Section 8 – Policies and Code

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8-1 Policies and Regulations – Table of Contents

The following section is a listing of general Company policies and State laws regarding service entrance designs. It is assumed that everyone has access to the National Electric Code. The State laws included here are ones that are commonly encountered but to which not everyone may have easy access.

The following is a listing of abbreviations:

WPS	Wisconsin Public Service
NEC	National Electric Code
NESC	National Electric Safety Code (rules governing utilities)
PSC	Public Service Commission of Wisconsin (regulatory & rule making policy)
MPSC	Michigan Public Service Commission (regulatory & rule making policy)

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8-2 Company Policies - General

Code Compliance and Inspection and Re-connects

All wiring shall be done in accordance with requirements of the Wisconsin Administrative (electrical) Code (in particular SPS 316), the requirements of Michigan Law (in particular the National Electrical Code as adopted by Michigan Rule 408.30801 and revised by subsequent sections of law), the Company's rules and other local requirements, whichever applies.

The Company will not inspect customer's wiring or equipment for compliance with the applicable codes.

In new wiring installations or when changes in existing wiring are made which require the removal of meters or the disconnection of service, the Company shall not connect or resume service until the facility is inspected and approved by a certified inspector (WI SPS 316)(MI Rule 408.30818). In some cases in Wisconsin this may require a Certificate of Compliance with the Wisconsin Administrative (electrical) Code. This is when an inspector is not available.

A WI Certificate of Compliance shall consist of a written statement furnished on Company form #159-2074 by the contractor or person doing the wiring, indicating there is such compliance.

The Company does not require inspection or a wiring certificate to reconnect an inactive account if no modifications have been made. It is the customer's responsibility to make sure that the electrical system is in a safe condition when requesting reconnection of a service. Note that some local jurisdictions may require inspection before a reconnection. Some jurisdictions may require the service to be upgraded. The Company may refuse to connect some inactive services due to out-of-date metering or obvious safety hazards at the service entrance. Common problems are old 200 Amp "A-Base" direct meters and old 30 or 60 Amp meter sockets that are falling apart, and deteriorated insulation at the weatherhead, etc.

The Company will not interpret the electrical code. Questions concerning code interpretations should be referred to the local or state electrical inspector.

The Company will inspect for compliance with its rules and may refuse or discontinue electric service if its rules are not complied with or if a hazardous condition exists.

Company crews setting meters or connecting new services test for infinite resistance at the meter socket load terminals. If this check indicates connected load at the load terminals, the meter shall not be set. It is mandatory that the service disconnect switch be left open to avoid the indication of connected load at the meter base. COMPANY CREWS WILL NOT ENTER A BUILDING TO OPEN OR INSPECT THE SERVICE DISCONNECT SWITCH AND THE METER WILL NOT BE SET.

Continuity and Quality of Service

Wisconsin

The Company will use reasonable care to provide an uninterrupted and regular supply of service and will comply with the service rules for electrical utilities set forth in Chapter PSC 113, Wisconsin Administrative Code. The Company shall not be liable for any loss, injury, or damage resulting from interruptions, deficiencies or imperfections of service unless and to the extent they are due to willful misconduct or negligence on its part. In no event shall the Company be liable for any special, consequential, punitive or other indirect damages of any nature, whether arising under contract, tort (including negligence and strict liability) or any other theory of law.

Without limiting the generality of the foregoing, the Company shall have the right to cause service to any customer to be interrupted or limited at any time without liability, by automatic devices or otherwise, pursuant to load control or on-peak control programs or when in the judgment of the Company such interruption or limitation is necessary or desirable to address actual or potential emergencies or other adverse conditions. The Company may also temporarily interrupt service without liability in order to make repairs, replacements or changes to the Company's facilities, whether on or off the customer's premises.

Unless conditions of an actual or potential emergency nature require otherwise, the Company shall strive to give reasonable advance notice to customers affected by planned service interruptions. Such interruptions shall be scheduled for periods which will cause a minimum of customer inconvenience.

8-2 Company Policies – General (Cont'd)

Michigan

The Company will endeavor to, but does not guarantee to furnish a continuous supply of electric energy and to maintain voltage and frequency within reasonable limits.

The Company shall not be liable for interruptions in the service, phase failure or reversal, or variations in the service characteristics, or for any loss or damage of any kind or character occasioned thereby, due to causes or conditions beyond the Company's control, and such causes or conditions shall be deemed to specifically include, but not be limited to, the following: acts or omissions of customers or third parties; operation of safety devices except when such operation is caused by the negligence of the Company, absence of an alternate supply of services; failure, malfunction, breakage, necessary repairs or inspection of machinery, facilities or equipment when the Company has carried on a program of maintenance consistent with the general practices prevailing in the industry; act of God; war; action of the elements; storm or flood; fire; riot; labor dispute or disturbances; or the exercise of authority or regulation by governmental or military authorities.

The customer shall be responsible for giving immediate notice to the Company of interruptions or variations in electric service so that appropriate corrective action can be taken.

The Company reserves the right to temporarily interrupt service for construction, repairs, emergency operations, shortages in power supply, safety and State or National emergencies and shall be under no liability with respect to any such interruption, curtailment or suspension.

All motors, appliances or equipment connected to the Company's system shall be designed, installed, and operated not to cause interference to other customers' service equipment nor to handicap the Company in maintaining proper system conditions.

It shall be the responsibility of the customer to provide motor protection for undervoltage, overcurrent, short circuit, loss of a phase and phase reversal. Note that the NEC has required protection on all phases where overload relays are used, since 1971 for continuous duty motors. This should provide single-phase protection. (NEC 430.37).

The voltage provided to the customer is intended to comply with the requirements of the Administrative Code (WI PSC 113)(MI Rule 460.3702). This code allows occasional voltage transients, which may adversely affect the operation of certain sensitive equipment. It is the customer's responsibility to prevent undesirable operation of sensitive equipment caused by these transients.

Neutral Voltages

It is normal for the Company's system neutral to carry low voltage levels, particularly in rural areas. This voltage creates no difficulty for most customers. When a customer experiences a problem due to this voltage, he/she can use available measures to eliminate the problem. The customer and his electrician can help mitigate the problem by ensuring proper grounding of wiring, bonding, and other electrical connections on the customer's premise.

Carrier Current

The Company reserves the right to use carrier frequency signals on its system for communication, system operation, and equipment control and shall not be held liable for potential damages. The customer should install suitable protective equipment if such frequencies might damage or interfere with their apparatus. The use by the customer of any part of the Company's distribution system for carrying foreign electric currents or for carrier current transmission, broadcasting, or control is forbidden. Customers using carrier current or any control frequency other than 60 hertz shall be required to install suitable equipment to prevent these frequencies from being imposed upon or entering the Company's distribution system.

Company Equipment on Customer's Premises

The Company shall have the right to install, inspect and maintain its equipment on the customer's premises as necessary to furnish proper service. All such equipment shall remain Company property, and the Company shall have the right to remove it when it discontinues service. (For Wisconsin, Service contract and PSCW filed rates E10.02.)

The customer shall be responsible for damages and losses resulting from interference or tampering with such equipment caused or permitted by the customer. In the event that the Company equipment is interfered with or damaged, the Company may require the customer to change his wiring, at his own expense, to permit the installation of other Company equipment or to permit the relocation of Company equipment to avoid further interference or damage (in Michigan Rule 460.3409 and 750.282).

8-2 Company Policies – General (Cont'd)

Sealing of Equipment

Meters and all associated metering equipment, service termination boxes, wire raceways, and service entrance switches containing unmetered conductors are sealed by the Company. This equipment must be designed with provisions for seals or locks as specified by the Company.

Unauthorized removing of Company seals is unlawful and may result in a billing for the investigation and replacement of the seal, as well as criminal prosecution.

Associated with removing seals is the issue of pulling electric meters. The customer/electrician cannot pull electric meters. Electric meters were never designed or intended to be used as a switch to de-energize a facility. There is a serious potential for injury when pulling or re-installing an electric meter. Common problems are the jaw breaking, not lining up correctly, accidental shorts, failures of the bypass switch, lightning damage, closing in on a fault, attempting to open under fault or high load conditions, etc. If an arc occurs, a tremendous amount of heat is generated. It is common to have this heat explode the cover of the meter like a bomb. This subjects the individual that is installing or removing the meter to shrapnel and a very high-intensity thermal flash and possible electrical contact. There are specific requirements for installing or removing electric meters. These are required by OSHA and NFPA 70E.

In addition to the above concerns, there are many installations where pulling the meter will not de-energize the electrical feed. In these cases, the metering is done through a current transformer. Pulling the meter in this case actually creates a very high-voltage situation at the meter socket. This may cause personnel injuries and will cause damage to the current transformers.

The Company will de-energize the electrical feed for you if you need to work on your service entrance equipment.

Arc Flash WARNING

Company electrical facilities have the potential of delivering very high levels of energy during an arc flash incident, potentially causing severe injury or death. Follow the appropriate requirements of OSHA / MIOSHA and NFPA - 70E if exposed to energized parts of electrical service entrance equipment and electrical metering.

Line Extensions on Private Property

Extensions of the Company's distribution lines onto property of the customer to be served will be made in accordance with the Company's extension rules, which are on the Company Web Page. These rules provide, among other things, that the Company will own and be responsible for the maintenance and operation of such lines and shall have the right of access at all reasonable times for construction, reconstruction, tree-trimming, maintenance inspection, rebuilding, maintenance and operation of lines and equipment with the right to remove poles and other equipment upon discontinuance of service. The Company shall also be granted the right to extend its facilities to serve other customers from such lines.

The Company will prepare all necessary easements along the route selected. The customer requesting service shall be responsible for obtaining all signatures and all associated easement costs. Some existing facilities are there by "prescriptive rights" [Wisc. Statute 893.28(2)] (MI 15 year-Rule 600.580).

Permanent survey stakes identifying property lines may be required by the Company before installing facilities.

When installed at customer request, the customer shall grant rights-of-way satisfactory to the Company for the installation and maintenance of the underground electric facilities.

Line Extensions on Other Than Private Property

The Company shall obtain all necessary licenses or permits for rights-of-way along the route which are not on private right-of-way. Examples are highway permits, railroad licenses, etc. The customer applying for service is responsible for associated permit and license fees.

Overhead/Underground Conductor Clearances

Contact Company prior to construction near or beneath overhead or underground power lines. The company does not allow new structures/equipment to be installed beneath overhead power lines or on top of underground power lines. The customer will be responsible for costs to mitigate installations in violation of the above policy.

8-2 Company Policies – General (Cont'd)

Underground Line Extensions on Private Property

The customer shall identify all privately owned underground equipment before the Company installs underground electric facilities. Damage to customer-owned underground equipment not located and/or identified by the customer shall be the customer's responsibility.

The customer shall grant right-of-way satisfactory to the Company for the installation and maintenance of the underground electric facilities.

The customer shall provide the following at no expense to the Company:

1. The right-of-way as designated by the Company shall have a minimum 6' wide path of clearance.
2. The route of underground facilities shall be within 6" of finished grade (4" in MI) to ensure proper installation.
3. Conductors located beneath pavement or other obstructions should be placed in conduit extending 3 feet beyond the obstruction. (NEC 300.5). Note conduit policy for underground services in subsection 8-3.

If obstructions are placed on the service right-of-way after the service is installed, additional repair costs incurred due to the obstruction will be billed to the customer if repairs to the service become necessary.

Foreign Attachments on Company Poles

Attachments to Company-owned poles are not allowed. Exceptions are normal contractual users such as communication companies, other electric power utilities, and municipalities (Christmas lighting, etc.). Examples of unacceptable attachments are signs, posters, notices, fencing, birdhouses, clotheslines, satellite dishes, customer switchgear, customer electrical feeders, customer communication circuits, etc. Traffic control signs will be accepted on Company-owned poles if there is no conflict with the use of the pole or safety issues.

NESC 217(A)(4) As adopted into law by the state of Wisconsin states:

> "Obstructions. Signs, posters, notices, and other attachments shall not be placed on supporting structures without concurrence of the owner. Supporting structures should be kept free from other climbing hazards such as tacks, nails, vines and through bolts not properly trimmed."

Section 86.19 Wisconsin Statutes states that:

> "No signs shall be placed within the limits of any street or highway except such as are necessary for the guidance or warning of traffic..."

Note: This includes political advertisements on utility poles.

Fault Current

It is very important to consider available fault current levels when the customer/electrician is installing electrical service entrance equipment. Subsection 3-11 gives information on maximum expected fault current levels. Because of current designs for residential systems (common use of 50 kva transformers), it is necessary to use a minimum of 18,000 amp short-circuit rated service entrance equipment for all services.

Standard Service Allowances

600 Amp and smaller	125 feet
800 Amp	100 feet
1000 through 1200 Amp	75 feet
1600 through 2000 Amp	50 feet
2500 through 3000 Amp	25 feet

Customers Digging Own Trench

It is the policy of Wisconsin Public Service that it is the company's responsibility to install its facilities including but not limited to digging/backfilling trenches, installing cable, conduits, pipe, setting poles, stringing wire or exposing company facilities. The company also does not allow a customer's private facilities to be installed in a joint trench.

8-3 Company Policies - Metering

Service Location

The location of the customer's service entrance shall in all cases be designated by the Company. The Company or its representatives shall make all connections to its lines. In no case shall these connections be made by anyone other than a Company representative. To avoid misunderstanding and additional expense, the Company shall be consulted concerning all new service connections.

Customer Service Laterals

1. The customer service laterals (conductors past the metering point on underground installations) are owned and maintained by the customer. If this is direct buried cable, great care must be taken with its installation. The customer is responsible for maintaining and locating this cable. (In MI NEC 300.5 requires the use of locating ribbon for customer-owned service laterals). There may be charges involved in de-energizing this cable so that maintenance can be done. The Company highly recommends that an overcurrent protection device be installed ahead of such direct buried cable, if possible (subsection 2-3). Also, for WI, see SPS 316.230(4) about going to more than one building or structure and SPS 316.230(3) on extending no longer than 8 feet into a building.

2. Code allows multiple service entrances as long as there is only one service drop or service lateral (generally the utility's system). This allows multiple sites for main disconnects, but all of the metering must be at one location. The Company requires a single termination point unless multiple termination points are mutually beneficial. Note that code defines it as one service drop as long as it starts at a common bus, follows the same route, and terminates beside each other. (NEC 230.2 & 230.40). Consult your local inspector on any of these installations. (See also subsection 6-1).

Lockable Main Disconnects

The Company requires that all main disconnects rated over 400 Amp be provided with a means of locking the disconnect in the open position. This meets the OSHA (MIOSHA Rule 408.14004) lock-out procedure.

Increased Loads

In cases where a customer's load requirements are changed necessitating a larger meter or transformer, the Company shall be given reasonable notice so it may provide a meter, service drop, and transformer of the proper capacity. Delays, poor service or a burned-out meter or transformer will thus be avoided. This applies particularly to customers who connect temporary or portable equipment. The Company may charge for the replacement cost of damaged Company equipment.

Relocation of Services

A customer may be billed for any change he requests in the point of service termination or removal and reinstallation of service conductors.

Conduit Policy for Underground Services

Company service conductors shall be placed in conduit if conditions warrant. Examples of where conditions warrant include areas under blacktop or concrete where laying out conductors on the ground for emergency conditions is not practical. Other cases are where soil conditions warrant, such as rock, gravel, frost heave problems, problems with crushed rock sub-grade under blacktop to concrete (common problem in Fox Valley clay soils). Consult subsection 3-5 on conduit size and number requirements.

Because of settling problems, it is necessary to provide adequate compaction under the normal UG service conductor depth (30") for disturbed soils. This needs to be done with sand or gravel. Frozen material and un-compacted clay are not acceptable.

These conduits shall be limited to a maximum of 270 degrees of total bends. The maximum length of the conduit run shall be 75 feet (shorter for very large entrances such as 1600 amps and up). Anything with more bends or longer lengths needs Field Application Engineer involvement. Note that large entrances are limited to less than 75 feet to avoid voltage problems or damage when pulling the cables.

8-3 Company Policies – Metering (Cont'd)

Resale of Energy

Service shall be for the customer's use only and may not be sold, re-metered or otherwise disposed of by the customer to lessee, tenants or others, except with the consent of the Company in accordance with the Company's appropriate rate and appropriate state laws.

This does not prohibit the installation of test or check meters for informational purposes.

Including the cost of electric service in the rent without identification as such is permitted.

Theft of Service

The Company will investigate for the possibility of theft of service whenever tampering with meter seals, meters, service conductors, and service connections is reported or detected. Only Company-authorized persons are permitted to make connections to Company lines.

If the investigation determines that current diversion is present, the company insists that corrections to be done within 30 day or the service will be disconnected.

Prior to restoration of service, the customer's service entrance equipment shall be made tamper resistant in accordance with Company requirements; and satisfactory arrangements will have been made for payment of the estimated amount of unmetered electricity.

Theft of service may result in criminal prosecution.

Involved Wisconsin Statutes are as follows: 939.32 Criminal Attempt, 941.30 Reckless Endangerment, 941.36 Fraudulent Tapping of Electric or Gas Lines (deals with presumptive evidence), 943.20 Theft (electric and gas defined as movable property) (also allows photos as evidence).

For Michigan rules dealing with theft or interference with the providing of electric or gas service, see Rule 460.3409 - Utility Rights and Requirements, Rule 750.282 - Utility interference Penal Code, and Rule 750.356 - Larceny Penal Code.

Wiring for Meters

1. The Company will under no circumstance permit "jumpers" to be placed in meter sockets which results in unbilled energy.
2. Metered and unmetered conductors shall not be installed in the same conduit or raceway (Company policy).
3. The Company shall not permit meters or instruments other than its own to be connected to its meter wiring.
4. Customer's responsibility to ensure that combined meter taps may not have a combined load exceeding the service rating.

Metering - Specific Requirements (See also subsection 2-0)

1. Meter Sockets Through 200 Amp

   Meter sockets must be UL listed, ringless, have at least bypass horns, must be sealable, and no covers allowed over the meter (problems with meter access and special meter equipment fitting inside the cover and automated metering).

   a. Single Phase Overhead Through 200 Amp
   No approved list other than above requirements. Minimum of 100 Amp socket. Service entrance size can be as small as 15 Amp except for residential which must be at least 100 Amp per code. No two-wire 120 volt systems are allowed.

   b. Single Phase Underground Through 200 Amp
   See approved lists in Section 2.

   c. Single Phase Network Meters Through 200 Amp
   The fifth jaw must be in the 9 o'clock position. Only for a 120/208V single-phase service. See subsection 5-5 for details.

8-3 Company Policies – Metering (Cont'd)

d. Three Phase Meter Sockets Through 200 Amp

A manual bypass lever is required. See subsection 2-7 for details and approved list.

2. 400 Amp Services

a. 320 Class Meter Sockets - Single Phase (The Company does not allow 320 Class Three Phase metering)

This type of meter socket is acceptable for residential, farm, or commercial customers. An underground pedestal is required for single meter underground services per subsection 3-1. Note that this meter socket is not rated for 100 percent duty at 400 Amp. The general requirements under "A" above still apply.

b. 400 Class Bolt-in Meters

As of 3/1/17 this type of meter is no longer acceptable. CT metering is to be used.

c. Current Transformer installations for 400 Amp

These are acceptable for all applications. See subsection 3-3 or 3-4.

3. 600 Amp Services

a. 480 Class 600 Amp Bolt-In Meters

As of 3/1/17 this type of meter is no longer acceptable. CT metering is to be used.

b. Current Transformer Metering

These are acceptable for all applications. See subsection 3-3 or 3-4.

Metering - General Requirements

1. Customers shall provide a suitable location for meters and associated equipment determined by and without charge to the Company.

2. Meters shall be installed in an accessible location to enable them to be safely read, inspected and tested at reasonable times with a minimum of inconvenience to the customer and Company. The electric meter shall be outside. Effort shall be made to locate Company gas and electric meters in the same general area.

3. Multiple meter installations served from a single entrance shall be grouped at a location or locations approved by the Company.

4. Single-phase and self-contained polyphase meter installations shall be located out of doors.

5. Meters shall not be installed in patio, porch, deck or carport areas or areas likely to be enclosed. (subsection 7-4).

6. At earth-bermed buildings that do not have an exposed side suitable for the meter location, the service shall be terminated at a meter pedestal. (subsection 2-3).

7. Meters shall not be fastened to mobile homes. (subsection 2-6) [NEC 550.32(A)].

8. Indoor meter locations, if allowed, shall be dry and free of hazardous conditions such as explosive materials or injurious fumes

8-3 Company Policies – Metering (Cont'd)

9. The meter location shall be on a solid structure free from vibration and possible mechanical damage.

10. The customer shall be responsible for providing protection for the meter(s) from damage caused by falling ice, snow or other objects. In locations where the meter is not protected by roof overhang, the customer shall provide a protective shield. (See subsection 4-3 for gas meter or 6-2 for electric meter shield specifications).

11. The clear working space in front of meter panels and at access location of service lateral terminations shall be a minimum of 3 feet and a vertical clearance of 6 feet 6 inches. Minimum 12" of horizontal clearance shall be provided on each side of meter enclosure from barrier or wall. Free space in front of instrument transformer cabinets shall be 2 feet beyond the cover in the extended position or a minimum of 3 feet, whichever is greater. The working space shall be level and flat as practical for the entire required depth and width. [See PSC 113.0809 and NEC 110.26(A)].

12. If changes are made on the customer's premises making the existing meter location unsafe or inaccessible for reading and testing, the customer shall be required to make changes in the wiring so that the meter may be relocated to comply with these rules. If a customer fails to correct his wiring to comply with these rules within a reasonable length of time after receiving a written notification of being in noncompliance, the Company reserves the right to discontinue electric service until the customer has changed his wiring as outlined above.

13. Pedestal-style meter sockets shall be required for underground applications through 200 amperes.

14. Metering equipment shall be adequately supported to maintain the meter socket in a level and plumb position. [NEC 110.13(A)].

15. On group installations, each meter socket and service switch shall be permanently marked, identifying the location to be served. The location being served shall be identified in the same manner. This identification shall be made on the outside of the metering panels (for the benefit of tenants and meter readers), inside the meter enclosure (non-movable part) (cover panels are usually interchangeable), and at the service panel that the meter serves. A label at the service panel is critical because labeling systems for apartments change, making it difficult to trace. This identification is often done with permanent black markers or white paint. (NEC 110.22 and WI PSC 113.0809).

16. Meter sockets shall have a minimum of 4 inches' clearance on all sides of the meter socket.

17. Insulated neutral or grounded conductors of a service entrance shall be identified by a white or natural gray color. Four-wire 120/240 volt Delta installations shall have the conductor with the higher voltage to ground identified orange over its entire length or shall be identified with orange paint or tape at any point when a connection is to be made.

18. Soil or groundwater conditions generally require the installation of above-ground entry of underground service conductors to prevent seepage or water entering through the entrance conduit. The Company is not responsible for any damage caused by water seeping into the building through the customer's raceway or conduit.

19. Customer-owned lightning arresters or other surge protection devices, if used, shall be installed on the load side of the customer's service overcurrent protective devices unless specific approval has been received from the Company to install them ahead of the overcurrent protective devices.

20. The Company requires all facilities to be metered. This includes billboards, traffic signal lights, CATV amplifiers, telephone remote switches, etc. (Note WI PSC 113.0802) (for MI it is Rule 460.3301, which requires all facilities to be metered unless consumption can be readily computed). Legacy non-metered services will need to be changed to a metered service when significant work is occurring, such as a pole replacement or replacing the service entrance equipment.

21. The Company uses 90°C conductor and will only terminate in a main terminal enclosure when used in conjunction with a lug landing pad. The Company will not terminate on main breakers due to main breaker lugs being rated and UL tested at 75°C.

22. Metering in a padmount transformer must be approved by the Company. The transformer cannot be in a position to serve more than one customer. The service must also be at least 800 Amps. This option is available for three-phase installations. The customer must install, own, and maintain the service lateral from the padmounted transformer.

8-3 Company Policies – Metering (Cont'd)

23. Service Entrance equipment where Company conductors terminate shall meet the minimum space requirements of subsection 3-5. The equipment also must be able to accept the standard service conductor sizes and quantities per this section. Failure to do so may make it necessary to add a termination enclosure alongside the Service Entrance Equipment in order to accommodate the Company conductors (see subsection 3-7). Note that modification of manufactured switchgear often voids the warranty and UL listing (some have tried to do this to accommodate Company conductors). Consult the Company with any questions.

24. Note that the WI PSC 113.0401 deals with the filing and enforcement of these service rules.

25. NEC 312.11 deals with internal clearances for live parts inside of cabinets. Generally, it requires 1/2 inch for under 250 volts and 1 inch for 251 to 600 volts.

26. The Company uses radio communications with some of its automated meter reading equipment. Because of this, covering an electric meter with metal is not acceptable.

27. 3' clearance between gas and electric metering equipment shall be provided. See Section 4-1 for details.

28. 10' clearance between liquefied petroleum gas equipment and electric metering equipment, or refer to the NFPA 58 for clearances.

29. Meter equipment shall not be located in pits or excavated areas that present tripping or falling hazards. Final grade of meter equipment working space shall not be lowered from the surrounding final grade in order to meet meter height requirements.

30. Any customer-owned equipment not specified in this manual shall not be in meter sockets, metering transformer cabinets and termination compartments.

Cellular Tower Policy

Only one service shall be run to a tower or a group of towers under one management (owner). This also means one service to the combination of a telephone central office switch/tower site. Special facilities are normally not an option because of code issues.

The Company will terminate the service at a single location. Acceptable points are pre-manufactured multiple meter packs (if UL listed, ringless design, have bypass horns, and are sealable) or approved termination enclosures (see subsection 3-5). For Multi-Metering, the meter positions needs to be permanently labeled to indicate which customer is connect to each meter positions. The Company cannot terminate on a main breaker because of our service conductor, which is rated 90 degrees C.

Note that the Wisconsin State Inspector defined the tower as the building or structure being served, making it an NEC violation to run more than one service.

Transfer Switches

Transfer equipment used with stand-by power plants or generators shall be suitable for intended use, UL listed and be so designed and installed as to prevent the inadvertent interconnection of normal and stand-by sources of supply in any operation of the transfer equipment. Further, a licensed electrician shall install transfer equipment such that it is located electrically on the load side of the meter. Meter mounted transfer switches will not be allowed. All transfer schemes shall be submitted to the local WPS job representative for acceptance before installation. See also NEC 230.82.

High Rise Complexes

Consult the Company on its policy on these installations. The Company defines these as three or more levels with individual residential apartments or residential condominiums or separate office spaces located on each floor. These types of installations involve special issues with regard to location of metering, voltage drop, and location for transformers.

Meter Collars and Meter Socket Adapters

The Company's meters will not be installed in any customer-owned meter collars and meter socket adapters. Meter collars and meter socket adapters installed downstream of Company metering equipment in customer metering equipment will be allowed with the following confirmation from the Authority Having Jurisdiction (AHJ)

- Additional customer metering equipment will not create additional neutral to ground bonds when installed in accordance with the meter socket's listing/instructions.

8-3 Company Policies – Metering (Cont'd)

- Any customer installed metering, jumpers, and/or covers used are UL listed and installed in accordance with their listing/instructions.

8-4 Company Policies – Utilization of Equipment

Motors - General

1. All of the following motor equipment connected to the Company's system is subject to approval by the Company with respect to starting characteristics and frequency of starts:

   Single-Phase Motors
   120 Volt - 1 HP and Larger
   240 Volt - 3 HP and Larger
   Three-Phase Motors
   10 HP and Larger
   Single-Phase Air Conditioners over 2 Ton (may need soft start capacitors)
   (excessive cycling - more than four times per hour - may cause problems also).

2. Motor installations including starting devices, shall be designed to have starting characteristics that will not cause an objectionable voltage drop or lighting flicker to other customers' service. Note that this also applies to infrequent motor starts or infrequent motor load swings. The Company follows the IEEE 1453-2022 voltage flicker standard.

3. Installations of motors used to drive equipment requiring a variable torque, such as compressors, reciprocating type pumps, sawmills, etc., shall be required to limit the variation of the motor current so it will not interfere with service to other customers. The Company reserves the right to require the customer to provide, at his own expense, equipment to control the fluctuations within limits prescribed by the Company. The maximum allowable variation of motor current for each specific installation may be obtained upon application to the Company.

4. All customer-owned equipment shall be protected from excessive current which may result from overload, undervoltage, single-phase operation of three-phase motors, etc., with fuses, thermal cutouts, overload relays, or other protective devices designed to protect the individual motor. Under-voltage release coils shall be installed on all motors which require starting compensators. Reverse-phase relays and circuit-breakers or their equivalent are required on all elevator installations and are recommended on crane or other installations where phase reversal may cause damage or injury.

5. It is recommended that single-phase motors be connected for 240 volt operation where feasible, since this will reduce lighting flicker for both the user and other customers.

6. If the size or number of motors contemplated is such that it necessitates the installation of special Company equipment to prevent interference with proper service, either to the customer using the service or to other customers, service to such motors will be delivered under the special facilities clause of the Company extension rules.

Water Heating

1. Water heaters may be connected to 120-volt or 240-volt service. Water heaters shall be equipped with thermostatically-controlled non-inductive heating elements. The maximum allowable wattage of the element is 1650 watts at 120 volts or 5500 watts at 240 volts. Water heaters having dual elements shall have them connected or interlocked to limit the connected load to the above limits.

2. Non-storage, instant recovery water heaters with wattages above 5500 watts may cause service interference. Special facility charges may be necessary to correct this interference.

Electric Space Heating

1. Electric space heating equipment may be connected to the general service meter under the residential, farm or commercial rate.

2. Permanently installed electric space heating designed to operate at 120 volts shall be limited to 1650 watts controlled by a single thermostat. Electric space heating designed to operate at 208 volts and above shall be limited to 6000 watts per element. Multiple elements installed in or as part of a unit exceeding 6000 watts shall be energized in stages not to exceed 6000 watts per stage and at time intervals of not less than three seconds between each stage.

8-4 Company Policies – Utilization of Equipment (Cont'd)

Lighting Systems

Lighting systems utilizing ballasts or transformers as part of the fixtures or as auxiliary equipment to the fixtures which are installed as the major lighting source for a building, space or area shall maintain not less than 90 percent lagging power factor for individual units or the entire lighting installation.

Electric Welders and Furnaces

Before any electric welder is connected, the consent of the Company shall be obtained; and any changes in the customer's wiring and in the Company's facilities necessary to permit welder operation under safe conditions and without interference to the service of other customers shall be completed.

The Company facilities are designed to provide reasonably adequate voltage and sufficient capacity for normal system loads. When a customer uses a welder that creates voltage variations that exceed normal operating voltage limits, these variations are not considered a violation of voltage codes (in WI PSC 113.0703) (in MI Rule 460.3702).

High-Frequency Apparatus

1. All wiring carrying high-frequency current used in connection with high-frequency apparatus shall be located as remotely as possible from the meter and wiring of the building. Motor generator sets supplying such apparatus shall be subject to the rules applying to motors. For the protection of meters supplying high-frequency apparatus, the Company may require the installation of an isolation transformer or suitable filters.

2. Equipment causing high-frequency current or harmonics must comply with IEEE Standard 519.

Fire Protection Systems

The Company will size the transformer and service conductors to meet our protection and voltage drop requirements during motor starts. If the customer requests the utility equipment to be sized for the locked rotor current, or additional voltage drop, increased special facilities costs will be applied.

Options for Service from the Company:

1. Source side tap in outside CT cabinet. CT cabinet cannot be near the main disconnect. Fire pump service must be metered and fire pump service equipment needs to be rated for the available fault current of the total service size. CT cabinet must be rated and have space available for a source side tap. De-energizing the main service will result in the fire pump service being de-energized.

2. Two separate services from the same transformer. One of these would be for the fire pump system. They cannot go to the same location on the building. This second service would be at a "special facilities" cost. This would involve at least two separate meters (main feed and the fire pump system). Fire pump service must be metered and fire pump service equipment needs to be rated for the available fault current of the total service size. De-energizing the main service will result in the fire pump service being de-energized.

3. Customer runs two services, from the Company padmounted transformer, if the Company has CT metering available in the padmount (see subsection 3-6). WI SPS 316.230(4) requires a disconnect where customer circuits go overhead or underground to more than one building. The inspector may rule that this does not apply for fire pumps, if the fire pump is in a separate building. Fire pump service must be metered and fire pump service equipment needs to be rated for the available fault current of the total service size. De-energizing the main service will result in the fire pump service being de-energized.

4. Separate transformer setting, just for the fire pump system. This would involve "special facilities" costs for the transformer, system, and service. This can be at a different voltage than the main feed.

Codes (some of the codes that may apply):

NEC 230.1(A)(1)	Allows an additional service for a fire pump.
NEC 230.72(A)Excep.	Allows the fire pump disconnect to be remote from the other disconnects.
NEC 230.82(5)	Allows a tap to the Supply Side of the service disconnect for fire pump equipment and fire alarms and sprinkler alarms.
NEC 230.94 Excep. #4	Allows for separate overcurrent protection device tapped supply side of the service overcurrent device for fire pumps and fire alarm systems.

8-4 Company Policies – Utilization of Equipment (Cont'd)

NEC 695.3(A)	Source must be capable of supplying locked rotor current plus associated equipment. This is not normally an issue with the utility source (primary system capacity).
NEC 695.3(A)(1)	Does not allow the fire pump system to be tapped inside of the service entrance disconnecting enclosure. This means that the fire pump tap cannot be made inside of the building or in a weatherproof, main disconnect, service entrance enclosure located outside. The only options are a separate CT cabinet on the outside. This CT cabinet can also not be located right next to an outdoor rated disconnect, for the rest of the building. The only other option is a tap at the transformer or a totally separate feed. This is new in 2005. Look at the actual wording of the NEC for specific details.
NEC 695.4(B)(1)	Requires the overcurrent protection for the fire pump system to handle full locked rotor current continuously. It does not require the conductor or other devices such as the utility transformer to be rated for full locked rotor current. This means that the conductor may be rather small for most pumps.
NEC 695.4(B)(2)	Requires the fire pump disconnect not to be located within enclosures that feed other loads. It must also be located remote from other disconnecting means to reduce the chance of accidental operation. The next couple sections further define this and labeling requirements. This section requires the fire pump disconnect to be lockable in the closed position.
NEC 695.5(A)	This section deals with customer-owned transformers feeding the fire pump system. This transformer must be able to supply 125% of the normal load current of the pump plus 100% of associated equipment.
NEC 695.6(A)	Requires the service entrance conductors for fire pumps to be located outside of the building with only a few, very special exceptions.
NEC 695.7	Motor voltage shall not drop more than 15% on starting on the output of the controller (reduced voltage starter or SCR drive). The maximum voltage drop at 115% of load is 5%. These stipulations may be a problem with large 120/208 motors, without reduced voltage starter or SCR drives.

Standby Generating Equipment

The customer shall install an approved double-throw switch or throwover switches that are mechanically interlocked, are of adequate current and voltage rating and are so connected that the customer's generating equipment cannot energize the Company's supply lines. (NEC Article 701 and 702) (Must be rated as Service Entrance Equipment if ahead of the main; UL listed as a transfer switch is covered under UL 1008).

The double-throw or throwover switch may be manually or automatically operated. Customer-owned generating equipment shall not operate in parallel with the Company's system except under specific contract with the Company covering the conditions of such operation. For requirements, visit the WPS Customer-Owned Generation page: https://www.wisconsinpublicservice.com/environment/generation-wi

The simple installation involves operating a generator in an open area and simply running a cord in to run one appliance at a time. Most refrigerators and freezers are good for about 24 hours if the door is not opened. Beyond that, four to six hours of run time on a generator is usually adequate per day. Follow good food preservation practices, as suggested by "The Extension Service" or other similar authorities.

Generators should always be run in open areas because of the potential for carbon monoxide poisoning. The same applies to the use of charcoal grills in confined areas. Also, do not attempt to heat a home with unvented appliances, such as a gas oven.

If you are installing a permanent standby generator system, consult an expert. There are other potential problems in addition to the need for the transfer switch. One problem is Ground Fault Interrupters (GFI's) installed on most portable generators. Another problem is that some generators are rated to only supply 240 volt or 120 volt loads and not both at the same time (120 / 240 rating)(center tapped).

Care also needs to be taken in sizing generators. Normally, generators must be oversized to handle the in-rush of a starting motor. Also, they need to be oversized if there is a lot of electronic load on it. A special concern with electronic loads is the operation of the generator as it runs out of fuel (the internal voltage regulation may not be able to protect electronic equipment connected to the generator).

8-4 Company Policies – Utilization of Equipment (Cont'd)

Standby Generators on Natural Gas

Standby generators can be installed on natural gas. There are, however, certain items to consider. If you are building a new home, it is important for the Company to know up front that you intend to install a natural gas-fired generator. Most natural gas feeds to a home consist of a 1/2-inch service with a 250 CFH meter and a pressure of 7 inches water column. Most generators require a one-inch service, a larger meter, and at least 11 inches water column pressure to be able to operate.

Parallel Generation System

A parallel generation system allows the transfer of electrical energy from the customer's generator into the Company's distribution system. The Company uses PSC 119 as its standard. Consult the Company for specific details. There are safety, liability, and contractual issues.

8-5 State Code Information

SPS 381.01(38) Definition (Wisconsin)

"Building" means a structure *for support, shelter, or enclosure of persons or property.*

Services (SPS 316.230(3)) (Wisconsin)

Wisconsin Rule in Addition to NEC 230.70(A) (1st part rephrased):

The service disconnecting means shall be installed at a readily accessible location either outside of a building or structure, or inside nearest the point of entrance of the service conductors. Raceways containing service conductors or cables, or service-entrance cable not contained within a raceway, shall not extend longer than 8 feet into a building to the service disconnect or the first service disconnect of a group of disconnects as permitted by NEC 230.71. The raceways or conductors shall be considered to have entered the building at the point where they pass through the outer surface of the building exterior, except as permitted by NEC 230.6.

Service entrance busway shall be permitted to exceed 8 feet.

Wisconsin Rule in Addition to the Requirements of NEC 230-70 (SPS 316.230(4))

Disconnecting means shall be provided to disconnect the utility wiring from the premises wiring at any point where utility wiring terminates and premises wiring extends overhead or underground to more than one building or structure.

Wisconsin PSC 113

The following are portions of PSC 113 that deal with service voltage and metering.

PSC 113.0701 Definitions

1. "Flicker" or "voltage flicker," means a variation of input voltage sufficient in duration to allow visual observation of a change in electric light intensity.

2. "Harmonic distortion," means the mathematical representation of the distortion of the pure sine waveform. Distortion of the pure sine waveform is typically caused by loads that draw current discontinuously or whose impedance varies during the cycle of the input AC voltage waveform.

3. "Point of service" means the connection point between the customer electrical system and the utility electrical system.

4. "Power quality,", means the concept of powering and grounding sensitive electronic equipment in a manner that is suitable to the operation of that equipment.

5. "Retail power service" means service furnished principally for electromotive or industrial purposes and may include service for lighting incidental thereto, as defined in the utility's rates and rules.

6. "Sag," means an RMS reduction in the AC voltage, at the power frequency, for durations from a half-cycle to a few seconds.

7. "Swell," means an RMS increase in the AC voltage, at the power frequency, for durations from a half-cycle to a few seconds.

8. "Transient," means a sub-cycle disturbance in the AC waveform that is evidenced by a sharp but brief discontinuity of the wave form. A transient may be of either polarity and may be additive to or subtractive from the nominal waveform.

9. "Steady state voltage" means the RMS voltage after all sags, swells and transients have decayed to a negligible value.

10. "Service voltage" means the steady state voltage at the point of service.

8-5 State Code Information (Cont'd)

Wisconsin PSC 113.0702 Standard and Maintenance of a Service Voltage

Each utility shall adopt standard nominal service voltages for each of the several areas into which the distribution system or systems may be divided, and shall file with the Commission a statement of the standard voltages adopted. The service voltage shall be reasonably constant within the following limits:

1. For all retail service, except retail power service, the service voltage shall not vary by more than 5% above or below the standard voltage.

2. For retail power service furnished customers having demands of 500 kilowatts or less, the service voltage shall be no more than 5% above or 10% below the standard nominal voltage.

3. For retail power service furnished customers having demands of more than 500 kilowatts, the service voltage shall not vary by more than 10% above or 10% below the standard nominal voltage.

4. For polyphase voltage unbalance issues, ANSI C.84.1-1995 Appendix D is the reference that will be followed. The utility and its customers may agree not to be constrained to the reference if it is economically beneficial to the customer.

5. For service rendered to public utilities and others for resale, the standard nominal voltage shall be as mutually agreed upon by the parties concerned. If no formal agreement exists, the standard nominal voltage shall vary by no more than 10% above or below the secondary nominal voltage.

6. The variation in service voltage referred to in subs. (1) to (3) inclusive shall refer to a steady state voltage.

7. Upon customer request, the utility shall investigate line voltage variations and disturbances associated with voltage sags, swells, and transients at the point of service. Requests for tests may be limited in availability, number or frequency for the same customer at the same location where previous tests have indicated that the variations and disturbances are within acceptable industry limits. The utility may establish rules for certain customers to decrease the incidence of these variations and disturbances as seen by other customers.

   Note: The industry voltage standard is ANSI C84.1-1995.

Wisconsin PSC 113.0703 Variations of Voltage

1. Service interruptions, or voltage sags, swells and transients caused by the action of the elements, temporary separation of parts of the system from the main system, infrequent or unavoidable fluctuations of short duration, equipment failure, normal operation of the system, necessary operations to safeguard employees or the general public, or causes beyond the control of the utility shall not be considered a violation of these rules.

   Note: Voltage fluctuations, transient s, sags and swells may affect the performance of certain types of equipment or operations and should be considered by the customer. Customers having equipment or operations that are sensitive to such voltage fluctuations, or that require service other than that specified by these rules may find it necessary to install, at their own expense, power conditioning equipment or other modifications to protect, mitigate or otherwise provide the type of service needed.

2. In order to limit the impact of voltage variations, utilities may establish starting and operating criteria for equipment on customer premises. Customer loads shall be sized and operated in accordance with such criteria.

3. If procedures for voltage reduction during emergency operating conditions have been filed with and accepted or approved by the Commission, variations of voltage in excess of those specified ss. PSC 113.0702 and PSC 113.0703, resulting from implementation in accordance with the specified procedures, shall not be considered a violation of the rules.

8-5 State Code Information (Cont'd)

Wisconsin PSC 113.0704 Harmonics

Utilities shall make reasonable efforts to investigate equipment operating problems suspected to be associated with harmonic distortion of the 60 Hz voltage sinewave at the point of service. When the source of the harmonic distortion is determined to be equipment operated by a specific customer, the utility shall notify the customer and it shall be the customer's responsibility to correct the problem. When corrective action is necessary, the guideline to be used is the most recent revision of IEEE Standard 519.

Wisconsin PSC 113.0707 Radio and Television Interference

The Company will investigate any radio/TV interference concerns. The following are portions of PSC 113 that deal with radio and television interferences.

1. Each utility shall own or otherwise arrange to have available when needed, suitable monitoring equipment for surveying its lines and equipment for possible radio and/or television interference.

2. Each utility shall establish and routinely utilize in the course of regular operation, means whereby the presence of radio and/or television interference may be detected.

3. Each utility shall, upon notification or detection of the presence of radio and/or television interference, survey its lines and equipment for possible sources of radio and television interference. When significant interference is found, reasonable measures shall be taken to locate the source and, if on the utility's system, to mitigate the interference. Where the magnitude and nature of the interference is found to be so small, intermittent or insignificant that it affects only a few customers or a particular, unique piece of customer equipment that may have limited capabilities to receive weak signals, it may be necessary to limit the utility's responsibility for mitigation to reasonable, cost-effective measures.

   Note: In some cases, some interference from the utility's system may be detected, but found to be insignificant and inconsequential for the majority of customers. Its elimination or mitigation may still not result in adequate reception of some signals. In many areas, radio or television reception of some transmissions is normally inadequate due to frequency, weak signal strength, high ambient noise, distance from the source, terrain or other obstacles beyond the utility's control. The capabilities and limitations of the customer's receiver should also be evaluated and considered in determining the nature, extent and cost of the utility's mitigation activities. Also, other options may be available and more feasible - for example, applying the mitigation to the customer's equipment or substitution of cable television (CATV) service for local antenna systems.

4. Where the source of interference is determined to be equipment owned by a specific customer, the customer shall be so advised and informed of his or her responsibility to correct the problem (see PSC 113.0201).

Wisconsin PSC 113.0802 Measuring Customer Service

1. Except as provided in sub. (2), all energy sold to customers shall be measured by commercially acceptable measuring devices owned and maintained by the utility. All other electrical quantities which the rates or utility's rules indicate are to be metered shall be metered by commercially acceptable instruments owned and maintained by the utility.

2. For temporary or special installations where it is impractical to meter loads, such as certain highway or area lighting which may be billed at a flat rate based on lamp rating and use, the consumption may be calculated.

3. The metering and wiring in non-transient, multi-dwelling-unit residential buildings, mobile home parks, and commercial establishments where individual unit metering is provided, or required under the provisions of PSC 113.0803, shall be so installed or arranged so that each customer or tenant is metered for his or her own consumption only. Energy used by common area loads (for example, hallway lighting and heating, shall be separately metered and billed as appropriate under the utility's filed tariff. (Incidental use no longer an exception as of 4/1/1994). (Also note NEC 210.25.)

4. Utilities shall inspect existing properties for jointly metered service where a tenant reasonably suspects that he or she is being billed for significant usage (e.g., furnace, water heater, etc.) that is serving more than one rental dwelling unit. The utility may bill the property owner for such an inspection. See s. 196.643, Stats (Rental Property Metering).

8-5 State Code Information (Cont'd)

Wisconsin PSC 113.0803 Individual Electric Meters Required for Non-transient Multi-dwelling Unit Residential Buildings, Mobile Home Parks, and for Commercial Establishments

1. Each dwelling in a multi-dwelling unit residential building and mobile home park constructed after March 1, 1980, shall have installed a separate electric meter for each such dwelling unit. Dwelling unit means a structure or that part of a structure which is used as or intended to be used as a home, residence or a sleeping place by one or more persons maintaining a common household, and shall exclude transient multi-dwelling buildings and mobile home parks; for example, hotels, motels, campgrounds, hospitals, community-based residential facilities, residential care apartment complexes or similar facilities, nursing homes, college dormitories, fraternities and sororities.

2. Each tenant space in a commercial building constructed after March 1, 1980, shall have installed a separate electric meter for each separate tenant space.

3. Any existing building which undergoes alterations involving a change in type of occupancy or substantial remodeling shall have installed a separate electric meter for each separate tenant space.

4. For the purpose of carrying out the provisions of sub (1), individual unit metering will not be required:

    a. In commercial buildings where the commercial unit space requirements are subject to alteration, as evidenced by temporary versus permanent type of wall construction separating the commercial unit spaces. Examples of temporary wall construction are partition walls which do not extend through the ceiling and walls which do not constitute a code-required fire separation.

    b. For electricity used in central heating, ventilating and air conditioning systems.

    c. For electric back-up service to storage heating and cooling systems or when alternative renewable energy resources are utilized in connection with central heating ventilating and air conditioning systems.

5. For reasonable cause shown, the Commission may grant waivers of this rule on a case-by-case basis. Applications for a waiver must be submitted to the Commission in writing and set forth the facts or reasons applicant believes justify a waiver. In cases involving multi-dwelling unit residential buildings, the applicant must show that the electric equipment under tenant control is substantially more efficient than required by applicable codes and that the overall electric usage under tenant control is minimal. Example cases which would not qualify for waiver are buildings which are electrically heated or buildings which have individual unit electric water heaters.

Wisconsin PSC 113.0804 One-Point Metering

Every reasonable effort shall be made to measure at one point all the electrical quantities necessary for billing a customer under a given rate.

Wisconsin PSC 113.0809 Installation of Metering Equipment

1. The customer or his or her agent should confer with the utility as one of the first steps in planning an electrical installation. The watthour meter should be located where it will be readily accessible for reading, testing and repairs and where it will not be subjected to adverse operating conditions or cause inconveniences to the customer. Normally, the utility shall determine the location and type of metering equipment to be installed.

2. The utility should have available for distribution to customers, architects, contractors and electricians copies of rules, specifications and requirements that may be in force relative to meter installations. Installations should conform to such specifications and to applicable codes and safety requirements.

3. Whether installed indoors or outdoors, meters should not be located where they will be subject to vibration or mechanical damage and should be mounted without tilt.

4. Meters and associated equipment used on outdoor installations shall be designed specifically for such use or shall be suitably housed for outdoor service. Meters installed outdoors should not be located where they may be damaged, such as on buildings where unguarded meters will extend into alleys, walkways or driveways.

5. Meters installed outdoors should not be more than 6 feet or less than 4 feet above final ground level (measured from the center of the meter cover) except in the case of meters on pedestals or padmounted transformers where they shall be placed as high as practicable, and meters on underground services which may, when practicable, be placed as low as 2.5 feet above final ground level (measured from the center of the meter cover). On individual installations indoors the meter

8-5 State Code Information (Cont'd)

should be not more than 6 feet or less than 4 feet above floor level (measured from the center of the meter cover). On group installations of meters indoors no meter should be more than 6 feet or less than 2 feet above floor level (measured from the center of the meter cover). When a number of meters are placed on the same meter panel, the distance between centers should be not less than 8.5 inches vertically or 7.5 inches horizontally. For meters installed both indoors and outdoors, there should be a minimum of 3 feet of unobstructed space in front of the meter from the surface on which it is mounted. [See also NEC 110.26 for clearances.]

6. When there is more than one meter at a location, each shall be so tagged or marked as to indicate the circuit metered. Where similar types of meters record different quantities (for example, kilowatt-hours and reactive power), the meters shall be tagged to indicate what they are recording.

7. Test facilities shall be placed in enclosures of sufficient size and of such construction as to make it possible for meter testers to perform the tests required by these rules with safety.

Section 196.17 Wisconsin Statutes

1. Any officer or agent of any public utility furnishing or transmitting water, gas or electric current to the public or for public purposes may enter, at any reasonable time, any place supplied with gas, electricity or water by the public utility, for the purpose of inspecting, examining, repairing, installing or removing the meters, pipes, fittings, wires and works for supplying or regulating the supply of gas, electricity or water and for the purpose of ascertaining the quantity of gas, electricity or water supplied.

2. No officer or agent of a public utility may enter any premises under this section unless the officer or agent:

    a. Was duly appointed by the public utility for the purpose of acting under this section.

    b. Exhibits written authority signed by the president, by a vice president and secretary, or by a vice president and assistant secretary of the public utility. The authority of any officer or agent of a municipally owned public utility shall be signed by the commissioner of public works or by any other official in charge of the public utility.

3. Any person who directly or indirectly prevents or hinders any officer or agent from entering a premises, or from making an inspection, examination, removal or installation under this section shall be fined not more than $25 for each offense.

Michigan Rule 460.3301 Metered Measurement of Electricity Required; Exceptions

1. All electricity that is sold by a utility shall be on the basis of meter measurement, except where the consumption can be readily computed or except as provided for in a utility's filed rates.

2. Where practicable, the consumption of electricity within the utility or by administrative units associated with the utility shall be metered.

Michigan Rule 460.3505 Utility Line Clearance Program

Each utility shall adopt a program of maintaining adequate line clearance through the use of industry-recognized guidelines. A line clearance program shall recognize the National Electric Safety Code standards that are adopted by reference in R 460.811 et seq. The program shall include tree trimming.

Michigan Rule 460.3605(2) Metering Electrical Quantities

Every reasonable effort shall be made to measure at one point all the electrical quantities necessary for billing a customer under a given rate.

8-5 State Code Information (Cont'd)

Michigan Rule 460.3702 Standard Nominal Service Voltage; Limits; Exceptions

1. Each utility shall adopt and submit standard nominal service voltages.

2. With respect to secondary voltages, the following provision shall apply:

    a. For all retail service, the variations of voltage shall be not more than 5% above or below the standard nominal voltage as submitted pursuant to subrule (1) of this rule, except as noted in subrule (4) of this rule.

    b. Where 3-phase service is provided, the utility shall exercise reasonable care to ensure that the phase voltages are balanced within practical tolerances.

3. With respect to primary voltages, the following provisions shall apply:

    a. For service rendered principally for industrial or power purposes, the voltage variation shall not be more than 5% above or below the standard nominal voltages as submitted pursuant to subrule (1) of this rule, except as noted in subrule (4) of this rule.

    b. The limitations in subdivision (a) of this subrule do not apply to special contracts in which the customer specifically agrees to accept service with unregulated voltage.

4. Voltages outside the limits specified in this rule shall not be considered a violation if the variations are infrequent fluctuations or occur from adverse weather conditions, service interruptions, causes beyond the control of the utility, or voltage reductions that are required to reduce system load at times of supply deficiency or loss of supply.

Michigan Rule 460.813 Standards of Good Practice; Adoption by Reference

Parts 1, 2, and 3 and sections 1, 2, 3, and 9 of the National Electrical Safety Code, 1997 edition (ANSI-C2-1997), are adopted by reference in these rules as standards of accepted good practice. Parts 1, 2, and 3 and sections 1, 2, 3, and 9 of the National Electrical Safety Code, 1997 edition (ANSI-C2-1997) are available from the Michigan Public Service Commission, P.O. Box 30221, Lansing, MI 48909, (at a cost), or from the Institute of Electrical and Electronics Engineers, Service Center, P.O. Box 1331, Piscataway, NJ 08855-1331, (at a cost).

Michigan Rule 408.30801 National Electrical Code; Adoption by Reference; Inspection; Purchase

(exceptions also)