

**Interconnection Standards for
Installation and Parallel Operation of
Customer-Owned Residential and Commercial
Renewable Energy Generation Facilities**

City of Hillsboro, Kansas

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OVERVIEW

1. PURPOSE:

The purpose of this document is to establish standards for eligible customers (“Customer-Generator”) to interconnect and operate Customer-Owned Renewable Energy Generation Facilities in parallel with the City of Hillsboro (“City”) Electric Distribution System.

2. ELIGIBILITY:

- a. Must be a Residential or Commercial electric customer with an eligible Customer-Owned Renewable Energy Generation Facility as defined herein that is interconnected behind the meter (connected to the customer side of the electric meter or meters) and that receives retail electric service furnished through an electric meter or meters capable of recording the flow of electricity in each direction. Specific metering shall be at the City’s discretion.
- b. Customer-Generator’s utility account must be in good standing and in compliance with the City’s electric rate schedules, Electric Utility Rules and Regulations, and these Interconnection Standards for Installation and Parallel Operation of Customer-Owned Residential and Commercial Renewable Energy Generation Facilities.
- c. A Generation Facility that is not a Renewable Energy Generation Facility as defined herein or if such facility has a rated output greater than 25 kW_{AC} for Residential Customer-Generators and 200 kW_{AC} for Commercial Customer-Generators is subject to separate negotiation with the City and is not eligible to interconnect with the Electric Distribution System under these Interconnection Standards.
- d. For purposes of these Interconnection Standards, an eligible Generation Facility must:
 - (1) Be powered by a Renewable Energy Resource as defined in Kansas Statutes Annotated 66-1264 and amendments thereto;
 - (2) Be owned by the Customer-Generator;
 - (3) Be located on a premises owned by the Customer-Generator;
 - (4) Serve only the Customer-Generator’s premises (serve no other customers);
 - (5) Be interconnected with and operate in parallel phase and synchronization with the Electric Distribution System;
 - (6) Comply with these Interconnection Standards for Installation and Parallel Operation of Customer-Owned Residential and Commercial Renewable Energy Generation Facilities;
 - (7) Be intended primarily to offset part or all of the Customer-Generator’s own electrical energy requirements;
 - (8) Contain a City-approved mechanism(s) that automatically disconnects the Generation Facility and interrupts the flow of electricity back onto the Electric Distribution System in the event that electric service to the Customer-Generator is interrupted.
 - (9) Meet all of the following generator output limitations:
 - a. For Residential Customer-Generators, 25 kW_{AC} or less;
 - b. For Commercial Customer-Generators, 200 kW_{AC} or less;

- c. Be appropriately sized to the Customer-Generator's electric load as determined by the City;
- d. Total Customer-Owned generator rated output in kW_{AC} under the City's Net Metering/Parallel Generation Rate Rider shall not exceed five percent (5%) of the previous calendar year City electric system peak demand. No Generation Facility shall be interconnected that would cause the rated output of all Customer-Owned Generation Facilities under the Net Metering/Parallel Generation Rate Rider to exceed five percent (5%) of the previous calendar year electric system peak demand.

3. INTERCONNECTION REQUEST:

The Customer-Generator shall request interconnection of its Generation Facility by completing and submitting the attached "Interconnection Application" to the City. The City may require additional information or clarification to evaluate the Customer-Generator's Interconnection Application. Interconnection Applications will be reviewed by the City in the order in which they are received. If the City determines that an Interconnection Application is incomplete, the City will notify the Customer-Generator that the Application is incomplete, provide a description of information needed to complete the Application, and include a statement that the Application cannot be processed until the Application is complete.

4. ELECTRIC DISTRIBUTION SYSTEM IMPACT ANALYSIS:

After receiving a properly completed Interconnection Application, the City will analyze the potential impact of the proposed Generation Facility on the Electric Distribution System and on other City electric customers. Such analyses will be based on Good Utility Practice to determine thermal effects, voltage ranges, power quality, system stability, etc., and will include the following:

- a. The Customer Generation Facility's proposed interconnection point is on a radial distribution circuit and not a transmission line.
- b. The proposed Generation Facility complies with IEEE 1547 and UL 1741 standards.
- c. The proposed Generation Facility's rated output in aggregation with other generation on the circuit shall not exceed 15 percent (15%) of the total circuit peak demand (kW) as most recently measured at the substation during the previous 12-month period; nor shall it exceed 15 percent (15%) of a distribution circuit line section annual peak demand (kW).
- d. The proposed Generation Facility, in aggregation with other generation on the distribution circuit, shall not contribute more than 10 percent (10%) to the distribution circuit's maximum fault current at the point on the primary voltage distribution line nearest the proposed interconnection point.
- e. The proposed Generation Facility, in aggregation with other generation located on the distribution circuit, shall not cause any distribution protective devices and equipment including substation breakers, fuse cutouts, and line reclosers, or other customer equipment on the Electric Distribution System to be exposed to fault currents exceeding 85 percent (85%) of the short circuit interrupting capability.
- f. No additional Generation Facilities shall be interconnected on a circuit that meets or exceeds 85 percent (85%) of its short circuit interrupting capability.

- g. No Generation Facility shall be interconnected that would cause the total rated output of all interconnected Customer-Owned Generation Facilities to exceed five percent (5%) of the previous year City Electric System peak demand.
- h. When a proposed Generation Facility is single-phase and is to be interconnected on a center tap neutral on a 240-volt service, its addition shall not create an imbalance between the two sides of the 240-volt service of more than 20 percent of the nameplate rating of the service transformer.
- i. The proposed Generation Facility installation must be certified to pass an applicable non-islanding test, or use reverse power relays or other means to meet IEEE 1547 unintentional islanding requirements.
- j. When the Applicant's facility is to be connected to three-phase, four-wire primary distribution lines, a three- or single-phase generator will be connected line-to-neutral and will be effectively grounded.
- k. A review of the type of electrical service provided to the Customer-Generator, including line configuration, and the transformer connection, will be conducted to limit the potential for creating over voltages on the Electric Distribution System due to a loss of ground during the operation time of any anti-islanding function.
- l. When the proposed Generation Facility is to be interconnected on a single-phase shared secondary line, the aggregate generation rated output on the shared secondary line, including the proposed Generation Facility, shall not exceed ten kilowatts alternating current (10 kW_{AC}).

Feasibility Analysis

If the proposed Generation Facility fails to meet one or more of the above requirements, the Customer-Generator may request that the City complete an analysis to determine the feasibility of interconnecting the proposed Generation Facility to the Electric Distribution System. The Feasibility Analysis shall include:

1. Initial identification of any circuit breaker short circuit capability limits exceeded as a result of the interconnection.
2. Initial identification of any thermal overload or voltage limit violations resulting from the interconnection.
3. Initial review of grounding requirements and system protection.
4. A description and nonbinding estimated cost of facilities required to interconnect the Generation Facility to the Electric Distribution System in a safe and reliable manner.

The actual cost of the Feasibility Analysis shall be paid by the Customer-Generator. The City will provide an estimated cost of the Feasibility Analysis to Customer-Generator and Customer-Generator shall advance 50% of such estimated cost to the City. When Feasibility Analysis cost exceeds 50% of the estimated cost, the City shall bill Customer-Generator as such fees are incurred. Customer-Generator shall pay all such invoiced amounts within 30 days.

System Impact Study

If the Feasibility Analysis concludes that interconnection of the proposed Generation Facility would create an adverse system impact, a System Impact Study is required. A System Impact Study evaluates the impact of interconnection of the proposed Generation Facility on the safety and reliability of the Electric Distribution system. The study shall:

1. Identify and detail the system impacts that result if the proposed Generation Facility is interconnected without project or system modifications.
2. Consider the adverse system impacts or potential impacts identified in the Feasibility Analysis.
3. Consider all Generation Facilities that, on the date the System Impact Study is commenced, are interconnected with the Electric Distribution System.
4. Consider pending Interconnection Applications of Generation Facilities requesting interconnection to the Electric Distribution System.

The System Impact Study shall consider the following criteria:

1. A load flow study.
2. A short circuit analysis.
3. A stability analysis.
4. Voltage drop and flicker studies.
5. Protection and set point coordination studies.
6. Grounding reviews.

The City shall state the underlying assumptions of the System Impact Study and share the results of the analyses with the Customer-Generator, including the following:

1. Any potential impediments to providing the requested interconnection service.
2. Any required Electric Distribution System Upgrades and the estimated cost and time to engineer and construct said System Upgrades.

The actual cost of the System Impact Study shall be paid by the Customer-Generator. The City will provide an estimated cost of the System Impact Study to Customer-Generator and Customer-Generator shall advance 50% of such estimate to the City. When System Impact Study cost exceeds 50% of the estimated cost, the City shall bill Customer as such fees are incurred. Customer-Generator shall pay all such invoiced amounts within 30 days.

5. SYSTEM UPGRADES:

The City shall not be obligated to make upgrades or improvements to its Electric Distribution System to accommodate the Customer-Generator's Generation Facility. Where System Upgrades are required prior to interconnection of a Generation Facility as identified in the System Impact Study, the City will provide the Customer-Generator with an estimated schedule and the Customer-Generator's estimated cost for said System Upgrades.

6. INTERCONNECTION AGREEMENT:

After the Customer-Generator and the City have identified and mutually agreed on the project scope including the Generation Facility, System Upgrades and estimated costs (if any), the Customer-Generator and the City shall execute the attached document entitled "Interconnection Agreement." The Interconnection Agreement shall be between the City and the Customer-Generator and shall not include third parties. Prior to commencement of System Upgrades

required to allow interconnection of the Customer-Owned Generation Facility, Customer-Generator shall deposit with the City an amount equal to the estimated cost of said System Upgrades. See "Section 4 Interconnection Costs" of the Interconnection Agreement for additional information.

7. CODES AND PERMITS:

- a. The Customer-Generator shall be responsible for procuring all building, operating, environmental and other permits for the Generation Facility and for the necessary ancillary structures to be installed that are required by any Governmental Authority having jurisdiction.
- b. The Generation Facility and interconnecting equipment shall meet all requirements in "Technical Requirements" below.
- c. The construction and facilities shall meet all applicable building and electrical codes.

8. CERTIFICATION OF COMPLETION:

Upon completion of the Generation Facility and prior to the Commercial Operation Date of said Facility, the Customer-Generator shall complete and submit a signed copy of the attached "Certificate of Completion."

9. COMMERCIAL OPERATION:

The Customer-Generator may begin Commercial Operation of the Generation Facility upon receipt of written approval from the City.

10. DEFINITIONS:

All capitalized terms and phrases throughout this set of standards shall be defined as indicated in the attached Definitions.

TECHNICAL REQUIREMENTS

1. CHARACTER OF SERVICE:

The electric service shall be 60 cycles per second (60 Hertz) alternating current (AC) at supply voltages and number of phases under the Residential or Commercial electric rate schedule that would apply if the Customer-Generator did not have an interconnected Generation Facility.

2. CODE REQUIREMENTS:

The Generation Facility shall meet all requirements established by the city's adopted versions of the National Electrical Code (NEC), National Electrical Safety Code (NESC), National Electrical Safety Code 2 (NESC C2), Institute of Electrical and Electronics Engineers (IEEE), and Underwriters Laboratories (UL). Specific applicable codes are shown below as "Standards for Interconnection, Safety and Operating Reliability." In addition, manufacturer's ownership, operation and maintenance manuals or documents and applicable equipment settings shall be provided to the City with the Interconnection Application. The City shall review said manuals or documents as part of the Interconnection Application review process.

3. GENERATION FACILITY CONTROL:

The control system of the Generation Facility shall comply with IEEE and UL specifications and standards for parallel operation with the Electric Distribution System, and in particular as follows:

- a. Power output control system shall automatically disconnect from the Electric Distribution System: 1) upon loss of System voltage; 2) if System voltage fluctuates more than plus or minus ten percent 10%; or 3) if frequency fluctuates plus or minus two cycles (2 Hertz). The Generation Facility shall remain disconnected until Customer-Generator is notified by City representatives that it is safe to reconnect the Generation Facility.
- b. Inverter output Harmonic Distortion shall meet IEEE and UL requirements.
- c. The Generation Facility shall meet applicable IEEE and UL standards concerning impacts to the Electric Distribution System with regard to Harmonic Distortion, Voltage Flicker, power factor, direct current injection and electromagnetic interference.

4. FAULT CURRENT PROTECTION:

The Generation Facility shall be equipped with protective equipment designed to automatically disconnect from the Electric Distribution System during fault current conditions. The Generation Facility shall remain disconnected until Customer-Generator is notified by City representatives that it is safe to reconnect the Generation Facility.

5. RECLOSING COORDINATION:

The Generation Facility shall be coordinated with Electric Distribution System reclosing devices by disconnecting from the System during de-energized System operation. The Generation Facility shall remain disconnected until Customer-Generator is notified by City representatives that it is safe to reconnect the Generation Facility.

6. EXTERNAL GENERATOR AC DISCONNECT SWITCH:

The Customer-Generator shall install an external alternating current (AC) disconnect switch within six (6) feet of the City electric meter(s) that is visible and readily accessible to City representatives at all times. This switch shall be clearly labeled as "Generator AC Disconnect Switch." This manual switch shall be capable of being locked in an open position and shall prevent the Generation Facility from supplying power to the Electric Distribution System while in the open position.

The Generator AC Disconnect Switch shall serve as a means of isolating the Generation Facility during Customer-Generator maintenance activities, routine outages, or emergencies. The City shall give notice to the Customer-Generator before the manual switch is locked open or a isolating device used, if possible, and otherwise shall give notice as soon as practicable after locking open or isolating the Generation Facility.

7. STANDARDS FOR INTERCONNECTION, SAFETY AND OPERATING RELIABILITY:

The interconnection of a Generation Facility and associated equipment to the Electric Distribution System shall meet the applicable provisions of the following publications or successor standards:

- a. ANSI/IEEE1547-2003 Standard for Interconnecting Distributed Resources with Electric Power Systems (including use of IEEE 1547.1 testing protocols to establish conformity). The following standards shall be used as guidance in applying IEEE 1547:
 - 1. IEEE Standard 519-1992, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems
 - 2. IEC/TR3 61000-3-7 Assessment of emission limits for fluctuating loads in MV and HV power systems
- b. UL 1741 Standard for Inverters, Converters and Controllers for Use in Independent Power Systems
- c. ANSI/NFPA 70, National Electrical Code
- d. National Electrical Safety Code C2
- e. OSHA (29 CFR § 1910.269)
- f. IEEE Standard 929-2000, *IEEE Recommended Practice for Utility Interface of Photovoltaic (PV) Systems*
- g. IEEE Standard C37.90.1-1989 (R1994), *IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems*
- h. IEEE Standard C37.90.2 (1995), *IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers*
- i. IEEE Standard C62.41.2-2002, *IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits*
- j. IEEE Standard C62.45-1992 (R2002), *IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits*
- k. ANSI C84.1-1995 *Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)*

8. ACCESS AND INSPECTION BY CITY:

Customer-Generator shall provide the City reasonable opportunity to inspect the Generation Facility prior to its interconnection and Commercial Operation Date and to witness initial testing and commissioning of the Generation Facility. The City may witness any commissioning tests required by IEEE 1547/UL 1741.

Following initial testing and inspection of the Generation Facility and upon reasonable advance notice to Customer-Generator, the City shall have access at reasonable times to the Generation Facility to perform on-site inspections to verify that the installation, maintenance and operation of the Generation Facility complies with the requirements of these Interconnection Standards. The City's cost of such inspection(s) shall be at the City's expense; however, the City shall not be responsible for other costs Customer-Generator may incur as a result of such inspection(s). Upon written request, Customer-Generator shall inform the City of the next scheduled maintenance and allow the City to witness the maintenance program and any associated testing.

The City shall at all times have immediate access to the external Generator AC Disconnect Switch to isolate the Generation Facility from the Electric Distribution System.

9. GENERATION FACILITY OPERATION:

- a. Customer-Generator shall install, operate and maintain, at Customer-Generator's sole cost and expense, the Generation Facility in accordance with the manufacturer's suggested practices for safe, efficient and reliable operation of the Generation Facility in parallel with the Electric Distribution System. Customer-Generator shall bear full responsibility for the installation, maintenance and safe operation of the Generation Facility. Upon request from the City, Customer-Generator shall supply copies of periodic test reports or inspection logs.
- b. Customer-Generator shall be responsible for protecting, at Customer-Generator's sole cost and expense, the Generation Facility from any condition or disturbance on the Electric Distribution System, including, but not limited to, voltage sags or swells, system faults, outages, loss of a single phase of supply, equipment failures, and lightning or switching surges.
- c. Customer-Generator agrees that, without prior written permission from the City, no changes shall be made to the configuration of the Generation Facility as approved by the City, and no relay or other control or protection settings shall be set, reset, adjusted or tampered with, except to the extent necessary to verify that the Generation Facility complies with City-approved settings.
- d. Customer-Generator shall operate the Generation Facility in such a manner as not to cause undue voltage fluctuations, power quality issues, intermittent load characteristics or to otherwise interfere with the operation of the Electric Distribution System. At all times when the Generation Facility is operated in parallel with the Electric Distribution System, Customer-Generator shall operate said Generation Facility in such a manner that no disturbance will be produced thereby to the electric service rendered by the City to any of its other customers or to any electric system interconnected with the Electric Distribution System. Customer-Generator understands and agrees that the interconnection and operation of the Generation Facility pursuant to these Interconnection Standards is secondary to, and shall not reduce the safety, quality, or reliability of electric service provided by the City.
- e. Customer-Generator's control equipment for the Generation Facility shall immediately, completely, and automatically disconnect and isolate the Generation Facility from the Electric Distribution System in the event of a fault on the Electric Distribution System, a fault on Customer-Generator's electric system, or loss of a source or sources on the Electric Distribution System. The automatic disconnecting device included in such control equipment shall not automatically reclose. The Generation Facility shall remain disconnected until Customer-Generator is notified by City representatives that it is safe to reconnect the Generation Facility. Additionally, if the fault is on Customer-Generator's electric system, such automatic disconnecting device shall not be reclosed until after the fault is isolated from the Customer-Generator's electric system.

10. RIGHT TO DISCONNECT GENERATION FACILITY:

The City shall have the right and authority to disconnect and isolate the Generation Facility without notice at the City's sole discretion if the City believes that any of the following have occurred or is occurring:

- a. Adverse electrical effects (such as power quality problems) on the Electric Distribution System and/or the electrical equipment of other electric customers attributed to the Generation Facility as determined by the City.
- b. Electric Distribution System emergencies or maintenance requirements
- c. Hazardous conditions existing on the Electric Distribution System as a result of the operation of the Generation Facility, protective equipment or protective equipment settings.
- d. Failure of the Customer-Generator to maintain required insurance and to provide the City with proof of insurance within ten (10) days of request. The City shall be named as an additional "insured" on said insurance policy.
- e. City identification of uninspected or unapproved equipment or modifications to the Generation Facility after initial approval.
- f. Recurring abnormal operation, substandard operation or inadequate maintenance of the Generation Facility.
- g. In non-emergency situations, the City shall give Customer-Generator notice of noncompliance including a description of the specific noncompliance condition and allow Customer-Generator a reasonable time to cure the noncompliance prior to disconnecting and isolating the Generation Facility.
- h. In the event that the City disconnects the Generation Facility for routine maintenance, the City shall make reasonable efforts to reconnect the Generation Facility as soon as practicable.
- i. The Customer-Generator retains the option to temporarily disconnect the Generation Facility from the Electric Distribution System at any time. Such temporary disconnection shall not constitute termination of the Interconnection Agreement unless the Customer-Generator exercises its termination rights under Section 14.
- j. Generation Facility protective equipment shall be tested at least every two years.

11. RATES AND OTHER CHARGES:

- a. Customer-Generator must participate in the City's Renewable Energy Net Metering/Parallel Generation Rate Rider as a condition of interconnecting a Customer-Owned Generation Facility.
- b. Customer-Generator must complete and submit to the City the Renewable Energy Net Metering/Parallel Generation Rate Rider Application for Service. The City shall not approve a Customer-Owned Generation Facility Interconnection Application that does not include a properly completed Net Metering/Parallel Generation Rate Rider Application for Service.

c. Terms and conditions of service under the Renewable Energy Net Metering/Parallel Generation Rate Rider are included in said Rate Rider.

12. INSURANCE:

The Customer-Generator shall, at its own expense, maintain in force general liability insurance without any exclusion for liabilities related to the interconnection. The amount of such insurance shall be sufficient to insure against all reasonably foreseeable direct liabilities given the size and nature of the Generation Facility being interconnected, the interconnection itself and the characteristics of the system to which the interconnection is made.

13. LIMITATION OF LIABILITY AND INDEMNIFICATION:

Customer-Generator agrees to assume all liability for and shall indemnify the City for any claims, losses, costs, and expenses of any kind or character to the extent that they result from the design, construction, operation or maintenance of the Generation Facility. Such indemnity shall include, but is not limited to, financial responsibility for: (a) the City's monetary losses; (b) reasonable costs and expenses of defending an action or claim made by a third party; (c) damages related to the death or injury of a third party; (d) damages to the property of the City; (e) damages to the property of a third party; (f) damages for the disruption of the business of a third party. This paragraph does not create a liability on the part of the Customer-Generator to the City or a third party, but requires indemnification where such liability exists. The limitations of liability provided in this paragraph do not apply in cases of gross negligence or intentional wrongdoing.

14. EFFECTIVE TERM AND TERMINATION RIGHTS:

The Interconnection Agreement shall become effective when executed by both Parties and shall continue in effect until terminated in accordance with the provisions of this Section. The Interconnection Agreement may be terminated for the following reasons:

- a. Customer-Generator may terminate the Interconnection Agreement at any time by giving the City at least sixty (60) days' prior written notice stating Customer-Generator's intent to terminate the Agreement at the expiration of such notice period;
- b. The City may terminate the Agreement at any time following Customer-Generator's failure to generate energy from the Generation Facility in parallel with the Electric Distribution System by the later of two (2) years from the date of execution of the Interconnection Agreement or twelve (12) months after completion of the interconnection provided for by the Agreement;
- c. Either Party may terminate the Interconnection Agreement at any time by giving the other Party at least sixty (60) days' prior written notice that the other Party is in default of any of the material terms and conditions of the Interconnection Agreement or these Interconnection Standards for Installation and Parallel Operation of Customer-Owned Renewable Energy Generation Facilities, so long as the notice specifies the basis for termination and there is reasonable opportunity for the Party in default to cure the default;
or

- d. The City may terminate the Interconnection Agreement at any time by giving Customer-Generator at least sixty (60) days' prior written notice in the event that there is a change in an applicable rule or statute affecting the Agreement.

Upon termination of the Interconnection Agreement, Customer-Generator's Generation Facility shall be permanently disconnected from the Electric Distribution System.

Termination of the Interconnection Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing at the time of said termination.

15. TERMINATION OF ANY PRIOR AGREEMENT:

From and after the date when service commences under the Interconnection Agreement, the Agreement shall supersede any oral and/or written agreement or understanding between the City and Customer-Generator concerning interconnection service. Any such prior agreement or understanding shall be deemed to be terminated as of the date interconnection service commences under the Interconnection Agreement.

16. FORCE MAJEURE:

For purposes of the Interconnection Agreement, the term "Force Majeure" means any cause or event not reasonably within the control of the Party claiming Force Majeure, including, but not limited to, the following: acts of God, strikes, lockouts, or other industrial disturbances; acts of a public enemy; orders or permits or the absence of the necessary orders or permits of any kind which have been properly applied for from the government of the United States, the State of Kansas, any political subdivision or municipal subdivision or any of their departments, agencies or officials, or any civil or military authority; unavailability of a fuel or resource used in connection with the generation of electricity; extraordinary delay in transportation; unforeseen soil conditions; equipment, material, supplies, labor or machinery shortages; epidemics; landslides; lightning; earthquakes; fires; hurricanes; tornadoes; storms; floods; washouts; drought; arrest; war; civil disturbances; explosions; breakage or accident to machinery, transmission lines, pipes or canals; partial or entire failure of utilities; breach of contract by any supplier, contractor, subcontractor, laborer or materialman; sabotage; injunction; blight; famine; blockade; or quarantine. A Force Majeure event does not include an act of negligence or intentional wrongdoing.

If either Party is rendered wholly or partly unable to perform its obligations under the Interconnection Agreement because of Force Majeure, both Parties shall be excused from whatever obligations under the Agreement are affected by the Force Majeure (other than the obligation to pay money) and shall not be liable or responsible for any delay in the performance of, or the inability to perform, any such obligations for so long as the Force Majeure continues. The Party suffering an occurrence of Force Majeure shall, as soon as is reasonably possible after such occurrence, give the other Party written notice describing the particulars of the occurrence and shall use reasonable efforts to remedy its inability to perform; provided, however, that the settlement of any strike, walkout, lockout or other labor dispute shall be entirely within the discretion of the Party involved in such labor dispute.

INTERCONNECTION APPLICATION
City of Hillsboro
Customer-Owned Renewable Energy Generation Facility

This Application for Interconnection of a Customer-Owned Renewable Energy Generation Facility is complete when it provides all applicable and correct information required below. The City may require additional information or clarification to evaluate the Interconnection Application. Processing of this Application cannot begin until all requested information is complete.

Processing Fee

A non-refundable processing fee of \$500 must accompany this Application.

Customer-Generator

Name: _____ Utility Account Number: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone (Day): _____ (Evening): _____

Fax: _____ E-Mail Address: _____

Is the Generation Facility owned by the Customer-Generator listed above? Yes No

Contact (if different from Customer-Generator)

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone (Day): _____ (Evening): _____

Fax: _____ E-Mail Address: _____

Generation Facility Information

Location (if different from above): _____

Inverter Manufacturer: _____

Model _____

Nameplate Rating: (kW) _____ (kVA) _____

System Design Rated Output: (kW_{AC}) _____ (kVA_{AC}) _____

Energy Source: Solar Wind Other _____

Is the Generation Facility equipment IEEE 1547/UL 1741 Certified? Yes No

If Yes, attach manufacturer's documentation showing IEEE 1547/UL 1741 certification

Is a City Accessible External Generator AC Disconnect Switch Provided (Required) Yes No

Location of City Accessible External Generator AC Disconnect Switch _____
(e.g. Two feet west of electric meter)

Estimated Generation Facility Installation Date: _____

Estimated Generation Facility Commercial Operation Date: _____

List components of the Generation Facility equipment package that are currently certified:

Equipment Type	Certifying Entity
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____

Equipment Installation Contractor: Indicate by owner if applicable

Name: _____
Mailing Address: _____
City: _____ State: _____ Zip Code: _____
Contact Person (If other than Above): _____
Telephone (Day): _____ (Evening): _____
Facsimile Number: _____ E-Mail Address: _____

Electrical Contractor: (If Applicable) Indicate if not applicable

Name: _____
Mailing Address: _____
City: _____ State: _____ Zip Code: _____
Contact Person (If other than Above): _____
Telephone (Day): _____ (Evening): _____
Facsimile Number: _____ E-Mail Address: _____

Consulting Engineer: (If Applicable) Indicate if not applicable

Name: _____
Mailing Address: _____
City: _____ State: _____ Zip Code: _____
Contact Person (If other than Above): _____
Telephone (Day): _____ (Evening): _____
Facsimile Number: _____ E-Mail Address: _____

Provide a one line diagram of the Generation Facility. The one line diagram is a basic drawing of an electric circuit in which one or more conductors are represented by a single line and each electrical device and major component of the installation, from the generator to the point of interconnection, are noted by symbols. See attached example.

Copies of manufacturer's ownership, operating and maintenance manuals and equipment settings for all Generation equipment, inverters, and other proposed Generation Facility equipment must be submitted with this Application.

Customer-Generator Signature

I hereby certify that, to the best of my knowledge, the information provided in this Interconnection Application is true. I agree to abide by the terms and conditions of the City's Interconnection Standards for Installation and Parallel Operation of Customer-Owned Renewable Energy Generation Facilities and will return the Certificate of Completion to the City when the Generation Facility has been installed and prior to commencing operation of said Generation Facility.

Signature: _____ Date: _____

----- **City Use** -----

Contingent Approval to Interconnect the Generation Facility

Interconnection of the Generation Facility is approved contingent upon Customer-Generator's compliance with all terms and conditions of the City's Interconnection Standards and upon return of the Certificate of Completion prior to commencement of commercial operation of said Generation Facility.

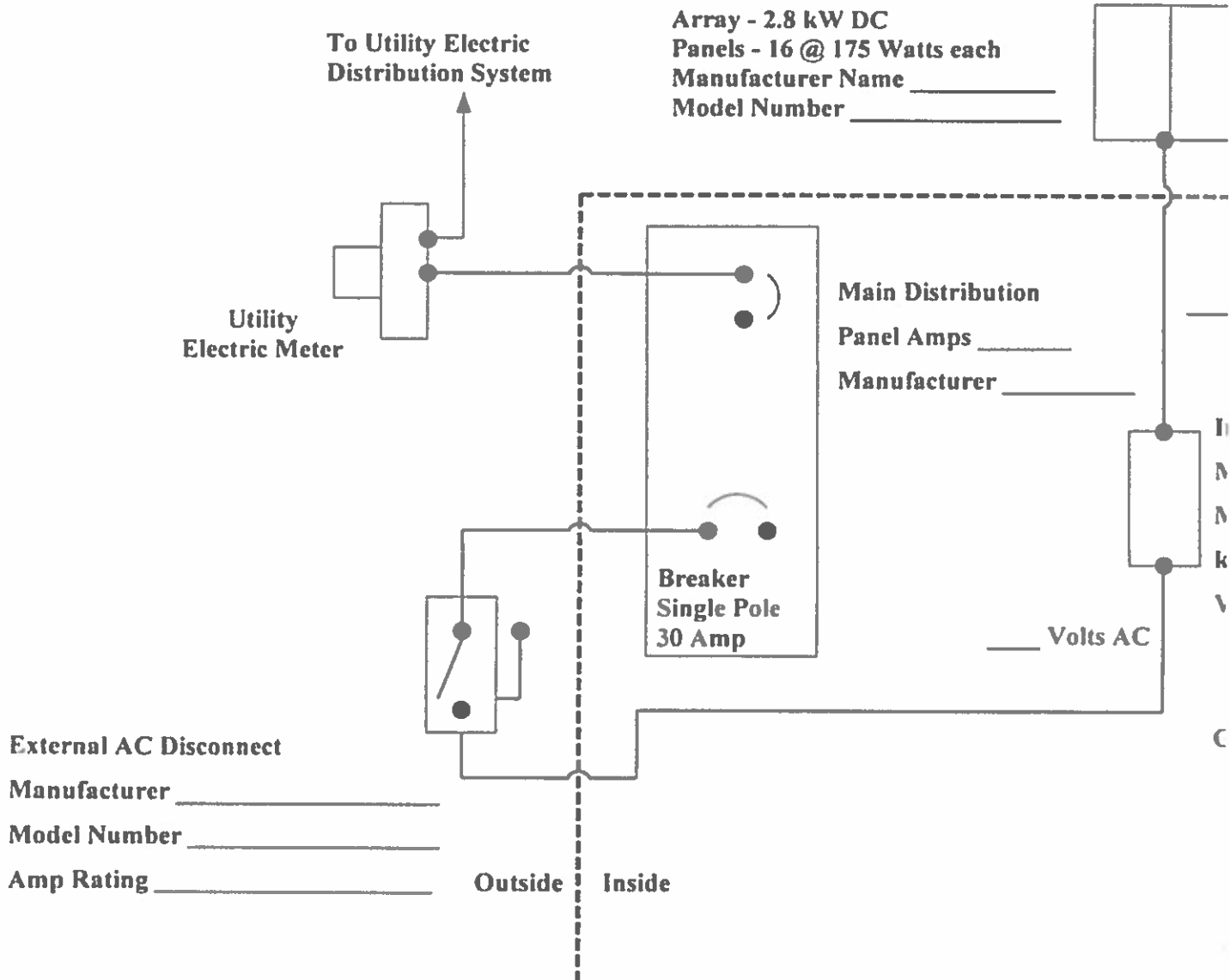
City Signature: _____

Title: _____ Date: _____

Application Number: _____

City waives inspection/witness test? Yes No Initial _____

One Line Diagram Example



INTERCONNECTION AGREEMENT

City of Hillsboro Customer-Owned Renewable Energy Generation Facility

This Agreement, (“Agreement”) is entered into by and between the City of Hillsboro, Kansas (“City) and _____, (“Customer-Generator”). The Customer-Generator electric account subject to this Agreement is Account Number _____. Customer-Generator and City are referenced in this Agreement collectively as “Parties” and individually as “Party.”

Recitals

WHEREAS, the City owns and operates an Electric Distribution System serving the City of Hillsboro, Kansas, and surrounding area;

WHEREAS, Customer-Generator owns or desires to install, own and operate a City-approved Renewable Energy Generation Facility interconnected with and operating in parallel with said Electric Distribution System;

Agreement

NOW, THEREFORE, in consideration of the covenants and promises herein, the Parties mutually agree as follows:

1. SCOPE OF AGREEMENT:

This Agreement governs the terms and conditions under which the Customer-Generator’s Generation Facility will interconnect with and operate in parallel with the Electric Distribution System.

2. DEFINITIONS:

The definitions used in this Interconnection Agreement are those found in the City Interconnection Standards for Installation and Parallel Operation of Customer-Owned Renewable Energy Generation Facilities.

3. PARALLEL OPERATION:

Customer-Generator shall not interconnect or commence parallel operation of the Generation Facility until written Approval to Energize the Generation Facility as provided herein has been provided by City. City shall have the right to have representatives present during initial testing of the Generation Facility and its protective apparatus.

4. INTERCONNECTION COSTS:

The City has estimated the costs, including overheads, for necessary System Upgrades to its Electric Distribution System and Customer-Generator service connection, if any, and has provided a detailed itemization of such costs in the attached description of estimated System Upgrade costs. Prior to commencement of System Upgrades that are required to allow interconnection of the Customer-Owned Generation Facility, Customer-Generator shall deposit with the City an amount equal to the estimated cost of said System Upgrades. If the actual costs of said System Upgrades are less than the amount deposited by the Customer-Generator, the City will refund the difference to the Customer-Generator within 60 days of completing said System Upgrades. If the actual costs of said System Upgrades exceed the amount deposited by the Customer-Generator, the City shall bill the Customer-Generator for the difference. Customer-Generator agrees to pay the invoiced amount within 30 days of the invoice date.

5. INTERRUPTION OR REDUCTION OF DELIVERIES:

The City may require the Customer-Generator to interrupt or reduce energy deliveries when the City determines, in its sole discretion, that curtailment, interruption or reduction is necessary because of maintenance, safety, emergency, Force Majeure or compliance with Good Utility Practices. No compensation or credit will be provided to the Customer-Generator by the City for such interruptions or reductions in energy deliveries.

6. ADVERSE OPERATING EFFECTS:

Interconnection of the Generation Facility shall not reduce the reliability or quality of City Electric Distribution System service. This includes, but is not limited to power quality issues such as Harmonic Distortion, Voltage Flicker and frequency deviations. The City shall notify the Customer-Generator as soon as practicable if, based on Good Utility Practice, operation of the Generation Facility causes disruption in or deterioration of service to other City electric customers or if operating the Generation Facility may damage the Electric Distribution System. If, after notice, the Customer fails to timely remedy the adverse operating effect, the City may disconnect the Generation Facility with no further notice.

7. LIMITATION OF LIABILITY AND INDEMNIFICATION:

Customer-Generator shall assume all liability for and shall indemnify the City for any claims, losses, costs, and expenses of any kind or character to the extent that they result from the design, construction, operation or maintenance of the Generation Facility. Such indemnity shall include, but is not limited to, financial responsibility for: (a) the City's monetary losses; (b) reasonable costs and expenses of defending an action or claim made by a third party; (c) damages related to the death or injury of a third party; (d) damages to City property; (e) damages to the property of a third party; (f) damages for the disruption of the business of a third party. This paragraph does not create a liability on the part of the Customer-Generator to the City or a third party, but requires indemnification where such liability exists. The limitations of liability provided in this paragraph do not apply in cases of gross negligence or intentional wrongdoing.

8. ACCESS TO PREMISES:

The City shall have access to the Customer-Generator premises or property and to the External AC Generator Disconnect Switch as permitted in its policies, Rules and Regulations and these Interconnection Standards.

9. GOVERNING LAW:

This Agreement shall be interpreted and governed under the laws of the State of Kansas, the Ordinances of the City of Hillsboro and City Electric Utility Rules and Regulations.

10. DOCUMENTS:

This Agreement incorporates all other provisions and related documents of these Interconnection Standards for Installation and Parallel Operation of Customer-Owned Renewable Energy Generation Facilities as the same may be amended from time to time.

11. NOTICES:

All written notices shall be directed as follows:

CUSTOMER-GENERATOR:

Name: _____

Address: _____

City/State/Zip: _____

CITY OF HILLSBORO:

Name: _____

Title: _____

City/State/Zip: _____

12. TERM OF AGREEMENT:

This Agreement shall be in effect when executed by the Customer-Generator and the City and shall remain in effect thereafter unless terminated in accordance with the provisions of Section 14 of "Technical Requirements."

IN WITNESS WHEREOF, the Parties hereto have caused two originals of this Agreement to be executed by their duly authorized representatives. This Agreement is effective as of the last date set forth below.

CUSTOMER-GENERATOR:

CITY OF HILLSBORO:

Signature

Signature

Print Name

Print Name and Title

Date

Date

CERTIFICATE OF COMPLETION

**City of Hillsboro
Customer-Owned Renewable Energy Generation Facility**

Is the Generation Facility installed, tested and ready for operation? Yes No

Customer: _____ Utility Account Number: _____

Address: _____

Telephone (Day): _____ (Evening): _____

Fax: _____ E-Mail Address: _____

Location of the Generation Facility (if different from above):

Electrician/Service Company:

Name: _____

Address: _____

City/State/Zip: _____

Telephone (Day): _____ (Evening): _____

Fax: _____ E-Mail Address: _____

License number: _____

Date City approved interconnection of Generation Facility: _____

Inspection:

The Generation Facility has been installed and inspected in compliance with all applicable electrical codes.

A copy of the signed electrical inspection form is attached. Yes No
(If inspection form is not attached)

Signature of inspector: _____ Date

Printed name of inspector

APPROVAL TO ENERGIZE GENERATION FACILITY

**City of Hillsboro
Customer-Owned Renewable Energy Generation Facility**

The City, having entered into an Interconnection Agreement for the Generation Facility described in the Application noted above and having received a Certificate of Completion with proper documentation of the electrical inspection hereby authorizes the Generation Facility to be energized:

City Signature: _____

Title: _____ Date: _____

DEFINITIONS

- a. **AC** – Alternating Current
- b. **Applicable Laws and Regulations** – All duly promulgated applicable federal, state and local laws, regulations, rules, ordinances, codes, decrees, judgments, directives, or judicial or administrative orders, permits and other duly authorized actions of any Governmental Authority, including the Ordinances of the City of Hillsboro and City Electric Utility Rules and Regulations.
- c. **Appropriately Sized Generation Facility** – Customer-Owned Generation Facilities shall be appropriately sized for the Customer-Generator’s anticipated load as determined by the City. Such determination will include, but not be limited to, Customer-Generator’s load profile, average and peak monthly demand, and monthly and annual energy consumption.
- d. **City** – The City of Hillsboro, Kansas, an incorporated urban center that has self-government, boundaries, and legal rights established by state charter.
- e. **Commercial Operation Date** – The date on which the Generation Facility is operating and is in compliance with the requirements of the City Interconnection Standards for Installation and Parallel Operation of Customer-Owned Renewable Energy Generation Facilities as determined by the City.
- f. **Customer-Generator** – A Residential or Commercial electric customer that receives retail electric service from the Electric Distribution System that also owns and operates an approved interconnected Generation Facility.
- g. **Customer in Good Standing** - Any entity connected to the Electrical Distribution System for the purpose of receiving retail electric service for twenty-four (24) consecutive months with no delinquencies.
- h. **DC** – Direct Current
- i. **Electric Distribution System** – The City facilities and equipment used to provide electric service to customers, including service to the Customer-Generator.
- j. **Generation Facility** – The Customer’s device for the production of energy as defined in Overview Section 2d.
- k. **Good Utility Practice** – Any of the practices, methods and acts engaged in or approved by a significant portion of the electric industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion

of all others, but rather to be acceptable practices, methods, or acts generally accepted by the electric utility industry in the region.

- l. **Governmental Authority** – Any federal, state, local or other governmental regulatory or administrative agency, court, commission, department, board, or other governmental subdivision, legislature, rulemaking board, tribunal, or other governmental authority having jurisdiction over the Parties, their respective facilities, or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power; provided, however, that such term does not include the Customer-Generator or any Affiliate thereof.
- m. **Harmonic Distortion** – Distortion of the normal AC sine wave, typically caused by non-linear loads or inverters.
- n. **Interconnection** – The physical connection of a Generation Facility to the Electric Distribution System.
- o. **Interconnection Application** – The Customer request to interconnect a new Generation Facility, or to increase the rated output of, or make a material modification to the operating characteristics of an existing Generation Facility that is interconnected with the Electrical Distribution System.
- p. **Interconnection Standards** – All provisions, forms, and related documents described in the collective parts of these Interconnection Standards for Installation and Parallel Operation of Customer-Owned Renewable Energy Generation Facilities or successor document.
- q. **Metering Point** – The electric meter shown on the one-line diagram accompanying the Customer-Generator’s Interconnection Application.
- r. **Party** – Individually the City and the Customer-Generator; collectively the “Parties.”
- s. **Reasonable Efforts** – With respect to an action required to be attempted or taken by a Party under the Interconnection Agreement, efforts that are timely and consistent with Good Utility Practice and are otherwise substantially equivalent to those a Party would use to protect its own interests.
- t. **System Upgrades** - Additions, modifications, improvements and upgrades to the Electric Distribution System or Customer-Generator service connection at or beyond the point of interconnection to facilitate interconnection of the Customer-Generator’s Generation Facility.
- u. **Voltage Flicker** – A variation of voltage sufficient in duration to allow visual observation of a change in electric light source intensify.