that positive cash flows are reinvested at the same rate of return as that of the project that generated them. A more likely situation is that the funds will be reinvested at a rate closer to the cost of capital. For determining MIRR, we assumed a finance rate of 5.00% and a reinvestment rate of 8.00%.

Measures of Predictability: Using "hurdle rates" Levelized Energy Cost (LEC)

Solar Electric (PV): $0.11 per kWh

Another dimension of concern about a proposed investment is the predictability of its anticipated costs and returns, which requires measures of the uncertainty associated with them. Levelized Energy Cost (LEC) analysis provides us with a "hurdle rate" (the levelized energy cost). LEC is the average lifetime cost of energy produced by a particular system. We can compare LEC to the current utility rate and its expected change in price as time goes on. In this manner one can judge the investment as a "better bet" than utility rates to contain energy costs.

Assessing Option Value: The option value of a proposed investment represents the value of future opportunities that would be made available only if the investment were made. Like the ante in a poker game, the investment may promise no return other than the opportunity to look at the cards being dealt, at which point one can either fold or "exercise the option" by making additional investments in an attempt to win the pot. To realize future value here new investments are not necessarily required to "exercise the options" - ownership is enough. In the case of renewable energy systems in general, there are primarily two opportunities, or options, which may have future value: Property value appreciation, and Renewable energy certificates (RECs or SRECs):

Property Value Appreciation: $37,080

Installing a renewable energy system can result in increased property valuation. The (few) papers on this topic assume that by decreasing utility bills (operating costs) the property owner`s cash flow can accommodate higher loan-to-value ratios.  In other words, by reducing monthly expenses, a property owner can afford to take on more debt.  According to one report by the Appraisal Journal a home`s value can increase by $20,000 for every $1,000 reduction in annual operating costs due to energy efficiency improvements. This assumes a 5% cost of money ($20,000 x 5% interest = $1,000).

Property value appreciation is estimated to be:

$37,080 = 1st-year utility savings of $1,854 (post-tax) x 20 years

(Note: If system life is expected to be more than 20 years, then 20 years is used.)

The following factors should be kept in mind:

1. The annual savings will not be the same every year. Utility inflation rates, assuming the renewable energy system is grid connected, will alter the annual savings over time - more savings with utility rate inflation, less if utility rate deflation occurs.

2. At some point in the system`s life, its value as a "saleable" asset will start to reduce to zero as the system comes to its end of life.

3. Property valuations are based upon many variables (external factors), many of which are location-specific and/or contingent upon macro-economic and micro-economic factors such as interest rates, the economy, new developments, changing lifestyle and living patterns, etc. A property`s value can change by many percentage points as a result of these external factors and one needs to consider the amount of value a renewable energy system may add to a property vis-a-vis the overall property`s value.

Renewable Energy and/or Carbon Credits or Certificate (REC or SREC): Renewable Energy Certificates (sometimes called "solar renewable energy credits/certificates" - SRECs, S-RECs, or simply RECs) are a new and evolving method to ascribe future financial value to a renewable energy system. RECs represent the bundle of legal rights to the "green" part of each unit of energy produced by a renewable energy system. This green part can be sold for a value, which generates additional revenue for the seller. These certificates can be sold and traded or bartered and the owner of the REC can claim to have purchased renewable energy.

Utility Energy Summary: Electric

Electric Utility Rates	
Current Rate	Post Project Rate
Fixed Price per unit $0.1190/kWh	Fixed Price per unit
Average Cost: $0.119 per kWh	Average Cost: $0.116 per kWh
Tiered Rate: No	Tiered Rate: No
Time-of-Use Rate: No	Time-of-Use Rate: No
Demand Charges: No	Demand Charges: No

Summary of Utility & New Source Electricity

Electric by Month (kWh)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Entered into Software (historical)													
Monthly Use	2,050	1,800	900	800	1,000	1,500	1,550	1,600	1,400	1,000	700	1,200	15,500
Historical Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Estimated by Software at Current Rates													
Estimated Use	2,050	1,800	900	800	1,000	1,500	1,550	1,600	1,400	1,000	700	1,200	15,500
Current Cost	$244	$214	$107	$95	$119	$179	$184	$190	$167	$119	$83	$143	**$1,844**
Post Project Use	1,138	598	(411)	(501)	(351)	345	(29)	165	63	(114)	(480)	76	499
Post Project Cost	$0	$58	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$58**

Minimum monthly meter fees may apply and are not included in this analysis.

Cash Flow Details for the System

Cash Flows in Year	0	1	2	3	4
Gross Cost: PV	(25,900)				
O&M Cost: PV	0	(67)	(68)	(70)	(72)
Reference: Utility Bill Savings with Inflation Applied	0	1,854	1,923	1,995	2,070
Utility Bill Savings as Gross Income Dollars	0	2,852	2,958	3,069	3,185
Solar Electric (PV) Incentives					
Federal Tax Credit (30% of Net Cost at Installation)	7,770	0	0	0	0
Total Incentives	7,770	0	0	0	0
Net Annual Cash Flow	**(18,130)**	**2,785**	**2,890**	**2,999**	**3,113**
Cumulative Cash Flow	(18,130)	(15,345)	(12,455)	(9,456)	(6,343)

Net Annual Cash Flow is the sum of values in gray lines.

Cash Flows in Year	5	6	7	8	9
O&M Cost: PV	(74)	(76)	(79)	(81)	(83)
Reference: Utility Bill Savings with Inflation Applied	2,148	2,229	2,313	2,399	2,489
Utility Bill Savings as Gross Income Dollars	3,305	3,429	3,558	3,691	3,829
Net Annual Cash Flow	**3,231**	**3,353**	**3,479**	**3,610**	**3,746**
Cumulative Cash Flow	(3,112)	241	3,720	7,330	11,076

Cash Flows in Year	10	11	12	13	14
O&M Cost: PV	(85)	(88)	(7,055)	(93)	(95)
Reference: Utility Bill Savings with Inflation Applied	2,582	2,679	2,780	2,885	2,993
Utility Bill Savings as Gross Income Dollars	3,972	4,122	4,277	4,438	4,605
Net Annual Cash Flow	**3,887**	**4,034**	**(2,778)**	**4,345**	**4,510**
Cumulative Cash Flow	14,963	18,997	16,219	20,564	25,074

Cash Flows in Year	15	16	17	18	19
O&M Cost: PV	(98)	(101)	(104)	(106)	(109)
Reference: Utility Bill Savings with Inflation Applied	3,106	3,223	3,343	3,469	3,599
Utility Bill Savings as Gross Income Dollars	4,778	4,958	5,143	5,337	5,537
Net Annual Cash Flow	**4,680**	**4,857**	**5,039**	**5,231**	**5,428**
Cumulative Cash Flow	29,754	34,611	39,650	44,881	50,309

Cash Flow Details for the System

Cash Flows in Year	20	21	22	23	24
O&M Cost: PV	(112)	(116)	(119)	(122)	(9,826)
Reference: Utility Bill Savings with Inflation Applied	3,734	3,874	4,020	4,171	4,328
Utility Bill Savings as Gross Income Dollars	5,745	5,960	6,185	6,417	6,658
Net Annual Cash Flow	**5,633**	**5,844**	**6,066**	**6,295**	**(3,168)**
Cumulative Cash Flow	55,942	61,786	67,852	74,147	70,979

Cash Flows in Year	25	26	27	28	29
O&M Cost: PV	(129)	(133)	(136)	(140)	(144)
Reference: Utility Bill Savings with Inflation Applied	4,490	4,659	4,833	5,015	5,203
Utility Bill Savings as Gross Income Dollars	6,908	7,168	7,435	7,715	8,005
Net Annual Cash Flow	**6,779**	**7,035**	**7,299**	**7,575**	**7,861**
Cumulative Cash Flow	77,758	84,793	92,092	99,667	107,528

Cash Flows in Year	30	31	32	33	34
O&M Cost: PV	(148)	0	0	0	0
Reference: Utility Bill Savings with Inflation Applied	5,399	0	0	0	0
Utility Bill Savings as Gross Income Dollars	8,306	0	0	0	0
Net Annual Cash Flow	**8,158**	**0**	**0**	**0**	**0**
Cumulative Cash Flow	115,686	0	0	0	0

Other Assumptions Used in this Analysis

Customer Type: Residential.

Tax Effects Applied to Utility Savings: As a residential customer, we have assumed Pre-tax (gross income) dollars are saved. This means the Utility Savings are divided by 1 minus the effective income tax rate (35.00% federal and 0.00% state).

System Life: PV System: 30 years. Inverters: 12 years.

PV System Derating (Losses)- PVWatts references: Derating: 0.877 (System Losses: 9.12%, Inverter Efficiency: 96.50%). Software`s suggested production adjusted by 100% for this estimate.

Performance Degradation and O&M Costs: We have assumed performance will degrade by 0.75% per year due to soiling and general wear. Annual operating and maintenance (O&M) costs are inflated 2.80% per year, and are estimated as a percent of gross system price, as follows: Solar Electric (PV): 0.25%.

Income Tax Rates: Federal: 35.00%, State: 0.00%

Annual Inflation Rates: Consumer price index: 2.80%, Electric Rates: 3.78%

Net Excess Generation (NEG): Monthly NEG credited at Utility Rate. Annual NEG sold at Utility Rate.

Discount Rate: 5.00%. Used to estimate net present value of future cash flows. This is also assumed to be the finance rate, as used to calculate MIRR.

Reinvestment Rate: 8.00%. Used to calculate MIRR.

PV Production by Year

PV system production will vary according to weather patterns, changes in obstacles that may shade the PV panels, and the like. Over time system production may also "degrade" due to general soiling and other effects of aging. The table below provides a range (+/- 20%) of typical annual production values for the system, by year, with an annual performance degradation of 0.75% included. The "Typical" values were used to provide this report.

Year	Low Typical	Typical	High Typical
1	12,000 kWh	15,000 kWh	18,000 kWh
2	11,910 kWh	14,888 kWh	17,865 kWh
3	11,820 kWh	14,775 kWh	17,730 kWh
4	11,730 kWh	14,663 kWh	17,595 kWh
5	11,640 kWh	14,550 kWh	17,460 kWh
6	11,550 kWh	14,438 kWh	17,325 kWh
7	11,460 kWh	14,325 kWh	17,190 kWh
8	11,370 kWh	14,213 kWh	17,055 kWh
9	11,280 kWh	14,100 kWh	16,920 kWh
10	11,190 kWh	13,988 kWh	16,785 kWh
11	11,100 kWh	13,875 kWh	16,650 kWh
12	11,010 kWh	13,763 kWh	16,515 kWh
13	10,920 kWh	13,650 kWh	16,380 kWh
14	10,830 kWh	13,538 kWh	16,245 kWh
15	10,740 kWh	13,425 kWh	16,110 kWh
16	10,650 kWh	13,313 kWh	15,975 kWh
17	10,560 kWh	13,200 kWh	15,840 kWh
18	10,470 kWh	13,088 kWh	15,705 kWh
19	10,380 kWh	12,975 kWh	15,570 kWh
20	10,290 kWh	12,863 kWh	15,435 kWh
21	10,200 kWh	12,750 kWh	15,300 kWh
22	10,110 kWh	12,638 kWh	15,165 kWh
23	10,020 kWh	12,525 kWh	15,030 kWh
24	9,930 kWh	12,413 kWh	14,895 kWh
25	9,840 kWh	12,300 kWh	14,760 kWh
26	9,750 kWh	12,188 kWh	14,625 kWh
27	9,660 kWh	12,075 kWh	14,490 kWh
28	9,570 kWh	11,963 kWh	14,355 kWh
29	9,480 kWh	11,850 kWh	14,220 kWh
30	9,390 kWh	11,738 kWh	14,085 kWh
Totals	**320,850 kWh**	**401,063 kWh**	**481,275 kWh**

Renewable Resources

The following renewable resource assumptions were used to develop estimates for the project location. These are typical values based upon observed data over several decades. Actual values (and system performance) will vary from month to month, and from year to year, in accordance to weather and climate pattern changes.

Weather station referenced: "TYLER/POUNDS FLD" (Texas)

Solar Resources: Flat-Plate, South-facing Tilted at Latitude												
Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
kWh/m2/day	3.588	5.145	5.147	5.328	5.444	4.854	6.474	5.899	5.666	4.538	4.79	4.385