

# **ELECTRIC DEPARTMENT**

## **Introduction**

Service may be taken from the municipal electric utility system as long as all applicable Ordinances of the City of Hillsdale, The National Electric Code, and all Rules and Regulations of the Hillsdale Board of Public Utilities are fully complied with. All necessary right-of-way permits must be filed with the City of Hillsdale.

Elsewhere in this schedule will be found rules governing metering, meter location, meter protection, access to customer's premises, approval of customer use equipment, rules prohibiting the resale of electric service, rules governing service to mixed loads, and service to properties of mixed occupancy.

There will also be found rules to cover service connections, service extension policies, prohibition of the use of low power factor devices and equipment which may cause disturbance of service to others, limitations of the use of electric welders and water heaters, and rules governing the size, type, voltage, and connection of electric motors.

Any new construction or upgrades will require an easement to gain right-of-way to our equipment.

Electric rate information and their corresponding rules and regulations are provided under separate cover.

Prior to any underground excavations the owner/contractor is required to contact the Miss Dig System. The BPU is a member of the Miss Dig System and will be notified of underground excavations in the BPU service area. All costs incurred for repair of overhead or underground distribution facilities due to underground excavation will be the responsibility of the owner, contractor, or entity involved in damaging BPU facilities.

## **Section 1**

### **CHARACTER AND USE OF SERVICE**

The BPU will endeavor, but does not guarantee, to furnish a continuous supply of electric energy and to maintain voltage and frequency within industry acceptable standards as adopted by the BPU.

Municipal utility services are subject to shutdowns, variations and interruptions necessitated by improvements, repairs and/or operation of the system. Whenever possible, notice of intent to temporarily discontinue service will be given to the customer. The BPU shall not be liable for loss or damage because of temporary interruption in service or because of inadequate or excessive quantity or quality.

The BPU agrees to use reasonable diligence in providing a regular and uninterrupted supply of power, but does not guarantee a constant supply of power, or the maintenance of unvaried frequency or voltage, and will not be liable for damages to the customer by reason of any failure in respect thereof.

The BPU reserves the right to determine its ability to serve any load, which may be offered for connection to the system. Each application which may require the installation of additional lines and transformers or the enlargement of existing lines and transformers, or which involves the connection of out of the ordinary use devices, will be a matter for special consideration.

The customer shall use the service so as not to disturb or to interfere with BPU's service to its other customers. Electrically operated devices which could cause objectionable operating conditions on the BPU's system, as determined by the BPU, shall not be attached without the consent of the BPU.

The BPU reserves the right to deny or terminate service to any customer whose wiring or equipment shall be deemed a safety hazard. The BPU disclaims any responsibility to inspect the customer's wiring or equipment and shall not be held liable for any injury or damage resulting from the provision of service. Any suspect service may be referred to the Electrical Inspector for determination of continued service.

Service that has been disconnected for 6 months or longer requires an inspection and approval by the Electrical Inspector before reconnection.

## **Section 2**

### **APARTMENT BUILDINGS AND MULTIPLE DWELLINGS**

When service is supplied through a single meter to a building containing more than one apartment, the customer will be billed under the residential rate schedule and the applicable customer charge shall be multiplied by the number of single-family dwelling units so served.

To determine the number of apartments served through one meter, only those rooms, suites, or groups of rooms having individual cooking and kitchen sink accommodations within the unit shall be counted as an apartment.

If a residential customer has a separate meter on an attached or unattached garage or second building, the rate for that second meter will be under the residential rate schedule unless the building is determined to be used for commercial reasons and therefore necessitate a non-residential rate.

## **Section 3**

### **COMBINED RESIDENTIAL AND COMMERCIAL USE**

When energy is supplied to a combined residential and non-residential customer, the wiring may be so arranged that the residential usage can be metered separately from the non-residential use.

Service supplied through a single meter will be billed on the residential rate if it can be determined that less than half of the monthly Kwh usage is non-residential. This determination will be made by the BPU.

If it is unable to be determined by the BPU staff as to what portion of usage is residential by the Kwh use, then if more than 50% of the square footage is attributable to residential use, the rate will be residential. If more than 50% of the square footage is attributable to commercial use, then the rate will be commercial.

## Section 4

### **OVERHEAD EXTENSION POLICY**

#### General

When application is made for electric service which requires the extension of the BPU's existing distribution lines, the BPU will make such extensions at its own expense when the estimated annual revenue, probable stability of the load and prospective load growth reasonably warrant the capital expenditure required. In all other cases, a contribution in aid of construction will be required as specified below.

If it is determined by the BPU that a portion of the proposed extension located within public streets and/or easements can be used to provide electric service to other existing or future customers, or for system reinforcement, the BPU may elect to construct that portion of the extension in the public streets and/or easements at its own expense.

Each extension shall be a separate, distinct unit and any further extension therefrom shall have no effect upon the agreements under which existing extensions were constructed.

Estimated construction costs shall exclude transformers, services and meters.

#### 1. Single Phase Extensions:

- (A) Free Extensions: For each permanent dwelling the BPU will provide, at no charge, a single phase line extension from a main line distribution feeder excluding service drop for a distance of up to 600 feet, of which no more than 200 feet is a lateral extension on the customer's private property. All main distribution feeder extensions must be along public road right-of-ways.
- (B) Financed Extensions: Where the length of the distribution line extension exceeds the free footage set forth above, the customer will be billed at the completion of the project for the amount exceeding the free footage.

#### 2. Three Phase Extensions:

- (A) Free Extensions: The BPU will construct three phase distribution line extensions at its own cost when the cost of such extensions (excluding transformers, service, and meters) to serve general service customers does not exceed three times the total annual estimated revenue to be received from the customer to be immediately served when the line extension is completed.

(B) Financed Extensions: Where the length of the distribution line extension exceeds the free portion set forth above, the customer will be billed at the completion of the project for the amount exceeding.

3. Farm Service

Service shall be available to farms for residential use under the residential rate schedule and in addition, service may be used through the same meter for any purpose so long as such use is confined to single phase service for the culture, processing, and handling of products grown or used on the customer's farm. Use of service for purposes other than set forth here shall be serviced and billed on the appropriate non-residential rate schedule.

## **Section 5**

### **OVERHEAD SERVICE CONNECTIONS**

Where suitable supply is available, the BPU will install overhead service wires from its distribution lines to a selected point of attachment on the customer's premises. The BPU shall select the location of this point of attachment. Should it become necessary, for any cause beyond the BPU's control, to change the location of this point of attachment, all costs of any changes required in the customer's service entrance wiring made necessary thereby shall be borne by the customer.

The selected point of attachment for the service wires to the customer's premises shall be such that adequate ground clearances suitable to the use and need of the area crossed over may be maintained and meet proper requirements. The owner will provide an attachment for the BPU service connection.

Where the height and design of the building or facility to be served is such that the above stated condition cannot be met, or in the event there is no permanent building, the customer shall provide and continuously maintain, at their expense, a suitable extension, frame, or mast, or a properly guyed, butt-treated line pole with a top diameter of not less than 6 inches and total length of not less than 25 feet, for the attachment of the service wires, all of which shall meet the approval of the BPU.

Service runs shall be as short as practical and terminated with the connection wires extending at least thirty-six (36) inches beyond the service cap or last point of support. When on a building, such terminals shall be carefully located so as to provide adequate clearance of the service drops and connections from windows, shutters, awnings, eaves troughs, downspouts, vent pipes, radio aerials, lightning rods, chimneys, and similar appurtenances of the structure.

All inside wiring must be grounded in accordance with the requirements of the National Electric Code and the requirements of City and State regulations. All new services and upgrades must be inspected by the Electrical Inspector and released to the BPU for hook-up. The BPU reserves the right to notify the Electrical Inspector of any suspect connections.

## Section 6

### **UNDERGROUND SERVICE CONNECTIONS**

#### Secondary Voltages

The BPU, at its option, may direct the owner to install and be responsible for construction of its own underground secondary service from the customer's service to the BPU's secondary voltage connections.

The customer, in all cases, shall install the secondary service line from the base of the pole to the premises serviced, subject to the BPU specifications. Before such installation the customer must submit to the BPU, for approval, plans and designs for such service lines installed by a customer.

Underground services may be direct buried if constructed of approved underground cable, or they must be installed in approved underground conduit or duct, as directed by the BPU. All underground services shall be effectively protected from mechanical damage for the entire length. All exposed conduits shall be according to the National Electric Code.

Meter locations shall be provided on the customer's premises as directed by the BPU. Meters are not allowed to be located on BPU poles unless by special permission.

#### Primary Voltages

When required, the BPU will provide connections and over-current protection for underground primary service connections, whether to serve customer-owned transformers located on their premises or to serve transformers owned by the BPU and located on the customer's premises.

#### Contributions for Construction

The customer will be responsible to pay the current rate for underground construction as set forth in Schedule A – Fees and Charges.

When unexpected practical difficulties such as frost, water conditions, rocks near the surface, or other conditions that increase the cost are encountered during the construction of underground extensions, facilities, or services, the applicant shall pay the BPU for such added cost. Additional costs will be billed to the applicant for repaving and concrete replacement.

With new construction, the BPU will backfill trench to existing grade. Cosmetic work to be responsibility of contractor or owner.



## **Section 7**

### **TEMPORARY SERVICES**

Customers desiring lighting and/or secondary power service for a short time only, such as for construction trailers, traveling shows, outdoor or indoor entertainment or exhibitions, etc, which require the installation of a temporary line extension and/or service connections, additional transformers, meters or other facilities of a temporary nature, shall pay the cost of installing and removing all of the facilities necessary to supply such service. The electric contractor will be required to post a deposit before construction of the temporary service is started which will be applied towards the final costs which will be billed in accordance with Schedule A – Fees and Charges. In addition, the customer will be billed the customer charge and usage monthly.

Temporary terminal poles and service equipment shall be installed by the customer for temporary services and be a properly guyed, butt-treated line pole with a top diameter of not less than 6 inches and total length of not less than 25 feet.

The actual location of the temporary service shall be determined by the BPU.

New houses are exempt from paying the temporary fee, if service will be converted to permanent upon completion of construction.

## **Section 8**

### **TRANSFORMERS LOCATED ON CUSTOMER'S PREMISES**

Pole mounted installations will be made entirely at the BPU expense

Ground slab or vault installations will be the responsibility of the customer and, if the situation warrants, protective barriers installed also. All ground slabs, vaults, and enclosing fence must meet National Electrical Code specifications by inspection authorized and as directed by the BPU.

If conditions prohibit the transformer being set in the BPU right-of-way, then installation of the transformer will be on the customer's property.

## Section 9

### **METER INSTALLATION**

#### Meter Wiring

Meter sockets, service meters, demand meters, metering transformers, and metering transformer cabinets, will be furnished by the BPU. Standard 200 AMP residential sockets will be provided at no cost upon proof of permit. All other sockets must be approved and may be provided by the BPU at cost to customer.

All conduit for metering purposes and all supports for metering equipment shall be installed by the customer at the expense of the customer.

Electric service meters shall be so located that their registers will not be less than 4.5 feet nor more than 6 feet from the floor or grade.

When more than one service entrance switch and/or more than one meter is located on the same premises, each such switch and meter shall be plainly marked to show the type of service that it supplies and the apartment or other portion of the customer service that it controls.

#### Inspection of Electric Wiring

The Electrical Code currently in effect requires that all electrical wiring be installed in accordance with the requirements of the National Electrical Code. It also charges the Electrical Inspector with the responsibility of inspecting all electrical wiring installed.

Anything contained in these Rules and Regulations in regard to electrical wiring is deemed to be cooperative with and accessory to any Ordinance or Code affecting that area involved.

Before any electric service entrance is installed or remodeled, permission shall be obtained from the BPU in the form of a site meeting with the electric department supervisor and the appropriate permits filed with the Electrical Inspector.

The general design and arrangement, the location and grouping of the entrance switches and meters, the routing of the service entrance run, and the point of contact with the service drops are all subject to the direction of the BPU and Electrical Inspector who, jointly with the electrician, will be responsible for the arrangement and character of work.

### Service Entrance Wiring

Electric service entrance wiring shall be installed in accordance with the latest revision of the National Electrical Code, subject to the approval of the Electrical Inspector.

## Section 10

### **POLE ATTACHMENTS**

#### Use of BPU Equipment

1. The BPU wires, poles and apparatus, together with any interconnections thereof, are the exclusive property of the BPU, and the connection of a customer's premises thereto does not entitle the customer to any use thereof except as necessary for the delivery of the BPU's service to the customer. The use of any part of the BPU's distribution or transmission system by the customer for carrying foreign electric currents for carrier current transmission, radio or telephone broadcasting or receiving is expressly prohibited.
2. The BPU may enter into an agreement providing joint use of certain of its poles for approved utility or telecom purposes. The BPU may also enter into a rental agreement with a CATV company providing cable television service to customers within the BPU's service area. The use of any pole by a telephone/communications company or CATV company without first having entered into a written agreement with the BPU is prohibited.

The BPU may also issue revocable permits to any person(s) or organization(s) other than a utility or municipality, seeking to attach any wire, cable, facility or apparatus for the transmission of telecommunications or electricity. Upon application for permit, the applicant shall pay a nonrefundable application fee as set forth in Schedule A – Fees and Charges.

Any reconstruction work necessary to accommodate the facilities of the applicant shall be done by the BPU at the expense of the applicant

The annual pole rental fee shall be as agreed in the Pole License Agreement. Poles found attached in the field without permission shall be subject to three years retroactive billing.

The BPU may exclude or limit certain facilities from its poles. Furthermore, any poles which, in the opinion of the BPU, are necessary for its sole use will be excluded from any pole attachment permit, joint use, or rental agreements.

3. The unauthorized attachment (including by painting or marking) of any signs, banners, lines, cables, equipment or any other matter to the BPU's poles is prohibited.
4. The BPU may remove or cause to be removed without notice any unauthorized foreign matter from its poles at the expense of the customer, the person(s) attaching the unauthorized matter, or in the event neither can be identified, the

individual, firm or organization which appears to be the primary sponsor, user or beneficiary of the unauthorized matter. The BPU will observe reasonable precaution to prevent any damage resulting from such removal, but will not be liable for any damage thereto.

5. Any pole attachment must comply with all Federal, State, and local rules and regulations, the National Electrical Safety Code and the National Electric Code.

## Section 11

### **COGENERATION**

To avoid potential problems associated with having cogenerators connected to the Hillsdale Board of Public Utilities electric system certain protective devices will be required which will provide protection.

#### **1. Induction Generators of all Ratings, and Synchronous Generators Rated 100 KW or Less**

In order to overcome the potential problems of reclosing on a generator that is out of phase which would expose the cogenerator's equipment to possible damage and the BPU system to voltage and frequency fluctuations during periods when the power source is interrupted, the following is recommended and any or all may be required by the BPU.

The following equipment shall be installed at the cogenerator's generator at the cogenerator's expense:

- ❖ Electrically operated circuit breaker (52G) on the generator circuit with the appropriate rating and opening time to coordinate with the BPU system.
- ❖ Gang operated disconnect switch with fuses.
- ❖ Over/under voltage relay (Devices 27/59) with timing characteristics to coordinate with the BPU system requirements. The relays will trip the electrically operated circuit breaker for abnormal voltage conditions.
- ❖ Over/under frequency relays (Devices 81/OF and 81/UF) with timing characteristics to coordinate with the BPU system. The relays will trip the electrically operated circuit breaker for abnormal frequency conditions.
- ❖ Two service entrance watt-hour demand meters with detents. One would meter power flow into the customer and one would meter power flow out of the customer.
- ❖ Required protective devices for the cogeneration equipment.

The BPU would adjust the distribution circuit reclosing delay time to coordinate with the customer relaying.

The rating and operation mode of the induction generator can greatly affect the system power factor. Depending on the rating of the generator, power factor correction

capacitors could be required. Alternately, the billing rate could include provisions for metering and billing for reactive power flow or for power factor outside an acceptable range. The billing method would be preferred in most cases in that power factor correction capacitors could cause operational problems.

## **2. Synchronous Generator Rated 100 KW to 1000 KW**

In order to overcome the potential problems of: (1) Having the synchronous generator feed a BPU system fault thus causing excessive damage to the BPU system and the cogenerator's system; (2) Flowing power into the BPU system unless contracted for; (3) Exposing the BPU system to voltage and frequency fluctuations during periods when the power source is interrupted; and (4) Ensuring the distribution circuit is deenergized when the BPU source breaker is open, the following is recommended and any or all may be required by the BPU:

The following equipment shall be installed within the cogenerator's system at the cogenerator's expense:

- ❖ Electrically operated circuit breaker (52-G) on the generator circuit with the appropriate rating and opening time to coordinate with the BPU system.
- ❖ Transformer Delta-Wye connected.
- ❖ Gang operated disconnect switch with fuses.
- ❖ Ground detector on the BPU side of the transformer.
- ❖ Directional overcurrent relays (three Device 67V) for detecting faults on the BPU system and tripping the generator breaker (52G).
- ❖ Reverse power relay (Device 32) for detecting power flow in the BPU system. Relay set to trip generator breaker (52G). Relay would be set depending on the contract between the BPU and the cogenerator for amount of power sales.
- ❖ Over/under voltage relay (Devices 27/59) with timing characteristics to coordinate with the BPU system requirements. The relays will trip the generator circuit breaker (52G) abnormal voltage conditions.
- ❖ Over/under frequency relays (Devices 81/OF and 81/UF) with timing characteristics to coordinate with the BPU system. The relays will trip the generator breaker (52G) for abnormal frequency conditions.
- ❖ Two service entrance watt-hour demand meters with detents. One would meter power flow into the customer and one would meter power flow out of the customer.



- ❖ Required protective devices for the cogeneration equipment.
- ❖ Synchronizing equipment consisting of incoming and running voltmeters, lights and synchroscope.

Depending on the load on the distribution feeder and setting of the reverse power relay, a transfer trip transmitter and receiver may be required to ensure deenergizing of the distribution circuit when the BPU substation breaker is opened.

If the distribution circuit source breaker has an automatic reclose mode, the reclose time delay may have to be adjusted and a synchronism check relay system and voltage verification system may have to be installed at the BPU source breaker.

### **3. Synchronous Generator or Multiple Synchronous Generators Rated Over 1000KW**

In order to overcome the potential problems of: (1) Having the synchronous generator feed a BPU system fault thus causing excessive damage to the BPU system and the cogenerator's system; (2) Flowing power into the BPU system unless contracted for; (3) Exposing the BPU system to voltage and frequency fluctuations during periods when the power source is interrupted; (4) Ensuring the distribution circuit is deenergized when the BPU source breaker is open; and (5) Providing adequate protection for the supply transformer, the following is recommended and any or all may be required by the BPU:

The following equipment shall be installed within the cogenerator's system at the cogenerator's expense:

- ❖ Electrically operated circuit breaker on the incoming circuit with the appropriate rating and opening time to coordinate with the BPU system.
- ❖ Transformer Delta-Wye connected.
- ❖ Gang operated disconnect switch.
- ❖ Ground detector on the BPU side of the transformer.
- ❖ Directional overcurrent relays (three Device 67V) for detecting faults on the BPU system and tripping incoming breaker.
- ❖ Reverse power relay (Device 32) for detecting power flow into the BPU system. Relay set to trip incoming breaker. The relay would be set depending on the contract between the BPU and the cogenerator for amount of power sales.
- ❖ Over/under voltage relay (Devices 27/59) with timing characteristics to coordinate with the BPU system requirements. The relays will trip the incoming circuit breaker for abnormal voltage conditions.

- ❖ Over/under frequency relays (Devices 81/OF and 81/UF) with timing characteristics to coordinate with the BPU system. The relays will trip the incoming breaker for abnormal frequency conditions.
- ❖ Phase time overcurrent relays (three Device 50/51) with instantaneous on the line side of the incoming breaker. The relays will trip the incoming breaker. Relays to provide transformer protection and the BPU coordination.
- ❖ Ground fault relay (one Device 51N) on the line side of the incoming breaker.
- ❖ Two service entrance watt-hour demand meters with detents. One would meter power flow into the customer and one would meter power flow out of the customer.
- ❖ Required protective devices for the cogeneration equipment,
- ❖ Synchronizing equipment consisting of incoming and running voltmeters, lights and synchronizing scope.

Depending on the load on the distribution feeder and setting of the reverse power relay, a transfer trip transmitter and receiver may be required to ensure deenergizing of the distribution circuit when the BPU substation breaker is opened.

If the distribution circuit source breaker has an automatic reclose mode, the reclose time delay may have to be adjusted and a synchronism check relay system and voltage verification system may have to be installed at the BPU source breaker.