



Calamba Water District

Lakeview Subd., Halang, Calamba, Laguna

Tel. Nos. 545-1614: 545-7895: 545-1389: 545-7981: 545-2863

PROPOSAL FOR CALAMBA WATER DISTRICT SOLAR POWER GENERATING SYSTEM

Product Requirement/Technical Specification

1. The project will cover the conduct of feasibility study of the Solar Power Generating System, grid interconnection, final design, procurement, construction, permitting, commissioning, operation and maintenance must be done by the winner bidder, to wit:

Solar Power Generating System – is a set up that includes all components required to convert solar radiation to useable Alternating Current (AC) power. This includes Solar Modules, Inverter, Mounting Structures, Balance of Systems (DC and AC cables and other protective devices that may be necessary).

Feasibility Study – involves the conduct of preliminary structural assessment, system sizing and identification of specifications. This also includes the application of a Distribution Impact Study (DIS) and Net-metering with the Distribution Utility (DU).

Grid Interconnection – includes the execution of the DIS and actual interconnection to the grid.

Final Design - incorporates the results of the DIS and completes the Bill of Materials of the System that will make it compliant to the standards of the DU.

Procurement – is the acquisition of the Bill of Materials of the System as indicated in the Design.

Construction – involves all the activities required to execute the Final Design. This will be carefully monitored in order to ensure workmanship quality,

Permitting - includes the application of a Certificate of Electrical Inspection (CEI) from the local government, DU Certification, and Certificate of Compliance (CoC) from the Energy Regulatory Commission (ERC).

Commissioning – involves the conduct of a functionality test using the protection setting prescribed by the DU. This ensures the successful operation between the System and the distribution grid.

Operation and Maintenance – an optional package that covers all required activities to ensure the performance of the Solar Generating System.

2. The Solar Power Generating System will be installed at the roof of Calamba Water District (CWD) main building, Lakeview Subdivision, Halang, Calamba City.
3. **Panel Selection, the PV Capacity will be 10.56 kwp**
4. Contractor may install other panel brands and type of equivalent or better quality without reducing the size of the system.
5. **PV Module will be 32 pieces JS-330P-P160,**

PV Inverter will be 2 pieces SMA SB5000TL-21

- 7. PV Mounting Systems will be Antai Solar
- 8. Operations and Maintenance Package cost must be limited to 1% per year onwards.

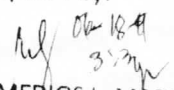
Maintenance Activity	Frequency
Panel cleaning and I-V curve measurement	Semi-annual
Check panels for damage and corrosion	Semi-annual
Check Voc and Isc of PV strings	Semi-annual
Check DC cable termination. Perform IR scan	Semi-annual
Check mounting structure	Semi-annual
Check surge protection and fuses	Semi-annual
Transformer maintenance (if applicable)	Annual
Check inverters	Semi-annual
Check AC wiring termination	Semi-annual
Check inter-connection point (panels and bus bars)	Semi-annual

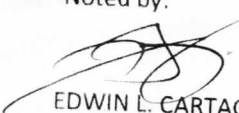
Financial Analysis

- 1. The price per kw will be P90,725.06 while the electricity bill per kwh will be from P7.50 to P9.50
- 2. The aged degradation will be 2.5% in the first years and .7%
- 3. The Performance Ratio must be 75%

Benefit

- 1. The total energy production will be 14,989kwh/year
- 2. There will be oil reduction consumption at around 189 pcs
- 3. There will be reduction of carbon dioxide emission by 540 pcs
- 4. Solar provider must provide a 10-year warranty for equipment and a 25-year warranty for module power output.
- 5. Solar provider is available and ready to assist with any kind of issues whether on technical side.
- 6. Return on Investment based on energy rate of MERALCO is at P6.5912 per kwh and will have a payback period of 9 years with an IRR of 10%.
- 7. The System is expected to deliver the yearly estimated savings of P100,000.00.

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