



**NEGROS OCCIDENTAL ELECTRIC COOPERATIVE
(NOCECO)
Kabankalan City**

Implementation of Net Metering for Renewable Energy System

Application Fee Information

| Description | Amount |
|--------------------------|-------------------|
| a. Coop Admin Fee | Php 1,000.00 |
| b. ERC Filing Fee | Php 1,500.00 |
| c. Inspection Fee | Php 1,200.00 |
| d. <u>Connection Fee</u> | <u>Php 350.00</u> |
| Total | Php 4,050.00 |



NEGROS OCCIDENTAL ELECTRIC COOPERATIVE
(NOCECO)
Kabankalan City

Net Metering application includes the following requirements and information:

- Letter of Intent
- Valid ID of Applicant (Driver's License, SSS, PRC, TIN, Passport, etc.); photocopy with 3 specimen signature
- Special Power of Attorney (SPA) if owner is not the one who will sign the Net Metering Agreement
- Letter of Authorization from the lessor (if the Net Metering facility is being rented) authorizing the lessee to enter into a Net Metering Agreement (NMA) with NOCECO on its behalf
- Electrical Permit issued by the Office of the Building Official (OBO)
- Single Line Diagram
- Electrical Plan signed by a Professional Electrical Engineer (PEE)
- Specifications and Certifications of Equipment
- Pictures of Solar Facility/ Solar Installation
- Name and Address of the Applicant (Form 1)
- Address of the Service Point where the SPV Plant shall be Installed
- Name and Address of the Person who prepared the Information Submitted in the Application Form (must be a Licensed Electrical Engineer or RME with direct knowledge of RE Facility)
- Information on the Power Generating Facility (Form 2)
 - * Type (synchronous/ induction/ inverter)
 - * Fuel Source Type (solar, biogas, wind, etc.)
 - * kW Rating
 - * Kilovolt- Ampere Rating
 - * Voltage Rating
 - * Ampere Rating
 - * Number of Phases
 - * Frequency
 - * Manufacturer
 - * Plan to Export Power (maximum expected capacity)
 - * Pre-Certification of Type Number
 - * Expected Energization and Start-Up Date
 - * Normal Operation of Interconnection
 - * One Line Diagram

- * Information whether the manufacturer has provided its dynamic modelling values to the DU
- * Layout sketch showing lockable, “visible” disconnect device
- Request for a Distribution Impact Study (Form 3)
 - Distribution Impact Study (DIS) Component:
 - * Impact of Short Circuit In-Feed to the Distribution Equipment
 - * Coordination of Protection System
 - * Impact of User Development on Power Quality
- Impact Assessment Information (in particular for SPV & Wind Converters) (Form 4)
 - * Electric Systems Description
 - * Load Information: Customer and Generating Facility
 - * Generator Facility Fault Contribution for Faults at the Connection Point
 - * Generator Facility Characteristics
 - * Transformer Data
 - * Operation Information
 - * Expected monthly generation, load consumption and net consumption from the facility (12month period for the first year and annually for the remaining four years)

Date

Domingo S. Santiago, Jr.
Project Supervisor/ Acting General Manager
Negros Occidental Electric Cooperative (NOCECO)
Kabankalan City, Negros Occidental

LETTER OF INTENT FOR NET METERING APPLICATION

Dear Mr. Santiago,

Greetings!

This letter confirms my intention to apply for Net-Metering in response to Republic Act 9513 or the Renewable Energy Act of 2008. In this connection, we would like to request the necessary application forms and pay the required fees in accordance with the guidelines provided by the Energy Regulatory Commission.

The project details are:

| | |
|--------------------|---|
| Owner | : |
| Address | : |
| NOCECO Account No. | : |
| Contact No | : |
| Email Address | : |
| System Type | : |
| System Size | : |
| Inverter Model | : |
| Modules | : |

We allow NOCECO to conduct a Distribution Impact Study and do the final inspection at the Client's residence or Location of the project once the application is ready.

For questions and clarifications, please do not hesitate to contact me.

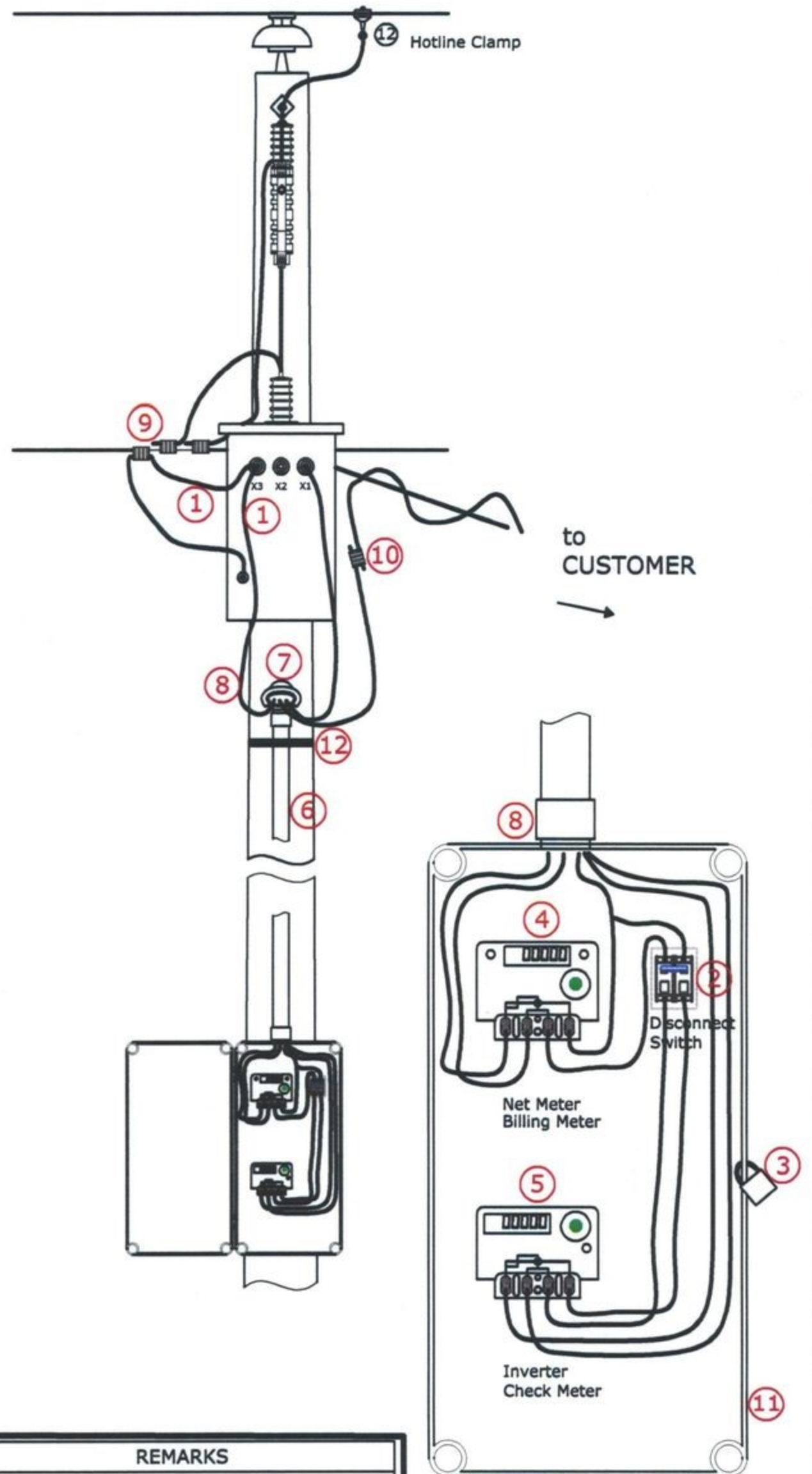
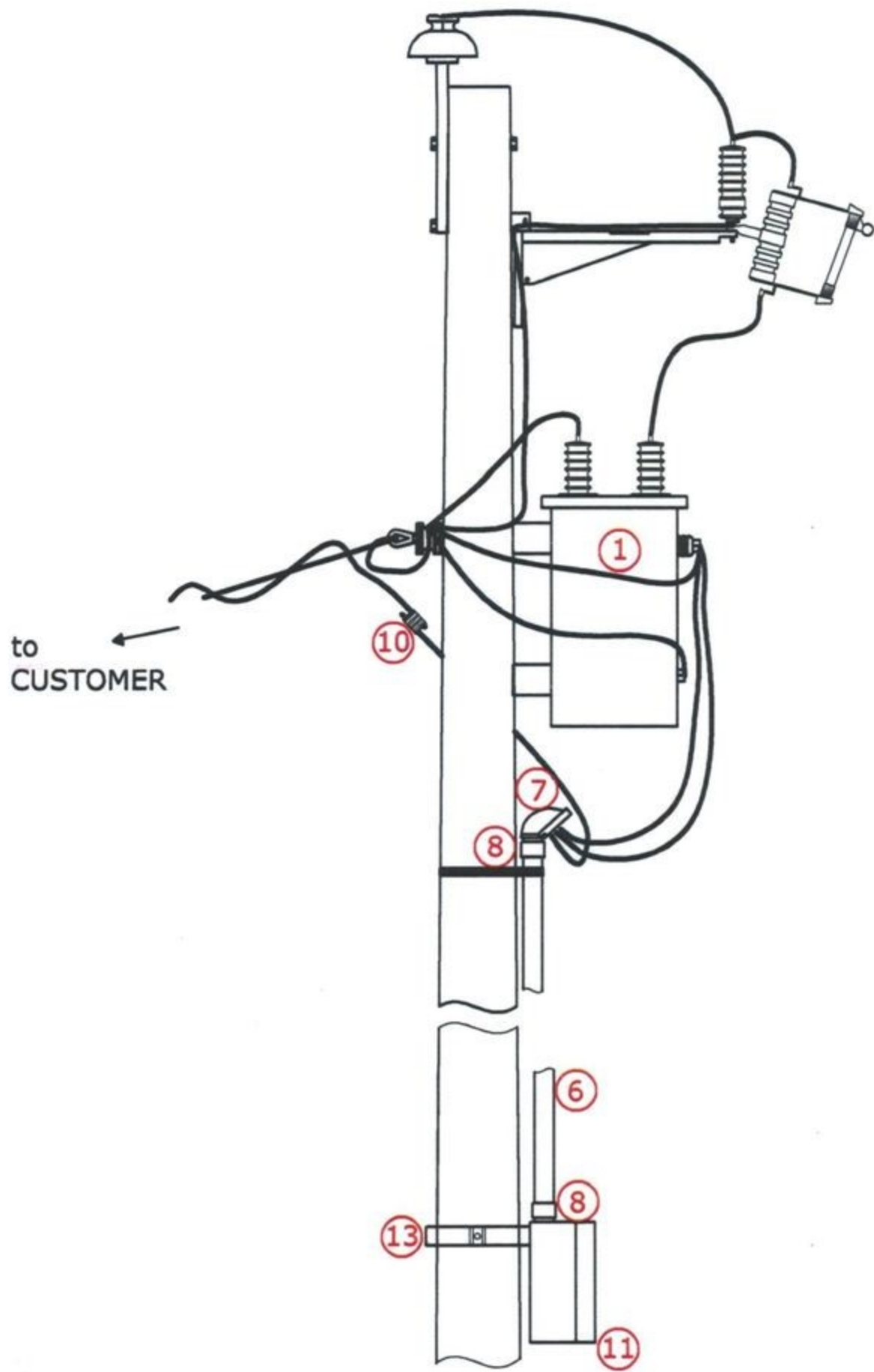
Sincerely yours,

Received by: _____
Date received: _____

This Service is
fitted with a LT
grid connected
RE plant!

 GREEN ENERGY SOLUTIONS, INC.

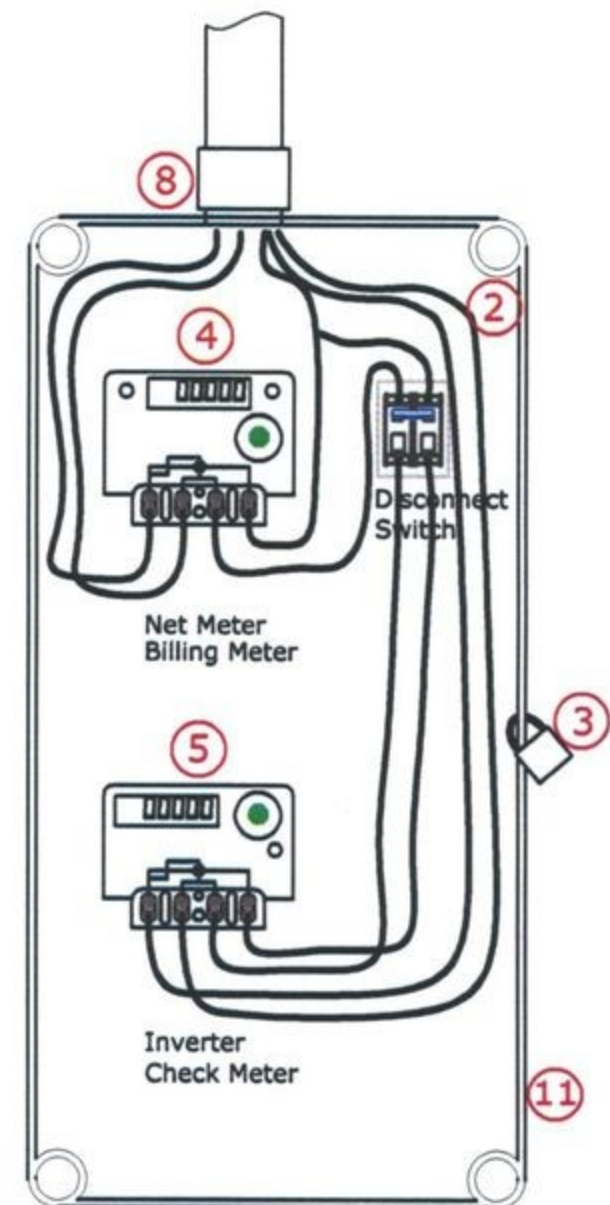
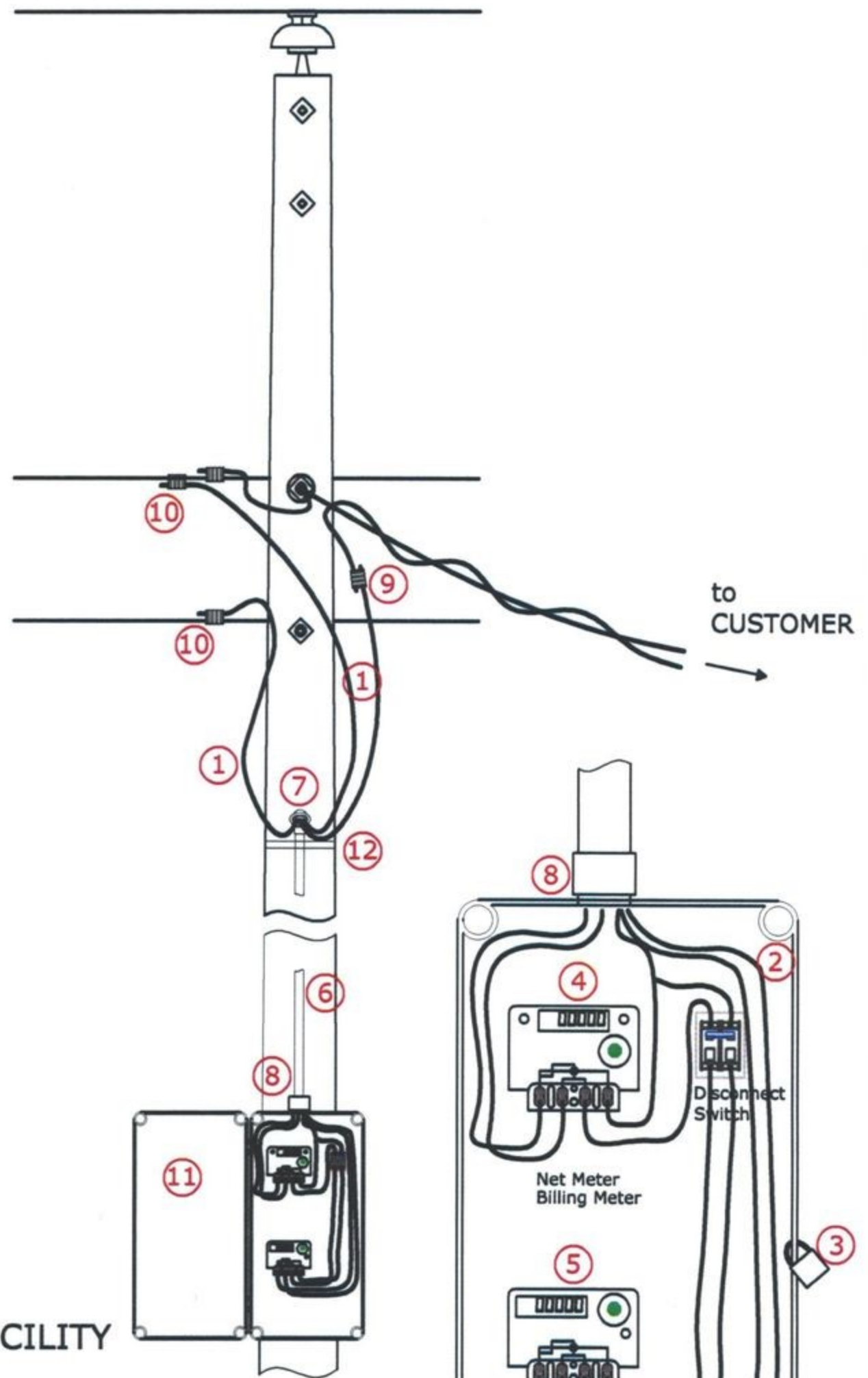
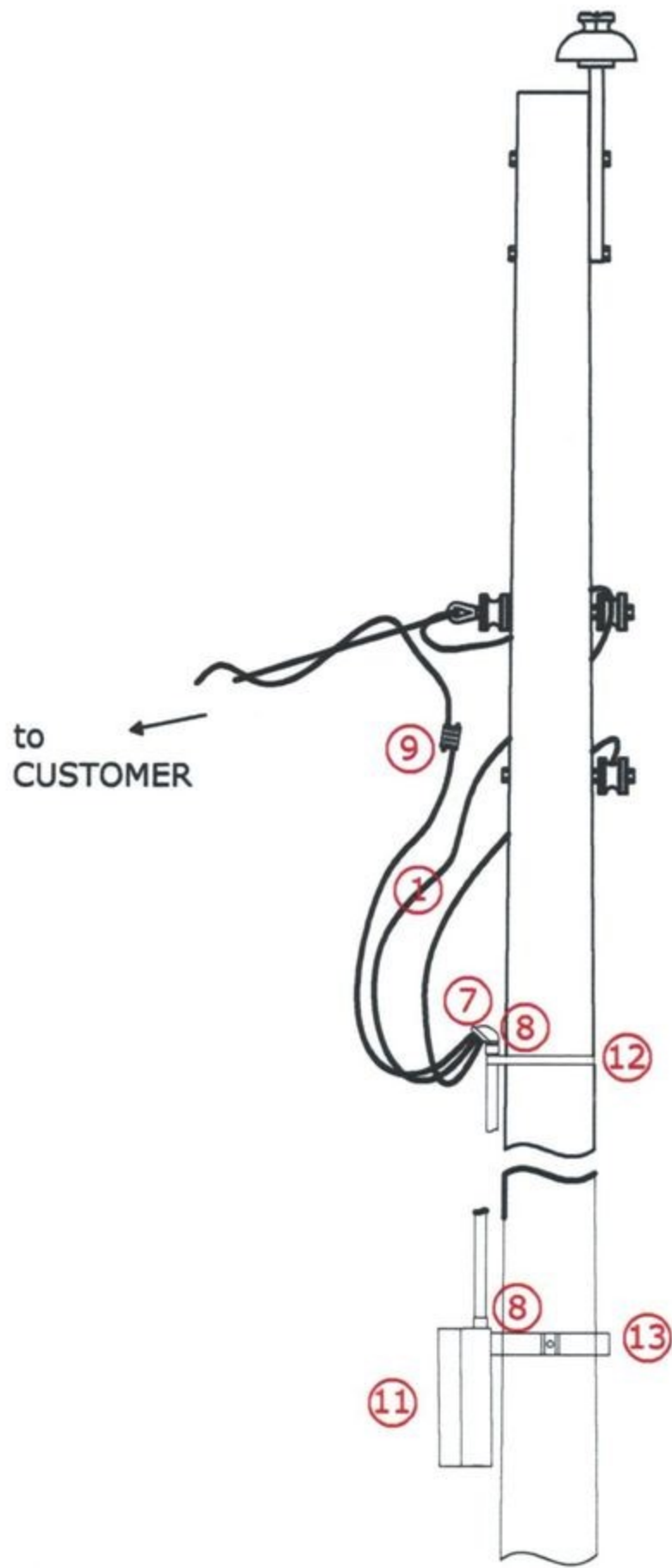




NET METERING STANDARD CONNECTION FACILITY WITH TRANSFORMER

BILL OF MATERIALS

| ITEM | QTY | UNIT | DESCRIPTION | REMARKS |
|------|-----|--------|-------------------------------|-----------------------------------|
| 1 | --- | UNIT | THW C.U. #4 | OWNER SUPPLIED |
| 2 | 1 | UNIT | DISCONNECT SWITCH | OWNER SUPPLIED |
| 3 | 1 | UNIT | PAD LOCK | OWNER SUPPLIED |
| 4 | 1 | UNIT | ENERGY METER (BI-DIRECTIONAL) | NOCECO SUPPLIED, CHARGED TO OWNER |
| 5 | 1 | UNIT | ENERGY METER | NOCECO SUPPLIED |
| 6 | 1 | LENGHT | PVC PIPE 50mm | NOCECO SUPPLIED, CHARGED TO OWNER |
| 7 | 1 | PC | SERVICE CAP 50mm | NOCECO SUPPLIED, CHARGED TO OWNER |
| 8 | 2 | PCS | PVC ADAPTER 50mm | NOCECO SUPPLIED, CHARGED TO OWNER |
| 9 | 1 | PC | CONNECTOR, 2A8U | NOCECO SUPPLIED, CHARGED TO OWNER |
| 10 | 1 | PC | CONNECTOR, YHO 150 | NOCECO SUPPLIED, CHARGED TO OWNER |
| 11 | 1 | PC | METER BOX | NOCECO SUPPLIED, CHARGED TO OWNER |
| 12 | 1 | METER | BAND-IT W/ BUCKLE | NOCECO SUPPLIED, CHARGED TO OWNER |
| 13 | 1 | PC | POLE CLAMP 8-9 DIA. | NOCECO SUPPLIED, CHARGED TO OWNER |



NET METERING STANDARD CONNECTION FACILITY WITHOUT TRANSFORMER (TYPE B)

BILL OF MATERIALS

| ITEM | QTY | UNIT | DESCRIPTION | REMARKS |
|------|-----|--------|-------------------------------|-----------------------------------|
| 1 | --- | UNIT | THW C.U. #8 | OWNER SUPPLIED |
| 2 | 1 | UNIT | DISCONNECT SWITCH | OWNER SUPPLIED |
| 3 | 1 | UNIT | PAD LOCK | OWNER SUPPLIED |
| 4 | 1 | UNIT | ENERGY METER (BI-DIRECTIONAL) | NOCECO SUPPLIED, CHARGED TO OWNER |
| 5 | 1 | UNIT | ENERGY METER | NOCECO SUPPLIED |
| 6 | 1 | LENGHT | PVC PIPE 50mm | NOCECO SUPPLIED, CHARGED TO OWNER |
| 7 | 1 | PC | SERVICE CAP 50mm | NOCECO SUPPLIED, CHARGED TO OWNER |
| 8 | 2 | PCS | PVC ADAPTER 50mm | NOCECO SUPPLIED, CHARGED TO OWNER |
| 9 | 1 | PC | CONNECTOR, 2A8U | NOCECO SUPPLIED, CHARGED TO OWNER |
| 10 | 1 | PC | CONNECTOR, YHO 150 | NOCECO SUPPLIED, CHARGED TO OWNER |
| 11 | 1 | PC | METER BOX | NOCECO SUPPLIED, CHARGED TO OWNER |
| 12 | 1 | METER | BAND-IT W/ BUCKLE | NOCECO SUPPLIED, CHARGED TO OWNER |
| 13 | 1 | PC | POLE CLAMP 8-9 DIA. | NOCECO SUPPLIED, CHARGED TO OWNER |



**NEGROS OCCIDENTAL ELECTRIC COOPERATIVE
(NOCECO)
Kabankalan City**

Implementation of Net Metering for Renewable Energy System

Additional Requirements

LIST OF CERTIFIED EQUIPMENTS

The QE shall provide the information for the following equipment, including test certificates or certifications, specifications, settings, and other vital data.

1. PV Module
2. Inverters
3. Disconnect Switches
4. Circuit Breakers
5. Surge Protection Devices
6. Ground-Fault Protection
7. Protective Relays
8. Synchronizing Devices
9. Anti-Islanding Equipment
10. Fuse and Fuse Holders; if any
11. Cooling Devices; if any
12. Reclosers; if any

DETAILED PLANNING DATA

1. Generating Unit and Generating Plant Data
 - This includes all available data of generating unit and the generating facility.
2. User System Data
 - QE shall provide information, including details of physical and electrical layouts, parameters, specifications and protection, needed to conduct an assessment of transient overvoltage effects in the grid.
3. Energy and Demand Forecast
 - This refers to the projected energy and demand requirement of the facility.
4. Plan for Future Modifications or Extensions

Name of Generation Company/Facility: _____

2. GENERATING FACILITIES OWNED: Number of Units ____

2.1 EXISTING FACILITIES

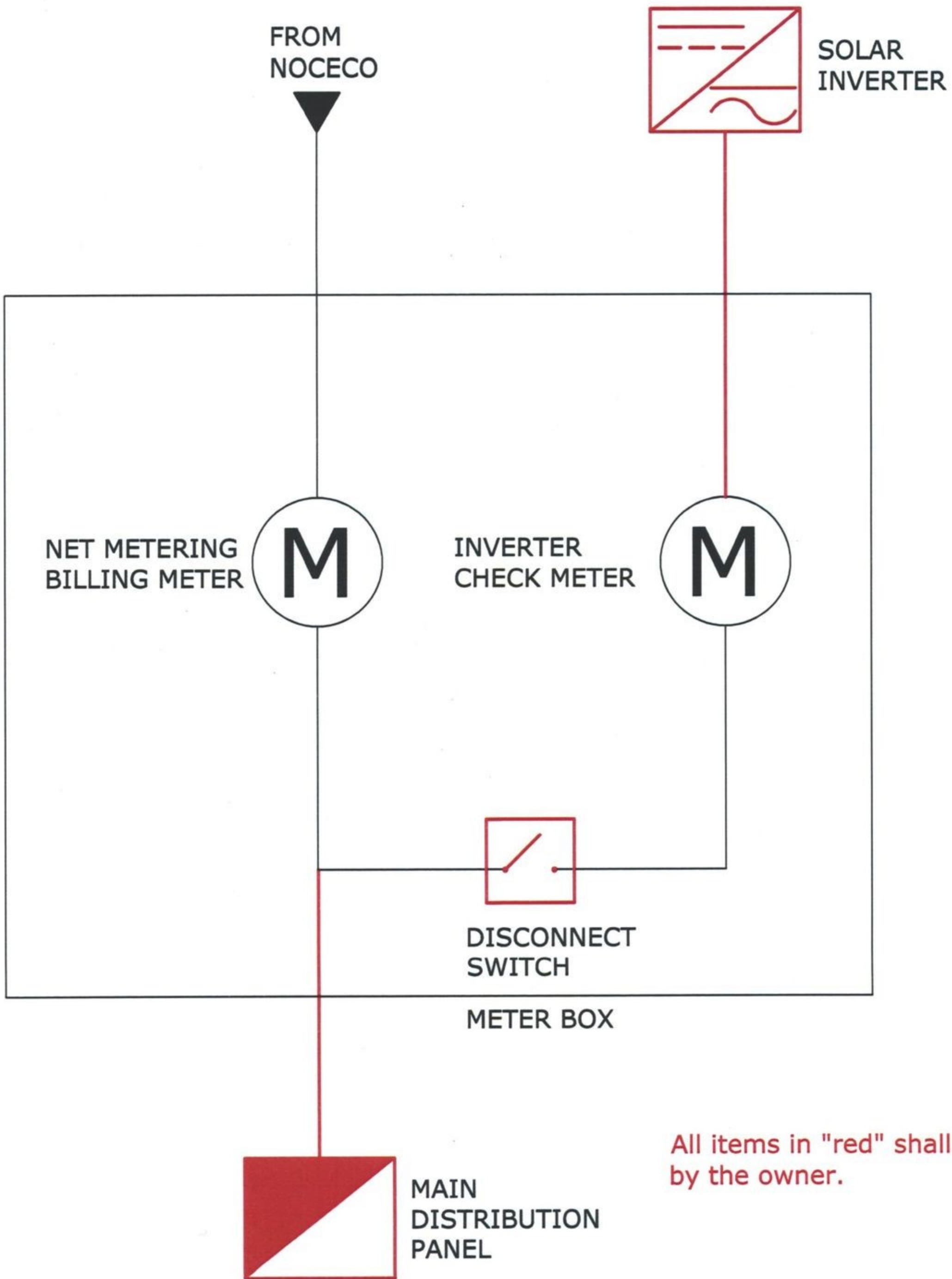
| | UNIT NO. 1 | UNIT NO. 2 | UNIT NO. 3 | UNIT NO. 4 | UNIT NO. 5 |
|-------------------------------|------------|------------|------------|------------|------------|
| Exact Location of Inverters | | | | | |
| Commissioning Date/Installed* | | | | | |
| Economic Life | | | | | |
| Inverter | | | | | |
| Manufacturer | | | | | |
| Serial No. | | | | | |
| Rated Capacity | | | | | |
| Modules (Solar Panel) | | | | | |
| Module Capacity (per panel) | watts | | | | |
| Voltage | | | | | |
| Frequency | | | | | |
| Power Factor | | | | | |
| Rated Capacity | kWp | | | | |
| Dependable Capacity | | | | | |
| No. of Panels Connected | | | | | |

*Module capacity (per panel) x No. of panels connected (No. of watts x 1,000) = Rated Capacity (kWp)

This Service is
fitted with a LT
grid connected
RE plant!

 GREEN ENERGY SOLUTIONS, INC.





All items in "red" shall be supplied by the owner.

**NOCECO
NET METERING
APPLICATION
REQUIREMENTS**

FORM 1
Application Form



Net Metering Application Form Customer Information Sheet

ACCOUNT #: _____

ACCOUNT NAME: _____
(FAMILY NAME) (FIRST NAME) (MIDDLE NAME)

ADDRESS: _____
(HOUSE #) (STREET) (BRGY)

(CITY/MUNICIPALITY) (PROVINCE)

Contact No. _____ Email Address: _____

TYPE OF CUSTOMER: Residential () Commercial () PUBLIC BUILDING () INDUSTRIAL ()

TYPE OF CONNECTION: UNDERBUILD () PRIVATE ()

IF PRIVATE WHAT IS THE SIZE OF TRANSFORMER IN KVA: _____, # OF PHASES: _____

NOTE: DRAW LOCATION SKETCH ON THIS FORM INDICATING THE MOST COMMON LAND MARK

| | |
|-----------------|--|
| LOCATION SKETCH | |
|-----------------|--|

FORM 1
Application Form

Net Metering Application Form
CUSTOMER APPLICATION TECHNICAL INFORMATION SHEET



TYPE OF RENEWABLE ENERGY FACILITY: () Solar () Wind () Hydro () Others: _____
CAPACITY OUTPUT: _____ Watt (s)/ Peak : **DIS/DAS ()**
If connected to UB 5kW is maximum, otherwise DIS/DAS is required to customer.

TECHNICAL SPECIFICATION:

INVERTER CONFIGURATION: _____ (GRID TIED/HYBRID) SYSTEM

MODULE: _____

TOTAL CAPACITY OUTPUT: _____ Watt(s)/peak

INVERTER TYPE: _____ (Micro-Inverter/ Central Inverter)

Waveform: _____ (Purely Sinusoidal @ 60Hz is recommended)

Installer Information:

Electrician/ Technician Name: _____
(Family Name) (First Name) (Middle Initial)

Company Name: _____

Address: _____

Contact No.: _____
(Phone No.) (Mobile No.)

Note: All Technical Information of the Module, Inverter and Solar Panel must be attached on this form.

THIS PORTION IS TO BE FILLED UP BY NOCECO HW INSPECTOR

EXISTING TECHNICAL INFORMATION OF THE CUSTOMER

METERING LOCATION: () MOP () PEDESTAL () HOUSE

kWh METER INFORMATION:

BRAND: _____

Model: _____

TYPE: _____

CLASS: _____

RATING: _____

PHASE: () Single () Three-Phase

Inspected by: _____

Contact #: _____

Signature: _____



NEGROS OCCIDENTAL ELECTRIC COOPERATIVE
(NOCECO)
Kabankalan City

FORM 2
APPLICATION FORM FOR INTERCONNECTION OF RENEWABLE ENERGY
TO NOCECO DISTRIBUTION SYSTEM

Account Name:

Account Number:

Address:

INSTALLER INFORMATION:

NAME:

ADDRESS:

PEE/REE/RME LICENSE NUMBER:

Telephone No.:

***Note:** All applicable items must be accurately completed in so that facilities may be effectively evaluated by the cooperative for the interconnection with the NOCECO distribution system*

Generating Facility Information

No. of Units:

Type (Synchronous/Induction/Inverter):

Fuel Source Type (Wind, Solar, Bio-gas, Etc.):

kW Rating per unit:

Kilo-Volt Ampere Rating (kVA) per unit:

Voltage Rating (V or kV):

Ampere Rating (A):

Phase (single or three):

Frequency:

Manufacturer:

Do you plan to export power? _____ Yes _____ No

If yes, maximum capacity expected _____

Pre-Certification Label or Type Number:

Target Energization Date or Start-Up Date:

One-Line Diagram attached? _____ Yes

Normal Operation of Interconnection (examples: provide power to meet baseload, demand management, standby, backup, others (please describe)):

Has the manufacturer supplied its dynamic modelling values to the DU? _____ Yes
(For Pre-Certified Equipment, answer is 'Yes')

Layout sketch showing lockable, "visible" disconnect device. _____ Yes

Company

By: _____

Title: _____

Date: _____

Customer Name

By: _____

Title: _____

Date: _____



**NEGROS OCCIDENTAL ELECTRIC COOPERATIVE
(NOCECO)
Kabankalan City**

**FORM 3
REQUEST FOR A DISTRIBUTION IMPACT STUDY (DIS) OF RENEWABLE ENERGY
FACILITY FOR NET METERING**

I. General Connection Information

Note: All information in the "General Connection Information" must be completed in full. Incomplete information may delay the processing of the study.

Date: _____

1. Account Name: _____
2. Existing NOCECO Account No. _____
3. Customer Address: _____
4. Telephone/ Fax/ Email: _____
5. Project Name: _____
6. Target date of Construction: _____
Target date of Energization: _____
7. Proposed Total Capacity: _____ kW _____ kVA
8. Project Location (City/ Town/ Province): _____
9. Other Information:

| | Project Contractor | Consultant |
|------------------|--------------------|------------|
| Company/Person: | | |
| Contact Person: | | |
| Mailing Address: | | |
| Telephone: | | |
| Fax: | | |
| E-mail: | | |

10. Renewable Energy Technology:

- Solar PV
- Wind (*with Power Converter*)
- Wind (*Induction Generator only*)
- Biomass/ Biogas
- Others (*please specify*) _____

11. Generator Facility Type:

(a) Generation Facility Voltage: AC _____ volts DC _____ volts

(b) Generation Capacity: _____ kW _____ kVA

(c) Type: Rotating Generators:

- Synchronous
- Induction
- Others (*please specify*) _____

(d) Non-Rotating DC Generation:

- Photovoltaic Arrays
- Batteries
- Others (*please specify*) _____

12. Single Line Diagram

(Please attach a Single line diagram with approximate line distance for connection to nearby NOCECO facilities or metering. The Site Plan should include roads (with street names) and lot number and nearby power lines.)

13. Proposed connection point: () Primary () Secondary

14. Submit Load Profile and Renewable Energy capacity profile.

Prepared by:

Signature over Printed Name/Date



NEGROS OCCIDENTAL ELECTRIC COOPERATIVE
(NOCECO)
Kabankalan City

FORM 4

IMPACT ASSESSMENT FORM

(For Solar Panels and Wind Turbines Equipped with Power Converter)

Note:

- (a) Kindly provide **all** the information requested below, if applicable. Indicate N/A (*Not Applicable*) where appropriate.
- (b) Should NOCECO require additional information to conduct the Impact Assessment, the requesting Customer should be duly notified and advised to be ready in providing the additional information.

Date: _____

1. Electric System Description

Please provide NOCECO a Single Line Diagram (*SLD*) of the customer loads and generating facilities including the customer's point of interconnection to NOCECO'S Distribution System.

- Riser Diagram (*Loads and Generators*)
- Systems Block Diagram
- DC System
- AC System
- AC and DC Grounding System
- Protection System
- Synchronization Equipment
- Equipment (*e.g. Generating Unit, Solar Panels, Inverters, Transformers, Circuit Breakers, etc.*)
- Electrical Circuits
- Switching Facilities
- Phasing Arrangement

Note: The diagram/ drawing shall indicate the quantities, ratings, and operating parameters of the equipment and cables.

2. Load Information: Customer and Generating Facility

(a) Updated Load Schedule (*Please attach additional sheets for the information*)

- | | | |
|------------------------------|-------------------|----------|
| (b) Total Connected Load: | 1-phase _____ kVA | _____ kW |
| | 3-phase _____ kVA | _____ kW |
| (c) Maximum Continuous Load: | 1-phase _____ kVA | _____ kW |
| | 3-phase _____ kVA | _____ kW |
| (d) Maximum Start-Up Load: | 1-phase _____ kVA | _____ kW |
| | 3-phase _____ kVA | _____ kW |

(e) Largest Motor Size that would be Started: _____ HP _____ kW

(f) Maximum Inrush Current of the Motor (*multiple of full load current*): _____ p.u.

3. Generating Facility Fault Contribution for Faults at the Connection Point

% impedance of generator:

4. Generator Facility Characteristics

(a) Number of Generating Units: _____

(b) Rated AC Capacity of Each Unit:

Gross: _____ kW _____ kVA

Net: _____ kW _____ kVA

(If unit outputs are different, please attach additional sheets to provide the information.)

(c) AC Net Capacity: _____ kW _____ kVA

(d) PV Panel/ Module Data

i) Manufacturer : _____

ii) Technology : _____

iii) Model No. : _____

iv) Total Plant Capacity : _____ kWp DC

v) Rated Output : _____

vi) Operating Current : _____ Amp

vii) Open Circuit Voltage : _____ Volts

viii) Short Circuit Current : _____ Amp

ix) Number of Units : _____

x) Total PV Array Area : _____

xi) Is there lightning protection system available?

Yes

No

xii) Grounding

System

Equipment

(e) Inverter: (*Please provide additional sheets for multiple models*)

i) Manufacturer/ Model : _____

ii) Technology Type:

Grid-Tie

Off-Grid

iii) Rated Capacity : _____

iv) Efficiency : _____

v) Number of Units : _____

- vi) Inverter DC Input Voltage : _____ Volts
- vii) Inverter DC Input Current : _____ Amps
- viii) Inverter AC Output Voltage : _____ Volts
- ix) Inverter AC Output Current : _____ Amps
- x) Number of Phases:
 - One
 - Three
- xi) Inverter Output Frequency : _____ Hertz
- xii) Output Waveform:
 - Square
 - Modified Sine
 - True/ Pure Sine Wave
- xiii) Type of Inverter:
 - Self-Commutated
 - Line Commutated
- xiv) Inverter Input Type:
 - Voltage Source
 - Current Source
- xv) Control Scheme:
 - Voltage Control
 - Current Control
- xvi) Power Source for Inverter Control Circuit:
 - DC Side
 - AC Side
 - Both (AC and DC Side)
- xvii) Total Harmonic Distortion: _____ %
(Please attach Harmonic Data Plot/ Graph)
- xviii) Inverter Rated Power Factor: _____ %
- xix) Inverter Power Factor Adjustments Range, if applicable (specify if lag or lead)
From: _____ p.u. to _____ p.u.
- xx) Are power factor correction capacitors used?
- xxi) If yes, total power correction installed: _____ VAR
- xxii) Number of Capacitor Steps: _____
- xxiii) Grounding
 - System
 - Equipment
- xxiv) Are power factor correction capacitors automatically switched off when inverter breaker opens?
 - Yes
 - No
- xxv) Does the inverter have surge protection available?
 - Yes

- No
 xxvi) Does the inverter have short circuit shutdown capability?
 Yes
 No
 xxvii) Does the inverter have anti-islanding protection?
 Yes
 No
 xxviii) Is the inverter paralleling equipment and/ or design pre-certified?
 Yes
 No
 xxix) If yes, to which standard(s)? (e.g. UL-1741, CSA c22.2 No. 107.1-01, IEEE 1547)

 xxx) Maximum inrush current upon inverter start-up (multiple of full-load current)
 _____ p.u.
 xxxi) Is the inverter test certified?
 Yes
 No
If yes, please attach the Test Certificate.

(f). Characteristics (Please attach additional sheets to provide the information)

- i) Harmonic Data Plot/ Graph
- ii) IV Curve/ PV Curve
- iii) Open Circuit
- iv) V Curves

5. Transformer Data (if applicable)

- (a) Manufacturer (if known) _____
- (b) Transformer Rating: _____ kVA
- (c) Number of Phases:
 One
 Three
- (d) Nominal Voltage of High Voltage Winding: _____ Volts
- (e) Nominal Voltage of Low Voltage Winding: _____ Volts
- (f) High Voltage Winding Connection:
 Wye (3-phase)
 Delta (3-phase)
 Line-to-Line (1-phase)
 Line-to-Ground (1-phase)
 Others _____
- (g) Grounding method of High Voltage Winding Neutral (if applicable):
 Solid
 Ungrounded
 Impedance: R _____ X _____ ohms

(h) Low Voltage Winding Connection:

- Wye (3-phase)
- Delta (3-phase)
- Line-to-Line (1-phase)
- Line-to-Ground (1-phase)
- Others _____

(i) Grounding Method of Low Voltage Winding Neutral (if applicable):

- Solid
- Ungrounded
- Impedance: R _____ X _____ ohms

(j) Series Impedance: (% based on Nameplate Ratings):

| | Unit 1 | Unit 2 | Unit 3 |
|--------------------|--------|--------|--------|
| Resistance: | _____ | _____ | _____ |
| Leakage Reactance: | _____ | _____ | _____ |

(k) Tap Information:

Number of Steps/ Taps: above nominal tap _____ below nominal tap _____
 Minimum Tap: _____ (volts; p.u.)
 Maximum Tap: _____ (volts; p.u.)

6. Operation Information:

- Mode of Operation: _____
- Annual Capacity Factor: _____ %
- Prospective Number of Annual Scheduled Starts/ Stops and Timing: _____
- Prospective Maintenance Schedule for 5 Years Operation (*Please attach.*)

7. Expected Monthly Generation, Load Consumption and Net Consumption (Energy and Demand) from the Facility (12 month period) for the First Year and Annually for the Remaining Four Years.

Data prepared by:

Signature over Printed Name/Date