

**MANSFIELD MUNICIPAL
ELECTRIC DEPARTMENT**

**Information & Requirements
for Electric Service**

**125 HIGH STREET; UNIT #2
MANSFIELD, MA 02048**

Monday, Tuesday, Thursday 8am-4pm
Wednesday 8am-8pm
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ARTICLE 100 GENERAL INFORMATION

101– Purpose. *Information and Requirements for Electric Service* is issued to provide information to Mansfield Municipal Electric Department (“Department”) Customers, electrical contractors, architects and engineers, in order that electrical installations to be connected to the Department’s system are made in a standard, uniform and proper manner. The requirements contained herein are supplemental to the Department’s Schedule of Rates and Terms and Conditions filed from time to time with the Department of Telecommunications and Energy (“MDTE”); as well as the Department’s *Customer Service Terms and Conditions* and *Construction Requirements for New Developments – Residential and Commercial/Industrial* policies for electric service, all of which are available from the Department.

This booklet is not intended to give complete coverage for wiring details and other lawful requirements. It has been prepared as a guide and is supplemental to the applicable National, State and Local Electrical Codes, Safety Codes, OSHA requirements, and to ordinances passed by authorities having jurisdiction. The issuance of this booklet by the Department shall not be construed as relieving the customer and/or his contractor from the responsibility of installing wiring in accordance with the rules and regulations published by local authorities having jurisdiction, nor shall the Department be deemed thereby to have accepted any responsibility for the condition of the Customer’s wiring and equipment.

102-Scope. The information contained in this booklet applies primarily to electric service requirements for installations at voltages not exceeding 600 volts. Certain parts of these requirements refer to voltages above 600 volts. For service installations at higher voltages contact the Department.

103-Effective Date and Revisions. This issue of *Information and Requirements for Electric Service* is effective upon issuance.

Revisions of this information will be made when necessary and the Department reserves the right to make such revisions. The Department cannot guarantee to give notice of revisions to persons who may have received this booklet.

104-Enforcement of Rules. The Department requires that all wiring intended for connection to its electric system shall be installed in accordance with the rules of the applicable National, State and Local Electrical Codes and with the laws and ordinances of State and Town authorities having jurisdiction over the area in which the work is located, and with the requirements of the Department.

All connections to the Department’s system shall be designed, installed and operated in a manner that will not cause undue disturbance to other Customers or the system, and shall not handicap the Department in maintaining proper system conditions. The Customer shall not continue the operation of any equipment or apparatus that adversely affects the

service to other Customers.

The Department reserves the right to refuse to connect and/or the right to disconnect a service where the Customer's installation does not comply with the provisions and requirements outlined by the Department.

Service can only be supplied pursuant to an Authorized agent of the Department. No agent or employee of the Department is authorized to orally modify any term, provision or rate of the Department.

105-Access to Department Installations. The Department requires the right, at reasonable times, to enter the property or premises of the Customer for the purpose of erecting, removing, operating or maintaining its facilities, including the reading and testing of its meters.

106-Advisory Service. The Department offers an advisory service to all Customers, architects, contractors and engineers, to assist them in obtaining installations which conform to the requirements of the Department. Contact the Department as soon as possible during the planning stages of the proposed installation.

Although the Department endeavors to keep informed of conditions under which Customers use electricity, it is the Customers responsibility to check their use against available rates, or request the Department to do so, as the Department does not guarantee any particular rate to be most favorable.

However, neither by inspection, nor by the rendering of an advisory service, nor in any other way, does the Department give any warranty, expressed or implied, as to the adequacy, safety, or other characteristics of any equipment, wires, appliances, or devices owned, used or maintained by Customers.

107-Excavations in Roads and Highways. Federal and State laws require excavators to notify the appropriate utility companies before excavating. The term "excavating" for this purpose shall include, but not be limited to, digging; trenching; grading; tunneling; auguring; boring; drilling; pile driving; plowing-in or pulling-in pipe, cable, wire, conduit, or any other substructure; backfilling; demolition; and blasting, except blasting in a quarry.

Massachusetts's law requires that before underground excavation work begins, DIG SAFE be notified at 1-888-344-7233. Department personnel are available to meet with excavators should any questions arise with respect to the location of the Department's underground facilities.

Specific requirements for excavators and utility companies regarding underground excavation are set forth in Massachusetts General Law Chapter 82, Section 40-49E. Additional information may also be obtained from DIG SAFE.

108-Construction in the Proximity to Conductors. General contractors, electrical contractors, electricians, their employees and any other person(s) undertaking work in the proximity of the Department's overhead electric lines must take proper precautions and observe the prohibitions prescribed by federal and state law when working or using any tools, machinery, or construction equipment near these lines.

The applicable federal provisions for work near overhead high voltage lines are set forth in the regulations of the Federal Occupational Safety and Health Administration (OSHA) at 29 CFR 1926.550(a) (15).

Massachusetts General Laws, Chapter 166, Sections 21A-21G, prohibits anyone from performing any type of work within close proximity (defined as six feet) to any overhead high voltage lines without having properly notified, and making satisfactory arrangements with, the appropriate utility company. In Mansfield that is the Department. Please note that some overhead electrical lines run through Mansfield that are owned and maintained by other utility companies.

In every case in which work needs to be performed near high voltage electrical lines, the Department must be contacted prior to the beginning of work. In addition a written application to perform work near energized lines must be filled out before work commences. This form is available at the Department.

Swimming pools shall not be constructed in the proximity to any electrical conductor per applicable Electrical Codes.

The cost of relocation of electrical facilities to comply with proximity to conductor laws and regulations shall be borne by the Customer or contractor as appropriate.

109 - Use of Electricity. The Department shall not be liable for damage to the person or property of the Customer or any other persons resulting from the use of electricity or the presence of the Department's equipment on the Customer's premises.

ARTICLE 200 APPLICATION FOR SERVICE

201 - Where and When to Apply. Application forms requesting electrical service in the Town of Mansfield can be obtained at the Mansfield Municipal Electric Department Business Office at 125 High Street; Unit #2. These forms are required to be filled out for temporary services, permanent services or changes to existing services.

It is essential that an application for new or additional service, or notification of changes in the present service, be made as early as possible so that engineering and construction details, when required, may be supplied and construction for the new or changed facilities may be completed on the date required.

Service cannot be supplied unless and until the Customer applies in person at the Department's Business Office, files the necessary signature card and renders payment for all fees and security deposits, as may be required, and complete a "Request for Electrical Service" application form and a service load calculation form, both of which are available from the Department.

Applications for electric service and requests to discontinue or restore service require three (3) business days advance notice.

202 - Availability of Service. Before ordering any electrical equipment, or starting any electrical construction in preparation for connection to the Department's electrical system, the Customer should check with the Department to make sure that the desired service and/or additional capacity is available.

The Department does not accept responsibility for information given orally relative to the type of service available at specific locations unless such information is confirmed in writing by an authorized representative of the Department.

203 - Additional Loads and/or Alteration of Service. Department facilities are designed to meet the Customer's initial requirements at the time the service is installed. When an additional load is contemplated, the Department should be notified as early as possible so proper provisions can be made to furnish the additional service. Failure to notify the Department of an increase in load may result in improper billing, damage to apparatus, or interruption to service.

Whenever changes are made in existing service installations involving relocation, replacement or additions, the entire service installation may require rebuilding to conform to the present requirements of the Department and of the applicable Electrical Codes. Decision as to the actual changes required to the service in any specific case, will be determined by consultation with the Department and with the Municipal Wiring Inspector.

The Department must be notified sufficiently in advance in order to provide for the required change in service facilities and to determine the conditions under which such changes or maintenance will occur. In some instances there may be a charge by the Department for its work.

For an additional load or alteration of service to a commercial or industrial facility, refer to the Department's *Construction Requirements for New Developments – Residential and Commercial/Industrial* booklet for more information.

The service changes must be approved by the inspection authority having jurisdiction before the Department will connect to the Customer's equipment.

204 – Customer Construction Cost. Information relating to the portion of the service construction cost, if any, to be paid for by the Customer will be supplied by the

Department. Customers should request this information before ordering equipment or starting construction.

Subdivisions

For the applicable Department charges for new construction of a residential or commercial/industrial subdivision refer to the Department booklet *Construction Requirements for New Developments – Residential and Commercial/Industrial*.

Single Residential Home

See Section 1008 of this policy manual for connection fees to connect to the Department's facilities.

The Department shall provide two utility poles and an overhead service drop, at no additional cost (not including the connection fee), to residential Customers to be served by overhead facilities. Additional facilities required to serve the Customer will be paid for by the Customer. An easement will be required where Department facilities are on private property.

If the Customer desires an underground service the Customer shall pay the cost for the entire installation. Contact the Department before installing a new underground service. The Department will not own and maintain any portion of the underground service. See Section 405 of this policy manual for more information.

Single Commercial/Industrial Facility or Mixed Use Facility

Refer to the Department policy manual *Construction Requirements for New Developments – Residential and Commercial/Industrial* for a detailed description of the Departments charges.

General Construction Charges

For construction service not included in any of the above headings, the Customer shall pay the total cost for the Department to perform the work. Before work is started the Customer shall contact the Department for an estimate of these charges. Before any work is performed the Customer shall pay 100% of the estimated charges. Upon completion of work an actual cost bill will be issued or a credit refunded to the Customer.

205 - Rates. The Department, as noted in Section 106 of this policy manual, is prepared to assist in the selection of the available rate or rates best suited to the Customer's use or uses of electricity. It is strongly urged that the Customer take advantage of this assistance before starting any work.

Copies of the Department's Schedule of Rates are available upon request at the Department's Business Office.

206 - Inspection Certification. The Department is not allowed and will not energize a Customer installation until approval has been issued by the Municipal Wiring Inspector.

207 - Temporary Service and Installation Charges. “Temporary Service” is any service for a construction project, carnival, temporary display, etc. which is not expected to continue in use for a period long enough to justify a permanent service installation. For residential home construction, temporary service shall be permitted for a period not to exceed one (1) year. Contact the Department before work begins on the temporary service. Approval of temporary service is at the option of the Department.

For temporary service, the Customer will pay an amount equal to the cost of installing and removing the Department’s service facilities, plus the cost of non-salvageable material used. A minimum charge of \$150.00 will apply to all temporary service requests. Estimates of these charges will be furnished by the Department on request. See Section 1007 of this policy manual for temporary service fees that apply. The Customer shall contact the Department for estimated temporary service charges.

208 - Condition of Service. The Department shall not be liable for any interruption, abnormal voltage, discontinuance or reversal of its service, due to causes beyond its immediate control whether by accident, labor difficulties, condition of fuel supply, the decision of any public authority, or failure to receive any electricity for which in any manner it has contracted, or due to the operation of its electric system in accordance with good utility practice; or any emergency load reduction program by the Department or by the party with whom it has contracted for a supply of electricity, or inability for any other reason to maintain uninterrupted and continuous service.

209 – Private Property Easement. Where it is required that the Department’s facilities be located on private property, the owners of record shall grant to the Department, without cost, perpetual rights and easements free and clear of encumbrances of record, including rights to ingress and egress, to the extent the Department deems the same necessary for the safe and adequate provision of electric service, and the form and the content of such rights and easement shall be acceptable to and approved by the Department’s property attorney. The Department will not energize a system nor install any electrical facilities prior to the Department receiving an executed easement that is satisfactory to the Department’s property attorney. If the easement is not executed in a timely manner, a legally binding agreement shall be executed detailing the property owner’s intent to grant an easement to the Department.

Under such circumstances, delays to service connections can be avoided by applying for service at the earliest possible date. Any questions or details pertaining to the required easement should be clarified with the Department.

210 – Tree Trimming. The Department reserves the right to perform trimming on private property to maintain proper clearance to its electric facilities. The Department will, during normal working hours, and when notified at least three business days in advance, remove and replace its service drop free of charge to enable easier tree or limb removal by its Customers. After hours or on weekends, the same service will be available except at actual cost. The Department reserves the right to perform trimming on private property to maintain proper clearance to its electric facilities.

ARTICLE 300 SERVICES

301 - General. Alternating current, 60-Hertz (cycles per second) service is supplied by the Department. The normal voltages supplied are described in Section 302 of this policy manual.

302 - Standard Service Characteristics. The characteristics and nominal voltages of the various forms of service commonly supplied by the Department are as follows:

- A. 120/240 volts, single-phase, three -wire.
- B. 120/208 volts, three-phase, four-wire.
- C. 277/480 volts, three-phase, four-wire.
- D. 120/208 volts, single-phase, three-wire.

Other voltages may be allowed providing the Customer installs, owns and maintains the required transformer. Contact the Department for information on availability of other voltages and service characteristics.

303 – Number of Services Per Building. Generally, one service will be installed to a building. Two or more services may be installed at the option of the Department, and if approved by the inspection authority having jurisdiction. If a Customer desires more than one service in order to separately meter another building on the same premises, and if this building could otherwise be supplied through the one meter and if the Department allows such additional service, the Customer shall pay for the entire cost of installing the additional service.

304 - Electricity Delivered Through More Than One Meter. Where electricity is delivered through more than one meter, the cost of service delivered through each meter will be computed and billed separately.

305 - Transformers. The Department will provide distribution transformers at all utilization voltages specified in Section 302, of this policy manual, in sizes up to and including 500 KVA. Larger sizes will be allowed provided the Customer installs, owns and maintains the transformer and any associated protective devices and switchgear necessary for the installation. Customers requiring in excess of 75 KVA of transformer capacity may be required to supply space for the Department's electrical equipment on private property.

306 - Unbalanced Load. The Customer shall at all times take and use energy in such a manner that the load will be balanced between phases to within plus or minus 10%. The Department reserves the right to require the Customer to make necessary changes at his expense to correct the unbalanced condition.

307 - Department Warranty Statement. For all voltages and services, the Department will cooperate with its Customers or their representatives. However, neither by inspection, nor by the rendering of advisory service, nor in any other way does the Department give warranty, expressed or implied, as to the adequacy, safety, or other characteristics of any equipment, wires, appliances, or devices owned, used or maintained by Customers. Refer to Section 106 of this policy manual for additional information.

308 - Customer's Emergency Stand-By Generator. The Customer must notify the Department in advance of installing stand-by generating equipment and obtain approval for the method of connection. Where the Customer installs a stand-by generator for the purpose of supplying all or a part of the load in the event of an interruption in the supply of Department service, the Customer's wiring shall be arranged so that no electrical connection can occur between the Department's service and the Customer's alternate source of supply. This will require, at a minimum, the installation of a double-throw switch that has a visual opening. This transfer scheme must meet the non-parallel requirements established by the Department.

Where automatic throw-over switching is installed, the Customer shall provide a load-break bypass-isolation switch in combination with each automatic transfer switch. The bypass-isolation switch shall provide visible, lockable means for manually bypassing and isolating the emergency generator. The Department will tag the isolation switch in a locked open position during maintenance or repair of the Department's supply lines. Arrangements utilizing interlocking of single-throw devices are not acceptable.

The Department requires protection between the transformer and the generator fuel storage unit, by either a twenty (20) foot separation or a masonry wall. This wall should be erected parallel to and located three (3) feet away from one side of the pad-mounted transformer foundation. The wall should be six (6) feet high and extend approximately three (3) feet beyond each end of the transformer foundation.

309 - Customer's Auxiliary Generation. Prior to the installation of solar, wind turbine or other auxiliary generation intended to operate interconnected with the Department, Customers shall notify the Department to ensure proper interconnection. There are precautions that must be taken to maintain adequate safety and quality of service to other Customers. The Customer will be required to provide (at Customer expense) protective and synchronizing equipment.

Customers wishing to sell electric energy shall consult with the Department regarding its purchase policy.

310 - Customer's Cogeneration. A cogeneration facility is defined as a facility which produces electric energy and steam or other forms of useful energy (such as heat) which are used for industrial, commercial heating or cooling purposes. Prior to the design and installation of any equipment, a Customer considering a cogeneration installation shall consult with the Department regarding its policy.

311 - Final Connections. The Department will connect the Customer's wiring to Department facilities for permanent or temporary services and it will not permit or tolerate unauthorized persons to connect to Department conductors or equipment.

312 - Secondary Surge Arrester. Secondary surge protective devices may be installed by and at the expense of the Customer. For protection to be effective, such devices should be connected in conjunction with any applicable codes and approved by the authority having jurisdiction.

Where the service is 750 volts or less, the surge arrester may be mounted on the service-equipment enclosure.

The Customer shall be responsible for providing and installing any secondary surge protective devices and for operating, maintaining, and inspecting any such installations. The Department will not be responsible for damage to a Customer's equipment resulting from voltage surges that may occur on the Customer's wiring.

313 - Short-Circuit Currents. So that architects, engineers, and contractors may select proper service equipment to meet Code requirements for short-circuit ratings, the following will apply to new installations served:

A. Residential - supplied at 120/240 volts from overhead or URD single-phase transformers.

Fault currents available at residential service equipment will generally be more than 5,000 amperes, but less than 10,000 amperes.

B. Commercial, Industrial and Residential Development's, which will be typically served with three-phase power - Available fault currents will vary with each installation. Inquiries for a particular location should be directed to the Department.

ARTICLE 400 SERVICE INSTALLATIONS FROM DEPARTMENT FACILITIES

401 – Installation of Service. Overhead services not of a temporary nature will be installed subject to the Department's approved rates and as specified in the Department's policies. For the Customer's cost of the service installation by the Department, please refer to Section 204 of this policy manual. Pole locations and a right-of-way acceptable to the Department shall be obtained before the service is installed.

402 – Maximum Span of Wires. The maximum single-span distance the Department will run its overhead-service-drop conductors to the point of service attachment is one hundred and twenty (120) feet. The maximum span may be reduced at the Department's discretion due to the conditions of the specific service location.

403 – Point of Attachment and Clearance. All service entrance construction must be in accordance with the requirements specified in the latest editions of the National Electrical Code, National Electrical Safety Code, or any other applicable code, as well as with the requirements of the local inspection authority having jurisdiction. Where any conflict occurs among the codes, the more stringent rule or regulation shall prevail.

- A. Point of Attachment and Clearance. The service-drop conductors shall be attached to a building or another other suitable point, as specified by the Department, which is not less than twelve (12) feet or more than twenty-five (25) feet above the finished grade level. The point of attachment and service-drop conductors shall not be readily accessible and shall have a clearance of not less than three (3) feet in any direction from windows, doors, porches, fire escapes, or similar locations. The point of attachment shall be accessible from a ladder without climbing on a roof and shall be at a height to permit the Department to maintain the minimum clearances described in Section 403-B, C and D below.
- B. Vertical Clearance Above Ground. The Customer’s point of attachment as determined by the National Electric Safety Code, shall be so arranged that the Department’s service-drop conductors shall have the following minimum clearances:

10 feet – At the electric service entrance to buildings, also at the lowest point of the drip loop of the building electric entrance, and above areas or sidewalks accessible only to pedestrians, measured from final grade or other accessible surface only for service-drop cables supported on and cabled together with a grounded bare messenger where the voltage does not exceed 150 volts to ground.

12 feet – Over residential property, and those commercial areas not subject to truck traffic where the voltage does not exceed 300 volts to ground.

15 feet - For those areas listed in the twelve (12) feet classification where voltage exceeds 300 volts to ground.

18 feet – Over public streets, alleys, roads, parking areas subject to truck traffic, driveways, and other land such as cultivated, grazing, forest and orchard.

- C. Vertical Clearance Above Roofs and Other Locations. In general, service-drop conductors shall not pass over roofs. Where this is unavoidable, conductors shall have the required minimum vertical clearances as specified in the applicable codes and be subject to the approval of the local jurisdiction having authority.

Refer to the applicable Codes or consult with the Department for minimum vertical clearance requirements for buildings, structures, swimming areas, waterways, bridges, railroad tracks, and any other locations not listed in this section.

- D. Horizontal Clearance. Service-drop conductors shall have minimum horizontal clearances as specified in the applicable Codes. Particular attention shall be given to maintain required minimum horizontal clearances from swimming areas as well as from buildings with windows, doors, porches, or fire escapes, or similar locations.

404 – Overhead Line Extension to a Single Residential Customer. Overhead construction on private property will be installed and maintained by the Department (with the exception of tree trimming), provided the Department is granted a permanent, perpetual easement for such poles, conductors, and attachments as the Department may consider necessary on private property. For the Customer cost of the service installation by the Department, please see Section 204 of this policy manual.

405 – Underground Service to a Single Residential Customer.

When the Customer desires an underground service from the Department’s overhead system, the service will be installed as follows:

- A. Riser Pole. Whether the riser pole is to be located in the street or on private property, the Customer shall furnish and own adequate underground service cable of sufficient length to reach the Department’s secondary conductors on the pole or the transformer secondary terminals. The Customer shall also supply protection for these underground conductors in the form of rigid conduit securely fastened to a point ten (10) feet above ground and grounded then continue up the pole with PVC to a weatherhead. The weatherhead shall be located at a point above the communication attachment. The Department shall install Customer supplied PVC and weatherhead. No more than four (4) conduits shall be installed on a riser pole, occupying no more than one-half (1/2) of the circumference of the pole.

If the Department is required to change the location of the pole on which an underground service terminates, all necessary changes to the pole location shall be at the Customer’s expense.

The meter shall not be located on the riser pole.

- B. Ownership. The Customer shall own and maintain the underground cable and conduit.

406 – Three Phase Service to a Single Residential Customer - No single residential dwelling in zoning districts R-1, R-2 and R-3 shall be served by a three phase electric service without approval of the permitting authority and without the express authorization of the Mansfield Municipal Electric Light Department Commission. All applications for the Board’s consideration of this type of service must include load calculations, service size and a one-line diagram prepared by a Registered Professional Engineer. The requirement to provide professional engineering services may be waived by the MMED Commission based upon review of the particular circumstances relating to an installation.

407 - Service to Commercial and Industrial Customers. The Customer or his agent shall consult the Department for information regarding the availability of service, the appropriate rate and specific details dealing with overhead or underground construction costs to supply the required service. Customers may be required to supply space for the Department's equipment on private property.

If the service is underground from a padmount transformer located on the customer's property, then the Customer shall own the secondary cable and conduit from the secondary terminals of the Department's transformer to the meter. Should the padmount transformer be located in the public way, MMED will own the secondary conduit and cable to the service handhole, which shall be located at the property line.

Refer to the Department's policy *Construction Requirements for New Developments – Residential and Commercial/Industrial* for more information on these requirements.

Customers whose services require a transformer capacity of 225 KVA or less may be served with either an overhead or a ground-level transformer installation, at the Department's sole discretion.

Customers whose service requires a transformer capacity of more than 225 KVA shall be served from a ground-level transformer installation.

Some overhead installations and all ground-level installations may be installed on the customer's property as determined by the Department.

408 – Connection to Electric Supply. The Department shall not make a service connection unless all wiring on the Customer's premises is in accordance with the National Electrical Code Articles or any other applicable code, and the local inspection authority having jurisdiction has given approval.

ARTICLE 500 SERVICE ENTRANCE GENERAL

501 - Size of Conductors. The size of the service entrance conductors shall be in accordance with the National Electric Code or any other applicable code. Separate service-entrance conduits or approved cables shall be provided for each type of service.

502 - Service Equipment. One or more switches or circuit breakers shall be installed as part of the permanent wiring for each service. These devices shall conform to the following:

- A. Any service equipment located on the line side of meters must be of the enclosed type, with facilities for sealing by the Department. Fuse replacement or breaker reset must be possible without disturbing the enclosure seal.

- B. Where multiple service equipment is required for either commercial or dwelling occupancy, each disconnecting means shall be marked in a conspicuous, legible and permanent manner to indicate which portion of the installation it controls. The Customer is solely responsible for the proper identification of meter sockets.

503 - Location of Service Disconnect. In general, metering equipment shall be installed on the line side of the service disconnecting means (hot sequence metering). The service disconnecting means may be installed either inside or outside the building wall.

504 - Main Switches and Disconnecting Means. It is recommended that each service be equipped with a main disconnect in order to completely disconnect all of the conductors in the building from the service-entrance conductors.

On all services supplied from the Department's underground systems, main disconnects are recommended. They shall be located in a readily accessible location as near as possible to the point of entrance of the service conductors into the building and be of a type approved by the Underwriters' Laboratories, the Department and the local inspection authority having jurisdiction

505 - Assigning Location of Service and Metering Equipment. The locations of the service and metering equipment shall be assigned by the Department. No wiring dependent upon service-entrance and meter locations shall be started until these locations have been definitively assigned and approved by the Department and the local inspection authority having jurisdiction. The Customer or his agent shall apply for service with the Department in accordance with Section 201 of this policy manual.

Contractors will notify the Department of their intent to perform work at least ten (10) days in advance, to allow the Department time to assign locations.

506 - Unmetered Conductors. Unmetered conductors on customer's premises shall not be installed in the same raceway or conduit with metered conductors.

507 - Fuses. All fuses for service entrance equipment shall be supplied by the Customer. It is recommended that spare fuses be available at each point of utilization. The Department does not change fuses on Customer owned equipment.

On installations where special types of fuses, such as high-interrupting capacity or current-limiting fuses are used, it is very important that the Customer maintain a stock of replacement fuses. Where a new service is to be supplied from the Department's underground system, or from an overhead transformer bank, the Department should be consulted for the available short-circuit current.

For the safe and proper operation of the Customer's equipment, it is recommended that fuse types and sizes be selected to achieve proper coordination.

OVERHEAD

508 - Anchorage for Overhead Service-Drop Conductors. Anchorage for service-drop conductors shall be provided by the Department except as follows:

- A. Installation of Service Bolt - A service bolt or other suitable support is required on all buildings constructed of tile, brick veneer, stucco, concrete, concrete block, cinder block, asbestos shingle, sheet iron, plywood, insulating board or other materials which make it difficult for the Department to obtain a suitable anchorage for the service-drop conductors.

The Customer shall install such service bolts or other suitable means of service support. Where a service bolt is adequate, it may be obtained from the Department at no cost to the Customer.

- B. Location of Service Bolt – The service bolt shall be located at least six (6) inches below the service head or weather cap and have a horizontal clearance of six (6) to twelve (12) inches from the service-entrance cable or conduit. Before installation of the service bolt, please contact the Department for a service location. The final location of the service shall allow the Department to maintain vertical clearances as listed in the applicable codes.

509 - Service Facilities Requirements.

Single-Family Residence - Meters shall be mounted on the outside of the building in an approved 100-ampere or larger meter socket supplied by 100-ampere or larger service-entrance conductors.

Multi-Family Residences - Meters shall be mounted on the outside of the building except where meters may be installed in a common inside location accessible to all occupants and to the Department meter readers.

510 - Building Alterations Affecting the Electric Service. To ensure continuity of service, the Customer shall notify the Department before starting alterations to a building which may affect the electrical service. This will give the Department time to inspect the service-drop attachment and advise the Customer of any metering or service problems that could result from the alterations. It will be the responsibility of the Department, at no cost to the Customer, to temporarily remove the service-drop attachment from the building to permit the alterations. When notified that the scheduled alterations are completed, the Department will reattach this equipment to the building. It will be the responsibility of the Customer to have the service entrance equipment detached from the building and reattached when the work has been completed.

511 - Aluminum or Other Siding to be Installed on Existing Building. To ensure continuity of service, the Customer should notify the Department five days before an installation is started. This will give the Department time to inspect the service-drop attachments and advise the Customer of any metering or service problems that could result from the installation of the siding. The Customer should check with the local

inspection authority having jurisdiction over service requirements.

512 - Connecting to Department's Conductors. A minimum length of three (3) feet for each conductor shall be left at the upper end of the service entrance to provide for connection to the Department's service-drop conductors. Connections to the Department's lines will be made by the Department.

UNDERGROUND

513 - Connection to Department's Underground Conductors. A minimum length of five (5) feet for each service entrance conductor shall be left at the junction box or hand hole to provide for the connection to the Department service conductors.

514 – Residential Subdivisions or Commercial/Industrial Developments – See the Department policy entitled *Construction Requirements For New Developments -- Residential and Commercial/Industrial* for specifications.

ARTICLE 600
WIRING AND VOLTAGE REQUIREMENTS
GENERAL

601 - Single-Phase Service. The service-entrance equipment for single-phase 3-wire services shall be suitable for 120/240 volt operation, except as provided in Section 504 of this policy manual. The loads on all 3-wire services shall be balanced.

602 - Three-Phase Service. The Department shall be consulted to ascertain the type of service and voltage available. See Section 302 of this policy manual for more information.

603 - Fluctuating Loads. Electric welding equipment, furnaces, boilers, x-ray equipment, compressors, pumps, molding machines or similar equipment causing load fluctuations should not be installed except under conditions specified by the Department. Voltage dips caused by load fluctuations, regardless of their frequency, shall not cause undue disturbance nor hinder the Department in maintaining proper voltage conditions to other Customers. The Department reserves the right to withhold connection of loads to the distribution system which are considered detrimental to the service quality of other Customers.

604 - Grounding. All grounding shall be done in accordance with the National Electrical Code or any other applicable Code enforced by the inspection authority having jurisdiction. The Department shall not be liable for damage to the property of the Customer resulting from unbalanced voltage conditions to the opening of a grounding neutral service conductor.

605 - Grounding Secondary AC Service. Where the Department's secondary system is grounded at any point, the grounded conductor shall be run to each individual service. Services having a grounded conductor shall have that conductor and the service equipment grounded on the Customer's premises by connecting the grounding electrode conductor to the grounded service conductor of the distribution system on the supply side of the service disconnecting means. This connection should be made within the service-entrance-equipment enclosure.

An underground metallic water pipe, either local or supplying a community, shall always be used as a part of the grounding electrode system where such pipes are available. It shall be supplemented by one or more acceptable grounding electrodes as required by the National Electrical Code or any other applicable Code for other grounding electrodes and equipment grounding. To minimize the hazard of electrical shock, all metallic water-piping systems inside a building shall be bonded to the grounding electrode. Where extensive metal in or on buildings may become energized, adequate bonding to the grounding electrode shall be provided.

The Customer shall also check with the local inspection authority having jurisdiction over grounding requirements

606 - Power Factor. Maintenance of a proper power factor is of the utmost importance to both the Customer and the Department in the operation and efficiency of the distribution system. Department rates are, in general, based on an average power factor not lower than 95 percent. The Department should be consulted in advance regarding all installations likely to develop low power factors in order that such conditions may be rectified by measures designed to boost power factor.

607 - Power Factor Correction Capacitors. When a Customer desires to install capacitors for the purpose of power factor correction, the Department should be consulted prior to the ordering of such equipment. Approval by the Department for all capacitor installations is required so service to other Customers will not be adversely affected by the manner in which such equipment is installed and operated.

608 - Power Supply to Voltage Sensitive Equipment. Customers who install computers, x-ray equipment, emergency devices or other voltage sensitive equipment should consider the installation of auxiliary devices designed to protect the Customer equipment from power disturbances. These power disturbances may be in the form of voltage sags or surges, spikes, temporary loss of power, or any other deviation from normal.

The Department is not responsible for disturbances which may be caused by switching, lightning surges, operations on the Department's system that are considered good utility practice, acts of God, automobiles hitting utility poles or other conditions beyond its control.

ARTICLE 700 METERS

701 - General. All energy supplied by the Department shall, in general, be measured by appropriate meters for billing purposes. The installation of meters and metering equipment shall comply with the requirements set forth in this Article. The Department shall furnish and install all meters required for billing purposes. Protection of meters and metering equipment is the responsibility of the Customer. In general, all Customers shall be served from one service location and one meter. Where an individual household, business enterprise or institution occupies more than one unit of space, each unit will be metered separately and considered a distinct Customer for the purposes of billing. The Department shall not be liable for incorrectly identified meter sockets. Where each unit is individually metered, the owner shall supply the Department with a simplified plan and designate each unit and meter socket within the building by appropriate number for identification purposes and mail addressing by the Department. Apartment buildings shall be served through one service, one building service meter, and individual meters for each occupancy. In the case of more than one building in an apartment complex, each building service meter shall be considered an individual and separate account and will be billed separately.

Definitions: Only definitions of terms pertinent to this Article are included:

Delivery-point (service-point) is the point of connection from the Department owned facilities to the facilities owned by the Customer. This is the terminus of the Department's ownership of equipment and maintenance responsibility. The following defines the location of the delivery-point:

1. For a single family residence:
 - If the service is underground then the delivery-point is the point where the customer owned cable connects with the secondary terminals on the riser pole.
 - If the service is overhead the delivery-point is the weatherhead connection on the side of the house.
2. For underground single phase residential subdivisions and residential compounds, the delivery-point is at the secondary terminals of the padmount transformer. If an MMED service handhole is connected to the transformer at the property line, then the delivery-point is the service handhole.
3. For a commercial, mixed-use, industrial and/or residential development (apartment or condominium) where MMED serves the building with a padmount transformer on private property, then the delivery-point is the secondary terminal of the padmount transformer.
4. For a commercial, mixed-use, industrial and/or residential development (apartment or condo) where MMED serves the building with pole mounted transformer(s).
 - If the service to the building is underground the delivery-point is the secondary terminal of the pole mount transformer(s), if it is located at the secondary riser pole. If the pole mount transformers are not on the secondary riser pole then the delivery-point is at the secondary terminals on the riser pole.
 - If the service to the building is overhead the delivery-point is the weatherhead connection on the side of the building.
5. In the downtown area (North Main Street area) where MMED serves buildings from its underground distribution network, excluding buildings served directly with underground service cable from a padmounted transformer located on the property or buildings served directly from a secondary riser pole, the delivery-point is at a handhole at the property

line in the public right-of-way.

6. As of February 9, 2011, if a building service does not have a handhole at the property line, should the service be upgraded, require maintenance or fail, MMED will install, at its own expense, a handhole at the property line in the public right-of-way. The new handhole will now serve as the delivery-point and the secondary service cable and conduit on private property to the building will now be customer owned. Should replacement of the building service be required on private property, the property owner shall then bring the new customer owned secondary service cable from the building to the handhole for connection to MMED's conductors.
7. For certain buildings on North Main Street, the delivery point is currently defined as either the meter socket or, in some cases, the weatherhead on the side of the building. However, as of February 9, 2011 should any of these services be upgraded, require maintenance or fail, the delivery-point for the service will then be at the property line between the public right-of-way and the private property. MMED will install, at its own expense, a handhole at the property line in the public right-of-way. This handhole will be the delivery-point.

The new handhole will now serve as the delivery-point and the secondary service cable and conduit on private property to the building will now be customer owned. Should replacement of the building service be required on private property, the property owner shall then bring the new customer owned secondary service from the building to the handhole for connection to MMED's conductors.

The North Main Street property owners affected by Section 701, Subsection 7 shall be at the following addresses; 11, 25, 69, 89, 101-103, 111-115, 121-123, 127-129, 108-110, 112-116 150, 160-162, 165,242, 250-252, 271-273, and 277-279 North Main Street.

Metering-point is the location of the meter or metering equipment, such as instrument transformers.

Note: Delivery-point and metering-point are not necessarily at the same location. For example, where the Customer owns the complete substation, the "delivery-point" is that point where the Department's high-voltage line terminates on the Customer's structure.

Rates as now filed provide that the metering location (i.e., the primary side or secondary side of the transformer), is an option of the Department. In general, it is Department policy to locate the meter on the secondary side of the transformer.

702 - Standard Meter Installation. The Department will specify the type and location of metering for each installation. Self-contained single-phase socket metering is standard where the load-side capacity is not more than 400 amperes.

In general, self-contained poly-phase socket metering is standard where the load-side capacity is not more than 320 amperes and the voltage is less than 250 volts to ground. Meters with current transformers are standard for all installations where the load-side capacity is more than 400 amperes. Meters with both current and voltage transformers are required for all services over 400 amperes where the line-to-ground voltage is more than 250 volts and on ungrounded systems where line-to-line voltage is more than 480 volts. Refer to section 714 of this policy manual for Department meter socket requirements.

The secondary conductor length between the instrument transformers and the meter shall be kept to a minimum, not to exceed fifty (50) feet.

703 - Meter Locations. Metering equipment shall be installed on the load side of the service disconnecting means (cold sequence), at a location to be determined by the Department.

- A. Center of meter to be five (5) feet above finish grade.
- B. Fifth (5th) jaw or terminal to be at nine o'clock (9:00), if required.

Outdoor meter locations are required for all single occupancy installations. Each location shall be readily accessible to Department representatives for meter reading, testing, and maintenance. Service will not be provided if in accessing the meter requires Department employees to use adjacent property, climb fences or other obstructions, or cause damage to the Customer's shrubbery or flower beds in gaining access to the meter. The meter socket shall not protrude over a sidewalk or driveway. Meters on garages shall be so located so that they will not be damaged by motor vehicles.

Meters will be installed on buildings and in Department approved pedestals. Metering equipment shall not be installed on Department-owned poles. In areas subject to vandalism or damage, permission may be granted for indoor meters in single occupancy buildings for commercial and industrial accounts. All such indoor meters shall be in a readily accessible location next to the service-entrance equipment. Where premises are closed for long periods or where there is no indoor location, such as at outdoor signs, meters shall be located within a Company-approved lockable enclosure furnished and installed by the Customer.

In multiple occupancy buildings, for residential or commercial use, meters may be installed indoors in one common location accessible to the Department.

704 - Meter Height.

- A. Outdoor Meters - Outdoor meter sockets or troughs should be mounted so that the face of the meter is five feet above the final grade. In no instance will any meter be installed with the top of the meter more than six feet nor the bottom of the meter less than three feet above the final grade. A clear area of three feet is required in front of each meter.

B. Indoor Meters - Multiple meter centers installed indoors shall be mounted so that the face of the meter is 50 inches maximum and 30 inches minimum above the floor level. A clear area of three feet is required in front of each meter

705 - Voltage Drop. Meter locations and feeder sizes should be so chosen so that the voltage drop between the point of service entrance and the meter will not exceed one percent at full load of the feeder.

706 - Mounting. Meter sockets and meter/breaker centers shall be mounted plumb and firmly secured to supports. Where supports are attached to masonry or concrete walls, expansion bolts or anchors shall be used. Wood plugs driven into holes in masonry, concrete, plaster or similar materials are not acceptable.

707 - Clearance. Ample space shall be provided around meters to allow for testing. Clear and unimpeded access to the meter for all Department personnel shall be maintained at all times.

708 - Identification of Meter Sockets and Customer Disconnecting Means. All meter sockets and Customer disconnecting means shall be plainly and permanently marked for proper suite, floor, office, etc, by the electrical contractor or owner. No service will be provided to a building that has unidentified meter sockets.

Where suites, offices, apartments or other areas are not assigned numbers by the building owner, the electrical contractor shall clearly designate the location of each tenant's premises, such as: "Basement Front", "1st Floor Right", or "2nd Floor Rear". Such locations shall be determined from a position facing the front of the building from the outside. The Department shall not be responsible for billing issues arising from meters installed in incorrectly marked meter sockets. The building owner will assume responsibility in these circumstances.

709 - Unmetered Conductors. Unmetered conductors shall not be installed in the same raceway with metered conductors.

Where unmetered conductors are run through Customer's premises, they shall be enclosed in a continuous run of rigid metal conduit or service busway. The installation of pull boxes or similar devices is not permitted on unmetered raceways on the Customer's premises.

710 - Demand/kVAr Meter Wiring and Customer Request for Meter Pulses. Commercial and industrial installations may require kW and kVAr demand metering. Contractors should obtain specific information from the Department for each such installation.

Upon request from a Customer to the Department, the Department will install at the Customer's expense, as part of its metering facilities at the metering point, a source of kWh pulses to the Customer so that the Customer can monitor load/demand for the

purpose of load control. The following conditions shall apply:

- A. The Customer's load is presently being measured with a watt-hour meter equipped with pulse initiation equipment; or
- B. The installation, operation, and maintenance of any equipment, other than that provided by the Department, shall be the responsibility of the Customer.
- C. The point of connection between the Department and the Customer owned equipment shall be designated by the Department and the connection shall be made by the Department.
- D. The Customer will be required to pay the Department for subsequent installation and maintenance charges and any alterations necessitated by a change to the existing meter installation.
- E. The Department agrees to furnish the pulse data but makes no representation as to the accuracy or actions resulting from its use, more specifically, but not limited to, its effect on bills for service rendered by the Department to the Customer.
- F. The Customer shall furnish and pay all cost of a phone line to the meter for Department use.

Contact the Department to request load data and/or installation of pulse metering equipment.

711 - Combined Billing. Each meter location shall be billed as a separate account. The Department will not combine two or more meter registrations at the same location for billing purposes.

712 - Security. All cabinets, switches, circuit breakers and other enclosures providing access to unmetered wiring shall be equipped with Department approved locking provisions.

The service switch or circuit breaker, when installed on the line side of the meter, shall be designed so that the unmetered wiring is inaccessible without removing the locking device, even during the removal of fuses.

For permission to remove meter seals and meters the Department must be contacted and authorize removal before work begins.

713 - Moving or Removing Metering Equipment. Meters, instrument transformers, and other metering devices are the property of the Department and shall not be moved, removed or altered in regard to wiring or connections by anyone other than authorized employees of the Department, except when written specific permission is obtained from the Department. Violators will be prosecuted.

METER SOCKETS

714 - Meter Sockets for Self-Contained Meters. For each service with self-contained

metering, the Customer shall furnish and install an approved meter socket that shall have the UL label, be approved by the local authority having jurisdiction and conform to Department requirements as follows:

1. Automatic by-passes are never permitted.
2. All meter sockets installed on commercial and industrial services, shall be equipped with a safety arc shield and an approved visual, single-handle-operated manual by-pass.
3. Multiple meter installations with ringless sockets shall have separate covers for each meter position. Single covers for two (2) or more meter positions are not acceptable.
4. Socket with a manual by-pass must meet the following requirements:
 - a. Have a single-handle-operated mechanism.
 - b. The non-by-passed, in service position of the operating mechanism must be visible when the meter is installed.
 - c. It shall not be possible to replace the meter socket cover when the operating mechanism handle is in the by-passed position.
 - d. All sockets with by-passes rated 200 or more amperes, shall have a mechanism which locks the meter blades in the socket jaws.

Warning: Manual by-pass mechanisms shall not be used as a disconnecting means as a disconnect to open or close a circuit carrying load.

715 - Cover Plates. After the wiring has been completed, the interior of the socket shall be protected. Socket covers will be furnished by the Department for unused socket meter positions. Sealing rings will be furnished by the Department.

716 - Installation of Sockets. Meter sockets must be mounted plumb and level.

The threads on conduit, fittings or sealing plugs screwed into the hub of meter sockets located outdoors shall have joint compound applied to prevent the entrance of water.

717 - Clearance. The minimum clearance between the sides of multi-station troughs, or single-position sockets and the building wall is 4 inches. The minimum clearance between meter sockets and gas meters or gas fitting openings shall be three (3) feet side to side.

718 - Meter Connections. The service or line-side conductors are always connected to the top terminals of meter sockets or troughs and the load-side conductors to the bottom terminals.

719 - Meter Pedestals. All meter pedestals shall be Department approved and subject to approval by the local authority having jurisdiction. Meter pedestals are free-standing units intended to be mounted outdoors on a concrete pad in conjunction with underground wiring. If a free-standing meter pedestal is used, it must extend a minimum of 36 inches above the finished grade or ground level. The pedestal shall have a stabilizing means extending 36 inches below finished grade to insure that the meter

mounting stays in a plumb position. Meter pedestals may also incorporate circuit breakers, but these are not intended to replace the service disconnecting means required at the building. The neutral strap in a meter pedestal is bound to the enclosure, and must be provided with a terminal for a grounding conductor.

720 – Grounding of Meter Sockets.

A. Grounding Services

1. Where the meter socket is installed on the line side of the service disconnecting means (hot sequence), the socket shall be grounded by bonding to the grounded (neutral) conductor.
2. Where the meter socket is installed on the load-side of the service disconnecting means (cold sequence), it shall be permissible to ground the socket by connection to the grounded (neutral) conductor on the load-side of the service disconnect if:
 - a. No service ground-fault protection is installed; and
 - b. All meter sockets are located near the service disconnecting means. The grounded (neutral) conductor may be insulated from the grounded parts of the socket.

B. Ungrounded Delta Services. See Department for details.

INSTRUMENT TRANSFORMER INSTALLATIONS

721 - Instrument Transformers and Enclosures. For all installations (**except primary metering installed in Customer owned switchgear**) requiring instrument transformers, the transformers (current and voltage transformers) will be supplied by the Department. A charge for this equipment may apply – see Section 204 of this policy manual. Transformer cabinets shall be supplied by the Customer and approved by the Department. The Customer will install the transformer cabinet and provide and install the raceway as required by the Department.

For primary metered installations where instrument transformers are located in Customer owned switchgear the following applies. The Department will provide the Customer specifications for the instrument transformers. The instrument transformers and switchgear will be ordered and paid for by the Customer. The switchgear and the instrument transformers will be owned and maintained by the Customer. The Customer is solely responsible for prompt repair or replacement of instrument transformers and metering fuses to ensure accurate metering operation.

722 - Meter Sockets and Test Switches. Meter sockets and test switches for use with instrument transformers will be furnished by the Customer. Meter socket enclosures shall be installed by the Customer and wired by the Department. The Customer shall supply a 20 ampere, 13 terminal transformer rated meter socket with provision for a 10 position test switch/block. Contact the Department for specific manufactures model number.

723 - Instrument Transformer Secondaries. A continuous metal raceway shall provide an uninterrupted metallic bond between the transformer cabinet and the meter test

switch cabinet for instrument transformer secondaries. Elbows with removable covers are not acceptable.

1. Provide 1-1/4 inch raceway for secondary conductor runs that are less than 20 feet in length.
2. Provide 1-1/2 inch raceway for secondary conductor runs that are 20-50 feet (100 conductor feet) in length. The maximum distance between meter and instrument transformer cabinet shall be 50 feet.

Conduit shall be furnished and installed by the Customer. Secondary wiring will be furnished and installed by the Department.

724 - Use of Instrument Transformer Cabinets. Instrument transformer cabinets shall not be used as junction boxes or for branch circuit wire ways. Service conductors shall enter and leave the cabinet as one circuit with no branches regardless of number of conductors per phase. Line-side connections to other meters shall not be made in the transformer cabinet or enclosure.

725 - Multiple Conductors. Where multiple conductors are used or where conductor size is greater than 250 MCM copper the Customer shall furnish and install a rigid mounting securely fastened to the transformer enclosure for connecting the conductors to the primary terminals of the current transformers. The Customer shall consult with the Department before installation.

726 - Primary Metering for Department Owned Transformers. Where primary metering equipment is installed for the Customer's benefit, he shall pay the difference between primary and secondary metering costs.

727 - Pad-Mounted Metering. Where a single Customer is supplied from a pad-mounted transformer, consideration will be given by the Department to locating the instrument transformers in the pad mounted distribution transformer. The Department has the sole discretion to allow this.

ARTICLE 800 UTILIZATION EQUIPMENT

801 - General. Customers must not use electric service from the Department in such a manner as to cause unusual fluctuations or disturbances on the Department's electric system or to adversely affect the quality of service to other Customers. The Department reserves the right to discontinue service or require the Customer to modify their installation with appropriate control devices

Motors and other installations connected to the Department's system must be of a type to utilize minimum starting current and must conform to the Department's requirements as well as the applicable electrical codes for wiring, kind of equipment and control devices.

802 – Motor Specifications. Please note that Table 1 and Table 2 referred to in the following Section are located after Section 804.

A. Limitation of Size. The Department reserves the right to refuse service to the following:

1. Single phase motors larger than six and one-half (6.5) horsepower. Single-phase motors of larger rating may be permitted, provided the Department's facilities are adequate to supply the service and provided the use of such motor or motors does not interfere with the quality of service rendered to other Customers.
2. Polyphase motors larger than six and one-half (6.5) horsepower, operated from a single-phase service by use of a phase converter.
3. Polyphase motor installations aggregating less than six and one-half (6.5) horsepower. Specific permission from the Department will be required in all cases involving polyphase motors of less than six and one-half (6.5) horsepower.
4. The Department further reserves the right to limit the size of the largest motor that may be operated on any part of its system at its sole discretion.

B. Single-Phase Motors.

1. 120-Volt supply. Motors with ratings of one and one-half (1.5) horsepower or less and window-type air conditioning units whose running-load current does not exceed 7.5 amperes, with not more than four (4) starts per hour and with a locked-rotor current not exceeding 50 ampere , may be connected to 120 volt supply.

Motors having a full load running current of more than 7.5 amperes but less than 12 amperes, and conforming to the above locked-rotor current limitations, may be connected to a 120-volt branch circuit only if such branch circuit supplies the one unit and does not supply lighting units or other appliances. It is strongly recommended that units drawing more than 7.5 amperes full load running current be connected to 240 or 208-volt circuits.

2. 208 or 240-Volt Supply. Motors with ratings larger than one half (0.5) but less than six and one-half (6.5) horsepower will be regularly supplied at 208 or 240 volts, provided the locked-rotor current does not exceed the values given in Table No. 1. In predominantly residential areas, and for small commercial installations, the Department should be consulted before installing motors with ratings over two (2) horsepower.
3. Maximum Locked-Rotor Currents. Single-phase motors supplied from

combined light and power secondary systems shall not have locked-rotor values in excess of those shown in Table No. 1. Motors having locked-rotor current values in excess of those shown in the table shall be equipped with starters that will limit the current to the values specified. Domestic laundry equipment with operating cycles and electrical characteristics as currently available are considered acceptable.

Motors that start more than four (4) times per hour are an exception to the above and may cause interference to other Customers. Automatically (frequently) started motors for general use, such as motors for refrigerators, oil burners, and other similar devices, shall not have a locked-rotor current exceeding 23 amperes at 120 volts or 19 amperes at 240 volts.

For multi-motored devices arranged for starting of motors one at a time, the locked-rotor current limits shall apply to the individual motors.

4. Single-Phase Motors on Three-Phase Service. Where single-phase motors are supplied from a 3-phase service, they shall be properly balanced across the three (3) phases.

C. Three-Phase Motors.

1. Size of Motors. In order that the proper capacity may be available to supply the load, the Department should be advised of the motors to be installed. In predominantly residential areas, the Department should be consulted before installing 3-phase motors with ratings over five (5) horsepower.
2. Maximum Locked-Rotor Currents. Three-phase motors supplied from combined light and power secondary system shall not have locked-rotor current values in excess of those shown in Table No. 2. Starting compensators are ordinarily required for 3-phase motors seven and one-half (7.5) horsepower and larger. An exception to this practice will be allowed to the extent local distribution facilities permit. Motors having current values in excess of those shown in the table shall be equipped with starters which will limit the current to the values specified. Increment start motors must have not less than a one-half-second interval between steps.

The Department should be consulted in regard to the installation of three-phase motors ten (10) horsepower or larger and must be consulted on motors twenty (20) horsepower or larger.

803 – Fluctuating Loads. Welders, X-ray equipment, motors connected to variable load machinery, and other equipment having fluctuating load characteristics may require special facilities for satisfactory service. The Department reserves the right to withhold connection of Department facilities to such loads which are considered detrimental to the service of other Customers.

1. Arc Welders. The Department reserves the right to refuse the supply of service to any AC arc welder which could cause interference or disturb the quality of service to other Customers.
2. Resistance Welding Machines. These shall not be installed on the Department's lines without first obtaining the Department's permission.
3. Intermittently Operated Equipment. Electric furnaces and boilers, heat pumps, X-ray equipment, compressors, pumps, molding machines, or similar equipment with load fluctuations at a frequency greater than four (4) times per hour should not be installed except under conditions specified by the Department.

804 – Protective Equipment. Protective devices for Customer owned equipment shall be installed on the load side of the meter.

1. Protection against Single-Phase Operation. Three-phase motors shall be protected against the possibility of the loss of any one phase of the supply circuit. Three overcurrent (overload) units shall be used, one in each phase, unless the motor is protected against single-phase operation by other approved means.
2. Undervoltage Protection. Motors that cannot be safely subjected to full voltage at starting, or would start on return of normal voltage after an interruption and which could endanger life or property, shall be provided with automatic undervoltage protection. Such protective device shall ensure that with either no voltage or less than fully rated voltage the motor will be disconnected from the line and the starter will be returned to the "off" position.

The Department recommends the use of time-delay undervoltage protection because instantaneous undervoltage protection will operate on momentary fluctuations of voltage.

3. Overload Protection. All motors should be protected against overload by the installation of adequate overcurrent thermal protective devices or their equivalent, which will operate so as to prevent excessive motor winding temperatures.
4. Phase Reversal. On motors for passenger and freight elevators, cranes, hoists, and other equipment where reversal or direction of rotation might cause property damage or injury, an approved reverse-phase relay shall be installed so that the motor circuit will be opened in the event of loss of any phase or phase reversal.

The operation of this relay and associated circuit breaker shall be instantaneous and be such that the circuit cannot be re-energized until the normal phase relations are restored.

5. Damage to Equipment. The Department will not be responsible for damage caused to Customer owned equipment where such damage is caused by absence or failure of any of the protective devices listed above.

6. Automatic Restarting. A motor that can restart automatically after shutdown shall not be installed if its automatic restarting can result in injury to persons.

Table No. 1

Single Phase Motors

Maximum Locked-Rotor Current Values in amperes.

This table is based on not more than four (4) starts per hour with long periods of continuous operation under maximum load conditions. Consult the Department if these conditions cannot be met, or if equipment rating and/or starting characteristics exceed the following:

A – Equipment with Motors Rated in Horsepower

Rated at	Maximum Locked-Rotor Current
120 volts	50 ampere
240 volts, single-phase 2 hp or less	60 ampere
2.5 to 6.5 hp	Residential use-consult Department Commercial use-60 ampere plus 20 ampere per hp in excess of 2 hp

B – Air conditioning or Heat Pump Equipment – Rated in Btu Per Hour

Rated at 240 volts, single-phase	Maximum Locked-Rotor Current
20,000 Btuh or less	60 ampere
21,000-30,000 Btuh	60 ampere plus 3 ampere per 100 Btuh in excess of 20,000 Btuh
Over 30,000 Btuh	Consult Department

Table No. 2

Three-Phase Motors

Maximum Locked-Rotor Current Values in amperes.

This table is based on not more than four (4) starts per hour with long periods of continuous operation under maximum load conditions. Consult the Department if these conditions cannot be met, or if equipment rating and/or starting characteristics exceed the

following:

A – Equipment with Motors Rated in Horsepower

Rated at	Maximum Locked-Rotor Current
240 volts, three-phases	
2 hp or less	50 ampere
2.5 hp to 19.9 hp	50 ampere plus 14 ampere per hp in excess of 2 hp
Over 19.9 hp	Consult Department

B – Air conditioning or Heat Pump Equipment – Rated in Btu Per Hour

Rated at	Maximum Locked-Rotor Current
240 volts, three-phase	
20,000 Btuh or less	50 ampere
21,000-50,000 Btuh	50 ampere plus 2.5 ampere per 1000 Btuh in excess of 20,000 Btuh
51,000 to 225,000 Btuh	125 ampere plus 1 ampere per 1000 Btuh in excess of 50,000 Btuh
Over 225,000 Btuh	Consult Department

ARTICLE 900
THEFT OF SERVICE

901 – Theft of Service. Theft of service is diversion of electrical energy by any method or device used by any person that prevents the electric meter from properly registering the quantity of electricity supplied by the Department and/or taking of any electric energy with intent to avoid a lawful charge for electricity by themselves or another person. Such person or persons responsible shall be liable for prosecution under penalty of law.

Under Massachusetts General Laws, the applicable sections dealing with theft of electrical energy are Chapter 164, Sections 127 and 127A; Chapter 266, Section 30; and Chapter 266, Section 127.

Where there is evidence of meter tampering or theft of electrical energy, such person or persons responsible shall be liable for prosecution under penalty of law. All instances of meter tampering will be reported to the Police Department. See Article 1003 for fees and charges relating to meter tampering.

902 – Meter Tampering Warning. Meter seals and other locking devices installed by the Department on metering equipment shall not be cut or removed except with permission by the Department. No Customer shall install jumper pieces or other bypassing devices, remove or install sleeves, change the meter registration, or tamper in any way with the electric meter. Property of the Department shall not be moved, removed or altered in regard to wiring or connections by other than authorized employees of the Department.

Meters determined by the Department to be tampered with may be disconnected immediately and without notice. To restore service after it has been disconnected, application must be made in person at the Department's office. In addition to the fees for reconnection and tampering costs (see Section 1003 of this policy manual for more information), a deposit will be required, if one is not already in effect, equal to three months' average consumption during previous or subsequent comparable periods of use on the premises in question.

Service will be reconnected within 24 hours after payment of the aforementioned fees and deposit, if the matter has been resolved to the satisfaction of the Department.

Whenever the Department determines that an unauthorized and unmetered use of electricity is being made on the premises of a Customer and is causing a loss of revenue to the Department, the Department may, at the Customer's expense, make such changes in the location of its meters, appliances and equipment on said premises as will, in the opinion of the Department, prevent such unauthorized and unmetered use from being made. Relocation of meters and equipment because of tampering will be at the Customer's expense.

ARTICLE 1000 FEES AND CHARGES

1001 – Removal of Service Drop. There will be no charge for temporary removal of a service drop from a structure to facilitate structural change, siding, moving of service, moving of structure, etc. provided that 48 hours notice is provided to the Department and work is performed during normal Department construction hours.

1002 – Meter Test. All meter tests will be performed by the Department for a charge of \$40. Upon request of the Customer, the meter will be sent to an independent testing company. The entire cost of third party testing as requested by the Customer shall be passed on to the Customer. If the meter is found to be inaccurate, no fee will be assessed. A meter shall be deemed inaccurate if it registers more than two percent above or below the standard measure approved by the MDTE.

1003 – Tampered Meter. When a meter is determined, by the Department, to have been tampered with, a \$40.00 reconnection fee and any other applicable charge determined by the Department payable by cash, credit card, money order or cashier's check to the Department shall be collected before the service is reconnected. In addition to charges for electricity, as determined, by the Department, to be used but not metered as a result of tampering, all costs attributable to investigation of the tampering, calculation of amounts owed and any other administrative costs will be charged to the Customer. The Department reserves the right to collect triple damages for unmetered electricity as per Massachusetts General Laws Chapter 164, Section 127A.

1004 – Damaged Meter. Meters damaged accidentally or otherwise will be replaced at the expense of the property owner where the meter is located. Charges will include the labor and materials to replace the meter.

1005 – Service Disconnected for Non-Payment. After service is disconnected for non-payment a reconnection charge of \$40.00 will be made to the Department for restoration of service during normal work hours. An additional charge will be imposed for after hours work. Contact the department for after hours charges.

1006 – Returned Check. A \$25.00 fee shall be charged to the Customer for each check presented to the Department for which there are insufficient funds to honor the check. This fee shall be applicable only where the check has been dishonored after being deposited for a second time or stamped "do not redeposit" by the bank.

1007 – Temporary Service Charge.

A minimum charge of \$150.00 will apply to all temporary service installations.

If the Department must extend the electrical distribution system beyond one overhead section of secondary cable in order to serve a temporary service, the Customer will be provided with the estimated costs to provide the temporary service. This estimated cost

must be paid in full before the Department will commence work. The Customer shall contact the Department for estimated temporary service charges.

The Customer will also be required to make payments for electricity usage at the regular rates.

1008 – Permanent Connection Charge.

A charge of \$275 will be assessed for each new overhead service connected. A charge of \$150 will be assessed for each new underground service connected. This does not include any construction related costs for the new service. See Section 204 of this policy manual for Customer construction costs.