

LAFAYETTE UTILITIES SYSTEM

Net Metering Interconnection Standards

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1 Introduction

1.1 Purpose

The purpose of these interconnection standards for Qualified Small Customer / QF Energy Facilities is to describe the requirements and procedures for safe and effective connection and operation of Small electric generators on the LUS Electric Distribution System.

A Net Metering Customer may operate an Electric Generator at 60 Hertz (Hz), single- or three-phase at voltages up to and including 480V in parallel with LUS's Electric Secondary Delivery System pursuant to an Interconnection Agreement, provided that the equipment meets or exceeds the requirements of this standard. Any interconnection request above the 480V level will be considered on a case by case basis. Contact Lafayette Utilities Chief Electrical Engineer to discuss any interconnection requests of this type.

Two objectives must be met to arrive at compliance by the proposed installation:

1. **Safety** - The Net Metering Customer's Renewable Energy Facility will be held to the same Standard of Care, as LUS is required to maintain. In addition, the safety of the general public and the personnel and equipment of LUS shall in no way be reduced or impaired as a result of the Interconnection.
 - a. The Net Metering Customer's Renewable Energy Facility shall be equipped with Protective Functions designed to prevent the Renewable Energy Facility from being connected to a de-energized circuit owned by LUS.
 - b. The Net Metering Customer's Renewable Energy Facility shall be equipped with the necessary Protective Functions designed to prevent connection or Parallel Operation of the Net Metering Customer's facility with the Electric Secondary Delivery System unless the Electric Secondary Delivery System service voltage and frequency are of normal magnitude. The design of some systems provides these functions without adding equipment at the PCC. Each system not providing additional devices at the PCC must be shown to be capable of these functions.
2. **Customer Impact** - The reliability, availability, and Quality of Service to LUS's other Customers shall not be diminished or impaired as a result of the Interconnection.

This standard describes typical connection requirements. Some installations, however, may require more extensive Interconnection Facilities, and will be addressed on a case by case basis. This is most likely to be required when several Customers desire to connect Renewable Energy Facilities to the same transformer or on the same distribution feeder.

1.2 Scope

Customer Renewable Energy Facilities may be installed within LUS's service area on the Net Metering Customer's side of the meter. These facilities will be connected to the Electric Secondary Delivery System when the Electric Secondary Delivery System is operating under normal conditions. The Net Metering Customer's entire load or any part of it may be supplied with energy by the Renewable Energy Facility. LUS's facilities will be available to handle the Net Metering Customer's entire load as needed.

Applications for Net Metering are limited to:

Residential Maximum Generator Size Total	Non-Residential Maximum Generator Size Total	Type of Fuel
25 kW	100 kW	Renewable fuel as solar, wind or qualified biomass

Generators that do not qualify for Net Metering and desire interconnection shall contact LUS's Chief Electrical Engineer.

The provisions contained in this document are the minimum requirements for safe and effective Interconnection and operation of Net Metering Facilities operating in parallel with LUS's Electric Secondary Delivery System.

2 Definitions

Abnormal Operating Conditions – A situation in which LUS is operating the Electric Distribution System and the Electric Secondary Delivery System in a manner inconsistent with normal configuration or under conditions that do not normally exist. Examples of abnormal operating conditions are times when LUS must switch distribution feeder circuits out of use for repairs and switch other alternate feeders into use to deliver energy to Customers.

Customer - Any entity interconnected to LUS's Electric Secondary Delivery System who takes electric service under one of LUS's rate schedules.

Displaced Load – The Net Metering Customer's entire electrical requirement or a portion of it that, except for the output of the Net Metering Customer's Renewable Energy Facilities, would have been served by LUS.

Electric Distribution System – All of LUS's wires, equipment, and facilities having a voltage of 13.8kV or below including the Electric Secondary Delivery System

Electric Secondary Delivery System - LUS's wires, equipment, and facilities having a voltage of 480V or below to which the Net Metering Customer's Facility is interconnected (the Electric Secondary Delivery System is a subset of the Electric Distribution System).

ETrakit – See LCG Online Permit and Project Search Engine

Interconnection - The physical connection of facilities to the Electric Secondary Delivery System so that Parallel Operation can occur.

Interconnection Agreement - The Standard Interconnection Agreement for Net Metering Facilities approved by the Lafayette Public Utilities Authority and Lafayette City Parish Council.

Interconnection Facilities - All facilities installed solely to interconnect the Net Metering Customer's system with that of LUS to facilitate the exchange of power between the Net Metering Customer's Renewable Energy Facilities and LUS's power system including, but not limited to, connection, transmission, distribution, engineering, transformation, switching, metering, and safety equipment. Interconnection Facilities shall include any additions and/or modifications to LUS's system deemed by LUS to be necessary.

LUS – Lafayette Utilities System

LCG Online Permit and Project Search Engine – An online permit tracking database accessible to the public used to track permits and inspections. <http://etrakit.lafayettela.gov/Etrakit2/Index.aspx>

Network Service - Two or more primary distribution feeder sources electrically connected on the secondary (or low voltage) side to form one power source for one or more Customers. This configuration is designed to maintain service to the Customers even after the loss of one of these primary distribution feeder sources.

Net Metering Customer - Any Customer that takes service under LUS's net metering provisions.

Net Metering Facility - The hardware and software installed to measure the energy flow both into and out of the Net Metering Customer's facilities for the purpose of determining the usage for billing, if any.

Parallel Operation - The operation of Renewable Energy Facilities by a Net Metering Customer while the Net Metering Customer's facilities are physically and electrically interconnected to LUS's Electric Secondary Delivery System.

Point of Common Coupling (PCC) - The point where transfer of any electric power between the Customer's facilities and LUS's Electric Secondary Delivery System takes place, normally at the point of attachment.

Protective Function - Unsafe Operating Conditions shall be prevented from occurring before, during, and after the Interconnection of a Renewable Energy Facility with LUS's Electric Secondary Delivery System. This system typically uses hardware (including switching devices), relay protection schemes and software that and shall be designed to isolate the Net Metering Customer's Renewable Energy Facility or to disconnect it from LUS's Electric Secondary Delivery System under Unsafe Operating Conditions or outages.

Quality of Service - An operating state of the Electric Secondary Delivery System that provides usable power to a Customer. This state of usable power includes the parameters specified for power factor, voltage surges and sags, voltage flicker, frequency and harmonics. For more information on these parameters, refer to the first page of this standard for these sections.

Renewable Energy Facility - A system of hardware and software by which electric energy is generated using sun, wind, or biomass products as the source and is allowed to be interconnected to LUS's Electric Secondary Delivery System.

Stabilized - The Electric Secondary Delivery System is considered stabilized when, following a disturbance, the system returns to the normal range of voltage and frequency for duration of five minutes.

Standard of Care - A term defining the level of awareness to maintain workplace and public safety in the design, installation and operation of facilities which generate power.

System Protection Facilities - The equipment required to protect LUS's system and its other Customers' facilities from Unsafe Operating Conditions occurring at the Net Metering Customer's Renewable Energy Facilities. The protection requirements shall be met at the PCC, although the devices and functions providing the Protective Functions can be located elsewhere.

Unsafe Operating Conditions - A situation that if left uncorrected would result in: (1) harm to any personnel or damage to any equipment, (2) unacceptable system stability or, (3) operation outside established parameters affecting the Quality of Service to other Customers connected to the Electric Secondary Delivery System.

3 Details

3.1 Available Voltage Systems

LUS's Electric Secondary Delivery Systems available for parallel generation operations are of grounded wye or closed delta configurations. Generally, all secondary voltage levels from 120/240 V to 480 V single-phase or three-phase (except open-delta and open-wye) are available for Interconnection. Open-delta and open-wye secondary voltage configurations require special evaluation prior to Interconnection. The voltage level available for connecting the Customer's Renewable Energy Facility in parallel with the system depends on the desired location on LUS's Electric Secondary Distribution System and the size of the Net Metering Customer's Renewable Energy Facility.

3.2 Reasons for Disconnection from the Electric Secondary Delivery System

LUS may disconnect the Net Metering Customer's Renewable Energy Facilities from the Electric Secondary Delivery System under the following conditions:

1. Upon termination of the Interconnection Agreement;
2. Non-compliance of the Net Metering Customer's facility with any of the requirements in this document;
3. System emergency –
 - a. LUS may temporarily disconnect a Net Metering Customer's facility without prior written notice in cases where continued Interconnection will endanger persons or property;
 - b. During the forced outage of the Electric Distribution System, LUS shall have the right to temporarily disconnect a Net Metering Customer's facility to make immediate repairs on the Electric Distribution System;
4. During routine maintenance, repairs, and modifications to LUS's Electric Distribution System;
5. Lack of approved Interconnection Agreement – In order to interconnect the Net Metering Customer's Renewable Energy Facility to LUS's Electric Secondary Delivery System, a Net Metering Customer must first submit to LUS an executed Standard Interconnection Agreement for Net Metering. LUS may refuse to connect or may disconnect the Net Metering Customer's facility if such agreement has not been received and approved.

When possible, LUS will provide the Net Metering Customer with reasonable notice of disconnection and will reconnect the Net Metering Customer as quickly as reasonably practical.

3.3 Electrical Current and Voltage of Existing Service

LUS shall ascertain if the proposed Renewable Energy Facility output exceeds the current carrying capability and matches the voltage of the existing secondary service wires and transformers. LUS will advise Customer of any Customer costs which may be incurred if upgrades are required and the voltage and load carrying ability of the existing service.

3.4 System Changes

3.4.1 Lafayette Utilities System Changes to Electric Distribution System

The Electric Distribution System is a dynamic and changing system. If LUS changes the distribution voltage, the Net Metering Customer will be responsible for paying for all modifications to the Net Metering Customer's facilities required for reconnecting to LUS's reconfigured Electric Secondary Delivery System. LUS will notify the Net Metering Customer of reconfiguration programs.

3.4.2 Net Metering Customer Changes to Interconnection

The Net Metering Customer shall notify and obtain prior approval from LUS prior to performing any modifications to the interconnecting scheme.

3.5 Allowable Tie Points

One tie point between the Net Metering Customer's facilities and LUS's Electric Secondary Delivery System will be allowed. This point will be the Point of Common Coupling (PCC).

3.6 Energy Flow during Emergencies

Power flow from or to a Net Metering Customer's facilities during periods of system emergencies may be discontinued. LUS shall pay for kWh actually received, not for Customer potential capacity.

3.7 Types of Allowed Generators

Single or three-phase alternating current generating units may be operated in parallel with the Electric Secondary Delivery System. They may be synchronous generators, induction generators, or inverter-controlled systems. Direct-current generation shall not be connected to LUS's Electric Secondary Delivery System.

3.8 General Interconnection Requirements

The Net Metering Customer's Renewable Energy Facility shall meet the technical requirements as prescribed in this section and in IEEE 1547, latest version.

3.8.1 Net Metering Customer's Equipment and Interconnection Standards

The Net Metering Customer's Renewable Energy Facilities and Interconnection installation must meet all applicable national, state, and local construction and safety codes. The Net Metering Customer shall be responsible for the design, installation, operation and maintenance of all equipment and facilities installed or that will be installed on the Net Metering Customer's side of the PCC specified by the parties involved. Such design shall meet the latest standards of Institute of Electrical and Electronic Engineers, National Electric Manufacturers Association, American National Standards Institute, National Electric Code, other national codes and local codes pertaining to the design and construction of electrical facilities in effect at the time of installation. The facility shall be subject to the requirements of all authorities having jurisdiction and shall comply with all applicable codes and ordinances. **A visible opening General Duty, Single Throw, NEMA 3R AC disconnect, which is accessible to and lockable by LUS personnel at all hours without notice, shall be furnished and installed by the Customer.** This disconnect shall be located within ten feet (10') of the customer meter base and shall disconnect the Customer's Renewable Energy Facility from the Electric Distribution System. This disconnect must be labeled as per NEC requirements.

The meter base must be labeled as per NEC requirements. In addition to NEC requirements, the meter base must be labeled with the following criteria:

- Directional arrow pointing towards AC disconnect
- Distance to AC disconnect
- AC output, in kW, of generation system.

3.8.2 Rating of Net Metering Customer's Equipment

The equipment selected by the Net Metering Customer shall be rated for continuous Parallel Operation with LUS's system. Renewable Energy Facilities that are intended to provide the Customer with power during periods when LUS's facilities are unavailable shall be equipped with an automatic transfer switch to prevent energizing a non-energized LUS Electric Secondary Delivery System consistent with sections 3.12.3 and 3.8.1 of this policy.

3.8.3 Protection of Net Metering Customer's Equipment

The Net Metering Customer will be responsible for protecting its facilities in such a manner that Electric Secondary Delivery System outages, short circuits or other disturbances, including zero sequence currents and ferroresonant over-voltages, do not damage the Net Metering Customer's facilities. The Net Metering Customer's protective equipment shall be installed to prevent the

Renewable Energy Facility from causing unnecessary tripping of the Electric Distribution System breakers that would affect the Electric Distribution System’s ability to provide reliable service to other Customers.

3.8.4 Required Drawings

Adequate drawings of the Net Metering Customer’s proposed Renewable Energy Facility must be submitted to LUS for review during the planning stage. They shall include, at a minimum:

- A complete one line diagram originating at the generation source and ending at the utility meter, including all equipment and Over-Current Protection Device (OCPD) ratings, directly connected to or associated with the Renewable Energy Facility
- Site address
- Generator/Inverter manufacturer, model number and quantity
- Solar panel manufacturer, model number and quantity and number of strings/panels per string
- AC disconnect distance to meter base

Additional drawings may be required on a case by case basis.

3.8.5 Changes to Lafayette Utilities System Facilities

The total cost of any additional equipment that must be installed by LUS on its Electric Distribution System to allow Parallel Operation must be paid for by the Net Metering Customer, including the transformers and any facilities which must be added due to increased fault current or special operating conditions.

3.8.6 Power Factor

The power factor of the Customer Renewable Energy Facility at the PCC shall be according to the appropriate rate schedule for this installation. The presence of the Customer Renewable Energy Facility shall not cause the power factor to be lower than it was prior to installation and operation of the Customer Renewable Energy Facility.

3.8.7 Reactive Power Requirements

Net Metering Customer’s Renewable Energy Facility shall normally be responsible for supplying the facility’s own reactive power as required by the load to which it supplies power.

3.8.8 Voltage Surges or Sags

The Net Metering Customer will operate its Renewable Energy Facility in such a manner that the voltage levels on the Electric Distribution System are in the same range ($\pm 5\%$ from nominal voltage) as if the facilities were not connected to LUS’s system. The Net Metering Customer shall be responsible for any damages to the Net Metering Customer’s facilities, and shall be liable for any damages to LUS’s facilities or the facilities of other Customers due to any under voltage or over voltage contribution from the Customer Renewable Energy Facility. The Customer shall provide an automatic method of disconnecting the generating equipment from the Electric Secondary Delivery System consistent with IEEE Standard 1547a-2014 Table 1.

Default Settings ^a		Clearing time: adjustable up to and including (s)
Voltage range (% of base voltage ^b)	Clearing times (s)	
V < 45	0.16	0.16
45 ≤ V < 60	1	11
60 ≤ V < 88	2	21
110 < V < 120	1	13
V ≥ 120	0.16	0.16

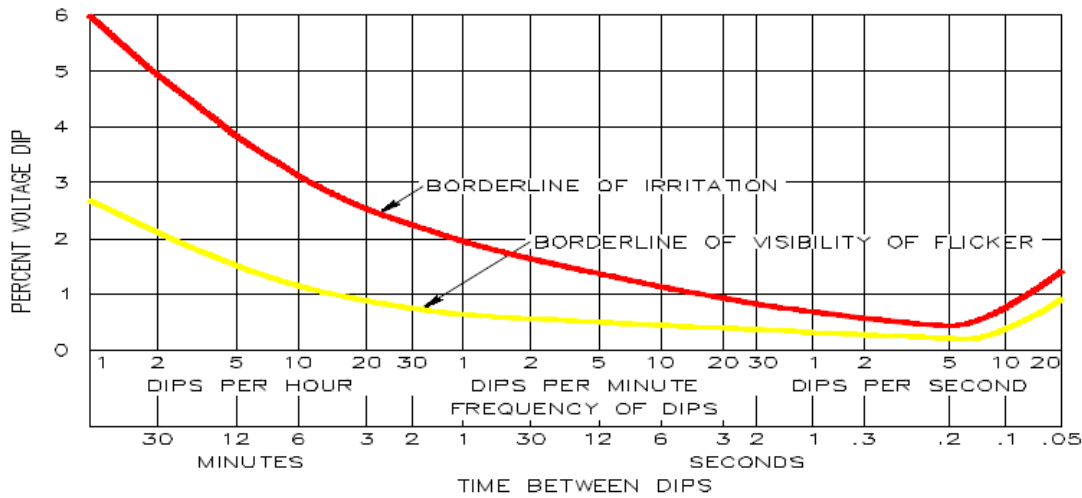
^a – Under mutual agreement between the EPS and DR operators, other static or dynamic voltage and clearing time trip settings shall be permitted.

^b – Base voltages are nominal voltages stated in ANSI C84.1-2011, Table 1.

(Source IEEE Standard 1547a-2014 Table 1)

3.8.9 Voltage Flicker

The Customer Renewable Energy Facility shall not create objectionable flicker for LUS's other Customers. As a guide to identifying objectionable flicker the "Border Line of Irritation" curve, IEEE Standard 141-1993 Figure 3-8, is included below. The creation of objectionable flicker shall result in disconnection by LUS until such time that all objectionable flicker problems are corrected.



(Source: IEEE Standard 141-1993 Figure 3-8)

3.8.10 Frequency

When the operating frequency of the Customer's generating equipment deviates from the 60 Hz base, as outlined in IEEE Standard 1547a-2014 Table 2, the generating equipment shall be automatically disconnected from the Electric Secondary Delivery System:

Function	Default Settings		Ranges of Adjustability	
	Frequency (Hz)	Clearing Time (s)	Frequency (Hz)	Clearing Time (s) adjustable up to and including
UF1	< 57	0.16	56-60	10
UF2	< 59.5	2	56-60	300
OF1	> 60.5	2	60-64	300
OF2	>62	0.16	60-64	10

(Source IEEE Standard 1547a-2014 Table 2)

LUS may require the Customer to wait up to five minutes to reconnect after the Electric Secondary Delivery System voltage and frequency return to normal range and the system is stabilized. Consult LUS for details. (IEEE 1547 4.2.6)

3.8.11 Harmonics

In accordance with IEEE Standard 519-2014, the total harmonic distortion (THD) voltage shall not exceed 8.0% of the fundamental 60 Hz frequency or 5.0% of the fundamental frequency for any individual harmonic when measured at the PCC.

3.9 Inspection Prior to Operations and Additional Requirements

LUS reserves the right to impose any herein described but unmet requirements and to make subsequent final inspection before the Customer Renewable Energy Facility operates to verify that all such unmet requirements have been satisfied. However, LUS has no actual or implied responsibility in this regard. The Net Metering Customer shall be responsible for making necessary changes, at the Net Metering Customer's expense, to the facility should such changes be required. Inspection by LUS of the Net Metering Customer's equipment and Interconnection Facilities shall

not constitute a determination by LUS of the continuing suitability of such equipment and Interconnection. An inspection by LUS shall in no way constitute a warranty or representation by LUS against future negligence, misuse, faulty repairs, or subsequently developing defects, and LUS assumes no responsibility or liability therefore.

3.10 Responsibility for Net Metering Customer's Operations

LUS is not responsible for proper operations of the Net Metering Customer's Renewable Energy Facility upon and after Interconnection to LUS's Electric Secondary Delivery System.

3.11 Responsibility for Net Metering Customer's Annual Maintenance

Annual maintenance of the Net Metering Customer's facility is the Net Metering Customer's sole responsibility. The Net Metering Customer shall maintain records of such maintenance activities, which LUS may review at reasonable times. Such maintenance records shall be made available for LUS's inspection upon request. LUS reserves the right to inspect the records, but has no responsibilities for maintenance either actual or implied.

3.12 Protection/Interface Requirements

Protecting both the Net Metering Customer's facilities and LUS's system are of great importance. Proper protective systems shall be established in the design phase and confirmed prior to start-up of the Net Metering Customer's Renewable Energy Facility. An Interconnection between LUS and the Net Metering Customer will not be allowed prior to the proper coordination of protective devices. The Net Metering Customer shall be responsible for providing to LUS the necessary documentation certifying that maintenance and testing have been satisfactorily performed.

3.12.1 Changes to Lafayette Utilities System Fault Interruption Equipment

Customer Renewable Energy Facilities that are installed on LUS's Electric Secondary Delivery System will provide additional fault current to the Electric Distribution System. Thus, in special circumstances it is possible that the added facilities will necessitate the modification of the existing fault interrupting devices on the distribution feeder. The Net Metering Customer will be responsible for paying the cost of these changes to LUS's system. It is also possible that the added facilities will increase the available fault current on the Electric Distribution System beyond the interrupting capability of the existing devices on the Electric Distribution System. The Net Metering Customer may be required to limit the fault current contribution from the Customer Renewable Energy Facility. Should LUS also be required to make changes, the Net Metering Customer shall pay the cost of the required changes. These issues will be examined on a case-by-case basis.

3.12.2 Tests of the Net Metering Customer's Equipment

LUS reserves the right, but has no responsibility either actual or implied, to observe the Net Metering Customer's tests and/or inspection of any of the Net Metering Customer's protective equipment that is essential to the Interconnection, including relays, circuit breakers, protective devices and related equipment. Inspection may include simulated test tripping of the Net Metering Customer's Interconnection breakers by the protective relays to verify all protective set points and relay/breaker trip timing prior to Interconnection to LUS system. Inspection by LUS of the Net Metering Customer's equipment and Interconnection Facilities shall not constitute a determination by LUS of the continuing suitability of such equipment and Interconnection. An inspection by LUS shall in no way constitute a warranty or representation by LUS against future negligence, misuse, faulty repairs, or subsequently developing defects, and LUS assumes no responsibility or liability therefore. The Net Metering Customer shall provide LUS with notice at least two weeks before the initial energizing and start-up testing of the Net Metering Customer's facilities so that LUS may witness the testing of any equipment and protective systems associated with the Interconnection. If upon connecting to LUS's system a system emergency develops, safety issues arise, or the Quality of Service to other Customers is affected, LUS may then require additional inspections or tests of the Net Metering Customer's protective equipment as per IEEE 1547 and IEEE 1547.1, latest version.

3.12.3 Requirements for Specific Technologies

Various technologies require unique control, protection, and safety equipment to be installed. The specifications in this section list those requirements unique to the technologies.

3.12.3.1 Induction Generators and Inverter Systems

Induction generation may be connected and brought up to synchronous speed (as an induction motor) if it can be demonstrated that the initial voltage drop measured on the Electric Secondary Delivery System side of the PCC is within the allowable visible flicker standard in Section 3.8.9. Otherwise, the Net Metering Customer may be required to install hardware or employ other techniques to bring voltage fluctuations to acceptable levels. Self-commutated inverters whether of the utility-interactive type or stand-alone type shall be used in parallel with the Electric Secondary Delivery System only with synchronizing equipment. Line-commutated inverters do not require synchronizing equipment. For Customer Renewable Energy Facilities using a line commutated inverter system, no other fault-interrupting device is required. The inverter interrupts the fault.

3.13 Susceptibility to Transmission Faults

Faults, single-phasing events, or other Abnormal Operating Conditions occurring on the LUS's transmission system could affect a Net Metering Customer's facilities connected to LUS's Electric Secondary Delivery System. It is the Net Metering Customer's responsibility to protect the Net Metering Customer's facilities from these conditions.

3.14 Synchronizing Requirements

The Net Metering Customer shall be solely responsible for synchronizing and properly connecting and disconnecting its electrical system relative to Parallel Operation with LUS's system. The Net Metering Customer shall provide an automatic synchronizing scheme to prevent the closing of its circuit breaker when the two electrical systems are out of synchronism. The Net Metering Customer's Renewable Energy Facility should be automatically disconnected from LUS's Electric Distribution System if it does not meet the requirements of 3.8.8 and 3.8.10.

3.15 Metering Requirements

Based on LUS's standard practices, LUS will provide the meter base. The Customer may pick up a standard 200A meter base from the warehouse at 1314 Walker Road during normal business hours which are typically 7:00 am and 3:30 pm on weekdays. To obtain a meter base larger than 200A, the Customer will be required to provide LUS with information regarding the total connected load.

LUS shall furnish and install a standard bi-directional kilowatt-hour meter for net metering customers. The Customer shall install a meter socket for the bi-directional kilowatt-hour meter and any related interconnection equipment per the system's technical requirements, safety standards, and performance standards. The Customer shall be responsible for all costs associated with installation of the bi-directional kilowatt-hour meter and any testing of the meter deemed necessary by LUS.

LUS reserves the right to install a meter to measure the actual power generated by the Customer's Renewable Energy Facility. The cost of the meter and its installation shall be borne by the customer.

LUS's standard deposit requirements for service will apply for net metering service. For additional information on interconnection rates and/or deposits, see LUS's website – www.lus.org.

3.16 Standard Interconnection Requirements

A written agreement will be required between LUS and the Net Metering Customer specifying the liability provisions, indemnities, terms of payment of cost to modify Electric Distribution System (if

not paid in advance), and other items affecting service under this document. This agreement will explain in detail the authority or responsibilities of the parties involved.

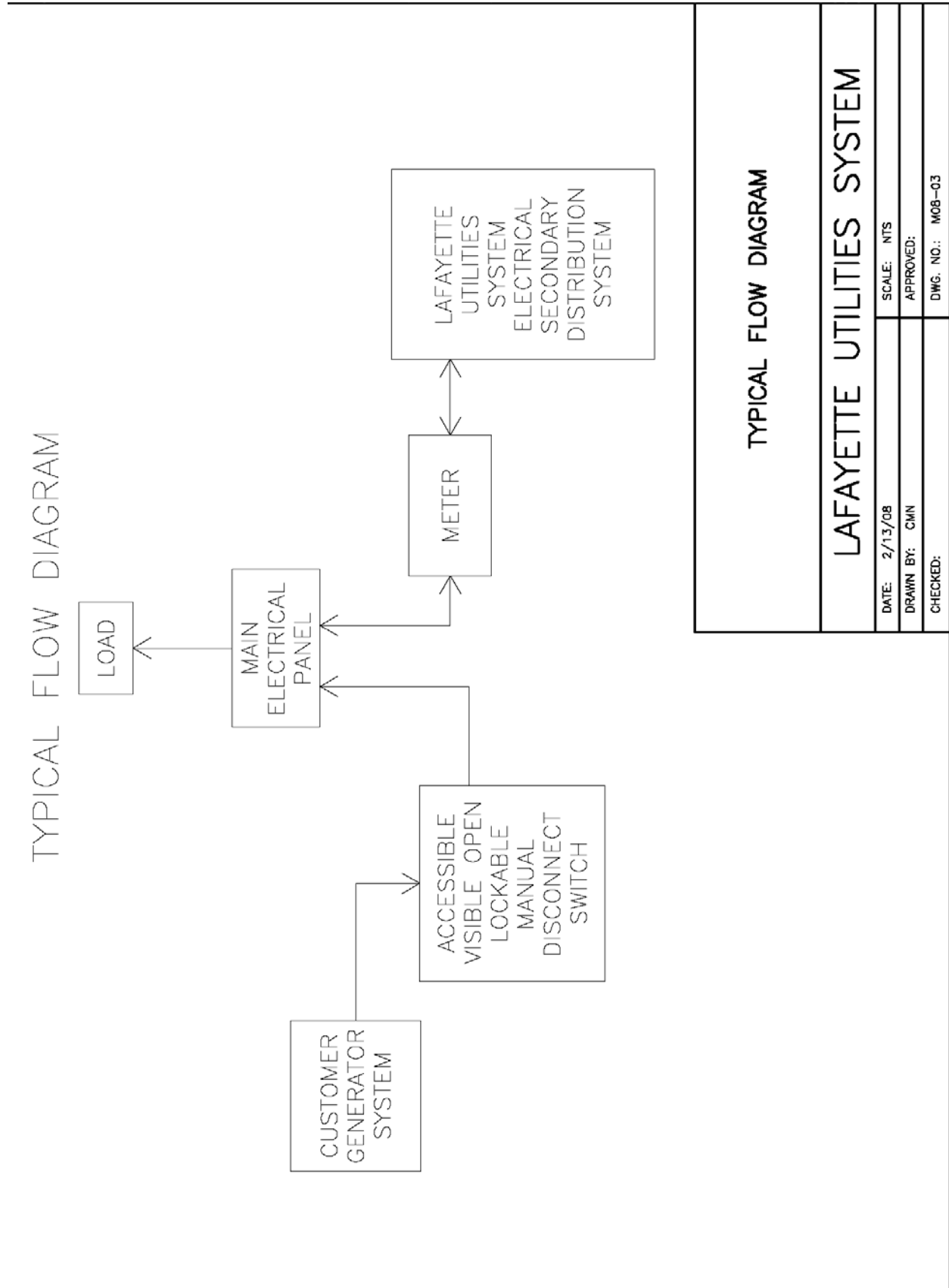
An Interconnection between LUS's Electric Secondary Delivery System and a Net Metering Customer's Renewable Energy Facility will not be allowed prior to LUS having a fully executed Standard Interconnection Agreement for Net Metering Facilities on file.

4 References

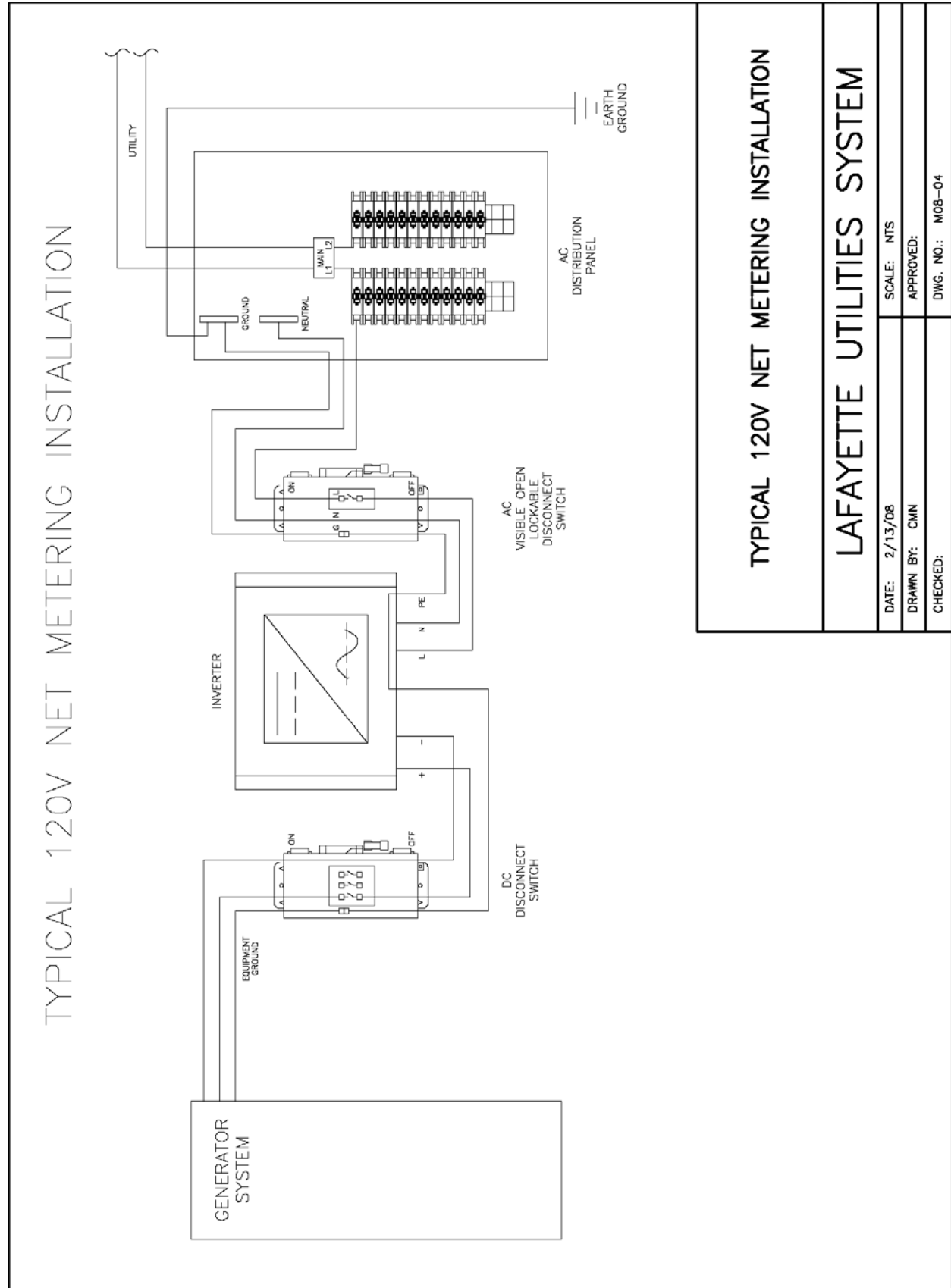
IEEE Guide for Protective Relaying of Utility-Consumer Interconnection C37.95 (Latest revision)
IEEE Recommended Practices and Requirements for Harmonic Control in Electric Power Systems, 519-2014
IEEE Recommended Practice for Electric Power Distribution for Industrial Plants, 141-1993
IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems, 1547
IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems, Am. 1, 1547a-2014
IEEE Standard Conformance for Test Procedures for Interconnecting Distributed Resources with Electric Power Systems, 1547.1

Net Metering Flow Sheets and Diagrams

5. NET METERING FLOW SHEETS AND DIAGRAMS



5. NET METERING FLOW SHEETS AND DIAGRAMS

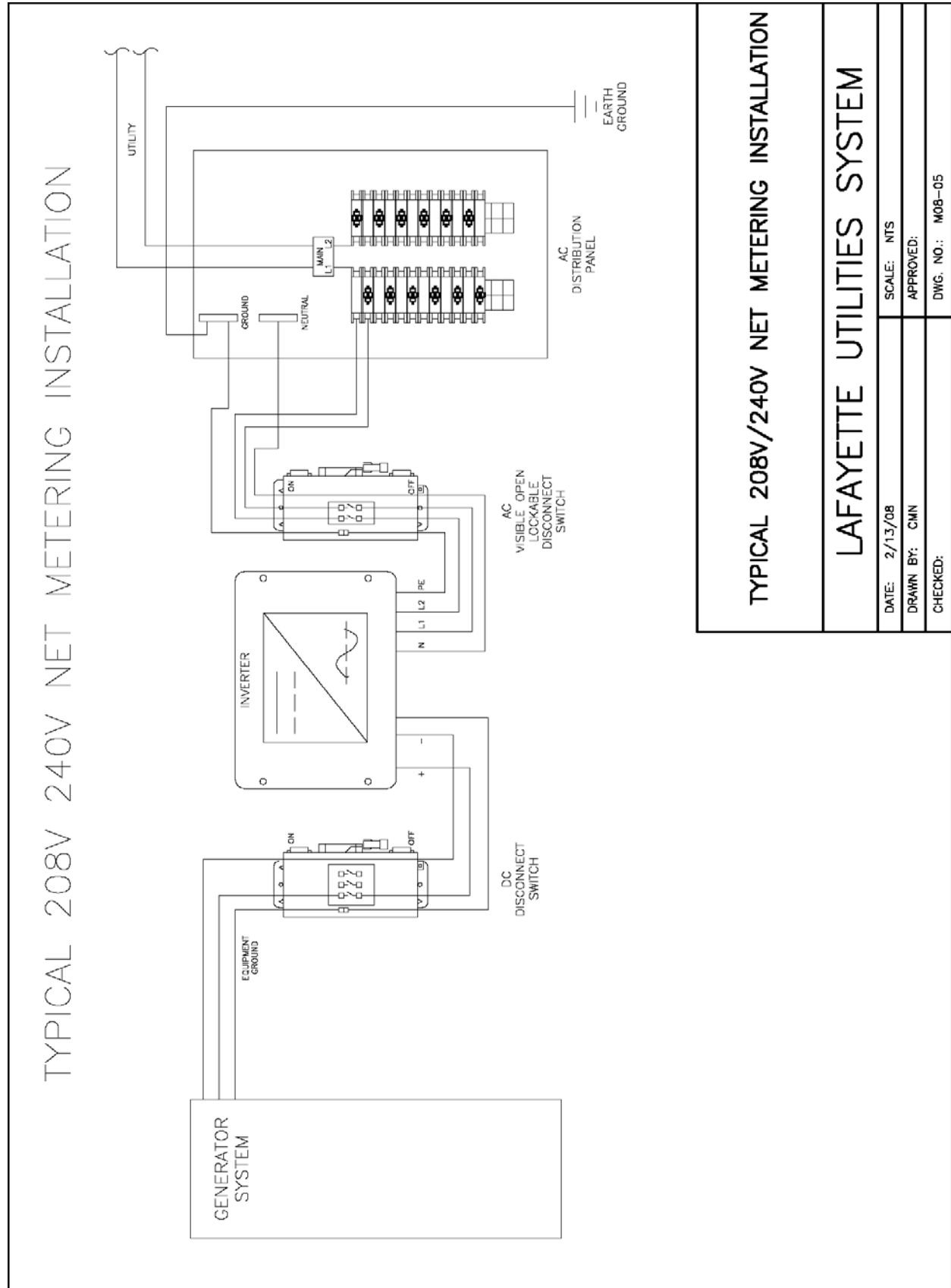


TYPICAL 120V NET METERING INSTALLATION

LAFAYETTE UTILITIES SYSTEM

DATE: 2/13/08	SCALE: NTS
DRAWN BY: CMN	APPROVED:
CHECKED:	DWG. NO.: MOB-04

5. NET METERING FLOW SHEETS AND DIAGRAMS



TYPICAL 208V/240V NET METERING INSTALLATION

LAFAYETTE UTILITIES SYSTEM

DATE: 2/13/08	SCALE: NTS
DRAWN BY: CMN	APPROVED:
CHECKED:	DWG. NO.: MOB-05

Annex A

Net Metering Interconnection Application



Net Metering Interconnection Application

This form shall be completed and approved before the customer/contractor is allowed to apply for building and electrical permitting through the Lafayette Consolidated Government Planning, Zoning and Codes Division.

Enter information in the empty fields below. The Customer may want to have the contractor help fill out this application. Once complete, submit this form either electronically (email), through hand-delivery or by mail to:

Lafayette Utilities System
Net Metering
1314 Walker Rd.
Lafayette, LA 70506

Facility Address: _____ Application Date: _____

Customer Information	
Customer Name: _____	Contact: _____
Mailing Address: _____	City: _____ State: _____ Zip: _____
Phone No (Daytime): _____	Phone (Evening): _____
Customer Account No (from utility bill): _____	

System Information	
Type (circle one):	Solar Wind Biomass
Generator/Inverter Mfr. and Model No: _____	Qty: _____
Voltage: _____ VAC	Phase: _____ Power Factor: _____ Frequency: _____ hz
AC Output: _____ kW	Meets applicable standards? <input type="checkbox"/> UL1741 <input type="checkbox"/> IEEE1547
Solar Panel Mfr. And Model No: _____	Qty: _____
Location of AC Disconnect (relative to meter base): _____	

Installer Information	
Installer: _____	Contractor License No: _____
Mailing Address: _____	City: _____ State: _____ Zip: _____
Phone No (Daytime): _____	Phone (Evening): _____

Drawing Requirements:

- A complete one line diagram originating at the generation source and ending at the utility meter, including all equipment and Over-Current Protection Device (OCPD) ratings, directly connected to or associated with the Renewable Energy Facility
- Site address
- Generator/Inverter manufacturer, model number and quantity
- Solar panel manufacturer, model number and quantity, number of strings, panels per string
- AC disconnect distance to meter base

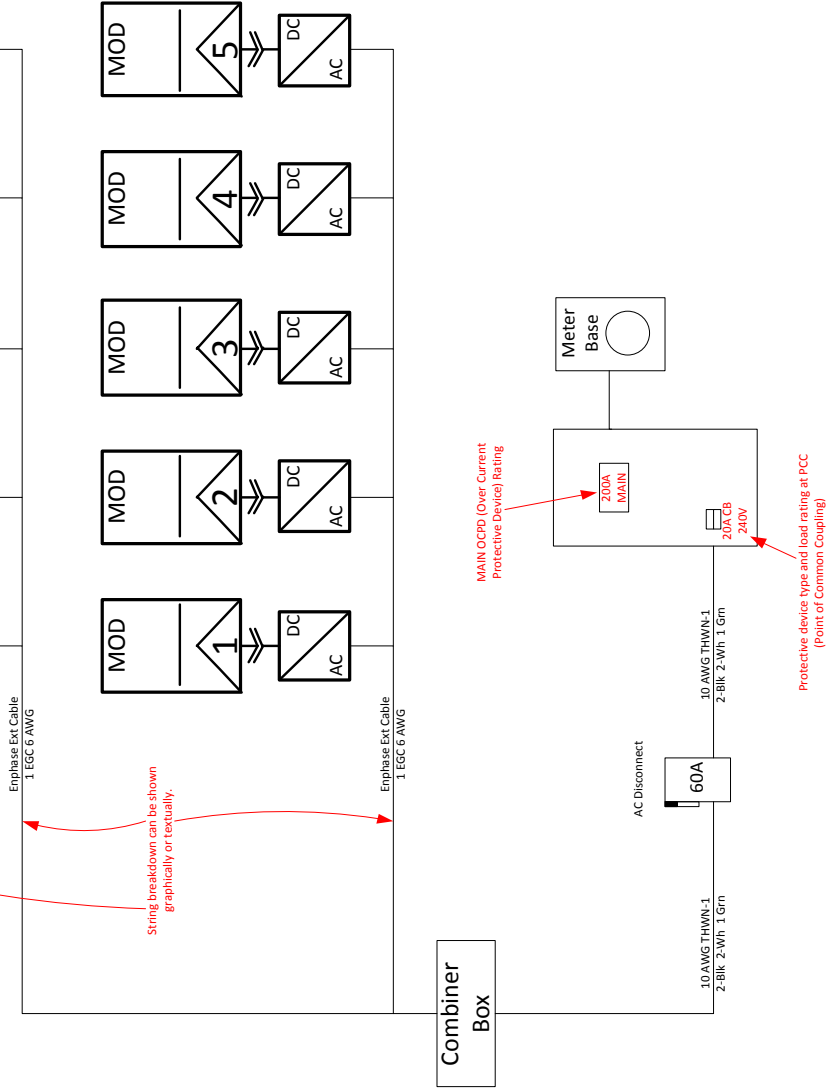
NOTE: All equipment and quantities should match application.

Lafayette Utilities System Use Only	
Approved: _____	Date: _____

Sample Drawing

2.7 kW Solar Photovoltaic System

Part No	No. of Units
Inverter Enphase M215-60-2LL-IG-S22/S23/S24	10
Panel Hyundai HIS-M270MG	10
AC Disconnect Within 10' of meter base	2 strings of 5



Customer:
John R Doe
127 Dexter Dr,
Lafayette La 70506

Annex B

Net Metering Interconnection Agreement

Lafayette Utilities System
STANDARD INTERCONNECTION AGREEMENT FOR NET METERING FACILITIES

I. STANDARD INFORMATION

Section 1. Customer Information

Name (customer on account): _____
Mailing Address: _____
City: _____ State: _____ Zip Code: _____
Facility Location (if different from above): _____
Daytime Phone: _____ Evening Phone: _____
Utility Customer Account (from electric bill): _____

Section 2. Renewable Energy Facility Information

System Type (circle one): Solar Wind Hydro Geothermal Biomass Fuel Cell Micro Turbine
Generator Inverter Manufacturer/Model: _____ No of Units: _____
Generator/Inverter Input Rating (kW): _____ AC or DC Output Rating (kW): _____ AC
Generator/Inverter Power Rating (KVA): _____
Generator/Inverter Location: _____
Solar Panel Manufacturer/Model: _____ No of Units: _____
Describe Location of Accessible and Lockable Disconnect: _____

Section 3. Installation Information

Attach a detailed electrical diagram of the net metering facility.

Installer: _____ Contractor License Number: _____
Mailing Address: _____
City: _____ State: _____ Zip Code: _____
Phone: _____ Installation Date: _____

Section 4. Certification

The system has been installed in compliance with the local Building/Electrical Code of Lafayette Parish and the municipality of _____. Permit Number: _____ Date: _____

Section 5. Utility Verification and Approval

Facility Interconnection Approved: _____ Date: _____
Metering Facility Verification By: _____ Date: _____

II. INTERCONNECTION AGREEMENT TERMS AND CONDITIONS

This Interconnection Agreement for Net Metering Facilities ("Agreement") is made and entered into by Lafayette Utilities System ("Utility") and _____, an _____, each hereinafter sometimes referred to individually as "Party" or collectively as the "Parties". In consideration of the mutual covenants set forth herein, the Parties agree as follows:

Section 1. The Net Metering Facility

The Net Metering Facility meets the requirements of "Net Metering Facility", as defined in the Lafayette Utilities System Net Metering Interconnection Standards ("Net Metering Standards").

Section 2. Governing Provisions

The terms of this agreement shall be interpreted under and subject to Louisiana Law. The parties shall be subject to the provisions of House Bill 2003-653, the terms and conditions as set forth in this Agreement, and the Net Metering Standards.

Section 3. Interruption or Reduction of Deliveries

The Utility shall not be obligated to accept and may require the Customer to interrupt or reduce deliveries when necessary in order to construct, install, repair, replace, remove, investigate, or inspect any of its equipment or part of its system; or if it reasonably determines that curtailment, interruption, or reduction is necessary because of emergencies, forced outages, force majeure, or compliance with prudent electrical practices. Whenever possible, the Utility shall give the Customer reasonable notice of the possibility that interruption or reduction of deliveries may be required. Notwithstanding any other provision of this Agreement, if at any time the Utility reasonably determines that either the facility may endanger the Utility's personnel or other persons or property, or the continued operation of the Customer's facility may endanger the integrity or safety of the Utility's electric system, the Utility shall have the right to disconnect and lock out the Customer's facility from the Utility's electric system. The Customer's facility shall remain disconnected until such time as the Utility is reasonably satisfied that the conditions referenced in this Section have been corrected.

Section 4. Interconnection

Customer shall deliver the as-available energy to the Utility at the Utility's meter. The customer still will be held accountable to the standard deposit as required by the utility, subject to review of customer's credit. Utility shall furnish and install a standard bi-directional kilowatt-hour meter if one does not already exist. Customer shall install a meter socket, provided by the Utility, for the Utility's meter and any related interconnection equipment per the Utility's technical requirements, including safety and performance standards.

Following notification by the customer, the utility shall review the plans of the facility and provide the results of its review to the customer within fifteen (15) calendar days. Any items that would prevent parallel operation due to violation of applicable safety standards and/or power generation limits shall be explained along with a description of the modifications necessary to remedy the violations.

To prevent a net metering customer from back-feeding a de-energized line, the customer shall install a manual disconnect switch with lockout capability that is accessible to utility personnel at all hours. This requirement for a manual disconnect switch may be waived if the following three conditions are met: 1) The inverter equipment must be designed to shut down or disconnect and cannot be manually overridden by the customer upon loss of utility service; 2) The inverter must be warranted by the manufacturer to shut down or disconnect upon loss of utility service; and 3) The inverter must be properly installed and operated, and inspected and/or tested by utility personnel. The decision to grant the waiver will be at the Utility's discretion.

Customer, at his own expense, shall meet all safety and performance standards established by local and national electrical codes including the National Electrical Code (NEC), the Institute of Electrical and Electronics Engineers (IEEE), the National Electrical Safety Code (NESC), and Underwriters Laboratories (UL).

Customer, at his own expense, shall meet all safety and performance standards adopted by the utility and pursuant to Net Metering Standards 3.8.1 that are necessary to assure safe and reliable operation of the net metering facility with the utility's system.

Customer shall not commence parallel operation of the net metering facility until the net metering facility has been inspected and approved by the Utility. Such approval shall not be unreasonably withheld or delayed. Notwithstanding the foregoing, the Utility's approval to operate the Customer's net metering facility in parallel with the Utility's electrical system should not be construed as an endorsement, confirmation, warranty, guarantee, or representation concerning the safety, operating characteristics, durability, or reliability of the Customer's net metering facility.

Modifications or changes made to a net metering facility shall be evaluated by the Utility prior to being made. The Customer shall provide detailed information to the Utility in writing describing the modifications or changes prior to making the modifications to the net metering facility. The Utility shall review the proposed changes to the facility and provide the results of its evaluation to the Customer within fifteen (15) calendar days of receipt of the Customer's proposal. Any items that would prevent parallel operation due to violation of applicable safety standards and/or power generation limits shall be explained along with a description of the modifications necessary to remedy the violations.

Section 5. Maintenance and Permits

The customer shall obtain any governmental authorizations and permits required for the construction and operation of the net metering facility and interconnection facilities. The Customer shall maintain the net metering facility and interconnection facilities in a safe and reliable manner and in conformance with all applicable laws and regulations.

Section 6. Access to Premises

The Utility may enter the Customer's premises to inspect the Customer's protective devices and read or test the meter. The Utility may disconnect the interconnection facilities without notice if the Utility reasonably believes a hazardous condition exists and such immediate action is necessary to protect persons, or the Utility's facilities, or property of others from damage or interference caused by the Customer's facilities, or lack of properly operating protective devices.

Section 7. Indemnity and Liability

Each party shall indemnify the other party, its directors, officers, agents, and employees against all loss, damages expense and liability to third persons for injury to or death of persons or injury to property caused by the indemnifying party's engineering design, construction ownership or operations of, or the making of replacements, additions or betterment to, or by failure of, any of such party's works or facilities used in connection with this Agreement by reason of omission or negligence, whether active or passive. The indemnifying party shall, on the other party's request, defend any suit asserting a claim covered by this indemnity. The indemnifying party shall pay all costs that may be incurred by the other party in enforcing this indemnity. It is the intent of the parties hereto that, where negligence is determined to be contributory, principles of comparative negligence will be followed and each party shall bear the proportionate cost of any loss, damage, expense and liability attributable to that party's negligence.

Nothing in this Agreement shall be construed to create any duty to, any standard of care with reference to or any liability to any person not a party to this Agreement. Neither the Utility, its officers, agents or employees shall be liable for any claims, demands, costs, losses, causes of action, or any other liability of any nature or kind, arising out of the engineering, design construction, ownership, maintenance or operation of, or making replacements, additions or betterment to, the Customer's facilities by the Customer or any other person or entity.

Section 8. Notices

All written notices shall be directed as follows:

Attention:
[Utility]
Lafayette Utilities System
1314 Walker Rd.
Lafayette, LA 70506

Attention:
[Customer]
Name: _____
Address: _____
City: _____

Customer notices to Utility shall refer to the Customer's electric service account number set forth in Section 1 of this Agreement.

Section 9. Term of Agreement

The term of this Agreement shall be the same as the term of the utility's electric service to customer at the Facility Location specified in this Agreement. This Agreement shall remain in effect until modified or terminated in accordance with its terms or applicable regulations or laws.

Section 10. Installation Costs

Per Ordinance No. O-212-2008, the Customer shall be responsible for all costs associated with the installation of the bi-directional kilowatt-hour meter. LUS shall charge the customer and installation fee of sixty (60) dollars.

Section 11. Assignment

This Agreement and all provisions hereof shall inure to and be binding upon the respective parties hereto, their personal representatives, heirs, successors, and assigns. The Customer shall not assign this Agreement or any part hereof without the prior written consent of the Utility, and such unauthorized assignment may result in termination of this Agreement.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their duly authorized representatives.

Dated this ____ day of _____, 20____

Customer

Lafayette Utilities System

By: _____
(PRINT CUSTOMER NAME)

By: _____

(CUSTOMER SIGNATURE)

Title: _____

Title: _____ LUS Director

Annex C

NEC 2011 Labeling Requirements

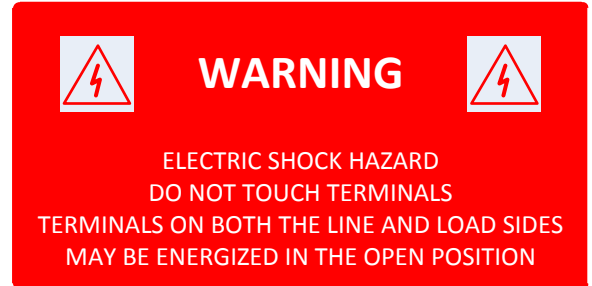
NEC 2011 Labeling Requirements

These images are to be used as a guide only, the installer is responsible for all NEC code requirements.

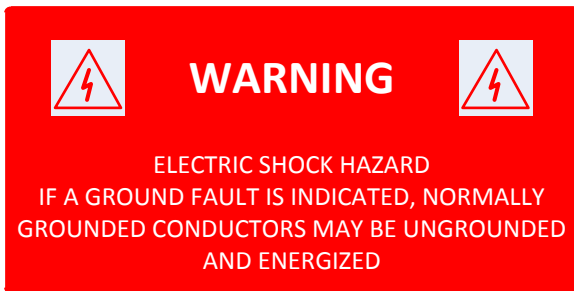
NEC 690.4(F)



NEC 690.17



NEC 690.5(C)



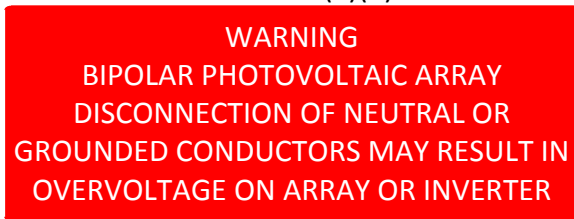
NEC 690.31(E)(3)



NEC 690.33(E)(2)



NEC 690.7(E)(3)



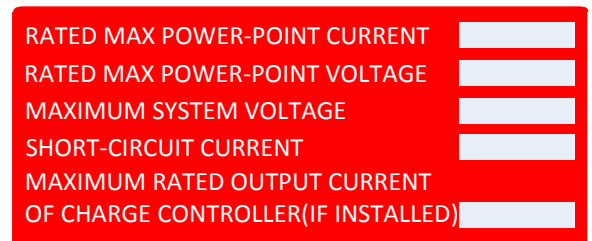
NEC 690.35(F)



NEC 690.10(C)



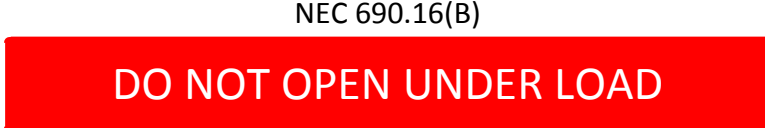
NEC 690.53



NEC 690.14(C)(2)



NEC 690.54



NEC 690.55

PHOTOVOLTAIC AC DISCONNECT

MAXIMUM AC OPERATING VOLTAGE [REDACTED]
THIS SYSTEM GROUNDED ON THE [REDACTED] SIDE

NEC 705.12(D)(7)

WARNING

**INVERTER OUTPUT CONNECTION
DO NOT RELOCATE THIS OVERCURRENT DEVICE**

NEC 705.12(D)(4)

WARNING MULTIPLE POWER SOURCES

UTILITY SOURCE
PHOTOVOLTAIC SOURCE

Some NEC articles require labeling or placards specific to the system installed. It is the responsibility of the installer to ensure these labels and placards are installed and designed such that they convey the intended information required by the NEC article. Those articles are listed below.

NEC 690.4(H)

NEC 690.14(D)(4), NEC 705.10

NEC 690.56(A)

NEC 690.56(B)
