


KISSIMMEE UTILITY AUTHORITY
Engineering and Operations Department

 KUA KISSIMMEE UTILITY AUTHORITY	GUIDELINES & PROCEDURES	Date 6/27/2017
Electric Metering Service Requirements		

Preface: This information herein is not intended to conflict with the National Electric Safety Code, the National Electric Code, or such state or local laws or ordinances as may be in force in the KUA Service Territory. The following guidelines are KUA requirements at the date indicated on the first page of this document. KUA should be contacted for the latest requirements in effect.

Reference Standards: All work associated with the installing or retrofitting of a meter service shall conform to the requirements of applicable codes, standards and all local agencies having jurisdiction. The published edition of the National Electric Code (NFPA-C2 – Latest Edition) and the National Electric Safety Code (IEEE C2-Latest Edition) shall be incorporated into this document as applicable to metering and vertical clearance.

Definitions: Words, phrases, or other expressions used herein this document shall have the following meanings.

“Alternating Current (AC)” : Current which alternates the direction of its flow periodically. The period in which it alternates or changes from original to reverse back from original is a cycle (frequency) measured in Hertz.

“Ampere (amp)” : Unit of measurement of current. Quantity of electrons flowing through a conductor past a given point in one second.

“Branch Circuit” : That portion of the electrical circuit nearest the utilization point behind the main disconnect and the last circuit protective device.

“Cable” : An electrical conductor composed of two or more separately insulated wires banded or twisted together.

“Circuit” : A conductor or system of conductors and other electric equipment through which electric current flows or is intended to flow.

“Circuit Breaker” : An overcurrent device used to protect wiring from excessive current flow.

“Demand” : The magnitude of electric load in operation at an installation. Demand may be expressed in kilowatts, Kilovolt-amperes, or other suitable units.

“Energy” : Electric power consumed over time, generally expressed in kilowatt-hours.

“Flicker” : The momentary variation of voltage level caused by on/off switching of a circuit load.

“Fuse”: A protective device containing a small wire designed to melt when current reaches a value that could damage the conductor for runoff or absorption of excess electrical current.

“Loop”: An electrical circuit that provides two sources of power to a load or substation. Within a loop, when a source is de-energized, the remaining source can continue to provide power.

“Ohm”: A unit of measurement of electrical resistance.

“Point of Attachment (to the customer): That location at which KUA attaches its service to the Customer’s wiring system.

“Point of Delivery”: The point where KUA’s facilities are connected to the service cable serving the customer.

“Resistance”: Property of substance to resist the flow of electric current. A certain amount of energy is required to overcome resistance of an electrical conductor, resulting in some energy loss.

“Service Drop”: The overhead service conductor from the last pole or other aerial support to and including the connections to the service entrance conductors at the building.

“Service Equipment”: The necessary equipment, usually consisting of circuit-breaker or switch, fuses, and their accessories, located near the point of entrance of supply conductors to a building and intended to constitute the main control and means of disconnection for the supply to that building.

“Service Lateral”: The underground service conductor between the transformer, handhole, junction box or pole and the Customer’s terminal box, meter or other enclosure.

“Single Phase”: One phase of a three-phase system.

“Tap”: An electric circuit with limited capacity extending from the main feeder, usually supply a small number of customers.

“Three Phase”: A term applied to circuits or machines utilizing three alternating current voltages, equal in magnitude, separated by 120 electrical degrees.

“Voltage”: The electrical pressure of a circuit expressed in volts. Generally, the nominal rating based on the maximum normal effective difference of potential between the conductors of a circuit.

“Voltage Dip”: A momentary reduction of voltage level.

“Weatherhead”: A device used at the service entrance to prevent water from entering the service mast or riser.

Metering for Electric Service: KUA will furnish the necessary meter based on the information provided regarding the type of electric service being requested by the customer. All electrical energy furnished by KUA shall be determined by the meter’s measurements. If a meter fails

due to a defect not caused by the customer, adjustments will be made. KUA requires individual meters for each separate occupancy unit of commercial establishments, residential buildings, condominiums, cooperatives, marinas, mobile homes and recreational parks.

Access to KUA’s Equipment: Duly authorized agents of KUA shall at all times have access to KUA’s Equipment on the Customer’s premises for the purpose of installing, maintaining, inspecting, & removing KUA property, and shall have access to the premises during normal working hours for the purpose of meter reading. KUA shall not be liable for trespass during the performance of these activities. The customer shall grant or cause to be granted to KUA without cost to KUA, all rights, easements, permits, and privileges which in the opinion of KUA, are necessary for the rendering of service to the Customer.

Service Voltage Available: It is essential that the customer consult KUA Engineering Department before proceeding with the purchase of equipment or installation of wiring. The type of service provided will be determined by KUA based on the character of the customer’s load. The following table will be used as a guide in determining the type of service for which the customer may be qualified.

Typical Service Voltage	Typical Structure Type:	Maximum Service Size:	Pull Wire:
120/240v 1ph 3wire	Single Family (overhead or underground)	200A	KUA
	Single Family (overhead or underground)	400A	KUA
120/240v 1ph 3wire	Condomium (Gang meter set up only)	200A	Cust
	Townhouse (Gang meter pedestal preferred)	200A	Cust
	Townhouse (Individual run meter)	200A	KUA
120/208v 3 ph 3 wire	Apartment Unit (Gang meter set up only)	200A	Cust
120/240v 3ph 4wire Delta	Overhead Service	400A	KUA
	Underground Service	800A	Cust
120/208v 3ph 3wire	Underground Service	200A	Cust
120/208v 3ph 4wire Wye	Overhead Service	400A	KUA
	Underground Service	3000A	Cust
277/480v 3ph 4wire Wye	Overhead Service	400A	KUA
	Underground Service	3000A	Cust

Cust = Customer

For all multi-gang disconnect metered services for apartments & condominiums, it is the responsibility of the customer to pull the electric conductor. For condominiums, it is also a requirement to affix the multi-

gang disconnect metered services to a permanent wall or separate free standing structure. All new apartment structures must be wired for three phase power.

Temporary Electrical Service: KUA has special requirements for temporary service and must be consulted for each case. Installations requiring special service, meter or other work for construction purposes, exhibits for short durations, etc., shall be made at the expense of the customer.

Temporary installation for service entrance, other wiring and meters shall be made and inspected in the same manner as permanent installations. The temporary service drop or temporary construction wires shall not be tied to the customer's permanent panel except for testing purposes.

Temporary service for construction purposes may be either overhead or underground depending on the available service needs. All temporary saw poles or underground pedestals must have a driven ground. All overhead temporary poles must be 16 feet long and be at least a 4"x6" thickness. The disconnect panel must be mounted next to the temporary meter can.

Refer to the Customer Service Department fee schedule for applicable fees and deposits that may be associated with the setting up of a temporary service.

TUG Procedure: Temporary underground service (TUG) is available for residential service where the permanent meter enclosure, meter and riser pipe are configured in a manner that they can be used for temporary service. Due to the fact that TUG is utilized to provide temporary service; as well as, permanent, and at the time of installation the building may not be ready to display a permanent address, the address shall be identified on the meter enclosure.

Upon receipt of the application for TUG service and approval inspection, KUA will install the permanent underground service to the meter enclosure. This service can be used for construction purposes only until the Certificate of Occupancy has been obtained. The builder/developer is responsible for having the service converted and put into the name of the homeowner.

When an electric panel is configured for a TUG, the main line switch and breakers are mounted in the panel with receptacles mounted below the panel. Upon receipt of the customer's contribution for the various fees and final inspection approval from the respective governmental entity, KUA will install the permanent underground service and meter.

Contact either the City or County building departments for the applicable TUG form that you as a developer will need to fill out before contacting KUA.

Permanent Power: Permanent power is defined as the final electric service required to bring the facility to completion for occupancy. When the developer wants such service type, it is his responsibility to contact the applicable inspection agency and to establish an electric account with KUA. When the final inspection clearance and application has been received, KUA will proceed with scheduling the meter to be set.

Within subdivisions in both the City of Kissimmee and Osceola County, an underground service is required. For services 200 amps or less, a 2" gray sch-40 conduit will need to be installed from the transformer or junction box to the meter base. For services 201 amps to 400 amps, a 3" gray sch-40 conduit will need to be installed from the transformer or junction box to the meter base. The meter base height must be within a range of 48 inches to 66 inches. The depth of this conduit must be at least two (2) feet from top of conduit to final grade.

For the limited number of locations that overhead services may be required, the customer shall install a minimum of five (5) feet of service cable beyond the protective weatherhead in order that the required connections can be properly made by KUA. Before guessing whether an overhead service is acceptable, please contact KUA's Engineering Department first.

Additional requirements may be required for your permanent meter service depending on your application, first contact KUA's Engineering Department before proceeding with any work. Other applicable documents associated with permanent electric service are the "Underground Standard Requirements" and the "Facility Connection Requirements". Refer to the Customer Service Department fee schedule for applicable fees and deposits that may be associated with the setting up of a permanent electric service.

Overhead Electric Service Requirements: In areas where the existing distribution system is overhead, overhead services may be allowed. Verify with KUA's Engineering Department before building an overhead service. For overhead service drops, a minimum clearance of 36 inches above the roof is required. Installations where it is not feasible to provide a point of attachment 36 inches above the roof will require the customer to provide and install a secure point of attachment that will meet the clearance requirements of the NESC. All vertical clearances over driveways, roadways, etc., must comply with the clearance requirements of the NESC and the FDOT.

Underground Electrical Service Requirements: KUA's standard method of service is underground. Underground service is available to individual customers; as well as, developments provided certain required conditions are satisfied. Depending on the application, the point of service for underground feeds vary. For single family residential services, the point of service is the meter can location in which the secondary wire from the transformer/secondary box to the meter can is furnished, installed, maintained, and owned by KUA. While for commercial services and gang metered multi-family residential services, the point of service is the transformer/secondary box. Therefore, it is the responsibility of the owner/developer to furnish, install, and maintain the electric service conduit and conductor.

Mobile Home Service Pole: Service poles that have either overhead or underground electric services that feed mobile homes are considered the property of said parcel owner. The metering pole shall be at least 18 feet long so that it can be set in the ground at least 3 feet deep and be pressure treated with a CCA compound. This requirement is so that there will be at least 16.5 feet vertical clearance for the service wire and that it will be rigid enough to withstand 200 lbs of pull at the pole top. The pole diameter shall be have a minimum circumference of 15 inches or at least be a 6" by 6" square pole.

All components such as load side conductors, conduits, conduit straps, electric disconnects, 200 amp meter socket, and mounting hardware shall be furnished and installed by the property owner. The meter socket shall be mounted in a manner that it allows the meter to be inserted and withdrawn without causing movement of the socket.

All new and replacement meter service poles and equipment must meet the requirements of the inspection agency and pass inspection before KUA will energize the service.

Service Point Location Identified: For all underground services, KUA will designate the location for the service point to the building or in some cases a service point remote from the building to which the customer/developer must bring his service conductors. KUA will assume no responsibility for changing the location of the service conductor if an improper location is chosen without consultation with KUA or if the previously designed location is not utilized.

In order to comply with requirements of governmental entities, if it becomes necessary for KUA to make changes in the location of its equipment or to change the character of its service, the customer will, at his expense, make such changes.

For all metered services, KUA will make connections on the line side of the meter socket and the customer/developer shall make connections on the load side of the meter socket.

Electrical Grounding: The grounded neutral conductor of the service entrance conductors shall be grounded in accordance with the NEC, latest edition. All conduits, metallic tubing, and service entrance equipment shall be grounded also in accordance with the latest edition of the NEC. KUA does not allow the installation of foreign grounding conductors within its pad-mounted switchgear and transformers or the attachment of foreign grounding conductors to its ground.

Service Entrance Requirements: Wires carrying metered energy shall not be located in the same raceway with wires carrying un-metered energy. All service entrance conductors must be of sufficient size to conform to the rated ampacity of the service entrance equipment and also be of sufficient size to provide for reasonable future load increases. It is required that the neutral conductor of the service entrance wires be plainly identified. Bare or substantially white insulated wires are sufficient identification.

Wiring Allowed in Meter Can: In self-contained installations, no wiring except the service entrance conductors and grounding conductors may pass through the meter socket. No wiring may pass through the instrument transformer meter socket except that installed by KUA.

Wiring Troughs: All wiring troughs containing un-metered wires shall be of a lockable/sealable type. It is required that the high voltage leg and neutral of four wire delta service entrance conductors be identified in each box, cabinet, switch, or trough through which they pass. They shall also be identified at the weatherhead. Neutral or grounding conductors of any system must be readily identifiable.

The line side high voltage leg of a delta system should always be attached to the top right hand terminal in the meter socket. The load side high voltage leg of a delta system should be connected to the bottom

right terminal of the meter socket.

Gang Meter Location Requirements: For duplex buildings, condominiums, townhouses, apartment buildings, etc., separate sets of service entrance conductors must be brought out to a common point on the building wall to be connected to a single service lateral. If a building wall cannot be attached to, a permanent pedestal wall or permanent grounded stainless steel metal frame must be provided for the common point.

Metering Equipment: KUA will furnish and connect all meters, instrument transformers, and meter control wiring necessary to complete the meter installation on each project location within KUA's territory. Meters for service to residential and commercial customers shall be installed outdoors. Where building mounted CT cabinets are required, it is up to the customer to furnish and install them.

Metering Location – General: The meter location is an important consideration for both the customer and KUA. If there are any obstacles that affect where the meter can be placed, please inform the KUA designer so he can incorporate it into his design. Meter sockets and enclosures shall be securely mounted in a plumb and level position on a solid wall or structure. The customer shall be responsible for securely fastening the meter enclosure in order to withstand the normal forces required to routinely remove and install the meter. Meter enclosures shall not be recessed or framed in any way that blocks access, knockouts, or drainage.

Meter Location – Residential: Meters for single family residential homes shall always be located outdoors and shall normally be on the front half of a side wall, and shall not be enclosed by a fence. Refer to KUA's conduit layout plan for the specific subdivision to determine which side of the house that the meter service is to be located. Meters shall not be located in areas such as carports, open porches, swimming pools, etc which are susceptible to subsequent enclosures by walls or screens. In the event a meter area is later enclosed or otherwise made inaccessible or unsafe, the customer shall, at his expense, have the meter facilities moved to a readily accessible outside location.

Meter Location – Outdoor Commercial: Commercial metering shall normally be installed outdoors. Meters shall be located on a building in a place where they shall be protected from mechanical damage. The location should not be affected by a kitchen discharge fan or other vents, or the drain from a roof gutter or air conditioner and should be free from vibration. The customer is responsible for providing this protection. On new construction, the center of the meter shall not be more than 5.5 feet maximum or less than 4 feet minimum from the final grade or floor. A clear space of at least 48 inches from the front of all meter enclosures shall be maintained from grade to 6 ft. 7 inches height or top of equipment, whichever is greater, minimum of 36 inches wide (18" on each side of center line of meter enclosure) to allow easy and safe access for reading and testing.

Meter Location – Indoor Commercial: When the meter installation requires that they be placed indoors, the meters must be grouped together in a meter room furnished by the customer that is located on the first floor. KUA shall have access to the meter rooms at all times for reading, testing and servicing the equipment. When meters are located in areas that can be locked, the customer shall make

arrangements such that KUA shall have access to the meters at all times. A provided key lock box is acceptable.

Meter Room Requirements: Meters installed inside shall be in a clean, dry, lighted, safe place and be easily accessible. They shall not be located in rest rooms, dressing rooms, bedrooms, kitchens, ventilating or elevator shafts, boiler rooms, laundry rooms, hallways, etc. The meter location must also be free of any other safety type hazard locations.

Using meter rooms for storage or other purposes which cause a degradation in ease of access or adequacy of workspace shall not be allowed. Failure to maintain a safe accessible location for meters shall require that they be relocated to an appropriate location at the customer's expense.

Meter Identification on Multi-Occupancy Buildings: On multi-occupancy buildings, all meter sockets, all individual service disconnect switches, and the main gang meter service disconnect switches shall be plainly and permanently marked with numbers and/or letters by the customer so as to indicate the building address and unit being served. The markings must be either plastic nameplates or embossed metal tags at least ½" high. If grouped meters are within enclosed meter room, additional labeling is required on the door. KUA does not assumed any responsibility for inspecting the customer's equipment or the accuracy of matching premise location as indicated on the meter socket and main service disconnect, but shall have the right to satisfy itself that the service is certified by the local inspection authorities and that it is safe to connect.

Individual Meter Socket Labeling: Any commercial service (including multi-service apartment units) shall have the meter socket clearly marked with a permanent label, showing the service address. The label must be secured with rivets or screws to insure that the label cannot be removed. The lettering shall be a minimum one-half inch high and be either an engraved plastic or embossed metal tag. The service address must also be displayed on the building or permanent structure per 911 requirements.

Meter Height: All single or double meter installations shall have a meter height of 48 inches to 66 inches above final grade to the center of the meter. All multi-unit gang meter installations shall be a minimum of 22 inches to the bottom meter and a maximum of 72 inches to the top meter from final grade. The measured meter height shall be taken two feet away from the meter socket.

Relocation of Electric Service and Meter Equipment: Whenever it becomes necessary to relocate the service entrance and metering equipment of an existing installation, KUA shall be consulted before such work starts. KUA will attempt to minimize interruption of service during the changeover period. Where applicable, additional charges may be necessary for relocation of or changes to power facilities serving the customer especially if the work is performed at the customer's request and for the customer's convenience.

Pulse Metering: If the customer plans on having an energy management system which utilizes meter output pulses, a request for such metering must be made with KUA upfront. All metering conduits shall be supplied and installed by the contractor/customer.

No Connections Ahead of Metering Devices: The connection of any customer owned apparatus or device to the service conductors ahead of KUA owned meters or to the meter socket without KUA authorization is expressly forbidden. All 480 volt self contained meter installations require the installation of a non-fused disconnect switch (provided and installed by the customer) ahead of the meter socket for the safety of KUA's employees. The meter socket, or current transformer cabinet shall not be used as a junction box.

Meter Seals: All enclosures containing un-metered conductors shall be capable of being effectively locked and sealed by KUA. The breaking of seals by other than authorized persons or tampering with KUA meters and measuring devices is prohibited. Where KUA detects that the physical facilities have been tampered with so as to cause an unauthorized electric energy usage, KUA may at any time without notice, discontinue the electric energy supply to the customer and remove its meter and other apparatus until such time as the customer has corrected the condition to KUA's satisfaction.

Current Transformer Metering: The size of current transformers shall be determined by KUA based on the information provided by the customer. Note that current transformer polarity markings must face the line side of the service.

For single phase services greater than 400A service, current transformers are required. Note that the current transformer will not be mounted in single phase pad-mounted transformers due to clearance between phases and ground. A separate enclosure is required for this type of application.

For three phase services greater than 600A service, current transformer are required. KUA prefer method is to mount the applicable current transformer inside the pad-mounted three phase transformer that is dedicated to the individual metered location and place the meter socket on the side of the transformer.

When there are multiple metered services from one transformer and a service requires current transformers, a cabinet mount enclosure must be provided for the current transformers. This cabinet must be painted gray and be of a steel material. A 1.0 inch sch-40 PVC conduit must be installed by the customer from the current transformer cabinet to the approved meter location for termination in the meter enclosure. This distance must not exceed 3 feet. KUA prefers that a non-fused disconnect switch be installed in front of the current transformer metered service when multiple meters are fed from the same transformer and the customer wants to minimize power outages to its tenants when the current transformer meter service is periodically tested.

Index for Meter Base Installations:

Phases	Service	Service Size Amps	Service Type Volts	Socket Type	Meter Form	Reference Notes
1	Residential	0 - 200	3 wire 120/240	4 jaw 200-Amps	2S	1
1	Residential	201-400	3 wire 120/240	K-4 400 Amps	2K	2
1	Residential (CTs)	> 400	3 wire 120/240	8 jaw 20 Amps	5S	4
1	Commercial Self Contained	0-200	3 wire 120/240	4 jaw 200-Amps 4 jaw 200-Amps	2S	3 3,6
1	Commercial Self Contained	201-400	3 wire 120/240	K-4 400 Amps	2K	2
1	Commercial (CTs)	> 400	3 wire 120/240	8 jaw 20 Amps	5S	4
3	Commercial Self Contained	0 - 200	3 wire 120/208	5 jaw 200-Amps	12S	3
3	Commercial Self Contained	201-600	3 wire 120/208 Y	K-7 600 Amps	12K	3
3	Commercial Self Contained	0-200	4 wire 120/208Y 4 wire 120/240 Delta	7 jaw 200 - Amps 7 jaw 200 - Amps	15/16S 15/16S	3 3, 7
3	Commercial Self Contained	0-200	4 wire 277/480 Y 4 wire 240/480	7 jaw 200 - Amps 7 jaw 200 - Amps	15/16S 15/16S	3, 6 3, 6, 7
3	Commercial Self Contained	201-600	4 wire 120/208 Y 4 wire 120/240 Delta	K-7 600 Amps K-7 600 Amps	15/16K 15/16K	5 5, 7
3	Commercial Self Contained	201-600	4 wire 277/480 Y	K-7 600 Amps	15/16K	5, 6
3	Commercial (CTs)	> 600	4 wire 120/208 Y 4 wire 120/240 Delta	13 jaw 20-Amps 13 jaw 20-Amps	8/9S 8/9S	4 4, 7
3	Commercial (CTs)	> 600	4 wire 277/480 Y	13 jaw 20-Amps	8/9S	4

Note 1

Residential Bypass: Residential services do not require a bypass device unless the customer requires one.

Note 2

Single Phase K-Base: This socket type allows for 320 amps continuous up to 400 amps service maximum (intermittent) in a self contained profile. The K-4 meter socket (UL listed) to be installed must have an internal shield. This K-4 meter equipment type is available at the KUA warehouse.

Parallel conductor connectors with a wire size range of #6 through 350 MCM are standard with the “K” socket. In addition #6 through 800 MCM single conductor connectors are available for purchase through the warehouse.

Note 3 – Bypass:

All self-contained commercial service except for the K-4 and K-7 socket type shall incorporate a lever type jaw tension release (make before break), type bypass device. Meter sockets equal to or greater than all Landis & Gyr “HQ” models, Milbank model 1797x, S9551-0 or greater will be accepted. Socketes with aluminum “jaws” will not be permitted.

Fifty amp services may use a less expensive socket but should also incorporate a bypass if the customer will require uninterrupted service. Services for irrigation, ticket booths, and small illuminated signs do not require a bypass.

Note 4 – CT Service:

CT cabinets should only be used when required due to installation/design restrictions (KUA CT service equipment standard installation will be installed on the transformer). The cabinet must be made out of a steel material and be UL listed. The specific size shall be determined per application by the customer.

CTs will be mounted left to right (ABC) and the WHITE POLARITY DOT will always be toward the INCOMING or LINE SIDE.

The meter socket shall not be greater than three feet from the location of the current transformers (CTs). The meter socket and CTs shall be mounted outside. The meter socket, test switch and CTs shall be purchased from KUA and maintained by KUA. All metering equipment (excluding the meter) shall be mounted between three feet and six feet above finished grade. New CT services can be completed in most cases on a next day basis (provided that all proper documentation and inspection have been approved and received). However, due to workloads, the lead time could be three to four days.

Meter wiring must be in its own conduit. It cannot share conduit with the service wiring. The conduit from the CT location to the meter socket must be 1.0 inch diameter.

It is suggested that the meter division be contacted at the earliest possible date after the installation of the meter center. This will allow for a timely completion of the project to enable the service technicians to complete the service installation and apply voltage.

Note 5 – Three Phase K-Base

This socket type allows for 480 amp continuous up to 600 amps service maximum (intermittent) in a self-contained profile. The K-7 meter socket (UL listed) to be installed must have an internal

shield. This K-7 meter socket is available at the KUA warehouse.

Parallel conductor connectors with a wire size range of #6 through 350 MCM are standard with the “K” socket. In addition, #6 through 800 MCM single conductor connectors is available for purchase through the warehouse.

Note 6 – 480v Single Phase Service or 480/277v Three Phase Service

A non-fused disconnect is required to be installed before the meter. This enclosure must be capable of being sealed and locked.

Note 7 – High Leg

Reminder that even though the electrical code may require that the HIGH LEG be in the center of the customer’s equipment, it is still required to be on the right side in ALL METER RELATED EQUIPMENT and marked with orange tape.