

## UNION ELECTRIC COMPANY

## ELECTRIC SERVICE

MO.P.S.C. SCHEDULE NO. 62nd RevisedSHEET NO. 170CANCELLING MO.P.S.C. SCHEDULE NO. 61st RevisedSHEET NO. 170APPLYING TO MISSOURI SERVICE AREAELECTRIC POWER PURCHASESELECTRIC POWER PURCHASES FROM QUALIFYING FACILITIES**1. \*STANDARD RATES FOR PURCHASE**

The standard rates for purchase from a customer with a design capacity of 100 kW or less are as follows:

**a. Non-Time - Differentiated Energy Rate**

Summer Rate (Applicable during 4 monthly billing periods of June through September)

Summer 2.68¢ per kWh

Winter Rate (Applicable during 8 monthly billing periods of October through May)

Winter 2.47¢ per kWh

**b. Time-Differentiated Energy Rate**

Summer Rate (Applicable during 4 monthly billing periods of June through September)

Weekday (10 AM - 10 PM) 3.35¢ per kWh

Weekday (10 PM - 10 AM) 2.20¢ per kWh

Saturday, Sunday, Holiday (1) 2.47¢ per kWh

Winter Rate (Applicable during 8 monthly billing periods of October through May)

Weekday (10 AM - 10 PM) 2.75¢ per kWh

Weekday (10 PM - 10 AM) 2.34¢ per kWh

Saturday, Sunday, Holiday (1) 2.30¢ per kWh

(1) Legal Holidays of New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Thanksgiving Friday, Christmas Eve Day, and Christmas Day.

**c. Customer Charge (per meter required for parallel operation)**Non-Time Differentiated Energy

Single Phase \$4.00 per month

Three Phase \$6.00 per month

Time Differentiated Energy

Single Phase \$13.00 per month

Three Phase \$15.00 per month

\*Indicated Revision

DATE OF ISSUE February 2, 2017DATE EFFECTIVE March 4, 2017ISSUED BY Michael Moehn  
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**UNION ELECTRIC COMPANY****ELECTRIC SERVICE**MO.P.S.C. SCHEDULE NO. 61st RevisedSHEET NO. 170.1CANCELLING MO.P.S.C. SCHEDULE NO. 6OriginalSHEET NO. 170.1APPLYING TO MISSOURI SERVICE AREA**ELECTRIC POWER PURCHASES****ELECTRIC POWER PURCHASES FROM QUALIFYING FACILITIES (Cont'd.)****2. APPLICATION**

This tariff applies to purchases of electric energy or electric energy and capacity from Qualifying Facilities (hereinafter referred to as "Customer") under the provisions of Rule 4 CSR 240-20.060 of the Missouri Public Service Commission (Commission).

- \* Company shall not be obligated to enter into new contracts or obligations to purchase electric energy or capacity from Qualifying Facilities with a net capacity larger than 20,000 kilowatts as ordered by the Federal Energy Regulatory Commission in Docket No. QM16-2-000 on June 30, 2016.

**3. BILLING**

Monthly billing between Company and Customer shall be in accordance with the Contract between the parties.

**4. CONTRACT**

Whether or not purchases are made by Company under the standard rates, the Company shall not be required to make any purchase from Customer until Company and Customer have entered into a written contract for such purchases.

**5. GENERAL RULES AND REGULATIONS**

All provisions of this tariff are subject to all Commission rules and regulations as may be revised from time-to-time. All terms of the tariff are also subject to the Commission's normal complaint and arbitration procedures.

\*Indicates Addition

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CANCELLING MO.P.S.C. SCHEDULE NO. \_\_\_\_\_

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APPLYING TO MISSOURI SERVICE AREAELECTRIC POWER PURCHASESELECTRIC POWER PURCHASES FROM QUALIFYING FACILITIES (Cont'd.)GUIDELINE TECHNICAL REQUIREMENTS FOR PARALLEL OPERATION WITH THE COMPANY'S SYSTEMIntroduction

The minimum technical requirements for safe parallel operation of Customer-owned electrical generating facilities with the Company's system are set forth below. These requirements will serve as a guide for Company and Customer engineering when planning such an installation; however, it is recognized that each installation may have specific requirements other than those set forth herein as a result of each installation's unique nature.

General Technical Requirements1. Protection

Customer shall install protective devices capable of detecting fault conditions on both his system and the Company's system. These devices will separate Customer's system from the Company's system either directly or through an auxiliary device such as a circuit breaker. The separating device must be capable of interrupting the available fault current. The detection sensitivity and operating speed of these devices must be compatible with protective devices on the Company's system.

The Customer shall install equipment designed to automatically separate his system from the Company's system upon loss of the normal Company supply.

The Customer is responsible for protecting Customer-owned equipment in such a manner that faults or other disturbances on the Company's system or on Customer's system do not cause damage to his equipment.

Customer shall furnish information to Company regarding his proposed generation equipment and protective devices prior to parallel operation. Company will check the adequacy of this proposed equipment and its compatibility with protective devices on the Company's system and will either approve as submitted or specify additional equipment which will be required in order to begin parallel operation with the Company's system.

All protective relay settings that would affect any Company system relay settings will be specified by Company. These relays will be initially calibrated by Company to assure proper operation.

A manual visible disconnect switch must be provided which is under the exclusive jurisdictional control of the Company dispatcher. This manual switch must have the capability to be locked out of service by a Company-authorized switchman.

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APPLYING TO MISSOURI SERVICE AREAELECTRIC POWER PURCHASESELECTRIC POWER PURCHASES FROM QUALIFYING FACILITIES (Cont'd.)General Technical Requirements (Cont'd.)1. Protection (Cont'd.)

The above statements are the basic minimum protection requirements that would be associated with parallel generation. Additional requirements and/or equipment would depend on an in-depth study of each proposed connection.

2. Operation

Under certain conditions the intertie breaker (if one is required) must be operated by Customer in order for Company to operate the manual disconnect switch. Company may request this action for any of the following reasons:

- a. System emergency.
- b. Inspection of Customer's generating equipment or protective equipment reveals an unsafe condition.
- c. Customer's generating equipment interferes with other customers or with the operation of the Company's system.
- d. An outage is scheduled on the Company's supply circuit or feeder.

Customer shall be solely responsible for properly synchronizing his generating equipment with the Company's frequency and voltage. This includes resynchronizing his generator(s) after system outages or disturbances.

3. Quality of Service

The interconnection of Customer's generating equipment with the Company's system shall not cause any reduction in the quality of service being provided to other customers or cause any undesirable effect on any Company facilities.

In order to achieve this objective, wave form guidelines presently applicable to Customer's facility and which are measured at the point of interconnection between the Company and the qualifying facility are as follows:

- a. The phase unbalance must be less than 1%,
- b. The arithmetic sum of harmonics in the current or voltage must be less than 10%, and
- c. The root of the sum of the squares of harmonics in the current or voltage must be less than 5%.

The above lists should be viewed as general guidelines which are subject to change as dictated by experience as well as the unique nature of the electrical system at each point of interconnection.

The power factor of Customer's load with his generating equipment connected shall not be less than that specified by retail tariff for his applicable customer class.

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APPLYING TO MISSOURI SERVICE AREAELECTRIC POWER PURCHASESELECTRIC POWER PURCHASES FROM QUALIFYING FACILITIES (Cont'd.)General Technical Requirements (Cont'd.)4. Metering

Parallel generating facilities connected to Company's system are divided into two groups: (a) "Two-way Power Flow," and (b) "One-way Power Flow." "Two-way Power Flow" would apply to Customer's facilities whose load is sufficiently variable or smaller than its generating capacity so that excess Customer-generated power could flow into the Company's system. "One-way Power Flow" would apply to Customer's facilities whose load is significantly larger than their generating capacity so that no Customer-generated power would flow into the Company's system except under fault conditions.

## a. Two-way Power Flow

This type of installation provides for the interchange of energy in either direction as a normal operating mode.

The revenue metering for Two-way Power Flow installations shall include two series connected watthour meters with detents. One meter shall be connected to measure energy supply to Customer from Company; the other meter shall measure Customer-generated energy supplied to Company. The meter detents prevent operation of either meter in the reverse direction.

Additional metering may or may not be required depending on the terms of the contract between Company and Customer.

## b. One-way Power Flow

This type of installation does not allow the interchange of energy from Customer to the Company.

The intertie circuit breaker will be tripped by equipment capable of detecting the reverse power flow condition toward the Company's system.

This type installation requires a single revenue meter installation with detent to prevent operation of the meter in the reverse direction.

Additional metering may or may not be required depending on the terms of a contract between Company and Customer.

5. Other Requirements

All Customer installations shall adhere to any applicable requirements of the National Electrical Safety Code, the National Electric Code, Institute of Electrical and Electronics Engineers (IEEE), Underwriters Laboratories (UL), local electric codes, applicable NEMA codes, OSHA, and Company's Electric Service Rules as set forth in published tariffs.

Customer will bear all interconnection costs of parallel operation over and above the normal cost to serve his load.

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