



Republic of the Philippines
 Department of Agriculture
AGRICULTURAL TRAINING INSTITUTE
 ATI Building, Elliptical Road, Diliman, Quezon City, Metro Manila 1100
 Tel. Nos. (63-2) 8929-8541 to 49 & 8928-7397 | Fax No. (63-2) 8920-9792
 Email: director@ati.da.gov.ph
 URL: http://www.ati.da.gov.ph | www.e-extension.gov.ph

REQUEST FOR QUOTATION

DATE: 02/19/2025

PURCHASE REQUEST NO.: ADMIN FUND 2025-02-41

CANVASS NO. 34

Gentlemen:

Please quote your lowest price, taxes included, and subject to the terms and conditions that you may encounter purposely for article (s) and/or service(s) enumerated below, stating the shortest time of delivery and submit your quotation duly signed by your representative not later than _____ in the return envelope attached here with.

Very truly yours:

MILAGROS C. URBANO
 BAC Chairman

| ITEM NO. | QTY | UNIT | ITEM AND DESCRIPTION | UNIT PRICE | TOTAL |
|----------|-----|------|--|------------|-------|
| | | | SUPPLY OF PREVENTIVE MAINTENANCE OF SOLAR PANELS AT THE ATI-CO COMPOUND FOR 2025 | | |
| | 1 | lot | Provision of Preventive Maintenance for 10 kWp Solar PV ATI-CO main building | | |
| | 1 | lot | Provision of Preventive Maintenance for 32.4 kWp Solar PV ATI-CO main building | | |
| | 1 | lot | Provision of Preventive Maintenance for twenty-one (21) units Solar Street Lights at ATI-CO compound | | |
| | 1 | lot | Relocation & Rehabilitation for 10 kWp Solar PV ATI-CO main building | | |
| | | | (See attached term of reference for the details) | | |

PURPOSE:

To conduct preventive maintenance of the various solar panels at the ATI-CO compound.

Pls. submit the following eligibility documents:

- ___ Mayor's/Business Permit
- ___ Income Tax Return
- ___ Notarized Omnibus Sworn Statement
- ___ PhilGEPS Registration Number/Red Membership
- ___ Certificate of Sole Distributorship

Note: Pls. provide also the following: contact information such as email address and mobile/landline numbers; Tax Identification Number and Bank Details

I hereby certify that I am in the position to furnish the above article(s), service(s) at the prices and in quantities as called for except as I have indicated. The articles are available in our stock for immediate delivery to the Agricultural Training Institute, Elliptical Road, Diliman, Quezon City

MODEL: _____

DELIVERY PERIOD: _____

WARRANTY PERIOD: _____

PRICE VALIDITY: _____

 Signature Over printed name of proprietor/Manager
 or Authorized Representative

CANVASSED BY: _____

DATE: _____



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TERMS OF REFERENCE

| | | |
|--|---|---|
| PROJECT | : | Relocation & Rehabilitation of 10kWp Solar PV Installed in the Agricultural Training Institute - Central Office for 2025 |
| APPROVED BUDGET FOR THE CONTRACT (ABC) | : | PhP380,000.00 |
| PERIOD COVERED | : | One (1) Year |
| LOCATION OF PROJECT | : | Agricultural Training Institute, ATI Compound, Elliptical Road, Diliman, Quezon City |

I. INTRODUCTION:

The ATI-CO has a **10kWp Solar PV** installed in the ATI compound. These solar equipment provide a sustainable, economical, and convenient investment to the public. To maintain its operation, annual preventive maintenance is required. However, We must relocate and rehabilitate the 10kWp Solar PV to maximize and focus the 2nd floor left wing to supply an additional power source. This will be the preparation for the future additional system of the solar supply for the ATI building. Nonetheless, ATI personnel do not have the ability to perform maintenance services, hence said services shall be outsourced.

II. EQUIPMENT ENROLLED:

- 10kWp Solar Panels (9 pcs.)

III. SCOPE OF WORK:

1. Dismantle the 10kWp solar panels for the relocation and rehabilitation from the existing place to the roof top of the left wing of the Main building.
2. Design, supply, installation, Testing and commissioning for the new set-up of 10kWp solar panels from off-grid to grid tied system.
3. Supply and installation of 10kW Hybrid Inverter(Single Phase),materials to be used and other devices.
4. Supply the relocated 10kW solar panel in a grid tied system to the lower ground floor.
5. Apply for net metering with a utility provider or provide limiter
6. Final system documentation and handover.

IV. CONTRACT DURATION:

Once per year, Relocation and rehabilitation shall commence upon the approval of the proposal and shall be mutually considered terminated if the preventive maintenance will not commence after 15 calendar days. A corresponding notice of termination will be sent.



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I. WARRANTY:

1- year Warranty on labor upon completion of relocation and rehabilitation.

V. CONTRACT COST & TERMS OF PAYMENT

The price of the contracted services shall be structured as follows:

- ❖ **Total Amount for 1 year** : **PhP380,000.00/year**
- ❖ **Terms** : **PhP380,000/year**
*(The client shall issue a full payment in the amount of **PhP380,000.00/bill.**)*
- ❖ **Delivery** : **As per the contract**

Prepared By:

Approved:


ARLENE GEMINIANA S. NILO, CPA

REMELYN R. RECOTER, MNSA, CESO III

OIC-Head, General Services 

Director IV



TERMS OF REFERENCE

| | | |
|--|---|--|
| PROJECT | : | Provision of Preventive Maintenance for 10kWp Solar PV Installed in the Agricultural Training Institute - Central Office for 2025 |
| APPROVED BUDGET FOR THE CONTRACT (ABC) | : | PhP30,000.00 |
| PERIOD COVERED | : | One (1) Year /Semi-Annual |
| LOCATION OF PROJECT | : | Agricultural Training Institute, ATI Compound, Elliptical Road, Diliman, Quezon City |

I. INTRODUCTION:

The ATI-CO has a **10kWp Solar PV** installed in the ATI compound. These solar equipment provide a sustainable, economical, and convenient investment to the public. To maintain its operation, annual preventive maintenance is required. However, ATI personnel do not have the ability to perform maintenance services, hence said services shall be outsourced.

II. EQUIPMENT ENROLLED:

- 10kWp Solar PV

III. SCOPE OF WORK:

SERVICES PROVIDER shall perform Maintenance Services such as predictive, preventive, and corrective maintenance on all elements of the system to ensure the operation and increase production life of the 5kWp Hybrid/Off-Grid Solar PV installed in the Agricultural Training Institute Central Office.

A. Predictive Maintenance

1. SERVICES PROVIDER shall execute all the operations which ensure that the operational values are correct by observing the main functional parameters to verify the correct operation of the installation.

If a photovoltaic generator indicates a fault, SERVICES PROVIDER undertakes to carry out fault diagnosis without delay.

2. SERVICES PROVIDER shall initiate actions necessary to repair any failure/error without undue delay. The errors that can be corrected online shall be corrected online.

For any other error, SERVICES PROVIDER shall send maintenance staff to the plant in the shortest time possible, established in 24 hours during weekdays and 48 hours in case of Sunday or holidays.



B. Preventive Maintenance

1. SERVICES PROVIDER shall execute the operations of visual inspection, verification of performances, and others that applied to the facility should allow keeping within acceptable limits the operating conditions, performance, protection, and durability of the installation.
2. The maintenance plan shall be carried out by specialized technical personnel of SERVICES PROVIDER who have proven experience in solar photovoltaic technology and electrical installation in general. The maintenance plan includes all maintenance or replacement necessary (corrective maintenance) to ensure that the system works properly during its lifetime.
3. The work shall be performed in accordance with the current state of the technology, as stipulated in the relevant regulations and standard provisions, namely:
 - Cleaning
 - Emergency Response
 - Inspection
 - Service
 - Testing

| Activity Area | Component | Description | Interval |
|--------------------|----------------------|---|-------------|
| Cleaning | PV module General | Clean PV modules with plain water or mild dishwashing detergent. Do not use hard brushes, any types of solvents, abrasives, or harsh detergents | Semi-annual |
| Emergency Response | System | Contractors available by email and phone 24 x 7 x 365 | On-going |
| Inspection | AC Wiring | Inspect electrical boxes for corrosion or intrusion of water or insects. Seal boxes if required | Semi-Annual |
| Inspection | AC Wiring | Check the position of disconnect switches and breakers | Semi-Annual |
| Inspection | AC Wiring | Exercise operation of all protection devices | Semi-Annual |
| Inspection | AC Wiring | AC disconnect box inspection Test system grounding with "megger". | Semi-Annual |
| Inspection | AC Wiring | Test system grounding with "megger". | Semi-Annual |
| Inspection | AC Wiring | Scan combiner boxes with an infrared camera to identify loose or broken connections. | Semi-Annual |



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| Inspection | AC Wiring | Inspect cabling for signs of cracks, defects, pulling out of connections; overheating, arcing, short or open circuits, and ground faults. | Semi-Annual |
| Inspection | AC Wiring | Check the proper position of DC disconnect switches. | Semi-Annual |
| Inspection | Combiner and Junction Boxes, DC Wiring | Open each combiner box and check that no fuses have blown and that all electrical connections are tight. Check for water incursion and corrosion damage. Use an infrared camera for identifying loose connections because they are warmer than good connections when passing current. | Semi-Annual |
| Inspection | DC Wiring | Look for any signs of intrusion by pests such as insects and rodents. Remove any nests from electrical boxes (junction boxes, pull boxes, combiner boxes) or around the array. Use safe sanitation practices because pests may carry disease. | Semi-Annual |
| Inspection | Inverter | Observe instantaneous operational indicators on the faceplate of the inverter to ensure that the amount of power being generated is typical of the conditions. Compare current readings with the diagnostic benchmark. Inspect inverter housing or shelter for physical maintenance required if present. | Semi-Annual |
| Inspection | PV Array | Test open circuit voltage of series strings of modules. | Semi-Annual |
| Inspection | PV Array | Check all hardware for signs of corrosion, and remove rust, and re-paint if necessary. | Annual |
| Inspection | PV Array | Walk through each row of the PV array and check the PV modules for any damage. Report any damage to the rack and damaged modules for warranty replacement. Note the location and the serial number of questionable modules. | Semi-Annual |
| Inspection | PV Array | Inspect ballasted, non-penetrating mounting system for abnormal movement. | Semi-Annual |
| Inspection | PV Array | Determine if any new objects, such as vegetation growth, are causing shading of the | Annual |



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| | | array and move them if possible. Remove any debris from behind collectors and from gutters. | |
| Inspection | PV Module | Use an infrared camera to inspect for hot spots; bypass diode failure. | Annual |
| Inspection | Batteries | Battery cables, fuses, distilled water level when necessary | Annual |
| Inspection | DC Wiring | Check grounding braids for wear | Annual |
| Inspection | PV Module | PV module torque check and visual inspection | Annual |
| Inspection | PV Module | Racking torque check and inspection | Annual |
| Management | PV Module | Inspection: corrosion and encapsulate yellowing | Annual |
| Management | PV Module | Galvanization inspection | Annual |
| Management | Asset Management | Daily operations and performance monitoring | Semi-annual |
| Management | Asset Management | Monitor alarms and site-specific alert parameters | As needed |
| Management | Documents | Documents all O&M activities in a workbook available to all service personnel | On-going |
| Management | Documents | Confirm availability and take any measures to secure operating instructions, warranties and performance guarantees, and other project documentation. | Annual |
| Management | Documents | Update record with preventive maintenance activities and track any problems or warranty issues and secure the record onsite. | On-going |
| Management | Meter | Maintain a log of cumulative power delivery (kWh to date) and chart this value against the date. Chart the value even for uneven or infrequent intervals. Explain variation by season or weather. | Monthly |
| Service | AC wiring | Re-torque all electrical connections on the AC side of the system | Annual |



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|---------|------------|--|---------------------|
| Service | DC Wiring | Re-torque all electrical connections in the combiner box | Annual |
| Service | Batteries | Battery voltage measurements. Checks tighten bolts. Ensure batteries is free from dust | Semi-annual |
| Service | Inverter | Replace transient voltage surge suppression devices | As per manufacturer |
| Service | Inverter | Clean (vacuum dust from heat rejection fins) | Semi-annual |
| Service | Inverter | Replace any air filters on air-cooled equipment such as inverter | As needed |
| Service | PV Array | Remove bird nests from the array and rack area | Semi-annual |
| Service | PV Array | Nesting vermin removal, nesting vermin prevention | Semi-annual |
| Testing | PV module | Test output of modules that exhibit cracked glass, bubble formation oxidation of busbars, discoloration of busbars, or PV module hot spot (bypass diode failure) | Annual |
| Testing | PV Modules | Test modules showing corrosion of ribbons to junction box | Annual |
| Testing | Batteries | Check battery charging through Hybrid/Off-grid inverter and grid | Semi-annual |

4. SERVICES PROVIDER shall perform all maintenance tasks so that any defects from the normal operation of solar street lights shall be minimal, preferably during periods of low solar resources.
5. SERVICES PROVIDER shall carry out a technical report for each of the visits on the state of equipment and facilities covered with photos when necessary.
6. SERVICES PROVIDER shall keep a record of the maintenance activities carried out in a maintenance logbook, which includes the names of the person who performed the maintenance tasks.
7. SERVICES PROVIDER shall issue a maintenance report with the activities performed during and shall deliver the report within 7 days after completing the maintenance tasks.



C. Corrective Maintenance

SERVICES PROVIDER shall perform all operations and works aimed at remedying failures once produced.

1. SERVICES PROVIDER shall assist any notice within:
 - a. 24 hours if the solar PV system does not work. This period shall not apply in cases not attributable to SERVICES PROVIDER such as there are no available spare parts for repairs or replacements under this contract. This period is extended to 48 hours during Sundays and holidays.
 - b. One (1) week if the fault does not affect operation.
2. Failure or defects caused by any of the following circumstances are not included in this maintenance contract:
 - a. Force majeure, i.e. external circumstances that the client cannot prevent despite keeping the utmost care. It includes circumstances such as earthquakes, radiation, and wind force exceeding the specified survival rate for performing the work.
 - b. War or civil unrest, strikes or riots.
 - c. Terrorism and hooliganism.
 - d. Actions carried out by third parties without the authorization of SERVICES PROVIDER.
3. To the extent that the repairs were carried out, SERVICES PROVIDER shall provide ATI a monthly report 3 weeks from the end of the month in which they are made. This report shall include details concerning the failures, the nature of the repair work, the material used, and hours worked.
4. The breakdown of solar street lights shall be repaired on the site by SERVICES PROVIDER. If the failure of any component could not be repaired in ATI property, the component must be sent to the official workshop designated by the manufacturer by the Client, without prejudice to the claim that may subsequently be made to the manufacturer.
5. SERVICES PROVIDER shall perform repairs or replacement of the parts as soon as possible after the defect has been identified, but is not liable for damages caused by the delay in the repairs.
6. SERVICES PROVIDER shall properly service all components of all covered systems in good repair, good operating condition, appearance, and working order with the manufacturer's recommendations and warranties.
7. SERVICES PROVIDER shall replace any part of the covered system that becomes unfit and unavailable for use. Spare parts supply is expressly excluded from the scope of maintenance. However, during the course maintenance, if the SERVICES PROVIDER performs the maintenance and found out that spare parts are to be replaced, said SERVICE PROVIDER shall prepare a recommendation and also include in their report the cost of the spare parts to be procured. The ATI shall prepare a purchase request to procure the replacement parts subject to funds availability. The payment of replacement of parts shall be separately billed and paid by ATI upon approval of the purchase order.



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8. SERVICES PROVIDER shall perform the procurement and management of replacement parts from all the suppliers of the solar photovoltaic installation with the charge of the client. Small electrical and cleaning materials are included in the contract.

IV. Components Maintenance

In response to the main system components, SERVICES PROVIDER shall execute the following operations:

1. **Solar panels:**

SERVICES PROVIDER shall shoulder the cost of operation set, connect and disconnect the panels, and have all the tools and resources necessary to carry out the tasks associated with that transaction, including small electrical material.

SERVICES PROVIDER shall provide the special brushes and horses needed to clean the modules. The client shall inspect them before the cleaning activities.

2. **Hybrid/ Off-grid Inverters:**

It shall be for the account of SERVICES PROVIDER to warn the failure of the equipment to the supply company as well as help the connection and disconnection of equipment.

It shall be for the account of SERVICES PROVIDER to have all the tools and resources needed to carry out tasks associated with that activity, including small electrical material.

3. **Electrical Protection:**

It shall be for the account of SERVICES PROVIDER to manage the maintenance of the electrical protection resulting from defects or changes and have all the tools and resources necessary to carry out the tasks associated with that transaction, including small electrical material.

V. CONTRACT DURATION

- 1-year contract

VI. CONTRACT COST & TERMS OF PAYMENT

The price of the contracted services shall be structured as follows:

- ◆ **Total Amount for 1 year** : **PhP30,000.00/year**
- ◆ **Terms** : PhP15,000.00/Semi-annual
(The client shall issue a bill every six (6) months in the amount of PhP15,000.00/bill.)
- ◆ **Delivery** : As per the contract

Prepared By:


ARLENE GEMINIANA S. NILO, CPA
OIC-Head, General Services 

Approved:


REMELYN R. RECODER, MNSA, CESO III
Director IV



TERMS OF REFERENCE

| | | |
|--|---|--|
| PROJECT | : | Provision of Preventive Maintenance for 32.4 kWp Solar PV Installed in the Agricultural Training Institute -Central Office for 2025 |
| APPROVED BUDGET FOR THE CONTRACT (ABC) | : | PhP50,000.00 |
| PERIOD COVERED | : | One (1) Year/Semi-Annual |
| LOCATION OF PROJECT | : | Agricultural Training Institute, ATI Compound, Elliptical Road, Diliman, Quezon City |

I. INTRODUCTION:

The ATI-CO has a **32.4kWp Solar PV** installed in the ATI compound. These solar equipment provide a sustainable, economical, and convenient investment to the public. To maintain its operation, annual preventive maintenance is required. However, ATI personnel do not have the ability to perform maintenance services, hence said services shall be outsourced.

II. EQUIPMENT ENROLLED:

- 32.4 kWp Solar PV

III. SCOPE OF WORK:

Services provider Shall perform Maintenance Services such as predictive, preventive, and corrective maintenance on all elements of the system to ensure the operation and increase product life of the **32.4 kWp Solar PV** installed in the ATI-CO.

A. Predictive Maintenance:

1. SERVICES PROVIDER Shall execute all the operations which ensure that the operational values are correct by observing the main functional parameters to verify the correct operation of the installation.
2. SERVICES PROVIDER through a remote system data acquisition shall dump the operating parameters of each inverter.

In the event that a photovoltaic generator indicates a fault, SERVICES PROVIDER undertakes to carry out fault diagnosis without delay.

3. SERVICES PROVIDER Shall initiate actions necessary to repair any failure/error without undue delay. The errors that can be corrected online shall be corrected online.

For any other error, SERVICES PROVIDER shall send maintenance staff to the plant in the shortest time possible, established in 24 hours during weekdays and 48 hours in case of Sunday or holidays.



B. Preventive Maintenance:

1. SERVICES PROVIDER Shall execute the operations of visual inspection, verification of performances, and others that applied to the facility should allow keeping within acceptable limits the operating conditions, performance, protection, and durability of the installation.
2. The maintenance plan shall be carried out by specialized technical personnel of SERVICES PROVIDER who have proven experience in solar photovoltaic technology and electrical installation in general. The maintenance plan includes all maintenance or replacement necessary (corrective maintenance) to ensure that the system works properly during its lifetime.
3. The work Shall be performed in accordance with the current state of the technology, as stipulated in the relevant regulations and standard provisions, namely:
 - o Cleaning
 - o Emergency Response
 - o Inspection
 - o Service
 - o Testing

| Activity Area | Component | Description | Interval |
|--------------------|----------------------|---|---|
| Cleaning | PV module General | Clean PV modules with plain water or mild dishwashing detergent. Do not use hard brushes, any types of solvents, abrasives, or harsh detergents | Condition or study dependent (typically, every quarter) |
| Emergency Response | System | Contractors available by email and phone 24 x 7 x 365 | On-going |
| Inspection | AC Wiring | Inspect electrical boxes for corrosion or intrusion of water or insects. Seal boxes if required | Semi-Annual |
| Inspection | AC Wiring | Check the position of disconnect switches and breakers | Semi-Annual |
| Inspection | AC Wiring | Exercise operation of all protection devices | Semi-Annual |
| Inspection | AC Wiring | AC disconnect box inspection Test system grounding with "megger". | Semi-Annual |



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|------------|--|---|-------------|
| Inspection | AC Wiring | Scan combiner boxes with an infrared camera to identify loose or broken connections. | Semi-Annual |
| Inspection | DC Wiring | Inspect cabling for signs of cracks, defects, pulling out of connections; overheating, arcing, short or open circuits, and ground faults. | Semi-Annual |
| Inspection | AC Wiring | Check the proper position of DC disconnect switches. | Semi-Annual |
| Inspection | Combiner and Junction Boxes, DC Wiring | Open each combiner box and check that no fuses have blown and that all electrical connections are tight. Check for water incursion and corrosion damage. Use an infrared camera for identifying loose connections because they are warmer than good connections when passing current. | Semi-Annual |
| Inspection | DC Wiring | Look for any signs of intrusion by pests such as insects and rodents. Remove any nests from electrical boxes (junction boxes, pull boxes, combiner boxes) or around the array. Use safe sanitation practices because pests may carry disease. | Semi-Annual |
| Inspection | Inverter | Observe instantaneous operational indicators on the faceplate of the inverter to ensure that the amount of power being generated is typical of the conditions. Compare current readings with diagnostic benchmarks. Inspect inverter housing or shelter for physical maintenance required if present. | Semi-Annual |
| Inspection | Monitoring | Spot-check monitoring instruments (pyranometer, etc) with hand-held instruments to ensure that they are operational and within specifications. | Semi-Annual |
| Inspection | PV Array | Test open circuit voltage of series strings of modules. | Semi-Annual |



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| Inspection | PV Array | Check all hardware for signs of corrosion, and remove rust, and re-paint if necessary. | Annual |
| Inspection | PV Array | Walk through each row of the PV array and check the PV modules for any damage. Report any damage to the rack and damaged modules for warranty replacement. Note the location and the serial number of questionable modules. | Semi-Annual |
| Inspection | PV Array | Inspect ballasted, non-penetrating mounting system for abnormal movement. | Semi-Annual |
| Inspection | PV Array | Determine if any new objects, such as vegetation growth, are causing shading of the array and move them if possible. Remove any debris from behind collectors and from gutters. | Annual |
| Inspection | PV Module | Use an infrared camera to inspect for hot spots; bypass diode failure. | Annual |
| Inspection | Transformer | Inspect transformer meter, oil, and temperature gauges include housing containers, or concrete housing if presentment. | Annual |
| Inspection | Transformer | Transformers/ switchgear inspection | Annual |
| Inspection | DC Wiring | Check grounding braids for wear | Annual |
| Inspection | PV Module | PV module torque check and visual inspection | 5 years |
| Inspection | PV Module | Racking torque check and inspection | 5 years |
| Management | PV Module | Inspection: corrosion and encapsulate yellowing | Annual |
| Management | PV Module | Galvanization inspection | Annual |
| Management | Asset Management | Daily operations and performance monitoring | On-going |
| Management | Asset Management | Monitor alarms and site-specific alert parameters | As needed |



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| Managem nt | Documents | Documents all O&M activities in a workbook available to all service personnel | On-going |
| Managem nt | Documents | Confirm availability and take any measures to secure operating instructions, warranties and performance guarantees, and other project documentation. | Annual |
| Managem nt | Documents | Update record with preventive maintenance activities and track any problems or warranty issues and secure the record onsite. | On-going |
| Managem nt | Meter | Maintain a log of cumulative power delivery (kWh to date) and chart this value against date. Chart the value even for uneven or infrequent intervals. Explain variation by season or weather. | Monthly |
| Managem nt | Communicat ion | Check internet connection of the inverter | Annual |
| Service | AC wiring | Re-torque all electrical connections on the AC side of the system | Annual |
| Service | DC Wiring | Re-torque all electrical connections in the combiner box | Annual |
| Service | Instruments | Exchange or re-calibrate instruments | As per manufacturer |
| Service | Inverter | Replace transient voltage surge suppression devices | As per manufacturer |
| Service | Inverter | Install any recent software upgrades to inverter programming or data acquisition and monitoring system | 5 years |
| Service | Inverter | Clean (vacuum dust from heat rejection fins) | Semi-annual |
| Service | Inverter | Replace any air filters on air-cooled equipment such as inverter | As needed |
| Service | PV Array | Remove bird nests from the array and rack area | Semi-annual |



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|---------|------------|--|-------------|
| Service | PV Array | Nesting vermin removal, nesting vermin prevention | Semi-annual |
| Testing | Inverter | Test overvoltage surge suppressors in inverter | 5 years |
| Testing | PV module | Test output of modules that exhibit cracked glass, bubble formation oxidation of busbars, discoloration of busbars, or PV module hot spot (bypass diode failure) | Annual |
| Testing | PV Modules | Test modules showing corrosion of ribbons to junction box | Annual |

4. SERVICES PROVIDER shall perform all maintenance tasks so that any defects from the normal operation of solar street lights Shall be minimal, preferably during periods of low solar resource.
5. SERVICES PROVIDER shall carry out a technical report for each of the visits on the state of equipment and facilities covered with photos when necessary.
6. SERVICES PROVIDER shall keep a record of the maintenance activities carried out in a maintenance logbook, which includes the names of the person who performed the maintenance tasks.
7. SERVICES PROVIDER shall issue a maintenance report with the activities performed during and Shall deliver the report within 7 days after completing the maintenance tasks.

C. Corrective Maintenance:

1. SERVICES PROVIDER Shall perform all operations and works aimed at remedying failures once produced.
2. SERVICES PROVIDER Shall assist any notice within:
 - a) 24 hours if the solar PV system does not work- this period Shall not apply in cases not attributable to SERVICES PROVIDER such as there are no available spare parts for repairs or replacements under this contract. This period is extended to 48 hours during Sundays and holidays.
 - b) One (1) week if the fault does not affect operation.
3. Failure or defects caused by any of the following circumstances are not included in this maintenance contract:
 - a) Force majeure, i.e. external circumstances that the client cannot prevent despite keeping the utmost care. It includes circumstances such as earthquakes, radiation, and wind force exceeding the specified survival rate for performing the work.
 - b) War or civil unrest, strikes or riots.



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- c) Terrorism and hooliganism.
 - d) Actions carried out by third parties without the authorization of SERVICES PROVIDER.
4. To the extent that the repairs were carried out, SERVICES PROVIDER Shall provide ATI a monthly report 3 weeks from the end of the month in which they are made. This report Shall include details concerning the failures, the nature of the repair work, the material used, and hours worked.
 5. The equipment Shall be repaired on the site by SERVICES PROVIDER. If the failure of any component could not be repaired in ATI property, the component must be sent to the official workshop designated by the manufacturer by ATI, without prejudice to the claim that may subsequently be made to the manufacturer.
 6. **SERVICES PROVIDER** perform repairs or replacement of the parts as soon as possible after the defect has been identified, but is not liable for damages caused by the delay in the repairs.
 7. **SERVICES PROVIDER** Shall perform and keep all components of the Solar equipment in good repair, good operating condition, appearance, and working order with the manufacturer's recommendations and warranties. Supply of *spare parts are excluded from the scope of maintenance*.

However, during the course of the maintenance, if the Service Provider found out that spare parts need to be replaced, said **SERVICE PROVIDER** Shall prepare a recommendation and also include in their report the cost of the spare parts. The **ATI** Shall prepare a purchase request to procure the necessary parts subject to funds availability. The payment of replacement of parts Shall be separately billed and paid by ATI upon approval of the purchase order.

8. **SERVICES PROVIDER** Shall perform the procurement and management of replacement parts from all the suppliers of the solar photovoltaic installation with the charge of the ATI. Small electrical and cleaning materials are included in the contract.

IV. COMPONENTS MAINTENANCE

In response to the main system components, SERVICES PROVIDER Shall execute the following operations:

1. Solar panels:

SERVICES PROVIDER shall shoulder the cost of operation set, connect and disconnect the panels, and have all the tools and resources necessary to carry out the tasks associated with that transaction, including small electrical material.

2. Inverters:

- a. It shall be for the account of SERVICES PROVIDER to warn the failure of the equipment to the supply company as well as help the connection and disconnection of equipment. At the same



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time, SERVICES PROVIDER Shall inform the client regarding any failure, disconnection, or communication with Meralco.

- b. It shall be for the account of SERVICES PROVIDER to have all the tools and resources needed to carry out tasks associated with that activity, including small electrical material.

3. Electrical Protection:

It shall be for the account of SERVICES PROVIDER to manage the maintenance of the electrical protection resulting from defects or changes and have all the tools and resources necessary to carry out the tasks associated with that transaction, including small electrical material.

V. CONTRACT DURATION

- 1-year contract commencing upon approval of the Purchase Order.

VI. CONTRACT COST & TERMS OF PAYMENT

The price of the contracted services Shall be structured as follows:

- ◆ **Total Amount for 1 year** : **PhP50,000.00/year**
- ◆ **Terms** : **PhP25,000.00/Semi-annual**
(The client Shall issue a bill every six (6) months in the amount of PhP25,000.00/bill.)
- ◆ **Delivery** : **As per the contract**

Prepared By:

Approved By:


ARLENE GEMINIANA S. NILO, CPA
Head, General Services Office *Yp*

REMELYN R. RECOTER, MNSA, CESO III
Director IV



TERMS OF REFERENCE

| | | |
|--|---|---|
| PROJECT | : | Provision of Preventive Maintenance for Twenty One (21) Units Solar Street Lights in the Agricultural Training Institute -Central Office Compound for 2025 |
| APPROVED BUDGET FOR THE CONTRACT (ABC) | : | PhP60,000.00 |
| PERIOD COVERED | : | One (1) Year/Semi-Annual |
| LOCATION OF PROJECT | : | Agricultural Training Institute, ATI Compound, Elliptical Road, Diliman, Quezon City |

I. INTRODUCTION:

ATI-CO has **twenty one (21) units of Solar Street Lights** installed inside the ATI compound. These solar street lights provide a sustainable, economical, and convenient investment to the public. To maintain its operation, annual preventive maintenance is required. However, ATI does not have the ability to perform maintenance services, hence said services shall be outsourced.

II. EQUIPMENT ENROLLED:

Twenty One (21) Units of Solar Street Lights

III. SCOPE OF WORK:

The **SERVICES PROVIDER** shall perform Maintenance Services such as predictive, preventive, and corrective maintenance on all elements of the system to ensure the operation and increase the life of the **21 units Solar Street Lights** installed in the Agricultural Training Institute-Central Office.

A. Predictive Maintenance

SERVICES PROVIDER Shall execute all the operations which ensure the solar streetlights are working properly.

In the event that the solar streetlights are defective, SERVICES PROVIDER undertakes to carry out fault diagnosis without delay. SERVICES PROVIDER shall initiate actions necessary to repair it without undue delay.

B. Preventive Maintenance

1. SERVICES PROVIDER shall execute the operations of visual inspection, verification of performances, and others that applied to the Solar Street Lights installation should allow



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keeping within acceptable limits the operating conditions, performance, protection, and durability of the installation.

2. The maintenance plan shall be carried out by specialized technical personnel of SERVICES PROVIDER who have proven experience in solar photovoltaic technology and electrical installation in general. The maintenance plan includes all maintenance or replacement necessary (corrective maintenance) to ensure that the system works properly during its lifetime.
3. The work shall be performed in accordance with the current state of the technology, as stipulated in the relevant regulations and standard provisions, namely:

| Activity Area | Component | Description | Interval |
|--------------------|--|---|---|
| Cleaning | PV module General | Clean PV modules with plain water or mild dishwashing detergent. Do not use hard brushes, any types of solvents, abrasives, or harsh detergents | Condition or study dependent (typically, every quarter) |
| Emergency Response | System | Contractors available by email and phone 24 x 7 x 365 | On-going |
| Service | LED Luminaire | Cleaning and repair or replacement in case of defect or fault | Semi-Annual |
| Service | Charge Controller Unit | Checking of charging functions and repair or replacement in case of defect or fault | Semi-Annual |
| Inspection | DC Wiring | Inspect cabling for signs of cracks, defects, pulling out of connections; overheating, arcing, short or open circuits, and ground faults | Semi-Annual |
| Inspection | Streetlights assembly and pole Batteries | Check all hardware for abnormal movement, signs of corrosion, and remove rust and repaint if necessary | Annual |
| Inspection | Batteries | Battery cables, fuses, and housing | Annual |
| Management | Documents | Documents all O and M activities in a workbook available to all service personnel, | On-going |



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| | | | |
|------------|-----------|---|-------------|
| Management | Documents | Confirm availability and take any measures to secure operating instructions, warranties and performance guarantees, and other project documentation | Annual |
| Management | Documents | Update record with preventive maintenance activities and track any problems or warranty issues and secure the record onsite | On-going |
| Service | DC Wiring | Re-torque all electrical connections in the combiner box | Annual |
| Service | Batteries | Battery voltage measurements. Checks tighten bolts. Ensure batteries id free from dust | Semi-Annual |
| Testing | PV module | Test output of modules that exhibit cracked glass, bubble formation oxidation of busbars, discoloration of busbars, or PV module hot spots (bypass diode failure) | Annual |
| Testing | Batteries | Check battery charging through Charge Controller Unit | Semi-Annual |

4. SERVICES PROVIDER shall perform all maintenance tasks so that any defects from the normal operation of solar street lights shall be minimal, preferably during periods of low solar resources.
5. SERVICES PROVIDER shall carry out a technical report for each of the visits on the state of equipment and facilities covered with photos when necessary.
6. SERVICES PROVIDER shall keep a record of the maintenance activities carried out in a maintenance logbook, which includes the names of the person who performed the maintenance tasks.
7. SERVICES PROVIDER shall issue a maintenance report with the activities performed during and shall deliver the report within 7 days after completing the maintenance tasks.

C. Corrective Maintenance



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1. SERVICES PROVIDER shall perform all operations and works aimed at remedying failures once produced. SERVICES PROVIDER shall assist any notice within:
 - a) 24 hours if the solar PV system does not work. This period shall not apply in cases not attributable to SERVICES PROVIDER such as there are no available spare parts for repairs or replacements under this contract. This period is extended to 48 hours during Sundays and holidays.
 - b) One (1) week if the fault does not affect operation.
2. Failure or defects caused by any of the following circumstances are not included in this maintenance contract:
 - a) Force majeure, ie external circumstances that the client cannot prevent despite keeping the utmost care. It includes circumstances such as earthquakes, radiation, and wind force exceeding the specified survival rate for performing the work.
 - b) War or civil unrest, strikes or riots.
 - c) Terrorism and hooliganism.
 - d) Actions carried out by third parties without the authorization of SERVICES PROVIDER.

In such cases, SERVICES PROVIDER shall offer the ATI repairs to remuneration commensurate with the usual prices for these jobs or as an individual offer.

To the extent that the repairs were carried out, SERVICES PROVIDER shall provide ATI a monthly report 3 weeks from the end of the month in which they are made. This report shall include details concerning the failures, the nature of the repair work, the material used, and hours worked.

The breakdown of solar street lights shall be repaired on the site by the SERVICES PROVIDER. If the failure of any component could not be repaired in the ATI property, the component must be sent to the official workshop designated by the manufacturer by the client, without prejudice to the claim that may subsequently be made to the manufacturer.

SERVICES PROVIDER shall perform repairs or replacement of the parts as soon as possible after the defect has been identified, but is not liable for damages caused by the delay in the repairs.

IV. COMPONENTS MAINTENANCE

The SERVICES PROVIDER shall execute the following operations:

1. Solar Street Lights Assembly:

- a) **SERVICES PROVIDER** shall shoulder the cost of operation set, connect and disconnect the panels, and have all the tools and resources necessary to carry out the tasks associated with that transaction, including small electrical material.



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- b) **SERVICES PROVIDER** shall provide the special brushes and hoses needed to clean the modules. The client shall inspect them before the cleaning activities.
- c) **SERVICES PROVIDER** shall perform and keep all components of the 21 units of Solar Street Lights installed in the ATI-CO in good repair, good operating condition, appearance, and working order with the manufacturer's recommendations and warranties. Supply of **spare parts are excluded from the scope of maintenance**.

However, during the course of the maintenance, if the Service Provider found out that spare part needed to be replaced, the said **SERVICE PROVIDER** shall prepare a recommendation and also include in their report the cost of the spare parts. The **ATI** shall prepare a purchase request to procure the necessary parts subject to funds availability. The payment of replacement of parts shall be separately billed and paid by ATI upon approval of the purchase order.

- d) **SERVICES PROVIDER** shall perform the procurement and management of replacement parts from all the suppliers of the solar photovoltaic installation with the charge of the ATI. Small electrical and cleaning materials are included in the contract.

V. CONTRACT DURATION

One (1) year contract

VI. CONTRACT COST

The price of the contracted services shall be structured as follows:

- ❖ Total Contract Cost: **PhP60,000/Year**
- ❖ The client shall issue a bill every six (6) months the amount of **PhP30,000/billing**.

Terms and Conditions:

- ❖ **Terms** : PhP30,000.00 every six (6) months.
- ❖ **Total** : PhP60,000.00/Year
- ❖ **Delivery** : As per the contract

Prepared by:


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Head, General Services *sp*

Approved By:


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OIC-Director IV