SOUTHERN COMPANY
Energy to Serve Your World℠

SOUTHERN COMPANY DISTRIBUTION INTERCONNECTION POLICY

Operation of Generators in Parallel with the Distribution System

This document contains the interconnection requirements for generators, up to 10,000 kW, that operate in parallel with the Southern Company's distribution system. Requirements for inverter based generators 25 kW and smaller are covered by the interconnection policy "Inverter Based Generators 25 kW and Smaller"

December 1st, 2013

SOUTHERN COMPANY *Energy to Serve Your World™*	**Title: Parallel Operation of Generation on the Distribution System**
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1.0 Introduction

Customer owned generators may be operated in parallel with the Southern Company ("Company") distribution system pursuant to an Interconnection Agreement, provided that the generator and Interconnection Equipment meet the requirements of this policy, subject to all applicable statutory and regulatory requirements.

Requirements for Customer owned emergency or standby generators using open transition schemes or closed transition automatic transfer switches or breakers that parallel with the distribution system for no more than 100 milliseconds **are not** addressed by this document.

1.1 Purpose

This policy sets forth the minimum interconnection requirements, application process and procedures for connection and safe operation of generators in parallel with the Company's distribution system. There may be costs to the generator owner associated with the interconnection. This policy identifies the nature of those costs.

1.2 Scope

This document sets forth the requirements for interconnection of Customer owned, single and three phase generators, with aggregate alternating current (ac) output capacity up to 10,000 kW, that operate in parallel with the Company's distribution system at voltages up to and including 34.5kV (phase to phase). This policy describes the minimum interconnection requirements; additional requirements may apply.

Requirements for inverter based generators 25 kW and smaller are covered by the interconnection policy "Inverter Based Generators 25 kW and Smaller".

1.3 Limitations

Where necessary, the Company may limit the capacity and operating characteristics of single-phase generators in a manner consistent with its existing limitations for single-phase motors to avoid the potential for a generating facility to cause problems with the service of other Customers.

The rules of federal, state or local regulatory agencies shall take precedence over these requirements. If this document does not comply with any federal, state or local regulation, then this document is superseded by the applicable regulation.

This policy does not apply to generation connected to the Company Transmission System. The Company Transmission Parallel Operation Requirements shall apply to such generators.

1.4 Additional Requirements

If the Company concludes that an application for Parallel Operation describes facilities that may require additional devices and operating schemes, the Company shall make those additional requirements known to the Customer before the application is approved and before interconnection is made.

1.5 Insurance and Securitization

Adequate insurance, as deemed by the Company, may be required as part of the Interconnection Agreement. In addition, the Customer may be required to provide securitization through a Letter of Credit, Parent Guarantee, or other form of securitization that is acceptable to the Company, at its sole discretion.

The Customer shall use reasonable care not to damage the electrical equipment of the Company and shall reimburse the Company for damage to the Company's distribution system resulting from defects in the operation and maintenance of its electrical equipment or resulting from its negligence or that of its agents or employees, and shall indemnify the Company against liability for injury or damage suffered by third parties for any such defects and/or negligence.

1.6 Safety

The safety of the general public, Company employees and equipment shall in no way be reduced or impaired as a result of the interconnection. In general, the Customer's facilities will be held to the same standard of care that the Company is required to maintain.

1.7 Application Process

The steps in the process to interconnect a generator to the Company distribution system are:

1. Contact the Company designated representative and request interconnection information, including rules, rate options, guidelines and an application.
2. Complete the application form, including information about the proposed system and send it to the Company representative.

3. After review and approval of the application, installation may begin. Once the installation is complete, contact the Company representative to let him/her know your installation is complete.
4. Sign the contract and/or an Interconnection Agreement.

2.0 Right to Disconnect

The Company may disconnect a generator from the distribution system for any of the following conditions:

1. Expiration, termination or lack of Interconnection Agreement.
2. Non-compliance with the technical requirements.
3. System emergency.
4. Situations when continued interconnection will endanger persons or property.
5. Routine or emergency maintenance, repairs, or modifications to the distribution system.
6. Failure of Customer to comply with any existing or future regulations, rules, orders or decisions of any governmental or regulatory authority having jurisdiction over the Customer's electric generating equipment or the operation of such equipment, which failure of compliance would place in jeopardy the personnel, or property, or service capability of the Company, or would pose a threat of sanction or liability to the Company in the event that it continued interconnection.
7. Adverse effect of Customer's generation to the Company's other electric consumers and/or system as determined by the Company.
8. Failure of Customer to maintain any insurance required as a condition to the start of interconnection work.

3.0 System Studies.

The Company may, at the Customer’s expense, conduct system studies prior to interconnection of a generation facility.

System studies may include, but are not limited to:

(a) **Site visit** – A review to determine the system voltage and interconnection requirements at the proposed site of the distributed generation (“DG”).

(b) **Coordination Study**- An engineering analysis that determines whether the presence of the DG unit at a particular location would interfere with the protective fusing and relaying on the distribution system. It includes a review of the fault current contribution by the DG unit and the effects on the Company's distribution system.

(c) **Distribution System Study** – An engineering analysis that models the distribution system with the proposed DG in place to determine whether the feeder will support the DG unit without reliability problems or interruptions in service to other Customers. The analysis includes a review of the DG contribution to power flow, and the effects on the distribution system voltage.

(d) **Network Study** – An engineering analysis to determine whether a generation facility can be added to a Network Secondary Distribution System.

(e) **Transmission Impact Study -** an engineering analysis that models the generator's impact to the transmission system to determine any modifications or upgrades necessary to accomplish the interconnection to the Company's facilities. Such a study may be required where there is a possibility of the generator exporting to the transmission system.

(f) **Affected System Study** –studies by other utilities that may be affected by interconnection of the Customer's generator(s). The Customer will be responsible for study costs of the other utility.

4.0 Modifications to Company or Customer Facilities.

4.1 Changes to Company Fault Interruption Equipment

A Customer generator on the distribution system is an additional source of fault current. Should the Company be required to make changes due to the additional fault contribution, the Customer may have to pay the cost of the required changes. The Customer may also be required to limit the fault current.

4.2 Company Changes to Distribution System

If three-phase service is not available in the area, or if Company facilities must be upgraded to enable the Customer to interconnect, the Customer may incur additional costs for such service or improvements as determined by the Company. The Company reserves the right to refuse three-phase service.

The distribution system is a dynamic and changing system. The Company reserves the right to make changes from time to time. The Customer will be responsible for paying for modifications required for reconnecting Customer's system to the Company's reconfigured distribution system.

4.3 Customer Changes to Interconnection

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

5.0 Customer Responsibilities

5.1 Design and Installation

The Customer is responsible for design and installation of generation facilities that comply with the National Electrical Code, the National Electrical Safety Code, the Institute of Electrical and Electronic Engineers, National Electrical Manufacturers Association, American National Standards Institute, National Fire Protection Association, Underwriters Laboratories, other national codes, and any local codes pertaining to electrical facility design, construction, or safety. Company reserves the right to field verify the Customer's installed equipment against the submitted application.

5.2 Inspection and Tests

When installation of the generation facility is completed, the facility must be inspected by a municipal, state, federal, or governmental agency/Authority Having Jurisdiction (AHJ). If no AHJ exists for the Facility location, the Facility shall be inspected by a qualified Licensed Electrician or Registered Professional Engineer. The Customer shall provide a copy of the inspection report to the Company. The Company reserves the right to observe Acceptance Testing and Operational Testing of the generation facilities, including any of the Customer's protective equipment that is essential to the interconnection, relays, circuit breakers, protective devices and related equipment. The testing may include tripping of the Customer's interconnection breakers by the protective relays to verify all protective set points and relay/breaker trip timing prior to connection to the Company system. Unless waived, the testing shall be performed prior to interconnected operation of the generation facility.

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

The Company reserves the right to request additional operational testing of the Customer's protective equipment any time a system emergency develops, safety issues arise, or the quality of service to other Customers deteriorates, as deemed necessary by the Company.

5.3 Operations and Maintenance

The Customer is solely responsible for proper operation of the Customer's generation facilities. The Customer may be required to maintain records of operation and maintenance activities, which the Company may review at reasonable times. Maintenance records should 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. Customer will not make a change to the generation facilities that might adversely affect Company equipment or distribution system, without the Company's prior written approval.

5.4 Energizing Dead Circuits

The Customer shall not energize a de-energized Company distribution circuit.

5.5 Load Shed

If the generator drops off line, an automatic load shed scheme may be required to shed the Customer's load should this additional load exceed the available capacity of or cause excessive voltage sag on the distribution circuit. Such requirements shall be noted in the Interconnection Agreement.

5.6 Interconnection Costs

The Customer will pay the Company for all expenses reasonably incurred by or on behalf of the Company in connection with the Company's interconnection facilities required for interconnection service to the Customer's generation facility, including system upgrades.

6.0 References

IEEE Std. C37.95, Guide for Protective Relaying of Utility-Consumer Interconnection (Latest revision)

IEEE Std. 519-1992, Recommended Practices and Requirements for Harmonic Control in Electric Power Systems,

IEEE Std. 141-1993(Reaffirmed-1999) Recommended Practice for Electric Power Distribution for Industrial Plants,

UL 1741 – 2010, UL Standard for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources.

IEEE Std. 1547™-2003, IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems.

IEEE Std. 1547.1™-2005, IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems.

IEEE Std. 1547.2™-2008, IEEE Application Guide for IEEE Std. 1547™, IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems.

IEEE Std. 1547.3™-2007, IEEE Guide for Monitoring, Information Exchange, and Control of Distributed Resources Interconnected with Electric Power Systems.

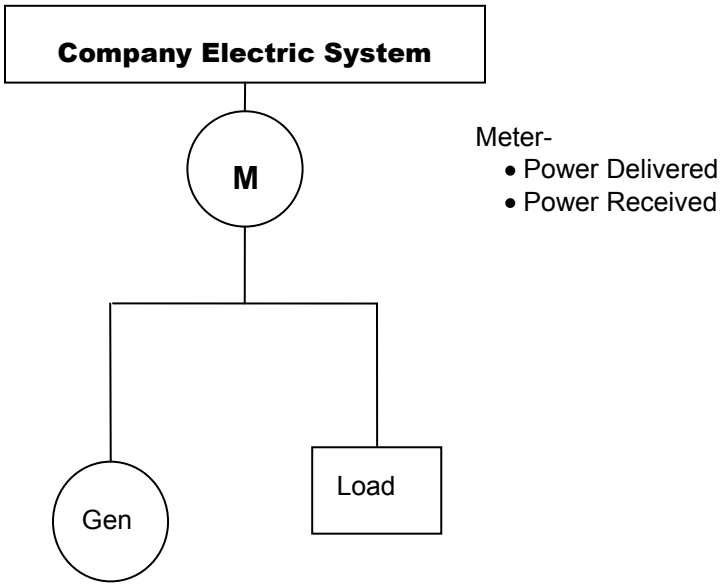
IEEE 1547.6™-2011, IEEE Recommended Practice for Interconnecting Distributed Resources with Electric Power Systems Distribution Secondary Networks.

NFPA 70-2011 National Electrical Code

Note: Where a later version of a standard exists, the current version will apply.

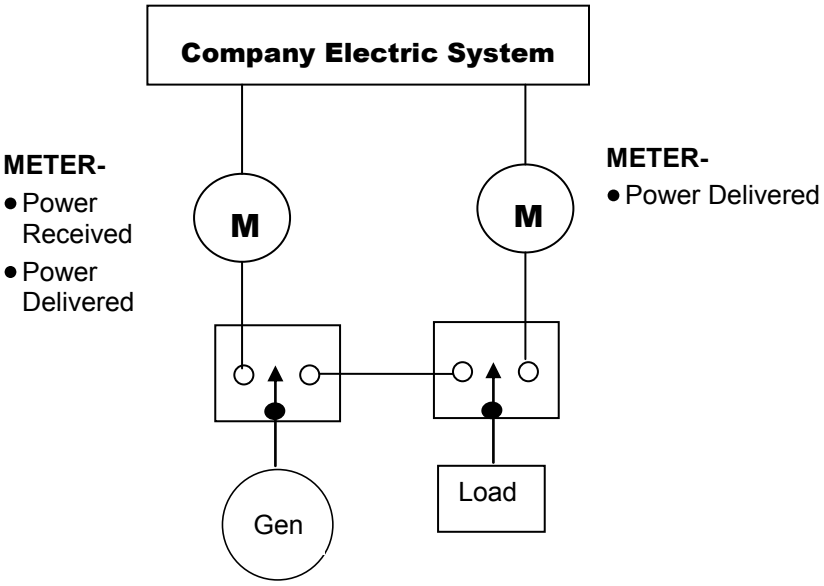
Appendix A Metering Arrangements

Category 1
Customer Exports Excess

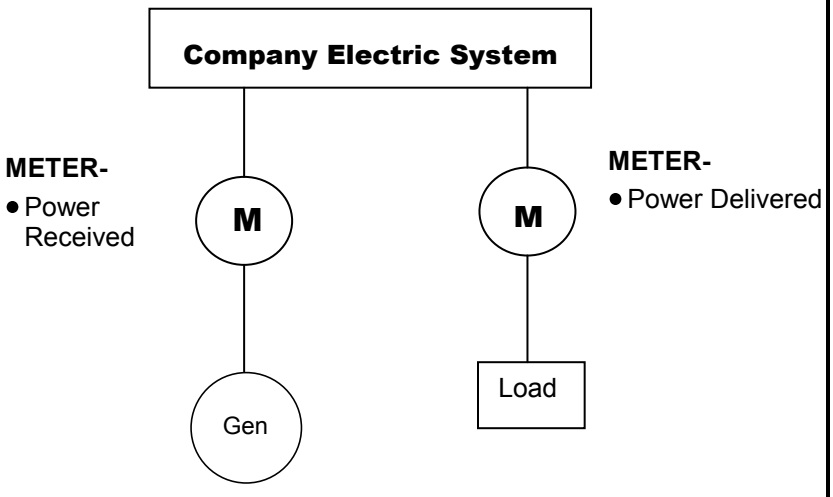


Appendix A Metering Arrangements (Continued)

Category 2
Customer exports all generation.
For loss of utility, supplies load



Category 3
Customer exports all generation



Appendix B Interconnection Requirements

B.1 General Interconnection Requirements

The Customer's generation facilities shall meet the technical requirements prescribed in this Appendix. The Company reserves the right to impose additional requirements as necessary; these additional requirements will be made a part of the Interconnection Agreement.

B.2 Customer's Equipment and Interconnection Standards

The Customer's generation and interconnection installation must meet all applicable federal, 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 Interconnection. Such design shall meet the latest standards of Institute of Electrical and Electronic Engineers Association, National Equipment Manufacturers Association, American National Standards Institute, National Electrical Code, other national codes and any local codes pertaining to the design and construction of electrical facilities. The facility shall be subject to the requirements of all authorities having jurisdiction and shall comply with all applicable codes and ordinances.

B.3 Protection of Customer's Equipment

The Customer will be responsible for protecting its generating equipment in such a manner that distribution system outages, short circuits or other disturbances do not damage the Customer's generating equipment.

B.4 Drawings

Adequate drawings of the Customer's proposed generation facility, which include a one line diagram and diagrams of the relay system, may be required for review. The Customer shall also provide relay settings, relay and control logic. Additional drawings may also be required.

B.5 Changes to Company Facilities

The Customer may be responsible for the cost of additional equipment that must be installed by the Company on its distribution system to allow Parallel Operation of the Customer's generator.

B.6 Power Factor

The power factor at the Point of Interconnection shall be as agreed to in the interconnection agreement.

B.7 Voltage Regulation

Unless otherwise specified by the applicable regulatory authority, the Customer will operate its generating equipment within the ranges specified by ANSI C84.1 Table 1, Range A, measured at the Point of Interconnection. On a 120 volt basis, this range is 114-126 volts.

B.8 Interrupting for Faults

The Customer's equipment shall automatically disconnect the generation from the distribution system, within the times shown, if the voltage falls within those shown in Table 1 below.

Table 1

Response to Abnormal Voltages Under Fault Conditions	
Percent of Normal Voltage	**Clearing Time in Seconds**
Below 50	0.16
50 to 88	2.0
110 to 120	1.0
120 and above	0.16

B.9 Voltage Flicker

The generation shall not create objectionable voltage flicker for other Customers, as determined by the Company. Failure to meet these limits may result in immediate disconnection by the Company until corrected. For additional guidance, see the Southern Company Flicker Policy.

B.10 Frequency

When the system frequency deviates outside the range 59.3-60.5 Hz, the generator shall automatically disconnect in 0.16 seconds.

In the event the Customer's generator fails to disconnect, creating a hazardous condition on the Company's system, the Customer shall be liable for resulting damage and injuries.

Unless otherwise agreed to in the Interconnection Agreement, reconnection shall be permitted 5 minutes after the utility voltage and frequency return to normal range.

B.11 Harmonics

The Customer must comply with the Southern Company Harmonics Policy. Generally, equipment that is certified as meeting UL 1741 requirements will comply with this policy.

B.12 Transformer Connections

Six interconnection transformer configurations are used to interconnect generators with the utility system; each has inherent advantages and disadvantages. Regardless of which party owns the interconnection transformer, it is important that the impacts to the distribution system be considered. The interconnection transformer connection can adversely affect the utility feeder protection scheme, and can have adverse effects on the lightning arresters on the feeder. When the transformer is Customer owned, it is important that the connection type be provided to the Company so that the impacts to the utility electric system can be considered. Additionally, the use of neutral resistors at the transformer, generator, or both, has impacts that must be considered. Certain configurations may not be acceptable depending on the effect it has to the distribution system, while others may require modifications to the distribution system. Table 3 shows six configurations, noting problems and advantages of each type.

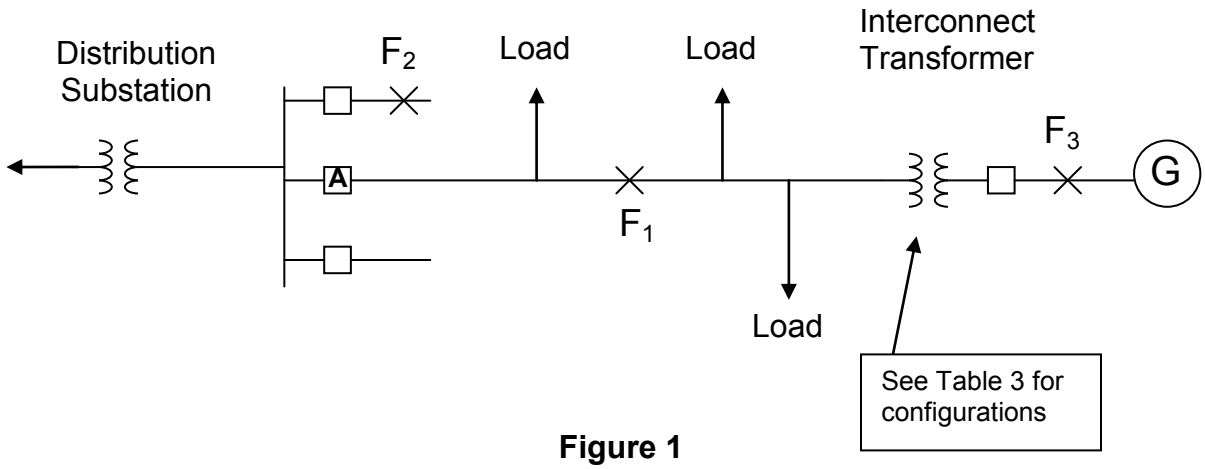
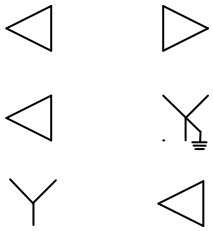


Figure 1

Table 3

Interconnect Transformer Connections High Voltage Low Voltage	**Problems**	**Advantages**
	Can supply the feeder circuit from an ungrounded source after substation breaker **A** trips causing overvoltage.	Provides no ground fault backfeed for fault at F_1 & F_2. No ground current from breaker **A** for a fault at F_3.
	Provides an unwanted ground current for supply circuit faults at F_1 and F_2, and reduces ground current at breaker **A** for restricted faults at F_1	No ground current from Breaker **A** for faults at F_3. No overvoltage for ground fault at F_1.
	Allows source feeder relaying at **A** to respond to a secondary ground fault at F_3.	No overvoltage for ground fault at F_1.
 Resistance grounded neutral	Can supply the feeder circuit from a resistance grounded source, after substation breaker **A** trips, causing overvoltage.	Provides reduced ground fault backfeed for fault at F_1 & F_2. Reduced ground current from breaker **A** for a fault at F_3.

B.13 Protection Equipment

The necessary protective equipment shall be established in the design phase and confirmed prior to start-up of the Customer's generation facilities. The Company has the right to require certain protective devices, including relays that the Customer must install. Settings of interconnection protective devices on the Customer's system will be specified by the Customer, but will be reviewed by the Company. The Company may request changes to the Customer's relay settings.

B.14 Disconnect Switch

The Customer's generation facilities shall have a visible break, lockable, manually operated disconnect switch, in a location easily accessible to Company personnel. The Company reserves the right to open the disconnect switch without prior notice for any of the reasons noted in item 4.0. At the Company's discretion, the revenue meter may serve as the disconnect switch, for use only by Company personnel.

B.15 Protection from Automatic Reclosing

The Company normally applies automatic reclosing after fault clearing on all overhead distribution lines. The duration of outages due to clearing temporary faults is most frequently in the range of 0.1 - 2.0 seconds, but varies depending on many factors. The automatic reclosing schemes often assume that the circuit is dead and do not employ any voltage check, phasing, or synchronization schemes. The Customer must insure that his generation is disconnected from the distribution system prior to automatic reclosing. The Company will assume no responsibility for damage to the Customer's equipment due to out–of–phase reclosing.

It is possible to install voltage check schemes at some locations on the Company system to prevent automatic reclosing. At the discretion of the Company, these voltage check schemes may be installed at the Customer's expense. When these schemes are contemplated, both the preferred and the alternate circuits that can supply power should be considered.

B.16 Synchronous Generators

Overcurrent devices (circuit breakers) for synchronous generators shall be three-phase devices with electronic or electro-mechanical control. The Customer is solely responsible for properly synchronizing its generator with the distribution system.

B.17 Induction Generators and Inverter Systems

Induction generation may be connected and brought up to synchronous speed as induction motors if it can be demonstrated that the initial voltage drop measured on the distribution system at the Point of Interconnection is within the limits stated in the Southern Company Flicker Policy. The Customer may be required to install equipment 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 system only with synchronizing equipment. Line-commutated inverters do not require synchronizing equipment.

B.18 Requirements for Non-Inverter Based Units 25 kW or Less

These Facilities shall have:

a. Accessible, lockable, visible break disconnect switch at the service entrance.
b. Over-current protection.
c. Over/under voltage trip.
d. Over/under frequency trip.
e. Manual or automatic synchronizing (may omit if not capable of standalone operation).

B.19 Requirements for Units 26 kW to 10,000 kW

These facilities shall have:

a. Accessible, lockable, visible break disconnect switch at the service entrance.
b. Over-current protection.
c. Over/under voltage trip.
d. Over/under frequency trip.
e. Manual or automatic synchronizing (may omit if not capable of standalone operation).
f. Ground fault detection and tripping.
g. Reverse power tripping, if not exporting.

Note: Inverter based units that meet the non-islanding requirements of UL 1741 will satisfy requirements B.19 b-g above.

B.20 Metering Requirements

Appendix A outlines four metering arrangements utilized by the Company. Net Metering is prohibited unless provided for by state law or regulation.

B.21 Telemetering

Telemetering may be required depending on the output or the application of the Customer's generating facility. Generally, generators smaller than 250 kW will not require telemetering. The Customer may be required to reimburse the Company for the cost of the telemetering equipment.

Appendix C Definitions

Abnormal operating conditions – A situation in which the Company is operating the distribution system in other than normal configuration, or under conditions that do not normally exist. Examples of abnormal operating conditions are: (1) high usage days when Customers are requested to conserve energy or, (2) switching feeders out for repairs and switching in alternate feeders.

Application for Distribution Interconnection - The form to be used to apply for approval to connect generation facilities to a Company distribution system.

Company –The Southern Company operating subsidiary to which the Customer is requesting interconnection.

Customer - Customer, its agent, partner or other entity located on the customer's premise connected to the Company's distribution system for the purpose of receiving and/or exporting electric power through the Company's distribution system.

Distribution System – The Company's wires, equipment and facilities, with a voltage 34.5 kV and below, to which the generation equipment is interconnected.

Facility - An electrical generating installation consisting of one or more on-site generation units.

Interconnection - The physical connection of generation to the distribution system so that Parallel Operation can occur.

Interconnection Agreement – The document that sets forth the contractual conditions under which the Company and a Customer agree that a facility may be interconnected with the Company's distribution system.

Interconnection Equipment - All equipment installed solely to interconnect and exchange power between the Customer's generation facility and the Company's distribution system.

Metering, Bi-directional - A method of metering that allows the Customer to reduce energy usage with energy generated simultaneously with the usage, measuring purchased electric energy and electric energy delivered to the Company separately so that purchased energy and energy sold are at different rates. This method allows the Customer to sell only the electric energy generated in excess of its usage. See Appendix A, Category 1.

Metering, Independent - A method of metering, that independently measures purchased electric energy and generated electric energy, allowing the total generated electric energy to be sold to the Company at a different rate than the purchased electric energy rate. In this case the Customer's generator typically has a separate/independent connection to the utility. See Appendix A, Metering Arrangements, Categories 2&3.

Metering, Net - A method of metering that allows for the electric energy delivered to the Company at any time during the billing cycle to be subtracted from a Customer's purchased electric energy during the same billing cycle, thus compensating the Customer for generated electric energy at the same retail rate that electric energy is purchased. Customer should check with the local Southern Company subsidiary to determine if this method of metering is permitted as regulations vary by state and jurisdiction.

Network Secondary Distribution System – a system of distribution in which the secondary of distribution transformers are connected to a common network for supplying electric power to consumers.

Parallel Operation - The operation of electric generation connected to the utility electric distribution system.

Point of Interconnection - The point of connection of the Customer's service equipment to the utility electric system.

Power Delivered – energy supplied by the utility to the Customer (generator owner).

Power Received – energy supplied by the Customer (generator owner) to the utility.

Southern Companies or Southern Company- collectively, Alabama Power Company, Georgia Power Company, Gulf Power Company, and Mississippi Power Company.

Telemetering- Communications equipment used to obtain information or control the generator, including, but not limited to a transmitter, antenna, pole for the antenna, telephone etc.

Southern Company
Generation Facility Technical Data Form

Appendix D Technical Data Form

Complete all sections that apply to the generation facility. Copy this form as needed for additional equipment.

SYNCHRONOUS GENERATOR

Skip this section if no synchronous generator is or will be installed at this Facility.

Quantity: _____ **Manufacturer:** _____ **Model No.** _____

Phase: _____ **Rated Frequency:** ____ **Hz** **Rated Speed:** _____ **RPM**

Rated Voltage: _____ **V** _____ **(Wye/Delta)** **Rated Power:** _____ **kVA** _____ **Power Factor**

Limits of Power Factor Control: _____ **Lag to** _____ **Lead** **Excitation:** _____ **V** _____ **A**

Power Required to Start Generator: _____ **kVA** **Starting Power Factor:** _____

Saturated Sub-transient Reactance (X_{dv}"): _____ **%** **on** _____ **kVA Base**

Saturated Transient Reactance (X_{dv}'): _____ **%** **on** _____ **kVA Base**

Synchronous Reactance (X_d): _____ **%** **on** _____ **kVA Base**

Saturated Negative Sequence Reactance (X_{2v}"): _____ **%** **on** _____ **kVA Base**

Positive Sequence Resistance (R_1): _____ **%** **on** _____ **kVA Base**

Negative Sequence Resistance (R_2): _____ **%** **on** _____ **kVA Base**

Zero Sequence Resistance (R_0): _____ **%** **on** _____ **kVA Base**

Grounding Impedance, if Stator is Wye Connected: _____ **Ohms** **Impedance Type:** _____

INDUCTION GENERATOR

Skip this section if no induction generator is or will be installed at this Facility.

Quantity: _____ **Manufacturer:** _____ **Model No.** _____

Phase: _____ **Rated Frequency:** _____ **Hz** **Rated Speed:** _____ **Design Letter:** _____

Rated Voltage: _____ **V** _____ **(Wye/Delta)** **Motoring Power:** _____ **kW** **Design Letter:** ____

No Load Reactive Power Required: _____ **VArs** **Full Load Reactive Power Required:** _____ **VArs**

Stator Resistance (R_s): _____ **Ohms** **Stator Reactance (X_s):** _____ **Ohms**

Rotor Resistance (R_r): _____ **Ohms** **Rotor Reactance (X_r):** _____ **Ohms**

Magnetizing Reactance (X_m): _____ **Ohms** **Short Circuit Reactance (X_{sc}):** _____ **Ohms**

Heating Time Constant (I_2^2t): _____

Southern Company
Generation Facility Technical Data Form

INVERTER

Skip this section if no inverter is or will be installed at this Facility.

Quantity: _____ **Manufacturer:** _____ **Model No.** _____

DC Input Ratings: _____ V min _____ Vrated _____ Vmax _____ kW

Nominal AC Output Ratings: ___ Phase _____ Hz _____ V _____ kVA _____ PF

PF Adjustable Range: _____ Lag to _____ Lead **Voltage THD:** _____ %

Max. Output Fault Current : _____ A for _____ sec **Current THD:** _____ %

Power Consumed: _____ kW (during operation) _____ kW (during night time)

Line or Self Commutated? _____ **UL-1741 Listed?** _____ **If Yes, provide certified type test report.**

Does Inverter have a built-in isolation transformer? _____ **If Yes, fill in transformer section of this form.**

2-Winding TRANSFORMER

If Transformer is owned or provided by Host Utility, do not complete this section.

Purpose(s) of Transformer: ☐ Facility Intertie (FI) ☐ Generator Step-Up (GSU) ☐ Both FI & GSU

Quantity: _____ **Manufacturer:** _____ **Model No.** _____

Self-Cooled Ratings: _____ kVA (HV Winding) _____ kVA (LV Winding)

Maximum Ratings: _____ kVA (HV Winding) _____ kVA (LV Winding)

Rated Voltage : _____ kV_{LL} (HV Winding) _____ kV_{LL} (LV Winding)

Winding Connection (Delta, GrdY, UnGrdY, etc) : _____ HV _____ LV

If GrdY, Neutral Grounding Impedance (Ohms) : _____ HV _____ LV

Neutral Grounding Impedance Type : _____ HV _____ LV

HV to LV Positive Sequence Impedance ($Z1_{HV-LV}$): _____ %, _____ X/R on _____kVA Base

HV to LV Zero Sequence Impedance ($Z0_{HV-LV}$): _____ %, _____ X/R on _____kVA Base

3-Winding TRANSFORMER

If Transformer is owned or provided by Host Utility, do not complete this section.

Purpose(s) of Transformer: ☐ Facility Intertie (FI) ☐ Generator Step-Up (GSU) ☐ Both FI & GSU

Quantity: _____ **Manufacturer:** _____ **Model No.** _____

Self-Cooled Ratings: _____ kVA (HV Winding) _____ kVA (LV Winding #1) _____ kVA (LV Winding #2)

Maximum Ratings: _____ kVA (HV Winding) _____ kVA (LV Winding #1) _____ kVA (LV Winding #2)

Rated Voltage : _____ kV_{LL} (HV Winding) _____ kV_{LL} (LV Winding #1) _____ kV_{LL} (LV Winding #2)

Winding Connection (Delta, GrdY, UnGrdY, etc) : _____ HV _____ LV #1 _____ LV #2

If GrdY, Neutral Grounding Impedance (Ohms) : _____ HV _____ LV #1 _____ LV #2

Neutral Grounding Impedance Type : _____ HV _____ LV #1 _____ LV #2

HV to LV #1 Positive Sequence Impedance ($Z1_{HV-LV1}$): _____ %, _____ X/R on _____kVA Base

HV to LV #2 Positive Sequence Impedance ($Z1_{HV-LV2}$): _____ %, _____ X/R on _____kVA Base

LV#1 to LV #2 Positive Sequence Impedance ($Z1_{LV1-LV2}$): _____ %, _____ X/R on _____kVA Base

HV to LV #1 Zero Sequence Impedance ($Z0_{HV-LV1}$): _____ %, _____ X/R on _____kVA Base

HV to LV #2 Zero Sequence Impedance ($Z0_{HV-LV2}$): _____ %, _____ X/R on _____kVA Base

LV #1 to LV #2 Positive Sequence Impedance ($Z0_{LV1-LV2}$): _____ %, _____ X/R on _____kVA Base

Southern Company
Generation Facility Technical Data Form

INTERTIE BREAKER

The intertie breaker is the device that trips to separate the Customer's Facility from the Host Utility Electric System for electrical faults / short circuits on the Host Utility Electric System.

Quantity: _____ Manufacturer: _____ Model No. _____

Interrupting Medium: _____ Dielectric Medium: _____

Electrical Ratings: ___ Phase ____ Hz _____ kV ____ cycles trip ____ cycles close

___ A continuous ____ kA interrupting _____ kV impulse withstand (BIL)

Trip Circuit: _____ V ___ Trip Energy Source (Spring, Motor, Pneumatic, etc): _____

Close Circuit: _____ V ___ Close Energy Source (Spring, Motor, Pneumatic, etc): _____

CURRENT TRANSFORMER – INTERTIE PROTECTION

The data required for this section apply to current transformers that supply current to the protective relays that initiate tripping of the intertie breaker for electrical faults / short circuits on the Host Utility electric system or unwanted power flow from the DG Facility.

Ratio: _____:5A Class: C_____ X1-X2 Tap: _____:5A X2-X3 Tap: _____:5A

X3-X4 Tap: _____:5A X4-X5 Tap: _____:5A