

WELLS RURAL ELECTRIC COMPANY

Adopted: March 1976
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RULE NO. 2

DESCRIPTION OF SERVICE

A. General:

- 1. The type of electric service which will be furnished to the member will depend on the location, size and type of load to be served.
- 2. Alternating current service at 60-hertz (cycles per second) frequency will be supplied and at such standard voltages:
- 3. The character of service available at a particular location should be ascertained by inquiry of a service application available on the company’s website. Service availability characteristics include any load service demand restrictions due to limited demand capacity of the company’s electric system at any particular location.

B. Service Delivery Voltages

- 1. All voltages hereinafter referred to on the rate schedules are nominal and refer to the voltage between energized conductors unless stated otherwise. Following are the voltages at which service is supplied, although not all of them are available at each delivery point:

<u>A. Single-phase</u>	<u>Operating limits</u>
120 V. Nominal – 2 wire, grounded neutral	114 to 126 volts
120/240 V. nominal- 3wire, grounded neutral	228 to 252 volts
240/480 V. 3 wire, grounded neutral	456 to 504 volts
<u>B. Three-phase</u>	
120/208 V. Wye – 4 wire, grounded neutral	1197 to 218 volts
120/240 V. 4wire, Delta	228 to 252 volts
240/480 V. 4wire, Delta	456 to 504 volts
277/480 V. Wye - 4 wire, grounded neutral	456 to 504 volts
<u>C. Primary distribution</u>	
7.2/12.5 kV nominal - grounded Wye	12,160 to 13,090 volts
14.4/24.9 kV nominal - grounded Wye	24,320 to 26,190 volts

- 2. Service at other voltages and Transmission service may be supplied on request by special arrangements with the company.

3. It will not be considered a violation of this voltage standard when voltages outside of the prescribed limits are caused by any of the following:
 - A. Action of the elements,
 - B. Service interruptions,
 - C. Infrequent fluctuations
 - D. Voltage control for load management,
 - E. Other causes beyond the control of the company
 - F. Addition of member equipment without proper notification
 - G. The operation of member's equipment.

C. Service Type

1. Single Phase:

- A. Single phase, three wire service will be supplied to all single-phase loads where the capacity of the service entrance does not exceed 400 amperes.
- B. Single phase 120/ 240-volt service will be supplied where the size of any single motor does not exceed 7 1/2 HP or 100 amperes starting current at 240 volts.

2. Three Phase

- A. Three phase service will be supplied for all loads when the single phase capacity of the service is greater than 400 amperes, except where existing company facilities or unusual circumstances make single phase supply necessary.
- B. Combination single phase and three phase service will be supplied three phase four wire through a single watt-hour meter when provided for in company's rate schedule. Services exceeding 400 amperes will require CT (current transformers) meter installations.
- C. Three phase service will be supplied to all permanent installations comprising three phase motors or an aggregate capacity of at least 7½ HP except where, in the opinion of the company, existing facilities make single phase supply necessary.
- D. All instances of three phase motors connected to a single phase service (via a conversion device), where the horsepower equivalent of the 3 phase pump on the single phase terminal is greater than 7.5 HP are required to be reviewed and approved by the company's engineering department.

D. General Load Limitations

1. Where three wire single phase or three-phase service is supplied, the load must be as nearly balanced as practicable between the two sides of a single-phase service or the phases of a three-phase service, respectively. In no case is the load on any one phase of a three-phase service to be greater than ten percent (10%) of any other.
2. Resistance Heating Equipment:
 - A. Any heating unit in excess of 1.65 KW shall be rated at 240 volts and shall be thermostatically controlled. The resistance heating load placed in and out of service shall be in steps of not more than 7 KW in single-phase installations and not more than 21 KW in three phase installations.
 - B. Water heaters shall be approved by Underwriters Laboratories, Inc.
 - C. Water heaters with heating units of a combined capacity greater than 4500 watts shall have the units interlocked so that only one at a time can be energized.
3. Furnaces, Welders, X-Ray Apparatus, Radio Transmitters, Signs, Instantaneous Water Heaters and Similar Apparatus over 10 KW:
 - A. This type of equipment because of its operating characteristics, may at times interfere with satisfactory service to other member/owners.
 - B. Application shall be made to the company in each case to determine the class of service and conditions under which service to such equipment will be supplied, together with the special precautions that must be observed by the member/owner.
4. Electric Motors:
 - A. Motor Protection: Certain protective devices considered necessary for adequate motor protection are recommended hereunder:
 1. Line Starting Protection: Any motor which, in starting, might be damaged by the full line voltage requires some type of protective device to disconnect it from the line during interruptions in service thus protecting the motor when service is restored. The company further recommends that such a device be equipped with a time delay mechanism so that the motor will not be disconnected by momentary fluctuations in voltage which cannot injure it.
 2. Overload Protection: Since the intense heat caused by overload might seriously damage the motor, member/owner should install a

device that will disconnect the motor if overload occurs. Fuses, thermal relays or circuit breakers which are specially designed to operate when excessive current occurs, are the devices used for this purpose. Where member/owner receives three-phase service, the company recommends that such protective devices be connected in all phases.

3. Single Phasing Protection: Where member/owner receives three phase service, a relay should be installed which will disconnect the motor from the lines in the event one phase of the line becomes open.
4. Reverse Phasing Protection: For three phase installations of electric cranes, hoists, elevators, pumps and the like, member/owners should install relays which will disconnect the motor from the line in the event of accidental phase-reversal.

B. Power Factor Correction: Power factor correction capacitors will be required on all electric motors 20 horsepower and above. Correction is required to 95% power factor minimum. It will be the responsibility of the member/owner to obtain the size of the recommended power factor correction capacitors from the manufacturer of the motor. Power factor correction capacitors are to be installed on the motor side of the magnetic contactor or installed such that when the motor is on line the capacitors are on line and when the motor is off line the capacitors are off line.

1. For reduced voltage soft start motor controls, the power factor capacitors may be installed in such a way that during the motor start the capacitors are off line until the motor reaches full line voltage. Then they must be switched on and remain on as long as the motor is running.

5. Irrigation & Large Power Pumps:

A. Required pump panel specifications:

1. Lightning Arrestors
2. Surge Capacitors
3. Magnetic Contractor of Proper Rating
4. (3) Fuses or (3) Pole Breakers of Proper Size
5. Phase Failure Relay
6. Phase Reversal Relay
7. (3) Ambient Compensated Overload Relays
8. Time Delay Relay or Backspin Protection
9. Power factor correction capacitors will be required on all pumps 20 horsepower and above. Correction is required to 95% power factor

minimum.

It will be the responsibility of the member/owner to obtain the size of the recommended power factor correction capacitors from the manufacturer of the motor. Power factor correction capacitors are to be installed on the motor side of the magnetic contactor or installed such that when the motor is on line the capacitors are on line and when the motor is off line the capacitors are off line.

- B. The basic panel must be rain tight and proper N.E.M.A. size for the motor.
 - C. The company requires a suitable type of reduced voltage starting on any pump motor installation over 100 HP.
 - D. These are general specifications and much additional protection is available and may be beneficial if desired by the purchaser.
 - E. Failure to provide the above equipment on a pump panel or equipment improperly installed will allow Wells Rural Electric Company the right to disconnect or refuse to connect such pump.
- E. Impairment or Interference of Service to other Consumers:
- 1. The company shall have the right to refuse service to installations having a load of such nature that may impair or interfere with the service to other member/ owners. Where the type of load is such that it causes power frequency distortion, wide fluctuations in its demand on the company's system, or other problems deemed detrimental, the member/ owner will be required to:
 - A. Install equipment, which will limit this wide variation in demand to a reasonable degree; or guarantee the payment of minimum bills upon the KVA rating of transformer capacity which the company deems necessary to absorb such fluctuations.
 - B. Limit power frequency distortion as defined by IEEE-519 "Recommended Practices and Requirements for Harmonic Control in Electric Power Systems." The established power frequency distortion limits apply to the customer/company interface. These requirements cannot guarantee that interference will not occur to other member/ owners. The installation causing the interference to other member/owners will be required to mitigate the interference.
 - C. The consumer shall reimburse the company for any engineering, investigation, or consultation costs associated with the consumer's impairment or interference problems.

- D. In the event the impairment or interference of service to other consumers requires the company to upgrade its electric system to correct the problem, the installation causing the problem will be required to pay the cost of the electric system upgrade.

F. Consumer Equipment Tolerance to Power Frequency Distortion:

Member/owners equipment must be capable of operating within the power frequency guidelines of IEEE-519 "Recommended Practice and Requirements for Harmonic Control in Electric Power Systems." The power frequency distortion limits recommended establish the maximum voltage distortion at the point of customer/company interface. Equipment susceptible to power frequency distortion, such as electronic and computer equipment must be protected with proper filtering equipment. It is the member/owners responsibility to provide the proper protection filtering equipment.

G. Primary Service

1. Metering at Primary Service Voltages:

- A. If service is furnished at a primary distribution voltage, the company shall have the option of metering at primary or secondary voltages. Consumer must also agree to take service under the 008 Industrial rate Tariff.

2. General Primary Service Interconnection Requirements

- A. The following provisions apply to all Consumers requesting Primary Service interconnection with the Company's electric system. Any exceptions to these requirements must be made in a separate agreement with the Company.

- 1. Primary service shall be available to Consumers with special requirements such as industrial facilities, public utilities, railroads, military installations and communication sites who demonstrate to the reasonable satisfaction of the Company the Company's capability of operating and maintaining primary facilities. Such facilities shall take service from the Company at a rate schedule that provides for primary service.
- 2. The primary service interconnection with the Company's primary service shall be at the Consumer's property boundary.
- 3. The Consumer shall be limited to one primary service connection serving the Consumer's property.
- 4. The Company shall install primary metering at the point of

interconnection.

5. Extension of the Company's primary service transmission or distribution lines to the Consumer's property boundary shall be provided under the Company's Rule 9.
6. All interconnection facilities including primary metering required by the Company shall be provided by the Company under the Company's Rule 9.

3. Company Primary Interconnection Facilities

- A. The Company shall specify the equipment requirements for the interconnection facilities. Facilities shall include but not be limited to metering, communication equipment, protection equipment, and disconnect switches.
- B. The Company shall construct, own, operate and maintain all equipment on the Company's side of the primary service interconnection.

4. Customer Primary Interconnection Facilities

- A. The Consumer shall submit proof to the Company that all licenses, permits, inspections, and approvals necessary for the construction and operation of the Consumer's facilities which have been obtained from applicable federal, state, or local authorities.
- B. The consumer shall submit the designs, plans, and specifications for Consumer's primary interconnection facilities to the Company for review. The Company's acceptance shall not be construed as confirming or endorsing the design, or as a warranty of safety, durability, or reliability. The Company will retain the right to inspect this equipment at its discretion.
- C. The consumer shall provide and maintain adequate protective equipment sufficient to prevent interruption of service to other Consumers on the Company's electric system.
- D. All Consumer interconnection facilities will be constructed and maintained in a manner to be in full compliance with generally accepted utility practices, the National Electric Safety Code, and all other applicable federal, state, and local safety and electrical codes and standards at all times.

H. Miscellaneous:

1. The member/owner shall, at his own risk and expense, furnish, install, inspect and keep in good and safe conditions all electrical wires, apparatus, and equipment of any kind or character which may be required for (1) receiving electrical energy from the lines of the company regardless of the location of the transformers, meters, or other equipment of the company; and (2) applying and utilizing such energy including all necessary protective devices and suitable housing therefore. Member/owner shall so transmit and deliver and be solely responsible for the transmission and delivery of all electric energy over or through member/owner's wires and equipment regardless of the place where such electric energy may be transformed or metered. All of member/owner's wires, apparatus and equipment shall be selected to supply safety, efficiency good voltage regulation, and the highest practicable power factor.
2. The company shall not be responsible for the transmission and delivery of electric energy over or through member/ owner's wires and equipment, or for any loss or damage occasioned thereby, whether to the member/owner or third persons or otherwise or at all.
3. If, for any cause, a member/owner applies for and receives service under a rate schedule not applicable to the class of service taken, on discovery of such error, all bills rendered during the preceding 12 months will be recalculated in accordance with the lowest properly applicable rate schedule, and any excess amount paid by the member/owner shall be refunded by the company, or any balance shall be paid by the member/owner, as the case may be.