



# **Rules of Operation**

## **WMEU Electric Operations**

Effective January 1, 2023

## TABLE OF CONTENTS

Purpose, Applicability and Definitions .....	3
Service Characteristics .....	4
Service Installation Guidelines .....	5-8
Primary Line Extensions .....	9
Services .....	10-12
Metering, Mounting and Installation.....	13-18
Residential Services .....	19
Mobile Home Services .....	20
Rural Services .....	21-23
Commercial and Industrial Services .....	24-25
Temporary Services .....	26
Commercial Tower Services .....	27
Motors and Special Equipment .....	28-29
Standby Generator Services .....	30
Grain Bins .....	31-33
House Moves.....	34
Utility Lines and Equipment Relocation.....	34
Customer Owned Renewable Electric Generating Facilities .....	35
Part 1 – Overview.....	35-38
Part 2 – Technical Requirements .....	39-40
Part 3 – Net Metering for Customers’ Renewable Generation .....	41-42
Part 4 – Interconnection & Net Metering Application.....	43-44
Part 5 – Interconnection & Net Metering Agreement.....	45-47
Part 6 – Certificate of Completion .....	48
Part 7 – Approval to Energize Generating Facility .....	49

## **Purpose**

These rules of operation have been adopted by the Board of Trustees of Waverly Utilities. The rules are subject to change from time to time to ensure safe and efficient service in compliance with applicable laws and regulations.

## **Applicability**

These rules of operation are intended to broadly govern operation of Waverly Utilities. Where a rule cannot be reasonably applied to a specific situation, the Board of Trustees reserves the right to act in an adjudicative capacity to resolve such conflicts.

References to rates or charges and certain other terms and conditions of service "adopted by the Board of Trustees" refer to applicable resolutions adopted by the Utility's governing body.

The Utilities Division of the Iowa Department of Commerce regulates certain aspects of municipal utility operations. Unless a statute specifically provides for regulation of municipally owned utilities, regulatory authority is limited to those statutes referenced in section 476.1B of the Code of Iowa.

## **Definitions**

Unless another meaning is specifically indicated, when used in these rules:

**Board of Trustees** – Means the Board of Trustees established under Chapter 388, Code of Iowa.

**Customer** – Means any person, firm, association, or corporation, any agency of the federal, state or local government, or legal entity directly benefiting from electric service from Waverly Utilities.

**Demand** – Means the quantity of electrical power needed by the customer at a given point in time.

**Meter** – Means a device that measures and registers the integral of an electrical quantity with respect to time.

**NEC** – Means National Electric Code

**Normal Business Hours** – Means 7:30am to 4:30pm Monday through Friday, excluding published holidays.

**Utility** – Means Waverly Utilities.

# SERVICE CHARACTERISTICS

## **Classification of Service Rates**

Service classification shall be based upon the type of service supplied and on similarities in customer load and demand characteristics. Service classifications shall be defined as part of the rate schedules adopted by the Board of Trustees. In addition, the Utility reserves the right to supply large power service in accordance with the provisions of a written contract. As nearly as practicable, rate schedules adopted by the Utility shall reflect relative differences in the costs of providing service to each customer class.

## **Individual Metering**

Individual metering shall be required on multi-occupancy premises in which units are separately rented or owned, except that the Utility may provide single meters for electricity used in central heating, cooling, water heating, or ventilation systems where individual metering is impractical; where a facility is designated for elderly or handicapped persons and Utility costs constitute part of the operating cost and are not apportioned to individual tenants; or where sub-metering or resale of service was permitted prior to 1966.

## **Special Metering Installations**

The Utility reserves the right, at its option, to require or place special meters or instruments on the premises of a customer for the purpose of special tests of all or part of the customer's load.

## **Meter Register**

Where it is necessary to apply a multiplier to the meter readings, the multiplier shall be marked on the face of the meter register or stenciled in weather resistant paint upon the front cover of the meter. Wherever practicable, customers shall have continuous visual access to meter registers.

## **Meter Testing**

All meters and associated devices shall be inspected, tested, adjusted, and certified to be within an allowable tolerance of error, in accordance with commonly accepted engineering practice.

# SERVICE INSTALLATION GUIDELINES

## **General Information**

This guidance is issued by the Utility to provide the necessary service installation information to customers, employees, builders, electricians, architects, contractors and others involved in the planning and installation of electric services within the Utilities service territory.

The information is intended to cover most typical installations. Please consult the Utility when special conditions exist that will require non-typical installations.

Nothing contained in this guidance will be construed to relieve or lessen the responsibility of the customer or the customer's representative from complying with all applicable codes, rules and regulations.

## **Customer Obligations**

Acceptance of service shall obligate a customer to the conditions imposed by these rules and applicable rules of the Utilities Division of the Iowa Department of Commerce. Customers should note that other sections of these rules of operation prescribe standards of engineering practice and establish special conditions for the installation of certain motors and other equipment, common to industry and agriculture.

## **Wiring and Electrical Equipment**

Except for the meter and other facilities defined in these rules of operation or in Utility extension policies adopted by the Board of Trustees, as a responsibility of the Utility, the customer shall be responsible for all wiring and electrical equipment on his or her premises. The installation and maintenance of customer facilities shall be consistent with standards imposed by these rules of operation and any other applicable laws or regulations. Location of the meter loop and meter socket shall be at the discretion of the Utility, consistent with the customer's reasonable convenience.

No inspection or approval of a customer's compliance with this section or other agent of the municipal government shall be construed to impose any duty or liability on the Utility, but shall be considered solely for the purpose of ensuring protection of the Utility's property and for ensuring continuity of service to customers of the Utility.

## **Damage to Utility Facilities**

The customer shall not use the equipment or structures of the Utility for reasons other than those incidents to normal service nor attach items to equipment or structures of the Utility, nor create a condition likely to interfere with the functions of such equipment and structures, without written consent of the Utility. The customer shall be held responsible for his or her actions that cause damage to or loss of equipment or structures located on property occupied by the customer.

### **Notice by Customer to Disconnect Electric Service**

A customer shall give the Utility no less than three business days' notice prior to disconnection of electric service. Disconnection of service shall be between 8:00AM and 2:00PM Monday through Friday, excluding published holidays.

### **Corrective Equipment**

Customer electrical equipment shall be installed and used in such a manner as not to adversely affect voltage regulation or impair the Utility's service to other customers. When such equipment creates fluctuating voltage or power factor conditions, or any other disturbances in service detrimental to the service of other customers or to the Utility's use of its own equipment, the customer shall be required to install and maintain, at his or her own expense, suitable corrective equipment to eliminate the detrimental effects.

### **Standby Generators**

No other source of supply of electricity shall be introduced or used by a customer in conjunction with electric service supplied by Waverly Utilities, without prior written approval of the Utility. At a minimum, standby facilities will be approved only if a single changeover switch that provides a visible opening and is padlocked in the open position, or a relay of adequate capacity, is installed so that municipal Utility lines cannot become energized by a standby power source under any condition.

### **Energy Conservation Standards**

As a condition of electric service for space heating or cooling, the owner or builder of any structure, completed after July 1, 1992, and intended primarily for human occupancy, must certify to the Utility or other agent of the municipal government that the building conforms to the energy conservation requirements of the State Building Code or other agent of the municipal government. If compliance is being certified to another state or local agency, a copy of the certification form may be provided to the Utility.

### **Continuity of Service**

The Utility strives to provide safe, reliable and efficient service to our customers. In some instances, such as major storms where lightning, high winds, ice or similar conditions may occur, the Utilities electrical system may experience momentary or extended outages, low or high voltage, overload, loss of phase or phases, harmonics or wave form irregularities. We do not guarantee continuous service, standard voltage or frequency at all times.

It is the Customers responsibility to install the necessary protective devices on their equipment to protect their assets from these conditions. The Utility recommends installing voltage surge suppressors at the main service entrance panel and at the point of use. It is suggested that a battery backup or other equipment be installed for all conditions where loss of electricity, voltage or a voltage dip may cause loss of data in certain equipment.

## **Codes, Rules and Regulations**

The Utility requires that all customer wiring installations meet the latest requirements of the National Electrical Code, National Electric Safety Code, DOT regulations, City of Waverly and Bremer County codes, American National Standards Institute requirements, and Institute of Electrical and Electronic Engineer Requirements.

## **Safety and Code Compliance**

The Utility reserves the right to refuse service or de-energize any service where the service is found to not comply with these electrical codes, the service is in an unsafe condition or it poses a danger to persons or property.

## **Inspections**

The Utility reserves the right, but is not responsible for the inspection of the customer's installation. The Bremer County Building and Zoning department or the Iowa Department of Public Safety will handle all inspections and permitting.

## **Excavations**

It is the customer's responsibility to make certain that they plan and do work in such a manner that damage to Utility property does not occur. Before starting actual construction, call Iowa One Call at 811 to have all underground lines located.

The Utility must immediately be notified if contact is made with our cables so we can inspect and repair any damage which may have occurred. Failure to contact Iowa One Call prior to digging, may cause damage to and risk the safety of equipment, property, employees and the public. The customer is responsible for all charges incurred from any damage caused to Utility equipment if the customer fails to call Iowa One Call before excavating.

## **Utility Poles**

All Utility poles will be removed from service when the Utility's equipment is removed from the pole.

## **Line Clearance**

The customer will be responsible for clearing any trees, brush, fences, old foundations or obstacles which might inhibit the service installation.

## **Final Grade**

The Utility will install service cables when the proposed cable route is clear of all obstructions, all roads have been paved and approved by the City of Waverly or Bremer County, new lots are staked and the lot or subdivision is within six inches (6") of final grade. Grade changes of more than six inches (6") is not allowed. All costs associated with moving electrical cables due to grade changes will be charged to the customer.

### **Utility Equipment on Customer Premises**

Customers will grant the Utility the right to install its equipment on the Customer's premises to supply service. All such equipment will remain Utility Property and may be removed when service is no longer required.

The Utility will have the right of access to its equipment located on Customer premises for inspection, maintenance, meter reading, restoration and removal of service. Failure to provide access will result in disconnection or denial of service to those premises. The Customer will provide at no cost to the Utility the necessary easements and/or right of way for Utility personnel to install, maintain and access Utility facilities on the Customers property that provide electric service to the Customer. This will include permission to trim and/or remove trees and brush that may interfere with the installation and operation of Utility facilities. Any changes to an existing service must be approved by the Utility.

Customers are expected to take reasonable care of Utility equipment located on their property. Customers will be responsible for all damages to or loss of Utility property located on the premise, unless damage is by causes beyond their control. The customer will not grant authority to anyone who is not an employee of the Utility to open or operate Utility equipment.

The Utility will attempt to give advance notice when accessing Utility facilities on the Customer's property, but may not be able to do so during emergencies.



# PRIMARY LINE EXTENSIONS

## **Primary Line Extension Definition**

A primary line extension is an electrical distribution line of one or three phases at our current primary voltage that is extended from an existing distribution line or substation. The Utility may install overhead or underground cables at their discretion. This covers installations to residential, commercial, industrial customers and any other primary line extensions that are constructed. The line may be installed in public or private right-of-way.

## **Aid to Construction Costs**

All new line extensions shall be subject to aid to construction payments based on a 10-year recovery period. The full cost of the line extension, including transformers, and any related substation, transmission and /or distribution system improvements incurred to serve this customer, shall be calculated based on current material, labor and equipment costs. A 10-year revenue credit, less the projected cost of power and less any distributed generation, shall be credited towards the cost of the line extension. The cost of power may include an amount for moving power to town i.e. transmission charges including but not limited to losses and congestion fees at the sole discretion of the utility.

If the cost of the line extension is greater than the 10-year revenue credit, the customer will be required to pay the difference between the estimated cost to construct the line and a 3-year revenue credit, less the cost of power during the 3 years. One-half the aid to construction cost will be paid to the Utility before construction begins and the remainder when the project is finished. The customer is subject to a yearly refund of the aid to construction payment over a 10-year period based on actual annual revenues, less the Utilities' average cost of power. Any amount remaining after 10 years of permanent service shall be forfeited to the Utility.

The utility board reserves the right not to apply the aid to construction at its sole discretion.

## **Construction**

The Utility will construct, own, and maintain the primary line extension to the point of delivery. The customer is responsible for installing a concrete transformer pad per Utility specifications, in a location approved by the Utility for all three-phase pad mounted transformers. The Utility has final approval on all transformer locations.

## **Residential Subdivisions**

Residential subdivisions will be subject to the aid to construction costs as defined for primary line extensions. The developer's business plan for projected lots sold will be used to calculate the aid to construction payment and 3-year revenue credit. If an aid to construction payment was not required, the project will be reviewed 3 years after the Utility has finished installing the primary line extension to determine if the lot sales are proceeding as planned. If the sales are not keeping up with the business plan, the Utility will recalculate the aid to construction costs and charge the developer aid to construction costs based on current conditions and lot sales. The same requirements of the aid to construction costs will apply using the original installation date for the 10-year refund period.

# SERVICES

## **Secondary Service Definition**

A secondary service is defined as that part of the electrical system that carries the secondary voltage from the Utilities distribution transformer or secondary pedestal to the entrance panel on the customer's side of the meter. All services will be installed underground unless special conditions, as approved by the Utility, warrant changes to the standard.

## **Capacity**

Service entrances will have ample capacity, per the *National Electrical Code*; see *NEC Article 220*, for any electrical load that may reasonably be expected to develop. For Customer installations of two to six breakers, or set of fuses, on the load side of a termination box, or current transformer cabinet, the sum of the ratings of the circuit breakers, or fuses will be permitted to exceed the rating of the termination box or instrument transformer cabinet provided the load is calculated in accordance with the *NEC Article 220*. That load will not exceed the ampacity rating of the termination box or current transformer cabinet.

## **Load Increases**

The customer will give the Utility reasonable notice of load increases (permanent or temporary) which may require the Utility to increase the capacity of its facilities. Customers who fail to notify the Utility will be charged for the replacement cost of damaged Utility equipment resulting from the increase in load.

Where the customer is planning a load increase which requires a change out of a main service disconnect the following items may apply.

- (A) If the customer is using a service voltage no longer provided by the Utility, the customer will be required to convert to a service voltage presently provided by the Utility.
- (B) The Utility will review the Service Installation Manual and apply the terms to the load increase as necessary.
- (C) The Utility board reserves the right not to apply any or all of the Rules of Operation at its sole discretion.

## **Identification of Conductors**

The neutral or grounded conductor of a service entrance (480 V and under) will be identified by a white or gray color/tape, or by three continuous white stripes on other than green insulation along its entire length.

On 4-wire, delta connected secondary, where the midpoint of one phase winding is grounded to supply lighting and similar loads, the phase conductor having the higher voltage to ground will be identified by an outer finish that is orange in color, by tagging, or other effective means. Such identification will be placed at each location where a connection is made if the grounded conductor is also present.

## **Service Connections**

The Utility will make all service connections to its distribution system. Connection to or alteration of the electric service facilities or other equipment is prohibited and is subject to immediate disconnection of service.

Service connections and disconnections may be scheduled Monday through Friday, excluding published holidays and between the hours of 8:00 AM and 2:00 PM.

## **Unauthorized Use of Service**

Any tampering, breaking of meter seals, opening or damaging of company locks, interference, or work performed on meter installations or other property of the Utility is prohibited. The Utility may at any time and without notice discontinue supply of service to the customer, and remove its meters and metering equipment in the event of such tampering or interference. The customer will be responsible for payment of all costs which result from such tampering or interference with Utility property.

## **Grounding**

The Utility requires service to be grounded according to the National Electric Code Sections 250.52 and 250.66 and Bremer County Inspections. When using ground rods, install to the right or left of the meter socket, not in front. The grounding conductor will not pass in front of the meter socket.

## **Applications for Service**

All applications for a new electrical service, service upgrade or electrical work to be performed should be made to Bremer County and the Utility. For residential applications, the Utility requires a copy of the building permit (if new construction), an electrical permit and a set of plans showing the proposed meter socket location at least 14 days in advance of any work performed by the Utility. We will not install new services or upgrades until we have copies of the permits and a set of plans showing the exact location of the meter socket. If the Utility is not supplied a socket location, the socket location will default to the “ufer” (concrete encased grounding electrode) location. Once the service has been installed, the cost to move the service and the socket location will be charged to the customer.

Three-phase services for commercial and industrial loads may require a 90-day lead time to get the proper transformer and materials for the application. It is very important that a company representative contact the Utility at least 90 days prior to the requested installation date to discuss the size of the service, voltage required, proposed meter socket location and complete a load data sheet that will enable the Utility to meet the Customer’s needs. Delays may occur if the Utility is not given adequate notice.

No service will be installed until the Utility has received the plans; a copy of the electrical permit and the socket has been inspected and approved by the Bremer County Building and Zoning department or the Iowa Department of Public Safety. Failure to attain the necessary permits and provide a proposed meter socket location will delay the installation of the service. The customer will pay all costs incurred by changes to the service and meter socket location after it has been accepted by the Utility. Installed services which have not been connected by the customer to their service panel within 90 days of installation may be charged the full cost of the installation at the Utility’s discretion.

## **Point of Delivery**

The Utility will designate a point of delivery for the connection of the customer's service. The customer will grant all Utility easements requested by the Utility to provide service to the designated delivery point.

The point of delivery is where the customers wiring starts and the Utilities' ends.

- An underground service with a self-contained meter will have a delivery point at the lugs on the Utilities service wires.
- For a customer with metering at the transformer, fed from a transformer designated solely for their installation, the delivery point will be the secondary lugs of the transformer. The Utility will own and install the instrument transformers and meter for all services.
- An underground service with multiple customers individually metered will have a delivery point at the line side of the current transformers or the lugs on the Utilities service wires if direct metered.
- The point of delivery on an overhead service will be at the compression lugs at the weather-head where the Utilities service wires connect with the Customer's service entrance conductors. Thirty inches of tails are required from the weather head for the Utilities connections.

The Utility provides the portion of the service up to the point of delivery. All facilities beyond the point of delivery will be owned, installed and maintained by the Customer with the exception of meters and instrument transformers supplied by the Utility. In emergency situations, the Utility may make repairs in the meter socket to restore power with the understanding that this is a temporary repair and will need to be corrected by a licensed electrician as soon as possible. The Utility will make no repairs to customer equipment beyond the meter socket.

The Utility will not terminate service cables inside the customer's building or in customer owned switchgear. The termination point will be outside the customer's building in either free standing or wall mounted equipment, self-contained meters, CT cabinets, or a termination box.

For commercial and large general service extensions, the customer may be required to install a transformer pad, constructed to Utility specifications in an approved location.

## **Service Size**

All service cables installed by the Customer will be sized according to the capacity of the main breaker in the service panel on the customers' property and the potential load of the Customer.

## **Multiple Customers from a Normal Installation**

Where the Utility elects to serve more than one customer from a normal installation, the Utility will install and own the low voltage services to the Customer's metering. The Customer on whose property the transformer is located will provide an easement to the Utility for the transformer location and the services to the other customers.

## METERING, MOUNTING AND INSTALLATION

The Utility will furnish and install one meter for each class of service supplied per customer. The meter will be installed on the yard pole, meter pedestal, a solid free-standing wood structure approved by the Utility or the exterior of a permanent structure. A clear space of three feet will be maintained in front of the meter at all times. If an obstruction is built within this limit, the meter will be relocated at the Customer's expense. The location will provide easy access for reading the meter and provide protection from physical damage.

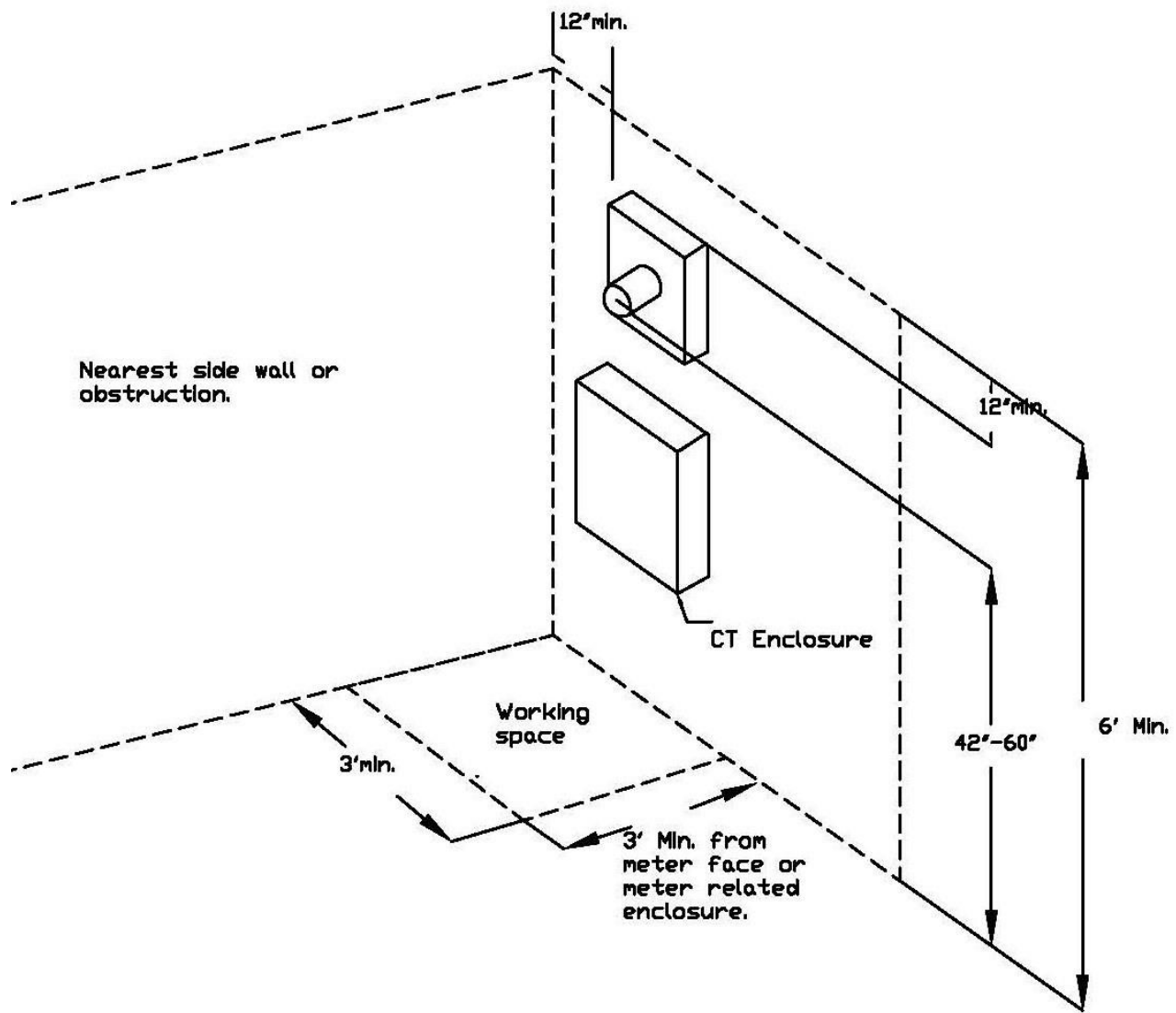
All meter sockets will be firmly secured to a plywood backing so the meter is in a true vertical position. This applies to re-siding, as well as new construction. Meter sockets will be mounted so that the center of the meter is at a height of 42- 60 inches above final grade while meter pedestals will be mounted so the center of the meter is at 30-42 inches above final grade. The Customer must take into consideration any landscaping to be finished after the meter is installed. There should be at least 12 inches of clear space on each side of the meter socket.

All meter sockets will be a minimum of 200 amps whether new, upgrade or replacement due to damage, failure, etc.

Meter sockets found to not be in compliance with the mounting and location requirements set forth in this manual will be notified in writing of the violation and will have six months to correct the violation. If a customer fails to make the necessary corrections within the time allowed, the Utility will make the necessary corrections and bill the customer for the cost of the corrections.

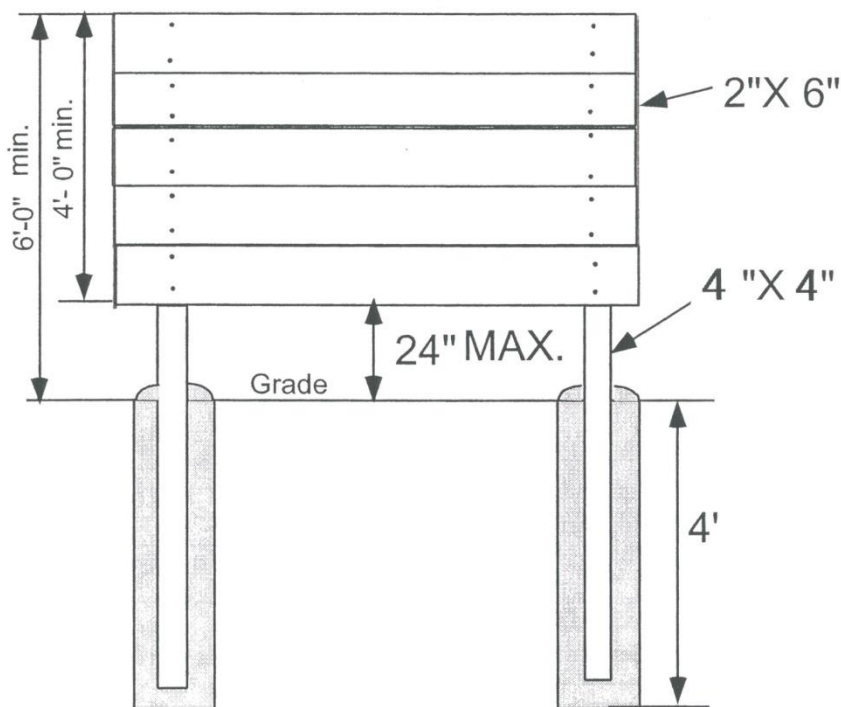
### **Entrance Specifications**

The Customer shall install, own and maintain the service entrance equipment. When a standard meter socket is used, the Utility requires the customer to provide the riser pipe with an expansion joint. The Customer must also provide a meter socket with a fully rated bypass clamping action on the meter spades. Specialized meter sockets must be approved by the Utility before installation. All meter sockets must be NEC compliant. Conductors other than entrance conductors will not be installed in the Utilities service entrance conduit. Only the original knockout may be used in the socket. The creation of additional knockouts is not permitted. A meter seal shall be placed on all meters to restrict access to meter. The location and termination of utility owned service conductors must be on the outside of the Customer's building or structure.



### **Free Standing Wood Structure for Meter Mounting**

If a permanent structure is not available for mounting a meter, the following structure may be used if built to Utility specifications.



### **Meter Size**

Self-contained meters and sockets with lever bypass will be furnished by the Customer for single-phase three-wire installations having a service entrance with a nominal capacity of 400 amperes or less.

### **Current Transformer Metering**

The Customer will furnish space and a weather tight, hinged, sealable metal cabinet to house CT's at a location on the exterior of the building or on a free-standing wood structure approved by the Utility. The size of the cabinet will be a minimum of 36" x 36" x 10" for all three-phase services below 800 amps and 24" x 24" x 10" for single-phase services. A 1-inch conduit will be furnished from the CT cabinet to the meter housing located on the exterior of the building. The length of this conduit will not exceed 25 feet. The Customer is responsible for installing the CT cabinet in an approved location on a permanent structure. The customer will also furnish Burndy 2-hole compression lugs for connection to the customer side of CT's. The Utility will terminate connections in CT cabinet. The Utility will install the CT's and meter pedestal for all pad-mount transformers located on the Customer's premises. The Utility is responsible for installing and maintaining the CT's, meter socket, wiring from the CT's to the meter socket and meter for all other installations.

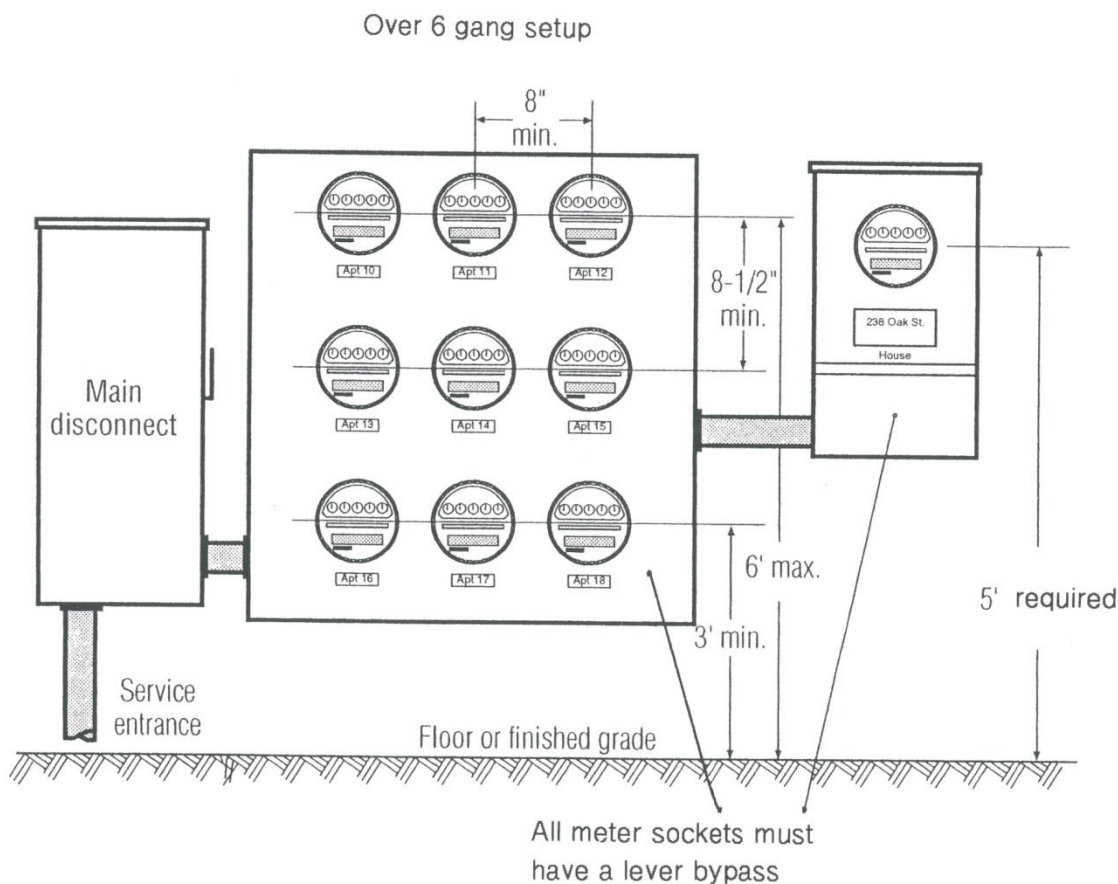
## **Multiple Metering**

The customer will review multiple metering proposals with the Utility prior to ordering the sockets.

When multiple metering, the maximum is 4 rows of sockets. For 1 or 2 weather tight metering rows, the center of the meters in the top row will be a maximum of 60 inches and a minimum of 42 inches to center of the bottom row. For 3 or 4 rows, the center of the top row will be a maximum of 72 inches and a minimum of 30 inches to the center of the bottom row.

The customer will install Utility approved, heavy duty (clamp jaw), pre-wired, ganged meter sockets with lever bypass. If a house meter socket is used, the meter socket must have a lever bypass. The Customer will provide and keep in the main disconnect, one complete block assembly for sockets with 3 or more positions.

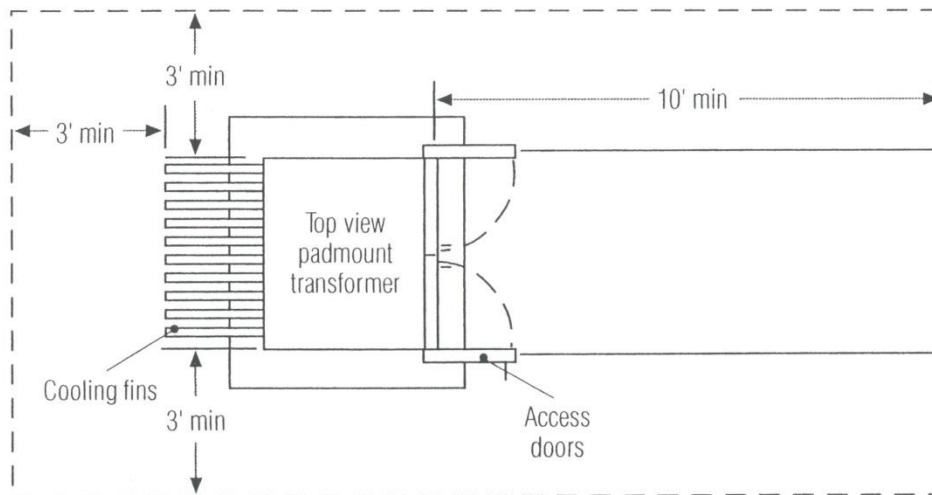
The Utility will attempt to verify the meter socket is wired to the correct electrical panel serving the customers premise in multiple metering applications. The building owner or contractor is responsible for the correct labeling of the meter socket. Each meter socket must be permanently identified with self-sticking weatherproof labels. The labels are to be located next to the main breaker with service address before the utility will make connection.



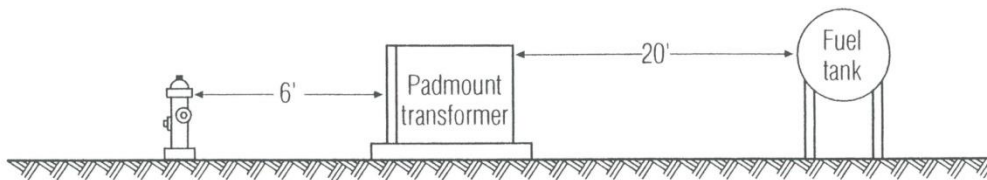
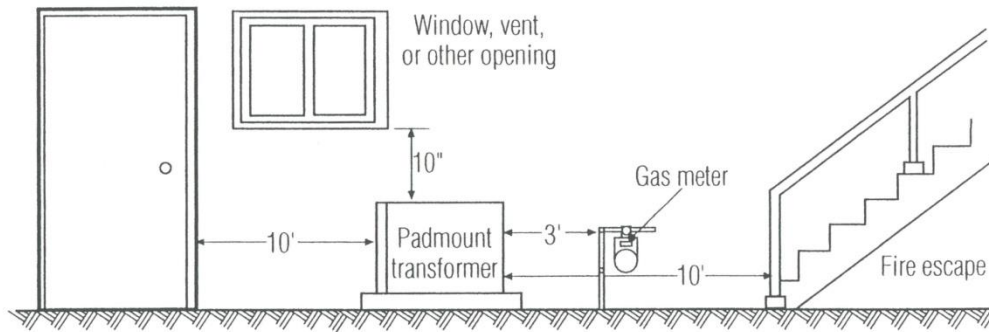
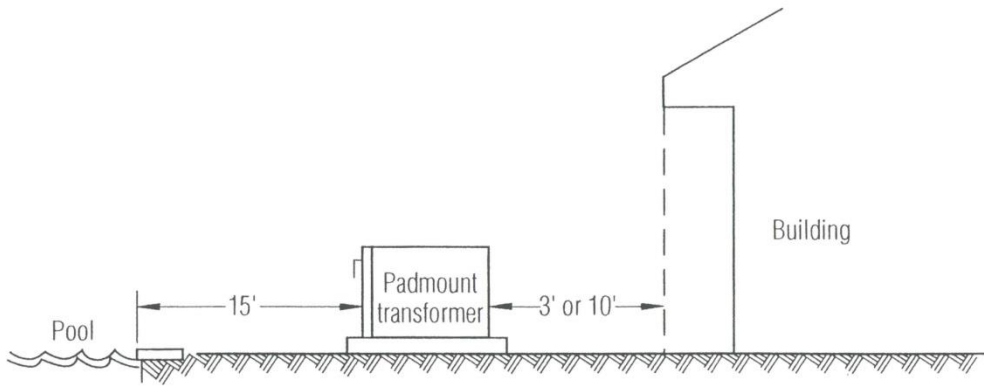


## **TRANSFORMER CLEARANCES**

Minimum distances are required for the clearance of transformers from walls, windows, doors, gas meters, fire escapes, pools, fuel tanks, etc. Minimum clearance from sides and rear from a non-combustible wall shall be three feet (3'). All other clearances shall be a minimum of ten feet (10'). Front clearance in all cases shall be a minimum of ten feet (10'). Please refer to the following drawings for proper clearance of transformers from these items.



**Work clearances around a padmount transformer.**



# RESIDENTIAL SERVICES

## **Definition**

Applied to separately metered individual dwelling units within the City of Waverly for all normal domestic light, heat, and small power purposes. For row-house construction a separate drop or lateral may be provided for each two attached units. All services will be installed in conduit.

## **Meter Socket Location**

The preferred location for single-family residential meter sockets is the side or front of the home. The socket must be mounted in a clear, unobstructed location.

## **Installation Costs**

The Utility will install all residential electric service extensions. An invoice will be created and submitted to the Customer prior to the installation of electric service. The electric service installation fee must be paid in full to the Utility before work will commence.

The fee for electric service installations is:

New Residential Service: \$500 Flat Fee Plus \$8.00 Per Ft.

Residential Service Upgrade: \$8.00 Per Ft.

## **Number of Services**

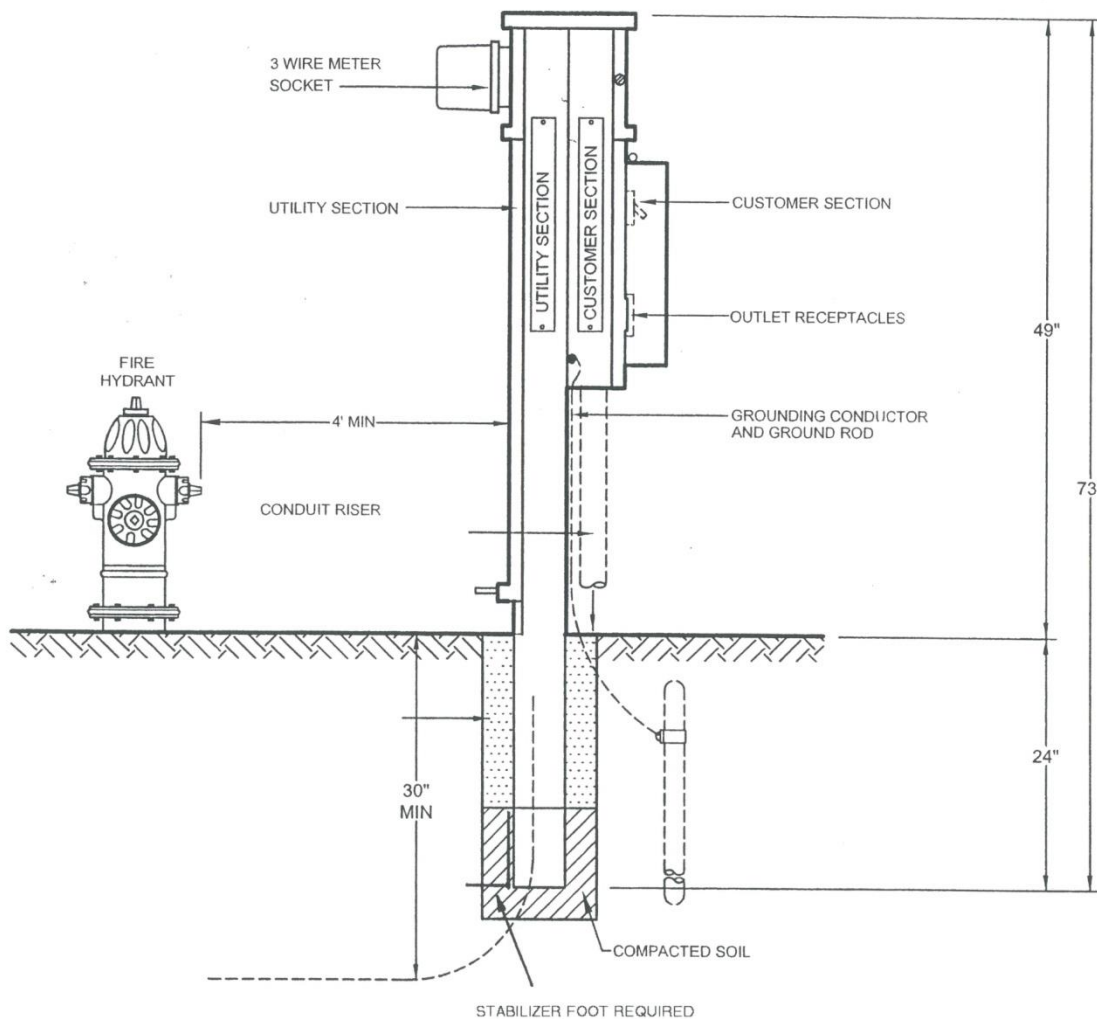
Only one service and meter per rate class will be installed to a residential lot. All additional services on the same property for services to outbuildings, garages, pole buildings, etc. will need to be installed, owned and maintained by the customer from the customer's side of the meter.

## **Service Voltages and Maximum Amperage**

Residential services will be alternating current, 60 Hertz, single-phase, three-wire 120/240 volts or 120/208 volts. It will be served with either an overhead or pad-mount transformer. The maximum continuous amperage will be 400 amps from an overhead transformer and 600 amps when served by a pad-mount transformer. All services will have a grounded neutral conductor. The minimum fault current rating on service equipment will be 10,000 amps. Service is not available on this rate for three phase requirements.

## MOBILE HOME SERVICES

The Customer will provide a 200-amp meter pedestal designed for use with Mobile Homes. The meter socket shall be a fully rated bypass with a clamping action on the meter spades. The pedestal will include a Utility side for the meter and a customer side designed with a breaker, outlet receptacles and connections for the entrance cable. The Utility owns and maintains the cables on the line side of the meter. The Customer owns and maintains everything on the load side of the meter including the pedestal, cables, breakers and receptacles. The Customer is responsible for installing the meter pedestal firmly and securely according to grade line indications on the pedestal and in compliance with all codes and regulations. The Customer or customer's representative is responsible for making all connections on the load side of the meter.



# RURAL SERVICES

## **Definition**

NEC Article 547 defines an agricultural building as one where:

- Excessive dust and dust with water may accumulate, including all areas of poultry, livestock, and fish confinement systems, where litter dust of feed dust, including mineral feed particles, may accumulate.
- Corrosive atmosphere exists in buildings and areas where the following conditions exist:
  - Poultry and animal excrement may cause corrosive vapors.
  - Corrosive particles may combine with water.
  - The area is damp and wet by reason of periodic washing for cleaning and sanitizing with water and cleansing agents.
  - Similar conditions exist.

A service to a rural customer who does not have an agricultural building, as defined by NEC Article 547, will follow the rules as set forth for residential services. Please refer to the section listed in this manual for residential services.

A service to a rural customer, who has an agricultural building, as defined by NEC Article 547, will follow the rules as set forth in this section.

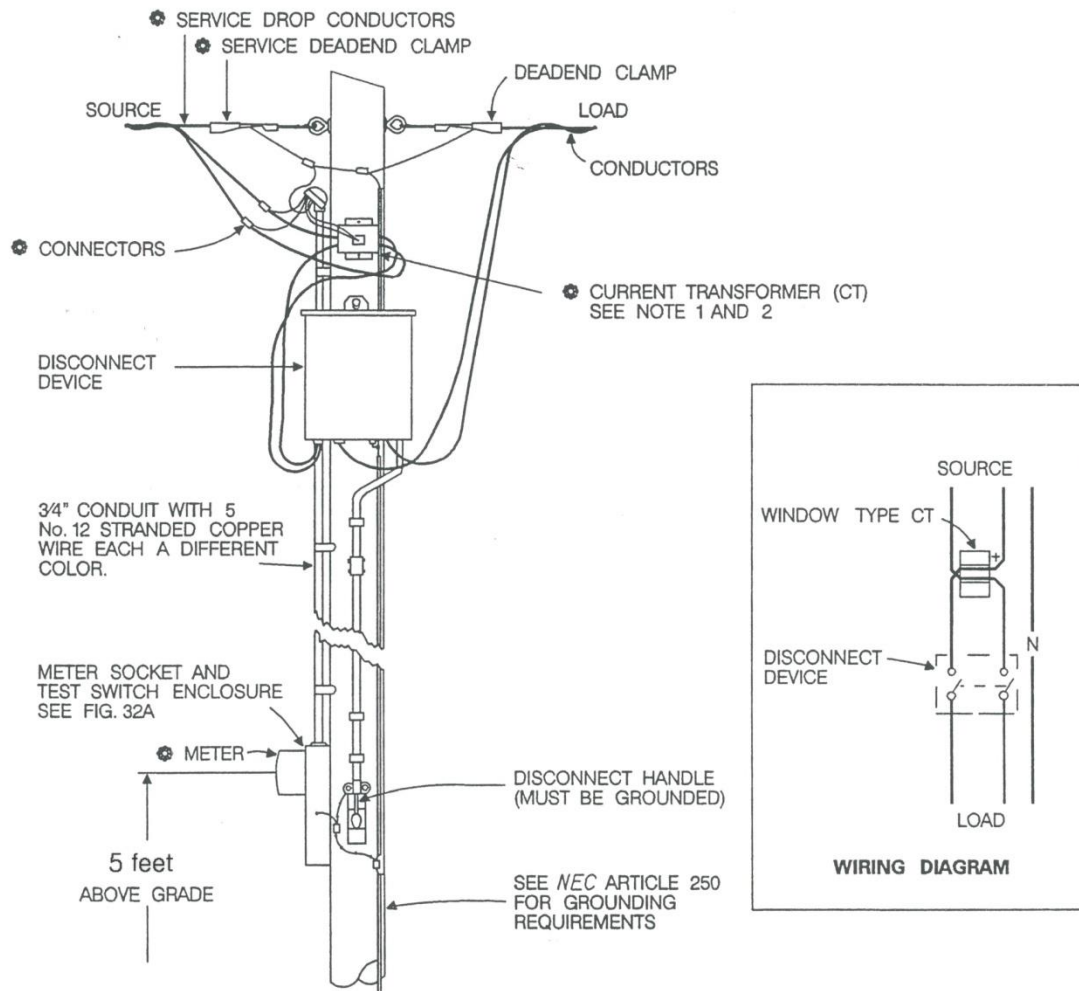
## **Customer Owned Equipment**

All wiring and equipment beyond the point of delivery will be installed by the customer according to National Electric Code requirements. The Customer must provide fuse or circuit breaker protection for each building supplied from the point of delivery.

The Customer must install a disconnecting device as per NEC Article 230. The unit must have an operating handle at ground level for an overhead service or an equivalent unit for an underground service.

If the Customer has a standby energy source, he must furnish and install the standby loop and a double throw switch approved by the Utility.

Customer owned equipment, wire, cables, lights, etc. are not allowed on utility poles or attached to utility property with the exception of a rural service meter pole.



Typical service size; 1-phase 120/240 V, 3-wire, 200 A

For rural services, the Utility provides and installs a standard meter, CT's, conduit and wire from the CT's to the meter socket.

## **Installation Costs**

The Utility will install all rural residential electric service extensions. An invoice will be created and submitted to the Customer prior to the installation of electric service. The electric service installation fee must be paid in full to the Utility before work will commence.

The fee for electric services installations is:

New Residential Service:	\$500 Flat Fee Plus \$8.00 Per Ft.
Residential Service Upgrade:	\$8.00 Per Ft.

## **Number of Services**

Only one service and meter per rate class will be installed to a rural customer. All additional services on the same property for services to outbuildings, garages, pole buildings, etc. will need to be installed, owned and maintained by the customer from the customer's side of the meter.

## **Service Voltages and Maximum Amperage**

Rural residential services will be alternating current, 60 Hertz, single-phase, three-wire 120/240 volts or 120/208 volts. Those rural customers requiring a three-phase service will be placed on a commercial rate schedule and will be subject to the requirements of a commercial service. It will be served with either an overhead or pad-mount transformer. The maximum continuous amperage will be 400 amps from an overhead transformer and 600 amps when served by a pad-mount transformer. All services will have a grounded neutral conductor. The minimum fault current rating on service equipment will be 10,000 amps.

## **Service Location**

The yard pole will be in an accessible location so the supply conductors are in a direct line from the Utilities supply pole, has proper tree clearance and is out of the way of farm equipment traffic. This location must be approved by the Utility.

An underground service transformer or secondary pedestal will be in an easily accessible location, out of the way of farm traffic, protected from potential damage and approved by the Utility. A clear space of ten feet will be maintained at the front of the transformer and three feet on all other sides.

# COMMERCIAL AND INDUSTRIAL SERVICES

## **Commercial Service Definition**

Applied to small commercial customers within the service area for service delivered through one meter at one location for normal lighting, power, and supplemental heating purposes.

## **Commercial Service Voltages and Maximum Amperage**

A commercial service will be provided to non-residential customers with less than 50 kW's of demand as single-phase, 3-wire, 120/240 volts or 120/208 volt or three-phase, 4-wire, 120/208 volts or 277/480 volts. Three phases 120/208-volt service entrance panels rated 800 amps or larger and three phases 277/480-volt service entrance panels rated 400 amps or larger are automatically assigned to General Service (50 kw demand requirement is waived). Please check with the Utility for availability of voltages as not all voltages are readily available at all locations.

## **General (Industrial) Service Definition**

Applied to commercial customers with demand requirements over 50 kW occurring four (4) or more months in any twelve (12) month period. This may include industrial and commercial customers within the service area for service delivered through one meter at one location for all purposes.

## **General (Industrial) Service Voltages and Maximum Amperage**

The power will be delivered as 4-wire, three-phase power at either 120/208 volts or 277/480 volts. Three phase 120/208-volt service entrance panels rated 800 amps or larger and three phase 277/480-volt service entrance panels rated 400 amps or larger are automatically assigned to General Service (50 kW demand requirement is waived). Service may also be delivered at primary voltage subject to provisions of primary voltage riders. Please check with the Utility for availability of voltages as not all voltages are readily available at all locations.

## **Primary Service Voltage Costs**

The Utilities primary service voltage is offered at 7200/12470 volts on a 4-wire system. If primary voltage is desired, both potential and current transformers are required for metering purposes. The Utility will provide and install the primary metering. The customer is responsible for reimbursing the Utility for all costs associated with installation of the primary metering including CT and PT transformers, cabinets, materials, labor and equipment. When more than one transformer is furnished by the Utility, it is the customer's responsibility to furnish transformer locations, pads, primary metering cubicle, protective switchgear, fusing, and primary cable, all approved by the Utility. An industrial customer may own and maintain its transformers and may receive a transformer discount according to current rate schedules.

All customer owned primary systems must be maintained at the Utility's system voltage of 7200/12470 grounded Y on a 4-wire system. The customer must maintain their system in accordance with all NEC, NESC, State of Iowa, Bremer County, and City of Waverly codes, be inspected annually and maintained by an electrician who is trained and qualified to work on a 7200/12470GY system.



### **Secondary Service to Multiple Locations**

A customer's load and/or distance conditions may dictate the need for secondary service delivery at more than one location. If more than one secondary voltage is required, the Utility may install a second service at the Utilities discretion. Please reference Article 230.2 of the *National Electric Code* for conditions that allow additional services to the same location.

### **Switching from a Primary Service to Secondary Service**

When a current primary customer wants to become a secondary customer, the customer will need to bring their system to the current Utility standards.

### **Installation Costs**

The Utility will install all commercial and industrial service extensions. However, the customer may, with the consent of the Utility and in accordance with the Utility standards, offset a portion of the installation cost by providing trenching and backfill for the electric underground service. The Customer will be charged for new services based on all material costs, labor and applicable equipment fees for electric services. Installation costs can be provided prior to the start of the project for estimation purposes. If during the course of work, the estimated costs are in jeopardy of being exceeded due to unforeseen circumstances. The Utility will notify the responsible party of the project of such changes.

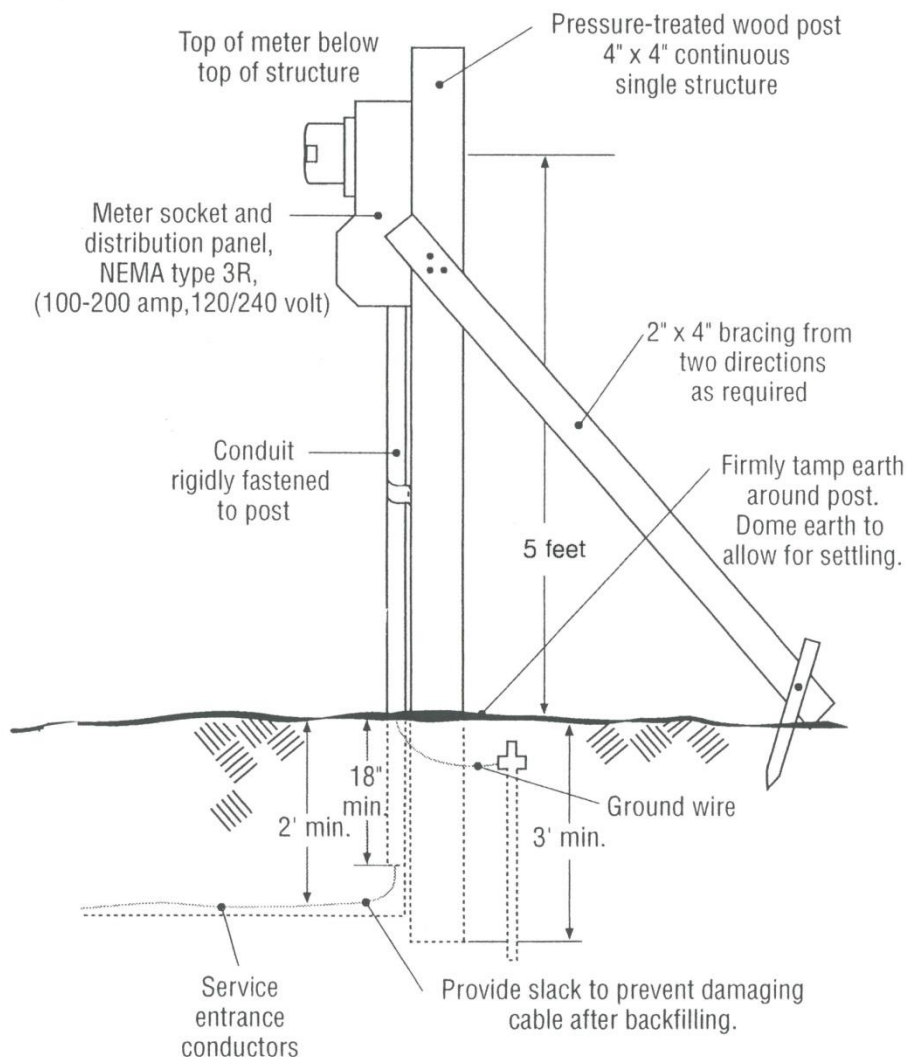
## TEMPORARY SERVICES

## Single-Phase Temporary Services

A service application is required for all temporary services. The Utility will approve the location of all temporary services.

Temporary services will have an active duration of no more than 1 year.

When the customer no longer requires the temporary service, the customer will notify the Utility to remove the service. The cost of installing, removing and the electricity used by the temporary service will be charged to the customer. Temporary services may not be classified as permanent unless such installations meet all the requirements set forth in this manual and all applicable codes and regulations.



## Large Capacity Three-Phase and Primary Temporary Services

The Customer will submit specific proposals for Utility approval.

## COMMUNICATION TOWER SERVICES

All communication towers are considered to be structures. The Utility will provide one service to a tower site regardless of the number of towers. The tower owner will be responsible for providing metering and service entrance facilities to serve all tenants utilizing the tower facilities.

# MOTORS AND SPECIAL EQUIPMENT

The proper operation of motors and other electrical equipment is necessary to minimize objectionable motor starting effects and to otherwise protect the service to other customers. All motors require starting currents substantially greater than their normal running currents. Excessive starting currents will result in objectionable drops in the supply voltage to the customers in the vicinity. Therefore, the customer's equipment will conform to the following requirements and any exceptions will be subject to agreement by the Utility.

## **Protection of Motors and Other Equipment**

Customers are advised to provide protection in accordance with the NEC or other pertinent sources of information for all types of equipment including, but not limited to, motors, computers, electronic equipment, and equipment in which computers or electronic equipment form an integral operating part, to adequately protect such equipment under all conditions including the following:

1. Overload
2. Loss of voltage
3. High or low voltage
4. Loss of phase (single-phasing on polyphase motors)
5. Re-establishment of normal service after any of the above
6. Phase reversal
7. Motors that cannot be subjected to full voltage on starting
8. Harmonics or wave form irregularities

The failure of the customer to provide proper protection may result in needless damage to equipment and the expense of delay and repair. The Utility is not responsible for motor damage caused by any of the above conditions. For further information about protective devices, the customer is urged to contact the equipment supplier or their electrician.

## **Guidelines for Motor Sizes**

Single phase motors, 5 horsepower and smaller, may be operated without special means of reducing starting current. Single-phase motors larger than 5 hp may be permitted with Utility approval, provided the Utilities electric facilities are adequate to supply the service and provided the use of such a motor or motors does not interfere with the quality of service rendered to other customers.

In general, single-phase motors up to 2 hp may be operated on 120 volts. Single-phase motors 2 hp and larger will not be operated on 120 volts. Poly-phase motors larger than 5 hp which are operated from a single-phase service by use of a phase converter will only be allowed with Utility approval.

Poly-phase motors rated 15 hp and less may be started at full line voltage. For larger motors, the Utility reserves the right to require the customer to limit the motor starting current by the use of reduced-voltage starters or other acceptable means. Contact the Utility regarding any starting current limitations or information on high-efficiency motors. The Utility reserves the right to disallow the use of large electric motors which may have an adverse effect of the Utilities electric system.

### **Group Motor Installation**

Reduced-voltage starting requirements for the largest motor will be the maximum allowable across-the-line starting current for smaller motors. In this case, the reduced-voltage starting requirements for smaller motors may be omitted.

### **Large Electric Load Equipment**

The installation of welders, electric furnaces, large capacity or quick recovery water heaters, and similar equipment may adversely affect the electric service to adjacent customers and will not be connected to the Utilities lines without prior approval.

Please call the Utility prior to the installation so an adequate service may be installed.

### **Power Factor**

A low power factor has an adverse effect on the Utilities and Customers electric systems. The Utilities electric tariffs impose an additional cost when the average power factor of the Customer's system is below a specified limit. Cost justification may exist for the customer to install high power factor equipment and/or capacitors on the Customer's electric system to maintain an acceptable power factor. Motors should be sized so normal motor operation is at or near their rated capacity to assist in maintaining a desirable power factor.

## STANDBY GENERATOR SERVICE

Waverly Utilities (WU) will allow the use of standby electric generators for temporary or emergency electric service. For the safety and protection of WU employees and property, as well as protection of the Customer's equipment, there must be a positive way to guarantee the standby generator cannot accidentally be connected in parallel to WU's distribution system.

A manual or automatic transfer switch must be installed at the Customer's expense. This switch must be designed so that under no conditions will the standby generator and WU's electrical system operate in parallel. The transfer switch must open all ungrounded conductors from one source before connection is made to the other source. The switch should contain a visual break or some method that determines the physical position of the switch. The switch will be installed in compliance with all NEC codes.

Prior to commissioning of a standby electric generator. A representative from WU shall complete an inspection and verify the proper operation of the transfer switch and associated equipment. This inspection by WU does not replace or supersede local or NEC code requirements.

# GRAIN BINS

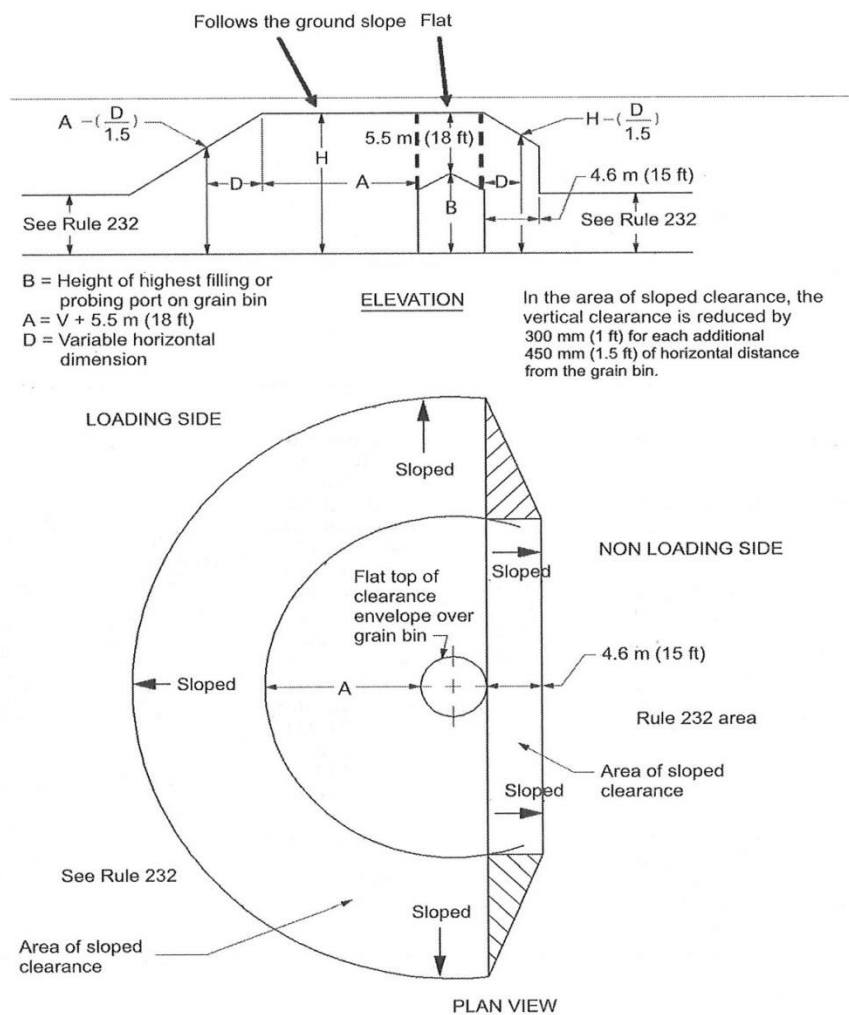
## **Clearances of Wires, Conductors, Cables and Rigid live parts**

Grain bins loaded by permanently installed augers, conveyors, or elevator systems where all portions of grain bins which are expected to be loaded by the use of a permanently installed auger, conveyor or elevator system shall be considered as a building or other installation under the NEC code for the purpose of determining appropriate clearances of wires, conductors, cables, and rigid live parts. In addition, the following clearances shall also apply without wind displacement. See figure 234-4 (a).

- A clearance of not less than eighteen feet (18') in all directions above the grain bin shall be maintained from each probe point in the grain bin roof for all wires, conductors and cables.
- A horizontal clearance of not less than fifteen feet (15') shall be maintained between grain bins and open supply conductors, 0 to 22 kV. This clearance does not apply to a neutral conductor meeting Rule 230 E1.

Grain bins loaded by portable augers, conveyors, or elevators (with no wind displacement)

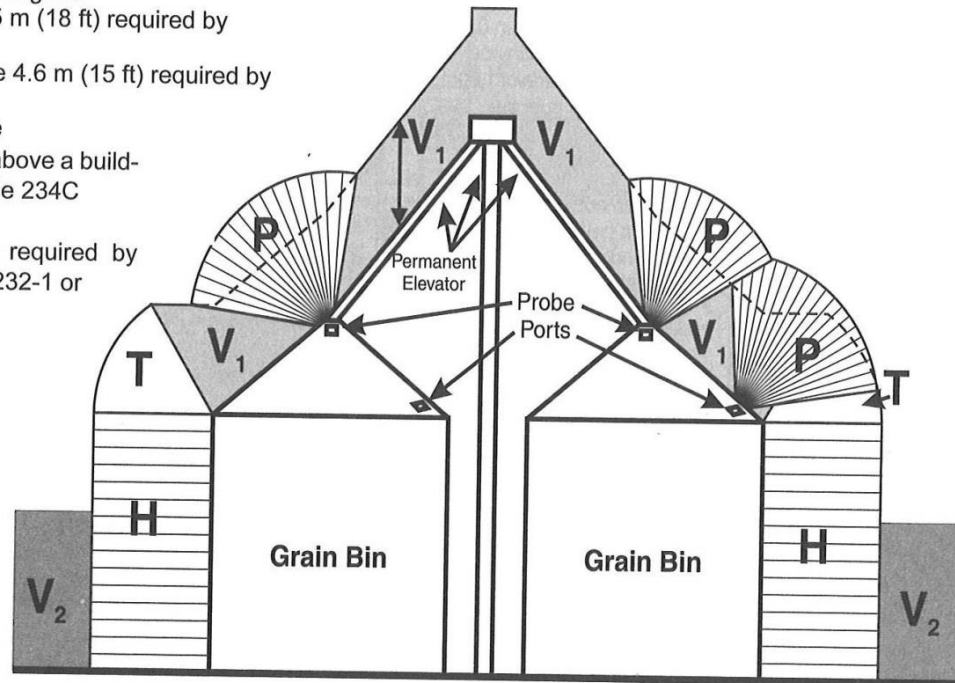
- The clearance of wires, conductors, cables and rigid live parts from grain bins that are expected to be loaded by the use of a portable auger, conveyor, or elevator shall be not less than the values illustrated in Figure 234-4b.  
*Exception:* Clearance of the following items on the nonloading side of grain bins shall be not less than those required by Rule 234C for clearances from buildings:
  - Support arms; effectively grounded equipment cases
  - Insulated communication conductors and cables, messengers, surge-protection wires, grounded guys, neutral conductors meeting Rule 230E1 and supply cables meeting Rule 230C1.
  - Supply cables of 0 to 750V meeting Rule 230C2 or 230C3
- Any side of a grain bin is considered to be a nonloading side if it is so designated, or if it is so closely abutting another structure or obstruction, or so close to a public road or other right of way that a portable auger, conveyor, or elevator is not reasonably anticipated to be used over that side or portion to fill the grain bin.
- Where an agreement excludes the use of portable augers, conveyors, or elevators from a designated portion of a grain bin, such portion is considered to be a nonloading side.



**Figure 234-4(b)—Clearance envelope for grain bins filled by portable augers, conveyors, or elevators**



- Legend
- P = probe clearance 5.5 m (18 ft) required by Rule 234F1a
  - H = horizontal clearance 4.6 m (15 ft) required by Rule 234F1b
  - T = transition clearance
  - $V_1$  = vertical clearance above a building required by Rule 234C (Table 234-1)
  - $V_2$  = vertical clearance required by Rule 232B (Table 232-1 or 232-2)



**Figure 234-4(a)—Clearance envelope for grain bins filled by permanently installed augers, conveyors, or elevators**

## HOUSE MOVES

House moves within the Utility service territory will be allowed for moving heights less than 20 feet. House moves with a loaded height above 20 feet which cross under Utility power lines, will not be allowed. A deposit exceeding the estimated moving cost for the Utility is required before the house may be moved. The Utility requires a 14-day advance notice of the day the house is to be moved and a map designating the route. The route must be approved by the Utility before proceeding with the move. The Utility reserves the right to reject any proposed routes. It is the responsibility of the Customer to obtain all necessary permits prior to the house move.

## UTILITY LINES AND EQUIPMENT RELOCATION

Periodically, the Utility is required to relocate lines and equipment due to the construction of buildings, roads and driveways, other utilities, additions to homes, etc. in the area that the electric lines are near or occupying. If the construction causes violations of the current National Electric Safety Code, National Electric Code or causes the Utility to abandon the lines and equipment or easements containing such equipment, we will be required to move or construct new lines and equipment. The Utility may move the lines and equipment to another location to allow the construction to take place and meet current codes, rules and regulations. This applies to any and all Utility assets including electric, fiber, generation, substation, metering and other facilities or equipment as required.

# INTERCONNECTION STANDARDS FOR PARALLEL INSTALLATION AND OPERATION OF CUSTOMER–OWNED RENEWABLE ELECTRIC GENERATING FACILITIES

## Part 1 OVERVIEW

### PURPOSE:

The purpose of this document is to establish standards for the Utility to interconnect and operate in parallel with customer-owned renewable electric generators.

### DEFINITIONS:

**Applicable Laws and Regulations** – All duly promulgated applicable federal, state and local laws, regulations, rules, ordinances, codes, decrees, judgments, directives, or judicial or administrative orders, permits and other duly authorized actions of any Governmental Authority.

**Avoided Costs** – The incremental cost to the Utility of electric energy which, but for the purchase from the Customer’s Generating Facility, the Utility would generate itself or purchase from another source. It is the average yearly cost per kwh to the utility of the energy portion of the power purchased from the Municipal Energy Agency of Nebraska. This is calculated at the end of each calendar year and is effective for the following year.

**Customer** – Any entity interconnected to the Utility’s distribution system for the purpose of receiving retail electric power service from the Utility’s distribution system.

**Customer Generator** – The owner or operator of a Generating Facility which:

1. is powered by a renewable energy resource;
2. is located on a premise owned, operated, leased or otherwise controlled by the Customer Generator;
3. is interconnected and operates in parallel phase and synchronization with an affected utility and is in compliance with the standards established by the affected utility;
4. is intended primarily to offset part or all of the Customer Generator’s own electrical energy requirements;
5. contains a mechanism, approved by the utility, which automatically disables the unit and interrupts the flow of electricity back onto the supplier's electricity lines in the event the service to the Customer Generator is interrupted.

**Distribution System** – The Utility's facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries directly from nearby generators or from interchanges with higher voltage transmission networks which transport bulk power over longer distances.

**Force Majeure** – A Force Majeure event shall mean “any act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, any order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or any other cause beyond a Party’s control”. A Force Majeure event does not include an act of negligence or intentional wrongdoing.

**Generating Facility** – For purposes of this Standard, the Customer's device for the conversion of wind or solar energy to electricity, as identified in the Interconnection Application.

**Good Utility Practice** – Any of the practices, methods and acts engaged in or approved by a significant portion of the electric industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.

**Governmental Authority** – Any federal, state, local or other governmental regulatory or administrative agency, court, commission, department, board, or other governmental subdivision, legislature, rulemaking board, tribunal, or other governmental authority having jurisdiction over the Parties, their respective facilities, or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power; provided, however, such term does not include the Customer or any Affiliate thereof.

**Interconnection Application** – The Customer's request to interconnect a new Generating Facility, or to increase the capacity of, or make a material modification to the operating characteristics of, an existing Generating Facility that is interconnected with the Utility's electrical system.

**Interconnection Standard** – Any reference to Interconnection Standard shall mean all the provisions, forms and related documents described in the collective parts of this document, the Interconnection Standards for Parallel Installation and Operation of Customer-Owned Renewable Electric Generating Facilities, as of the date adopted and printed on the cover page.

**Net Metering** - A bi-directional metering process using equipment sufficient to measure the difference between the electrical energy supplied by a Customer Generator to the Utility's Distribution System and the electrical energy supplied by the Utility to the Customer and over an applicable billing period.

**Qualifying Facility** – A cogeneration facility or a small power production facility is a qualifying facility under 18 CFR Part 292, Subpart B, used by an interconnection customer to generate electricity that operates in parallel with the electric distribution system or local electric power system. Qualifying Facilities that are not Generating Facilities under subparagraphs “g” above may qualify for interconnection with the Utility under provisions of the Public Utilities Regulatory Policies Act (PURPA), but the terms and conditions of interconnection shall be determined on a case-by-case basis.

**Reasonable Efforts** – With respect to an action required to be attempted or taken by a Party under the Interconnection Agreement, efforts that are timely and consistent with Good Utility Practice and are otherwise substantially equivalent to those a Party would use to protect its own interests.

**System Average Energy Cost** – The current average cost of fuel and purchased energy for the billing period as determined by the Utility.

**System Upgrades** – The additions, modifications, and upgrades to the Utility's Distribution System at or beyond the point of interconnection to facilitate interconnection of the Generating Facility and render the transmission service necessary to affect the Interconnection Customer's wholesale sale of electricity in interstate commerce. Distribution Upgrades do not include Interconnection Facilities.

#### ELIGIBILITY:

Interconnection to the electric system shall be granted only to new or existing customers, in good standing, under the Utility's electric service schedules. The Interconnection Agreement shall be between the Customer and the Utility and will not include third parties.

The Interconnection Standards apply to a customer-owned Generating Facility with a rated output of 25 kilowatts (kW) or fewer. Proposals to interconnect a customer-owned generator with output rated at more than 25 kW or Qualifying Facility not covered by this standard will be subject to a review process that may consider the impact of the interconnection on reliability, rates, power supply agreements, and local and regional system planning.

#### REQUEST:

All customers installing renewable electric generating facilities are required to make a request by completing the attached document entitled "Application for Interconnection". The Utility may require additional details or clarifications as needed to properly evaluate the application.

#### SYSTEM EFFECTS:

The Utility will analyze the overall impact of the proposed generating facility on the transmission and distribution system. Such analyses will be based on Good Utility Practice to determine thermal effects, voltage ranges, power quality, system stability, etc.

#### SYSTEM UPGRADES:

The Customer will be billed and required to pay for any additional transmission, distribution, metering or administrative costs at actual time and material rates as required to provide service to the generating facility. The Utility will provide the Customer with a cost estimate and projected timeframe for any system upgrades that may be necessary to accommodate the generating facility.

#### AGREEMENT:

Once the Customer and the Utility have identified and mutually agreed on the scope of the overall project including the generating facility, system upgrades and estimated costs, the Customer and the Utility shall execute the attached document entitled "Interconnection Agreement".

#### CODES AND PERMITS:

The Customer shall be responsible for procuring all building, operating and environmental permits that are required by any Governmental Authority having jurisdiction for the type of generating facility and for the necessary ancillary structures to be installed.

The equipment shall meet the standards listed in the attached document entitled "National Certification Codes and Standards".

The construction and facilities shall meet all applicable building and electrical codes.

#### NET METERING:

The Customer shall complete the necessary net metering service schedule documentation to permit the bi-directional flow of electricity and the financial treatment of the net deliveries.

#### CERTIFICATE OF COMPLETION:

Upon completion of the generating facility and prior to normal operation, the Customer shall provide a signed copy of the attached document entitled "Certificate of Completion".

**NORMAL OPERATION:**

The Customer may begin normal operation of the generating facility upon completion of all documentation and receipt of written approval from the Utility.

## Part 2

# TECHNICAL REQUIREMENTS

### CHARACTER OF SERVICE:

The electrical service shall be 60 cycle per second alternating current (AC) at supply voltages and number of phases which apply under the Utility's rate schedules.

### CODE REQUIREMENTS:

The Generating Facility shall meet all requirements established by the National Electrical Code (NEC), National Electrical Safety Code (NESC), Institute of Electrical and Electronics Engineers (IEEE), Underwriters Laboratories (UL), and Occupational Safety and Health Administration. Specific codes are listed in Section 7 of this Part 2, below as "National Certification Codes and Standards". In addition, Manufacturer's Ownership, Operating and Maintenance Manuals shall be reviewed and accepted by both parties prior to beginning operation.

### GENERATING FACILITY CONTROL AND OPERATION:

The control system of the Generating Facility shall comply with the IEEE specifications and standards for parallel operation with the Utility and in particular as follows:

1. Power output control system shall automatically disconnect from Utility source upon loss of Utility voltage and not reconnect until Utility voltage has been restored by the Utility.
2. Power output control system shall automatically disconnect from Utility source if Utility voltage fluctuates beyond plus or minus 5% (five percent). The Customer shall provide adequate protection to prevent damage to the Utilities electrical system from inadvertent over/under voltage conditions originating in Customer's generating facility and to protect the Customer's generating facility from inadvertent over/under voltage conditions originating from the Utilities electrical system. Follow the IEEE 1547 standard for voltage ranges and clearing times for interconnection settings.
3. Power output control system shall automatically disconnect from Utility if frequency fluctuates plus or minus 2 cycles (Hertz).
4. Inverter output distortion shall meet IEEE requirements.
5. The Generating Facility shall meet the applicable IEEE standards concerning impacts to the Distribution System with regard to harmonic distortion, voltage flicker, power factor, direct current injection and electromagnetic interference.
6. The voltage produced by the Customer's generating facility must be balanced if it is a three-phase installation. The Customer is responsible for protecting the generating facility from an inadvertent phase unbalance in the Utilities service voltage.

### FAULT PROTECTION

The Generating Facility shall be equipped with protective equipment designed to automatically disconnect during fault current conditions and remain disconnected until the voltage and frequency have stabilized. The Customer's equipment shall protect the Utility from fault currents originating from Customer's generating facility. The Customer shall also be responsible to provide adequate protection for the generating facility from fault currents originating in the Utilities electrical system.

## RECLOSING COORDINATION

The Generating Facility shall be coordinated with the Distribution System reclosing devices by disconnecting from the system during the initial de-energized operation and shall remain disconnected until the voltage and frequency have stabilized.

## DISCONNECT DEVICE:

A safety disconnect switch shall be installed that is visible to and readily accessible by Utility personnel. The switch shall be capable of being locked in the open position and shall prevent the generator from supplying power to the distribution system.

## STANDARDS FOR INTERCONNECTION, SAFETY, AND OPERATING RELIABILITY

The interconnection of a Customer-Owned Generating Facility and associated interconnection equipment to the Utility's Distribution Facilities shall meet the applicable provisions of the following publications:

- a. ANSI/IEEE1547-2003 Standard for Interconnecting Distributed Resources with Electric Power Systems (including use of IEEE 1547.1 testing protocols to establish conformity). The following standards shall be used as guidance in applying IEEE 1574:
  - i. IEEE Std 519-1992, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems
  - ii. IEC/TR3 61000-3-7 Assessment of emission limits for fluctuating loads in MV and HV power systems
- b. Iowa Electric Safety Code, as defined in 199 IAC Chapter 25
- c. ANSI/NFPA 70 (2008), National Electrical Code
- d. OSHA (29 CFR § 1910.269)
- e. City of Waverly, Iowa codes and requirements
- f. Bremer County, Iowa codes and requirements



## Part 3

### NET METERING FOR CUSTOMERS' RENEWABLE GENERATION

#### PURPOSE:

The provisions of this policy set forth the terms and conditions under which a customer may be compensated for net deliveries of energy and/or capacity to the Utility from Customer Generators with Renewable Energy Resources approved by the Utility.

#### DEFINITIONS:

The definitions used in this Part are those found in Part 1, Section 2 of this Interconnection Standard.

#### NET METERING GENERAL PROVISIONS:

1. The Utility requires Net Metering from its Customers who wish to generate electricity on the Customer's side of the meter using only renewable resources for energy sources.
2. Net Metering is intended for Customer Generators with a rated output of 25 kilowatts (KW) or fewer produced through conversion of wind or solar energy.
3. The Utility shall make Net Metering available to eligible Customer Generators within its service area on a first-come, first-served basis. The maximum total rated capacity in kW of customer generation that will be allowed on the Utility's system shall be limited to not more than 5% percent of the Utility's peak demand during the previous Annualized Period. Interconnection of Generating Facilities in excess of this system limit shall be evaluated on a case-by-case basis
4. Customer Generators shall be equipped with properly approved Utility metering equipment as follows: Meter #1 shall meter the total amount of energy produced by the Customer Generator (installed between the inverter and service panel); and Meter #2 (bi-directional meter) shall meter the total energy delivered to the distribution system, the total amount of energy received by the customer and the net amount of energy. Meter sockets and meters will be supplied by the Utility. All associated costs for such equipment will be billed to the Customer. The Customer is responsible for installation of the meter sockets by a qualified electrician.
5. Whenever the amount of electricity delivered by an eligible Customer Generator in a billing period exceeds the electricity supplied by the Utility in such billing period, the Utility shall settle with the Customer Generator for the excess kilowatt-hours (kWh) in accordance with the billing practices described in this policy.
6. If a Customer Generator formally terminates Net Metering, the Utility shall treat the end of the service period as if it were the end of the billing period and, if applicable, settle with the Customer Generator according to the appropriate billing practices. Customer Generator equipment must be removed at termination of Net Metering.
7. The Utility shall provide Net Metering at non-discriminatory rates that are identical with respect to the applicable customer rate class, retail rate components, and any monthly charges, to the rates that a customer would be charged if not a Customer Generator.

8. The Utility shall not charge a Customer Generator any fee or charge, or require additional equipment or any other requirement, unless the fee, charge, or other requirement is specifically authorized under the terms of the Interconnection Agreement, this Policy or if the fee, charge or other requirement would apply to other customers that are not Customer Generators. Any insurance coverage which may be required is specifically exempted from this paragraph.
9. Nothing in this Policy shall abrogate any Customer's obligation to comply with all applicable Federal, State, or local laws, codes, or ordinances; nor with the Service Rules and Policies of the Utility.

#### INTERCONNECTION STANDARDS

To qualify for Net Metering, Customer Generators must comply with the Utility's Interconnections Standards for Parallel Installation and Operation of Customer-Owned Electric Generating Facilities.

#### REQUEST

The Customer Generator shall make a request for Net Metering by completing the Utility's Application for Net Metering and the Utility's Application for Interconnection. The Utility may require additional details or clarifications as needed to properly evaluate the application.

#### BILLING PRACTICES

The following net billing provisions shall apply to net consumption of energy by a Customer whose Generating Facility is eligible for Interconnection under Part 1, Section 3 of this Standard and has received Approval to Energize under Part 7 of this Standard.

#### NET METERING CREDIT – FINANCIAL CREDIT

1. **Positive Net Consumption.** Whenever the amount of electricity delivered by an eligible Customer Generator in a billing period is less than the electricity delivered by the Utility during such billing period the net energy supplied by the Utility will be billed in accordance with the rate schedule applicable to the Customer's assigned rate class and all applicable riders.
2. **Negative Net Consumption.** Whenever the amount of electricity delivered by an eligible Customer Generator in a billing period is more than the electricity supplied by the Utility in a billing period, the Utility shall credit the Customer Generator for the excess kilowatt-hours. The excess kilowatt-hours will be credited to the Customer Generator's account on a monetary basis at the Avoided Cost.
3. **Obligation for Other Charges.** Regardless of whether the Customer Generator is entitled to receive financial credit for excess electrical energy from a prior billing period, Customer Generators remain responsible for all charges incurred during each billing period including, but not limited to: customer charges, facilities charges, demand charges, environmental charges, transmission charges, any late payment charges, and any requirements for deposits or special charges or fees that may be applied.

## Part 4

# INTERCONNECTION & NET METERING APPLICATION

Application No. \_\_\_\_\_

This Application for Interconnection and net metering of customer-owned renewable generation is considered complete when it provides all applicable and correct information required below. Additional information or clarification to evaluate the Application may be requested by the Utility.

### Processing Fee

☐ For systems with a rated output of 10 kW or fewer, a non-refundable processing fee of \$100 must accompany this Application.

☐ For systems with a rated output greater than 10 kW and up to 25 kW, a non-refundable fee of \$200 must accompany this Application.

### Customer

Name: \_\_\_\_\_ Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Telephone (Day): \_\_\_\_\_ (Evening): \_\_\_\_\_

E-Mail Address: \_\_\_\_\_

### Contact (if different from Customer)

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Telephone (Day): \_\_\_\_\_ (Evening): \_\_\_\_\_

Fax: \_\_\_\_\_ E-Mail Address: \_\_\_\_\_

Owner of the facility: \_\_\_\_\_

### Generating Facility Information

Location (if different from above): \_\_\_\_\_

Generator Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Inverter Manufacturer: \_\_\_\_\_

Model: \_\_\_\_\_

Nameplate Rating: (kW) \_\_\_\_\_ (kVA) \_\_\_\_\_

Energy Source: Solar ☐ Wind ☐ Other (describe) \_\_\_\_\_

Voltage: \_\_\_\_\_ Phase: \_\_\_\_\_

Disconnect Switch Manufacturer and Model: \_\_\_\_\_

Tower height and rotor diameter (if wind system): \_\_\_\_\_

Is the equipment UL1741 Listed? ☐ Yes ☐ No

If Yes, attach manufacturer's cut-sheet showing UL1741 listing

Estimated Installation Date: \_\_\_\_\_ Estimated In-Service Date: \_\_\_\_\_

**Provide a one-line diagram of the Small Generating Facility.** The one-line diagram is a basic drawing of an electric circuit in which one or more conductors are represented by a single line and each electrical device and major component of the installation, from the generator to the point of interconnection, are noted by symbols.

If available, please attach monthly output load profiles showing the monthly generation output of the generator.

**Customer Signature**

I hereby certify that, to the best of my knowledge, the information provided in this Application is true. I agree to abide by the terms and conditions of the Utility's Interconnection Standard and will return the Certificate of Completion when the Generating Facility has been installed.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

----- **Utility Use** -----

**Contingent Approval to Interconnect the Generating Facility**

Interconnection of the Generating Facility is approved contingent upon the terms and conditions of the Utility's Interconnection Standard and upon return of the Certificate of Completion.

Utility Signature: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Application Number: \_\_\_\_\_

Utility waives inspection/witness test? ☐ Yes ☐ No Initial \_\_\_\_\_

## Part 5

# INTERCONNECTION AND NET METERING AGREEMENT

Application No. \_\_\_\_\_

This Agreement, (“**Agreement**”) is entered into by and between Waverly Utilities (“**Utility**”) and \_\_\_\_\_, (“**Customer**”). Customer and Utility are referenced in this Agreement collectively as “**Parties**” and individually as “**Party**.”

### **Recitals**

WHEREAS, Utility is a municipal electric utility engaged in the retail sale of electricity in the state of Iowa;

WHEREAS, Customer owns or desires to install, own and operate an electric Generating Facility;

### **Agreement**

NOW, THEREFORE, in consideration of the covenants and promises herein, the Parties mutually agree as follows:

1. **SCOPE OF AGREEMENT**  
This Agreement governs the terms and conditions under which the Customer’s Generating Facility will interconnect with and operate in parallel with the Utility’s electrical system.
2. **DEFINITIONS:**  
The definitions used in this Part are those found in Part 1, Section 2 of this Interconnection Standard.
3. **PARALLEL OPERATION**  
Customer shall not commence parallel operation of the generating facility until written approval of the interconnection facilities has been given by Utility. Such approval shall not be unreasonably withheld. Utility shall have the right to have representatives present at the initial testing of Customer’s protective apparatus.
4. **INTERCONNECTION COSTS**  
The Utility has estimated the costs, including overheads, for the purchase and construction of necessary System Upgrades to its Distribution System and has provided a detailed itemization of such costs in the attached description of the estimated System Upgrade costs. The Customer agrees to pay the costs upon receipt of the Utility’s invoice within the timeframe indicated on the invoice.
5. **INTERRUPTION OR REDUCTION OF DELIVERIES**  
Utility may require Customer to interrupt or reduce deliveries when the Utility determines, in its sole discretion, that curtailment, interruption or reduction is necessary because of personnel safety, emergencies, Force Majeure or compliance with Good Utility Practices

6. ADVERSE OPERATING EFFECTS

The interconnection of the customer-owned generation shall not reduce the reliability and quality of the Distribution System. This includes, but is not limited to high levels of harmonics, abnormal voltage fluctuations and excessive frequency deviations. The Utility shall notify the Customer as soon as practicable if, based on Good Utility Practice, operation of the Generating Facility may cause disruption or deterioration of service to other customers served from the same electric system, or if operating the Generating Facility could cause damage to the Utility's distribution system. If, after notice, the Customer fails to remedy the adverse operating effect within a reasonable time, the Utility may disconnect the Generating Facility. The Utility shall provide the Customer with notice of such disconnection as provided in the Utility's Service Policies.

7. ACCESS TO PREMISES

Utility shall have access to the Customer's premises or property as permitted in the Service Policies.

8. INSURANCE

The Customer shall, at its own expense, maintain in force general liability insurance without any exclusion for liabilities related to the interconnection undertaken pursuant to this Agreement. The amount of such insurance shall be not less than \$100,000 combined single limit.

9. LIABILITY

The Customer will be responsible for providing and maintaining all equipment they deem necessary for the protection of the own property and operations. By virtue of the interconnection to the generating facility, the Utility assumes no liability for the protection of any property of person associated with the qualifying facilities operations.

10. INDEMNIFICATION

To the fullest extent permitted by law, Customer shall indemnify, defend (at Customer's sole expense) and hold harmless the Utility, the City of Waverly, representatives, members, designees, officers, directors, shareholders, employees, agents, successors, and assigns ("Indemnified Parties"), from and against any and all claims for bodily injury, death or damage to property, demands, damages, actions, causes of action, suits, losses, judgments, obligations and any liabilities, costs and expenses (including but not limited to investigative and repair costs, attorneys' fees and costs, and consultants' fees and costs) ("Claims") which arise or are in any way connected with this Agreement, Materials furnished, or Services provided under this Agreement. These indemnity and defense obligations shall apply to any acts or omissions, neglect or willful misconduct of Customer, its employees or agents, whether active or passive. Said indemnity and defense obligations shall further apply, whether or not said claims arise out of the concurrent act, omission, or negligence of the Indemnified Parties, whether active or passive. Customer's indemnification and defense obligations hereunder shall extend to Claims occurring after this Agreement is terminated as well as while it is in force, and shall continue until it is finally adjudicated that any and all actions against the Indemnified Parties for such matters which are indemnified hereunder are fully and finally barred by applicable Laws.

11. DAMAGES

The Customer will reimburse the Utility for any damage caused to the Utilities system by Customers generating facility.

12. GOVERNING LAW

This Agreement shall be interpreted and governed under the laws of the State of Iowa. Venue of any action arising hereunder or related to this Agreement shall lie in Bremer County, Iowa.

13. SUCCESSORS AND ASSIGNS

Customer shall not assign its rights and obligations under this Agreement in whole or in part without prior written consent of the Utility, which consent shall not be unreasonably withheld or unduly delayed. The Utility may withhold its consent to any proposed assignment if the proposed assignee fails to assume the obligations of Customer under the agreement in writing. This agreement shall be binding upon the personal representative, heirs, successors, and permitted assigns of the respective parties.

14. DOCUMENTS

This Agreement incorporates all other provisions and related documents of this Interconnection Standard.

15. NOTICES

All written notices shall be directed as follows:

CUSTOMER:

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City/State/Zip \_\_\_\_\_

UTILITY:

Waverly Utilities

1002 Adams Parkway

Waverly, IA 50677

TERM OF AGREEMENT

This agreement shall be in effect when signed by the Customer and Utility and shall remain in effect thereafter month to month unless terminated by either party on thirty (30) days prior written notice and in accordance with the Utilities service policies.

IN WITNESS WHEREOF, the Parties hereto have caused two originals of this Agreement to be executed by their duly authorized representatives. This Agreement is effective as of the last date set forth below.

CUSTOMER:

Signature: \_\_\_\_\_

Print Name: \_\_\_\_\_

Date: \_\_\_\_\_

For the UTILITY:

Signature: \_\_\_\_\_

Print Name and Title: \_\_\_\_\_

Date: \_\_\_\_\_

## Part 6

### Certificate of Completion

Application No. \_\_\_\_\_

Is the Generating Facility installed, tested and ready for operation? Yes \_\_\_\_\_ No \_\_\_\_\_

Customer Name: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone (Day): \_\_\_\_\_ Evening: \_\_\_\_\_

Email Address: \_\_\_\_\_

#### **Electrician/Service Company**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City/State/Zip: \_\_\_\_\_

Telephone (Day): \_\_\_\_\_ Evening: \_\_\_\_\_

Email Address: \_\_\_\_\_

License No: \_\_\_\_\_

#### **Inspection**

Application No: \_\_\_\_\_

The Generating facility has been installed and inspected in compliance with applicable electrical codes. A copy of the signed electrical inspection form is attached.

Yes: \_\_\_\_\_ No: \_\_\_\_\_

If inspection form is not attached

Signature of Inspector: \_\_\_\_\_ Date: \_\_\_\_\_

#### **Utility Approval:**

Utility Signature: \_\_\_\_\_ Date: \_\_\_\_\_



Part 7  
APPROVAL TO ENERGIZE GENERATING FACILITY

Application No. \_\_\_\_\_

The Utility, having entered into an Interconnection Agreement for the facility described in the Application noted by number above and having received a Certificate of Completion with proper documentation of the electrical inspection hereby authorizes the Generating Facility to be energized:

Utility Signature: \_\_\_\_\_

Title: \_\_\_\_\_ Date: \_\_\_\_\_