



*Service, Quality, Community*

**BOARD OF WATER AND POWER COMMISSIONERS  
ADJOURNED REGULAR MEETING AGENDA  
November 5, 2024  
10:00 AM**

**CITY OF BIG BEAR LAKE,  
DEPARTMENT OF WATER AND POWER  
41972 GARSTIN DRIVE  
BIG BEAR LAKE, CALIFORNIA 92315  
[WWW.BBLDWP.COM](http://WWW.BBLDWP.COM)**

**BOARD MEMBERS**

Bob Tarras, Chair  
Barbara Willey, Vice-Chair  
Craig Hjorth, Treasurer  
Joe Cylwik, Commissioner  
Jim Smith, Commissioner

**This meeting will be held at the DWP Office at 41972 Garstin Drive, Big Bear Lake, CA 92315,**

**ZOOM ACCESS INFORMATION**

This meeting will be available at: <https://us02web.zoom.us/j/85359418109>

**Passcode: bigbear  
Meeting ID: 833 4812 6937**

You may also call into the meeting by dialing one of the phone numbers below, entering the meeting ID, and entering the passcode.

**Meeting ID: 833 4812 6937  
Passcode: 985264**

- +1 669 900 9128 US (San Jose)
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- +1 346 248 7799 US (Houston)
- +1 301 715 8592 US (Germantown)
- +1 312 626 6799 US (Chicago)
- +1 646 558 8656 US (New York)

**OPEN SESSION**

**CALL MEETING TO ORDER**

**PLEDGE OF ALLEGIANCE**

**PUBLIC FORUM**

All remarks shall be addressed to the Board as a body only. There is a three-minute maximum time limit when addressing the Board. Please note that California law prohibits the Board from taking action on any item not appearing on the agenda.

**1. DISCUSSION/ACTION ITEMS**

**1.1 Motive Solar and Backup Generator Proposal**

Agreement with Motive Energy for the Garstin Water Operations Facilities Project – Solar and Generator Backup

**2. CLOSED SESSION**

**2.1 Closed Session Pursuant to Section 54957, Public Employee Performance Evaluation**

Title: General Manager

**ADJOURNMENT**

I hereby certify under penalty of perjury, under the laws of the State of California, that the foregoing agenda was posted in accordance with applicable legal requirements. Dated this 28<sup>th</sup> of October 2024.

*Sam Armstrong*

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Sam Armstrong, Board Secretary, DWP Board of Commissioners

*The City of Big Bear Lake, Department of Water and Power strives to make all of its public meetings accessible to everyone. If you need any special assistance or disability-related accommodation in order to participate in this meeting, please contact the Board Secretary at (909) 866-5050. Notification 48 hours prior to the meeting will enable the DWP to make reasonable arrangements to ensure accessibility to this meeting.*

*We are an equal opportunity provider and employer.*

# AGENDA REPORT



*Service, Quality, Community*

**DATE:** November 5, 2024

**TO:** Board of Commissioners

**FROM:** Reginald A. Lamson, General Manager

**RE:** **Agreement with Motive Energy for the Garstin Water Operations Facilities Project – Solar and Backup Generator**

**Background:**

The Garstin Water Operations Facilities Project includes solar panels and a diesel backup generator that will provide power for the new Garstin facilities, Lake Plant Well No.5 Pumping Plant, and Lake Plant Well No. 6 Pumping Plant.

Motive Energy provided the attached proposal based on the annual energy demand for the proposed Garstin Water Operations Facilities and the two well pumping plants. The proposed solar system will include 368 solar panels, which will be mounted on the operations building and parking structure, an automatic transfer switch, 1,000A net meter electrical service, and diesel generator. The estimated payback period is 11.3 years and the electric bill savings over the 30-year project life are estimated at \$5,062,631. The estimated net total cash flow over the 30-year life of the project is \$3,710,521. The typical lifespan of solar panels is greater than 30 years. The current Garstin Solar System saves about \$25,000 per year. The proposed Garstin Solar System will save an estimated \$98,854.

With the passage of the Inflation Reduction Act (IRA) the long-standing Investment Tax Credit (ITC) program for solar projects was modified. Now municipalities and nonprofit organizations can apply for a 30% rebate via the ITC program. Motive Energy evaluated the requirements for the ITC's 40% rebate and DWP qualifies for the solar portion of the project.

During the October 22, 2024 Board meeting, the following questions were asked:

- 1) *Diesel versus Natural Gas Standby Generator?* A natural gas engine/generator is more commonly used as a primary power source that operates on a regular basis. A standby generator operates intermittently and for short periods of time. A diesel engine/generator is more reliable operating within standby conditions. Also, during an earthquake, natural gas lines can fail, and natural gas engine generators will not operate.
- 2) *Does the solar equipment include more than one (1) inverter?* Yes, there is one SE80K inverter and one SE120K inverter. The 368 solar panels each have an optimizer, which allows them to operate independently of each other and optimizes their power production.

- 3) *Does PBK’s scope of work include the design of the solar and standby generator equipment?*  
 No, PBK’s agreement states, “Photovoltaic panels are expected to be incorporated into the design of the warehouse facilities.”
- 4) *What components of the solar and standby generator equipment are eligible for the 40% rebate?* The solar system, 1,000-amp electrical switch gear, conduits, and conductors are eligible for the 40% rebate. The standby generator is not eligible.

The cost breakdown for the above facilities is as follows:

ITEM	TOTAL (\$)	NOTES
Solar Panels	\$721,416.13	368 Panels, Mounting Hardware, Conduits, Conductors, & Installation
Conduit, Conductors, and Trenching for Well Plants	\$301,949.85	Lake Plant Well Nos. 5&6 Electrical Service Upgrades, Conduits, Conductors, Trenching, and Installation
1,000-amp Service Main	\$235,926.53	Furnish and Install Net Meter Panel per BVES Specifications.
Solar Sub-Total	\$1,259,292.51	Solar Equipment Eligible for the 40% Rebate
400 KW Standby Generator	\$531,903.12	Furnish and Install 400 KW, Deisel Generator, Automatic Transfer Switch, 24-Hour Fuel Tank, and Ventilation Equipment
Total	\$1,791,195.63	
Less 40% Solar Components Rebate	\$503,717.00	\$1,259,292.51 X 40%
Net Total Cost	\$1,287,478.63	

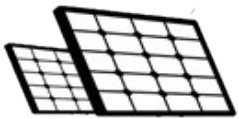
**Financial Impact:**

If approved, funds in the amount of \$1,880,756 will be appropriated for these services.

**Recommendation:**

Award a design-build agreement with Motive Energy for the Garstin Solar and Backup Generator Project for \$1,791,196, and budget internally \$89,560 for a 5% contingency for a total amount of \$1,880,756.

**MOTIVE  
ENERGY**



SOLAR, BATTERY BACK-UP, AND EV CHARGER SOLUTIONS



# Department of Water



- Pricing includes a Generac SD400 - 400 kW diesel generator with ~24 hour backup capability.
- Pricing includes 1000A 480/277V 3Ph main electrical switchgear(30KAIC NEMA 3R), It excludes any upstream electrical equipment including transformer and downstream electrical equipment including any subpanels & associated breakers.
  - Pricing assumes single POI interconnect at 277/480V 3Ph.
  - Trenching, conductors and conduit for LP5 and LP6 are included in price.
- PV O&M cost for the first year is \$4,765 which is excluded from the proposal. Estimated annual price escalation shall be 4%.
  - Steel Racking is TAA (Trade Agreement Act) and BAA (Buy American Act) compliant.
  - Total consumption is assumed to be combined into one rate schedule (A-3).
- kWh usage data for LP5 and LP6 have been estimated using a 12-hour daily operation schedule, taking into account averages of the kW values from pump efficiency reports.
  - Permit costs/AHJ fees are excluded and would be a pass-through.
- Proposal assumes 30%Investment Tax Credit doesn't apply to backup Diesel Generator.
- Proposal assumes the Energy Community Tax Credit 10% Bonus; customer will be required to apply for Bonus Credit Program.

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# 1 Project Summary

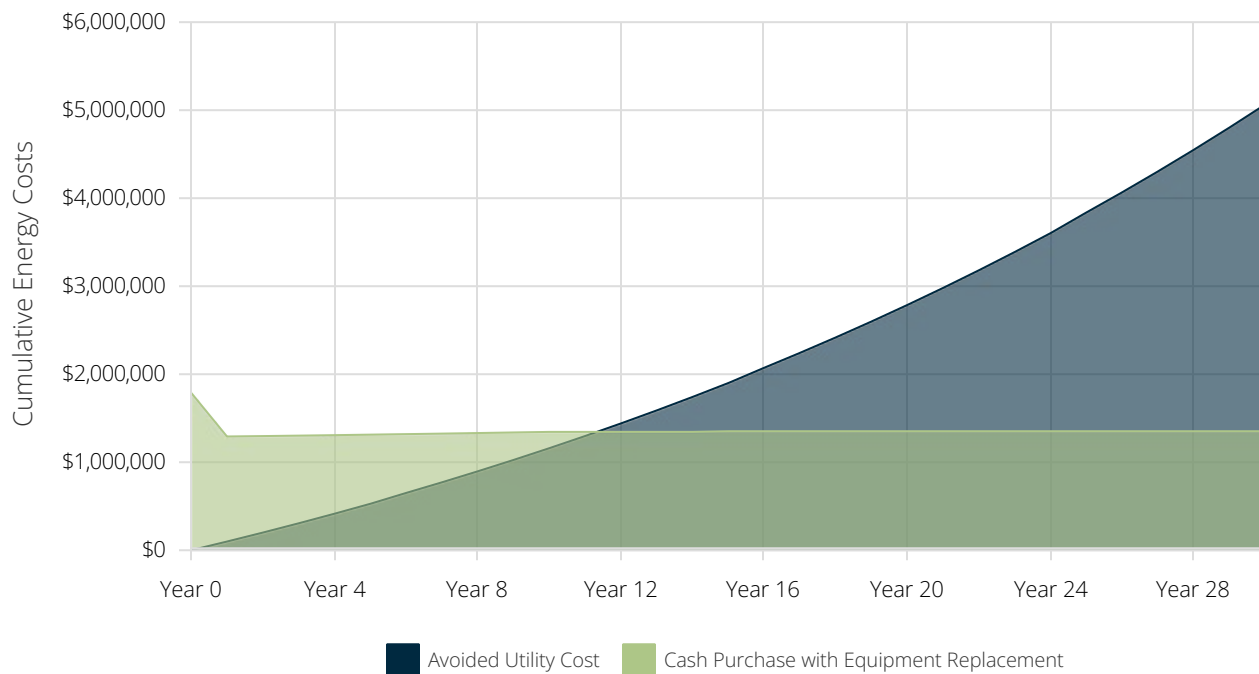
Payment Options	Cash Purchase with Equipment Replacement
IRR - Term	9.3%
LCOE PV Generation	\$0.123 /kWh
Net Present Value	\$938,369
Payback Period	11.3 Years
Total Payments	\$1,791,196
Total Incentives	\$503,717
Net Payments	\$1,287,479
Electric Bill Savings - Term	\$5,062,631
Upfront Payment	\$1,259,293

## Combined Solar PV Rating

Power Rating: 202,400 W-DC

Power Rating: 179,029 W-AC-CEC

**Cumulative Energy Costs By Payment Option**



# 2.1.1 PV System Details

## General Information

Facility: Combined Office + Wells (interval)  
 Address: 41972 Garstin Dr Big Bear Lake CA 92315

## Solar PV System Rating

Power Rating: 202,400 W-DC  
 Power Rating: 179,029 W-AC-CEC

## Solar PV Equipment Description

Solar Panels: (368) Thornova Solar TS-BG72(550)  
 Inverters: (1) SolarEdge SE80KUS, (1) SolarEdge SE120K

## Energy Consumption Mix

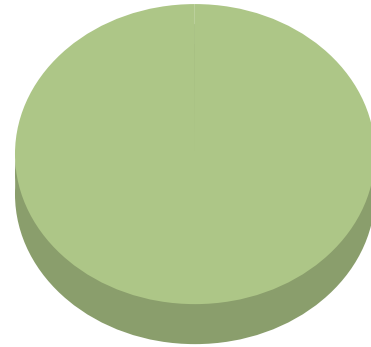
Annual Energy Use: 341,052 kWh

## Solar PV Equipment Typical Lifespan

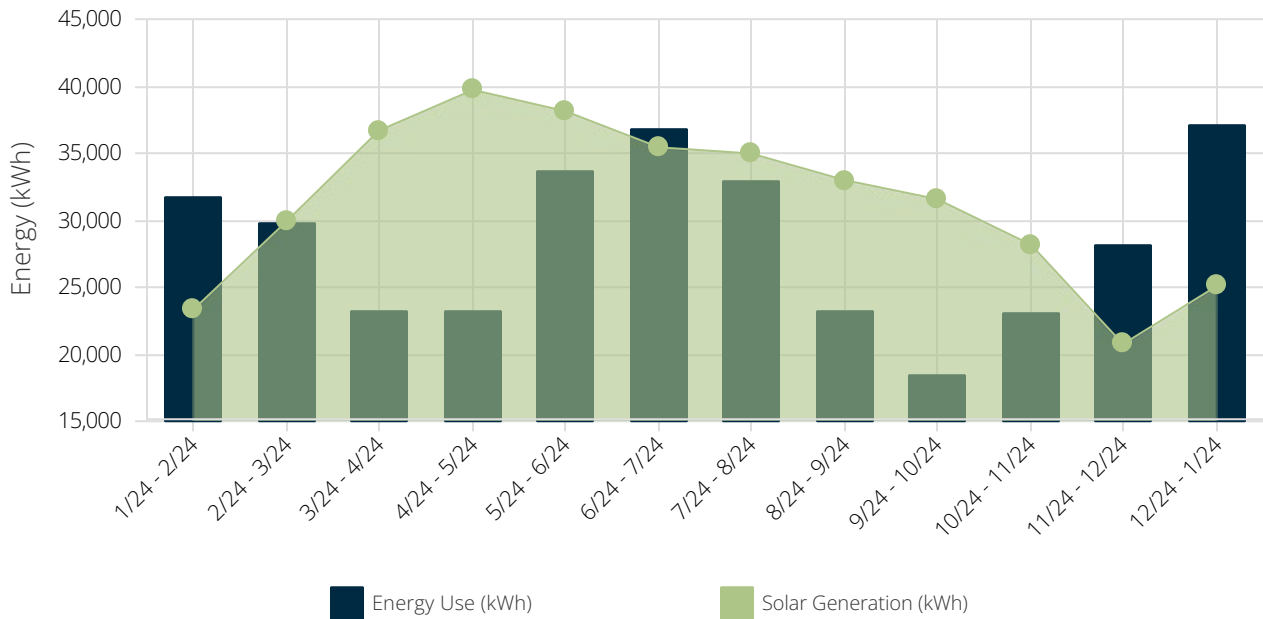
Solar Panels: Greater than 30 Years  
 Inverters: 15 Years

## Solar PV System Cost and Incentives

Solar PV System Cost	\$1,259,293
Direct Pay ITC	-\$503,717
<b>Net Solar PV System Cost</b>	<b>\$755,576</b>



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: \$503,717



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Motive Energy Storage Systems, Inc., CSLB# 1089117

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## 2.1.3 Utility Rates

The table below shows the rates associate with your current utility rate schedule (A-3 - 3/15/2023). Your estimated electric bills after solar are shown on the following page.

Customer Charges				Energy Charges				Demand Charges			
Season	Charge Type	Rate Type	A-3 - 3/15/2023	Season	Charge Type	Rate Type	A-3 - 3/15/2023	Season	Charge Type	Rate Type	A-3 - 3/15/2023
W	Flat Rate	per day	\$6.60	W	T < 657.5 kw	Import	\$0.26946	W	Flat Rate	Import	\$9.00
S	Flat Rate	per day	\$6.60	W	657.5 kw < T	Import	\$0.31869	S	Flat Rate	Import	\$9.00
				S	T < 657.5 kw	Import	\$0.26946				
				S	657.5 kw < T	Import	\$0.31869				

## 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: BVES - A-3 - 3/15/2023

Time Periods	Energy Use (kWh)	Max Demand (kW)	Charges			
			Other	Energy	Demand	Total
Bill Ranges & Seasons	Total	NC / Max				
1/24/2022 - 2/24/2022 W	31,670	86	\$205	\$9,089	\$774	\$10,068
2/24/2022 - 3/24/2022 W	29,707	93	\$185	\$8,561	\$837	\$9,583
3/24/2022 - 4/24/2022 W	23,169	66	\$205	\$6,380	\$594	\$7,179
4/24/2022 - 5/24/2022 W / S	23,247	72	\$198	\$6,438	\$640	\$7,275
5/24/2022 - 6/24/2022 S	33,620	103	\$205	\$9,711	\$927	\$10,843
6/24/2022 - 7/24/2022 S	36,862	116	\$198	\$10,776	\$1,044	\$12,018
7/24/2022 - 8/24/2022 S	32,850	96	\$205	\$9,466	\$864	\$10,534
8/24/2022 - 9/24/2022 S	23,140	72	\$205	\$6,371	\$648	\$7,224
9/24/2022 - 10/24/2022 S	18,377	60	\$198	\$4,952	\$540	\$5,690
10/24/2022 - 11/24/2022 S / W	23,128	72	\$205	\$6,367	\$636	\$7,208
11/24/2022 - 12/24/2022 W	28,160	76	\$198	\$8,003	\$684	\$8,885
12/24/2022 - 1/24/2023 W	37,122	98	\$205	\$10,827	\$882	\$11,914
Total	341,052	-	\$2,409	\$96,942	\$9,070	\$108,421



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## 2.1.5 New Electric Bill

**Rate Schedule:** BVES - A-3 - 3/15/2023

Time Periods Bill Ranges & Seasons	Energy Use (kWh)	Max Demand (kW)	Charges			
	Total	NC / Max	Other	Energy	Demand	Total
1/24/2022 - 2/24/2022 W	8,360	74	\$205	\$2,253	\$666	\$3,123
2/24/2022 - 3/24/2022 W	-237	76	\$185	\$64	\$684	\$805
3/24/2022 - 4/24/2022 W	-13,517	44	\$205	\$3,642	\$396	\$3,042
4/24/2022 - 5/24/2022 W / S	-16,473	40	\$198	\$4,439	\$360	\$3,881
5/24/2022 - 6/24/2022 S	-4,522	76	\$205	\$1,218	\$684	\$330
6/24/2022 - 7/24/2022 S	1,425	81	\$198	\$384	\$729	\$1,311
7/24/2022 - 8/24/2022 S	-2,127	65	\$205	\$573	\$585	\$216
8/24/2022 - 9/24/2022 S	-9,846	53	\$205	\$2,653	\$477	\$1,971
9/24/2022 - 10/24/2022 S	-13,200	47	\$198	\$3,557	\$423	\$2,936
10/24/2022 - 11/24/2022 S / W	-5,041	71	\$205	\$1,358	\$567	\$587
11/24/2022 - 12/24/2022 W	7,402	74	\$198	\$1,995	\$666	\$2,859
12/24/2022 - 1/24/2023 W	12,025	93	\$205	\$3,240	\$837	\$4,282
<b>Total</b>	<b>-35,751</b>	-	\$2,409	\$84	\$7,074	\$9,567

**Annual Electricity Savings: \$98,854**



# 3.1 Cash Purchase with Equipment Replacement

## Assumptions and Key Financial Metrics

IRR - Term	9.3%	Net Present Value	\$938,369	Payback Period	11.3 Years
ROI	207.2%	PV Degradation Rate	0.50%	Discount Rate	5.0%
Energy Cost Escalation Rate	4.0%	Federal Income Tax Rate	0.0%	State Income Tax Rate	0.0%
Total Project Costs	\$1,791,196				

Years	Project Costs	Inverter Replacement	Solar Production Monitoring Services	Electric Bill Savings	Direct Pay ITC	Total Cash Flow	Cumulative Cash Flow
Upfront	-\$1,791,196	-	-	-	-	-\$1,791,196	-\$1,791,196
1	-	-	-\$4,765	\$98,854	\$503,717	\$597,806	-\$1,193,390
2	-	-	-\$4,956	\$102,294	-	\$97,338	-\$1,096,052
3	-	-	-\$5,154	\$105,851	-	\$100,697	-\$995,354
4	-	-	-\$5,360	\$109,529	-	\$104,169	-\$891,185
5	-	-	-\$5,574	\$113,332	-	\$107,758	-\$783,427
6	-	-	-\$5,797	\$117,264	-	\$111,467	-\$671,960
7	-	-	-\$6,029	\$121,329	-	\$115,300	-\$556,660
8	-	-	-\$6,270	\$125,532	-	\$119,262	-\$437,398
9	-	-	-\$6,521	\$129,877	-	\$123,356	-\$314,043
10	-	-	-\$6,782	\$134,369	-	\$127,586	-\$186,456
11	-	-	-	\$139,012	-	\$139,012	-\$47,445
12	-	-	-	\$143,811	-	\$143,811	\$96,367
13	-	-	-	\$148,772	-	\$148,772	\$245,139
14	-	-	-	\$153,900	-	\$153,900	\$399,039
15	-	-\$7,422	-	\$159,200	-	\$151,778	\$550,817
16	-	-	-	\$164,678	-	\$164,678	\$715,495
17	-	-	-	\$170,339	-	\$170,339	\$885,835
18	-	-	-	\$176,190	-	\$176,190	\$1,062,025
19	-	-	-	\$182,237	-	\$182,237	\$1,244,262
20	-	-	-	\$188,485	-	\$188,485	\$1,432,746
21	-	-	-	\$194,941	-	\$194,941	\$1,627,687
22	-	-	-	\$201,612	-	\$201,612	\$1,829,300
23	-	-	-	\$208,506	-	\$208,506	\$2,037,805
24	-	-	-	\$215,627	-	\$215,627	\$2,253,433
25	-	-	-	\$222,986	-	\$222,986	\$2,476,419
26	-	-	-	\$230,587	-	\$230,587	\$2,707,006
27	-	-	-	\$238,441	-	\$238,441	\$2,945,446
28	-	-	-	\$246,553	-	\$246,553	\$3,192,000
29	-	-	-	\$254,933	-	\$254,933	\$3,446,933
30	-	-	-	\$263,589	-	\$263,589	\$3,710,521
Totals:	-\$1,791,196	-\$7,422	-\$57,209	\$5,062,631	\$503,717	\$3,710,521	-



## 4 Assumptions and Exclusions

### Assumptions

- Proposal is valid for 15 days only.
- Solar Panels: 30-year linear performance warranty, and 12-year product warranty
- Li-Ion Battery Modules - 5 years
- Power Conversion System: 3-years
- Inverters: 12-years
- Solar Racking System: 25-years
- Switchgear: 10-years
- Workmanship: One year warranty for the construction of the system
- Workmanship: 10-year warranty when O&M Agreement Fully Executed
- Interconnection work/outages will be scheduled during normal business hours
- Building department and utility inspections will be scheduled during normal business hours
- Pricing assumes the contractor's employees will have free and clear access to all array locations simultaneously during business hours (M-F 0700-1700)
- The contractor will provide electrical drawings stamped by a licensed California Registered Electrical Professional Engineer
- Monitoring pricing based on availability of Cat 5 landline provided outside of building firewall. If no landline is available pricing will be subject to increase.
- The System & installation will meet all requirements for interconnection with appropriate documentation. The contractor will be responsible for providing all documentation.
- System layout is acceptable to AHJ in terms of clearances
- Single mobilization and completion of project in one phase
- As built plans are available for engineering reference
- The contractor is not responsible for superficial marking of parking deck due to use of equipment
- On-site staging areas are available for storage of equipment and materials
- No special safety requirements beyond the contractor's standard safety regulations will be enforced
- 7.49° tilt maximum on carports
- 10' clear height maximum on carports except with a change order
- All modules to be installed in portrait orientation
- Pricing includes hot dip galvanizing of all bare steel columns & beams
- Pricing includes NEMA 3R electrical equipment
- Module pricing is based on current market value. Price is subject to adjustment based on market conditions at time of contract.
- Ground penetrating radar (GPR) is accurate down to a depth of 3'-4'. There may be underground utilities below this level that are untraceable with GPR that would require the use of an underground camera to be located at additional cost.
- Pricing assumes the structure can support the additional loads of the PV array system as well as the required erection equipment
- Pricing is subject to change until site walk and validation of site conditions
- Pricing is based on non-union Prevailing wage rates
- Tax rate is assuming customer has filled the CA tax exemption form.



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#### Exclusions

- UL recertification of existing electrical equipment beyond our scope of work
- Repairs of any electrical code violations at the existing facility
- Removal and/or disposal of hazardous materials
- Arc flash or breaker coordination studies
- 3rd party (private) locating services
- Pedestrian & vehicle traffic control
- Re-creation of building plan sets
- Union project labor agreements
- Lightning protection systems
- Revenue grade metering
- ADA design/compliance
- ADA compliance improvements/work
- Sprinklers & gutters
- Inverter enclosures
- Phasing
- Bonding
- CAISO study or approval costs
- Rock drilling
- De-watering, and/or caissons for collapsible soils



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