MORGAN COUNTY REA

Your Touchstone Energy® Cooperative

MORGAN COUNTY RURAL ELECTRIC ASSOCIATION: THE STANDARD FOR ELECTRIC INSTALLATION AND USE

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INTRODUCTION

Mission: Morgan County Rural Electric Association (MCREA), a member-owned cooperative, is dedicated to serving our members by providing safe, reliable energy with a strong tradition and vision for the future.

This document, “Morgan County Rural Electric Association: The Standard for Electric Installation and Use,” contains the requirements and standards for our members and MCREA to achieve these goals.

This document addresses the installation, service rules, and service quality issues. We have attempted to ensure that all the standards are incompliance with the *National Electrical Code®*, the *National Electrical Safety Code®*, and accepted industry practice.

Information on the rates MCREA offers can be found in our complete Tariffs, which can be obtained from MCREA and are on file with the State of Colorado Public Utilities Commission.

Morgan County Rural Electric Association

FOREWORD

The standards contained in this publication are necessary to enable MCREA to serve all its members and to assist in planning service connections.

New, rewired, altered, or repaired wiring installations intended for connection to MCREA's distribution system shall comply with the standards of MCREA, the National Electrical Code®, and any other codes or regulations in the area served. MCREA does not assume the function of inspecting members' wiring for adequacy, safety, or compliance with electrical codes. The responsibility to coordinate the inspection remains with the members and inspectors.

Questions concerning large and complicated electrical projects should be directed to MCREA's Engineering Department before construction and equipment purchase at 970-867-5688.

Due to constant progress in the development of materials and methods, MCREA may revise this publication from time to time. Revisions are necessary for continued application of work practices. The Engineering Department reviews potential revisions for possible addition to or replacement of the current practice.

MCREA's complete Rates, Rules, and Regulations are contained in the Tariffs, which can be obtained from MCREA and are on file with the State of Colorado Public Utilities Commission.

This publication is available at MCREA's website, http://www.mcrea.org.

SECTION 1

DEFINITIONS

Note: The following definitions are furnished for the appropriate interpretation of this document and are not necessarily universally accepted.

ACCESS POINT

The point is defined by the intersection of the member's property line and MCREA-owned conductors crossing it, which serves that member. When a member is to be served from a distribution line in an easement on the member's property, the access point is the pole for overhead (OH), the switch cabinet bay for primary underground (UG), or the splice box or pedestal for secondary underground (UG) from which MCREA-owned conductors will be fed.

AGENT

One who is authorized to act for another under a contract or relation of agency, for MCREA or the member.

ALTERED

Replacing major components or any integral part of a meter socket, current transformer cabinet, riser, mast, line, or load side conductor, relocating electric service equipment, and upgrading from fuses to breakers (including storm damage).

AMI – ADVANCED METERING INFRASTRUCTURE

An automated system for reading electric registers (indexes), performing meter checks, connects, and disconnects. It also refers to meters allowing AMI.

AMR - AUTOMATED METER READING

An automated method of reading electric registers (indexes). It also refers to meters allowing AMR.

APPLICANT

The property owner, lessee, sub-lessee, agent, contractor, or developer applying for electric service from MCREA.

CLASSIFICATION OF METERING

Commercial and Industrial (See definition for COMMERCIAL, INDUSTRIAL, AND IRRIGATION METERING.) Residential (See definition for RESIDENTIAL METERING.)

CLOSED LOOP

Unmetered electric service

COMMERCIAL, INDUSTRIAL, AND IRRIGATION METERING

Metering of any service used to operate a business, whether or not for profit, shall be considered a commercial or industrial enterprise. Includes metering of all services other than residential.

COMPACTION

The degree of trench backfill density measured relative to displaced and adjacent soil conditions.

CONDUIT
Standard tubular material which is used for mechanical protection of electrical conductors that may be exposed, buried beneath the ground surface, or encased in a building structure as required. (May also be described as DUCT). A protective duct raceway which is installed to accommodate installation or required replacement of electric primary, secondary, and streetlight cables.
Note: The terms Conduit and Duct are used interchangeably for this publication.

CONSTRUCTION TRAILER
A structure built on a permanent chassis designed to be transportable, intended for installation on a site without a permanent foundation.

CONTRACTOR
Any person, company, or corporation acting under contractual agreements for either MCREA or for the member.

CURRENT TRANSFORMER (CT)
An instrument transformer designed for the measurement or control of current.

DIVERSION OF ELECTRICITY
Unauthorized connection to MCREA's electric facilities where electric service is being used and not metered (e.g. when the electric meter has been bypassed without a closed loop authorization from MCREA or tampering with MCREA equipment to cause it not to register energy consumption correctly).

DELIVERY POINT
All voltages referenced in this document pertain to "Service Voltage," the voltage at the delivery point. For MCREA members, the delivery point is the meter. The delivery point is defined as the primary meter in primary metered accounts. Morgan County REA is not responsible for changes in voltage past the delivery point.

EASEMENT
Platted or written legal document describing an area where electric facilities may be installed and maintained.

ELECTRIC DEMAND
A measure of the average amount of electric power, over a specified time frame, in kilowatts required to serve a specific electric area or installation.

ELECTRIC METER
A device for measuring electric energy and demand use in kilowatt hours and kilowatts. The meter is typically the point of electric service delivery from MCREA to the member. (See point of service)

QUALIFYING FACILITY
Any source of energy that can be used to produce electric energy under the terms and conditions of the Morgan County Rural Electric Association Interconnection Agreement which details the conditions of operation in which a facility can connect in parallel with the Association's distribution system.

EMS MARKER
An electronic locating device used to mark the ends of empty conduits or the location of underground and potentially covered at-grade electric structures.

EMT
Electric Metallic Tubing (*NEC*®)

EXTENSION AGREEMENT/LINE EXTENSION AGREEMENT
The Line Extension Policy defines the terms and conditions for constructing an electric line extension to provide electric service to a member or development.

FEEDER
Three-phase primary voltage electric distribution lines; 12,470 volts phase to phase function as ties between electric substations and the primary source of electric service to subdivisions and developments.

FLAT TAP
Unmetered electric service

GAIN
Cutting a flat spot into a pole or attaching a metal device to a pole with a flat surface on one side.

GRC
Galvanized Rigid Conduit (*NEC*®)

GUTTER
Any channel for holding bus bars, cables, or wires; designed for this purpose.

HOT SEQUENCE METERING
Where electric meter is connected directly to the service conductors without using a fault-current limiting disconnect or meter safety-switch device between the electric meter and the supply source.

INSPECTOR
The electrical inspector of the local Public Authority.

INSTRUMENT TRANSFORMER
A transformer that reproduces, in its secondary circuit, the voltage or current proportional to its primary circuit.

JOINT USE
Use of a trench or overhead pole line for installation of multiple dry utility systems, including electric, communication, and cable television.

JOINT USE AGREEMENT
A contractual agreement between MCREA and a third party that allows the use of Morgan County REA property or facilities.

JUMPERED
Temporary unmetered electric service. (See definitions for CLOSED LOOP and FLAT TAP.)

MANUFACTURED HOME
A structure that is transportable and intended for installation on a permanent foundation meeting the definition of a Manufactured Home as defined in 2023® *NEC* Article 550.2, or as may be amended.

MCREA
Abbreviation for Morgan County Rural Electric Association that can be used interchangeably.

MCREA OWNED/RENTAL LIGHT
MCREA installed and maintained light fixtures with a flat monthly fee paid by the member.

MEANS OF ATTACHMENT
Fittings used to attach service-drop conductors.

MEMBER
The applicant or user of electric service in whose name the service with MCREA is listed.

MEMBER-GENERATOR
The end-use electric member that generates electricity on the member side of the meter using eligible energy resources.

METER/METERING EQUIPMENT
The equipment necessary to measure the member's electric energy use and demand includes a meter socket, instrument transformers, a protective device, and a meter.

METER PEDESTAL (COMMERCIAL)
Free-standing meter housing is installed by the member, developer, or government agency to connect member-owned and maintained secondary voltage facilities such as irrigation timers, entrance monument lighting, common area lighting, traffic signals, etc.

METER PEDESTAL (RESIDENTIAL)
MCREA installed free-standing meter housing as part of a front-lot electric distribution system in a subdivision or individual residential lots to connect member-installed residential electric service laterals.

MEMBER OWNED LIGHT
Light fixtures are installed on the load side of the meter by the member and maintained by the member**,** with the usage being billed monthly.

MINIMUM SYSTEM
The portion of an electric distribution system required to serve a specific member or development to be paid for by the developer in situations where MCREA elects to upgrade a portion of the electric line extension or distribution system at their own expense.

MOBILE HOME
A structure built on a permanent chassis designed to be transportable and intended for installation on a site without a permanent foundation.

MORGAN COUNTY RURAL ELECTRIC ASSOCIATION PROPERTY
All lines, wires, apparatus, instruments, meters, load management equipment, transformers, and materials supplied by MCREA at its expense or under its standard policies.

MORGAN COUNTY RURAL ELECTRIC ASSOCIATION REPRESENTATIVE
MCREA employee authorized to perform specific tasks.

MULTIPLE METER CENTER (BANK/RACK)
A pre-assembled multiple metering unit, or fabricated meter center using meter sockets, where two or more members are metered at a common location.

NEC® – NATIONAL ELECTRICAL CODE®
A publication of the National Fire Protection Association, Inc. Applicable to the Member side of any installation, not the MCREA equipment.

NESC® – NATIONAL ELECTRICAL SAFETY CODE®
A publication of the Institute of Electrical and Electronic Engineers, Inc. as adopted by ANSI. List of codes applicable to Morgan County Rural Electric Association for installing electric equipment.

NET METERING
Morgan County REA will allow a Member-Generator's retail electric consumption to offset the electricity generated from a qualifying facility.

NOMINAL VOLTAGE
Designation of the normal effective difference in potential value between any two appropriate circuit conductors.

POINT OF ATTACHMENT
The point at which the service-drop conductors are attached to a building or other structure.

POINT OF DELIVERY
Point where MCREA's electric facilities are first connected to the electric facilities of the member.

POINT OF SERVICE (DELIVERY)
The point at which MCREA connects service to the member. Exceptions: The overhead commercial delivery point is the member's weatherhead. The underground commercial member point of service is the secondary bushing on the pad-mounted transformer.

POTHOLE
Excavation or vacuum excavation to determine the actual horizontal and vertical location of an existing underground utility facility.

PRIMARY METERING
Members who choose or are required by Morgan County REA to install and maintain their own electric distribution system are metered at a primary voltage of 7,200 volts single-phase or 12,470 volts three-phase or at a sub-transmission voltage of 69,000 volts.

PUBLIC AUTHORITY
The municipal, county, or state authorities require permits and have inspectors and jurisdiction to inspect electrical installations.

PULLBOX (SPLICE-BOX)
Electric equipment installed flush with final grade in conjunction with electric distribution lines to facilitate installation of long segments of electric distribution lines installed in conduit systems.

PVC
Polyvinyl Chloride (*NEC®*)

RESIDENTIAL METERING
Metering of services used for the exclusive use of the individual member for domestic purposes.

READILY ACCESSIBLE
Defined as an area that can be casually accessed through a doorway, ramp, window, stairway, or permanently mounted ladder by a person on foot who neither exerts extraordinary physical effort nor employs special tools or devices to gain entry. A permanently mounted ladder is not considered a means of access if the bottom rung is 8 ft or more from the ground or other permanently installed accessible surface.

REPAIRED
Service equipment in need of any repair, such as damaged meter socket, riser, and mast (including storm damage).

REWIRED
Upgrading of any existing service equipment, including secondary conductors.

RISER POLE
Pole installed in an overhead electric line for the purpose of connecting and extending electric distribution lines underground to provide service to members, subdivisions and other facilities requiring electric service.

SECONDARY CONDUCTORS
That part of MCREA's distribution system which connects the secondaries of MCREA's distribution transformers to the service drop or service lateral.

SECONDARY PEDESTAL
Electric equipment installed above or at final grade in conjunction with electric distribution lines to provide service directly to residences and other facilities requiring electric service.

SECONDARY DISTRIBUTION VOLTAGE
Low voltage three-phase (120/208 volts, 120/240/208 or 277/480 volts), or single-phase (120/240 volts) electric cable to distribute electricity from transformers overhead from pole to pole or underground to transformers to secondary or meter pedestals.

SECTIONALIZING CABINET
Electric equipment installed above grade in conjunction with underground electric distribution lines to provide a tap point or junction point for two or more three-phase or single-phase primary electric cables.

SERVICE
The furnishing of electric energy for the exclusive use of the individual member.

SERVICE CONNECTION CABINET
The cabinet required when the number and size of conductors exceed MCREA's limit for terminating in a specified pad-mounted transformer.

SERVICE DROP
The overhead service conductors from the last distribution pole or other aerial distribution support to and including the splices connecting the service-entrance conductors at the building or other structure.

SERVICE-ENTRANCE CONDUCTORS, OVERHEAD SYSTEM
The service conductors between the terminals of the member's service equipment and the point of connection to the service drop conductors.

SERVICE-ENTRANCE CONDUCTORS, UNDERGROUND SYSTEM
The service conductors between the terminals of the member's service equipment and the point of connection to the service lateral.

SERVICE EQUIPMENT
Necessary equipment, usually consisting of a circuit breaker or fuseable disconnect switch and their accessories, located near the point of entrance of the supply conductors to a building and intended to constitute the main control and means of cutoff for the supply to that building.

SERVICE LATERAL
The underground service conductors between the MCREA secondary distribution system and transformer terminals and the connection to the service-entrance conductors in a terminal box or meter socket located outside the building wall. Where the meter is located in the building, and no terminal box exists outside the building, the point of connection shall be considered the point of entrance of the service conductors into the building.

SERVICE MAST
The conduit containing the service-entrance conductors where the point of attachment and the connection between the service drop and the service-entrance conductors are located **above** the roofline. The conduit extends to a point, and the weather head is above the roof eave. The conduit passes through the eaves of the building or extends past the roofline without passing through the eave. The means of attachment is attached to the service mast.

SERVICE RISER
The conduit containing the service-entrance conductors where the point of attachment and the connection between the service drop and the service-entrance conductors is located on a pole or **below** the roofline of the building being served. The conduit extends to a point, and the weather head is below the roof eave. The means of attachment is secured to the pole or building and is not attached to the service riser.

SERVICE TERRITORY
The certificated boundary of the area within which a specific utility is authorized to provide service. *Note: MCREA service territory map can be found at MCREA's website: www.mcrea.org/service-area.*

SINGLE-PHASE PRIMARY DISTRIBUTION LINE
Single high voltage electric line and neutral; 7,200 volts required to distribute electricity overhead from pole to pole or underground from switchgear or sectionalizing cabinets to transformers.

STEADY STATE
For the purposes of this document, Morgan County REA needs to define a time frame for measurements of various quantities of power, including current, voltage, demand, and power factor. For the purpose of a non-transient situation, we will refer to this as Steady State values. The steady state value is the RMS value averaged over no less than 15 minutes.

STREET CROSSING CONDUIT
The member or subdivision developer installs a conduit sleeve across streets or other obstructions prior to and allowing for subsequent electric distribution system installation.

STREET LIGHTS
Pole mounted lights installed and maintained by MCREA along dedicated public streets.

STREET LIGHTS - CDOT
CDOT maintains street lights along Interstate 76 with service and monthly billing provided by Morgan County REA.

STREET LIGHTS - SHARED
Street lights within a municipality or subdivision where the costs are shared equally between the residents.

STREET LIGHTS – YARD LIGHTS
Light fixtures installed to illuminate a member's property.

SUBSTATION
An electric facility that transforms power from typical transmission voltages of 115,000, 230,000, or 345,000 volts; sub-transmission voltage of 69,000 volts, to distribution voltage of 12,470 or 24.900 volts within the MCREA service territory.

SWITCHGEAR
Electric equipment installed above grade in conjunction with an underground electric feeder line that serves as a fuse tap point for distributing electric service throughout a subdivision, development or other defined area or to individual members.

TEMPORARY SERVICE
Metered electric service to provide service for construction or a temporary activity or event.

THREE-PHASE PRIMARY DISTRIBUTION LINE
Three high-voltage electric lines and neutral. 12,470 volts are required to distribute electricity overhead from pole to pole or underground from switchgear or sectionalizing cabinets to transformers.

TRANSFORMER
Electric equipment installed on poles or pad mounted above grade in conjunction with electric distribution lines to reduce high (primary) voltage to low (secondary) voltage for providing service directly to residential, irrigation, or commercial members.

TRANSIENT
For the purposes of this document, Morgan County REA needs to define a time frame for measurements of various quantities of power, including current, voltage, demand, and power factor. Transient will be used to refer to the measurement of any quantity for less than the time from Steady State or 15 minutes.

TRANSMISSION LINES
Overhead electric lines that deliver high voltage power from generating stations to electric substations.

URD (UNDERGROUND RESIDENTIAL DISTRIBUTION)
The underground electric distribution system installed within a residential subdivision including trench, cable, conduit, transformers, secondary pedestals, meter pedestals, streetlights, sectionalizing cabinets, switchgear, and pullboxes.

UTILITY LOCATES
Field marking of alignments of existing underground utility facilities. Utility locates are required before excavation can commence and are requested to the Utility Notification Center of Colorado (UNCC) by calling 811 or by requesting a locate online at www.colorado811.org.

VOLTAGE TRANSFORMER (VT or PT)
An instrument transformer intended to measure or control a circuit is designed to have its primary winding connected in parallel with the circuit.

VOLTAGE UNBALANCE
Maximum voltage deviation from average voltage.

SECTION 2

GENERAL INFORMATION

Morgan County REA has filed its Rules and Regulations with the local Public Authority as a part of the Tariffs, which set forth the terms and conditions under which electric service is supplied and govern all classes of service in all territories MCREA serves. The Tariffs are available for any member's inspection at the offices of MCREA. Service furnished by MCREA is also subject to: the *National Electrical Code*® and the National Electrical Safety Code®.

MCREA assumes no responsibility for the manufacturers', suppliers', electricians', or engineering consultants' compliance with all applicable *NEC*® and *NESC*® codes and all local and state codes. Any waiver at any time of MCREA's rights or privileges under the Rules and Regulations will not be deemed a waiver as to any breach or other matter subsequently occurring. The following are brief statements of operating rules and practices that affect most connections made to MCREA's lines. Where information not included herein is needed, a Morgan County REA Representative will assist.

EFFECTIVE DATE

This edition of the Morgan County Rural Electric Association Standard for Electric Installation and Use may be used at any time on or after the publication date. Additionally, this edition shall become effective no later than August 1, 2024

INTENT

The word "shall" indicates provisions that are mandatory.

The word "should" indicates acceptable and practical provisions for the specified conditions.

The word "may" indicates possibility.

The words "recommend" and "recommended" indicate provisions considered desirable but not intended to be mandatory.

Exceptions to a rule have the same force and effect required or allowed by the rule to which the exception applies. All requests for exceptions will not be granted.

Requirements of the *NEC*®, *NESC*®, or the Public Authority, which are more stringent than the document's requirements, will take precedence.

APPLICATION FOR SERVICE

The member may contact the MCREA Engineering Department to secure information relative to any application for new electric service connections or changes in existing service. Contact information and telephone numbers for MCREA can be found at the end of this section or on the company

website, www.mcrea.org.

Before an electric service connection can be made to the member's (applicant's) wiring system, it is necessary that:

1. The member has submitted a complete application, including required submittals, for service.
2. The applicant has met all requirements of the Morgan County Rural Electric Association Standards for Electric Installation and Use and the Rates, Rules, Regulations, and Extension Policy in effect and on file at the time of application.
3. MCREA has completed its construction.
4. The Public Authority has notified MCREA of approval of the member's installation of equipment and facilities by providing an inspection release.

Where no Public Authority has jurisdiction, MCREA, for the member's protection, may require written confirmation from the wiring electrician that the member's installation conforms to the *National Electrical Code®.*

MCREA does not assume responsibility for the design, operation, or condition of the member's installation. MCREA may make service available from either overhead or underground facilities. In cases where there are aesthetic considerations or where complicated overhead physical situations exist, MCREA may recommend the installation of underground facilities.

MCREA will not install facilities to serve a member until the member agrees to take the service under the applicable Rate Schedule, and all applicable charges for construction and service, as required by MCREA's Extension Policy, are paid to MCREA. Additional costs incurred for digging in frost conditions when insufficient time was provided to estimate, plan, schedule, and construct the necessary facilities prior to the onset of frost conditions will be paid by the member as a non-refundable charge.

MCREA shall not be required to make an extension under any circumstances that would be unprofitable and thereby cause undue hardship upon other members of MCREA.

MCREA must be consulted before finalizing the member's plans regarding MCREA's electric service requirements.

RATE SCHEDULES

Electric service is supplied to members under MCREA's established rates, rules, regulations, and marketing programs as approved by the Morgan County REA Board of Directors. Rate information for residential, irrigation, and commercial members, covering rate schedules and their application, is available from MCREA upon request. MCREA Representatives will assist the member in understanding MCREA's rates and applying them to their load conditions.

SERVICE AND LIMITATIONS

Service will be rendered to the member from MCREA's nearest suitable power line of sufficient capacity to furnish adequate service at the service voltage available. The member shall not use the

service for purposes other than those specified in the applicable Rate Schedule.

CLOSED LOOP / FLAT TAP / JUMPERED

Unmetered secondary service is not allowed in the service territory for new construction, with emergencies being the only exception. Refer to Section 4, METERING, Closed Loop Temporary Unmetered Services.

CONNECTION

MCREA shall make a connection to or disconnection from MCREA's distribution system. Under no circumstances will the member be permitted to climb MCREA's poles, access MCREA's underground facilities, or make connections to MCREA's lines, except as specified in SAFETY, Unlock, Open, and De-energize any Electric Power Equipment Procedures in this Section.

MCREA shall be notified when it is necessary to cut the meter seal due to situations where the electric service must be disconnected during an emergency or where it is necessary to access the meter socket by a qualified person. No persons other than employees or agents of MCREA may relocate meters or other equipment owned by MCREA.

MEMBER-OWNED METER EQUIPMENT RESTRICTIONS

Under no circumstances shall members' equipment:

1. Be connected to, or in any way be served from, the secondary terminals of the voltage and current metering transformers.
2. Be installed within any metering enclosures including, but not limited to, metering transformer cabinets, transformer compartments, or meter sockets.
3. Be connected to an unmetered bus or conductor.
4. Plug-in devices, such as surge suppression between the meter and the socket, are not allowed.

DIVERSION OF ELECTRICITY

Under no circumstances shall devices or attachments be connected to MCREA's facilities in such a manner as to permit the use of unmetered energy except in emergencies where specifically authorized by MCREA. Refer to Section 4. METERING, Closed Loop Temporary Unmetered Services.

EASEMENTS FOR MORGAN COUNTY REA'S FACILITIES

The member shall provide, at the request of and at no cost to MCREA, necessary easements and suitable land area or building space owned and controlled by the member for installation, construction, reconstruction, maintenance, operation, control and use of MCREA's overhead and underground facilities.

MEMBER'S RESPONSIBILITY

The member shall give authorized employees of MCREA access at all reasonable times to the premises of the member to obtain information concerning connected load, to measure or test service, to read meters, or for other purposes incidental to supplying electric service.

It is the member's responsibility to adequately protect MCREA's equipment located on the member's property against damage. The member shall be responsible for any damages or loss resulting from improper protection or neglect.

Pad-mounted transformers, switchgear, and metering equipment shall be installed with adequate clearances for normal maintenance work as specified in Section 5, and Figures 1UM, 2UM, 3UM and 4UM in Section 11, Drawings and Illustrations. Underground distribution facilities will not be installed until the property is to the final grade (±6 inches), the property pins are installed, the structure is staked, or the foundation is installed as applicable. Grade at pad-mounted equipment shall be to plus or minus 6" of final grade. Whenever MCREA deems it necessary, the member shall provide an MCREA-approved conduit. This will be required in locations that are not readily accessible by MCREA, such as under driveways, roads, parking lots, sidewalks, patios, etc.

Members shall connect their equipment so that the load at the point of delivery will be balanced as nearly as practicable. Where three-phase service is supplied, the member will attempt to connect equipment so that the load in any one phase at the point of delivery will not exceed the load in any other phase by more than ten (10) percent. Refer to Section 6, THREE-PHASE VOLTAGE UNBALANCE.

MEMBER-OWNED FACILITIES

Distribution facilities, either overhead or underground, beyond MCREA's point of delivery, are to be installed, maintained, and operated by the member under all the following conditions:

1. All energy is to be metered at one location.
2. Each installation is subject to the provisions of MCREA's Rules and Regulations, the applicable Rate Schedule, and MCREA's approval.
3. Under rates providing for delivery at secondary voltages, MCREA will install and maintain only a single transformer installation for the member, except as specified in Section 4, SERVICES.
4. MCREA will not install or permit any member-owned equipment on MCREA poles: meter sockets, metering equipment, distribution wires, posters, banners, placards, radio or television aerials, or other objects or devices. Only if requests are made by a governmental authority responsible for the public right-of-way and approved by MCREA can banners be attached to or strung from one steel streetlight standard to another. *Exception: Attachments are allowed on MCREA secondary lift or meter pole. Wires for municipal fire alarm systems, police signal systems, members' underground service extensions to the overhead system, members' dead-end equipment, or equipment covered by the Joint Use Agreement. Note: Meter sockets and other metering equipment shall not be installed on MCREA poles unless specifically covered by the Joint Use agreement.*
5. Foreign attachments such as, but not limited to, CATV, phone loops, grounding clamps, etc., are not permitted to be attached or connected to meter/metering equipment, service riser, or service mast. Refer to 2023 *NEC®* Article 230-28, or as may be amended.

6. The member's distribution system shall conform with the *National Electrical Code®*, the wiring regulation of the Public Authority, and MCREA's Rules and Regulations.
7. The distribution facilities of the member beyond the point of delivery shall be connected to MCREA's distribution system at one central point through protective devices approved by MCREA, installed and maintained at the expense of the member.
8. Members shall maintain their distribution system in a safe operating condition so that it does not constitute a hazard to themselves or other members or persons. MCREA assumes no responsibility for inspecting the member's lines and facilities and shall not be liable for injury to persons or damage to property when occurring on or caused by the member's lines or equipment.
9. The member shall install, own, operate, and maintain distribution facilities beyond the point of delivery. Such facilities shall be located on and traverse only land owned or controlled by the member. A member who is taking service under a commercial or industrial rate may cross dedicated public streets, alleys, or other public ways upon approval of MCREA and the public body having jurisdiction, so long as such facilities are necessary for serving member's contiguous buildings or locations which are separated only by such streets, alleys, and ways, and provided that such contiguous buildings or locations are used for an integral purpose. The member's distribution facilities shall be installed in compliance with the National Electrical Code®, the wiring requirements of the public body having jurisdiction, and MCREA's Rules and Regulations.
10. Refer to Section 4 for additional requirements for member-owned facilities.

SAFETY

Refer to federal regulations and Colorado state laws concerning safety requirements for working on or near high voltage electric power lines of public utilities, which produce, transmit, or deliver electricity. The following explanations should not be regarded as a substitute for reading the laws but are meant to highlight some of the major points.

OVERHEAD SAFETY

Danger: Overhead wires and conductors carry thousands of volts of electricity and are not insulated for protection from contact. Extreme care must be exercised when working near overhead facilities and lines. OSHA Rule 9-2.5-102 and 9-2.5-103.

Each year, a number of accidents involving contact with high-voltage overhead lines occur, often resulting in serious injury or death. In an effort to prevent these types of accidents, laws have been enacted to provide safer working conditions in areas around high-voltage overhead lines.

With few exceptions, these laws apply to any person or business entity contracting to do work or perform any activity that may bring an individual or equipment within 10 feet of high voltage overhead lines in excess of 600 volts. If work is to be performed within 10 feet of high-voltage lines, MCREA shall first be contacted to arrange safety provisions. MCREA is required to provide a cost estimate for making those provisions. If there is a dispute over the amount to be charged, MCREA will proceed promptly to provide the safety measures, and the dispute will be settled later. If work is begun after an agreement has been reached and before the safety provisions have been made, the person or entity performing the work shall be liable for damages resulting from contact with high-voltage overhead lines. Violations of these laws may result in a fine and liability for damages from contact with high-voltage overhead lines.

UNDERGROUND SAFETY

Caution: Stakes, flags, or painted lines mark the locations of underground utilities. Please dig very carefully within 18" on each side of the markings.

Anyone planning to dig in or near a public road, street, alley, right-of-way, or utility easement shall notify UNCC of your intent no less than 48 hours (2 working days) before you dig. Call the telephone number listed below for your locale:

811
National, Call Before You Dig Line 800-922-1987
Colorado, Utility Notification Center 800-482-7171

MCREA facilities may be buried along any residential area's rear, side, and front property lines. Residential service lines may cross homeowner's front and back yards. Many facilities are located within the street, alley, municipal, county, or highway rights-of-way.

Color Codes: (Verify color codes used within your locale) Red - Electric Power Lines, Cables, Conduit, and Lighting Cables; Yellow - Gas, Oil, Steam, Petroleum, or Gaseous Materials; Orange - Communication, Alarm or Signal Lines, Cables or Conduit, including Cable Television; Blue - Water, Irrigation and Slurry Lines; Green - Storm Drain Lines/Sewer; Pink - Survey Markings; White - proposed excavation area.

Change of Grade

The grade in any public right-of-way or easement shall not be changed without first contacting MCREA to determine if electric facilities are contained within the right-of-way or easement. MCREA Representative may grant permission to change the grade if the grade change does not affect the minimum clearance requirements. MCREA construction may be necessary if the grade change will necessitate moving equipment or facilities. MCREA's Engineering Department can provide an estimate for the cost of relocating facilities when necessary to provide adequate clearance.

Unlock, Open, and De-energize any Electric Power Equipment Procedures

MCREA established procedures to ensure maximum safety to protect all individuals prior to unlocking, opening, and de-energizing electric power equipment where access by unauthorized personnel is required. The following procedures apply to but are not limited to, energized MCREA facilities such as vaults, transformers, manholes, switchgear, and secondary pedestals:

1. The member shall request and receive access authorization prior to the MCREA Representative unlocking, opening, and de-energizing any electric power equipment.
2. Normally, a transformer will not be permanently energized until the secondary service is complete. In cases where it is necessary to leave the transformer energized, such as installing additional secondary conductors, an MCREA Representative will unlock the transformer, stand by while work is performed, and relock the transformer when the work is completed.
3. When the MCREA Representative opens a de-energized transformer for a contractor to pull the cable, the contractor shall relock the transformer and notify the MCREA Representative before leaving the worksite.
4. Charges for work may apply when MCREA personnel are required to open and close transformers or other electric equipment and stand by while work is performed around energized equipment. MCREA Representative will determine the amount to be charged.

ENERGIZATION OF ELECTRIC SERVICE

MCREA will not energize an electric service or set meters on new, rewired, altered, or repaired wiring installations unless all of the following conditions have been met:

1. The premises served have been properly identified by the member.
2. MCREA Metering Department has performed meter trace verifications.
3. MCREA has received an inspection release from the local Public Authority.
4. MCREA Representative has verified that the service entrance shows no continuity, load, or voltage feedback on the load-side terminals of the electric meter socket or CT metering installation.
5. MCREA Representative has verified that the member's equipment has a mechanical means to disconnect and isolate equipment from the load-side terminals of the self-contained electric meter socket or current transformers (CTs). This requirement includes, but is not limited to, any load produced by transformers (dry-type or oil-filled) that are used for a separately derived system.
   Note 1: The Cold Sequence Disconnect "IS NOT" the service disconnecting means and shall not be operated by the member except for emergency conditions. In accordance with 2023 NEC® Article 230.82 or as may be amended.
   Note 2: Once a service is energized, the member shall be responsible for turning on load side breakers or close disconnecting switches.
6. MCREA Representative has verified that the electric service meets all of the requirements in Section 4. *Note 1: The meter socket shall meet all requirements listed under METER SOCKETS in Section 4.*

MORGAN COUNTY REA OFFICE AND CONTACT DIRECTORY

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SECTION 3

CHARACTER OF SERVICE AVAILABLE

Contact MCREA for information regarding the availability of any desired type of service in a given locale. Delays and perhaps unnecessary expenses may be avoided by contacting MCREA in advance of construction.

TYPES OF SERVICE

The service voltages listed below may not be available in all parts of MCREA's service territory. MCREA will assist in determining whether the requested service voltage is offered under MCREA's tariffs within the service territory. These service voltages are all derived from grounded transformer

banks. Depending upon the service voltage, either the neutral or one-phase conductor is grounded at the supply transformer and will be run from the transformer installation to the meter socket. Members requiring an ungrounded service for operating a ground detection system or other operations permitted by the *National Electrical Safety Code®* are not permitted by MCREA due to the potential damage to members' equipment due to voltage imbalance.

1. 1Ø 2W ─ 120VAC (street lights)
2. 1Ø 3W ─ 120/240VAC or 120/208VAC
3. 3Ø 4W ─ 120/208VAC, 120/240/208VAC or 277/480VAC
4. Distribution (Primary) Voltage

METER SOCKETS FOR TYPES OF SERVICE

1. Self-Contained – Supplied by MCREA (Unless prior approval granted by Engineering Dept.)
2. 1Ø 3W - 4terminal meter sockets 120/240VAC or 5 terminal meter socket 120/208VAC (can)
3. 3Ø 4W – 7 terminal meter socket (can)
4. Transformer Rated (CT's) - Supplied by MCREA:

DISTRIBUTION (PRIMARY) SERVICE

Electric energy will be supplied at the voltage of MCREA's distribution line of adequate capacity for the load to be served. MCREA will advise the applicant on the primary voltage available and specify the location of the primary metering installation.

SUB-TRANSMISSION SERVICE

Electric energy will be supplied at the voltage of MCREA's existing sub-transmission lines at locations specifically approved by MCREA. Such service will be supplied only in locations accessible to MCREA's sub-transmission lines.

SECTION 4

SERVICE FACILITIES

MCREA will provide service from either overhead or underground distribution facilities, depending upon availability, requirements of local Public Authority, and initial construction costs. MCREA will normally offer the form requiring the least initial construction cost when there is a choice of overhead versus underground service. The member may choose the alternate, but charges will apply.

The member shall confer with the MCREA Engineering Department before purchasing equipment, beginning construction of a proposed installation, or altering existing service installations. The MCREA Engineering Department will determine if the type of service and voltage desired by the member is available, determine if additions to MCREA's facilities will be required, and secure a definite meter location and point of delivery. MCREA's Engineering Department will arrange all necessary alterations and determine applicable fees.

When MCREA is required by order of a Public Authority to alter its distribution system, necessitating a change in the location of the point of delivery, MCREA will designate a new point of delivery. At their expense, the member shall relocate the service entrance conductors and metering

equipment to the new point of delivery.

SERVICES

A building or other structure will be supplied by only one service in accordance with 2023 *NEC*® Article 230.2 or as may be amended. The policy pertaining to MCREA providing additional services for a building or building group will vary depending on the service territory. In most cases, additional charges for initial construction and perpetual maintenance costs will apply for the additional service(s). Contact MCREA's Engineering Department for specific information.
Only one service (point of delivery) will be provided to a building or other structure, except as specified below:

1. Special Conditions – MCREA may provide additional services for:
    a. Emergency lighting.
    b. Fire pumps.
    c. Legally required standby systems.
    d. Optional standby systems.
    e. Parallel power production systems.
2. Special Occupancies – MCREA may provide additional services for:
    a. Multiple-occupancy buildings where MCREA determines that there is no available space for service equipment accessible to all occupants.
    b. A single building or other structure where MCREA determines that such building or structure is sufficiently large to make two or more services necessary.
3. Capacity Requirements - Additional services may be provided where MCREA determines that it cannot adequately provide service at a single point of delivery.
4. Different Characteristics – MCREA may provide additional services for different voltages, phases, or loads with different rate schedules.

UNDERGROUND SERVICE

Underground System - Low Voltage (0-480 Volts) General Requirements:

1. Service Connection - Underground service laterals from underground distribution systems or overhead distribution systems shall be installed by an approved MCREA contractor and in accordance with MCREA's standards. MCREA will not accept all other installations.
2. Point of Entry - MCREA shall specify the location of the underground service lateral and metering equipment location most suitable for connection with MCREA's facilities. MCREA will not run an underground service lateral through a wall below grade or above the first-floor level.
3. Ice and Snow Shields - A meter ice and snow shield may be required on all new or rewired services in locations with heavy snowfall or ice loading. **Prior approval is required for installations on the drip side of a structure.** Check with MCREA's Engineering Department to determine requirements for your locale**.**
4. Underground Service Laterals - Laterals shall not be installed until the property is to the final grade (±6 inches), property pins are in place, and the cable route is free of obstructions.

    a. Company-owned service laterals shall not be installed at a depth of less than thirty-two (32) inches.
    b. Member-owned commercial and industrial service laterals shall be installed in accordance

with the 2023 *NEC*® or as amended.

5. Ground Movement – Slip sleeves (expansion joints) will be furnished and installed by the electrician on all new underground residential meter house installations in Colorado. An 18" length of 3" Schedule 80 PVC conduit shall be installed at the bottom of the underground riser. Refer to 2023 *NEC*® Article 300.5(J) (FPN).
6. Service Entrance Conductors - Service entrance conductors shall have a current carrying capacity at least as great as required by the *National Electrical Code*® and the Public Authority having jurisdiction. MCREA strongly recommends that some provision be made for future load increase. Line and load conductors are not permitted in the same raceway or conduit. Other than service conductors, no conductors shall be installed in the service lateral conduit. The underground service riser does not allow junction boxes, conduit bodies (e.g., LBs), or other devices. Drawings showing typical methods for installing service-entrance conductors are contained in Section 11, Drawings and Illustrations.
7. Conductors in Meter Socket – Line-side and load-side conductors entering and leaving an underground meter socket shall only enter and exit through opposite sides of the socket. If provided, the center knockout on the horizontal surface at the bottom of the socket shall not be utilized. Line conductors shall enter through the knockouts provided at either end of the bottom horizontal surface of the meter socket. The line conductors shall be routed along the meter socket's outermost edges, allowing for conductor settling. The knockouts on either end of the horizontal surface or the knockouts provided on the vertical surfaces of the meter socket may be used for load conductors. Load conductors shall exit the right side or the lower knockout on the rear wall of the meter socket on lever-type bypass meter sockets. Refer to Figure UM5 in Section 11, Drawings and Illustrations.

Underground System - Primary Voltage (Above 480 Volts)

Because of safety precautions, which must be exercised in the utilization of energy at voltages in excess of 480 volts, MCREA shall be consulted regarding service entrance, transformer location, and meter installation details for this class of service **in advance of construction and purchase of equipment**.

TRANSFORMER/EQUIPMENT INSTALLATIONS, PAD-MOUNTED

MCREA will provide an outdoor pad-mounted transformer for service to the member's facilities, such as shopping centers, office buildings, schools, large apartment buildings, etc., under the following conditions:

1. The member's facilities shall be located in an area not presently served or expected to be served by MCREA's underground network system. MCREA reserves the right to define areas to be served by secondary network systems.
2. MCREA will own, operate, and maintain the primary underground installation between the adjacent distribution facilities and the transformer, including the primary cable, ducts, transformer, and protective equipment.
3. The Member will provide an adequate base at the finished grade to install MCREA's sleeve and pad-mounted transformer. In areas near buildings where the earth has been disturbed, the member shall provide firm soil conditions (at least 2000 pounds/square foot compaction) under the pad area to prevent settling of the pad. If the transformer size is 1500kVA or greater, the

member is responsible for installing a concrete pad, which an MCREA representative inspects to ensure connections meet current standards. Contact MCREA for current standards.

4. MCREA will make and maintain all connections at the transformer terminals. No member-owned switches, fuses, etc., may be located within a fenced area designed to contain a transformer installation without written approval of MCREA.
5. The property shall be to the final grade (±6 inches) except at the equipment location, which shall be to the exact final grade. Property pins shall be placed with the structure staked or the foundation before the pad-mounted equipment and splice boxes are installed.
6. MCREA shall be consulted well in advance of any proposed project.
7. If in the judgment of MCREA, the selected location for the installation of the pad-mounted equipment is not adequately protected from traffic, or when directed by the local Public Authority, the member shall furnish and install either bollards or guard posts to protect the pad-mounted equipment installation. At the member's request, MCREA may elect to furnish and install the bollards or guard posts, and the member shall accept such cost as a non-standard design on a non-refundable basis.

   Further details relating specifically to transformers can be found in Section 5, and Drawings 1UM, 2UM, 3UM, 4UM and 6UM in Section 11, Drawings and Illustrations.

POINT OF DELIVERY

The point of delivery is the point where MCREA's electric facilities are first connected to the electric facilities of the member. The delivery point for the various service classifications is shown throughout Section 11, Drawings and Illustrations.

MCREA's policy is to own, operate, and maintain the electric distribution facilities up to the point of delivery. This policy applies to services rendered from either overhead or underground facilities. All such facilities will be installed in accordance with MCREA's Line Extension Policy and Rules and Regulations as filed with the Commission.

MEMBER-OWNED SERVICE CONDUCTORS

The number and size of member-owned conductors that may be terminated to MCREA facilities is limited by the type of installation as follows:

1. Overhead-to-Overhead:
   a. Service entrance risers on a building are limited to a maximum number of six (6), with a single set of conductors in each riser. For all installations with four to six service entrance risers, the member shall furnish UL-listed and labeled, insulated setscrew bars (one for each phase and neutral) to allow a single point of connection for MCREA-owned service drop conductors to the member-owned service entrance conductors for each phase and neutral. MCREA reserves the right to require the member to furnish UL-listed and labeled insulated setscrew bars for all installations with two or three service entrance risers. MCREA Representative will provide the necessary information regarding the number and size of the service drop conductors at the member's request.
   b. The conductor size shall not exceed 500 kcmil.
2. Overhead-to-Underground:
   a. A maximum of three U-guard risers per pole (MCREA-owned, foreign utility-owned, and

commercial member-owned) shall be attached to an MCREA pole.

b. 40 feet of commercial member-owned conductor shall be coiled at the base of the MCREA pole. If a commercial member installs conduit from the structure to the base of the pole, a commercial member may install an elbow at the pole but install no commercial member-owned conduit on MCREA owned pole.
c. The U-guard risers shall be grouped together and shall not occupy more than 40% of the pole circumference.
d. Only a single set of conductors shall be installed in each U-guard riser.
e. The conductor size shall not exceed 500 kcmil.

3. Underground-to-Underground:
   a. The maximum number of runs per phase that may be terminated in a pad-mounted transformer is eight (8). The maximum conductor size shall not exceed 1000 kcmil copper or 500 kcmil aluminum.
4. The maximum number of runs per phase that may be terminated in a secondary pedestal is four (4) and the maximum conductor size shall not exceed 350 kcmil aluminum.

Service Connection Cabinets

A service connection cabinet is required when there are more than (8) eight runs per phase or when the service lateral size exceeds 500 kcmil copper or 500 kcmil aluminum. If a service connection cabinet is required, it shall be purchased, installed, and maintained at the expense of the member. The member shall also install a concrete pad or pads to accommodate both the service connection cabinet and the pad-mounted transformer, which feeds the service connection cabinet. Arrangements for utilizing a service connection cabinet may be made by contacting the assigned MCREA Designer. Refer to METERING: Service Connection Cabinets (with or without optional member disconnect switch) with metering provisions in this section and to all of the drawings in Section 11 Drawings and Illustrations.

METERING

Closed Loop Temporary Unmetered Services New Services

MCREA will not permit a temporary unmetered service (closed loop/flat tap/jumpered) on new electrical services. Service may be supplied from a temporary meter panel prior to an inspection release on new services. Refer to Section 7, TEMPORARY SERVICE, and Section 11, Drawings and Illustrations.

Before permission is granted to energize a new service, MCREA shall have an application for electric service, and an inspection release shall be forwarded to MCREA by the local Public Authority. *Note 1: In locations where there is no local Public Authority, the wireman shall submit a signed and dated letter to MCREA's Engineering Department attesting that the electrical installation has been completed and installed according to the current NEC® and any other codes that apply before electric service is energized.*

Existing Services

For existing services, a temporary unmetered service (closed loop/flat tap/jumpered) may or may not be allowed in the service territory or locale where electric service is needed. Before closing a loop, the member shall obtain a wiring permit from the local Public Authority, and permission from MCREA, and all wiring shall comply with the *NEC®* and the rules of the local Public Authority. Electric energy used during the period of the closed loop will be estimated and billed at the appropriate rate. The member of record will be responsible for the energy used.

No one, except an MCREA Representative, shall reconnect the meter on any wiring installation where a meter has been disconnected. Closing a manual bypass mechanism or installing jumpers in the meter socket is not permitted and will be considered a closed loop, which requires prior permission.

If any wiring being served on a closed loop is not installed in accordance with MCREA's Rules and Regulations, MCREA may open the closed loop.

MCREA may grant permission for a temporary unmetered service (closed loop/flat tap/jumpered) on an existing service for up to a maximum of seven (7) calendar days. MCREA's Engineering Department requires special permission to extend a closed loop beyond seven days. Permission to close a loop may be obtained through an authorization letter or email by calling the MCREA Engineering Department. If a temporary unmetered service is not allowed in the service territory or locale where electric service is needed, or if the time that temporary service is required exceeds seven (7) days, the member may contact MCREA to coordinate temporary meter service. Refer to Section 4: Service Facilities, TEMPORARY SERVICE in this section.

A single service will supply all service to a member, and only one meter will be installed at an address or single unit of a multi-unit building. Only in the event that more than one service is allowed by MCREA, as detailed in SERVICES in this Section, will MCREA install more than one meter.
All services to a member will use Advanced Metering Infrastructure (AMI) for remote meter reading, disconnect capabilities, and reconnection to establish the location of outages and system improvement needs from the data transmitted.

A member-owned service connection cabinet may be utilized to augment an installation where additional services or metering points would be desirable but are prohibited by this document. A service connection cabinet may be arranged by contacting the MCREA Engineering Department. Refer to METERING: Service Connection Cabinets (with or without optional member disconnect switch) with metering provisions in this Section.

Only authorized MCREA employees are permitted to connect, disconnect, move, or remove meters. All meters, service wires, and other electrical facilities installed by MCREA upon the member's premises for delivering or measuring electrical energy to the member shall continue to be the property of MCREA. All metering equipment owned by MCREA and not installed shall be returned to MCREA. MCREA may repair, inspect, test, relocate, replace, or remove these facilities. MCREA will determine meter locations in all instances. All meters shall be installed outdoors in accordance with the rules in this Section governing outdoor meter installations.

Classification of Metering Refer to Section 1 for the definition of Classification of Metering.
MCREA Classifies its metering installations as:

1. Residential Rate:
   a. Self-Contained (Hot Sequence required.)
   b. Instrument Transformer (Hot Sequence or Cold Sequence could be required.)
   c. Net Metering (Hot Sequence Required.)
2. Irrigation and Commercial:

a. Self-Contained (See Cold Sequence Metering Section for Jurisdictional Requirements)
b. Instrument Transformer (Hot Sequence or Cold Sequence could be required.)
c. Temporary Construction (See Cold Sequence Metering Section for Jurisdictional Requirements)

MCREA will determine the type of metering used based on the service voltage, the load supplied, the available fault current, and the applicable Rate Schedule.

Residential service lateral may be extended to a structure containing not more than six residential units provided all meters are grouped at one location, and all units are separately metered on residential rates. The member shall install the service lateral if a house power service (Commercial) is required.

All services shall be metered on the secondary side of MCREA's transformer unless the applicable Rate Schedule specifies that the service be metered on the primary side of the transformer. MCREA may install its meter on either side of the transformer, and losses occurring between the point of delivery and the meter will be computed and added to, or subtracted from, the reading of the meter.

Self-Contained Metering

Single-phase services with a total connected load of 400 amps or less shall be metered by self-contained meters. Services where the total connected load is in excess of, or anticipated to be in excess of, 400 amps shall use instrument transformer (CT) metering.

Three-phase services with a total connected load of 200 amps or less shall be metered by self-contained meters. Services where the total connected load is in excess of, or anticipated to be in excess of, 200 amps shall use instrument transformer (CT) metering.

The total continuous load on self-contained metering shall not be greater than 200 amps on a 200-amp meter socket or 320 amps on a 320-amp meter socket. For devices having a meter socket in combination with a main disconnect(s), the total amp rating of the main disconnect(s) shall not exceed 250 amps for a 200-amp continuous duty-rated meter socket or 400 amps for a 320-amp continuous duty-rated meter socket.

MCREA shall furnish, own, and maintain all self-contained single-position and modular (multi-position) meter sockets of either single-phase or three-phase design. The construction of the meter sockets shall also conform to MCREA's standards as described in METER SOCKETS in this Section.

Instrument Transformer Metering, Secondary Voltage

Hot sequence is the required installation method for commercial and industrial instrument transformer (CT) metering. Depending upon the application, a cold sequence disconnect may be required ahead of a CT cabinet. A hot sequence is the installation method needed for Residential instrument transformer metering.

The CTs and meter-socket will be supplied, owned, and maintained by MCREA and shall be installed by MCREA. The instrument transformer compartment in a CT cabinet, service connection cabinet, or switchgear CT compartment, and the necessary conduit and fittings shall be supplied,

owned, installed, and maintained by the member. The member shall terminate the line-side and load-side conductors in the CT cabinet, service connection cabinet, or switchgear CT compartment. The secondary (metering) conductors will be supplied, owned, installed, and maintained by MCREA. Other than service conductors, member-owned equipment shall not be installed in the space dedicated to instrument transformers.

All current transformers (CTs) shall be installed in a location determined by MCREA.

Conductors in CT cabinets and service connection cabinets shall be installed in accordance with the minimum wire-bending space requirements of 2023 *NEC*® Article 312.6 or as may be amended.

The meter socket shall be bonded with a separate bonding conductor in accordance with 2023 *NEC*® Article 250 or as may be amended. Check with the MCREA Engineering Department for bonding requirements.

CT Cabinets

In addition to the general requirements in METERING and Instrument Transformer Metering, Secondary Voltage in this Section, the following requirements shall also be met:
MCREA will terminate the line conductors in all service territories.

Service Connection Cabinets with metering provisions

Single-point services to multiple buildings may be metered with a pad-mounted service connection cabinet with or without a member disconnect switch. Using a service connection cabinet with a member disconnect switch allows the member to de-energize their service for equipment maintenance without calling MCREA to schedule an outage. It also allows the metering and service disconnect to be located at a mutually advantageous point to the member and MCREA. Refer to Figure 7UM and 7UM-ATS in Section 11 Drawings and Illustrations.

Note: Refer to SERVICES, METERING, and Meter Location and Installation in this Section to clarify the allowable number of service and metering points.

In addition to the general requirements in METERING and Instrument Transformer Metering, Secondary Voltage in this Section, the following requirements shall also be met:
1. All buildings shall be served from the same transformer.
2. The maximum metered load shall not be greater than 4000 amps.

The member shall install the pad and pad-mounted secondary connection cabinet in accordance with Figure 7UM in Section 11 Drawings and Illustrations.

TEMPORARY SERVICE

Temporary service may be made available prior to the installation of the permanent meter. Temporary service shall be restricted to as short a time as possible, such as the time necessary for the construction of a building. MCREA will provide temporary service in accordance with its established Rate Schedules, Electric Service Connection Policy, and Line Extension Policy.

Overhead Temporary Service

The member shall supply the overhead service drop support in accordance with the requirements of this Section. The support shall be within 75 feet of a pole supporting MCREA's secondary lines. The support shall be located in such a manner as to clear all utility obstructions. The overhead drop shall overhang only the property owned and controlled by the member and clear all structures and obstacles per the applicable requirements for OVERHEAD SERVICE in Section 4. The support shall be installed so that the installed drop is at a vertical angle of not less than 45 degrees and not closer than 10 feet horizontally to MCREA's secondary or primary conductors. Temporary meter panels shall not be installed on an MCREA pole. The ground rod(s) and grounding electrode conductor shall be furnished and installed by the member and shall comply with 2023 *NEC*® Article 250 or as may be amended.

Underground Temporary Service

The underground service lateral and meter support shall be supplied and installed by the member in accordance with the requirements of this Section. The meter support shall be installed outside the utility easement and not less than 5 feet from the service pedestal or pad-mounted transformer. The ground rod and grounding electrode conductor shall be furnished and installed by the member and shall comply with 2023 *NEC*®Article 250 or as may be amended. The driven ground rod shall be located outside of the utility easement. The grounding electrode conductor shall be insulated for 600 volts when terminated within an MCREA-owned enclosure, such as a pedestal or pull box.

General Requirements for Temporary Service

The service address shall be prominently displayed on the temporary service installation. MCREA will make entry into and connections within all pad-mounted or underground facilities.

The meter socket shall be furnished and installed by the member. Temporary service installations shall be braced to withstand normal service drop tension and normal use of the facility.

Temporary meter service panels shall not be attached to vehicles or trailers. In the event that a temporary service installation fails or collapses, it will be disconnected by MCREA until repaired by the member.

The service equipment shall be "raintight" (NEMA 3R), and all 125-volt, single-phase, 15-, 20- and 30-amp circuits shall be equipped with ground-fault circuit interrupters in accordance with 2023 *NEC*® Article 527.6, or as may be amended.

COMMERCIAL METER INSTALLATIONS

Electricians working on commercial projects and projects requiring CT metering must coordinate the project with MCREA’s Operations Department.

1. Single-phase self-contained (straight) metering may be used up to and including 400-amp service. Any service above 400 amps requires CT metering. Three-phase self-contained (straight) metering may be used up to and including 200-amp service.

CT METERING:

MCREA shall provide the meter base and the CTs for CT metering

Member's electrician must trench and install the secondary conduits and the secondary service conductors into the transformer from the meter base, main disconnect, or CT cabinet. MCREA will **NOT** trench or hand dig to install any facilities on the secondary side of the transformer.
Member's electrician must schedule with MCREA dispatch to open the transformer for the electrician to pull in secondary service conductors from the meter base, main disconnect, or CT cabinet.

Commercial buildings (including apartment buildings) having two or more meters must have each meter base identified with a brass tag showing the unit number or address. The Member's electrician shall also provide a drawing of the building showing BOTH the location of each unit AND the configuration of the meter bases on the building. Refer to Figure 8UM in Section 11, Drawings and Illustrations.

Electricians shall schedule terminations and connection of service wires to the transformer. Termination must be scheduled after the electrical inspector's inspection and service approval. Electricians must provide wire size and the number of runs to be terminated. Terminating and energizing of service shall be coordinated with MCREA dispatch after receipt of inspection release by MCREA.

PRIMARY METERING INSTALLATIONS

MCREA-owned primary metering installations shall be located 5 to 25 feet from the access point on the member's property. Primary metering installations require coordination between the member and MCREA regarding technical details and location. Service at distribution primary voltage requires special engineering considerations; therefore, it is necessary to determine the availability of this type of service.

MCREA's Engineering Department shall be consulted well in advance of the time the service will be required so that all design and construction work of both parties may be properly coordinated. MCREA's Engineering Department shall also be contacted before design, construction, or equipment purchase. A set of specifications can be provided upon member request. This will reduce the risk of project delays or expensive changes during construction.

Primary voltage installations use current and voltage instrument transformers regardless of the load current. The primary meter installation will be on an MCREA-owned pole or in an MCREA-owned primary metering cabinet.

MCREA Representative will provide switchgear meter compartment specifications to engineers and contractors on request. The associated meter socket shall not be mounted on the member's switchgear unless specifically approved by MCREA's Engineering Department.
Refer to Figure 8UM in Section 11 Drawings and Illustrations.

METER SOCKETS

Self-contained 200-Amp and 320-Amp Meter Sockets

Purchasing, installing, connecting, and maintaining self-contained meter sockets shall be the responsibility of MCREA. A member can provide their own socket with prior approval from MCREA. All meter sockets shall be UL-listed and labeled, used in accordance with their labeling, installed per the 2023 *NEC*®, or as may be amended, and meet any code requirements that the local Public Authority may enforce.

All single and multiple position meter sockets installed on MCREA's system shall meet MCREA's standards for these devices as listed below. MCREA Representatives are instructed not to install a meter at the location where the meter socket does not comply with **all criteria listed below.** Meter sockets will be considered unapproved unless they adhere to these criteria.

Meters will not be installed unless all criteria for meter socket specifications outlined below are met:

1. Individual meter sockets shall be constructed from steel in accordance with Underwriters Laboratories (UL) Standard No. 414, revised December 15, 2015, or as may be amended. Sockets constructed from aluminum or nonmetallic materials are not allowed.
2. Individual meter sockets, excluding the side-wired type, which is bussed on the line side of the meter, used in underground installations shall have the following minimum dimensions:
   a. 200 amp – 19" height x 13" width.
   b. 320 amp – 26 ½" height x 13" width.
3. Temporary cover plates for meter sockets shall be constructed from a non-metallic material.

Exception 1: For temporary commercial services (e.g., temporary construction) and permanent single-phase residential installations, a horn-type bypass is permitted provided all of the following conditions are met:

a. The total connected load is 200 amps or less.

b. The service voltage is 240 volts or less. For Overhead installations, 100 to 200-amp continuous duty meter sockets are permitted. Meter sockets rated 100 and 125 amp shall have a hub size of not less than 1-1/4".

c. For Underground installations, only 200-amp continuous duty meter sockets are permitted. Meter sockets, meter/mains, and meter/load centers with meter compartments smaller than eleven (11) inches in width are not permitted.

d. All other self-contained meter socket requirements listed in this section are met.

Note: Permanent single-phase commercial installations do not qualify for this exception.

Exception 2: The single-phase commercial house power meter (e.g., common lighting, emergency lighting, or laundry facilities), if it is an integral part of the multiple residential meter panel, is permitted to use a horn-type bypass provided:

i. The total connected load is 200 amps or less.

ii. The service voltage is 240 volts or less. All other self-contained meter socket requirements listed in this section are met.

4. Sockets shall be equipped with an insulating, track-resistant polycarbonate safety shield.
5. Single-phase and three-phase, three-wire sockets shall have a fifth terminal connected to the neutral within the socket with a minimum #16 AWG wire. If the meter block design allows, the fifth terminal shall be installed in the 9 o'clock position rather than the 6 o'clock position. MCREA will not furnish or install the fifth terminal.

6. Three-phase, four-wire sockets shall connect the seventh terminal to the neutral within the socket with a minimum #16 AWG wire.
7. Sockets shall have ringless-style covers. No screws, studs, or wing nuts are allowed to secure meter covers.
8. Sealing means shall provide a plastic padlock seal with a 0.047" diameter shackle and a key-type padlock with a 9/32 shackle.
9. 320-Amp meter sockets shall have an anti-inversion clip (field installed) in the top right terminal.

Additional Requirements for Self-Contained Multiple Metering Panels:

1. Multiple metering panels shall be constructed from steel or aluminum. Panels constructed from non-metallic materials are not allowed.
2. Each meter socket shall have an individual ringless style cover with sealing provisions. No screws, studs, or wing nuts are allowed to secure meter covers.
3. The panel shall have permanent barriers to isolate the member's disconnect switches and wiring from the metering areas.
4. Each line-side compartment shall have provisions for an MCREA seal, whether or not the compartment is designed to house a meter.
5. No multiple metering panels shall have a door that completely encloses the electric metering.

Additional Requirements for Combination Metering Devices:

1. Combination metering devices, such as meter/main and meter/panel, shall be constructed from steel or aluminum. Devices constructed from non-metallic materials are not allowed.
2. Combination metering devices, excluding the side-wired type, which is bussed on the line side of the meter, used in underground installations shall have the following minimum dimensions in the metering section:
    a. 200 amp – 9 ½" height x 13" width (height measured from the top of the enclosure to the center of meter block).
    b. 320 amp - 13 ¼" height x 13" width (height measured from the top of the enclosure to the center of meter block).
3. Combination metering devices shall have permanent barriers to isolate the member's disconnect switch and wiring area from the metering area.
4. Combination metering devices shall have separate covers on the member's disconnect switch, wiring area, and metering area.

Additional Requirements for Metering Pedestals:

1. Metering pedestals shall be constructed from steel or aluminum. Pedestals constructed from non-metallic materials are not allowed.
2. Single-phase residential meter pedestals and Three-phase commercial meter pedestals shall be furnished, installed, and maintained by MCREA.
3. Pedestals shall meet MCREA and applicable code requirements.
4. Pedestals shall be adequately supported to maintain the vertical alignment of the meter in a level and plumb position throughout the installation's life.
5. Metering Pedestals with factory-installed disconnecting means shall have permanent barriers to isolate the member's disconnect switch and wiring area from the metering area.
6. Metering Pedestals shall have separate covers on the member's disconnect switch, wiring, and metering areas.
7. The electric metering compartment door shall be hinged on either the left or right side of the

metering pedestal.

8. Other than service conductors, member-owned equipment shall not be installed in the space dedicated to the electric metering compartment.
9. Sockets shall have ringless-style covers. No screws, studs, or wing nuts are allowed to secure the meter socket covers.
10. Pedestals with the meter socket inside a metering compartment enclosure, with a viewing window installed, are not permitted within MCREA standards.

Instrument Transformer Meter Sockets

MCREA will furnish instrument transformer meter sockets. MCREA shall be contacted first to determine the rate, load, and service voltage. The member should contact MCREA to coordinate meter installation.

METER LOCATION AND INSTALLATION

Meter Location

The member shall provide and maintain, without cost to MCREA, an easily accessible metering location. MCREA will locate an acceptable point of delivery and meter location upon the member's request. No wiring dependent upon a meter location shall be started until a definite meter location has been established. MCREA will not be responsible for the relocation of the service attachment, service entrance, or meter socket resulting from an improper location chosen by the member, which does not meet the requirements of MCREA. Residential self-contained and transformer-rated meters (including CT cabinets) shall be installed outdoors. MCREA will determine meter locations in all instances. Residential meters originally installed outdoors that, due to alterations or additions to the residence, become enclosed within the building structure (e.g., enclosed patio or garage), where access through a doorway is required, shall be relocated to an outdoor location and designated by the MCREA Engineering Department. The relocated service entrance installation shall conform to current MCREA standards.

Commercial or Industrial meter installations (including CT enclosures) shall be installed outdoors. The Engineering Department must approve the meter location before construction and equipment purchase.

Mobile homes, construction trailers, and those buildings not intended as dwelling units, such as, but not limited to, contractor's on-site offices, sales offices, mobile studios, mobile stores, or construction job dormitories intended for sleeping purposes only, shall have the meter socket located adjacent to and in line of sight of the structure it supplies. The meter socket shall not be mounted on or attached to the structure. Refer to 2023 *NEC*® Article 550.32(A) or as may be amended.

Manufactured homes may have the meter socket attached to the structure provided the structure meets the definition of a Manufactured Home as defined in 2023 *NEC*® Article 550.2, or as may be amended, and meets the requirements of 2023 *NEC*® Article 55032(B), or as may be amended. The manufactured home shall be installed on and secured to a permanent foundation and shall provide the necessary structural support for the meter socket attachment.

Meters originally installed in accessible locations satisfactory to MCREA, which become

inaccessible by virtue of alterations or new construction, shall be reinstalled at a point designated by MCREA at the expense of the property owner.

Meters shall be installed:
1. In a location that will be easily accessible to MCREA personnel at all reasonable hours for reading and maintenance.
2. In a location where they will be safe from damage.

Meters shall not be installed:
1. On fences, mobile homes, or construction trailers.
2. Where the meter will, in MCREA's opinion, interfere with traffic on sidewalks, driveways, hallways, or passageways.
3. Where the meter will, in MCREA's opinion, obstruct the opening of doors or windows.
4. In a location that may be considered hazardous in MCREA's opinion.
5. Where meter reading or servicing may, in MCREA's opinion, become impracticable.

Meter Installation

Installation of line-side (ahead of the meter) facilities shall conform with the Section 11 Drawings and Illustrations.

Installation of the meter socket is the responsibility of MCREA (unless a member-owned meter socket is approved). Both indoors and outdoors, meter sockets and associated equipment shall be mounted securely and plumb. Expansion bolts, plugs, or anchors shall be used where attachment is made to masonry, concrete, or plaster walls.
The meter socket, service mast, service riser, or any conduit containing conductors on the line side of meters shall not be covered or concealed except when necessary to pass through roof eaves or floor structures within a building.

The member shall provide suitable protective equipment approved by MCREA if a meter location puts the meter at risk of damage from any means, including falling ice or snow from roof overhangs. All line-side unmetered conductors shall be in a continuous length of conduit from the point of delivery to the meter socket, cold sequence disconnect, or CT cabinet. No conductors other than line-side conductors shall be permitted in line-side conduits, troughs, or lug landings. Access to the line-side conductors shall be sealable. Junction boxes, conduit bodies, or other devices are not allowed without specific approval from the MCREA Engineering Department. If provided on an underground service, the center knockout in the bottom of the socket shall not be utilized. Line conductors shall enter through the knockout provided at the left end of the bottom horizontal surface of the meter socket. The line conductors shall be routed along the outermost edges of the meter socket, allowing for ground settling, which could pull the line conductors down. Either the knockout on the right end of the bottom horizontal surface, the lower knockout on the right vertical surface, or the lower knockout on the back vertical surface of the meter socket may be used for load conductors. Load conductors shall not exit the left side of the meter socket.

METER MOUNTING HEIGHTS

The mounting height of meters, measured from the center of the meter to the final grade or platform outdoors or to the floor when installed indoors, are as follows:

1. Single meter sockets:
   a. Self-contained or transformer-rated----------4' minimum to 6' maximum
   b. Meter pedestals----------4' minimum to 6' maximum
2. Multiple meter sockets, vertically aligned:
   a. Indoor ----------2’minimum to 6’-6” maximum
   b. Outdoor ----------2’minimum to 6’-6” maximum

The height of multiple meter sockets, either horizontally or vertically aligned, shall be evenly distributed from the center point of the meter stack between the upper and lower height limitations. Mounting heights are also shown throughout the Section 11 Drawings and Illustrations Diagrams.

METER CLEARANCES

The minimum depth of working space in front of metering equipment shall be 3', 3'-6", or 4' in accordance with 2023 *NEC*® Article 110.26(A)(1) and Table 110.26(A)(1), or as may be amended. The minimum width of the working space in front of the metering equipment shall be the width of the metering equipment or 2'-6", whichever is greater, in accordance with 2023 *NEC*® Article 110.26(A)(2), or as may be amended. No member-owned equipment may be installed directly in front of metering equipment. Metering equipment includes cold sequence disconnects, CT cabinets, service connection cabinets, switchgear CT compartments, and meter sockets.

HOT SEQUENCE METERING

Residential

Residential self-contained meter installation, single-phase and three-phase, shall be hot sequence metering. Available fault currents in excess of 10,000 Amps at the electric meter on residential applications are uncommon. In cases where the fault current does exceed 10,000 amps, instrument transformer (CT) type metering shall be utilized.

Commercial and Industrial

Hot Sequence is the required installation method for commercial and industrial instrument transformers.

Type (CT) metering. Cold sequence disconnects are not allowed ahead of the CT cabinet unless required by the Local Public Authority having jurisdiction.

NET METERING

For this section, the following shall apply:

1. “Member – Generator” means an end-use electric member that generates electricity on the member side of the meter using Qualifying Facilities.
2. “Qualifying Facility” means any source of energy that can be used to produce electric energy under the terms and conditions of the Morgan County REA Interconnection Agreement detailing the operation conditions in which a facility can connect in parallel with the Association's distribution system.
3. “Net-Metering”: Morgan County REA will allow a Member-Generator’s retail electric consumption to offset the electricity generated from a Qualifying Facility.

Morgan County REA has a legal obligation with the State of Colorado to provide net-metering

services to its qualified Member-Generators. Morgan County REA will update and adjust any subsequent net-metering policy to reflect its legal requirements. The current policy can be found in its tariff book under Sheet 16. This sheet has been and will continue to be updated, and as appropriate, Morgan County REA holds the right to exceed these minimum requirements.

This policy will reflect a number of issues but will include:

a. "Monthly Excess Generation": If a Member-Generator generates electricity in excess of the Customer-Generator's monthly consumption, all excess energy, expressed in kilowatt-hours, shall be carried forward from month to month and credited against the energy consumption in subsequent months.
b. "Annual Excess Generation": At the end of each calendar year or if the member cancels its retail service, Morgan County REA will take any excess energy accrued by the Member-Generator and credit such excess generation as deemed appropriate by the utility.
   That credit is issued via check and credited at the current wholesale energy-only rate.
c. "Non-Discriminatory Rate": Morgan County REA shall provide net-metering services at the then Member-Generator's retail rate.
d. "Interconnection Agreement": The Member-Generator shall be required to sign the appropriate utility Interconnection Agreement before being allowed to connect to the utility distribution system. This agreement shall provide all the technical requirements and the utility's approval for interconnection. Morgan County REA has the right to deny interconnection if the member has not met the requirements of this agreement.
e. "Size Specifications" – Morgan County REA has the right to limit the size of any Qualifying Facility in its system.
    i. Capacity: Limits the connected load to the grid. This limit will be established by either the existing legal requirements or by the ability of the utility to absorb the generation into its existing system.
    ii. Energy: Limits the amount of energy that the utility can accept. This limit will be established by existing legal requirements or utility policy. This component is typically tied to a percentage of the energy consumption registered at the specific Member-Generator site. Excess generation at a specific site can be denied interconnection by the utility.
    iii. Special Conditions: Morgan County REA can grant permission for larger net-metered systems individually. This will be based on current policy and the ability of the utility to accept this additional generation. The member will bear any costs associated with this interconnection, subject to the appropriate Morgan County Rural Electric Association Interconnection Agreement and the associated technical requirements.

f. "Indemnify": Morgan County REA and the Member-Generator shall indemnify, defend, and save the other party harmless from all damages, losses, or claims in relationship to the provisions as identified in the signed Interconnection Agreement between the two parties.

SECTION 5

TRANSFORMERS

Necessary transformers will be installed and maintained by MCREA in accordance with its established Rate Schedules, Electric Service Connection Policy, and Line Extension Policy.

MCREA will not furnish transformers unless they are of standard size and voltage, as established by MCREA. The member shall notify MCREA in advance of any change in the member's load requirements that may affect the installed transformer capacity.

If the member's power requirement, within six months after the installation of transformers, proves to be more than the installed transformer capacity, MCREA may make an increase in the installed transformer capacity, and the member will be required to pay to MCREA the cost of making the change.

GROUNDING

All service systems operating below 1000 volts contain a grounded neutral or a grounded phase conductor used as a circuit conductor. The grounded neutral or grounded phase conductor is grounded at the supply transformer and will be run from the transformer bank to the meter socket. Each service disconnection means per 2023 *NEC*® Article 250.24(B) or as may be amended.

Members requiring an ungrounded service for the operation of a ground detection system or other operations permitted by the *National Electrical Safety Code*® shall submit an exception request detailing the special circumstances necessitating the request. In addition, the member shall state in the exception request that he is aware of and accepts the increased risk to personal safety associated with an ungrounded service. When supplying an ungrounded service results in an additional cost to MCREA, the additional cost may be passed on to the member.

SPECIAL RULES

When a member furnishes transformers or other equipment in accordance with the applicable MCREA Rate Schedule, Electric Service Connection Policy, and Line Extension Policy, MCREA accepts no responsibility for maintaining or replacing the member's transformers or other equipment if damaged or destroyed.

MCREA Rate Schedules for primary metering installations require that the member provide and own all equipment beyond the point of delivery. In unusual cases, MCREA may rent transformers, if available, to the member in accordance with MCREA Rules and Regulations.
The member shall provide a minimum of ten (10) feet clearance on the door side(s) of pad-mounted transformers for hot-stick operation and ten (10) feet clearance on the door side(s) of pad-mounted primary metering cabinets for instrument transformer maintenance. Transformers shall not be under any overhang (roof, balcony, stairs, etc.). Clearances required in specific cases may be obtained from MCREA's Engineering Department.

Refer to Figures 1 UM, 2UM and 3UM, Drawings and Illustrations.

FAULT CURRENT

MCREA system is very dynamic, and the configuration changes frequently. Understanding that it is important for members and their electricians to size equipment, MCREA will provide the maximum available fault current on the secondary side of our transformers. MCREA will use an "Infinite Bus" calculation, along with our minimum impedance, for any given transformer configuration to determine the available fault current on the secondary terminals of our transformers.

A more detailed analysis will be undertaken by our engineers for primary metered members.
MCREA understands that in today's environment, our members may need access to greater details about the characteristics of their electrical supply. However, it is impossible to notify all members of all the changes that can impact these characteristics. The data provided is, therefore, a snapshot representing the best information available at the time. MCREA members are encouraged to get updates as often as they see fit.
MCREA will provide the following data at each bus listed below: Nominal Voltage
Maximum Available Fault (Current and MVA) and fault type X/R ratio
MCREA Device Clearing time

Bus:

Member Bus based on normal source MCREA Normal Source Bus data MCREA Maximum available bus

MCREA's staff does our best to ensure the accuracy of the data provided. Advanced software is used to collect and maintain data and the calculations used to provide this data to our members. However, errors can and do occur, and MCREA cannot be held responsible for problems resulting from the accuracy or the interpretation of the results provided.

ARC FLASH

MCREA calculates the available levels of Arc Flash on the distribution system and up to the point of delivery with the member for the safety of our employees. Our members are responsible for managing and being aware of the Arc Flash potential at their facilities. MCREA will provide information on the available fault current and the clearing characteristics of our equipment to support members' internal Arc Flash studies.

MCREA's system changes periodically, and Arc Flash levels can change. It is the member's responsibility to request updated information.

SECTION 6

DELIVERY AND LOAD REQUIREMENTS

All electric wiring, ducts, cables, and apparatus, including protective equipment, necessary for the utilization of electric service on the member's side of the point of delivery shall be furnished, installed, and maintained by the member. Such equipment should provide efficient energy use and

good voltage regulation. The member shall not use any equipment or device that will adversely affect MCREA's service to the member or other members. The member's equipment shall be suitable for the service supplied. It shall be installed and maintained in good and safe condition by the member in accordance with the rules and requirements of the *National Electrical Code®*, the local Public Authority, and MCREA.

DELIVERY POINT VOLTAGE

For these requirements, MCREA will use two measures: the first is Steady State Voltage and the second Flicker. For this document, both voltages are considered RMS voltages, meaning they must occur for more than a cycle. Steady State Voltage will be considered the average voltage measured for 30 minutes. Flicker is a surge or sag in voltage that is less than 30 minutes in duration.
ANSI C84-1.2006 defines two levels of voltage quality, Range A and Range B. In general, MCREA will attempt to provide all secondary members with Steady State Voltage in Range A. Due to the nature of their loads, large industrial members may be required to operate in the Range B region. Range A means ±5% from the nominal delivery point voltage for all secondary members. This may not be possible for larger members, and Range B may need to be considered, allowing for up to ±8.33% variation.

Acceptable Steady State Delivery voltages according to Range A and B are shown in Table 6.1

TABLE 6.1

	RANGE A				RANGE B			
	Phase to Ground (Voltage)		Leg to Leg (Voltage)		Phase to Ground (Voltage)		Leg to Leg (Voltage)	
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum
120/240 volts 1Ø	126	114	252	228	127	114	254	220
208Y/120 volts 3Ø	126	114	218	197	126	114	218	197
480Y/277 volts 3Ø	291	263	504	456	291	263	504	456
7,200 volts 1Ø	7,560	7,020			7,620	6,840		
12,470Y/7,200 volts 3Ø	7,560	7,020	13,090	12,160	7,620	6,840	13,200	11,850

In accordance with the recommendations of ANSI C84-1.2006, MCREA will strive to provide delivery point voltage unbalance on a Steady State basis of no more than 3%, as defined by the equation below.

$$Percent\ voltage\ Unbalance = 100\ x \frac{max.deviation\ from\ average\ Voltage}{Average\ Voltage}$$

If it is determined that the imbalance at a member's site is due to an imbalance in either load or power factor, the member may be responsible for corrective measures, particularly if other MCREA members are experiencing it.

FLICKER

Flicker are voltage fluctuations that are not steady state. Flicker is often measured in terms of the magnitude of the voltage drop and the frequency of the voltage sags. There are generally two sources for flicker on the distribution system: faults and member equipment.

Some flicker is generated with system problems, most notably fault currents. When a fault occurs on a feeder, even if the fault is cleared properly, all members may experience a very short-duration voltage drop due to the high line current during the fault. There is little that can be done to reduce the magnitude of the voltage drop. MCREA will make every effort to locate and isolate the problem as quickly as possible. The frequency of this type of flicker is very low.

Typically, when utilities consider flicker, they are considering the higher frequency voltage sags produced by loads turning on or off. These loads can be Non-linear loads such as welders and x-ray machines or single or three-phase motors that turn on and off frequently.

Table 6.2 shows MCREA's version of the standard flicker table as provided in the IEEE 141-1976.

TABLE 6.2

Voltage Dip (V_D)	Frequency	
	Maximum Number	per Unit of Time
≥ 0.5%	1	second
≥ 1.0%	2	minute
≥ 1.5%	30	hour
≥ 2.0%	8	hour
≥ 2.5%	5	hour
≥ 3.0%	3	hour
≥ 3.5%	1	hour

Flicker produced by a member onto their own secondary will be the member's problem to resolve. However, if a member's load produces a flicker onto the distribution system in excess of those shown in the table, MCREA will ask the member to make changes to correct the problem. Failure to correct the problem adversely affecting other members may be a reason for disconnecting the service.

HARMONICS

Harmonics is a growing problem in the distribution system with the proliferation of non-linear loads. Harmonics are voltages and currents in multiples of the normal 60Hz power frequency. MCREA will ensure that the harmonics on the distribution system are limited per the guidelines in the IEEE Std. 519-1992 "IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems."

Voltage Harmonics:

Voltage Harmonics can be affected by MCREA and members on the line. MCREA will strive to

maintain in accordance with IEEE Std. 519-1992 to deliver voltage with no more than 3% harmonics on any individual frequency or 5% Total Harmonic Distortion (as defined by IEEE). MCREA will not be responsible for voltage harmonics produced by the members themselves. Members who produce voltage harmonics on MCREA's system in excess of these limits will be responsible for remedying the problem. It can be disconnected if it continues to affect the distribution system adversely.

Current Harmonics:

Member loads primarily produce harmonic currents and do not typically significantly impact other members. However, they can lead to Voltage Harmonics and reduce the life of MCREA equipment. For this reason, MCREA has adopted the standards established in the IEEE Std. 519-1992, as shown in Table 6.3.

TABLE 6.3

Current Distortion Limits for General Distribution Systems (120V Through 69,000 V)

Maximum Harmonic Current Distortion in Percent of I_L

I_{SC}/I_L	<11	11≤h<I7	I7≤h<23	23≤h<35	35≤h	TDD
<20*	4.0	2.0	1.5	0.6	0.3	5.0
20<50	7.0	3.5	2.5	1.0	0.5	8.0
50<100	10.0	4.5	4.0	1.5	0.7	12.0
100<1000	12.0	5.5	5.0	2.0	1.0	15.0
>1000	15.0	7.0	6.0	2.5	1.4	20.0

Even harmonics are limited to 25% of the odd harmonic limits above.

Current distortions that result in a dc offset, e.g., half-wave converters, are not allowed.

*All power generation equipment is limited to these values of current distortion, regardless of actual I_{SC}/I_L.

ISC = maximum short-circuit current at the delivery point.

IL = maximum demand load current (fundamental Frequency component) at the delivery point.

h = order of harmonic

Member's loads producing current harmonics over these standards may be asked to make immediate corrections or held liable for damaged equipment. Noncompliance can be considered a reason for disconnection.

POWER FACTOR

MCREA members must maintain a Steady State Power Factor greater than 95% leading or lagging. Failure to maintain this level of Power Factor can result in MCREA adjusting the billing to compensate. Billing will be adjusted using two power factor values; Energy will be adjusted using the average power factor during the billing period (assuming that the power factor is less than the 95% requirement), and demand will be adjusted based on the power factor at the time of the demand (for coincident peak members both coincident and peak demands).

The adjustment is the ratio of the desired power factor (95%) to the actual power factor. For example, the energy can be adjusted if the member averages a 90% power factor during the billing period.

$$\text{Adjustment Factor} = \frac{95\%}{\text{Measured Power Factor}}$$

A member whose average power factor was 90% would see an adjustment of

$$Adjustment = \frac{95\%}{90\%} = 1.056$$

When Power Factor problems are identified, MCREA will give members six months from notification to correct the problem before adjustments will be made.

PROTECTION OF MEMBER-OWNED EQUIPMENT

MCREA cannot guarantee the absolute quality of our power 100% of the time. Outages, lightning strikes, and other member equipment can cause problems. MCREA recommends that members with sensitive electronic and three-phase equipment susceptible to transients or voltage loss install the proper equipment to protect their equipment. This includes but is not limited to surge suppressors, under-voltage relays, single-phase loss of potential relaying, and uninterruptible power supplies.

THREE-PHASE VS SINGLE-PHASE SERVICE

MCREA will not serve any load greater than 100kVA with a single phase. 100kVA and less will normally be served at 120/240, although primary metering will be considered.

SECTION 7

SPECIAL TYPES OF SERVICE

DISTRIBUTION CONNECTED MEMBER-OWNED GENERATION See ‘NET METERING’ above

NON-STANDARD CONSTRUCTION

Non-standard construction is contingent upon prior approval by MCREA. Standard electric service is provided from a single supply source under the terms, conditions, and Rules and Regulations of MCREA's Tariff on file and in effect with the Commission. Any change from standard service, which is within the limits prescribed by the Commission, will be at the member's expense. This includes all engineering, installation, maintenance, and material costs to provide and maintain this non-standard construction.

Where additional transformer installations are requested solely to limit the size and length of member-owned services, the extra costs of such installations may be charged to the member as "Non-Standard Construction."

DATA PULSES

Meter Pulses Generated for Member Use as Data to Their Load Management System

Selecting the Correct Self-Contained Meter Socket
Self-contained meter sockets for services less than 600 volts and up to 320 amp

SECTION 8

POINT OF DELIVERY

OVERHEAD SERVICE RESIDENTIAL/COMMERCIAL

Point where MCREA*'s* facilities are first connected to the electric facilities of the member's overhead service riser/mast.

UNDERGROUND SERVICE RESIDENTIAL
(6 meters or fewer)

At line side terminals of meter socket or line side of disconnect if the main disconnect is used ahead of metering.

UNDERGROUND SERVICE COMMERCIAL
Point where MCREA*'s* facilities are first connected to the electric facilities of the member; load side of the pole-mounted or pad-mounted transformer; or line side of disconnect in a primary metering cabinet.

For responsibilities of line side conduit and conductors in each service area, please contact MCREA for information and refer to Section 11 Drawings and Illustrations.

SECTION 9

STREET LIGHTING STANDARDS AND CRITERIA

STREET LIGHTS

Pole mounted lights installed and maintained by MCREA along dedicated public streets. This shall include streetlights along Interstate 76 installed and maintained by CDOT with service and monthly billing provided by MCREA and area lights installed to illuminate a member's property (MCREA Owned/Leased by Member or Member Owned).

NEW STREET LIGHT REQUEST

MCREA shall furnish, trench, and install all electrical equipment and wires necessary to provide electric service to the street lighting system at the city's or the developer's expense. The Developer

is to provide MCREA with the city-approved street layout for the subdivision's interior and adjacent streets and request for electric service installation to the subdivision. The MCREA application to request the design, estimate, and installation of streetlights can be obtained upon request by contacting the MCREA Engineering Department.

STREET LIGHT SELECTION CRITERIA

The following six categories under which a streetlight can be installed are:
Residential streets, local street intersections, road curves, and mid-blocks are at least 200 ft from the nearest intersection.
1) City-maintained public facility entrance drives.
2) Collector Street intersections.
3) Arterial Street, Divided Street, and signalized streets.
4) Principal Arterial intersection.
5) Major Street corridor illumination is designed by the developer's engineer in accordance with the American National Standards Institute/Institute of Electrical Engineers Standards (ANSI/IEES), which is then approved by the city and the electric service provider.

All other street lighting not qualified by these categories will be considered a special request for an individual or single user group.

Special streetlight categories include:
1. Neighborhood illumination
2. Cul-de-sac (less than 150')
3. Turnarounds
4. Dead-end
5. Alley
6. Area lighting
7. Curb cut or entry
8. Area or Security lighting

STREETLIGHT DAMAGE, OUTAGE, OR REPAIR NOTICE

Notice of streetlight outages can be submitted by calling MCREA dispatch at 970-867-5688.

SECTION 10

RIGHT-OF-WAY CLEARING (TREE TRIMMING)

PURPOSE

In order to provide continuous, uninterrupted electric service to our members, it is necessary to prevent contact with the MCREA's power lines by a member's tree limbs and branches. Removing the offending limb or branch as soon as possible is necessary when contact occurs. This Operation Instruction has been prepared to provide guidelines on tree trimming adjacent to various

line voltages in all MCREA's service territory areas. Efforts will be made to trim trees in an attractive fashion; however, purely decorative trimming should not be practiced.

TREE TRIMMING GOAL

To establish five-year cuts in populated and rural areas for overhead primary line clearances. The ANSI "V" trimming method is preferred to get the preferred clearance and for the tree's health.
Note: The above will be implemented with flexibility and using good judgment. However, yearly return trips are inevitable in some areas depending on tree growth patterns.

NOTIFICATION OF PROBLEM

Reporting the contact of a tree to the electric lines or service should be called into MCREA and routed to **MCREA dispatch, or submit a completed tree trimming web form, which can be found on MCREA's website at https://www.mcrea.org/electrical-safety-tree-trimming.** It is important to provide the member's full name, address, home and work telephone numbers, and detailed description of the area of concern. All tree trimming notices will be assigned to a contract tree trimming crew. The contract tree trimming crew is responsible for notifying the member of the date the work will be performed.

PRIMARY VOLTAGE LINES

Trees will be trimmed to allow a minimum of 10' clearance (measuring from the centerline of the power pole) from the closest tree limb to the conductor whenever possible. Additional clearance is desired to allow for additional growth.

SERVICE LINES 600 VOLTS OR LESS

Open Wire
Trees creating a problem with open wire services are maintained by MCREA until the point of delivery. These wires can be de-energized for members to trim safely after the meter.

Triplex Cable Services
MCREA is responsible for trimming trees that affect triplex cable services until the point of delivery. Disconnect/Member Trim Service will be temporarily disconnected by the MCREA so trimming can be done by the member and then reconnected at no cost to the member if scheduled during business hours. Otherwise, overtime costs will incur.

Underground Conversion
Service may be converted to underground per MCREA policy at the member's expense.

Note: If the member is not agreeable to any of the foregoing options, and this refusal subjects other members to potential outages or otherwise creates a hazard, refer this information to MCREA Dispatch.

STREET LIGHTS

The member maintains trees affecting street lights or street light services.

MEMBER NOTIFICATION

The member shall be notified when trimming or removing a tree is necessary. If the member refuses to allow trimming or removal, refer the matter to MCREA Dispatch.
Note: If member contact cannot be made, and a potential outage or hazard exists, MCREA reserves the right to make the situation safe for its equipment and public safety.

TRANSMISSION LINE ENCROACHMENT

The member is to be notified if tree encroachment is causing interference with the operation or maintenance of a transmission line.

RIGHT-OF-WAY/EASEMENTS

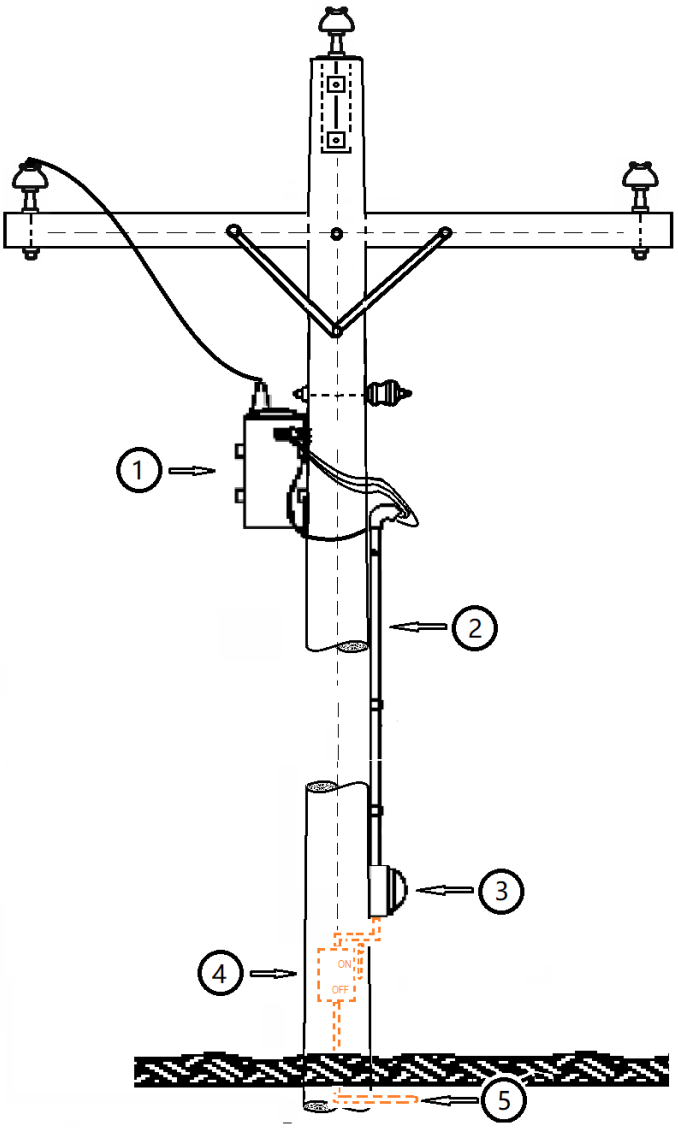
MCREA has the right to trim or remove a tree within MCREA easement or right-of-way that interferes with MCREA's reasonable use of that easement or right-of-way.
MCREA can trim or remove a tree that interferes with lines installed by right of permit or franchise agreement.
MCREA has the right to trim a limb to the easement line that overhangs into and interferes with the use of the easement.
Removal of a tree adjacent to MCREA's easement of right-of-way whose limbs overhand the easement may be considered; however, the member must be contacted for permission to remove the tree(s).

FOLLOW THROUGH TO COMPLETION

MCREA's Operations Department shall monitor the completion of the corrective action taken in any situation where the member has refused MCREA the right to trim or remove a tree that is interfering with the operation or maintenance of a line.

SECTION 11

DRAWINGS AND INSTALLATIONS



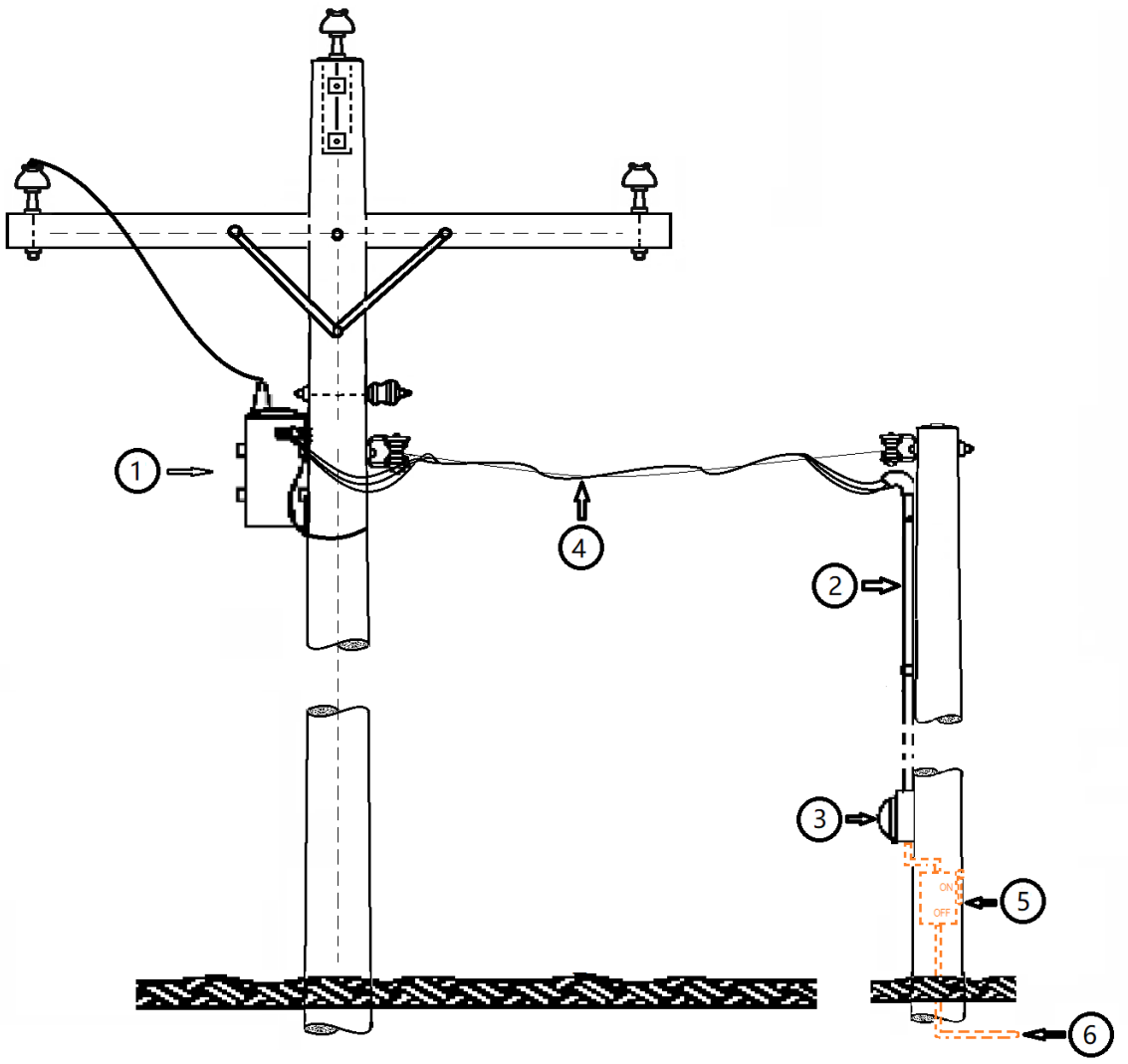
*EQUIPMENT SHOWN IN ORANGE FURNISHED AND INSTALLED BY MEMBER.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
1	1	Transformer as req'd			
2	1	Meter Loop			
3	1	Meter and Meter Housing			
4	1	Disconnect (Member Owned)			
5	1	Secondary Wire (Member Owned)			

MORGAN COUNTY REA

Single Phase Overhead Inline Service

May 2024	MCREA GUIDE ONLY	1M



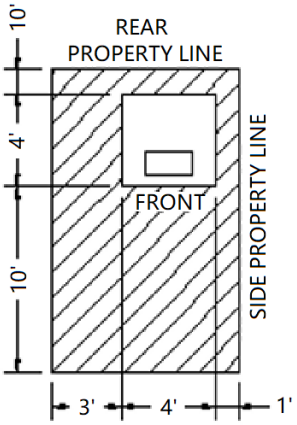
*EQUIPMENT SHOWN IN ORANGE FURNISHED AND INSTALLED BY MEMBER.

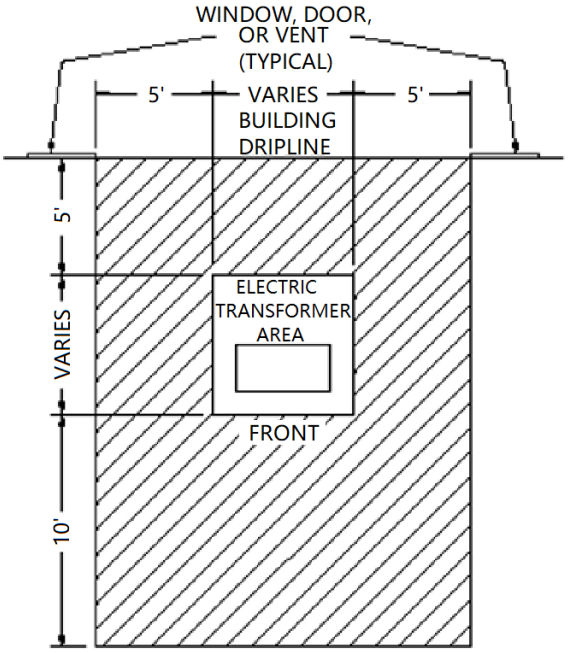
ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
1	1	Transformer as req'd	6		Secondary Wire (Member Owned)
2	1	Meter Loop			
3	1	Meter and Meter Housing			
4	1	Secondary Wire			
5	1	Disconnect (Member Owned)			

MORGAN COUNTY REA

Single Phase Overhead Service to Meter Pole

May 2024	MCREA GUIDE ONLY	2M





See Note <5>

RESIDENTIAL SUBDIVISION

Single-Phase Transformer for Residential Subdivision Installation

SINGLE-PHASE RESIDENTIAL/COMMERCIAL
THREE-PHASE COMMERCIAL

Single-Phase Transformer or Three-Phase Transformer or Combination Three-Phase Transformer and Secondary Termination Enclosure for Commercial Installation

NOTES

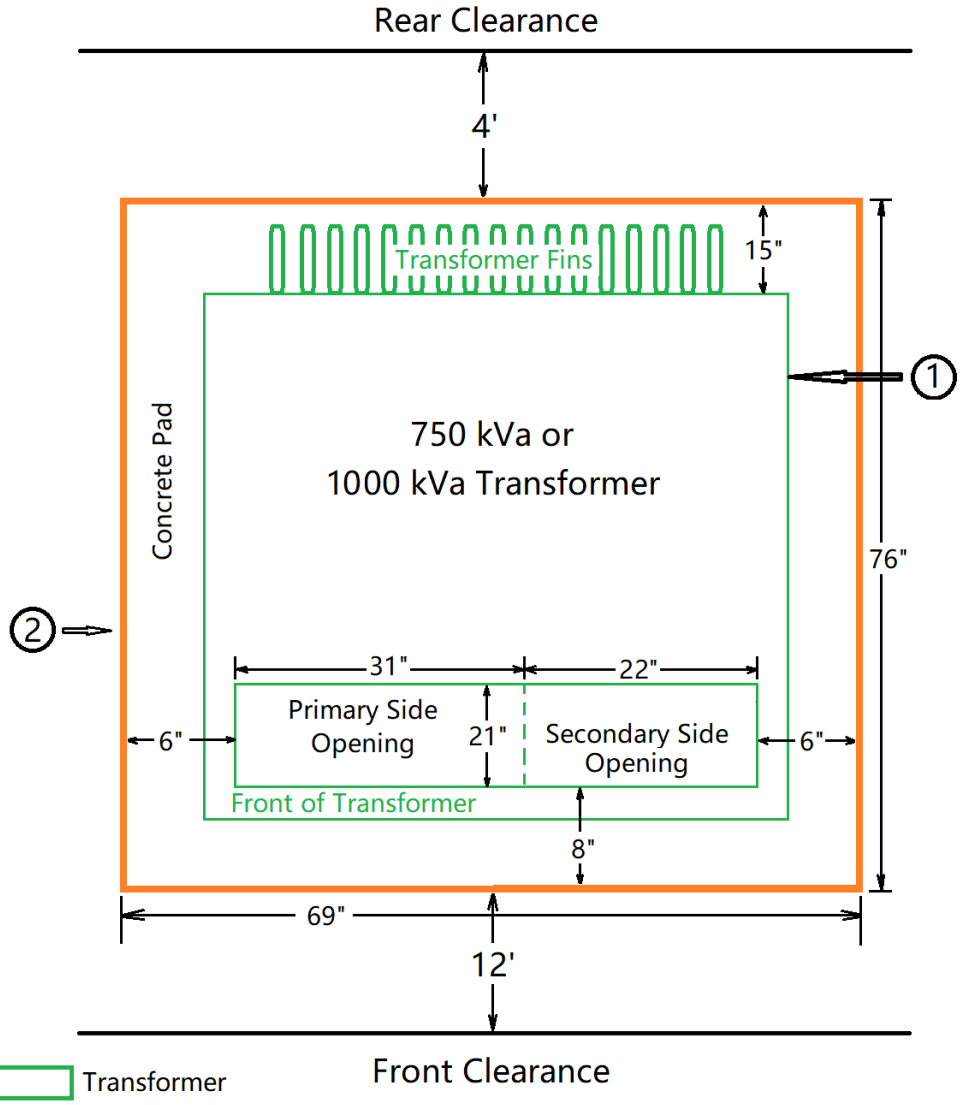
(1) Transformers can be a fire hazard since they contain flammable oil.
(2) The above dimensions allow access for operation and maintenance.
(3) Premanenet obstruction within or above the hatched working space is prohibited.
(4) Guard posts are required in traffic area.
(5) Gate (vented) required if transformer is to be installed within an enclosure. Gate must be a minimum of two feet wider than transformer and must include provision for an MCREA padlock. Contact MCREA for transformer dimensions and site specific requirements.
(6) Working Space Fire Safety Clearance:

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL

MORGAN COUNTY REA

Minimum Workspace Around Padmount Transformers

May 2024	MCREA GUIDE ONLY	1UM



Transformer

Concrete pad can be larger, but primary and secondary openings must meet listed dimensions.

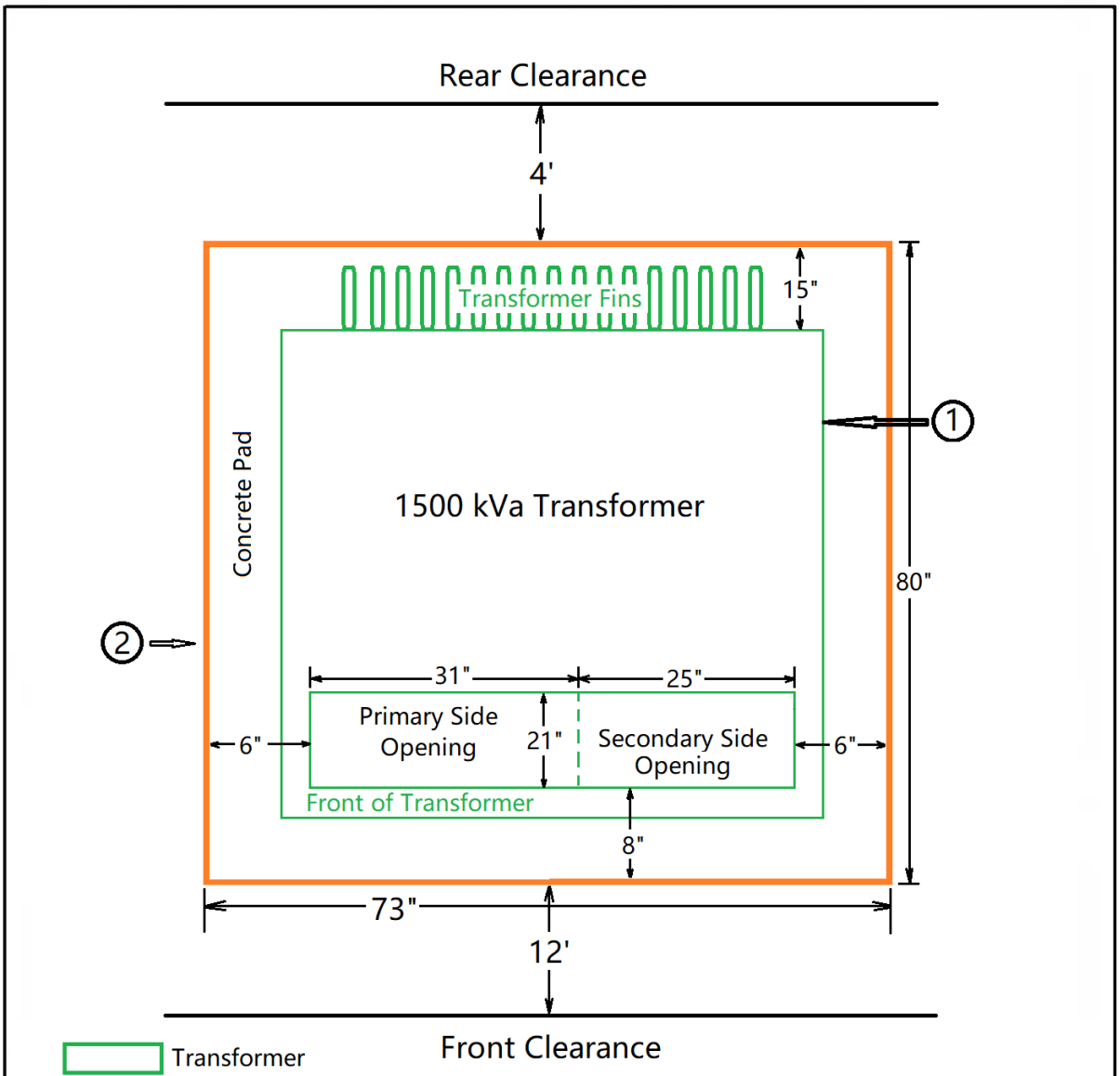
*EQUIPMENT SHOWN IN ORANGE FURNISHED AND INSTALLED BY MEMBER.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
1	1	Padmount Transformer			
2	1	Concrete Pad (Member Owned)			

MORGAN COUNTY REA

Concrete Pad for 750 kVa and 1000 kVa Padmounted Transformers

May 2024	MCREA GUIDE ONLY	2UM



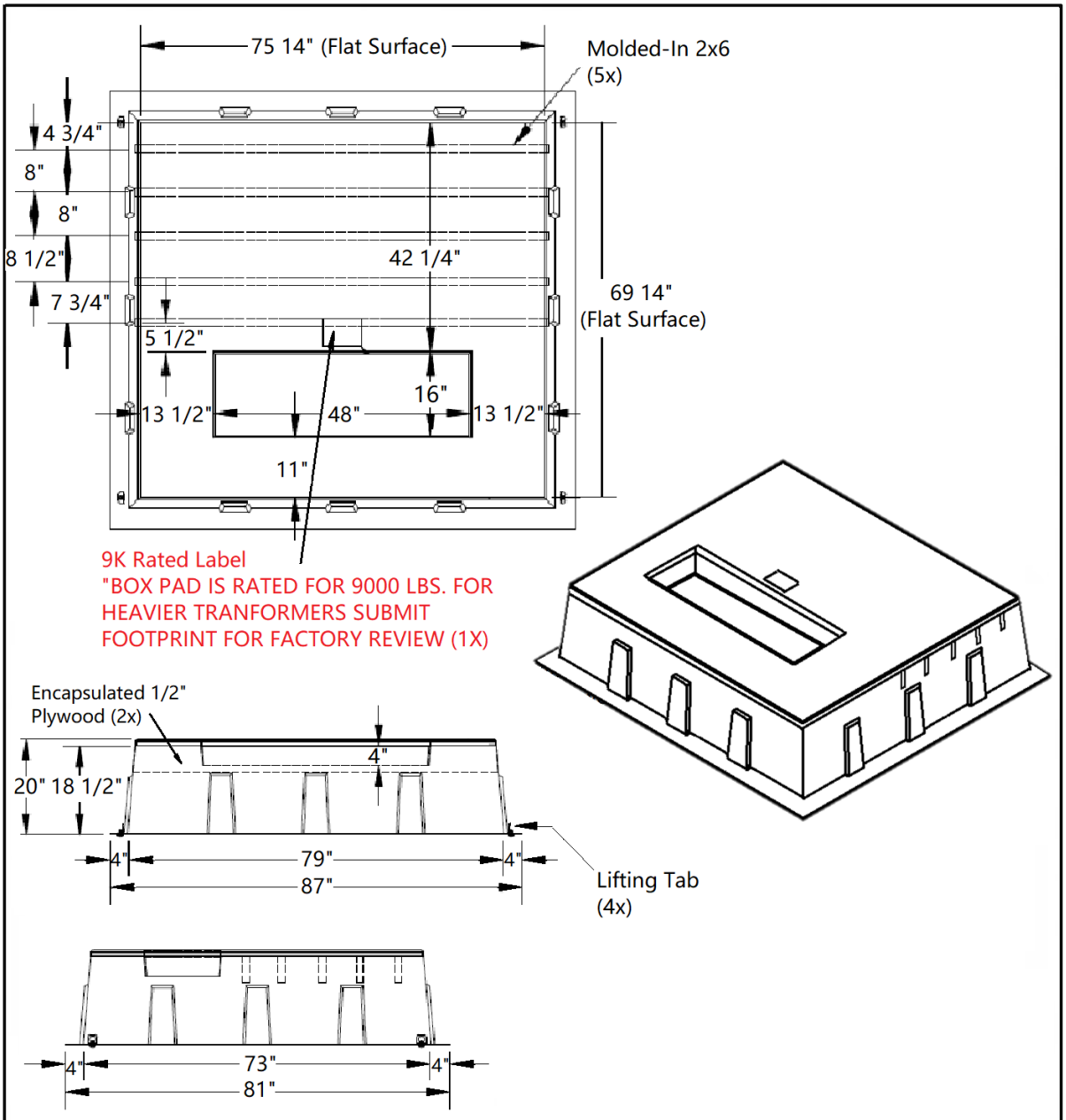
*EQUIPMENT SHOWN IN ORANGE FURNISHED AND INSTALLED BY MEMBER.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
1	1	Padmount Transformer			
2	1	Concrete Pad (Member Owned)			

MORGAN COUNTY REA

Concrete Pad for 1500 kVa Padmounted Transformer

May 2024	MCREA GUIDE ONLY	3UM

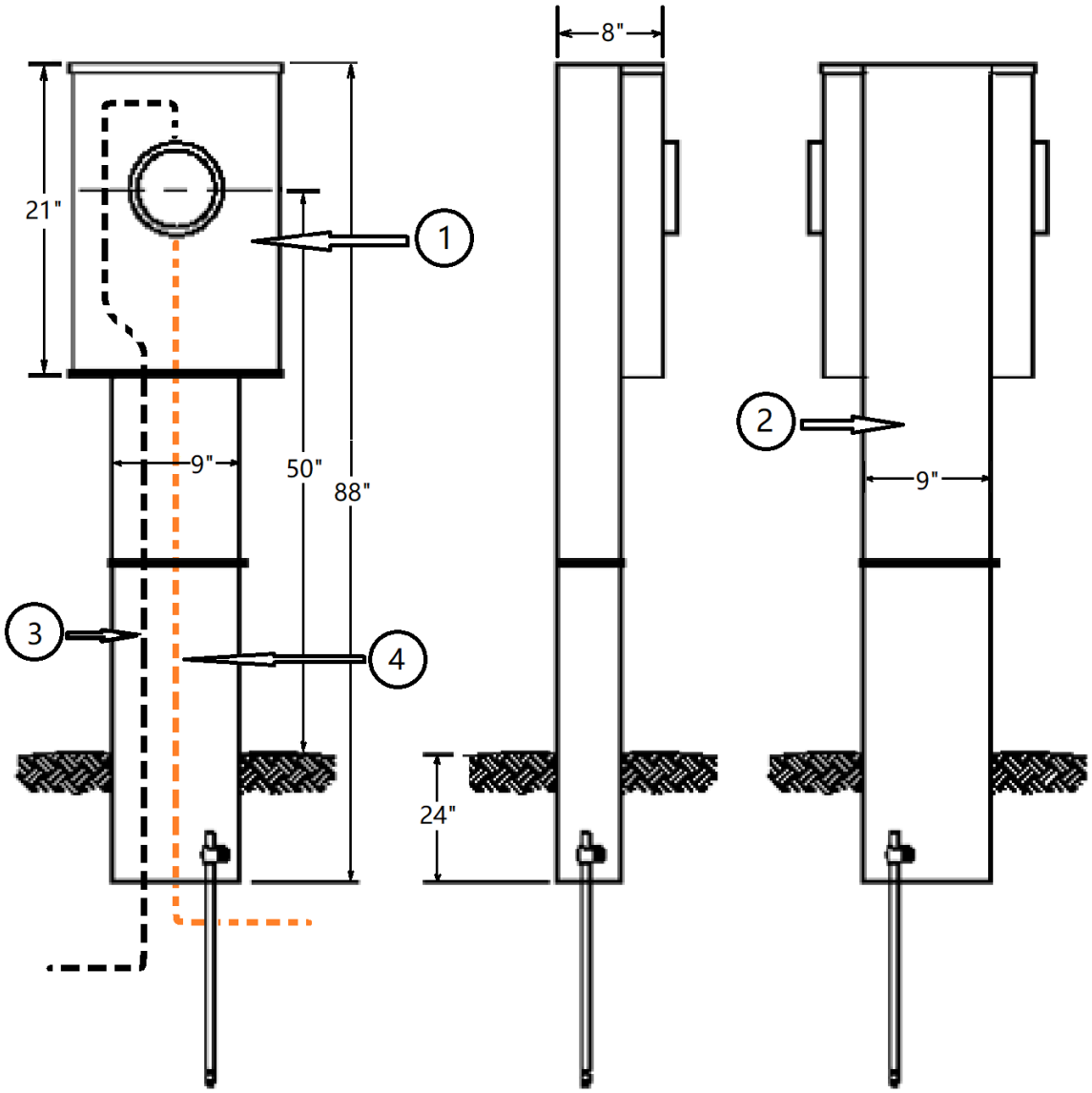


ITEM NO.	MATERIAL	ITEM NO.	MATERIAL

MORGAN COUNTY REA

Fiberglass Transformer Pad Dimensions (For Transformers less than 750 kVa)

May 2024	MCREA GUIDE ONLY	4UM



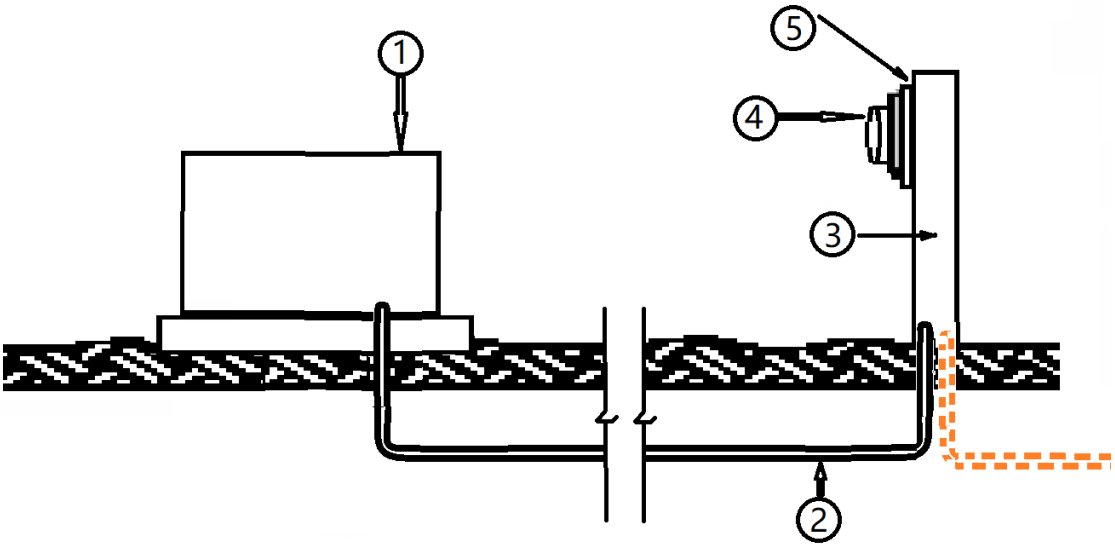
*EQUIPMENT SHOWN IN ORANGE FURNISHED AND INSTALLED BY MEMBER.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
1	1	Meter Pedestal			
2	1	Double Meter Pedestal			
3		MCREA Secondary Wire			
4		Member Owned Secondary Wire			

MORGAN COUNTY REA

Single and Double Meter Pedestals

May 2024 | MCREA GUIDE ONLY | 5UM



*EQUIPMENT SHOWN IN ORANGE FURNISHED AND INSTALLED BY MEMBER.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
1	1	Padmount Transformer as req'd			
2		Underground cable			
3	1	Meter Pedestal			
4	1	Meter			
5	1	Meter housing/socket			

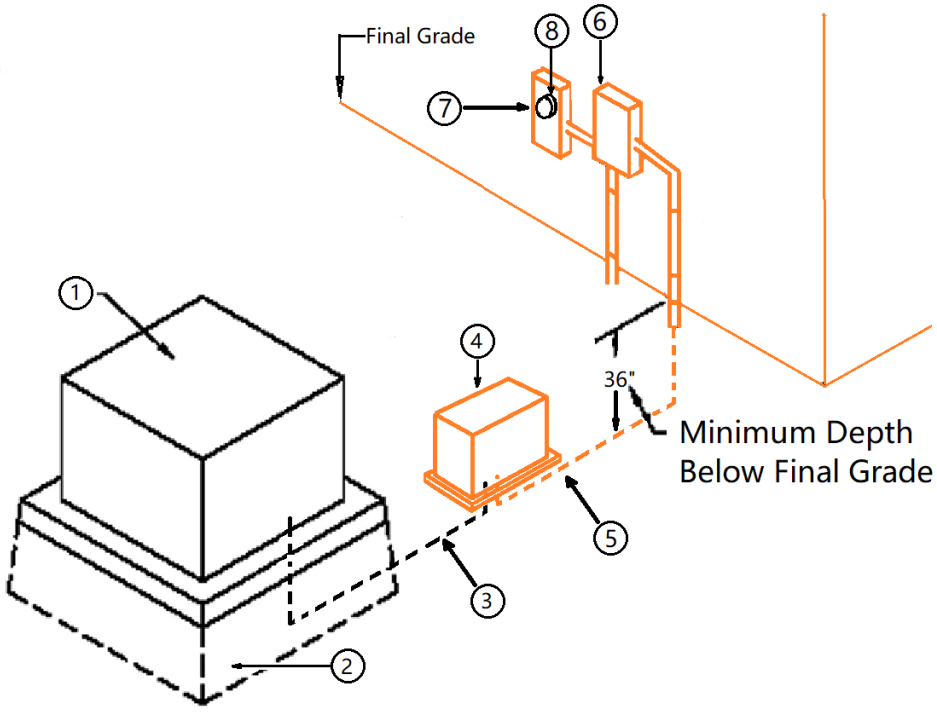
MORGAN COUNTY REA

Single Phase Underground Service to Meter

May 2024 | MCREA GUIDE ONLY | 6UM

Notes:

1. Member's system will be in conformance with the current national code and wiring regulations of the public authority. Contact your local electrical inspector prior to beginning work or purchasing materials.
2. See "guidelines, contacts, for commercial metering"
3. Maximum 6 - 350 MCM conductors per phase.



*EQUIPMENT SHOWN IN ORANGE FURNISHED AND INSTALLED BY MEMBER.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
1		Padmount Transformer	6		Consumer Breaker Panel
2		Transformer Ground Sleeve	7		Meter Housing
3		Secondary Service Conductor	8		REA Owned (and Provided) Meter
4		Secondary Connection Cabinet			
5		Secondary Service Conductor			

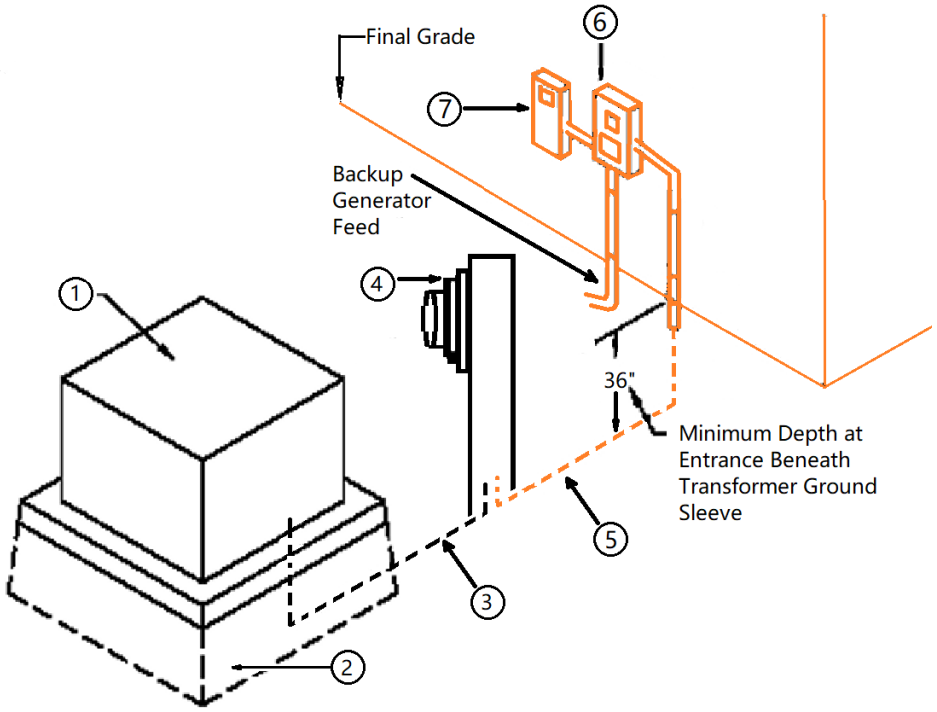
MORGAN COUNTY REA

Service Connection Cabinet

May 2024	MCREA GUIDE ONLY	7UM

Notes:

1. Member's system will be in conformance with the current national code and wiring regulations of the public authority. Contact your local electrical inspector prior to beginning work or purchasing materials.
2. See "guidelines, contacts, for commercial metering"
3. Maximum 6 - 350 MCM conductors per phase.



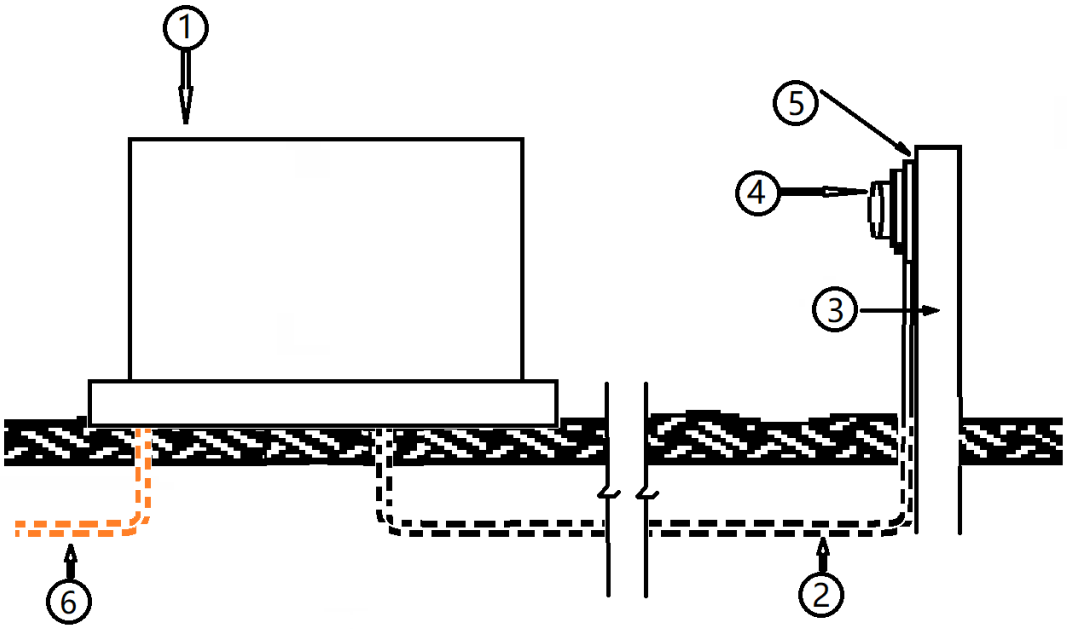
*EQUIPMENT SHOWN IN ORANGE FURNISHED AND INSTALLED BY MEMBER.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
1		Padmount Transformer	6		Automatic Transfer Switch
2		Transformer Ground Sleeve	7		Consumer Breaker Panel
3		Secondary Service Conductor			
4		Meter Pedestal			
5		Secondary Service Conductor			

MORGAN COUNTY REA

Automatic Transfer Switch with Backup Generator

May 2024	MCREA GUIDE ONLY	7UM-ATS



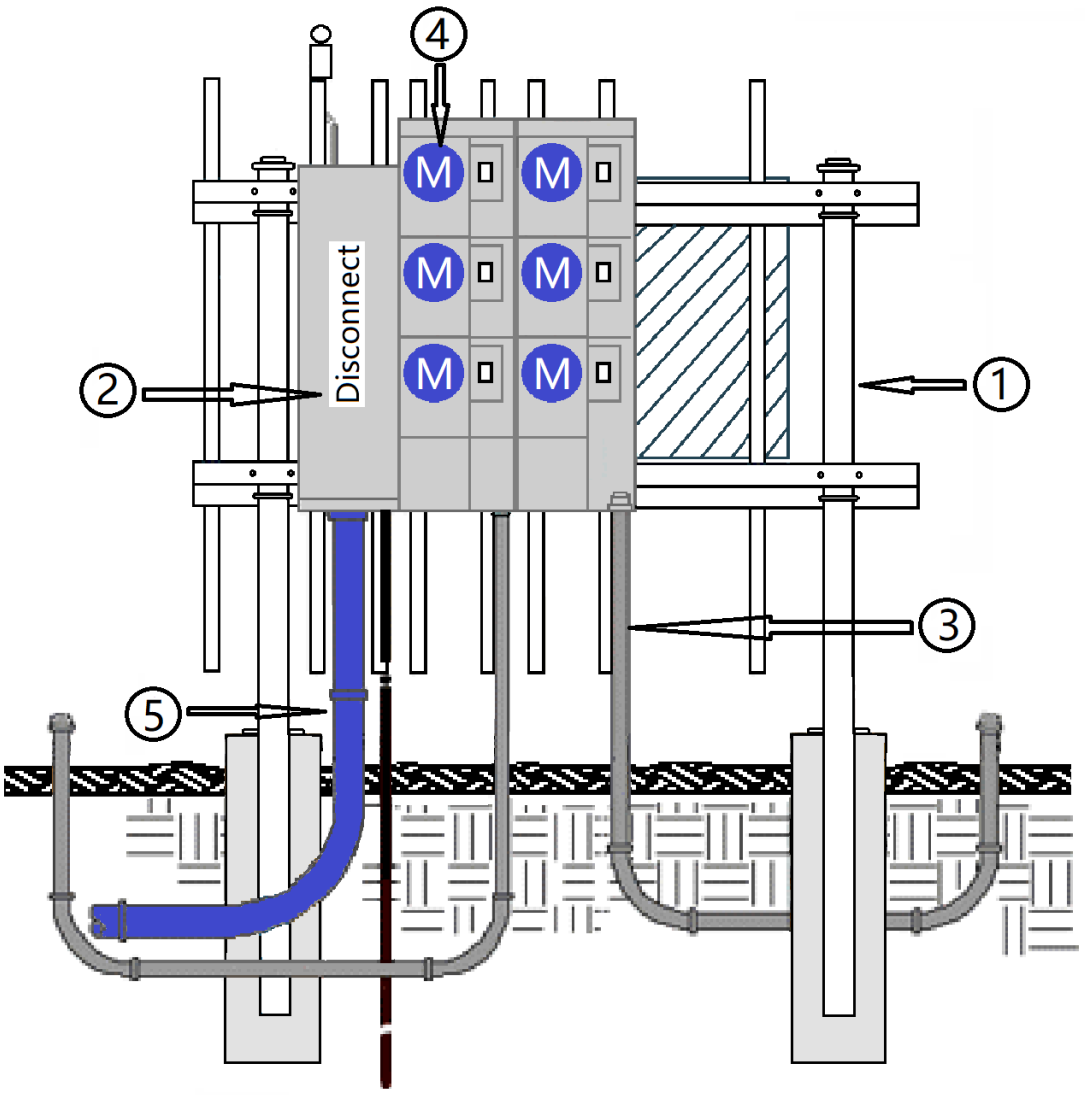
*EQUIPMENT SHOWN IN ORANGE FURNISHED AND INSTALLED BY MEMBER.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
1	1	Padmount Transformer as req'd	6		Member Owned Secondary
2		CT Wire in Conduit			
3	1	Meter Pedestal			
4	1	Meter			
5	1	Meter housing/socket			

MORGAN COUNTY REA

Single Phase Padmount Transformer with CT Metering

May 2024	MCREA GUIDE ONLY	8UM



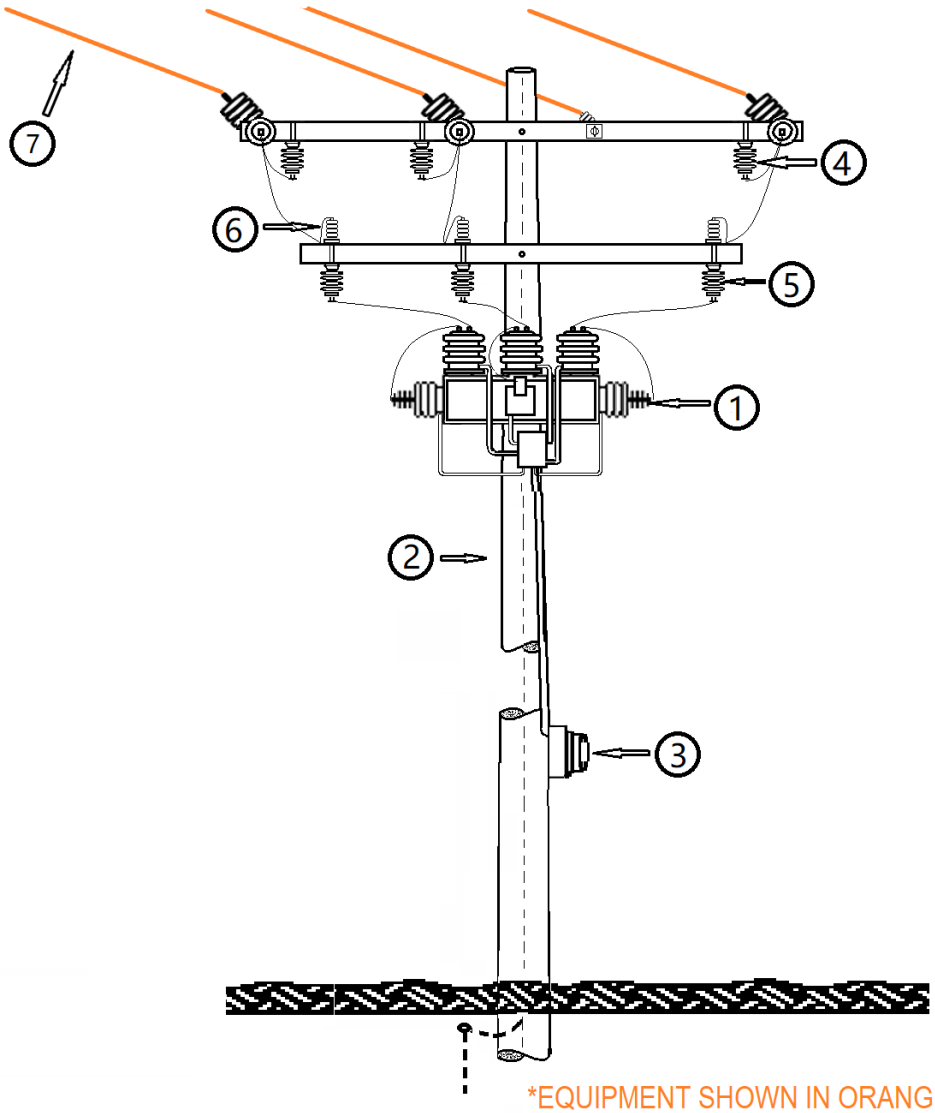
*ALL MATERIAL MEMBER PROVIDED AND OWNED, EXCEPT WHERE HIGHLIGHTED IN BLUE

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
1	1	Meter Rack (Member Owned)			
2	1	Disconnect (Member Owned)			
3		Secondary (Member Owned)			
4		Meter (MCREA Owned)			
5		Secondary (MCREA Owned)			

MORGAN COUNTY REA

Member Owned Meter Rack

May 2024	MCREA GUIDE ONLY	9UM



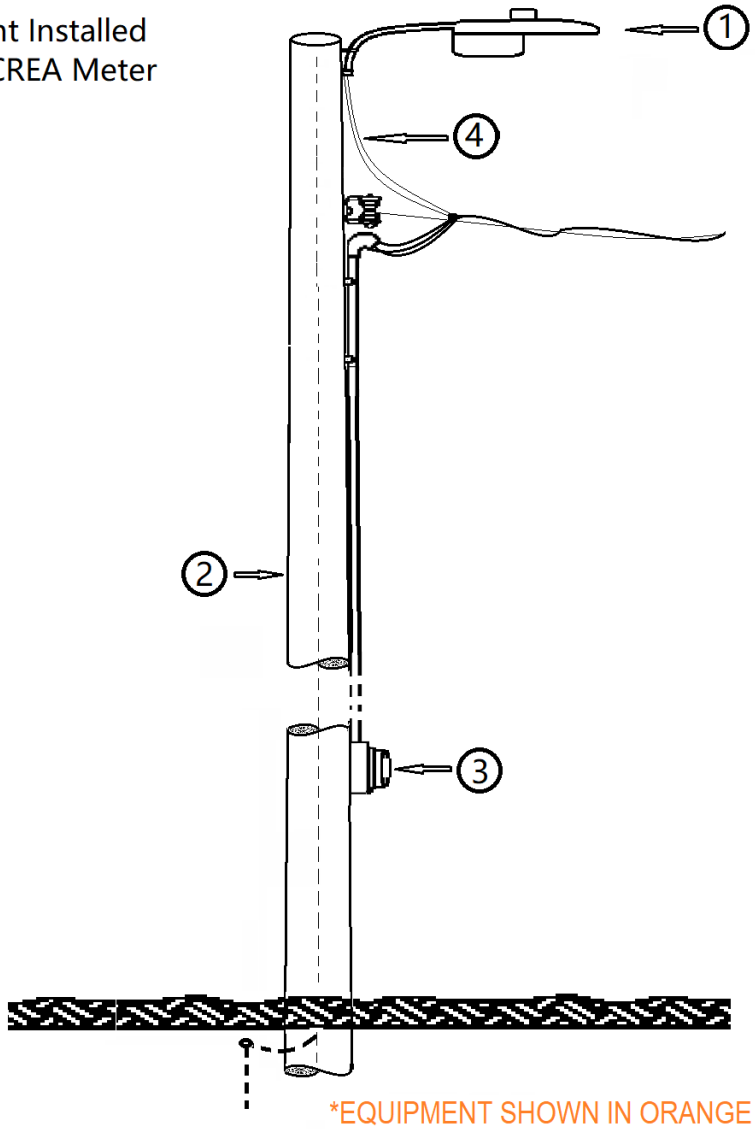
ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
1	1	3 Phase Primary Meter Assembly	6	3	Arrestor
2	1	Pole	7		Member Owned Conductor
3	1	Meter			
4	3	Switch Assembly			
5	3	Cutout			

MORGAN COUNTY REA

3 Phase Primary Metering

May 2024 | MCREA GUIDE ONLY | M8-15B

* Rental Light Installed
Before MCREA Meter



*EQUIPMENT SHOWN IN ORANGE FURNISHED AND INSTALLED BY MEMBER.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
1	1	Yard Light			
2	1	Lift Pole			
3	1	Meter			
4	1	Pre-Meter Secondary Wire			

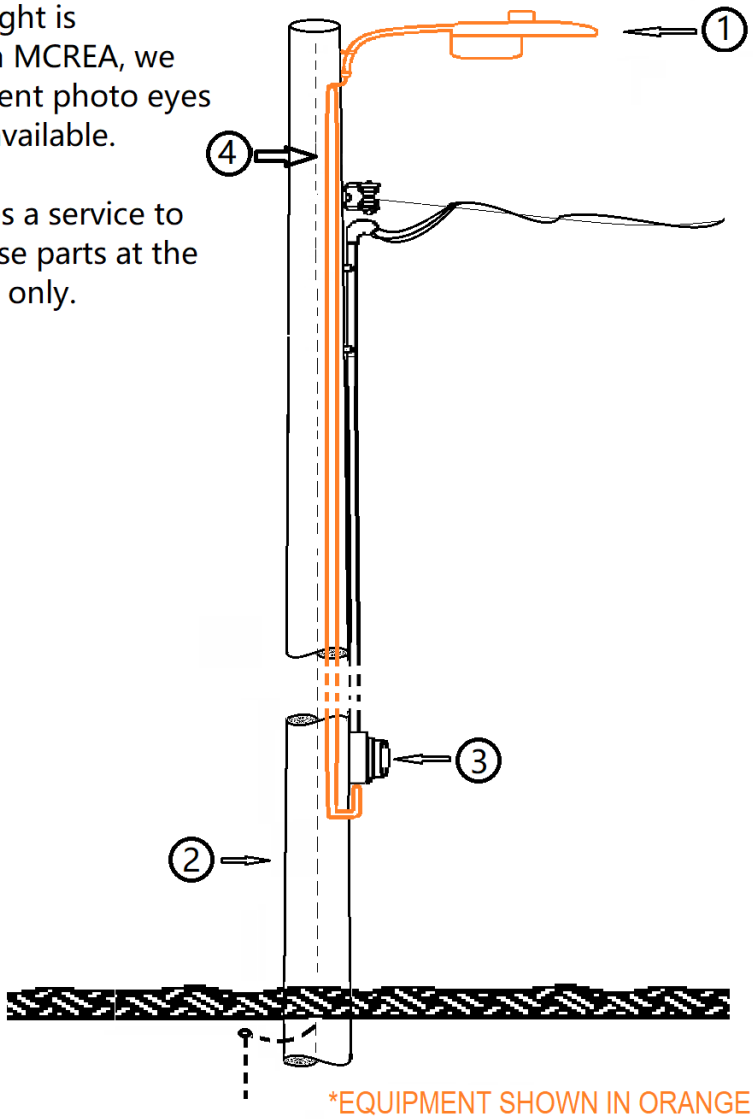
MORGAN COUNTY REA

Rental Yard Light

May 2024 | MCREA GUIDE ONLY | M26-5

NOTE: If Yard light is purchased from MCREA, we make replacement photo eyes and refractors available.

MCREA provides a service to change out these parts at the cost of material only.



*EQUIPMENT SHOWN IN ORANGE FURNISHED AND INSTALLED BY MEMBER.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
1	1	Yard Light (Member Owned)			
2	1	Lift Pole			
3	1	Meter			
4		After-the-Meter Secondary Wire			

MORGAN COUNTY REA

Member Owned Yard Light

May 2024	MCREA GUIDE ONLY	M26-5-CONS