

**Interconnection Standards for
Installation and Parallel Operation of
Customer-Owned Renewable Electric
Generation Facilities 25 kW_{AC} or Less**

City of Russell, Kansas

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PART 1. OVERVIEW

1. PURPOSE:

The purpose of this document is to establish standards for eligible customers (“Customer”) to interconnect and operate Customer-owned inverter-based solar, and wind Generation Facilities with a rated output of 25 kilowatts AC (kW_{AC}) or less in parallel with the City of Russell (“Utility”) Electric Distribution System.

2. 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 Russell and Utility Electric Rates and Regulations.
- c. **City** – The City of Russell, Kansas.
- d. **Commercial Operation Date** – The date on which the Generation Facility is operating and is in compliance with the requirements of these Interconnection Standards for Installation and Parallel Operation of Customer-Owned Renewable Electric Generation Facilities 25 kW_{AC} or Less as determined by the Utility.
- e. **Customer** – a Residential electric customer interconnected to the Electric Distribution System for the purpose of receiving retail electric service that also owns and operates an approved Generation Facility.
- f. **DC** – Direct Current
- g. **Electric Distribution System** – The Utility facilities and equipment used to provide electric service to customers, including the Customer.
- h. **Generation Facility** – For purposes of these Interconnection Standards, the Customer device for conversion of solar and wind energy to electricity, as identified in the Interconnection Application, that:
 1. Is an inverter-based energy facility with a rated capacity and output of 25 kW_{AC} or less when including any storage capabilities;
 2. Is owned by the Customer;
 3. Is located on the Customer’s premises;
 4. Serves only the Customer’s premises (serves no other customers)
 5. Is interconnected with and operates in parallel phase and synchronization with the Electric Distribution System and is in compliance with these Interconnection Standards;
 6. Is intended primarily to offset part of the Customer’s own electrical energy requirements;

7. Contains a Utility-approved mechanism(s) that automatically disconnects the Generation Facility and interrupts the flow of electricity to the Electric Distribution System in the event that electric service to the Customer is interrupted.
8. Meets all of the following generating capacity limitations:
 - a. Generator annual energy generation shall not exceed Customer's annual energy requirements.
 - b. Customer's Generator Facility in kW_{AC} shall not exceed Customer's average monthly demand or estimated average annual demand when historical demand (kW) meter readings are unavailable for the previous 12-month period starting January 1 and ending December 31, or 25 kW_{AC}, whichever is less. Customer's estimated average annual demand shall be calculated by using said customer's historical annual energy usage in kWh divided by 8,760 hours and further dividing by 35%.
 - c. Total Customer-owned generating capacity shall not exceed four percent (4%) of the previous year Utility peak demand. No Generation Facility shall be interconnected that would cause total Customer-Owned Generation Facility capacity to exceed four percent (4%) of the previous year Utility peak demand.
- i. **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 or any Affiliate thereof.
- j. **Harmonic Distortion** – Distortion of the normal AC sine wave typically caused by non-linear loads or inverters.
- k. **Interconnection** – The physical connection of a Generation Facility to the Utility Electric Distribution System.
- l. **Interconnection Application** – The Customer request to interconnect a new Generation Facility, or to increase the capacity of, or make a material modification to the operating characteristics of an existing Generation Facility that is interconnected with the Electric Distribution System.
- m. **Interconnection Standards** – Interconnection Standards shall mean all provisions, forms and related documents described in the collective parts of these Interconnection Standards for Installation and Parallel Operation of Customer-Owned Renewable Electric Generation Facilities 25 kW_{AC} or Less, or successor document.
- n. **Metering Point** – The Utility electric meter as shown on the one-line diagram accompanying the Customer's Interconnection Application.

- o. **Party** – Individually the Utility and the Customer; collectively the “Parties.”
 - p. **Prudent Utility Practice** – Any of the practices, methods and acts engaged in or approved by a significant portion of the electric utility 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. Prudent 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 in the region by the electric utility industry.
 - q. **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 Prudent Utility Practice and are otherwise substantially equivalent to those a Party would use to protect its own interests.
 - r. **Renewable Parallel Generation Residential Service rate schedule** – Included in Ordinance No. 1906
 - s. **System Upgrades** – Additions, modifications, improvements, and upgrades to the Electric Distribution System or Customer service connection at or beyond the point of interconnection to facilitate interconnection of the Customer Generation Facility.
 - t. **Utility** – City of Russell, Kansas
 - u. **Voltage Flicker** – A variation of voltage sufficient in duration to allow visual observation of a change in electric light source intensity.
3. **ELIGIBILITY:**
- a. Must be a Residential single phase electric customer with a Customer-owned inverter-based 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 single-phase service at 60 Hertz at a nominal voltage of 120/240 volts furnished through a single bidirectional electric meter or multiple meters capable of recording the flow of electricity in each direction. Specific metering shall be at Utility discretion.
 - b. Customer’s utility account must be in good standing and in compliance with Utility electric rate schedules and Electric Rules and Regulations.
 - c. A Generation Facility that does not meet all requirements, including capacity limitations, of Section 2h. Above is not eligible to interconnect with the Electric Distribution System under this Interconnection Agreement.

4. INTERCONNECTION REQUEST:

The Customer shall request interconnection of a Generation Facility by completing and submitting to the Utility the attached document entitled “Interconnection Application”. The Utility may require additional information or clarification to evaluate the Customer Interconnection Request. Interconnection Applications will be reviewed by the Utility in the order in which they are received. If an Interconnection Application is viewed as incomplete, the Utility will provide notice to the Customer that the Application is not complete, provide a description of the information needed to complete the Application, and include a statement that processing of the Application cannot begin until the Application is complete.

5. ELECTRIC DISTRIBUTION SYSTEM IMPACT ANALYSIS:

After receiving a properly completed Interconnection Application, the Utility will analyze the potential impact of the proposed Generation Facility on the Electric Distribution System and on other Utility customers. Such analyses will be based on Prudent 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 or successor standards.
- c. The proposed Generation Facility’s capacity 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, may 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 equals or exceeds 85 percent (85%) of its short circuit interrupting capability.
- g. No Generation Facility shall be interconnected that would cause the total interconnected Customer-owned Generating Facility capacity to exceed four percent (4%) of the previous year Utility 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. A review of the type of electrical service provided to the Customer, 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.
- k. When the proposed Generation Facility is to be interconnected on a single-phase shared secondary line, the aggregate generation capacity on the shared secondary line, including the proposed Generation Facility, shall not exceed ten kilowatts (10 kW_{AC}).

Feasibility Analysis

If the proposed Generation Facility fails to meet one or more of the above requirements, the Customer may request that the Utility 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. The Utility will provide an estimated cost of the Feasibility Analysis to Customer and Customer shall advance 50% of such estimate to Utility if Customer wants Utility to prepare a Feasibility Analysis. When Feasibility Analysis cost exceeds 50% of the estimated cost, Utility shall bill Customer as such fees are incurred.

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 shall evaluate the impact of the proposed Generation Facility interconnection 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 Generating Facilities that, on the date the System Impact Study is commenced, are directly 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 Utility shall state the underlying assumptions of the Study and share the results of the analyses with the Customer, 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. The Utility will provide an estimated cost of the System Impact Study to Customer and Customer shall advance 50% of such estimate to the Utility if Customer wants the Utility to prepare a System Impact Study. When System Impact Study cost exceeds 50% of the estimated cost, the Utility shall bill Customer as such fees are incurred.

6. SYSTEM UPGRADES:

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

7. INTERCONNECTION AGREEMENT:

After the Customer and the Utility have identified and mutually agreed on the project scope including the Generation Facility, System Upgrades and estimated costs (if any), the Customer and the Utility shall execute the attached document entitled "Interconnection Agreement." The Interconnection Agreement shall be between the Utility and the Customer and shall not include third parties. Prior to commencement of System Upgrades required to allow interconnection of the Customer-owned Generation Facility, Customer shall deposit with the Utility an amount equal to the estimated cost of said System Upgrades. See "Section 4. Interconnection Costs" of the Interconnection Agreement (Part 4) for additional information.

8. CODES AND PERMITS:

- a. The Customer shall be responsible for procuring all building, operating, environmental or 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 "Part 2. Technical Requirements" of these Interconnection Standards.
- c. The construction and facilities shall meet all applicable building and electrical codes.

9. CERTIFICATE OF COMPLETION:

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

10. NORMAL OPERATION:

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

PART 2. TECHNICAL REQUIREMENTS

1. CHARACTER OF SERVICE:

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

2. CODE REQUIREMENTS:

The Generation Facility shall meet all requirements established by the National Electrical Code (NEC), National Electrical Safety Code (NESC), Institute of Electrical and Electronics Engineers (IEEE), Underwriters Laboratories (UL), and the Occupational Safety and Health Administration. Specific applicable codes are shown in Section 9 of this Part 2 below as “Standards for Interconnection, Safety and Operating Reliability.”

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 upon loss of System voltage and shall not reconnect until System voltage has been restored.
- b. Power output control system shall automatically disconnect from the Electric Distribution System if System voltage fluctuates beyond plus or minus ten percent (10%).
- c. Power output control system shall automatically disconnect from the Electric Distribution System if the generator fails to operate within the operating frequency range of 59.3 – 60.5 Hz.
- d. Inverter output Harmonic Distortion shall meet IEEE and UL standards.
- e. 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. LIMITS SPECIFIC TO SINGLE-PHASE GENERATING FACILITIES:

When connected to a single phase transformer, the generator must be installed such that the aggregated gross output is balanced between the two phases of the single phase voltage and the maximum aggregated Gross Ratings for all the Generating Facilities shall not exceed the transformer rating.

5. SYSTEM PROTECTION:

The owner of the customer owned generator is responsible for providing adequate protection to electric Utility facilities for conditions arising from the operation of generation under all Utility distribution system operating conditions. The owner is also responsible for providing adequate protection to their facility under any Utility distribution system operating condition whether or not their customer owned generator is in operation. Conditions may include but are not limited to:

- a. Loss of a single phase of supply.
- b. Distribution system faults,
- c. Equipment failures,
- d. Abnormal voltage or frequency,
- e. Lightning and switching surges,
- f. Excessive harmonic voltages,
- g. Excessive negative sequence voltages,
- h. Separation from supply,
- i. Synchronizing generation,
- j. Re-synchronizing the Owner's generation after electric restoration of the supply.

6. FAULT CURRENT DISCONNECTION:

The Generation Facility shall be equipped with protective equipment designed to automatically disconnect from the Electric Distribution System during fault current conditions and remain disconnected until System voltage and frequency have stabilized.

7. 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 System voltage and frequency have stabilized.

8. EXTERNAL GENERATOR AC DISCONNECT SWITCH:

The Customer shall install an external alternating current (AC) disconnect switch within six (6) feet of the Utility electric meter(s) that is visible and readily accessible to Utility representatives at all times. This switch shall be clearly labeled as "Generator AC Disconnect Switch". The 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.

9. 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 1574:
 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 (2008), National Electrical Code
- d. OSHA (29 CFR § 1910.269)
- e. IEEE Standard 929-2000, *IEEE Recommended Practice for Utility Interface of Photovoltaic (PV) Systems*
- f. IEEE Standard C37.90.1-1989 (R1994), *IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems*
- g. IEEE Standard C37.90.2 (1995), *IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers*
- h. IEEE Standard C37.108-1989 (R2002), IEEE Guide for the Protection of Network Transformers
- i. IEEE Standard C57.12.44-2000, IEEE Standard Requirements for Secondary Network Protectors
- j. IEEE Standard C62.41.2-2002, *IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits*
- k. IEEE Standard C62.45-1992 (R2002), *IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits*
- l. IEEE Standard 100-2000, IEEE Standard Dictionary of Electrical and Electronic Terms
- m. ANSI C84.1-1995 *Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)*
- n. NEMA MG 1-1998, Motors and Generators, Revision 3
- o. IEEE Standard 2030.2, Guide for the Interoperability of Energy Storage Systems Integrated with the Electric Power Infrastructure (Including use of IEEE 2030.3 testing protocols to establish conformity).

10. ACCESS AND INSPECTION BY UTILITY:

Customer shall provide the Utility 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 Utility 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, the Utility shall have access at all 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 Utility cost of such inspection(s) shall be at Utility expense; however, the Utility shall not be responsible for any cost Customer may incur as a result of such inspection(s). Upon written request, Customer shall inform the Utility of the next scheduled maintenance and allow the Utility to witness the maintenance program and any associated testing.

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

11. GENERATION FACILITY OPERATION:

- a. Customer shall install, operate, and maintain, at Customer'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 shall bear full responsibility for the installation, maintenance and safe operation of the Generation Facility. Upon request from the Utility, Customer shall supply copies of periodic test reports or inspection logs.
- b. Customer shall be responsible for protecting, at Customer'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 agrees that, without prior written permission from the Utility, no changes shall be made to the configuration of the Generation Facility as approved by the Utility, 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 Utility-approved settings.
- d. Customer 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 shall operate said Generation Facility in such a manner that no disturbance will be produced thereby to the service rendered by the Utility to any of its other customers or to any electric system interconnected with the Electric Distribution System. Customer 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 Utility.
- e. Customer'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'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 be capable of reclosing until after service is restored on the Electric Distribution System. Additionally, if the fault is on Customer's electric system, such automatic disconnecting device shall not be reclosed until after the fault is isolated from the Customer's electric system.

12. RIGHT TO DISCONNECT GENERATION FACILITY:

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

- a. Electric service to Customer's premises is discontinued for any reason;
- b. Adverse electrical effects (such as power quality problems) on the Electric Distribution System and/or the electrical equipment of other Utility customers attributed to the Generation Facility as determined by the Utility.
- c. Electric Distribution System emergencies or maintenance requirements
- d. Hazardous conditions existing on the Electric Distribution System as a result of the operation of the Generation Facility or protective equipment
- e. Failure of the Customer to obtain and maintain required insurance and to provide the Utility with proof of insurance within ten (10) days of request.
- f. Utility identification of uninspected or unapproved equipment or modifications to the Generation Facility after initial approval.
- g. Recurring abnormal operation, substandard operation or inadequate maintenance of the Generation Facility.
- h. Noncompliance with the obligations under the Interconnection Agreement. In non-emergency situations, the Utility shall give Customer notice of noncompliance including a description of the specific noncompliance condition and allow Customer a reasonable time to cure the noncompliance prior to disconnecting and isolating the Generation Facility.
- i. Failure to remit payment to the Utility for any amounts owed, including but not limited to, amounts invoiced pursuant to Paragraph 15 of this Agreement.
- j. In the event that the Utility disconnects the Generation Facility for routine maintenance, the Utility shall make reasonable efforts to reconnect the Generation Facility as soon as practicable.
- k. The Customer retains the option to temporarily disconnect its Generation Facility from the Electric Distribution System at any time. Such temporary disconnection shall not constitute termination of the Interconnection Agreement unless the Customer exercises its termination rights under Section 16 of Part 2.

13. RATES AND OTHER CHARGES:

- a. Customer must participate in the Renewable Parallel Generation – Residential Service rate schedule as a condition of interconnecting a Customer-owned Generating Facility.
- b. Customer must complete and submit to the Utility the Renewable Energy Parallel Generation Application For Service in Part 7. The Utility shall not approve a Customer-owned Generation Facility Interconnection Application that does not include a completed Renewable Energy Parallel Generation Application For Service.
- c. Terms and conditions of service are contained in the Renewable Parallel Generation – Residential Service rate schedule, Interconnection Standards for Installation and Parallel Operation of Customer-Owned Renewable Electric Generation Facilities 25 kW_{AC} or Less.
- d. Customer must participate in the electric Utility's Renewable Parallel Generation – Residential Service rate schedule if the customer wishes to receive credit for any excess energy generated by the customer and delivered to the Utility.

14. INSURANCE:

Customer shall at its own expense obtain and continuously maintain bodily injury, property damage liability and general liability insurance, without any exclusion for liabilities related to the interconnection undertaken pursuant to the Interconnection Agreement. The amount of such insurance shall be sufficient to insure against all reasonably foreseeable liabilities and risks related to the Generation Facility, the ownership and operation of such Generation Facility, and the interconnection itself. Such insurance must be obtained from an insurance provider authorized to do business in the State of Kansas. Customer shall provide proof of insurance to the Utility not later than ten (10) days prior to the commercial operation date of the Generation Facility. Utility shall not interconnect the Generation Facility absent submission by the Customer of proof of insurance in accordance with these Interconnection Standards. Thereafter Customer shall provide proof of insurance to the Utility within ten (10) days of such request by the Utility. Utility receipt of proof of insurance does not imply an endorsement of the terms and conditions of said coverage. Customer shall promptly notify the Utility whenever an accident or incident occurs resulting in injuries or damages that are included within the scope of coverage of such insurance, whether or not Customer intends to submit a claim under such policy.

15. LIMITATION OF LIABILITY AND INDEMNIFICATION:**a. Limitation of Liability**

Each Party's liability to the other Party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees and court fees, relating to or arising from any act or omission in its performance of the Interconnection Agreement, shall be limited to the amount of direct damage actually incurred. In no event shall the Utility or the City of Russell be liable for any indirect, special, consequential, or punitive damages.

b. Indemnity

Customer assumes all liability for, and shall indemnify, defend and hold the Utility and the City of Russell harmless from, any and all claims, losses, costs, and expenses of any kind or character, direct or indirect, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, labor costs, and all other obligations by or to third parties arising out of or resulting from the design, construction, operation or maintenance of the Generation Facility, or the Customer's actions or omissions in breach of its obligations under the Interconnection Agreement. Such indemnity shall include, but is not limited to, financial responsibility for: (a) Utility 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 Utility property; (e) damages to the property of a third party; (f) damages for the disruption of the business of a third party. The limitations of liability provided in this paragraph do not apply in cases of gross negligence or intentional wrongdoing. If the Utility or the City of Russell incurs any costs as to which the indemnity provided in this section b. applies, the Utility or City of Russell shall invoice the Customer for such costs in writing. Customer shall remit payment to the Utility or the City of Russell, as appropriate, within 45 calendar days of the date of such invoice.

16. 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. Electric service to Customer's premises is discontinued for any reason. If electric service is disconnected for any reason or a change occurs in the account holder, a new Interconnection Application must be submitted to the electric Utility for consideration;
- b. Customer may terminate the Interconnection Agreement at any time by giving the Utility at least sixty (60) days' prior written notice stating Customer's intent to terminate the Agreement at the expiration of such notice period;
- c. the Utility may terminate the Interconnection Agreement at any time following Customer'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 during any twelve (12) month period following completion of the interconnection provided for by the Agreement;
- d. the Utility may terminate the Interconnection Agreement at any time by giving Customer at least sixty (60) days' prior written notice in the event the Customer generates and delivers to the Utility more energy than Customer consumes within a calendar year for two consecutive years or more.
- e. 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 Electric Generation Facilities 25 kW_{AC} or Less, 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
- f. The Utility may terminate the Interconnection Agreement at any time by giving Customer 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'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.

17. TERMINATION OF ANY APPLICABLE 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 Utility and Customer concerning the interconnection service covered by the Agreement. Any such prior agreement or understanding shall be deemed to be terminated as of the date interconnection service commences under the Interconnection Agreement.

18. 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 public enemies; 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 partially 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.

PART 3. INTERCONNECTION APPLICATION

Application No. _____

City of Russell**Customer-Owned Renewable Electric Generation Facility 25 kW_{AC} or Less**

This Application for Interconnection of a Customer-Owned Renewable Electric Generation Facility 25 kW_{AC} or less is considered complete when it provides all applicable and correct information required below. The Russell electric Utility may require additional information or clarification to evaluate the Interconnection Application. Processing of this Application cannot begin until all information is complete.

Processing Fee

A non-refundable processing fee of \$250 must accompany this Application.

Customer

Name: _____ Utility Account Number: _____

Address: _____

Town: _____ State: _____ Zip: _____

Telephone (Day): _____ (Evening): _____

Fax: _____ E-Mail Address: _____

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

Contact (if different from Customer)

Name: _____

Address: _____

Town: _____ State: _____ Zip: _____

Telephone (Day): _____ (Evening): _____

Fax: _____ E-Mail Address: _____

Generation Facility Information

Location (if different from above): _____

Inverter Manufacturer: _____

Model _____

Nameplate Rating: (kW_{AC}) _____ (kVA_{AC}) _____System Design Capacity: (kW_{AC}) _____ (kVA_{AC}) _____Energy Source: Solar Wind Battery/Storage

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

[Note: Requires a Yes for an application to be considered complete.]

If Yes, attach manufacturer's documentation and technical specification sheet showing IEEE 1547/UL 1741 certification.

Have all necessary government permits and approvals been obtained for the project prior to this application?

Yes No [Note: Requires a yes for an application to be considered complete.]

Is Utility Accessible External Generator AC Disconnect Switch Provided? (Required) Yes No

Location of Accessible External Generator AC Disconnect Switch _____
(e.g. Two feet west of utility 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 installation by owner if applicable

Name: _____

Mailing Address: _____

Town: _____ State: _____ Zip Code: _____

Contact Person (If other than Above): _____

Telephone (Daytime): _____ (Evening): _____

Facsimile Number: _____ E-Mail Address: _____

Electrical Contractor: (If Applicable) Indicate if not applicable

Name: _____

Mailing Address: _____

Town: _____ State: _____ Zip Code: _____

Contact Person (If other than Above): _____

Telephone (Daytime): _____ (Evening): _____

Facsimile Number: _____ E-Mail Address: _____

Consulting Engineer: (If Applicable) Indicate if not applicable

Name: _____

Mailing Address: _____

Town: _____ State: _____ Zip Code: _____

Contact Person (If other than Above): _____

Telephone (Daytime): _____ (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.

Provide a site layout of the Generation Facility and nearby features. The site layout is a basic drawing showing the location of the Generation Facility, electric Utility Electric meter, AC and DC disconnect switches, existing electrical panels, disconnects, and utility transformers, conduit/conductor runs and lockout locations.

Copies of manufacturer’s specification sheets for all Generation equipment, inverters, and other proposed Generation Facility equipment must be submitted with this Application.

Customer 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 of Russell’s (Utility) Interconnection Standards for Installation and Parallel Operation of Customer-Owned Renewable Electric Generation Facilities 25 kW_{AC} or Less and will return the Certificate of Completion to the Utility when the Generation Facility has been installed and prior to commencing operation of said Generation Facility.

Signature: _____ Date: _____

----- **City of Russell Utility Use** -----

Contingent Approval to Interconnect the Generation Facility

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

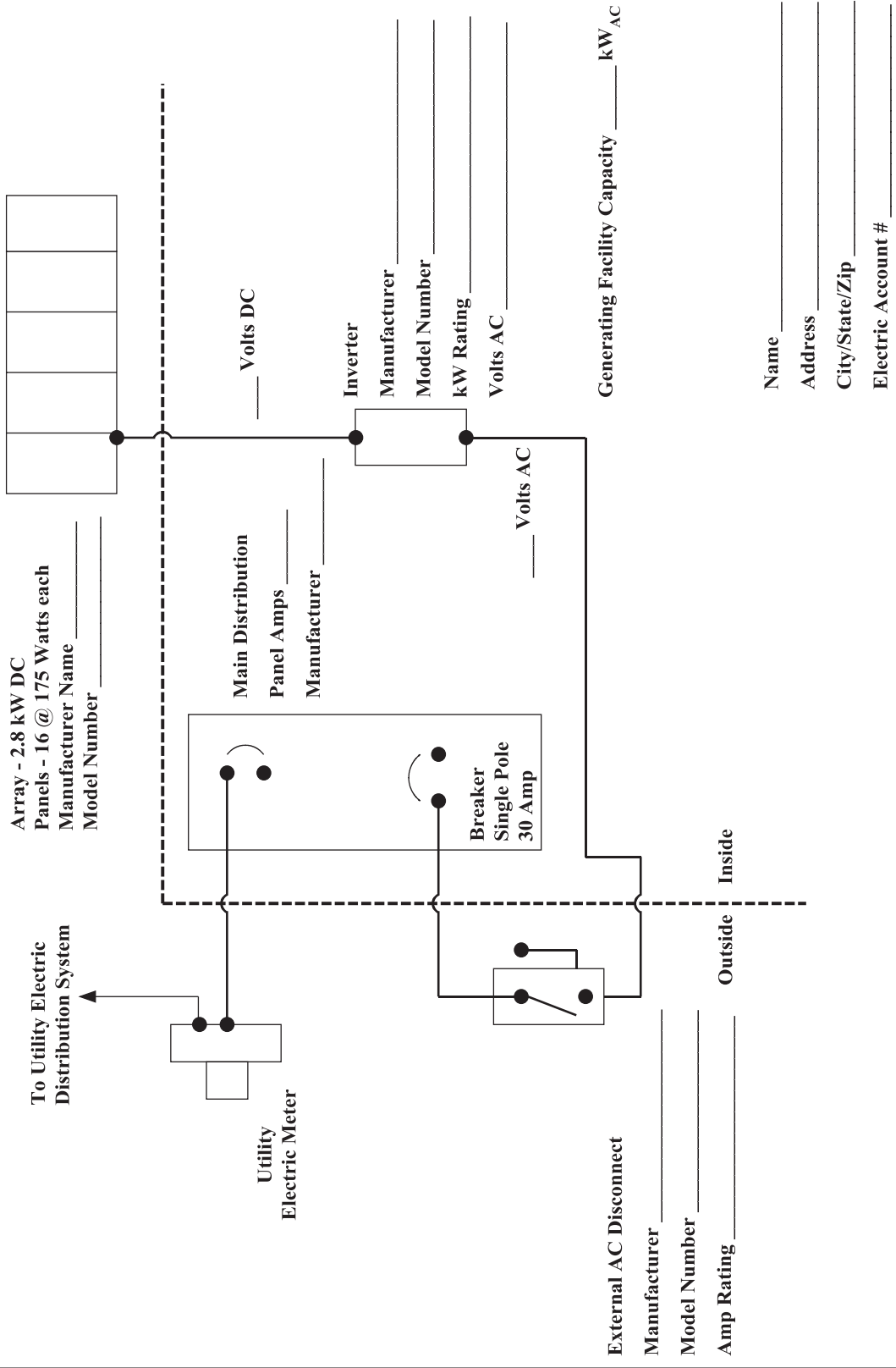
Signature: _____

Title: _____ Date: _____

Application Number: _____

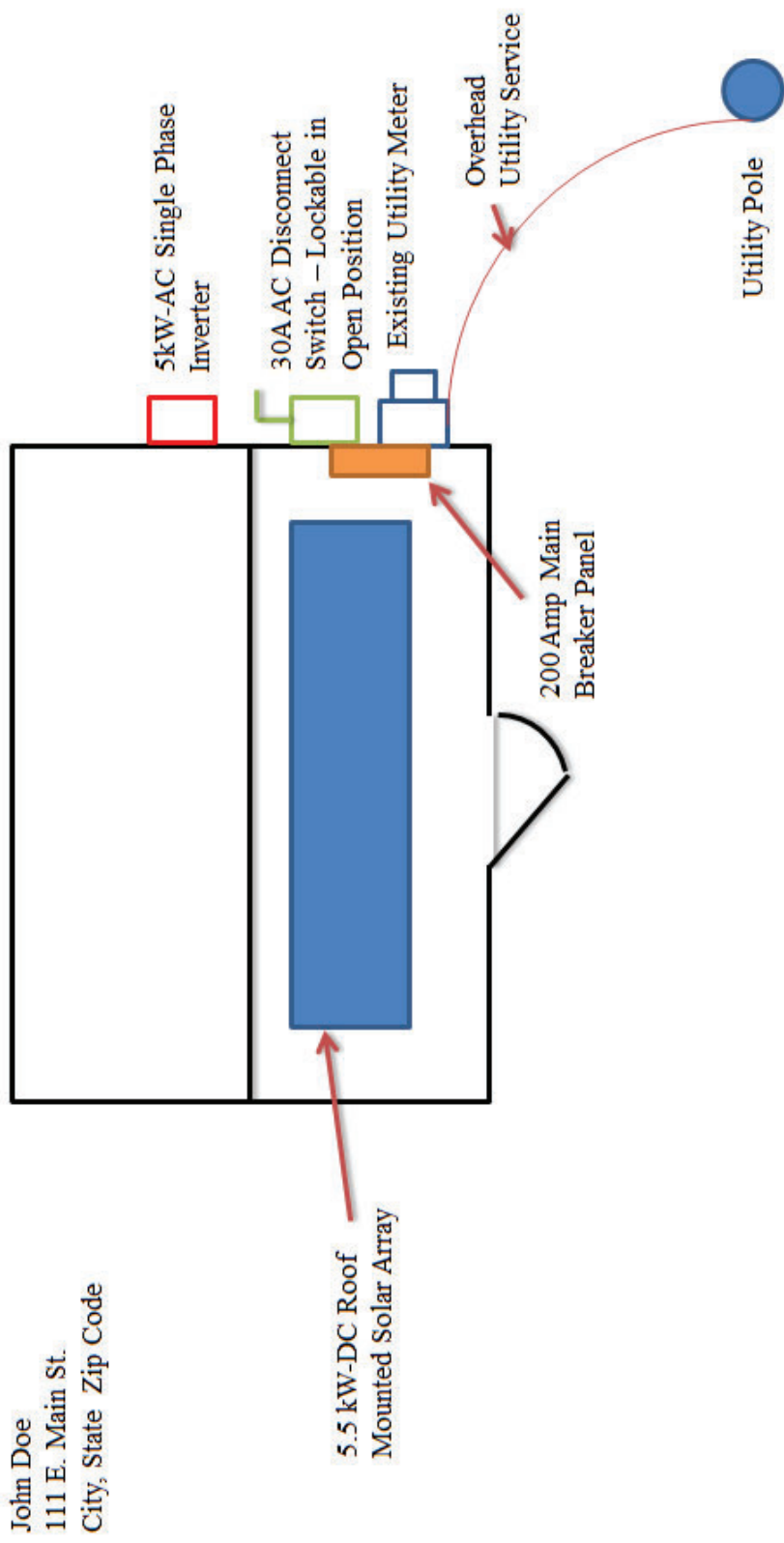
Electric Utility waives inspection/witness test? Yes No Initial _____

One Line Diagram Example



Sample Site Layout

John Doe
111 E. Main St.
City, State Zip Code



E. Main St.

PART 4. INTERCONNECTION AGREEMENT

Application No. _____

City of Russell, Kansas
Customer-Owned Renewable Electric Generation Facility 25 kW_{AC} or Less

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

Recitals

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

WHEREAS, Customer owns or desires to install, own and operate a Utility-approved renewable, electric Generation Facility with a rated output of 25 kW_{AC} or less, interconnected with and operating in parallel with the Utility 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 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 Part 1, Section 2 of the Utility Interconnection Standards for Installation and Parallel Operation of Customer-Owned Renewable Electric Generation Facilities 25 kW_{AC} or Less.

3. PARALLEL OPERATION:

Customer shall not interconnect or commence parallel operation of the Generation Facility until written Approval to Energize the Generation Facility under Part 6 of these Interconnection Standards has been provided by the Utility. The Utility shall have the right to have representatives present during initial testing of the Generation Facility and its protective apparatus.

4. INTERCONNECTION COSTS:

The Utility has estimated the costs, including overheads, for necessary System Upgrades to its Electric Distribution System and Customer 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 shall deposit with the Utility 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, the Utility shall refund the difference to the Customer within 60 days of completing said System Upgrades. If the actual costs of said System Upgrades exceed the amount deposited by the Customer, the Utility shall bill the Customer for the difference. Customer agrees to pay the invoiced amount within 30 days of the invoice date.

5. INTERRUPTION OR REDUCTION OF DELIVERIES:

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

6. ADVERSE OPERATING EFFECTS:

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

7. COMPLIANCE WITH INTERCONNECTION STANDARDS REQUIREMENTS:

Customer has read the Utility Interconnection Standards for Installation and Parallel Operation of Customer-Owned Renewable Electric Generation Facilities 25 kW_{AC} or Less, as adopted by the Utility, and agrees to comply with all requirements included therein, including, but not limited to, all insurance and indemnity provisions identified in Paragraphs 14 and 15 therein.

8. ACCESS TO PREMISES:

The Utility shall have access to the Customer premises or property and to the External AC Generator Disconnect Switch as permitted in its policies, Rules and Regulations and 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 Russell, and [Utility Electric Rates 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 Electric Generation Facilities 25 kW_{AC} or Less as the same may be amended from time to time.

11. NOTICES:

All written notices shall be directed as follows:

Customer:

City of Russell:

Name: _____

Name: _____

Address: _____

Title: _____

Town/State/Zip: _____

Town/State/Zip: _____

12. TERM OF AGREEMENT:

This Agreement shall be in effect when executed by the Customer and the City of Russell and shall remain in effect thereafter month to month unless terminated in accordance with the provisions of Section 16 of “Part 2 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:

City of Russell:

Signature

Signature

Print Name

Print Name and Title

Date

Date

PART 5. CERTIFICATE OF COMPLETION

Application No. _____

City of Russell
Customer-Owned Renewable Electric 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): _____

Has the Generation Facility been installed in accordance with all applicable building codes, permits and ordinances (if applicable)? Yes _____ No _____

Electrician/Service Company:

Name: _____

Address: _____

Town/State/Zip: _____

Telephone (Day): _____ (Evening): _____

Fax: _____ E-Mail Address: _____

License number: _____

Date electric Utility approved Interconnection Application: _____

Application Number: _____

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**Insurance:**The Generation Facility is covered with an insurance policy as described in the Technical Requirements, 14 and 15. A copy of proof of insurance is attached. Yes No

PART 6. APPROVAL TO ENERGIZE GENERATION FACILITY

Application No. _____

City of Russell
Customer-Owned Renewable Electric Generation Facility

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

Electric Utility Signature: _____

Title: _____ Date: _____

PART 7. RENEWABLE ENERGY PARALLEL GENERATION APPLICATION FOR SERVICE

Application No. _____

City of Russell

Customer Name: _____

Service Address: _____

Town: _____ State: _____ Zip: _____

Utility Account Number: _____

Contact Person: _____

Telephone Number: _____

Address: _____

City: _____ State: _____ Zip: _____

E-Mail Address: _____

This application is for electric service under the City of Russell (“Utility”) Renewable Parallel Generation – Residential Service rate schedule for the above customer (“Customer”). The Customer Generation Facility is a renewable energy Generation Facility as defined in Utility Interconnection Standards for Installation and Parallel Operation of Customer-Owned Renewable Electric Generation Facilities 25 kW_{AC} or Less.

The Generation Facility qualifies for the Renewable Parallel Generation – Residential Service rate as it meets the definitions and requirements of said Interconnection Standards. Total rated output of the Generation Facility under the Renewable Parallel Generation – Residential Service rate schedule, is _____ kW_{AC}. Customer acknowledges that he/she has read the rate schedule and agrees to all terms and conditions contained therein, including without limitation those specified in the Interconnection Standards for Installation and Parallel Operation of Customer-Owned Renewable Electric Generation Facilities 25 kW_{AC} or Less. Specifically, the Customer understands and agrees that an electric meter or meters capable of registering the flow of electricity in each direction must be in service at the facility. If a Utility-approved meter with this capability is not in service, Customer must submit a written request to the Utility to acquire, install, maintain, and read an approved meter at the Customer’s cost. All costs related to installation of said meter or meters shall be borne by the Customer.

Customer acknowledges and agrees that operation of said Generation Facility is intended primarily to offset part of Customer's electricity requirements, and that the Generation Facility is not sized to exceed the annual electric energy requirements of the Customer's premises. Customer further acknowledges and agrees that the Utility shall not provide credit for surplus energy generated by the Generation Facility under the Renewable Parallel Generation – Residential Service rate schedule that exceeds the Customer's annual energy consumption starting January 1 and ending December 31.

Requested By:

Customer Name

Authorized Signature

Date

Approved By:

Name

Utility Signature

Date

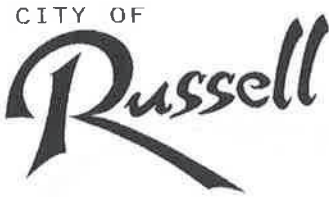
Rejected:

Name

Utility Signature

Reason for Rejection

Date



City Council Agenda Form

Meeting Date: May 15, 2018

Agenda Item Title: Ordinance 1906 Renewable Parallel Generation Residential Service and Rates

Department: Electric

Agenda Item Description: Establishing the Rates of Service for Renewable Residential Parallel Generation Service

Background: In 2010 in response to State Legislative mandated RPS (Renewable Portfolio Standards) utilities began adopting policies to accommodate customer-owned renewable energy sources. While municipalities were exempt from the RPS, there was a strong push for municipalities to voluntarily comply. To establish standards for customers to interconnect and operate customer-owned renewable energy facilities, an Interconnection Standards for Parallel Installation and Operation of Customer-Owned Electric Generating Facilities was adopted to protect the integrity of our system. To establish what credit a customer with a renewable energy generators connected to our system would receive a Net Metering Policy was adopted in 2010. Net Metering, as adopted in 2010, is flawed as it allows the customer to avoid paying for the fixed cost of the service which requires the remaining customers to subsidize those who install behind the meter generation. Staff has been working with Sawvel and Associates to update the policies and procedures for Parallel Generation. The updates will reflect current laws governing Customer Owned Generation, and eliminates "Net Metering".

City Attorney Review/ Comment: 5/1/2018

Funding Source: N/A

Options:

1. Approve Ordinance 1906
2. Give alternate direction/recommendations to staff
3. Take no action - Net Metering remains in place

Staff Recommendation: Approve Ordinance 1906 as presented - providing for renewable parallel generation residential service and establishing the rates of service for the same

Attachment(s): Ordinance 1906 Renewable Parallel Generation Residential Rate Schedule