

# District 70 - Rockland School

Estimate for E/W Roof-Mounted Solar Facility

Assumptions	
Size (kW)	131.5
Cost per kW	\$1.89
System Cost	\$248,535.00
ASAP	5%
System Degradation Rate	0.665%
Electricity Production (kWh/yr.)	164,375
Electricity Cost (\$/kWh)	\$0.095
Electricity Cost Savings	0.00%
Electricity Cost Escalator (%/yr.)	0%
Corporate Tax Rate	21.0%
Investment Tax Credit	30%
SREC Price (\$/Mwh) (65.61 - 6% fee, -10% Escrow, -5% 3rd Block)	\$45.15
Inverter Rebate (\$/kW)	\$250.00
Ops & Maint. (% of System Cost)	1.00%
Ops & Maint. Cost Escalator (%/yr.)	1.00%
Insurance (\$/kW)	\$8.00
Software Monitoring	\$500.00
Legal & Accounting	\$3,000.00

## Solar Renewable Energy Credits (SREC's)

	Ameren	ComEd
≤ 10 kW	\$85.10	\$72.97
> 10 - 25 kW	\$78.70	\$73.23
> 25 - 100 kW	\$64.41	\$65.61
> 100 - 200 kW	\$52.54	\$53.75
> 200 - 500 kW	\$46.85	\$48.07
> 500 - 2,000 kW	\$43.42	\$44.64

## Summary of Financial/CO2 Impacts

Investor Tax Incentives	\$ 118,924
Other Incentives	\$ 259,443
Final Cost to D70	\$61,260
Electricity Savings over 30 years	\$605,881.45
Decrease of Carbon Dioxide (lbs)	10,157,836

## Cash Flows

Debits	
Cost	\$248,535
Sales Tax	\$17,397
Fee's/Com.	\$5,485
Interest 5%	\$73,283
Total Cost	\$342,781

Credits	
Inverter Rebate	\$ 32,875
SREC's	\$ 129,722
Fed Tax 30%	\$ 74,561
Depreciation	\$ 44,363
Total Incentives	\$ 281,521

Net Cost	\$61,260
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## Cash Flow Projections

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
System Investment	\$ (248,535.00)											
Investment Tax Credit		\$ 74,560.50										
Depreciation Benefit		\$ 44,363.50										
Taxable Cash Flows												
Inverter Rebate		\$ 32,875.00										
Sale of SRECs		\$ 23,349.91	\$ 23,349.91	\$ 23,349.91	\$ 23,349.91	\$ 23,349.91						
Sale of Electricity		\$ 15,615.63	\$ 15,511.78	\$ 15,408.63	\$ 15,306.16	\$ 15,204.37	\$ 15,103.27	\$ 15,002.83	\$ 14,903.06	\$ 14,803.95	\$ 14,705.51	
Operations and Maintenance		\$ (2,485.35)	\$ (2,510.20)	\$ (2,535.31)	\$ (2,560.66)	\$ (2,586.27)	\$ (2,612.13)	\$ (2,638.25)	\$ (2,664.63)	\$ (2,691.28)	\$ (2,718.19)	
Insurance		\$ (1,052.00)	\$ (1,052.00)	\$ (1,052.00)	\$ (1,052.00)	\$ (1,052.00)	\$ (1,052.00)	\$ (1,052.00)	\$ (1,052.00)	\$ (1,052.00)	\$ (1,052.00)	
Software Monitoring		\$ (500.00)										
Legal and Accounting		\$ (3,000.00)										
ASAP Fee		\$ (12,426.75)										
Net Cash Flow Before Tax	\$ (248,535.00)	\$ 52,376.44	\$ 35,299.49	\$ 35,171.23	\$ 35,043.41	\$ 34,916.02	\$ 34,788.66	\$ 34,661.30	\$ 34,533.94	\$ 34,406.58	\$ 34,279.22	
Tax Expense	\$ (17,397.45)	\$ (10,999.05)	\$ (7,412.89)	\$ (7,385.96)	\$ (7,359.12)	\$ (7,332.36)	\$ (7,305.60)	\$ (7,278.84)	\$ (7,252.08)	\$ (7,225.32)	\$ (7,198.56)	
Net Cash Flow	\$ (265,932.45)	\$ 160,301.38	\$ 27,886.60	\$ 27,785.27	\$ 27,684.30	\$ 27,583.66	\$ 27,483.02	\$ 27,382.38	\$ 27,281.74	\$ 27,181.10	\$ 27,080.46	
Cumulative Cash Flow	\$ (248,535.00)	\$ (88,233.62)	\$ (60,347.02)	\$ (32,561.75)	\$ (4,877.45)	\$ 22,706.21	\$ 49,517.34	\$ 76,328.47	\$ 103,139.60	\$ 130,000.73	\$ 156,861.86	
Internal Rate of Return	5.84%											
Year 15 10% SREC Escrow	\$ 12,972.17											
Church Electricity Savings												
Is Inverter Rebate taxable?												
Assumes 100% equity.....debt implications?												

\$324,055.82

**PRELIMINARY PROPOSAL**

Proposal No. **3504-01CF**  
March 13, 2019

**Prepared for:**

Rockland School  
160 West Rockland Road  
Libertyville, Illinois 60048

**Prepared by:**

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Thank you for the opportunity to discuss your solar energy needs. This quotation is based on the preliminary information we've gathered to offer you an initial suggested system configuration, size and budgetary estimate. Upon more detailed review, the size and cost may be adjusted to reflect new information.

**Project Name & Location**

Rockland Elementary  
160 West Rockland Road  
Libertyville, Illinois 60048

**Site Information**

Energy Consumption	218,000 kWh / year
Blended Utility Rate	0.095 \$ / kWh
Electrical Service	3-phase (480 VAC)

The proposed system is 82 kWdc, which is the rated power generation capacity of the solar modules. Each module is rated at 285 W for a total number of 288 modules in the system. The system is projected to produce 110,000 kWh of net usable electricity per year.

**System Overview**

System Size	288 modules
System Module Power Capacity	82 kWdc
Projected Annual Energy Production	110,000 kWh / year
Ratio of Current Consumption Offset with Solar System	50%
Mounting Style	Roof (DeltaWing)
Estimated Useful Lifespan	30 years

Tax credits are available for this project, reducing the net after-tax cost of the system investment.

**Investment Overview**

System Investment / Quotation	\$154,800	<i>total turnkey installation cost (\$1,890/kWdc or \$1.89/Wp)</i>
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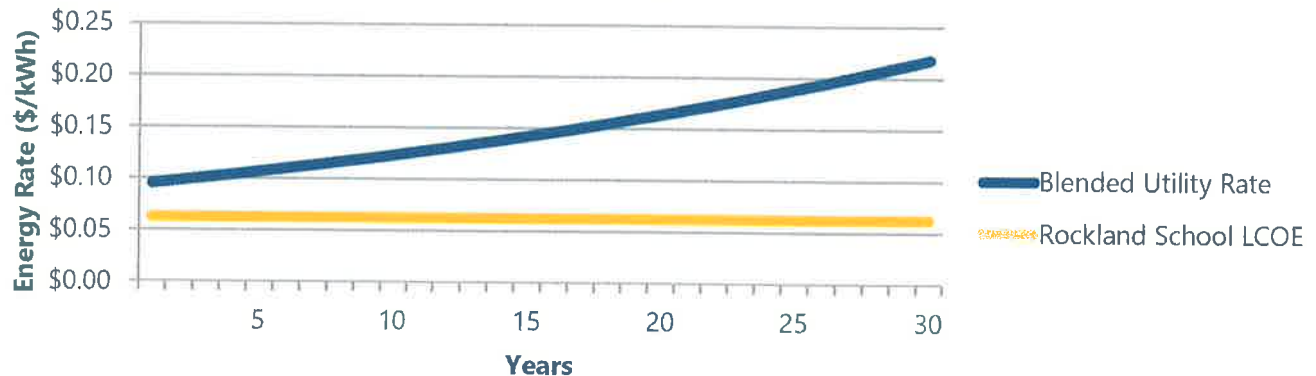
<b>Net Investment Before Depreciation</b>	<b>\$154,800</b>	<i>net cost in year of installation, before depreciation benefits</i>
Estimated Depreciation Tax Benefit	\$0	<i>over 1 year with an effective tax rate of 21%</i>
<b>Net Investment After Depreciation Tax Benefit</b>	<b>\$154,800</b>	<i>net after-tax investment after all tax benefits</i>

## Projected Energy Savings

Once installed, your SunPeak solar photovoltaic (PV) system will provide nearly free electricity every day for the next 30 years. This will lead to significant cost savings from your current utility bill, a savings that is anticipated to grow each year. The cost of electricity continues to rise in America and has grown 2.9% year-over-year over the past fifteen years.

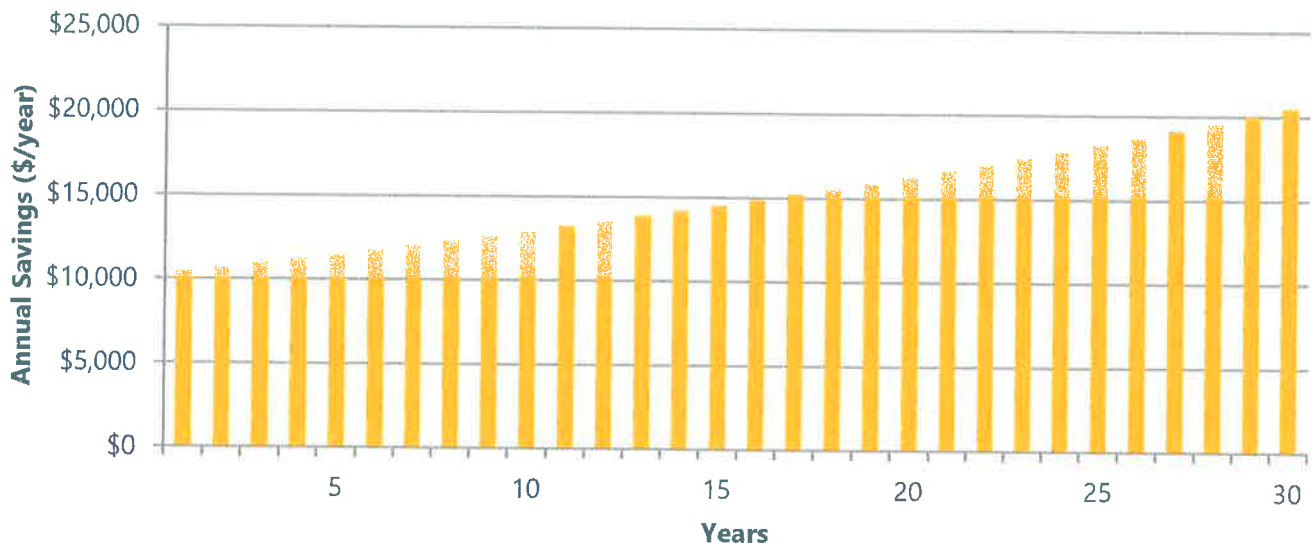
The Levelized Cost of Energy (LCOE) is the effective energy cost of solar, factoring in both upfront investment and operating costs. It allows a direct comparison between utility rates and the equivalent cost of solar over the life span of the system. You are currently paying a blended utility rate of \$0.095/kWh, which is projected to rise to \$0.218/kWh over the lifespan of the system. In contrast, the after tax LCOE for the proposed SunPeak system is \$0.062/kWh and is fixed.

### Solar Cost of Energy vs. Utility Rates



The proposed system is projected to generate 110,000 kWh/year. At the current blended energy rate being paid to the utility, this equates to an annual value of electricity of \$10,450/year. This figure is anticipated to grow over the lifespan of the system as the utility rates rise, leading to a total lifespan projected savings of \$448,000.

### Projected Annual Energy Cost Savings



## Operations & Maintenance (O&M)

An investment in a SunPeak system pays for itself and leads to significant cost savings and a strong return on investment over the duration of the system's life. The below estimates of cost savings are based on preliminary information and assumptions, and provide a guide to the expected economics for your project.

Annual Value of Electricity Produced	\$ 10,450 per year
Budgeted Annual Operating Expenses	\$ 450 per year
Net Value Generated after Operating Expenses	\$ 10,000 per year

The cost of operating the system each year is minimal, however, it is prudent to include some budget for eventual need to replace or service some components. The financial analysis below includes expected typical O&M expenses including a budget for expected maintenance and equipment replacement needs. SunPeak can offer you a variety of levels of service, depending on your preference and needs. The system has an expected useful life of 30 years, which is used to calculate the following return on investment metrics. The below figures take into account the various tax incentives and are after-tax figures.

## Return on Investment Overview

Internal Rate of Return (IRR) - Unlevered	7.3% per year
Reduction in Total Energy from Utility	50% reduction
Lifespan Simple Return on Investment (ROI)	222% ROI
Lifespan Value of Electricity Produced	\$ 448,000 over 30 years
Lifespan Energy Produced	3,060 MWh

**Internal Rate of Return (IRR)** can be loosely thought of as an effective "interest rate" that would be equal in value to the series of after-tax cash flows the system is projected to generate. Its advantage is in its simplicity. If the IRR is greater than the businesses cost of capital, the investment may be attractive. IRR can typically be magnified through use of debt financing; however, the IRR presented above assumes no outside financing.

**Reduction in Total Energy from Utility** is the projected annual energy production of the system as a ratio of current energy consumed at the facility.

**Lifespan Simple Return on Investment (ROI)** is the net after-tax value of the electricity cost savings divided by the net after-tax investment in the system.

**Lifespan Value of Energy Produced** is a simple summation of the annual projected value created over the system's 30-year lifespan based on the offset value of projected utility rates, assumed to inflate at 3% per year.

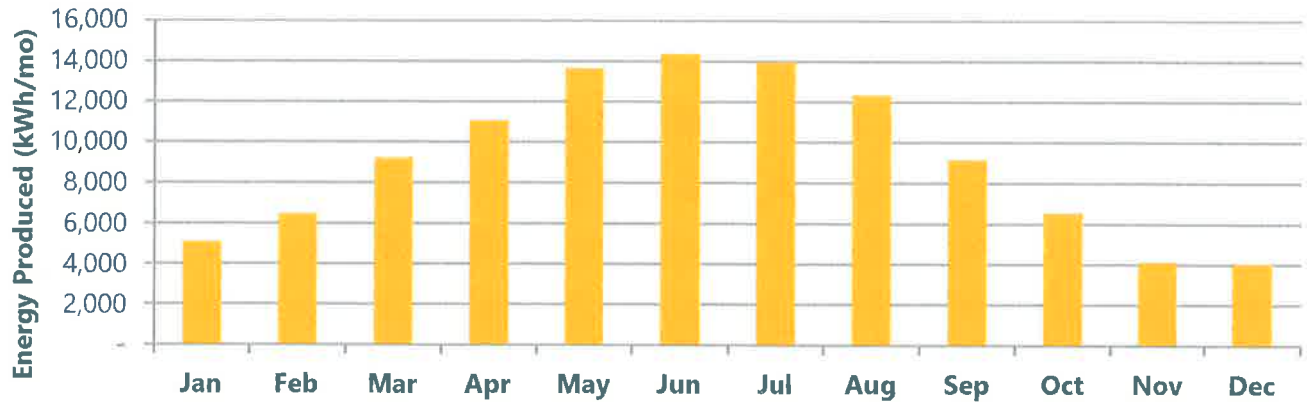
**Lifespan Energy Produced** is a simple summation of the projected energy production of the system over the next 30 years, which is its projected life. This figure takes into account expected module degradation over time.



## System Performance Overview

The system is projected to produce 110,000 kWh/year. Due to there being a seasonal variance in the available sunlight, monthly energy production will vary over the course of the year. The chart below shows an estimate of the distribution of energy produced per month.

### Monthly Energy Production



## Environmental Impact

Investment in solar energy demonstrates your leadership in reducing environmental impact. Over the course of the system's life, the energy produced will offset significant amounts of energy that would have otherwise been generated by conventional utilities.



**Electrical Energy**

**3,060,400** kWh



**Carbon Dioxide**

**2,300** tons of CO<sub>2</sub>



**Landfill Waste**

**800** tons on landfill



**Passenger Miles**

**5,024,500** miles of driving



**Gasoline**

**237,500** gallons of gasoline



**Coal**

**1,100** tons of coal



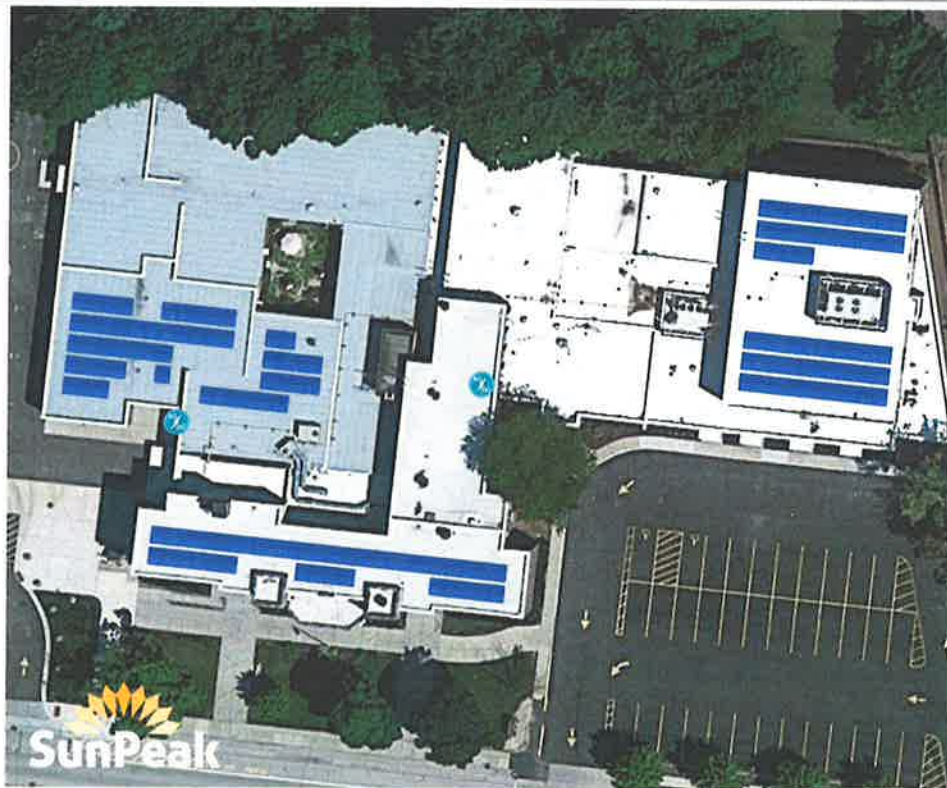
**Trees Planted**

**54,100** trees planted

## System Configuration

SunPeak has adopted a modular approach to project sizing, scaling projects with pre-engineered and proven subsystems. This approach leads to highly repeatable results, maximizes cost efficiency and offers the greatest value. Detailed engineering will occur upon project acceptance. Final engineering analysis may alter the following system outline; however, the final system will be equivalent or superior to what is presented below.

<b>System Size &amp; Configuration</b>	66 kWac power capacity (grid) 82 kWdc power capacity (solar modules) 1.24 DC/AC ratio
<b>Solar PV Modules (Panels)</b>	Tier 1 commercial polycrystalline silicon panels; e.g. Hareon Solar 285 watts/module power capacity 288 modules in system
<b>Inverter(s)</b>	Tier 1 commercial string inverter; e.g. SMA 33 kWac inverter capacity 2 inverters in system 3-phase output
<b>Mounting System</b>	Tier 1 commercial mounting system; e.g. Schletter USA Roof (DeltaWing) style mounting All necessary structural engineering included.
<b>Production Monitoring</b>	Solar Log, with online monitoring & smartphone access Flat panel display monitor can be added for in-building showcase of energy

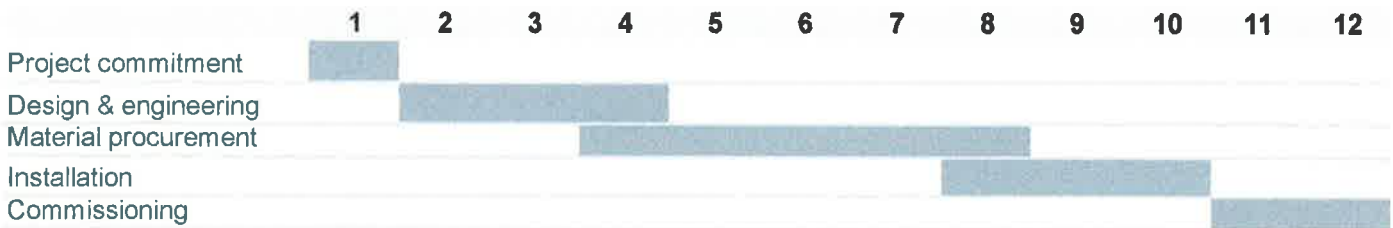


*The above image is a preliminary concept based on initial information and satellite imagery.*

## Installation Schedule

SunPeak can begin implementation on the project immediately. The project will start with a detailed site assessment from one of our field engineers, then full engineering and design. Concurrently, SunPeak will work with you and handle all required building & electrical permits, utility interconnection applications, incentive applications (if applicable) and any other needs as they arise. We manage the whole process.

Primary materials will be ordered after the design is mature. Each project is designed and built to suit, so a lead-time is typically associated with material procurement of 4-6 weeks. Once the materials are on-site, installation is completed. Final system testing and commissioning are the last steps.



## Payment Schedule

Invoices are typically issued as the project is completed, tied to specific milestones. Upon contract execution and project deposit, the project begins. SunPeak may be able to assist in various alternative financing schemes, depending on project size and need. The following table presents the standard payment schedule:

1	Project Deposit	\$15,484	10%
2	Materials Ordered	\$46,453	30%
3	Materials On Site	\$46,453	30%
4	System Completion	\$38,711	25%
5	Commissioned	\$7,742	5%
<b>Total Project Cost</b>		<b>\$154,843</b>	<b>100%</b>

## Available Operations & Maintenance Plans (O&M)

SunPeak can offer an optional Operations & Maintenance (O&M) service contract to maintain the system at full operating capability over the life of the system. The O&M contract can be structured at the level of service desired post-installation.

	Standard	Comprehensive
Remote Performance Monitoring	✗	✗
Online Data Hosting for Monitoring & Dashboard/Smartphone Access	✗	✗
Warranty Claim Service	✗	✗
Qualification of Customer Staff for System Operation & Reset	✗	✗
Annual System Performance Report	✗	✗
Annual On-Site Inspection & Cleaning		✗
Incidental System Maintenance & Repair		✗
<b>Annual Cost</b>	<b>\$450 / year</b>	<b>\$1,060 / year</b>

**We take care of everything.** SunPeak is a comprehensive solar developer that handles the whole process of “going solar” from beginning to end. We are focused everyday on solar photovoltaic (PV) systems. Our experience in this field allows us to handle all aspects of the process, allowing you to tend to your business. From initial site assessment and feasibility analysis through component procurement and final installation, we handle it all.

**SunPeak offers the best value in the industry.** Due to our quantity buying power, we have direct relationships with the world's leading component manufacturers. Our primary mission is to make clean renewable energy available to everyone. This includes anyone that wants to save money, not just those that want to promote green energy. This is only possible by streamlining our entire supply chain and operations. SunPeak runs a tight ship and passes those savings on to you.

**Global experience. Local service.** SunPeak's management has project experience in Germany, Japan, China, Canada and the United States. This perspective allows us to see the world's best practices, and adopt the best ideas for each project.

**Quality systems. Decades of power.** SunPeak uses only top quality components and engineers each system to provide reliable energy for decades. We have exclusive relationships with numerous suppliers, offering unique technology to the North American market.

**Long-term support and a close ongoing relationship.** In short, we stand behind our work. We offer a complete warranty, and ongoing operations and maintenance support for the life of the system. Our relationship with you will not end after the system is installed.

**We will help maximize your available incentives.** We are in the midst of exciting times. Federal, state and local governments are offering incredible incentives to adopt clean energy; however, navigating these incentives can be daunting. SunPeak has successfully attracted grant money on behalf of its customers, sometimes offsetting over half of the total project cost. We would be happy to assess your available incentives and assist in preparing any necessary grant applications for you. If awarded, you keep the money.



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## Assumptions & Clarifications

- 1.) LCOE discounts the cost of the energy and energy produced per National Renewable Energy Laboratory guideline
- 2.) Quotation assumes facility is "solar ready" and significant investment in site preparation is not needed.
- 3.) Additional insurance costs may increase O&M estimates higher than what is estimated.
- 4.) The blended energy rate (\$/kWh) equals the total cost of energy divided by the total energy consumed (kWh).
- 5.) Federal Investment Tax credit can be applied 1-year back and up to 20-years forward, per IRS rules.
- 6.) Solar production estimates were made using System Advisor Model (SAM), published by NREL.
- 7.) System configuration, size and pricing may need to be altered based on further analysis and information.
- 8.) ROI calculation based on the following assumptions:
  - a.) inflation in energy prices averages 2.9% per year
  - b.) module degradation averages -0.5% per year
  - c.) O&M costs are budgeted at \$450 per year
  - d.) system performance is based on 1340 kWh / kWdc / year per SAM weather files.
  - e.) effective tax rate is 21%
- 9.) For business systems, LCOE is an "after tax" rate that captures tax credits and depreciation benefits
- 10.) Estimates for environmental impact were derived from coefficients presented on the EPA's website
- 11.) Production estimates were based on azimuth of Roof (DeltaWing)
- 12.) Quoted price is good for thirty (30) days.
- 13.) Proposal assumes electrical system is capable of supporting installed solar system; e.g. is "solar ready."
- 14.) Ground-based systems may require additional investments in fencing and/or landscaping, which is not included  
#NAME?

## Disclaimer

*This proposal is for informational purposes only, using estimates for current and future utility rates, system production and projected incentives. System quote represents SunPeak's best estimate with the information presently available, but should be treated as budgetary until a detailed engineering analysis can be completed. Please consult with your tax accountant for any tax related information.*

*This proposal assumes the site is in acceptable condition to install a solar system (structurally, electrical system, access, etc.). This proposal includes forecasts, projections and other predictive statements resulting from an analysis by SunPeak of the information provided to it by the prospective client as well as information from SunPeak's operations and what is available within the marketplace. The forecasts, projections and other predictive statements, particularly those of energy savings and cost savings, are based on information available to SunPeak at the time made, stated assumptions that were relied upon and other factors outside the control of SunPeak. Prospective clients should recognize that the forecasts, projections and other predictive statements stated herein, although based upon information and assumptions that SunPeak believes to be viable and accurate, are projections and that SunPeak does not provide any guarantees for the achievement by the prospective client of the projections noted herein. The prospective client must realize that in the development of any projection there are certain factors that are unforeseen at the time the projection is made and thereby there are certain risks involved that provide for uncertainty. The prospective client's actual performance results may differ from those projected in this proposal. Therefore, there is no guarantee presented or implied as to the accuracy of any specific forecast, projection or predictive statement contained herein.*