



SECTION 9
CHARACTER OF SERVICE – VOLTAGE, FREQUENCY AND PHASE

- A. Electric energy furnished under these Rules and Regulations will be alternating current, sixty (60) hertz single or three-phase, at the standard, nominal voltages specified by the Company. The following nominal voltages are available on the Company's system:
1. Residential Customers: 120/240 volts single-phase
 2. General Service or Light and Power Customers:
 - a. Single-Phase: 120/240 volts (all areas)
 - b. Three-Phase:
 - i. 120/240 volts 4 wire delta: Applicable to existing overhead services (upgrades only)*
 - ii. 240/480 volts 4 wire delta: Applicable to existing overhead services (upgrades only)*
 - iii. 120/208 volts 4 wire wye
 - iv. 277/480 volts 4 wire wye
- * This may be available in some existing underground areas.
- B. The primary voltage supplied will depend on the Customer's load and the system voltage available at that location; it will be specified by the Company. Normally, this will be one of the following nominal distribution or sub-transmission voltages: 7970/13800 volts 4 wire wye, or 46,000 volts 3 wire delta. The actual standard nominal voltages available to a specific Customer will depend on location, load, and type of system in the area and will be specified by the Company.
- C. A Customer must meet certain minimum load requirements in order to qualify for three-phase service under Section 7 and within the Electrical Service Requirements.
- D. The Company does not guarantee the constancy of its voltage or frequency, nor does it guarantee against its loss of one or more phases in a three-phase service. The Company will not be responsible for any damage to the Customer's equipment caused by any or all of these occurrences brought about by circumstances beyond its control.



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E. Motor Protection

The following protective apparatus, to be provided by the Customer, is required on all motor installations:

1. No-Voltage Protection: Motors that cannot be safely subjected to full voltage at starting must be provided with a device to insure that upon failure of voltage, the motors will be disconnected from the line. Said device should be provided with a suitable time delay relay.
2. Overload Protection: All motors whose voltage does not exceed 750 volts are to be provided with approved fuses of proper rating. Where the voltage exceeds 750 volts, protective devices are to be provided. In these cases it will be found desirable to install standard switching equipment. The installation of overload relays and no-voltage releases is recommended on all motors, not only as additional protection, but as a means of reducing the cost of refusing.
3. Phase Reversal: Reverse phase relays and circuit breakers or equivalent devices are recommended on all polyphase installations to protect the installation in case of phase reversal or loss of one phase.

F. Load Fluctuation and Balance

1. Interference with Service: The Company reserves the right to refuse to supply loads of a character that may seriously impair service to any other Customers. In the case of hoist or elevator motors, welding machines, furnaces and other installations of like character where the use of electricity is intermittent or subject to violent fluctuations, the Company may require the Customer to provide at the Customer's own expense suitable equipment to reasonably limit those fluctuations.
2. The Company has the right to discontinue electric service to any Customer who continues to use appliances or other devices, equipment and apparatus detrimental to the service after the Company notifies the Customer of his or her causing detriment to the service.
3. Allowable Instantaneous Starting Current Values: The instantaneous starting current (determined by tests or based on limits guaranteed by manufacturers) drawn from the line by any motor must not exceed a value (as determined by the Company) that may be deemed detrimental to the normal operation of the system. If the starting current of the motor exceeds that value, a starter must be used or other means employed to limit the current to the value specified. A reduced voltage starter may be required for polyphase motors.
4. When three-phase service supplied under a power rate includes incidental lighting, the Customer will supply any necessary lighting transformers and arrange its lighting to give a substantially balanced three-phase load.

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Tucson Electric Power

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(continued)

G. Customer Responsibility for Equipment Used in Receiving Electric Energy

No statement or requirement in these Rules and Regulations can be construed as the assumption of any liability by the Company for any wiring of electrical equipment or the operation of same, installed in, upon, or about the Customer's premises, nor will the Company be responsible for any loss or damage occasioned or caused by the negligence, want of proper care or wrongful act of the Customer, or any of the Customer's agents or employees or licenses on the part of the Customer in installing, maintaining, using, operating, or interfering with any such wiring, machinery or apparatus.

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