



Lodi Electric Utility(LEU)

Rules and Regulations No.2 DESCRIPTION OF SERVICE

Revision: 02

Summary of changes:

Revision	Date	Council Resolution	Summary of Changes	Comments
1	3/22/1989	89-29	-Initial Release	
2	9/4/2019	2019-182	-Revision Page added -Formatting changes -Added being able to change subsurface equipment to current standard padmount equipment -Added references to the "Lodi Municipal Code" -Added "Relocation of Facilities" Section -Added "Non-Residential Customer Requested Scheduled Outages" Section -Added tables where applicable	



Lodi Electric Utility(LEU)

Rules and Regulations No.2 DESCRIPTION OF SERVICE

A. General

1. All electric Service described in this Rule is subject to the conditions in the Lodi Municipal Code and other pertinent rules.
2. Alternating-current Service will be supplied at a frequency of approximately 60 Hertz (cycles per second). The City will endeavor to maintain its frequency within reasonable limits, but does not guarantee same.
3. It is the responsibility of the Customer to determine the type of Service available at any particular location by inquiry at the City's office prior to final design or the purchase of any equipment.
4. In areas where a certain standard Secondary voltage is being served, or is planned to be served, to one or more Customers, Applicants may be required by the City to receive Service at the same standard voltage supplied to existing Customers.
5. It is the responsibility of the Applicant to ascertain and comply with the requirements of governmental authorities having jurisdiction.
6. Service to Customer is normally established at one delivery point, through one meter and at one voltage class. Other arrangements for Service at multiple Points of Interconnection or for Services at more than one voltage class, are permitted only where feasible and with the approval of the City.
7. Direct current will not be supplied by the City.
8. City property/easements are solely for the use of the City in the conveyance and supply of electric power. Customers, or third parties, may not use City property/easements (such as poles or transformers) for any purpose, including but not limited to, supporting Customer equipment (such as private lights or antennas) or supporting advertising or banners. Customer landscaping and property improvements may not impact City property/easements by changing elevation in the vicinity of City



Lodi Electric Utility(LEU)

property/easements, or by limiting the ability of the City to access and work on City facilities/easements. The City has the right to remove Customer or third-party property from City facilities/easements, and to remove any improvement that impacts City property/easements. Customers will be billed for City's cost in correcting infractions to this rule.

9. The City reserves the right to replace subsurface equipment with the current City standard pad mounted equipment. The City has the right to remove any vegetation, fences, or any other type of temporary structure that would otherwise prohibit the installation and/or maintenance of the newly set equipment, except where prohibited by a separate contract.

B. Service Delivery Voltages

1. Following are the standard Service Voltages normally available, although not all of them are available or can be made available at each Point of Interconnection. The utility at its sole discretion may determine that certain voltages are impractical or infeasible to offer at certain locations.

Table 1

Distribution Voltages			Sub-Transmission Voltage
Single-Phase Secondary	Three-Phase Secondary	Three-Phase Primary	Three-Phase
120, 2-wire	240/120, 4-wire	12,000, 3-wire	60,000, 3-wire
120/240, 3-wire	208Y/120, 4-wire	12,000, 4-wire	
120/208, 3-wire	480Y/277, 4-wire		

2. All voltages referred to in this Rule and appearing in some electric service rates are nominal Service Voltages at the Point of Interconnection. The City's facilities are designed and operated to provide sustained Service Voltage at the Point of Interconnection, but the voltage at a particular Point of Interconnection, at a particular time, will vary within a fully satisfactory range of 5% of the nominal values as shown below. The voltage balance between phases will be maintained as close as practicable to 2-1/2% maximum deviation from the average voltage between three phases.



Lodi Electric Utility(LEU)

Table 2

Nominal System Voltages	Minimum Voltage at Point of Interconnection	Maximum Voltage at Point of Interconnection
120V	114V	126V
208V	197V	218V
240V	228V	252V
277V	263V	291V
480V	456V	504V
12,000V	11,400V	12,600V

For purposes of energy conservation, the City's distribution voltage may be regulated to the extent practicable to maintain Service Voltage on distribution circuits within the voltages ranges of 0% to -5%.

3. Voltages may be outside the limits specified when the variations:
 - a. Arise from the temporary action of the elements.
 - b. Are infrequent momentary fluctuations of a short duration.
 - c. Arise from Distribution System interruptions.
 - d. Arise from temporary separation of parts of the Distribution System.
 - e. Are from causes beyond the control of the City.
 - f. Are from material or equipment failure.
4. Where the operation of the Customer's equipment requires unusually stable voltage regulation or other stringent voltage control beyond that supplied by the City in the normal operation of its system, the Customer, at the their own expense, is responsible for installing, owning, operating and maintaining any special or auxiliary equipment on the Load side of the Point of Interconnection as deemed necessary by the Customer.
5. The Customer shall be responsible for designing and operating their system between the Point of Interconnection and the Utilization Equipment to maintain proper Utilization Voltage at the line terminals of the Utilization Equipment.
6. It must be recognized that, because of conditions beyond the control of



Lodi Electric Utility(LEU)

the City or Customer, or both, there will be infrequent and limited periods when sustained voltages outside of the Service Voltage ranges will occur. Utilization Equipment may not operate satisfactorily under these conditions, and City or Customer protective devices may operate to protect the equipment.

7. Customer Utilization Voltages:
 - a. All Customer-owned Utilization Equipment must be designed and rated in accordance with the following Utilization Voltages specified by the ANSI Standard C84.1, if Customer equipment is to give fully satisfactory performance:

Table 3

Nominal Utilization Voltage	Minimum Utilization Voltage	Maximum Utilization Voltage (See note 1)
120V	110V	125V
208V	191V	216V
240V	220V	250V
277V	254V	289V
480V	440V	500V

Note 1: For 120-600 volt nominal systems, voltages in this column are maximum Service Voltages. Maximum Utilization Voltages would not be expected to exceed 126 volts for the nominal system voltage of 120, nor appropriate multiples thereof for other nominal system voltages through 600 volts.

- b. The difference between Service and Utilization Voltages are allowances for voltage drop in Customer wiring. The maximum allowance is 4 volts (120-volt base) for Secondary Service.
- c. Minimum Utilization Voltages from American National Standard C84.1 are shown for Customer information only as the City has no control over voltage drop in Customer's wiring.
- d. The Minimum Utilization Voltages shown in (a) above apply for circuits supplying lighting Loads. The minimum Secondary Utilization Voltages specified by ANSI Standard C84.1 for circuits not supplying lighting Loads are 90% of nominal voltages (108 volts on 120-volt base) for normal service.



Lodi Electric Utility(LEU)

- e. Motors used on 208-volt systems should be rated 200 volts or (for small single-phase motors) 115 volts. Motors rated 230 volts will not perform satisfactorily on these systems and should not be used. Motors rated 220 volts should not be used on 208-volt systems.

8. Voltage Control Within Special Limits:

Where Customer desires voltage control within unusually close limits, it is the Customer's responsibility to provide at their own expense such special or additional equipment as required, or the City may provide such equipment if Customer bears the cost in accordance to Rule No. 15.

C. Connected Load Ratings

1. The connected Load is the sum of the rated capacities of all of the Customer's electric Utilization Equipment that is served through one metering point and that may be operated at one time, computed to the nearest horsepower (hp), kilowatt (kW), or kilovolt ampere (kVA). Motors will be counted at their nameplate rating in hp and all other devices at nameplate rating in kW or kVA. Conversions between hp, kW and/or kVA rating will be made on a one-to-one basis. The City reserves the right to rate any device by actual test.
2. Motor-generator sets shall be rated at the nameplate rating of the alternating-current drive motor of the set.
3.
 - a. X-ray equipment shall be rated at the maximum nameplate kVA input operating at the highest rated output amperes. If the kVA input rating is not shown, it will be determined for single-phase Loads by taking the product of the amperes input rating and the input voltage rating divided by 1000. For three-phase equipment, multiply this product times the square root of three (1.73).
 - b. Where X-ray and welding equipment is separately metered and supplied from a separate transformer installed by the City to serve the X-ray or welding installation only, the kVA rating of the City's transformer or the total equipment input capacity, whichever is smaller, will be considered the rating.
 - c. Welders will be rated in hp at one kVA per hp.
4. Load Balance:

The Customer shall balance their Load as nearly as practicable between the two sides of a three-wire, single-phase Service and



Lodi Electric Utility(LEU)

between all phases of a three-phase Service. The difference in amperes between any two phases at the Customer's peak Load, and for loadings within 50% of the peak Load, shall not be greater than 10% or 50 amperes (at the Service delivery voltage), whichever is greater; except that the difference between the Load on the lighting phase of a four-wire delta Service and the Load on the power phase may be more than these limits. It shall be the responsibility of the Customer to keep their Demand Load balanced within these limits.

D. Welder Service

1. The City will serve welding equipment provided that Service to such welders is not detrimental to the City or to the Service of other City Customers.
2. Any welder exceeding 3 kVA capacity at 50% duty cycle supplied through a residential Service requires advance approval by the City.

E. General Load Limitations

1. Single-Phase Service:
 - a. Single-phase Service will normally be 120/240 volts (or three-wire 120/208 volts at certain locations as now or hereafter established by the City) where any single motor does not exceed 7-1/2 hp. For any single-phase Service, the maximum Demand as determined by the City is limited to the capacity of a 100 kVA transformer. If a Load requires a transformer installation in excess of 100 kVA, the Service normally will be three-phase.
 - b. In locations where the City maintains a 120/208-volt Secondary System, 3-wire single-phase Service will be limited to that which can be supplied by a main switch or Service entrance rating of 200 amperes. Single-phase Loads in these locations in excess of that which can be supplied by a 200 ampere main switch or Service entrance rating will normally be supplied with a 208Y/120 volt, three-phase, 4-wire Service.
2. Three-Phase Service 480 Volts or Less:
 - a. Service normally available from overhead Primary Distribution Systems:



Lodi Electric Utility(LEU)

Table 4

Nominal Voltage	Minimum Load Requirements	Maximum Demand Load Permitted
208Y/120	Demand load justifies a 75 kVA transformer	1,000 kVA
240/120	5 hp, 3-phase connected	300 kVA
480Y/277	30 kVA, 3-phase Demand	3,000 kVA

- b. Service from underground Primary Distribution Systems or from underground taps of overhead Primary Distribution Systems (where the City maintains existing 3-phase Primary circuits):

Table 5

Nominal Voltage	Minimum Load Requirements	Maximum Demand Load Permitted
208Y/120	Demand Load justifies a 75 kVA transformer	1,000 kVA
480Y/277	Demand Load justifies a 75 kVA transformer	3,000 kVA

- c. Where three-phase Service is supplied, the City reserves the right to use single-phase transformers connected wye, open-delta, or closed delta, or three-phase transformers.
- d. Three-phase metering for one Service Voltage supplied to installations on one Premise at one delivery location normally is limited to a maximum of a 2,000 ampere Service rating. Metering for larger installations, or installations having two or more Service switches with a combined rating in excess of 2,000 amperes, or



Lodi Electric Utility(LEU)

Service in excess of the maximum Demand Load permitted, may be installed provided approval of the City has been first obtained as to the number, size, and location of switches, circuits, transformers and related facilities.

3. Three-Phase Service Above 480 Volts:
 - a. Three-phase Demand Loads in excess of 1,500 kVA, but less than 7,000 kVA may, with City approval, be supplied by means of a Primary Service at the Primary distribution voltage available at the location.
 - b. Three-phase Demand Loads in excess of 7000 kVA will normally be served by means of a Primary Service at the Sub-transmission voltage of 60 kV. This Service is available only at select locations.
 - c. Service requirements at 3 phase Primary Voltages, as defined in Table 1, are subject to special negotiation between the City and the Customer. Customers accepting higher distribution voltages will provide and maintain all Distribution Facilities required beyond metered point, and all facilities required for reducing or increasing the City supplied voltage to any other voltage. In addition, Customers applying for Primary Service Voltage will present to the City their maintenance and outage response plan for equipment failure on their side of the meter.

4. Load Balance:

The Customer shall balance their Load as nearly as practicable between the two sides of a three-wire, single-phase Service and between all phases of a three-phase Service. The difference in amperes between any two phases at the Customer's peak Load, and for loadings within 50% of the peak Load, shall not be greater than 10% or 50 amperes (at the Service delivery voltage), whichever is greater; except that the difference between the Load on the lighting phase of a four-wire delta Service and the Load on the power phase may be more than these limits. It shall be the responsibility of the Customer to keep their Demand Load balanced within these limits.



Lodi Electric Utility(LEU)

F. Interference With Service

1. General:

The City reserves the right to refuse to serve new Loads or to continue to supply existing Loads of a size or character that may be detrimental to the City's operations or to the Service of its Customers. Any Customer who operates or plans to operate any equipment such as, but not limited to, pumps, welders, furnaces, compressors, invertors or other equipment where the use of electricity is intermittent, causes intolerable voltage or current fluctuations, or otherwise causes intolerable Service interference, must reasonably limit such interference or restrict the use of such equipment upon request by the City. The Customer is required either to provide and pay for whatever corrective measures are necessary to limit the interference to a level established by the City as reasonable, or avoid the use of such equipment, whether or not the equipment has previously caused interference.

2. Harmful Waveform:

Customers shall not operate equipment that superimposes a current of any frequency or waveform upon the City's system, or draws current from the City's system of a harmful waveform, which causes interference with the City's operations, or the Service to other Customers, or inductive interference to communication facilities.

3. Customer's Responsibility:

Any Customer causing Service interference to others must diligently pursue and take timely corrective action after being given notice and a reasonable time to do so by the City. If the Customer does not take timely corrective action or continues to operate the equipment causing the interference without restriction or limit, the City may, without liability, after giving 5 days written notice to Customer, either install and activate control devices on its facilities that will temporarily prevent the detrimental operation, or discontinue electric Service until a suitable permanent solution is provided by the Customer and it is operational.

4. Motor Starting Current Limitations:

- a. The starting of motors shall be controlled by the Customer, as necessary, to avoid causing voltage fluctuations that will



Lodi Electric Utility(LEU)

be detrimental to the operation of the City's distribution or transmission system, or to the Service of any of the City's Customers.

- b. If the starting current for a single motor installation exceeds the value listed in Table 6 and the resulting voltage disturbance causes or is expected to cause detrimental Service to others, reduced voltage starters or other suitable means must be employed, at the Customer's expense, to limit the voltage fluctuations to a tolerable level.
- c. Motor starting current is defined as the steady state current taken from the supply line with the motor rotor locked, with all other power consuming components, including a current reducing starter, if used, connected in the starting position, and with rated voltage and frequency applied. At its option the City may determine the starting current of a motor by test.
- d. Where Service conditions permit, subject to the City's approval, motor starters may be deferred in the original installation. The City may later order the installation of a suitable starter or other devices when it has been determined that the operation of the Customer's motors interfere with Service to the others. Also, the City may require starting current values lower than those set forth herein where conditions at any point on its system require such reduction to avoid interference with Service to other Customers.
- e. In the case of room and unitary air conditioners, heat pumps or other complete unit equipment on which the nameplate rating is expressed in kVA input and not in hp output the nameplate kVA input rating shall be considered to be the hp rating for use in Table 6. If the nameplate does not show kVA input then it may be determined for single-phase motors by taking the product of the running input line current in amperes times the input voltage rating divided by 1,000. For three-phase motors, multiply this product by the square root of three (1.73).
- f. The starting current values apply only to the installation of a single motor. Starting current reducing equipment may be omitted on the smaller motors or a group installation when their omission will not result in a starting current in excess of the allowable starting current of the largest motor of the group. Where motors start simultaneously they will be treated as a single unit equal to the sum of their individual starting currents.



Lodi Electric Utility(LEU)

- g. The City may limit the maximum size and the type of any motor that may be operated at any specific location on its system to that which in the opinion of the City will not be detrimental to the City's operation or to the Service of its Customers.
- h. Where the design or operation of the Customer's motor is such that unequal starting currents flow in the City's Service conductors the largest starting current in any one set of phase conductors shall be considered the motor starting current.
- i. For installations of motors where the equipment is started automatically by means of float pressure or thermostat devices the City may require the Customer to install at their own expense and in accordance with the City's operating requirements suitable preset time-delay devices to stagger the automatic connection of Load to the supply system and to prevent simultaneous start-up for any reason.
- j. The Customer shall contact the City regarding motors with voltage ratings in excess of 480 volts.
- k. Three-phase motors used where large Loads or special conditions exist may, with specific permission of the City, have starting currents in excess of the values shown in Table 6.
- l. It is the responsibility of the Customer to insure that their own electrical system is capable of handling the starting current permitted without excessive voltage drop.

NORMAL MAXIMUM ALLOWABLE MOTOR STARTING CURRENTS ALTERNATING-CURRENT MOTORS

Table 6

Rated HP Output	Single-Phase Voltage Motor Rating (Service Voltage)	Three-Phase Voltage Motor Rating (Service Voltage)		
	230V (240V)	200V (208V)	230V (240V)	460V (480V)
2	60 amps			
3	80 amps	74 amps	64 amps	32 amps
5	120 amps	106 amps	92 amps	46 amps
7.5	170 amps	146 amps	127 amps	63 amps
10		186 amps	162 amps	81 amps



Lodi Electric Utility(LEU)

15		267 amps	232 amps	116 amps
20		347 amps	302 amps	151 amps
25		428 amps	372 amps	186 amps
30		508 amps	442 amps	221 amps
40		669 amps	582 amps	291 amps
50		830 amps	722 amps	361 amps
60				431 amps
75				536 amps
100				711 amps
Over 100 HP- Contact LEU's Engineering Division				

G. Protective Devices

1. It shall be the Customer's responsibility to furnish, install, inspect and keep in good and safe condition at their own risk and expense, all appropriate protective devices of any kind or character, which may be required to properly protect the Customer's facilities. The City shall not be responsible for any loss or damage occasioned or caused by the negligence, or wrongful act of the Customer or of any of their agents, employees or licensees in omitting, installing maintaining, using, operating or interfering with any such protective devices.
2. It shall be the Customer's responsibility to select, install, and maintain such protective devices as may be necessary to coordinate properly with the City's protective devices to avoid exposing other Customers to unnecessary Service interruptions.
3. It shall be the Customer's responsibility to equip their three-phase motor installations with appropriate devices, or use motors with inherent features to completely disconnect such motors from their power supply, giving particular consideration to the following:
 - a. Protection in each set of phase conductors to prevent damage due to overheating in the event of overload.
 - b. Protection to prevent automatic restarting of motors or motor-driven machinery which has been subjected to a Service interruption and, because of the nature of the machinery itself or the product it handles, cannot safely resume operation automatically.



Lodi Electric Utility(LEU)

- c. Open-phase protection to prevent damage due to overheating in the event of loss of voltage on one phase.
 - d. Reverse-phase protection where appropriate to prevent uncontrolled reversal of motor rotation in the event of accidental phase reversal.
4. The available short-circuit current varies from one location to another, and also depends on the ultimate design characteristics of the City's supply and Service facilities. Consult the City for the ultimate maximum short-circuit current at each Service termination point.
 5. Any non-City-owned emergency standby generation equipment that can be operated to supply power to facilities that are also designed to be supplied from the City's system shall be controlled with suitable protective devices by the Customer to prevent parallel operation with the City's system in a fail-safe manner, such as the use of a double-throw switch to disconnect all conductors. See Rule and Regulation No. 21 for further details.
 6. It shall be the Customer's responsibility to select, install and maintain surge protection devices for protection of sensitive Customer equipment, including but not limited to computers, TV's, microwave ovens, etc. Surges (voltage spikes) occur on any electric power system from time to time. They can be generated by switching of various equipment including Customer-owned equipment, acts of God, accidents, etc. The maximum protection is obtained by locating the surge protection equipment as close as possible (electrically) to the Utilization Equipment being protected.

H. Power Factor Correction

In the case of neon, fluorescent, luminous, gaseous or mercury vapor lighting equipment, electric welders and other devices having low Power Factors, the Customer may be required by the City to provide, at their own expense, the necessary Power Factor corrective equipment to increase the Power Factor of such devices to not less than the value referenced in the "Lodi Municipal Code" – Chapter 13.20 Article III.



Lodi Electric Utility(LEU)

I. Change of Service Delivery Voltage

The City reserves the right to change the Service delivery voltage after giving all involved Customers a minimum of 180 days' notice in writing.

J. Notification of Changes

It is the Customer's responsibility to notify the City (LEU's Engineering Division) of any changes in the character of the Load, e.g. increase of Load, relocation of Service entrance, increase of Service size, change of Service Equipment or any other change that affects the City's electric system.

K. Non-Residential Customer Requested Scheduled Outages

The City will disconnect Service(s), per Customer request, under the following conditions:

1. The Customer shall provide a written request with the necessary information (schedules date, time, site address, purpose of the outage, etc.) to the Electrical Engineering Department with a minimum of seven to ten (7-10) Business Days' notice.
2. The Customer shall pay to the City, prior to scheduling construction, the Estimated Cost of the City's work.
3. If the major parts of this electrical Service(s) are replaced during the outage, the City will require an electrical inspection approved by the community development department prior to re-energizing the Service(s)

(End)