



# CU Policy 5.02 - Electric Interconnection and Net Metering

APPROVED BY: BOARD OF PUBLIC UTILITIES

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## 1. Introduction

- 1.1. These rules are intended to implement, to the extent practical, the requirements of the Public Utilities Regulatory Policies Act of 1978 (PURPA), Section 210, and the Net Metering and Easy Connection Act, 386.890 R.S.Mo. et seq.
- 1.2. These rules apply to all entities willing and able to enter into an agreement with City Utilities and who have the status of “Qualified Facility” as defined in Paragraph 2.9.
- 1.3. City Utilities is not required to enter into agreements with additional customer-generators after either of the following occurs:
  - 1.3.1. the total rated generating capacity of all Qualifying Facilities equals 5% of City Utilities' single-hour peak load during the previous year; or
  - 1.3.2. the total rated generating capacity of all Qualifying Facilities approved during the calendar year equals or exceeds 1% of City Utilities' single-hour peak load during the previous year.
- 1.4. These rules represent general guidelines since the nature, size, and character of Qualified Facilities can vary widely. City Utilities reserves the right to evaluate Qualified Facilities on a case by case basis.
- 1.5. City Utilities should be notified prior to purchase of any equipment that will be used to generate electricity or interconnect to City Utilities.

## 2. Definitions

- 2.1. Accredited Capacity is the electrical rating given to generating equipment that meets City Utilities’ criteria for uniform rating of generating equipment. This includes but is not limited to reliability, availability, type of equipment, and the degree of coordination between the Qualified Facility and City Utilities.
- 2.2. Customer-generator is a consumer of electric energy who purchases electric energy from City Utilities and is the owner of a qualified net metering unit.
- 2.3. Demand is the average rate in kilowatts at which electric capacity is made available as determined at the point of measurement during any 30-minute period and any other period to be determined by City Utilities.
- 2.4. Firm Capacity is a specified amount of kilowatts available from a Qualified Facility under a contract which specifies that the Firm Capacity:
  - 2.4.1. will be available during City Utilities’ daily and seasonal peak periods; and
  - 2.4.2. may be dispatched by City Utilities.



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- 2.5. Net Energy Metering is a measurement of the difference between the electric energy supplied to a customer-generator by a retail electric supplier and the electric energy generated by a customer-generator that is delivered to the same point of interconnection.
- 2.6. Point of Measurement is the point where energy and/or demand are metered.
- 2.7. Point of Interconnection is the point at which the Qualified Facility is to receive and/or deliver energy or capacity and energy under normal operating conditions.
- 2.8. Prudent Utility Practice consists of the practices, methods, and acts engaged in or approved by a significant portion of the electrical utility industry consistent with reliability, safety, and expedition.
- 2.9. Qualified Facility is a “qualifying facility” under subpart B of PURPA or is a “qualified net metering unit” under the Consumer Clean Energy Act.
  - 2.9.1. Under PURPA, a “qualifying facility” is a small power production facility or cogeneration facility which has applied for and received certification from the Federal Energy Regulatory Commission and has not had its certification revoked.
  - 2.9.2. Under the Consumer Clean Energy Act, a “qualified net metering unit”
    - a) is owned by a customer-generator;
    - b) is a hydrogen fuel cell or is powered by sun, wind or biomass;
    - c) has an electric generating system with a capacity of not more than one hundred kilowatts (100 kW);
    - d) is located on premises that are owned, operated, leased or otherwise controlled by the customer-generator;
    - e) is interconnected with, and operates in parallel and in synchronization with a retail electric supplier; and
    - f) is intended primarily to offset part or all of the customer-generator’s own electric power requirements.
  - 2.9.3. Qualified Facility shall also include the owners and operators of a Qualified Facility.
- 2.10. Retail Electric Supplier is any person that sells electric energy to the ultimate consumer thereof.
- 2.11. Surplus Energy is the electric energy as measured in kilowatt-hours delivered by a Qualified Facility to City Utilities in excess of energy delivered by City Utilities to the Qualified Facility during the billing period. Surplus Energy shall be furnished in the form of either single-phase



or three-phase, alternating current at approximately 60 hertz and at a voltage level approved by City Utilities.

### 3. Interconnection

- 3.1. Applications for interconnection to City Utilities' distribution system shall include a copy of the plans and specifications for the Qualified Facility for review and acceptance by City Utilities. Prior to connection to the distribution system, the Qualified Facility will furnish City Utilities with a certification from a qualified professional electrician or engineer that the installation meets the requirements of this section. Such applications shall be responded to by City Utilities within ninety (90) days. For applications for Qualified Facilities of 10kW or less, City Utilities shall respond in thirty (30) days. Unless otherwise agreed, if the application for interconnection is approved, City Utilities will normally complete the interconnection within thirty (30) days if electric service already exists to the premises.
- 3.2. The Qualified Facility shall comply with all requirements of the National Electrical Safety Code, National Electrical Code, Underwriters Laboratories, Institute of Electrical and Electronic Engineers, the Federal Energy Regulatory Commission, and any other applicable local, state, or national code and operate its equipment according to prudent utility practice. In case of any conflict in the foregoing codes or standards, City Utilities shall decide which shall govern.
- 3.3. City Utilities shall interconnect in parallel with the Qualified Facility. The Qualified Facility shall, to the point of interconnection: furnish, install, operate, and maintain in good order and repair and without cost to City Utilities such relays, locks and seals, breakers, automatic synchronizers, and other control and protective equipment as shall be designated by City Utilities as being required as suitable for the operation of the Qualified Facility in parallel with City Utilities' system. The Qualified Facility shall take appropriate steps to ensure that operating in parallel will not degrade in any fashion the quality of service that is normally maintained on City Utilities' system.
- 3.4. Switching equipment capable of isolating the Qualified Facility from City Utilities' system shall be accessible to City Utilities or its agent at all times. At its option, City Utilities or its agent may choose to operate, without notice or liability, this switching equipment if, in the opinion of City Utilities or its agent, continued operation of the Qualified Facility in connection with City Utilities' system may create or contribute to a system emergency or safety hazard.
- 3.5. The Qualified Facility shall, at least once every year, conduct a test to confirm that it automatically ceases to energize the output (interconnection equipment output voltage goes to zero within two (2) seconds of being disconnected from City Utilities). Disconnecting from City Utilities at the visible disconnect switch and measuring the time required for the unit to cease to energize the output shall satisfy this test. Qualified Facilities with Accredited Capacities of 10 kW or less will not be required to meet the testing requirements of this section or Section 3.6.
- 3.6. The Qualified Facility shall maintain a record of the results of these tests, and upon request, shall provide a copy of the test results to City Utilities.



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- 3.6.1. If the Qualified Facility is unable to provide a copy of the test results upon request, City Utilities shall notify the Qualified Facility by mail that it has thirty (30) days from the date of the request to provide the results of a test.
- 3.6.2. If the Qualified Facility's equipment ever fails this test, the Qualified Facility shall immediately disconnect from City Utilities.
- 3.6.3. If the Qualified Facility does not provide the results of a test to City Utilities within thirty (30) days of receiving a request or the results of the test provided show that the unit is not functioning correctly, City Utilities may immediately disconnect the Qualified Facility.
- 3.6.4. The Qualified Facility shall not be reconnected to City Utilities' electrical system until the unit is repaired and operating in a normal and safe manner.
- 3.7. The Qualified Facility shall indemnify and hold harmless City Utilities from any and all liability arising from the operation and interconnection of the Qualified Facility. The Qualified Facility shall bear full responsibility for the installation and safe operation of the equipment required to generate and deliver energy, or capacity and energy, to the point of interconnection.
- 3.8. The Qualified Facility shall carry no less than one hundred thousand dollars (\$100,000) of liability insurance that provides for coverage of all risk of liability for personal injuries (including death) and damage to property arising out of or caused by the operation of the Qualified Facility. Insurance may be in the form of an existing policy or an endorsement on an existing policy. No insurance shall be required for Qualified Facilities of 10 kW or less.
- 3.9. The minimum facilities required for interconnection with a Qualified Facility are given in this rule. Additional equipment may be required depending upon the size and location of the Qualified Facility.
- 3.10. All synchronizing and protective equipment shall be furnished, maintained, and installed by the Qualified Facility in accordance with the specifications and requirements of City Utilities. It shall be the responsibility of the Qualified Facility to determine and provide whatever equipment is deemed necessary to protect its generation and load facilities from power interruptions, voltage dips, etc., which normally occur on City Utilities' system.
- 3.11. Loads served directly by the Qualified Facility must be connected in such manner as to allow City Utilities to provide service to the load without closing the interconnecting breaker at any time the Qualified Facility is not operating.
- 3.12. In addition to protecting its own equipment, the Qualified Facility shall provide the equipment required to operate its generating facilities in parallel without causing an undesirable, unsafe, or harmful effect to City Utilities' personnel, equipment, or other customers. For Qualified Facilities with an Accredited Capacity over 100 kW, the following equipment is required:



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- 3.12.1. electrically operated interconnecting breaker equipped with thermal overload tripping for backup and equipped with the necessary telemetering required to transmit the breaker position to City Utilities' Dispatch Station;
- 3.12.2. synchronizing relay with interlocking control switch so that the interconnecting breaker cannot be closed unless both systems are in parallel with normal voltage on both sides of the interconnection;
- 3.12.3. isolating switch which is readily accessible to and operable by City Utilities' personnel and interconnected with the Qualified Facility's synchronized breaker such that this breaker will open when the isolating switch is opened;

NOTE: If the Qualified Facility desires to serve its own load during periods of isolation from City Utilities' system, an additional synchronized breaker will be required.

- 3.12.4. overcurrent relay with instantaneous tripping and where the time unit of this relay is set to trip the interconnection if current exceeds the capacity of the Qualified Facility and where the instantaneous unit is set to trip for faults near the interconnection; and
- 3.12.5. voltage relay which is set to trip the interconnection through a lockout relay at any time City Utilities' voltage varies more than 5% above or below normal operating range.

#### 4. Metering

- 4.1. The Qualified Facility shall supply, at no expense to City Utilities, a suitable location for meters and associated equipment.
- 4.2. The Qualified Facility shall provide City Utilities access to plant telephone service or grant public communications access to install communications service for metering purposes. City Utilities will be responsible for installation and modifications required to make communications available at the electric meter set.
- 4.3. City Utilities shall individually measure both the electric energy produced and the electric energy consumed by the Qualified Facility during each billing period using electric metering capable of such function.
- 4.4. All self-generated electric energy shall be metered individually, prior to any electric consumption.

#### 5. Conditions of Service

- 5.1. Availability of electric service to a Qualified Facility shall be subject to the General Terms and Conditions Governing Electric Service and City Utilities' Service Rules and Regulations,



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except as exempted in this rule. The Qualified Facility shall execute a written contract with City Utilities.

5.2. Upon request of a Qualified Facility, City Utilities shall sell any capacity and energy required by the Qualified Facility as defined below:

5.2.1. supplementary power—electric energy or capacity regularly used by a Qualified Facility in addition to that which the Qualified Facility generates itself;

5.2.2. backup power—electric energy or capacity used to replace energy ordinarily generated by a Qualified Facility's own generation equipment during an unscheduled outage of the facility;

5.2.3. interruptible power—electric energy or capacity which is supplied under special contract and subject to interruption by City Utilities; and

5.2.4. maintenance power—electric energy or capacity used by a Qualified Facility during scheduled outages of the facility.

5.3. Electric service to a Qualified Facility requesting supplementary power, back-up power, maintenance power, or a combination shall be billed under the appropriate electric service rate schedule which would be applicable if the Qualified Facility purchased all required energy and capacity from City Utilities.

5.4. All Qualified Facilities larger than 100 kilowatts will be required to maintain a power factor of not less than 85% lagging, at the meter. The cost of power factor improvement equipment, if required, shall be the responsibility of the Qualified Facility. At its option, City Utilities may install a meter to record the kilovar flow to the Qualified Facility.

5.5. City Utilities may discontinue delivery of energy to or receipt of energy from any Qualified Facility during a system emergency, providing that such discontinuance is done equitably among all Qualified Facilities affected by the emergency.

### 6. Credits for Surplus Energy (100 kW or less)

6.1. All electric energy delivered by City Utilities to a Qualified Facility with an Accredited Capacity of 100 kilowatts or less will be netted with any electric energy delivered by the Qualified Facility to City Utilities during the billing period.

6.2. If the quantity of electric energy delivered by City Utilities to the Qualified Facility as supplementary power, back-up power, or maintenance power exceeds the quantity of the electric energy delivered to City Utilities by the Qualified Facility during a billing period, then the Qualified Facility will be billed for the net quantity of the electric energy supplied.

6.3. If there is Surplus Energy during any billing period, then the Qualified Facility will be billed for the Customer Charge in the applicable electric rate schedule and be credited for the quantity



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of the Surplus Energy in accordance with the Standard Rate for Avoided Variable Cost of Generation Schedule.

### 7. Purchase of Energy (More than 100 kW)

- 7.1. City Utilities shall purchase energy from Qualified Facilities with an Accredited Capacity over 100 kW at a rate to be negotiated with the Qualified Facility at the Avoided Variable Cost of Energy (AVCE) Rate.
- 7.2. For Qualified Facilities with an Accredited Capacity over 100 kW, City Utilities shall not net the quantity of energy delivered to a Qualified Facility with the quantity of energy delivered by the Qualified Facility to City Utilities.
- 7.3. All energy used at the site, whether from CU or self-generation, will be totaled and billed at the applicable electric service rate, as assigned by City Utilities. The self-generation will then be credited at the AVCE Rate during each billing period.
- 7.4. Any surplus energy during a billing period shall be credited at the AVCE Rate.
- 7.5. Qualified Facilities with an Accredited Capacity over 100 kW shall reimburse City Utilities for any costs incurred by City Utilities which are required to enable it to purchase energy, such as reinforcement of existing lines and facilities. The Qualified Facility shall provide an advance payment to City Utilities in the amount of 50% of the estimated costs. The remaining 50% may be amortized over the specified term of the contract.

### 8. Calculation of Avoided Variable Costs.

- 8.1. City Utilities shall calculate the avoided variable cost of generating electric energy twice each year.
- 8.2. The calculation of City Utilities' avoided variable costs shall include:
  - 8.2.1. fuel costs – the calculated energy input avoided as a result of purchasing Surplus Energy from the Qualified Facility;
  - 8.2.2. fuel handling costs – the estimated reduction in fuel handling costs (FERC Accounts 501.6 and 501.8) associated with the energy input avoided as a result of purchasing Surplus Energy from the Qualified Facility; and
  - 8.2.3. pollution control costs - the estimated reduction in pollution control expenses (FERC Accounts 501.5, 501.7, 501.9, 502.4, and SO2 allowances), if applicable, resulting from purchasing Surplus Energy from Qualified Facilities in lieu of generating the energy; or
  - 8.2.4. purchased power costs – the purchased power expenses, if any, avoided as a result of purchasing Surplus Energy from the Qualified Facility.





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8.2.5. generation operations and maintenance costs – estimated avoided operations and maintenance costs, as determined by City Utilities’ cost-of-service analyses.

8.3. City Utilities’ avoided variable costs shall be expressed as dollars per kilowatt-hour.

### 9. Purchase of Firm Capacity

9.1. City Utilities shall purchase Firm Capacity, as defined in Paragraph 2.4, from Qualified Facilities also selling energy to City Utilities.

9.2. The Qualified Facility shall execute a written contract with City Utilities.

9.3. The rate paid for Firm Capacity purchased from Qualified Facilities shall be City Utilities’ avoided fixed costs.

9.4. The calculation of City Utilities’ avoided fixed costs shall include:

9.4.1. capital costs – the estimated reduction in debt service, if any, resulting from purchasing Firm Capacity from Qualified Facilities in lieu of acquiring additional generating capacity;

9.4.2. labor costs – the estimated reduction in production labor, if any, resulting from purchasing Firm Capacity from Qualified Facilities in lieu of operating and maintaining additional generating capacity; and

9.4.3. inventory – the estimated present value of any reductions in power production related inventories resulting from purchasing Firm Capacity from Qualified Facilities in lieu of maintaining inventories for additional generating capacity; or

9.4.4. purchased power costs – the estimated reduction in capacity charges for purchased power, if any, occurring as a direct result of purchasing Firm Capacity from the Qualified Facility.

9.5. Unless otherwise negotiated, City Utilities’ avoided fixed costs shall be calculated at the time of the beginning of the term for which the capacity is provided, calculated for the term of the contract, and expressed as dollars per kilowatt per month.

### 10. Transmission to Other Electric Utilities

By mutual agreement, City Utilities will transmit energy or capacity and energy from a Qualified Facility to another utility for purchase by that utility.





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### 11. Availability of Data

- 11.1. City Utilities shall make available to Qualified Facilities certain data from which avoided costs may be derived.
- 11.2. City Utilities shall maintain public records of the total generating capability, the type of generating system and the energy source used by Qualified Facilities. City Utilities shall notify the Missouri Public Service Commission when the total generating capacity of customer-generators meets the limits set forth in Section 1.3, above.