

Title: Connecting Small Electric Generators to the Entergy Distribution System (less than 300kVA)		Effective Date: May 04, 2016
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1 Introduction

1.1 Purpose

A Customer may operate an Electric Generator at 60 Hertz (Hz), single- or three-phase at voltages up to and including 34.5 kV in parallel with the Company's Distribution Delivery System provided that the equipment meets or exceeds the requirements of Company standards.

The purpose of this standard is to describe the **requirements and procedures for safe and effective connection and operation of electric generators smaller than 300kVA** on the Company Distribution electric grid. Customers who have 300kVA to 20MVA generators to connect should refer to *Connecting Large Electric Generators to the Entergy Distribution System*. Customers larger than 20MVA or who would interconnect at Transmission level voltages (69 kV and above) should contact Entergy Transmission. Cost of interconnect, service, payment for electricity and other economic considerations are regulated by the governing Public Service Commission.

Special Rates are allowed by Utility Regulators for consumers who own and interconnect (generally small) renewable energy facilities, such as wind, solar power or home fuel cells. In some areas this is called Net Metering. . Consult the Entergy webpage of your franchise or the appropriate Public utility for details. (These Customers are described by Case 5 in Section 1.2 Scope)

If they do not meet the requirements above or want another option, FERC Qualifying facilities or small power producers also have special rates in each jurisdiction allowing them to sell power to the Company at avoided cost. Agreement from the Company is required to inject Electric Power onto the Company Distribution System.

The process of Connection is started by a Customer submitting a completed Application (Available on the internet. Go to www.entergy.com, select your state or jurisdiction, select residential and select Net Metering or contact 1 800 ENTERGY.) The Customer may request the vendor of the equipment or the electrician help fill out the application. The third step is to contact your local Entergy Representative or call 1-800-ENTERGY to get a representative assigned.

1.1.1 Operating Agreement Requirements

A written agreement (which is available from your Company Representative and on the Internet) will be required between the Company and the Customer specifying the liability provisions, indemnities, terms of payment of cost to modify Distribution Delivery 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 the Company's Distribution Delivery System and a Customer's Electric Generator System will not be allowed prior to the execution of a written Standard Interconnection Agreement for the Facilities.**

Interconnected Electric Generators in Central Business District Grids is discussed in Section 3.8.11

1.1.2 Explicit Criteria for Parallel Operations

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

1.1.2.1 Safety

Customer's Electric Generators will be held to the same Standard of Care, as the Company is required to maintain. In addition, the safety of the general public and the personnel and equipment of the Company shall in no way be reduced or impaired as a result of the Interconnection.

- a Customer's Electrical Generator shall be equipped with Protective Functions designed to prevent the Generator from being connected to a de-energized circuit owned by the Company.
- b Customer's Electrical Generation Facility shall be equipped with the necessary Protective Functions designed to prevent connection or Parallel Operation of the Customer's facility with the Distribution Delivery System unless the Distribution Delivery System service voltage and frequency are of normal magnitude. The design of some systems provides these functions without adding equipment at the Point of Common Coupling (PCC). Each system not providing additional devices at the PCC must be shown to be capable of these functions.

1.1.2.2 Customer Impact

The quality, reliability and the availability of service to the Company's other Customers shall not be diminished or impaired as a result of the Interconnection.

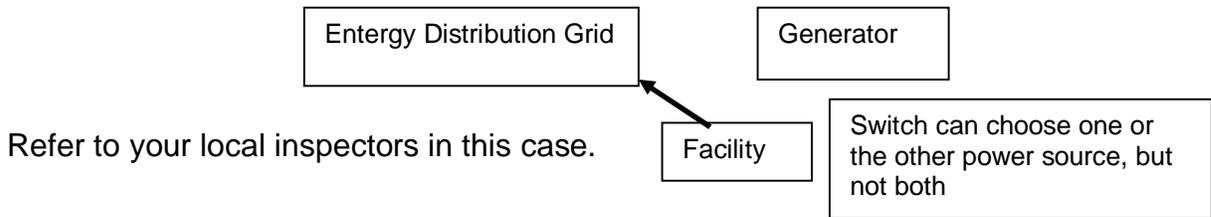
This standard describes typical connection requirements. Some installations, however, may require more extensive Interconnection Facilities, and will be addressed on a case by case basis. This is most likely to be required when several Customers desire to connect Electric Generators to the same transformer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

As specified in FERC Order 2006 10 kw and less UL1741 Listed Pre Certified - Inverter based units order will be accepted. Customers should supply that information as part of the application.

1.2 Scope

Distribution generation installed within Company’s service area will fall into one of seven scenarios:

Case 1.	<p>The Customer may build facilities that are NEVER connected to the Entergy distribution system some examples are:</p> <ul style="list-style-type: none"> • An emergency generator. Where electric cords are run directly to this generator for essential lights and appliances. • A house with a switch, rated for the customers generator size that does not allow electricity to flow from the generator into the facility when the facility is connected to the grid.
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Case 2.	<p>The Customer may build facilities that are connected to their building or internal electrical system and are not intended to be connected to the distribution system. The Customer shall supply a open and visible break verifiable by Company personnel. The location shall be on the outside of the facility accessible to Company personnel at all hours. A main disconnect in the off position qualifies as an open break. It is recommended that the customer tag the disconnect to help prevent accidental closing.</p> <p>Failure to have a visible break is reason for being disconnected, and subjects Customer to liability for resulting injury to people or property.</p>
Case 3.	<p>The Customer may build facilities that are NOT NORMALLY connected to the distribution system. Total connection time is 10 CYCLES OR LESS (@60 cycles/second). All loads become displaced. Stand-by facilities may or may not be requested. No energy is sold or sent to the Company. This Case is covered in <i>Connecting Large Electric Generators to the Entergy Distribution System (300kVA to 20MVA)</i></p>
Case 4.	<p>The Customer may build facilities that are connected to the distribution system more than 10 cycles (may be hours, days, months, etc.). Some or the entire load becomes displaced. Stand-by facilities may or may not be requested. No energy is sold or sent to the Company.</p>

Case 5.	The Customer may build facilities that are normally connected to the distribution system. Some or the entire load becomes displaced. Stand-by facilities are requested. A contract is signed for selling energy to the Company. The Company is required to buy electricity from FERC Qualified facilities This Case includes Net Metering Customers. Consult the Company.
Case 6	The Customer may build facilities that are normally connected to the distribution system. The Customer has no on-site load. A contract is signed for selling energy output to the Company. The Company is required to buy electricity from FERC Qualified facilities. Consult the Company.
Case 7.	The Customer may build facilities that are normally connected to the distribution system. A contract is signed with the Company for wheeling or wholesaling all energy output. This Case is covered in <i>Connecting Large Electric Generators to the Entergy Distribution System (300kVA to 20MVA)</i> and Entergy Transmission Standard PM3901.

2 Definitions

Abnormal Operating Conditions – A situation in which the Company is operating the Distribution 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 the Company must switch distribution feeder circuits out of use for repairs and switch other alternate feeders into use to deliver energy to Customers.

Central Business District Grids, Spot Network Grids and Downtown Underground Radially Fed Installations (CBD) are typically located in downtown areas in New Orleans, Baton Rouge, Lake Charles, West Monroe, Beaumont, Jackson, Little Rock, Pine Bluff, and Hot Springs. The common CBD setup is to have two or more transformers, each connected to a separate feeder and paralleled on the low voltage side through network protectors associated with each transformer. These protectors are commonly configured so that a small amount of fault current (usually in the range of one Amp) will cause the protector to trip. Injecting electric power (with a generator) will have a negative effect on reliability. Also see Network Service

Company - Entergy operating subsidiaries within the United States boundaries.

Customer - Any entity interconnected to the Company's Distribution Delivery System who takes electric service under one of Company's rate schedules.

Displaced load - The Customer's entire electrical requirement or a portion of it that, except for the output of the Customer's Energy Facilities, would have been served by the Company.

Distribution Delivery System - The Company's wires, equipment, and facilities having a voltage of 34.5 kV or below to which the Customer's Facility is interconnected.

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

Interconnection Agreement - The Standard Interconnection Agreement for Facilities. (Available on the internet. Go to www.entergy.com, select your state or jurisdiction, select residential and select Net Metering or contact 1 800 ENTERGY.)

Interconnection Facilities - Facilities installed solely to interconnect the Customer's system with that of the Company to facilitate the exchange of power between the Customer's Energy Facilities and the Company'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 the Company's system deemed by the Company to be necessary.

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. Also see Central Business District Grids.

Net metering is an electricity policy for consumers who own (generally small) renewable energy facilities, such as wind, solar power or home fuel cells. "Net", in this context, is used in the sense of meaning "what remains after deductions" — in this case, the deduction of any energy outflows from metered energy inflows. Under net metering, a system owner receives retail credit for the electricity they generate using electricity meters accurately recording electric flow in both directions. Consult the Entergy webpage of your franchise or the appropriate Public utility for details.

Small Interconnected Electric Generators Customer's Facility - Hardware and software installed to measure the energy flow both into and out of the Customer's facilities for the purpose of determining the usage for billing, if any.

Parallel Operation - The operation of Energy Facilities by a Customer physically and electrically interconnected to the Company's Distribution Delivery System.

Point of Common Coupling (PCC) - The point where transfer of any electric power between the Customer's facilities and the Company's Distribution 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 Customer Electric Generator System with the Distribution Delivery System. This system typically uses hardware (including switching devices), relay protection schemes and software that and shall be designed to isolate the Customer's System or to disconnect it from the Distribution Delivery System under Unsafe Operating Conditions or outages.

Quality of Service - An operating state of the Distribution 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 Electric Generator System - A system of hardware and software by which electric energy is generated using sun, wind, water, or biomass products as the source and as allowed to be interconnected to the Company's Distribution Delivery System.

Stabilized - The Distribution 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 the Company's system and its other Customers' facilities from Unsafe Operating Conditions occurring at the Customer's Energy Facilities. The protection requirements shall be met at the Point of Common Coupling (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 Distribution Delivery System.

3 Details

3.1 Available Voltage Systems

The Company's primary Distribution Delivery Systems available for parallel generation operations are of grounded wye. Generally, all voltage levels from 120/240 V to 34.5 kV single-phase or three-phase (except delta, open-wye and Central Business District Grids) are available for Interconnection. Delta and open-wye secondary voltage configurations require special evaluation prior to Interconnection. The voltage level available for connecting the Customer Electric Generator System in parallel with the system depends on the desired location on the Company's Distribution Delivery System and the size of the Customer's Electrical Generator Facility. **Interconnected Electric Generators in Central Business District Grids is discussed in Section 3.8.11**

3.2 Manually Operated Load Break Switch /Labeling/ Reasons for Disconnect from the Distribution Delivery System

3.2.1 Manually Operated Load Break Switch

One visible blade opening, lockable, inspect-able disconnect for all the Net Metering generation within sight of service entrance meter preferably adjacent to meter, but within 10 feet of meter which is accessible to and lockable by Company personnel at all hours without notice shall be furnished by the Customer to the Company's specifications. (A pull-out type switch not accepted)

Company will accept one breaker (per customer) in lieu of blade opening type disconnect for non-battery backup solar units 25kVA and below. This breaker could be in a house panel/breaker box which is accessible to Company personnel at all hours without notice, and shall meet all of the other conditions of this section.

3.2.2 Labels

Customer shall label

- Meter (or Breaker box if it is within one foot of meter) with type and size of generator with arrow pointing to it stating distance to disconnect. (Example 2.5 kW Solar & batteries, 3 ft → or 2.5 kW Solar & batteries, inside [when using breaker box only])
- If using breaker – The outside of the breaker box (that is more than one foot from meter) shall be labeled (example Solar Disconnect inside) and the breaker shall be labeled with arrow (Example solar disconnect ⇒)
- If using blade opening type disconnect – it shall be labeled with type of generator (Example Solar disconnect or wind power disconnect)

Label shall be red background with white letters and UV resistant. The lettering on each label/tag shall be 3/16 inch or larger and be either raised or incised on

each tag. Each tag shall be riveted or glued to the meter loop or switch or disconnect. Permanently attached tags are required.

The customer shall get **written approval of any and all variances** preferably in the design and planning stage. Contact the local Entergy Representative (or call 1-800-ENTERGY to get a representative assigned)

3.2.3 Reasons for Disconnect from the Distribution Delivery System

The Company reserves the right, but has no responsibility either actual or implied, to open the disconnect switch without prior notice to the Customer for any of the following reasons:

- A. Distribution system emergency,
- B. Routine maintenance, repairs, and modifications,
- C. Elimination of a safety hazard, protection of the public or on-site personnel, or if instructed to do so by public safety personnel (law enforcement, fire department or other governmental personnel),
- D. Inspection of Customer's generating equipment and protective equipment reveals a hazardous condition, a lack of scheduled maintenance or maintenance records,
- E. The operation of the Customer's generating equipment results in a deteriorated quality of service or safety issue with other Customers or with the operation of the Company's system, or

The Company may disconnect a distributed generation unit from the distribution system under the following conditions:

- F. Expiration or termination of interconnection agreement
- G. Non-compliance with the technical requirements
- H. Lack of approved application and interconnection agreement
- I. Unauthorized modifications to the Customer's interface equipment

When possible, the Company shall provide the Customer with reasonable notice and reconnect the Customer as quickly as reasonably practical.

3.3 Electrical Current and Voltage of Existing Service

The Company shall ascertain if the proposed generator output exceeds the current carrying capability and matches the voltage of the existing secondary service wires and transformers. If the Customer supplies his own transformation it should be configured for the Customer to monitor the Company's distribution system and react based upon specifications in this Standard. Grounded Wye to Grounded Wye transformers are preferred and Company approval is required before connection.

The Company will advise Customer of any Customer costs which may be incurred if upgrades are required and the voltage, load carrying ability or transformation of the existing service.

3.4 System Changes

3.4.1 Company Changes to Distribution Delivery System

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

3.4.2 Customer Changes to Interconnection

The Customer shall notify the Company to obtain prior approval for any proposed modifications to the interconnecting scheme.

3.5 Allowable Tie Points

Normally, only one tie point between the Customer's facilities and the Company's Distribution Delivery System will be allowed.

3.6 Energy Flow during Emergencies

Power flow from or to a Customer's facilities during periods of system emergencies may be discontinued. The Company 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 Distribution Delivery System. They may be synchronous generators, induction generators, or inverter-controlled systems. Direct-current generation shall not be directly connected to the Company's alternating-current Distribution Delivery System.

3.8 General Interconnection Requirements

The Customer's Electrical Generation Facilities shall meet the technical requirements as prescribed in this section, in IEEE 1547 and IEEE 1547.1 latest version and in Section 4.0 References.

3.8.1 Customer's Equipment and Interconnection Standards

The Customer's Electrical Generation Facilities and Interconnection installation must meet all applicable national, state, and local construction and safety codes. The Customer shall be responsible for the design, installation, operation and maintenance of all equipment and facilities installed or that will be installed on the Customer's side of the Point of Common Coupling. 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.

3.8.2 Rating of Customer's Equipment

The equipment selected by the Customer shall be rated for continuous Parallel Operation with the Company's system.

Customer's Electrical Generation Systems that are intended to provide the Customer with power during periods when the Company's facilities are unavailable shall be equipped with a transfer switch to prevent energizing a non-energized Company circuit consistent with sections 3.2, 3.13.3 and 3.8.1 of this policy.

3.8.3 Protection of Customer's Equipment

The Customer will be responsible for protecting its facilities in such a manner that Distribution Delivery System outages, short circuits or other disturbances, including zero sequence currents and Ferro resonant over-voltages, do not damage the Customer's facilities.

The Customer's protective equipment shall be installed to prevent the Customer Electric Generator System from causing unnecessary tripping of the Distribution Delivery System breakers that would affect the Distribution Delivery System's ability to provide reliable service to other Customers.

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

3.8.4 Required Drawings

Adequate drawings of the Customer's proposed Electric Generator System, which will include a one line diagram and proposed relay systems, must be submitted to the Company for review during the planning stage. Additional drawings may be required on a case by case basis.

3.8.5 Changes to Company Facilities

The total cost of any additional equipment that must be installed by the Company on its Distribution Delivery System to allow Parallel Operation must be paid for by the Small Interconnected Electric Generators 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 Electric Generator System at the Point of Common Coupling shall be according to the appropriate rate schedule for this installation. The presence of the Customer Electric Generator System shall not cause the power factor to be lower than it was prior to installation and operation of the Customer Electric Generator System.

3.8.7 Reactive Power Requirements

The Customer's Electric Generator System 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 Customer will operate its Electric Generator System in such a manner that the voltage levels on the Distribution Delivery System are in the same range (+5% or -5% from nominal voltage) as if the facilities were not connected to the Company's system. The Customer shall be responsible for any damages to the Customer's facilities, and shall be liable for any damages to the Company's facilities or the facilities of other Customers due to any under voltage or over voltage contribution from the Customer.

The Customer shall provide an automatic method of disconnecting the generating equipment from the distribution delivery system if:

Voltage Range (% of base voltage)	Time from beginning of event (seconds)
Less than 50%	0.16
50 to 89%	2.00
110% to 120%	1.00
Greater than 120%	0.16

3.8.9 Voltage Flicker, Harmonic Distortion, Transients and other Power Quality Issues

The Customer shall not create objectionable flicker, Harmonic Distortion, Transients, etc. for the Company's other Customers. Also consult Entergy's Power Quality Standards for Electric Service, latest edition which is available on The Entergy web site at www.entergy.com. Go to your state, "Your Business", Builder Standards.

3.8.10 Frequency

When the operating frequency of the Customer's generating equipment deviates from the 60 Hz base. The Customer shall automatically disconnect the generating equipment from the distribution delivery system based upon the table below:

Interconnection System Response to Abnormal Frequencies

Generator size	Frequency range (Hz)	Time from beginning of event (seconds)
Less than or equal to 30kW	Greater than 60.5	0.16
	Less than 59.3	0.16
Greater than 30 kW	Greater than 60.5	0.16
	Less than 59.8 to 57	Adjustable 0.16 to 300 (consult Company)
	Less than 57	0.16

The Company may require the Customer to wait up to five minutes to reconnect after the distribution delivery system voltage and frequency return to normal range and the system is stabilized. Consult the Company for details. (IEEE 1547 4.2.6)

3.8.11 Interconnected Electric Generators in Central Business District Grids

The Company will not allow interconnection in Central Business District Underground Secondary Networks, Spot Network Grids and Downtown Underground Radially Fed Installations. In Central Business District Grids, Spot Networks, and Downtown Underground Radially Fed Installations a generator will have a negative effect on reliability and the safety of employees that maintain these systems. This policy will affect Spot Networks, CBD Grids and Downtown Underground Radially Fed Installations including those in New Orleans, Baton Rouge, Lake Charles, West Monroe, Beaumont, Jackson, Little Rock, Pine Bluff, and Hot Springs

3.9 Inspection Prior to Operations and Additional Requirements

The Company reserves the right to impose any herein described but unmet requirements and to make subsequent final inspection before the Customer Electric Generator System operates to verify that all such unmet requirements have been satisfied. However, the Company has no actual or implied responsibility in this regard. The Customer shall be responsible for making necessary changes, at the Customer's expense; to the facility should such changes be required.

Inspection by the Company of the Customer's equipment and Interconnection Facilities shall not constitute a determination by the Company of the continuing suitability of such equipment and Interconnection. An inspection by the Company shall in no way constitute a warranty or representation by the Company against future negligence, misuse, faulty repairs, or subsequently

developing defects, and the Company assumes no responsibility or liability therefore.

3.10 Responsibility for Customer's Operations

The Company is not responsible for proper operations of the Customer's Electric Generator System upon and after Interconnection to the Company's Distribution Delivery System.

3.11 Responsibility for Customer's Annual Maintenance

Annual maintenance of the Customer's facility is the Customer's sole responsibility. The Customer shall maintain records of such maintenance activities, which the Company may review at reasonable times. Such maintenance records shall be made available for the Company's inspection upon request. The Company 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 Small Interconnected Electric Generators Customer's facilities and the Company's system are of great importance. Proper protective systems shall be established in the design phase and confirmed prior to start-up of the Customer's Electrical Generation Facility. An Interconnection between the Company and the Customer will not be allowed prior to the proper coordination of protective devices. The Customer shall be responsible for providing to the Company the necessary documentation certifying that maintenance and testing have been satisfactorily performed.

3.12.1 Changes to Company Fault Interruption Equipment

Customer Energy Facilities that are installed on the Company's Distribution Delivery System will provide additional fault current to the Distribution Delivery 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 Customer will be responsible for paying the cost of these changes to the Company's system.

It is also possible that the added facilities will increase the available fault current on the Distribution Delivery System beyond the interrupting capability of the existing devices on the Distribution Delivery System. The Customer may be required to limit the fault current contribution from the Customer Electric Generator System. Should the Company also be required to make changes, the Customer shall pay the cost of the required changes. The issues will be examined on a case-by-case basis.

3.12.2 Tests of the Customer's Equipment

The Company reserves the right, but has no responsibility either actual or implied, to observe the Customer's tests and/or inspection of any of the 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 Customer's Interconnection breakers by the protective relays to verify all protective set points and relay/breaker trip timing prior to Interconnection to the Company system.

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

The Customer shall provide the Company with notice at least two weeks before the initial energizing and start-up testing of the Customer's facilities so that the Company may witness the testing of any equipment and protective systems associated with the Interconnection.

If upon connecting to the Company's system a system emergency develops, safety issues arise, or the Quality of Service to other Customers is affected, the Company may then require additional inspections or tests of the Customer's protective equipment as per IEEE 1547 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 Synchronous Generators

For a Customer's synchronous generator, circuit breakers shall be three-phase devices with electronic or electro-mechanical control. The Customer is solely responsible for properly synchronizing its generator with the Company's Distribution Delivery System. The excitation system response ratio shall be 0.5 or greater. The generator's excitation system(s) shall conform, as near as reasonably achievable, to the field voltage versus time criteria specified in American National Standards Institute Standard C50.13-1989 in order to permit adequate field forcing during transient conditions.

3.12.3.2 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 Distribution Delivery System side of the Point of Common Coupling is within the allowable visible flicker standard - see §3.8.9. Otherwise, the 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 Distribution Delivery System only with synchronizing equipment.

Line-commutated inverters do not require synchronizing equipment. When a line commutated inverter system is used, no other fault-interrupting device is required. The inverter interrupts the fault.

3.13 Synchronizing Requirements

The Customer shall be solely responsible for synchronizing and properly connecting and disconnecting its electrical system relative to Parallel Operation with the Company's system. The Customer shall provide an automatic synchronizing scheme to prevent the closing of its circuit breaker when the two electrical systems are out of synchronism. Also see Section 3.8.10.

3.14 Metering Requirements

Based on the applicable rate schedule and the Company's standard practices, the Customer will provide the meter socket. The Company will supply the special meter that will measure the Customer's energy flow.

The Customer will be required to provide the Company with information regarding the total connected load. The Customer may be required to provide and / or install the meter socket, metering transformer enclosure, and adequate attachments or devices for attaching Company's metering facilities to the building. For additional information see the Company's *Customer Installation Standards for Electric Service* which is available on The Entergy web site at www.entergy.com. Go to your state, "Your Business", Builder Standards.

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, 519-1992

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 Conformance for Test Procedures for Interconnecting Distributed Resources with Electric Power Systems 1547.1

American National Standards Institute Standard C50.13-1989

UL 1741 Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources

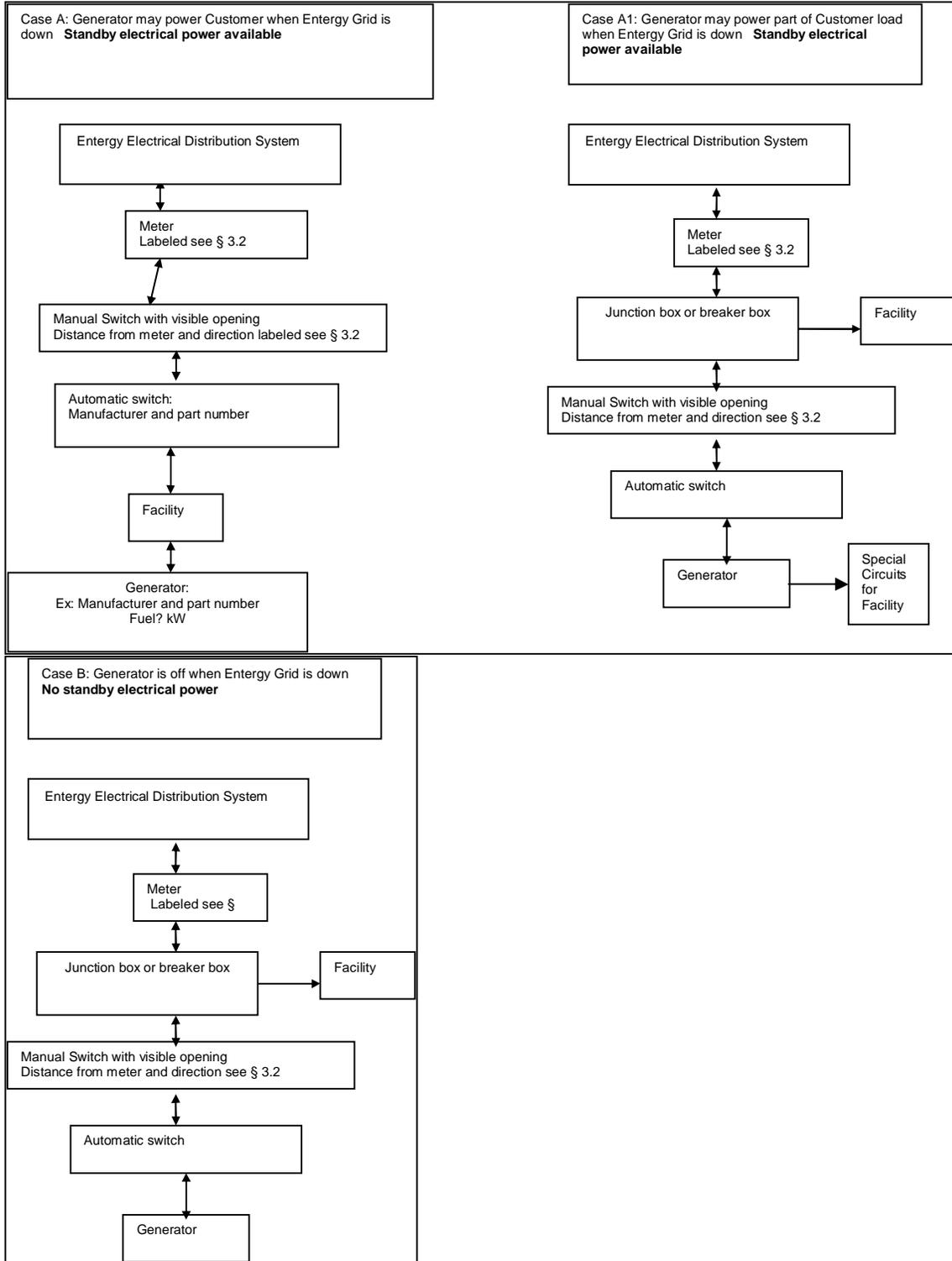
Jurisdictional Rules and Rates for Arkansas, Louisiana, New Orleans and Texas

Entergy Customer Installation Standards for Electric Service, latest edition

Entergy Power Quality Standards for Electric Service, latest edition

Connecting Large Electric Generators to the Entergy Distribution System (300kVA to 20MVA) Entergy Standard DR701

5 FLOW CHARTS (One Line Diagrams)



Title: **Connecting Small Electric Generators to the Entergy Distribution System (less than 300kVA)**

Effective Date:
May 04, 2016

Note: A one line diagram submitted to the Company could be like the ones above with equipment specific information included

6 Revisions

06	<ul style="list-style-type: none"> • Title of Standard changed from <i>Net Metering Facilities Safety and Performance Standards</i> to <i>Connecting Small Electric Generators to the Entergy Distribution System (less than 500kVA)</i> and expanded to include all interconnected generators below 500kVA. • Application moved to end of Standard • Added questions on application to learn if generator is to be connected less than 10 cycles. • Move Manually Operated Load Break Switch requirements from §3.8.1 and merge into §3.2 Reasons for Disconnection from the Distribution Delivery System • 3.14 Susceptibility to Transmission Faults moved to 3.8.3 Protection of Customer's Equipment • 3.8.11 sentence "Interconnections for Electric Generators will be allowed in Central Business Districts in overhead or standard underground distribution circuits which can comply with Company's Standards." Removed either the unit is in a legal downtown network grid or not • References to §3.2 added to 5.0 Flow Charts 	11/11/08
07	<ul style="list-style-type: none"> • 3.2 The customer shall get written approval of any and all variances, preferably in the design and planning stage. Contact the local Entergy Representative (or call 1-800-ENTERGY to get a representative assigned). • In Application, short circuit rating of entire system only needed. 	10/15/09
08	<ul style="list-style-type: none"> • Customer referred to website or 1 800 ENTERGY for application and Standards Interconnection Agreement form • Add to 3.2 .(A pull-out type switch not accepted unless it was installed, in place or approved before 1/26/2011) 	1/26/11
09	<ul style="list-style-type: none"> • 3.2 Only one disconnect allowed for all Net metering generation at site. (submitted for clarity it was always one) per IEEE1547-2003 § 4.1.7 • Disconnect must be within 10 feet of meter 	7/ 22/11

<p>10</p>	<p>Section 1.2 Scope Case 2. Has been changed to: “The Customer may build facilities that are connected to their building or internal electrical system and are not intended to be connected to the distribution system. The Customer shall supply a open and visible break verifiable by Company personnel. The location shall be on the outside of the facility accessible to Company personnel at all hours. A main disconnect in the off position qualifies as an open break. It is recommended that the customer tag the disconnect to help prevent accidental closing. Failure to have a visible break is reason for being disconnected, and subjects Customer to liability for resulting injury to people or property.” 3.2 Manually Operated Load Break Switch / Reasons for Disconnect from the Distribution Delivery System Company will accept a breaker in lieu of blade opening type disconnect for non-battery backup solar units 25kVA and below. This breaker could be in a house panel/breaker box which is accessible to Company personnel at all hours without notice, and shall meet all of the other conditions of this section.</p>	<p>4/17/2012</p>
<p>11</p>	<p>Modified requirements for labels 3.2.2 Labels Customer shall label</p> <ul style="list-style-type: none"> • Meter (or Breaker box if it is within one foot of meter) with type and size of generator with arrow pointing to it stating distance to disconnect. (Example 2.5 kW Solar & batteries, 3 ft → or 2.5 kW Solar & batteries, inside [when using breaker box only]) • If using breaker – The outside of the breaker box (that is more than one foot from meter) shall be labeled (example Solar Disconnect inside) and the breaker shall be labeled with arrow (Example solar disconnect ⇒) • If using blade opening type disconnect – it shall be labeled with type of generator (Example Solar disconnect or wind power disconnect) <p>Label shall be red background with white letters and UV resistant. The lettering on each label/tag shall be 3/16 inch or larger and be either raised or incised on each tag. Each tag shall be riveted or glued to the meter loop or switch or disconnect. Permanently attached tags are required.</p>	<p>3/12/12</p>
<p>Rev 12</p>	<p>Classified as Manual & reviewed/ reorganized for easier reading</p>	<p>4/30/12</p>

Rev 13	Changed Connecting Large Electric Generators to the Entergy Distribution System lower range from 500 kVA to 300 kVA to align with the less than 300kVA limit for Net Metering Inquiry and Application Processes Standard due to minimum impact on the Distribution System.	5/04/16
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