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3.01 General:

Electric service connections are limited to electric energy supply and transmission substation and distribution facilities available at time of building construction. Available secondary service voltage classifications will depend upon a customer's location and proximity to existing facilities within an overhead or underground service area.

The standard secondary service is alternating current, 60 hertz, single phase or three-phase. Service must not be used by the customer for purposes other than those specified in the applicable Electric Tariffs. The standard voltage classification for residential service is 120/240 volt single-phase or 120/208 volt two-phase.

3.02 Overhead and Underground Service Area Secondary Voltages:

Single-phase, two-wire, 120 volts.
Single-phase, three-wire, 120/240 volts.
Two-phase, three-wire, 120/208 volts wye.
Three-phase, four-wire, 120/208 volts wye.
Three-phase, four wire 277/480 volts wye.

3.03 Overhead and Underground Electric Facilities:

The electric distribution system is composed of overhead and underground electrical facilities.

As required by City Code, electric distribution facilities will be placed underground in areas subdivided and platted after 1967 within the corporate limits of the City of Colorado Springs pursuant to the operating rules and regulations of Colorado Springs Utilities.

In existing overhead areas, it is Utilities policy to extend and pay for a maximum of two spans of overhead distribution system. The customer is responsible for the costs of any additional extension. The costs of the extension will be collected with an *Extension Contract* or a *Revenue Guarantee Contract.* The Utilities Rules and Regulations, Electric 2.A(1), determine when a *Revenue Guarantee Contract* shall be applied to requests for extensions. When, in the sole judgment of Utilities, the costs to administer a *Revenue Guarantee Contract* are prohibitive, an *Extension Contract* will be administered. Any funds deposited with the *Extension Contract* will be identified as contributions-in-aid-to-construction and are not eligible for refund. The *Extension Contract* will not include the costs of the first two spans of the extension. Total project costs will be included if a *Revenue Guarantee Contract* is administered.

3.04 Electric Line Extension Requirements:

Extension of distribution or transmission facilities to a place of delivery to the customer will be made subject to the City Code and the Electric Tariffs on file with the City Clerk's Office of the City of Colorado Springs.

3.05 Qualification for Three-Phase Service:

a) General:

Customers requesting three-phase service must have enough three-phase load to assure annual revenues that will pay for the cost of the line installation as outlined in the line extension rules. Nominal three-phase loads may be provided if a three-phase primary and transformer are already in place and in use.

A customer should have a minimum of 25 horsepower connected three-phase load or a combined load greater than 40kW as diversified by Colorado Springs Utilities Field Engineering to qualify for three-phase service. Otherwise, the customer may add, at his own expense, an add-a-phase, roto-phase, or similar type device to obtain three-phase service. The 40kW diversity is calculated at the transformer secondary bushings. For minimum requirements, a distribution mainline must be readily available to the customer's lot as determined by Colorado Springs Utilities. If the customer does not qualify and still desires three-phase service, an estimated time and material cost difference for the installed cost of single phase and the installed cost of the three-phase can be paid by the customer.

b) Shell Buildings:

For the purpose of definition, a shell building is any building wherein the customer cannot identify the connected load that the Colorado Springs Utilities must serve. To qualify for three phase service:

1) Office-only buildings will be calculated at the rate of 3 watts per square foot of floor space and will have a minimum of 13,500 square feet of floor space.

2) Office/warehouse combination buildings will be calculated at the rate of 2½ watts per square foot and will have a minimum of 16,000 square feet of floor space.

3) Warehouse-only buildings will be calculated at the rate of 1½ watt per square foot and will have a minimum of 26,500 square feet of floor space.

3.06 Voltage Flicker:

The customer's equipment shall not create voltage flicker in excess of the "border-line of irritation" as specified in the IEEE Standard 519-1992 Figure 10.3*.

*As a protection to service and equipment, motors of ten horsepower and larger are to have such characteristics, or be equipped with a starter of such design, that the instantaneous starting current requirement will be limited to approximately 300% of rated full-load current.
* For residential service only, the use of any single-phase motor will be limited to 125 amps starting current at 240 volts which limits the flicker at the customer's meter to 5% and to 4% at an adjacent customer's meter.

By permission of Colorado Springs Utilities, exceptions to these rules under certain conditions may be permitted. All requests for a variance should be sent to the Colorado Springs Utilities Enhanced Service Engineering Section with the following information:
a. Premise address
b. Premise owner's name and address
c. Horsepower rating.
d. Nameplate full-load amps.

e. Nameplate locked rotor amps.
f. Frequency of starts per time unit.
g. NEMA code letter.
h. Nameplate voltage.

3.07 Three-Phase Motor-Protection Requirements:

All three-phase motors should be provided with protection against over-and under-voltage and single and reversed phasing condition by the customer.

3.08 Power Factor:

The customer should maintain the power factor at the point of delivery as near to unity as practicable. Power factor correction equipment should be switched with the load in such a fashion as to prevent a leading power factor at all times. The customer shall be responsible to correct the leading power factor as deemed necessary by Colorado Springs Utilities. Colorado Springs Utilities will assess a monetary adjustment to any lagging power factor less than 95% in accordance with the applicable Electric Tariff. For information with respect to evaluation of power factor correction needs, contact the Colorado Springs Utilities Enhanced Service Engineering Section (see Phone Section).

3.09 Harmonic Injection:

Harmonic distortion contribution shall be within the IEEE Standard 519-1992 Table 11.1 specified limits. The customer shall be responsible to correct their harmonic distortion contribution or pay Colorado Springs Utilities for required equipment and upgrades to compensate for their harmonic distortion contribution as deemed necessary by Colorado Springs Utilities.

3.10 Emergency Generators:

When an emergency generator is required, it will be installed in such a manner as to eliminate the possibility of operating in parallel with, or back-feeding into the Colorado Springs Utilities electrical system*.

A break before make “Open Transition Return” Automatic Transfer Switch (ATS) will be used for this purpose.

*Customers needing a “momentary” make before break “Closed Transition Return” Automatic Transfer Switch (ATS) shall request approval from the Colorado Springs Utilities Enhanced Service Engineering Section. No such approval can be granted for customers receiving service on the downtown secondary network.

Customers requesting to parallel with Colorado Springs Utilities system other than “momentary” must comply with Interconnecting Distributed Generation requirements (See 3.11).

3.11 Interconnecting Distributed Generation:

It is the policy of Colorado Springs Utilities to allow qualified small power producers and cogenerators to operate in parallel with Colorado Springs Utilities electrical system. Distributed Generation will not be allowed to be connected to the "Secondary Network". This may include but not limited to the following: Photovoltaic, Wind and Fuel Cell Systems.

The Colorado Springs Utilities guidelines for Interconnecting Distributed Resources will be enforced. The interconnection agreement and guidelines can be found online at: www.csu.org/residential/rebates/renew_rebate

Details of each case will be reviewed by the Enhanced Service Engineering Section upon receipt of a letter of request and intent. The customer is urged to discuss the project plans prior to the purchase and installation of equipment.

3.12 System Voltage Transients:

Voltage transients can and will occur on the power system resulting from both normal operation and acts of God. These transients will characteristically be of a short-time duration, low energy, but high magnitude. Sensitive equipment such as computers may be affected by these transients. Due to the nature and origin of these types of transients, special power-conditioning equipment may be required by the customer at the customer's expense for proper equipment operation. For more information, contact the Colorado Springs Utilities Enhanced Service Engineering Section.

3.13 Voltage Levels:

The actual secondary distribution voltage at the customer's meter will vary up to and including +/- 5% of the nominal voltage, depending on circuit location and normal operating needs. This conforms to the ANSI Standard C84.1, which deals with electric power supply and utilization systems. It must be recognized that because of conditions outside Colorado Springs Utilities control, there will be infrequent and limited periods when sustained voltage outside these limits may occur. Additional voltage variation will occur between the meter and the customer's utilization equipment at normal operation.

3.14 Momentary Interruptions and Voltage Sags:

Many modern electronic appliances such as digital clocks, VCRs, microwave ovens, PCs, etc. are extremely sensitive to momentary power interruptions or voltage dips. In order to minimize the duration of outages to all customers when a temporary failure occurs (as caused by nearby or direct lightning strikes to power lines, or by wind, trees, or animals) power circuit breakers and reclosers will trip to clear the fault and automatically reclose within a few seconds to restore service. Customers are encouraged to select electronic appliances with a short-term power outage carryover automatic clock reset feature, which are readily available from most leading manufacturers.

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