REQUIREMENTS FOR INTERCONNECTION OF COGENERATION AND SMALL POWER PRODUCTION (QUALIFYING GENERATION)

Customer-owned generation that meets the FERC criteria as qualifying cogeneration and small power production (typically solar and wind) facilities will be allowed to operate in parallel with the LES electrical system. This type of generation is hereafter referred to as Qualifying Facilities generation.

This type of generation furthers the goals of PURPA: the conservation of energy supplied by utilities; the optimization of the efficient use of facilities and resources by electric utilities; and equitable rates to electric consumers.

Requirements

All generators connected in parallel or closed transition to the LES system must meet the Qualifying Facilities requirements below: Compliance with LES Safety, Protection and Operating Guidelines and Supplemental LES and Protection Requirements Applicable to Owners of Qualifying Facilities.

LES shall be notified of all generation installations and approve the final wiring before the generator is put into service. The customer will operate the generator in compliance with these requirements and the terms of the LES service regulations.

When a customer wishes to install Qualifying generation, a LES “Application for Electric Service” will be prepared by the customer and submitted to the City of Lincoln’s Building and Safety Department.

Customers with Non-Qualifying generation may contact LES about options available under the LES Power Purchase Program. For information, contact the Manager, Energy Services.

Compliance with LES Safety, Protection, and Operating Guidelines

A. Qualifying facilities will be required to provide and maintain suitable apparatus to prevent the operation of their generation facilities from causing unusual fluctuations or disturbances on the LES electrical system.

B. Owners of qualifying facilities will cooperate with LES in developing mutually acceptable operating procedures for delivery of the output from the qualifying facility.

C. Owners of qualifying facilities will be responsible for providing and maintaining all equipment they deem necessary for the protection of their own property and operations. By virtue of the interconnections with the qualifying facility, LES
assumes no liability for the protection of any property or person associated with the qualifying facility's operations.

D. All protection, safety, and interconnection equipment installed by owners of qualifying facilities must meet standards of good engineering and electrical safety practices, comply with NERC, MRO and applicable SPP RTO requirements, and be capable of parallel operation with LES.

E. The owner of the qualifying facility is responsible for the installation and operations of the facility and will indemnify and hold LES harmless from liability for damage to property or person resulting from or arising out of or in any way connected with the installation, inspection, operation, maintenance, testing and/or use of the qualifying facility.

F. If the qualifying facility is not performing to the established standards of service or is reducing the quality of service to other LES customers, the customer must disconnect the qualifying facility until such time the owner takes corrective action. In the event the owner refuses to discontinue parallel operation, LES may terminate electric service in accordance with LES’ Service Regulations.

G. LES does not allow parallel or closed-transition operation of customer-owned generation with LES secondary spot or grid networks (i.e., LES downtown network).

Supplemental LES Safety and Protection Requirements Applicable to Owners of Qualifying Production Facilities

These requirements shall be applicable to assure the safe and reliable operation of parallel interconnections. The adequacy of protection devices used for interconnection with qualifying facilities will be determined by LES. The following requirements shall be generally applicable unless modified in the contract between the qualifying facility and LES. If applicable, the contract will also identify the specific requirements for compliance.

A. Disconnect Equipment

The owner shall provide equipment for manually disconnecting and isolating the qualifying facility from the LES service wires. An outside-mounted visible disconnect shall be installed on the owner’s side of the point of delivery/receipt near the meter or mutually agreed upon location. Such equipment must be capable of preventing the qualifying facility from energizing the LES service wires and must include a device which, at LES’ discretion, LES employees can operate and lock in place.

The owner shall also provide an interconnection breaker and interconnection relay to automatically disconnect and isolate the qualifying facility from LES during a service interruption. This automatic disconnect equipment shall receive its voltage
and frequency referenced from the LES service wires. The automatic disconnect shall not close without proper voltage and frequency from the LES service wires. Such equipment must be capable of preventing the qualifying facility from energizing the LES service wires during a service interruption. Please refer to the latest IEEE standard 1547 section on “Islanding.”

An exception to these requirements may be made for net-metering customers installing small inverter connected generation which uses a utility-interactive inverter. With a utility-interactive inverter, the customer-owned generation resource ceases to provide power when the utility source is interrupted. For customer-owned generation facilities that use this type of inverter, the generator shall cease to export power to LES under islanding conditions so that the generator does not energize down lines or supply power to other LES customers.

B. Fault Protection

Adequate protection facilities shall be provided by the owner to protect the LES service wires from fault currents originating from the qualifying facility. The owner shall also be responsible to provide adequate protection for the qualifying facility from fault currents originating in the LES electrical system.

C. Over/Under Voltage

It shall be the responsibility of the owner to provide adequate protection or safeguards to prevent damage to the LES electrical system caused by over/under voltages originating in the qualifying facility and to protect the qualifying facility from inadvertent over/under voltage conditions originating from the LES electrical system. Please refer to the latest IEEE standard 1547 for voltage ranges and clearing times when setting the interconnection relay.

D. Synchronization

The owner shall provide adequate facilities for the proper synchronization of the qualifying facility with LES service wires such that such synchronization is accomplished without causing undesirable currents, surges or voltage dips on the LES electrical system. LES employs automatic reclosing on its system circuit breakers. A fault and the subsequent breaker trip and reclose can cause an out-of-phase condition to exist between LES and the customer generation facility. Following a period of interruption, the proper resynchronization of the qualifying facility shall be the responsibility of the owner.
E. Grounding

The owner shall ground the qualifying facility and associated equipment in such a manner that coordination is maintained with the relay protection system in use by LES and the qualifying facility is protected from being subject to deleterious voltage and excessive current conditions.

F. Harmonics

Adequate design precaution must be taken by the owner to prevent excessive and deleterious harmonic voltages and/or currents caused by the qualifying facility from occurring on the electrical system of LES or LES’ customers. The qualifying facility must be designed to operate with normal harmonic voltage and currents that originate from the LES electrical system. Please refer to the latest IEEE standard 1547.

G. Power Factor

The operation of the qualifying facility shall not produce nor consume excessive reactive power. Should the power factor fall outside acceptable limits either lagging or leading, as determined by LES, the Owner shall undertake the necessary modifications to meet the required power factor level.

H. Voltage Regulation

The owner shall provide the necessary voltage regulation equipment to prevent the qualifying facility from causing excessive voltage variations on the LES electrical system. The voltage variation caused by the qualifying facility must be within the ranges capable of being handled by the voltage regulation facilities used by LES.

I. Voltage Flicker

Voltage surges or flickers caused by the operation, synchronization or isolation of the qualifying facility shall be within the standards of frequency of occurrence and magnitude established by LES to prevent undue voltage flicker on the LES electrical system. The owner shall provide suitable equipment to reasonably limit voltage fluctuations caused by the qualifying facility.

J. Voltage Balance

The voltage produced by the qualifying facility must be balanced if it is a three-phase installation. The owner shall be responsible in protecting the qualifying facility from an inadvertent phase unbalance in LES service voltage.
K. Over/Under Frequency

The owner shall provide the necessary facilities for safeguards and protection of equipment caused by the incurrence of an over or under frequency event. Please refer to the latest IEEE standard 1547 for frequency ranges and clearing times when setting the interconnection relay.

L. Operational Oversight

1. The owner will be responsible for operating its production facility in a manner that will not cause undesirable or harmful effects to LES or its other customers.

2. The owner will not begin initial operation of the production facility until it has passed applicable code inspection requirements and has received written approval from LES. LES System Protection personnel must witness a trip check of the interconnection breaker and must also witness the first parallel or closed transition operation of the facility.

3. The owner shall supply LES with technical specifications and drawings upon request relating to the production facilities and related interconnection, operation, and protective equipment. These must include a system one-line diagram, an interconnection breaker trip schematic and interconnection relay settings. LES’ approval of the qualifying facility’s use of equipment shall not be construed as confirming or endorsing the design or effectiveness of the equipment or the qualifying facility’s plan for use of the equipment for actually reducing demand or energy usage, or as any warranty of the safety, durability or reliability of equipment.

4. LES shall have the right at any time to inspect and test the operation of any control and protective equipment owned and maintained by the owner. Any future changes to the interconnection relay settings must receive the approval of LES System Protection personnel before implementation. LES will provide a label to be placed on or near the interconnection relay as a reminder of this requirement.

M. Governmental Regulations, Codes and Ordinances

The owner of the qualifying facility has the responsibility to comply with all applicable federal, state and local regulations, codes and ordinances including electrical codes. The LES review of design specification and drawings or LES inspections shall not be construed as approvals as to compliance with any such regulations, codes and/or ordinances. This includes environmental laws and regulations, safety laws, building and construction codes, local safety, health, industrial regulations or codes, and the LES Safety Manual.