

AAA Solar

June 9, 2013

J.R. Reading
1 Main Street
Aaronsburg, PA 16820

Dear Mr. Reading

We are pleased to submit a proposal for your solar electric, water heating and energy efficiency systems.

We are proposing a package that provides an optimal **investment** for you. In this proposal, we have taken into account your particular needs and desires, your energy requirements, and included a summary of any available local, state and federal incentives.

We are committed to a quality installation and to ensuring your total satisfaction with our products and service. The next step is to sign the necessary agreements so we can reserve your rebates and begin the engineering and permitting processes. This proposal is valid for 30 days.

We look forward to helping you achieve more energy independence, providing a good investment for years to come, and helping you make a more positive environmental impact.

I will follow-up with you shortly to review our proposal in more detail and to answer any questions you may have.

Sincerely yours,

Scott Cronk
Energy Matters LLC
P.O. Box 4352
Santa Rosa, CA 95402
Phone: 707-861-0101 * Email: Help@energyperiscope.com

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Performance & Financial Analysis

Solar Water & Electric System with Efficiency Improvements

Prepared June 9, 2013 for

J.R. Reading

1 Main Street, Aaronsburg, PA 16820



Prepared by Scott Cronk

Energy Matters LLC, P.O. Box 4352, Santa Rosa, CA 95402

Phone: 707-861-0101 * Email: Help@energyperiscope.com

1) This is for informational purposes only, using estimates for utility rates, system production and projected incentives. Please consult with your tax accountant for any tax related information.

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Executive Summary

Solar Water & Electric System with Efficiency Improvements

Electric Utility Savings: Anticipate a savings of approximately \$2,632 (141%): current electric utility rate savings of \$1,160 (expected to inflate 4.00% a year) plus first-year performance-based incentives (PBI) of \$1,472. (See Cashflow Detail). PBIs extend for 10 years. The purchase of electric energy (kWh) from your utility is expected to be reduced by 65%.

Propane Utility Savings: Anticipate a savings of approximately \$1,512 in your Propane bills (100%) at current utility rates in the first year. These savings will grow as Propane utility rates are expected to rise 4.00% a year. The purchase of Propane from your utility is expected to be reduced by 100%.

Over 25 years, annual utility savings are anticipated to average \$4,438, for a total utility savings of \$110,940. In gross income (pre-tax) dollars, savings average \$6,431 annually or \$160,787 over the system life. PBIs increase savings by another \$14,391.

System Performance Summary

Energy Efficiency Improvements: Total Electric use will be reduced by 544 kWh/Year.

Solar Electric (PV) System: 8.8 kW DC (8.36 kW AC) producing 9,815 kWh/Year

Solar Water Heating System: 2,705 kWh/Year

Aux. Water Heating System: Changed from Propane to Electric

Purchase Price & Net Cost

Gross Price: \$40,472

Incentives to Contractor: ~~(\$8,340)~~

Contract Price: \$32,132

Incentives to Customer: ~~(\$9,190)~~

Net Purchase Cost: \$22,942

Incentives in Later Years: ~~(\$7,683)~~ (P.V.)

Net-Present Cost: \$15,259

Includes present value (P.V.) of these future cash flows.

Financial Ratios (Levered)

Customer's Profitability Index: 3.4

Cashflow Payback: 1.4 years

3.8 years (modified)

Internal Rate of Return (IRR): 20.8%

Net Present Value (NPV): \$54,268

Cash Gained over Life: \$123,957

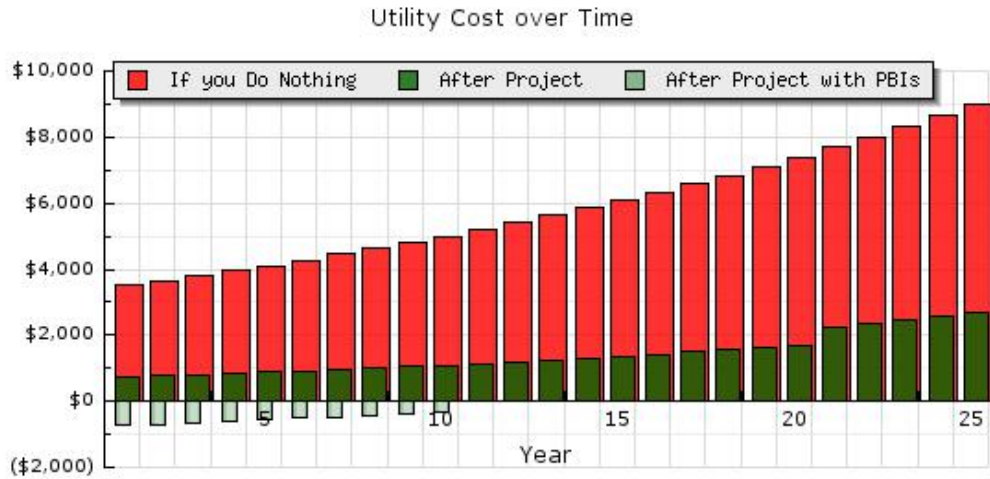
- Property Value Appreciation: \$94,960 (first-year utility savings and ave. PBI value x 20 years)
- CO2 Saved over System Life: 449 tons. Equivalent to driving 898,000 auto miles

Finance: Loan, fully amortized. \$19,180 at 8.000% apr. Repaid: \$233 per month over 120 months. Interest tax deductible. Initial Cash Required: \$3,762.



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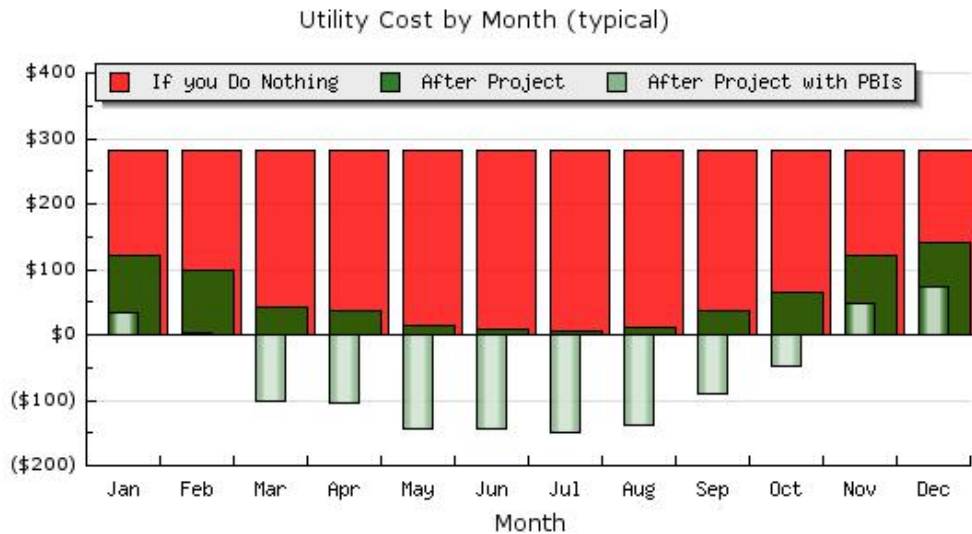
The Cost of Doing Nothing



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

Utility Cost by Month

For illustration purposes, 1st-year Performance-Based Incentives (PBIs) are distributed relative to expected system performance by month. Actual payments may vary.

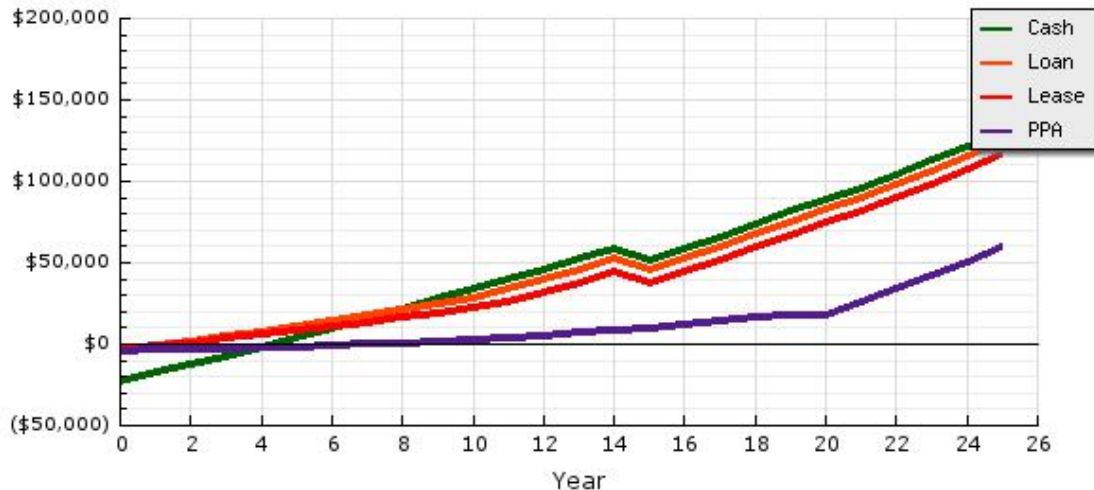


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Finance Options

	Cash	Loan	Operating Lease	PPA
Net-Cash at Install (invested or received):	(\$22,942)	(\$3,762)	(\$3,962)	(\$4,262)
Incentives in Later Years:	\$14,391	\$14,391	\$14,391	\$0
Wealth Created Over System Life (NPV):	\$59,239	\$54,268	\$53,738	\$22,064
Cash Gained Over System Life:	\$130,033	\$123,957	\$115,937	\$59,537
Return on Initial Cash Invested (IRR):	23.5%	20.8%	18.8%	21%
1st-Year Utility Savings Less Finance Payments:	\$4,028	\$1,232	\$1,232	\$362
Property Value Appreciation:	Yes	Yes	Not Expected	Not Expected

Cumulative Cash Flow of Finance Options



Terms of Finance Options:

Loan: Principal: \$19,180. Interest: 8.000%. Payment: \$233. Term: 120 months. Fully Amortized Loan.

Lease: Type: Operating. Covers: PV. Due at Signing: \$200. Payment: \$233. Term: 120 months. Annual Escalator: 3.00%. Fair-Market Value at end of Term: \$2,000 (est). Present Value of Lease Payments: \$25,428 (used to estimate IRR, MIRR, LEC)

The value capitalized by the lease is estimated to be: \$20,156. This is the system gross cost less incentives and tax benefits assumed by Lessor plus operational costs assumed by Lessor. With a monthly payment of \$233 for 120 months (escalated at 3.00%), this is equivalent to a loan charging 7.2% interest (apr)

PPA: Type: Power Purchaser. Covers: PV Electricity Generated by System. Due at Signing: \$500. Rate: \$0.25000 per kWh. Term: 240 months. Annual Rate Escalator: \$3.00%. Fair-Market Value at end of Term \$2,000 (est).

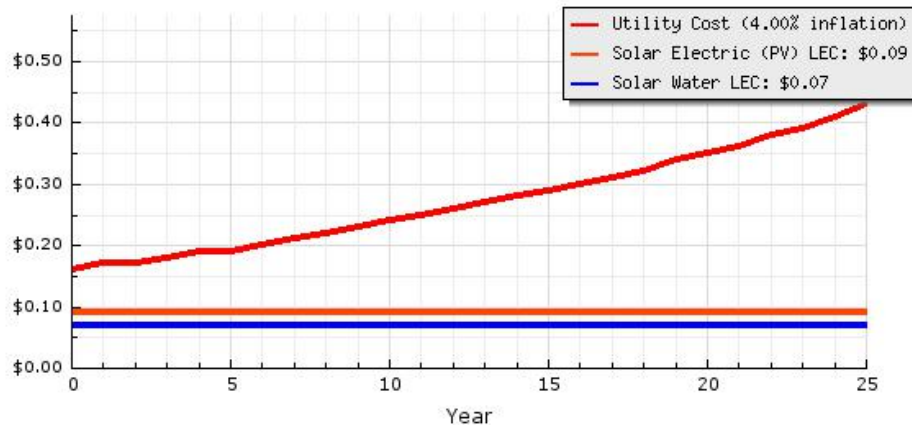
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Levelized Energy Cost (LEC)

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)

\$/kWh: Utility vs. System Levelized Energy Cost (LEC)



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Carbon Footprint

Your carbon footprint will be reduced.

Over the life of your system 449 tons of carbon dioxide (CO₂) will be eliminated from your footprint.

449 Tons of CO₂ is Equivalent to:



Planting 10,462 trees.



Driving reduced by 898,000 auto miles, or 45,798 gallons of gasoline.



Recycling 1,419 tons of waste instead of sending it to landfill.



Displacing CO₂ emissions from the annual electric use of 51 homes.

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Your Solar Home



Roof View

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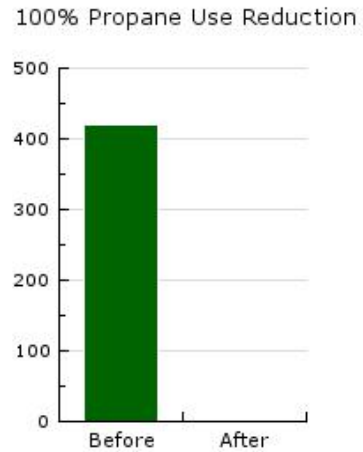
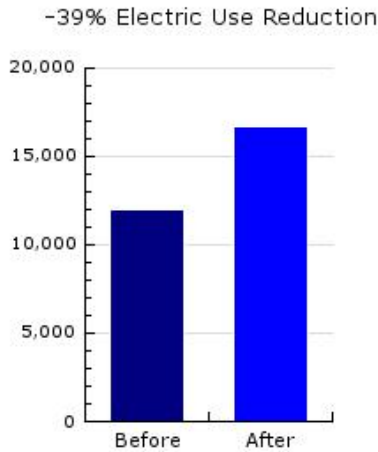
Your Solar Home



Charge your new electric motorbike with the sun

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Energy Efficiency Summary



Energy Efficiency Improvements

- Change water heating from Propane to Electric .
- Change water heater type from Standard Tank to EnergyStar Tank .
- Change lighting from Incandescent to Compact Fluorescent .

Category Annual Energy Savings

- Water Heating 104 Gallon Propane
- Water Heating Changed from Propane to Electric
- Electrical Appliances & Equipment 544 kWh Electric

Contract Price Summary: Energy Efficiency Improvements

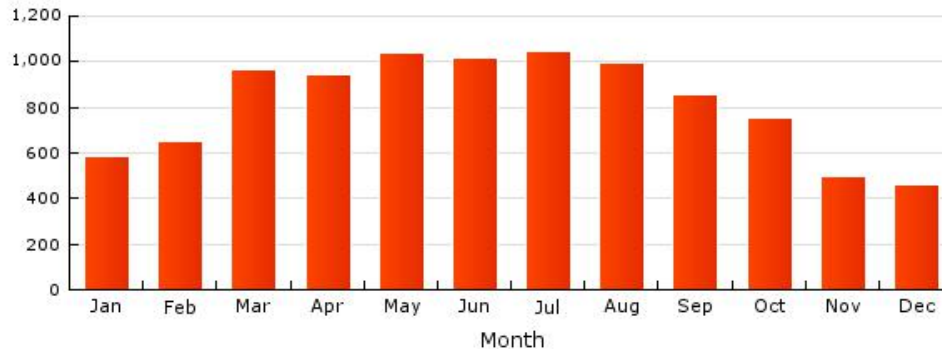
Contract Amount: \$1,500

Net Cost at Install (after incentives): \$1,500

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Solar Electric (PV) System Summary

Solar Electric (PV) kWh Production by Month (typical)



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

PV Panels: 44 x Centrosolar America, Model: D200

Inverters: 3 x SMA America, Model: SB3000US (208V)

Included: * Building Permit: \$250
* Racking: \$2,700

Total Panel Area: 762 sq-ft

System Peak Power: 8.8 kW DC (8.36 kW AC, 7.649 kW CEC)

Annual Production: 9,815 kWh. Supplying 82% of annual electric use

Contract Price Summary: Solar Electric (PV) System

Gross Price: \$34,000 (\$3.86 per watt DC)

Less added cost items (as included): \$3.53 per watt DC

Incentives to be received by Contractor in 1st Year

PA State SunShine Rebate (Residential Tier 4: \$ 0.75 per watt): (\$6,600)

Contract Amount: \$27,400

Incentives to be received by Customer in 1st Year

Federal Tax Credit (30% of Net Cost at Installation): (\$8,220)

Net Cost at Install (after incentives): \$19,180

Net Installed Price per Watt: \$2.18 per watt DC (\$2.29 per watt AC)

Less added cost items (as included): \$1.84 per watt DC (\$1.94 per watt AC)

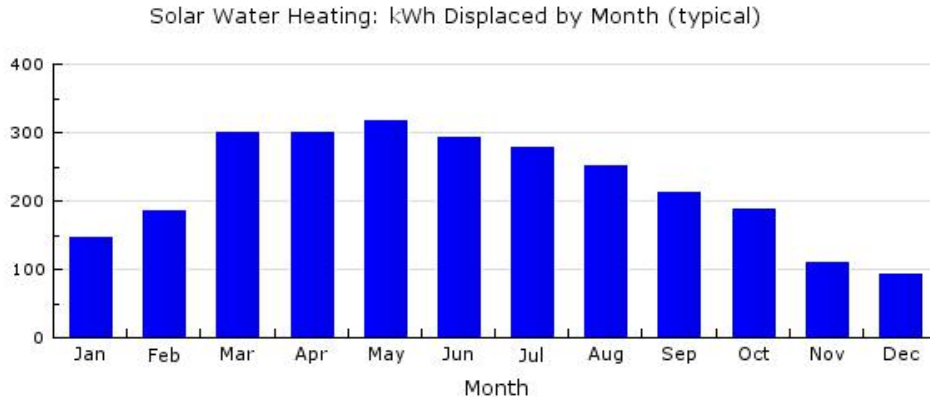
Total Incentives to be received by Customer in Later Years: \$14,391

Present Value of Future Incentives: \$7,683 in today's dollars, adjusted for any income tax that may become due.

* - Pennsylvania SREC Market (assumes ave. of \$ 150 per MWh for 10 years)

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Solar Water Heating System Summary



Collector Configuration: Tilt: 30° Azimuth: 180°
 Shade reduces production: 0%

Collectors: 2 x Bubbling Springs Solar Inc., Model:MS 29

Water Tank: 80 gallons with heat exchanger

Configuration: Freeze-Protected/Closed-Loop

Notes: * 5-Year Labor Warranty

Utility Energy Displaced: 2,705 kWh

Estimated Demand: 80 gallons of water per day heated to 120° F

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Solar Energy Fraction (SEF)	27%	37%	55%	62%	72%	80%	83%	79%	66%	50%	26%	19%

Contract Price Summary: Solar Water Heating System

Gross Price: \$4,972

Incentives to be received by Contractor in 1st Year

PA State SunShine Rebate (Residential) 35% of Gross Cost: (\$1,740)

Contract Amount: \$3,232

Incentives to be received by Customer in 1st Year

Federal Tax Credit (30% of Net Cost at Installation): (\$970)

Net Cost at Install (after incentives): \$2,262

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How to Interpret Financial Ratios and Measures

A Measure of Security: Cashflow Payback: 1.4 years - 3.8 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.

"**Levered**" ratios assume a cash purchase and take into account debt service (interest payments), including their tax deductions.

Profitability Index: 3.4 (Levered)

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

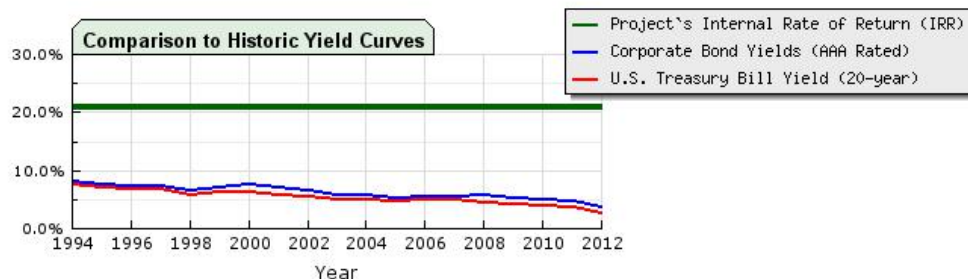
Profitability Index (PI) is a measure of investment efficiency. It identifies the relationship of investment to its return. Profitability Index (PI) is calculated as: (Net-Present Value of the Returns plus the Initial Investment) divided by the Initial Investment. For example: \$22,942 is invested and the NPV of the returns is \$54,268, then the $PI = (\$22,942 + \$54,268) / \$22,942 = 3.4$, or more generically, for every \$1 invested you received \$3.4 in return.

Net Present Value (NPV): \$54,268 (Levered).

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): 20.8% (Levered)

Internal Rate of Return (IRR) is another common measure of investment efficiency. Equivalent to the yield to maturity of a bond. It is defined as the interest rate that causes the project's net present value (NPV) to equal zero. The internal rate of return (IRR) on an investment is the annualized effective compounded rate of return that can be earned on the invested capital.



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

Solar Electric (PV): \$0.09 per kWh

Solar Water Heating: \$0.07 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: \$94,960

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 ($\$20,000 \times 5\% \text{ interest} = \$1,000$).

Property value appreciation is estimated to be:

$\$94,960 = 1\text{-st-year utility savings of } \$4,028 \text{ and ave. PBI value of } \$720 \times 20 \text{ years}$

(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.

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Utility Energy Summary: Electric

Electric Utility Rates													
Current Rate							Post Project Rate						
PECO Energy Co: Residence Service							PECO Energy Co: Residence Service						
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
<u>Entered into Software (historical)</u>													
Monthly Use	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	12,000
Historical Cost	\$120	\$120	\$120	\$120	\$120	\$120	\$120	\$120	\$120	\$120	\$120	\$120	\$1,440
<u>Estimated by Software at Current Rates</u>													
Estimated Use	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	12,000
Current Cost	\$156	\$155	\$156	\$155	\$156	\$155	\$156	\$156	\$155	\$156	\$155	\$156	\$1,867
Baseline Use after Efficiency	1,503	1,468	1,503	1,443	1,397	1,325	1,291	1,275	1,281	1,336	1,384	1,458	16,664
Baseline Cost after Efficiency	\$230	\$224	\$230	\$221	\$214	\$203	\$199	\$196	\$197	\$205	\$212	\$223	\$2,554
Post Project Use	766	627	237	199	36	9	(36)	26	208	392	777	903	4,144
Post Project Cost	\$121	\$100	\$43	\$37	\$13	\$9	\$7	\$11	\$38	\$65	\$122	\$141	\$707
<u>With Estimated Performance-Base Incentive (PBI) Values (First Year of 10 years shown)</u>													
PBI Value	\$(88)	\$(98)	\$(145)	\$(141)	\$(156)	\$(153)	\$(157)	\$(149)	\$(129)	\$(113)	\$(74)	\$(69)	\$(1,472)
Post-Project Cost with PBI Values	\$33	\$2	\$(102)	\$(104)	\$(143)	\$(144)	\$(150)	\$(138)	\$(91)	\$(48)	\$48	\$72	\$(765)

PBI values are distributed relative to expected system performance by month. Actual payments may vary.

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Utility Energy Summary: Propane

Propane Utility Rates													
Current Rate							Post Project Rate						
Fixed Price per unit \$3.6000 per Gallon							Fixed Price per unit						
Tiered Rate: No							Tiered Rate: No						
Summary of Utility Propane & New Source Energy													
Propane by Month (Gallon)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
<u>Entered into Software (historical)</u>													
Monthly Use	35	35	35	35	35	35	35	35	35	35	35	35	420
Historical Cost	\$105	\$105	\$105	\$105	\$105	\$105	\$105	\$105	\$105	\$105	\$105	\$105	\$1,260
<u>Estimated by Software at Current Rates</u>													
Estimated Use	35	35	35	35	35	35	35	35	35	35	35	35	420
Current Cost	\$126	\$126	\$126	\$126	\$126	\$126	\$126	\$126	\$126	\$126	\$126	\$126	\$1,512
Baseline Use after Efficiency	0	0	0	0	0	0	0	0	0	0	0	0	0
Baseline Cost after Efficiency	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Post Project Use	0	0	0	0	0	0	0	0	0	0	0	0	0
Post Project Cost	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

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

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Cash Flow Details for the System

Cash Flows in Year	0	1	2	3	4
Gross Cost: Efficiency	(1,500)				
Gross Cost: PV	(34,000)				
O&M Cost: PV	0	(87)	(89)	(92)	(94)
Gross Cost: Water Heating	(4,972)				
O&M Cost: Water Heating	0	(13)	(13)	(13)	(14)
Gross Cost: TOTAL	(40,472)				
O&M Cost: TOTAL	0	(100)	(102)	(105)	(108)
<u>Reference:</u> Utility Bill Savings with Inflation Applied	0	2,779	2,886	2,997	3,113
Utility Bill Savings as Gross Income Dollars	0	4,028	4,183	4,343	4,512
<u>Solar Electric (PV) Incentives</u>					
PA State SunShine Rebate (Residential Tier 4: \$ 0.75 per watt) *	6,600	0	0	0	0
Pennsylvania SREC Market (assumes ave. of \$ 150 per MWh for 10 years)	0	1,472	1,465	1,458	1,450
Federal Tax Credit (30% of Net Cost at Installation)	8,220	0	0	0	0
<u>Solar Water Incentives</u>					
PA State SunShine Rebate (Residential) 35% of Gross Cost *	1,740	0	0	0	0
Federal Tax Credit (30% of Net Cost at Installation)	970	0	0	0	0
Total Incentives	17,530	1,472	1,465	1,458	1,450
<u>Reference:</u> Total Incentives Federal Taxable as Income	0	1,472	1,465	1,458	1,450
<u>Reference:</u> Total Incentives Taxable as State Income	0	1,472	1,465	1,458	1,450
Income Tax on Incentives	0	(456)	(454)	(452)	(450)
Loan Principal & Payments	19,180	(2,796)	(2,796)	(2,796)	(2,796)
Tax Savings on Loan Interest Paid	0	461	427	391	351
Net Annual Cash Flow	(3,762)	2,609	2,723	2,839	2,959
Cumulative Cash Flow	(3,762)	(1,153)	1,570	4,409	7,368

* - Indicates Contractor to receive this incentive.

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Cash Flow Details for the System

Cash Flows in Year	5	6	7	8	9
O&M Cost: PV	(96)	(99)	(101)	(104)	(106)
O&M Cost: Water Heating	(14)	(14)	(15)	(15)	(16)
O&M Cost: TOTAL	(110)	(113)	(116)	(119)	(122)
<u>Reference</u> : Utility Bill Savings with Inflation Applied	3,233	3,358	3,488	3,621	3,761
Utility Bill Savings as Gross Income Dollars	4,686	4,867	5,055	5,248	5,451
Pennsylvania SREC Market (assumes ave. of \$ 150 per MWh for 10 years)	1,443	1,435	1,428	1,421	1,413
Total Incentives	1,443	1,435	1,428	1,421	1,413
<u>Reference</u> : Total Incentives Federal Taxable as Income	1,443	1,435	1,428	1,421	1,413
<u>Reference</u> : Total Incentives Taxable as State Income	1,443	1,435	1,428	1,421	1,413
Income Tax on Incentives	(447)	(445)	(443)	(441)	(438)
Loan Principal & Payments	(2,796)	(2,796)	(2,796)	(2,796)	(2,796)
Tax Savings on Loan Interest Paid	308	262	212	158	99
Net Annual Cash Flow	3,084	3,210	3,340	3,471	3,607
Cumulative Cash Flow	10,452	13,662	17,002	20,473	24,080

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Cash Flow Details for the System

Cash Flows in Year	10	11	12	13	14
O&M Cost: PV	(109)	(112)	(114)	(117)	(120)
O&M Cost: Water Heating	(16)	(16)	(17)	(17)	(18)
O&M Cost: TOTAL	(125)	(128)	(131)	(134)	(138)
<u>Reference</u> : Utility Bill Savings with Inflation Applied	3,906	4,057	4,213	4,375	4,544
Utility Bill Savings as Gross Income Dollars	5,661	5,880	6,106	6,341	6,586
Pennsylvania SREC Market (assumes ave. of \$ 150 per MWh for 10 years)	1,406	0	0	0	0
Total Incentives	1,406	0	0	0	0
<u>Reference</u> : Total Incentives Federal Taxable as Income	1,406	0	0	0	0
<u>Reference</u> : Total Incentives Taxable as State Income	1,406	0	0	0	0
Income Tax on Incentives	(436)	0	0	0	0
Loan Principal & Payments	(2,796)	0	0	0	0
Tax Savings on Loan Interest Paid	35	0	0	0	0
Net Annual Cash Flow	3,745	5,752	5,975	6,207	6,448
Cumulative Cash Flow	27,825	33,577	39,552	45,759	52,207

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Cash Flow Details for the System

Cash Flows in Year	15	16	17	18	19
O&M Cost: PV	(13,743)	(126)	(129)	(133)	(136)
O&M Cost: Water Heating	(18)	(18)	(19)	(19)	(20)
O&M Cost: TOTAL	(13,761)	(144)	(148)	(152)	(156)
<u>Reference</u> : Utility Bill Savings with Inflation Applied	4,719	4,901	5,090	5,286	5,490
Utility Bill Savings as Gross Income Dollars	6,839	7,103	7,377	7,661	7,957
Net Annual Cash Flow	(6,922)	6,959	7,229	7,509	7,801
Cumulative Cash Flow	45,285	52,244	59,473	66,982	74,783

Cash Flows in Year	20	21	22	23	24
O&M Cost: Efficiency	(819)	0	0	0	0
O&M Cost: PV	(139)	(143)	(146)	(150)	(154)
O&M Cost: Water Heating	(20)	0	0	0	0
O&M Cost: TOTAL	(978)	(143)	(146)	(150)	(154)
<u>Reference</u> : Utility Bill Savings with Inflation Applied	5,701	5,450	5,659	5,876	6,101
Utility Bill Savings as Gross Income Dollars	8,262	7,899	8,201	8,516	8,842
Net Annual Cash Flow	7,284	7,756	8,055	8,366	8,688
Cumulative Cash Flow	82,067	89,823	97,878	106,244	114,932

Cash Flows in Year	25	26	27	28	29
O&M Cost: PV	(158)	0	0	0	0
O&M Cost: TOTAL	(158)	0	0	0	0
<u>Reference</u> : Utility Bill Savings with Inflation Applied	6,336	0	0	0	0
Utility Bill Savings as Gross Income Dollars	9,183	0	0	0	0
Net Annual Cash Flow	9,025	0	0	0	0
Cumulative Cash Flow	123,957	0	0	0	0

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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 (28.00% federal and 3.00% state).

System Life: PV System: 25 years. Inverters: 15 years. Solar Thermal System: 20 years. Appliance/Lighting: 20 years.

PV System Derating: 0.791. (PVWatts reference).

Water Heater Efficiency (EF): Pre-project: 60%, Post-project: 95%.

Solar Water Heating Losses: 25%

Performance Degradation and O&M Costs: We have assumed performance will degrade by 0.50% per year due to soiling and general wear. Annual operating and maintenance (O&M) costs are inflated 2.50% per year, and are estimated as a percent of gross system price, as follows: Solar Electric (PV): 0.25%. Solar Thermal: 0.25%. Efficiency measures: None.

Income Tax Rates: Federal: 28.00%, State: 3.00%

Annual Inflation Rates: Consumer price index: 2.50%, Electric Rates: 4.00%, Propane Rates: 4.00%

Net Excess Generation (NEG): Monthly NEG credited at Utility Rate. Annual NEG Not sold.

Discount Rate: 5.00%. Used to estimate net present value of future cash flows.

Levelized Energy Cost (LEC) calculations do not include the cash effects of loans or leases to purchase the system.

This is for informational purposes only, using estimates for utility rates, system production and projected incentives. Please consult with your tax accountant for any tax related information.

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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.

Solar Resources: Flat-Plate, South-facing Tilted at Latitude

Month	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
kWh/m2/day	2.84	3.44	4.63	4.79	5.15	5.29	5.32	5.15	4.57	3.90	2.63	2.31

Water Inlet Temperature (Average °F)

Month	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
Water Source °F	36	34	36	43	52	63	68	72	68	63	52	43

Ambient Temperature Data (Typical °F) - Weather station referenced: Williamsport (PA)

Month	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
Mean °F	26	29	38	49	59	68	73	71	63	51	41	32
Max °F	35	38	48	60	71	79	84	82	74	63	51	40
Min °F	18	19	27	37	47	57	61	59	52	40	32	23

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Sales & Service Contract

This Contract is made by and between Energy Matters LLC located at P.O. Box 4352, Santa Rosa, CA 95402. (Contractor) and:

Customer

Correspondence & Work Location

J.R. Reading
1 Main Street
Aaronsburg, PA 16820

Major Equipment to be Installed

Energy Efficiency Improvements

Change water heating from Propane to Electric .
Change water heater type from Standard Tank to EnergyStar Tank .
Change lighting from Incandescent to Compact Fluorescent .

Solar Electric (PV) System

Array #1

PV Panels: 44 x Centrosolar America, Model: D200
Inverters: 3 x SMA America, Model: SB3000US (208V)

Included: * Building Permit: \$250
* Racking: \$2,700

Solar Water Heating System

Collectors: 2 x Bubbling Springs Solar Inc., Model:MS 29
Water Tank: 80 gallons with heat exchanger
Notes: * 5-Year Labor Warranty

Payment Schedule

Down Payment	\$1,500	Due at Signing
Equipment Delivery	\$9,190	Due about week 3
System Turn On	\$18,379	Due about week 8
Contract Balance	\$3,063	Due about week 10
Contract Total	<u>\$32,132</u>	

Note: The Contract Total has been reduced to account for Incentives to be received directly by the Contractor, as follows:
\$1,740 - PA State SunShine Rebate (Residential) 35% of Gross Cost
\$6,600 - PA State SunShine Rebate (Residential Tier 4: \$ 0.75 per watt)

Loan Arrangements: The Contract Total has not been reduced to account for any Loan arrangements.

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Sales & Service Contract

General Terms and Conditions of Sale

Our business relationships with our customers shall be based on our General Terms and Conditions of Sale, as defined below:

1. **Turn Key Service:** Contractor is providing a "turn key" system which includes all applicable standard hardware, materials, supplies and services required to provide a fully-operational system.
2. **Compliance to Building Codes:** All work shall be completed in a workmanship like manner and in compliance with all building codes and other applicable laws.
3. **License Status:** To the extent required by law all work shall be performed by individuals duly licensed and authorized by law to perform said work.
4. **Use of Subcontractors:** Contractor may at its discretion engage subcontractors to perform work hereunder, provided Contractor shall fully pay said subcontractor and in all instances remain responsible for the proper completion of this Contract.
5. **Liens and Waivers of Liens:** Contractor shall furnish Customer appropriate releases or waivers of lien for all work performed or materials provided at the time the next periodic payment shall be due. To protect Customer against liens being filed by Contractor, subcontractors and providers of materials, Contractor agrees that Final payment to Contractor shall be withheld by Customer until Contractor presents Customer with lien waivers, lien releases, or acknowledgment of full payment from each subcontractor and materials provider.
6. **Change Order (Mid-Performance Amendments):** The Contractor and Customer recognize that Contractor's original cost and time estimates may prove too low due to unforeseen events, or to factors unknown to the Contractor when the contract was made; Customer may desire a mid-job change in the specifications that would add time and cost to the specified work possibly inconvenience the Contractor; or Other provisions of the contract may be difficult to carry out because of unforeseen events, such as a materials shortage or a labor strike. If these or other events beyond the control of the parties reasonable require adjustments to this contract, the parties shall make a good faith attempt to agree on all necessary particulars. Such agreements shall be put in writing, signed by the parties and added to this contract. Failure to reach agreement shall be deemed a dispute to be resolved as agreed herein.
7. **Liability Waiver:** Contractor warrants it is adequately insured for injury to its employees and others incurring loss or injury as a result of the acts of Contractor or its employees and subcontractors.
8. **Permits and Approvals:** Contractor shall at its own expense obtain all permits necessary for the work to be performed.
9. **Surety Bond:** Prior to beginning job, Contractor shall be required to obtain a surety bond covering Contractor's obligations under this contract, in the amount of \$ _____.
10. **Taxes:** Unless otherwise indicated, no taxes are included in the prices. Customer agrees to pay any taxes which are paid or payable, or assessed in connection with this Work. In the event Customer shall fail to pay any periodic or installment payment due, Contractor may cease work without breach pending payment or resolution of any dispute.
11. **Dispute Resolution:** All disputes hereunder shall be resolved by binding arbitration in accordance with the rules of the American Arbitration Association.
12. **Force Majeure:** Contractor shall not be liable for any delay due to circumstances beyond its control including strikes, casualty or general unavailability of materials. Any starting or completion dates stated by us shall be subject to clarification of all technical details. Moreover, our obligation to meet any deadlines shall be based on the punctual and proper fulfillment of the customer's obligations. In the event of strikes, lockouts, Force Majeure, delayed shipments by suppliers or subcontractors or other causes hindering punctual Completion for reasons that we are not accountable for, we shall be entitled to extend the Completion date(s) by a reasonable amount of time.
13. **Materials:** All materials shall be new, in compliance with all applicable laws and codes, and shall be covered by a manufacturer's warranty if appropriate.

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14. What Constitutes Completion: The work specified herein shall be considered completed upon approval by Customer, provided that Customer's approval shall not be unreasonably withheld. Except for the "retainage amount" of 10% of the contract price, substantial performance of the specified work in a workmanlike manner shall be considered sufficient grounds for Contractor to require final payment by Customer, except as provided in Liens and Waiver of Liens clause herein.

15. Limited Warranties: Contractor will complete the specified work in a substantial and workmanlike manner according to standard practices prevalent in Contractor's trade. The specified work will comply with all applicable building codes and regulations.

Contractor warrants that the labor and materials provided as part of the specified work will be free from defects for a period of five (5) years from the date of completion.

Major equipment as supplied by third-party(ies) manufacturer(s) shall be warranted in accordance that manufacturer's warranty.

Additional warranties offered by the Contractor are as follows: _____

Contractor disclaims any liability for direct or indirect damages due to improper modifications, alterations or repair attempts, inappropriate use or operation, insufficient ventilation of electrical equipment, non-compliance with relevant safety standards or regulations, flood, lightning, over voltage, storm, fire (acts of nature).

Contractor will not be liable for any direct, indirect or consequential damages, losses, costs or expenses however arising in contract or tort, including without restriction any economic losses of any kind, any loss or damage to property, any personal injury, any damage or injury arising from or as a result of misuse or abuse, or the incorrect operation of the equipment.

16. Site Maintenance: Contractor agrees to be bound by the following conditions when performing the specified work:

Contractor shall perform the specified work between the following hours: _____

At the end of each day's work, Contractor's equipment shall be stored in the following location: _____

At the end of each day's work, Contractor agreement to clean all debris from the work area and leave all appliances and facilities in good working order except as follows: _____

Contractor agrees that disruptively loud activities shall be performed only at the following times: _____

Contractor agrees to confine all work-related activity, materials and products, including dust and debris, to the following areas: _____

17. Right of Cancellation: Customer may cancel this Contract within three (3) days after signature by notifying Contractor of such in writing.

18. Other Terms: Customer and Contractor additionally agree that:

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All agreements between Customer and Contractor related to the specified work are incorporated in this Contract. Any modification to the Contract shall be in writing.

I have read and agree to the above Sales Contract:

CUSTOMER:

Signature _____

Date _____

CONTRACTOR:

Signature _____

Date _____