Ipswich Municipal Light Department

272 High Street

Ipswich, MA 01938

(978) 356-6635

Electric Service Requirement and Policy Handbook

May 2011 Edition

Revised December 13, 2011 (Minor Update)

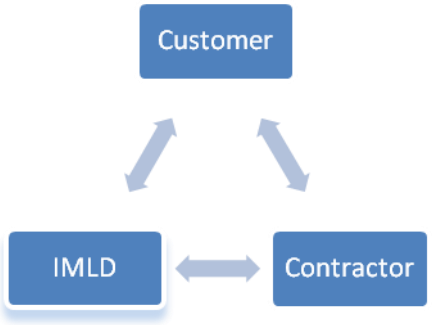
Foreword

The Ipswich Municipal Light Department is a Public Power Utility serving the electrical needs of the Town of Ipswich, Massachusetts. It is governed by the Town's Board of Selectmen who also act as the Light Department Commissioners, and the Electric Subcommittee comprised of two selectmen, one finance committee member, and two members at large.

The electric subcommittee meets on the first Wednesday of the month at 7 PM. The meeting schedule, with agendas is posted at the Electric Light office and Town Hall. This information is also posted on line at www.ipswichma.gov or www.ipswichutilities.org

Throughout this handbook, the Ipswich Municipal Light Department will be referred to as the IMLD and customers or the customer's agent referred to as customer.

All Rules and regulations of the National Electric Code and National Electric Safety Code must be adhered to therefore these documents rule if they are in conflict with any provision of this Handbook.



This handbook presents the Ipswich Municipal Light Department (IMLD) Electric Service Requirements and Policies. These were assembled to insure uniform policy, applied to all customers going forward, while defining the responsibilities of everyone involved in the process. Ultimately this uniformity will improve the efficiency of the process while providing for appropriate and reliable service to our customers.

All types of services large, small, residential and commercial are addressed herein. Temporary services, service upgrades and relocation of an existing service are also addressed.

These requirements shall be consistently applied to improve communications and coordination between customers, electricians, contractors, engineers, architects, Town Boards and the Ipswich Municipal Light Department (IMLD). Since these policies cover only the most common situations IMLD reserves the right to waive or modify any requirement on a case by case basis. This allows for a common sense approach when deemed necessary.

Ipswich Municipal Light Policies

The IMLD has assembled this illustrated Electric Service Requirements Handbook to clearly define everyone's responsibilities for installing electric service to residential, commercial and industrial locations. The manual was developed to ensure reliable and appropriate service to our customers and to improve communications and coordination between our customers, electricians, inspectors, contractors, architects, engineers and the IMLD. This manual covers the most common situations and sets guidelines and policies so that IMLD requirements will be applied uniformly. Some sections of this handbook provide useful information only (not policy) while the majority of the sections do contain IMLD policies.

The customer or their representative must contact both the Town Wiring Inspector and the Ipswich Municipal Light Department and apply for all the necessary applications and permits. Please note that electric distribution equipment such as padmount transformers have long lead times, often 6 months or more. For this reason it is imperative that the IMLD be contacted early in the planning process. A project gantt chart or similar document that provides IMLD information on your project's key dates often helps us serve you better through this process.

In particular:

- Read and understand this IMLD handbook because the policies set forth herein set the ground rules that must be adhered to.
- All questions on policy including interpretation must be submitted in writing (email or letter) by the customer's electrician. We will respond back via supplied email or phone number as requested by the electrician. Communication with electrician rather than the home owner generally insures familiarity with electrical terms used throughout this document allowing both parties to readily discuss fact and intent presented herein.
- Submit the required IMLD application(s) and verbally communicate with IMLD as early as possible. This is necessary so that we can prepare and accomplish the tasks needed to bring power to your location.
- Complete and submit a wiring permit with the Town of Ipswich. The Town of Ipswich Wiring Inspector will check your project for compliance with all applicable National Electric Code (NEC).
- Once the IMLD infrastructure is ready and the wiring inspector has signed off on the project we will complete final connections then energize power when you are ready.

Useful Contact information (Current May 2011):

Ipswich Municipal Light Department
272 High Street, PO Box 151
Ipswich, Massachusetts 01938
(978) 356-6635
Website: www.ipswichutilities.org

Town of Ipswich, Wiring Inspector
Department of Code Enforcement
25 Green Street (Town Hall)
Ipswich, Massachusetts 01938
(978) 356-6605 EXT. 8
David Levesqur, Sr.
E-mail: davidl@ipswich-ma.gov

Table Of Contents (with active links)

1. IMLD Terms and Conditions of Service

It is the customer's responsibility to understand and complete all the IMLD service requirements. In addition by accepting service from IMLD you are bound by all of our service requirements as stated herein and on all the documents that you are required to sign for IMLD service.

Understand that both terms and conditions and Handbook Rules and Regulations will be updated when deemed necessary by IMLD. These changes will occur without written notice to customers.

2. Contribution In Aid Of Construction (Policy Applicable To All Customers)

a. Infrastructure Deemed Good for the System (No Aid to Construction)

When IMLD installs, replaces, or makes major repairs to electric infrastructure that is deemed to be for the "good of the system" all costs will be assessed to the rate payers of the department.

b. Contribution Aid to Construction Policies

- If IMLD must add to, expand, or upgrade its facilities due to the increased load of an **existing Customer or the projected load of a new customer, IMLD may require the** customer to pay a Contribution in Aid of Construction.
- IMLD may require a customer who requests relocation, conversion (undergrounding), modification, or other alteration of IMLD's facilities to pay a contribution in aid of construction.
- IMLD may require a contribution in aid of construction payment for any enhanced distribution system or enhanced distribution facilities installed at the request of, or to benefit, a customer or potential customer.
- IMLD may require a contribution in aid of construction payment for any design, construction and related costs performed at the customer's request and that is not specifically covered in the Service Requirement Handbook. Work will begin only after IMLD determines the proper contribution in aid of construction amount and documents in the written agreement, any necessary additional terms and conditions.
- IMLD may require a contribution in aid to construction for the facilities required to serve any load that, based on IMLD's estimates will not provide IMLD an adequate return of investment.
- IMLD may, at its option, compute its charges on the basis of standard unit costs as determined from periodic studies made by IMLD of similar construction or removal.
- Any distribution line or service extension or reconstruction of facilities will be individually evaluated. Such line or service extension or reconstruction may require payment of a contribution in aid of construction.

3. Planning Your Electric Service

When planning electric service work in the Town of Ipswich please identify the bulleted item that best describes your circumstances. Then refer to the recommended section for requirement details that pertain to your project.

- Appling for a new service at an existing location that you own and occupy:
  Refer to section. Go to Page 13Sections 6.1
- Apply for service at an existing location that you do not occupy (rental property):
  Go To Page 13Sections6.2
- Temporary Service to supply power during construction:
  Go to Page 22 Section 10.2
- Basic new residential service up to 200 amperes:
  Go to Page 32 Section 11.1
- Large residential services, with a main breaker 400-amperes or larger:
  Go To Page 32 Section 11.1
- Very large residences, multifamily, apartment complexes, and condominium complexes:
  Go to Page 32 Section 11.6
- Commercial and industrial installations three-phase120/208V or 277/480V:
  Go to Page 38 Section 12.1
- Electric Services backed-up using generator(s):
  Go to Page 44 Section 13

4. Applying for Electric Service

In all cases new electric service to an existing or new building is a joint effort between the customer and the IMLD. The customer is responsible for permits, inspections, and utility paperwork. At the site the customer must provide an unobstructed overhead path for IMLD overhead service cable or a completed underground system ready for connection to IMLD infrastructure. After the necessary paperwork has been completed and the site is readied IMLD will install a revenue meter in the customers meter socket then complete connection to our infrastructure.

5. Existing Residence or Building

5.1 Owner Occupant – Existing Residence or Commercial Property

To apply for electric service at an existing residential or commercial property which is already metered and connected to the IMLD distribution system, please contact the Business Office at 978-356-6635 during regular business hours. After the Business Office has received notification of a change in ownership from the new customer, a final meter reading will be taken within two business days and the billing will be changed to the new name. Please remember that it is the customer's responsibility to inform the IMLD two business days prior to change in ownership or when moving.

5.2 Renter / Tennant – Existing Residential or Commercial Rental Property

To apply for electric service at an existing residential rental property which is already metered and connected to the IMLD distribution system, please contact the Business Office at 978-356-6635 during regular business hours. An "Application for Electricity for Rental Property" form must be completed. The IMLD Business Office requires, at a minimum, a deposit, picture identification and all prior (Town of Ipswich) accounts to be paid in full before establishing a new account. After the Business Office has accepted the application a meter reading will be taken within two business days and the billing will be changed to the new name. Please remember that it is the customer's responsibility to inform the IMLD two business days prior to change in ownership or when moving. See section 6.3 for a complete explanation of customer deposits.

5.3 Customer Deposits

When applying for electric service **for** the first the IMLD requires tenants to pay a minimum deposit of $40.00 for residents without electric heat or $75.00 those with electric heat. Residential customers who have had an account for more than twelve months that is in good standing may not be required to pay a deposit. Residential customers whose account has not been in good standing will be required to pay a deposit equivalent to an average of three months of occupied usage for the new residence. Commercial customers establishing an account for the first time are required to must pay a deposit of $350.00 or three months estimated usage whichever is greater. Commercial customers whose account has not been in good standing will be required to pay a deposit equivalent to an average of three months of occupied usage for the new space or $350.00 whichever is greater. Customer deposits are refundable to the customer's account after the account has been in good standing for twelve

consecutive months. Interest is paid on customer deposits at a rate equal to yields on U.S. Treasury securities at a constant, fixed one-year maturity. It is the responsibility of the tenant to notify IMLD when their service needs to be terminated

5.4 Customer / Landowner Responsibilities

Landlords are also responsible for notifying IMLD of a new vacancy and become responsible for electric use charges during the vacancy period unless the IMLD has been notified at in writing at least two business days prior to vacancy that the service should be terminated, or a letter is on file requesting all services be terminated when they become vacant.

6 Available Service Voltages & Characteristics

- 1ø – 3 wire 120/240V
- 1ø – 3 wire 120/208V (from 4 wire system)
- 3ø – 4 wire 120/208V
- 3ø – 4 wire 277/480V

7 IMLD System Voltage Conversion and upgrades

IMLD reserves the right to convert from one distribution voltage to a higher distribution voltage during system upgrades. Owners of private pole lines, underground cable, and or equipment in areas undergoing voltage upgrade are required to upgrade their facilities (at their expense) to support the new system voltage. IMLD may do this upgrade work on a time and material basis (if requested) depending on department work load among other limiting factors. IMLD will only perform work on private utility poles that are deemed safe by IMLD and since IMLD does not set poles or install conduit on private property work of this type is excluded from our services.

8 Types of Services Available From IMLD

Note: Also See Temporary Service, Section 10 (Go There now)

8.1 Residential

Residential service is defined as service to a single family residence or service to multi-family residence such as a duplex or condominium. Single-phase service (120/240Volts) is available for all residential services up to 400 amperes. Residence services over 400 amperes may require

three-phase (120/208Volts) however IMLD will determine this requirement on an individual basis.

8.2 Residential Sub-Divisions

The Town of Ipswich requires all new subdivisions to install underground electric facilities. IMLD will supply any required transformers, riser poles and make the final connection for utility service. Each residence in the subdivision will be supplied 120/240Volt supply rated up to 400 amperes.

The subdivision developer will be responsible for trenching, installing and testing primary (15kV) cable(s), secondary cable, transformer pads, hand holes, transformer ground grids, terminators, and anything else not provided by IMLD.

Main Breaker Current Rating	Typical Use	Pertinent Information
Less than 200 Amperes 200 Amperes	Small home	A meter socket rated at a minimum of 100 amperes shall be installed to accommodate our Revenue Meter. 200 ampere meter socket and Service panel
400 Amperes	Large home	Shall be feed from padmount transformer on customer's property
Over 400 Amperes	Very large home multiple dwellings	In General services of this type will be served three-phase120/208 volts although this requirement will be addressed individually by IMLD due to local voltage availability and other mitigating factors.

8.3 Business Service

Business service is described as a service to a commercial or an industrial site including the house revenue meter of a multi-family dwelling such as an apartment or condominium complex. The customer is required to supply a plot plan showing the placement of buildings, an

electrical one-line diagram of the site, and a completed load data sheet. Information supplied must include connected kW load, phase and neutral conductor sizes, desired voltage (120/208Y or 277/480Y volts) and a project gantt chart well in advance of actual need. Small commercial business requiring less than a 400 amperes service may be supplied by 120/240V three wire services from the existing overhead system, this at IMLD discretion.

9 Customer Responsibilities Including IMLD Easements & Service Details

The customer shall furnish and install the service entrance conductors, revenue meter socket and equipment. These items shall at a minimum meet the current requirements of the National Electric Code (NEC) and National Electric Safety Code (NESC) and any additional requirements of IMLD. The customer must grant IMLD any utility easement(s) needed as dictated throughout this document. IMLD requires that these easements be recorded (in perpetuity) on the property deed in all cases. IMLD must be provided with a copy of these deeds prior to utility connection.

9.1 Location of Meter and Service Entrance

IMLD will identify suitable locations for padmount transformers, revenue meters, and the appropriate riser pole for underground services or point of attachment for overhead services. Under no circumstances shall construction begin prior to these assignments.

Notes:

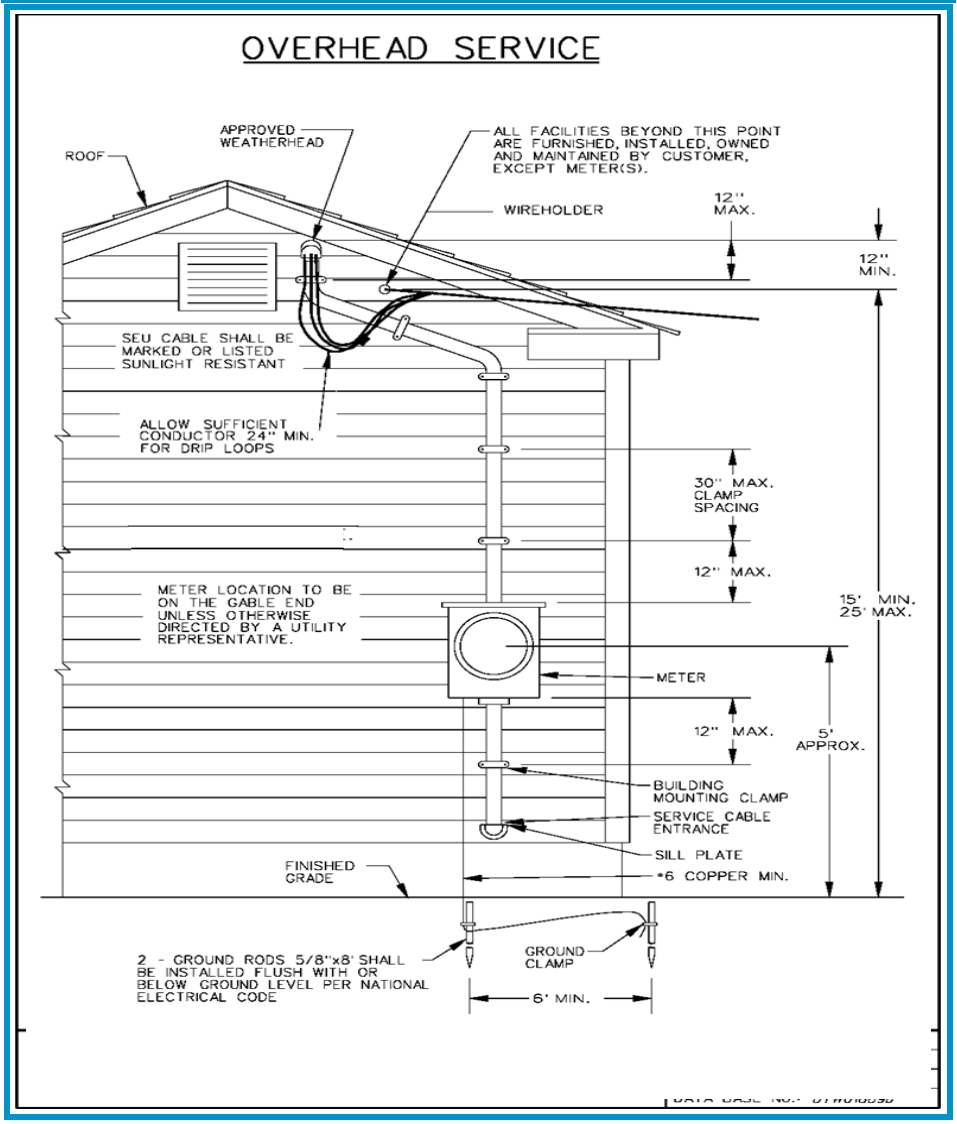
- Pedestal meters are allowed in underground areas.
- Although IMLD retains the right of final say customer requests will be considered during this process.
- Customers must notify IMLD of intent to start work at least 72 hours in advance to allow time for a service location to be assigned. All necessary IMLD applications, service request and load data sheets (when applicable) must have been completed and returned to the IMLD prior to this notification.

9.2 Point of Attachment (Illustration on Page 17)

Overhead service entrance conductors must be securely fastened to the building, with a weather head height of no less than 15 feet and no more than 25 feet. An attachment eye bolted and securely fastened to the structure of the building must be installed at a point 6 inches below the weather head. IMLD will provide a D-Eye and galvanized bolt, washers and

nut for this purpose upon request at no charge to the customer. Attachments must be made to a structurally sound and well secured surface, suitable for the purpose. Attachment to siding, soffits and the like are not acceptable. Customer's service cable shall be extended beyond the weather head by 24 inches for connection allowing for a cable drip loop to prevent water from wicking into the cable where it can travel into the meter socket and service panel.

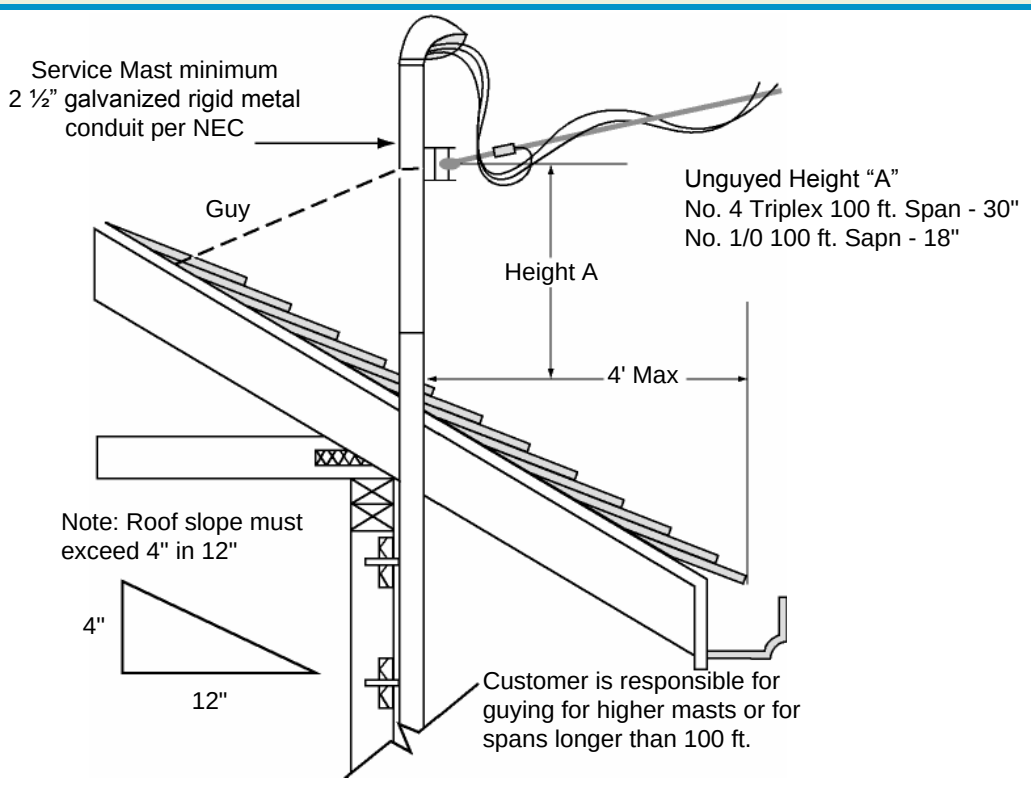
9.2.1 Point of Attachment Illustration



9.3 Service Masts

Service masts are a suitable alternative to gain the required height. The mast shall be adequately attached. Any mast longer than the guide for the service cable versus height shall be back guyed to support the pull of the service cable. All service masts with a service drop over 100 feet long must be back guyed. In these cases the mast will have a customer provided insulated conduit clevis for an attachment point. The mast will allow for the required vertical clearance to the ground. NEC section 230.24(A) permits a reduction of conductor clearance to 18 inches above a roof for service masts "through-the-roof" installations where voltage between the conductors does not exceed 300 volts (e.g. 120/240, 120/208Y services). IMLD does not allow mast heights to rise more than 4 feet over the roof.

Service Mast Illustration



9.4 Concealment of Service Entrance

Service entrance cables or conduit containing service entrance cables shall not be placed within a building wall or concealed in any way, except where they pass horizontally through the building wall to the service panel or inside service mast conduit passing thru a roof.

9.5 Service Clearances to Building Structures

9.5.1 Clearances to Padmount Transformers

The following clearances must be maintained to structural features of the building and other potential hazardous situations. In all cases the closest edge of the padmount to the building feature or hazard is used in the measurement. Note: transformers require a clear working area, front and sides of no less than 8 feet, this to be maintained going forward in time.

Building feature or hazard	Required Minimum Clearance
Padmount Transformer	8 Feet In Front & to Both Sides (3 Feet to Rear)
Building Non –Combustible Wall	3 Feet Horizontal
Fire sprinkler valves, standpipes and fire hydrants	6 Feet Horizontal
Combustible Walls, Including Stucco	10 Feet Horizontal
Facilities used to dispense or store hazardous liquids, such as gasoline pumps, & propane tanks	20 Feet Horizontal
Water's Edge of a pool or body of water	15 Feet Horizontal

9.5.2 Clearances to Electrical Service Entrances

The Following Clearances From the Service Entrance Must Be Maintained To Structural Features Of The Building And or other Potential Hazards

Building feature or hazard	Required Minimum Clearance
Doors, Porches, Fire Escapes & Windows	3 feet vertically and horizontally on all sides
Natural Gas Metering Equipment	3 Feet Horizontal
LP Storage Tanks- Buried & Above Ground	10 Feet Horizontal

9.6 Overhead Service Drop Clearances

9.6.1 Service Cable Required Minimum Vertical Clearances not exceeding 300 Volts to Ground

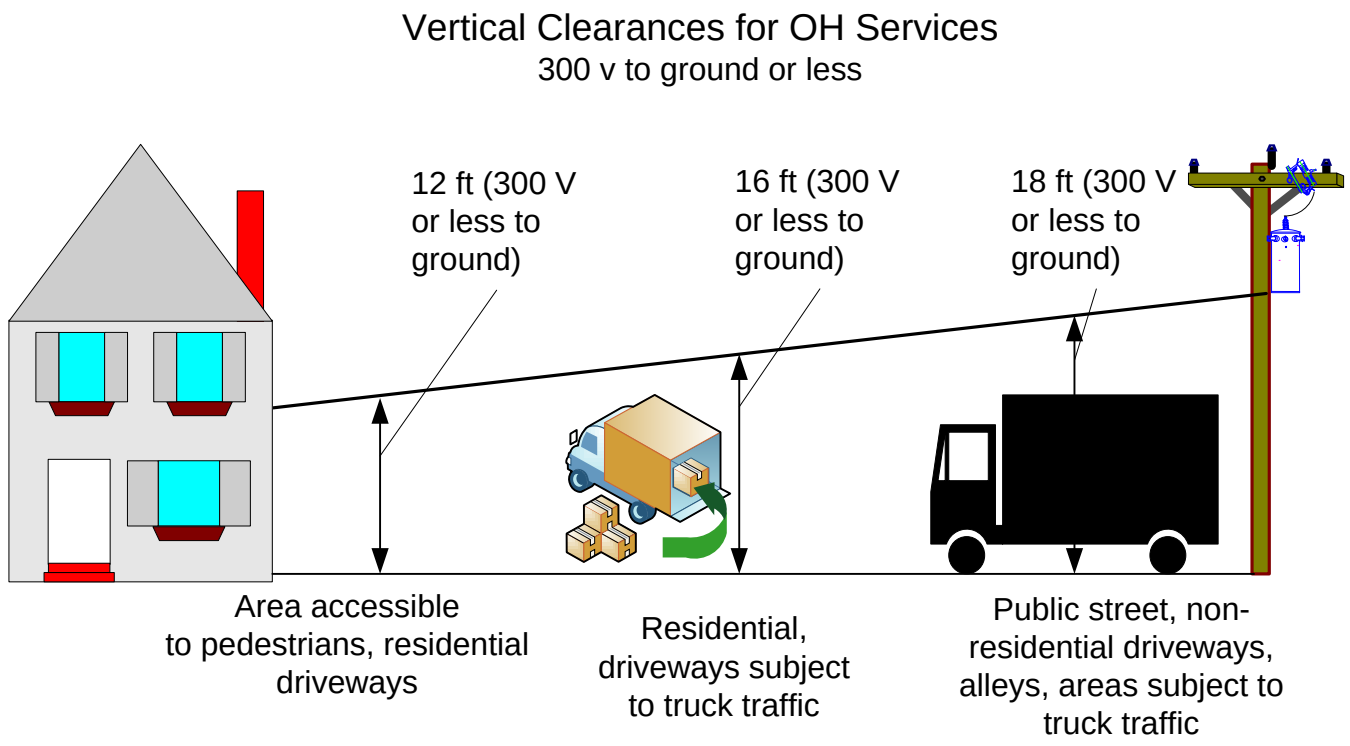
Cable with a Bare Neutral Conductor.	Required Minimum Vertical Clearance
Residential Property Accessible Only To Pedestrians.	12 Feet Vertical
Residential Private Driveways and Commercial Areas Not subject To Truck Traffic	16 Feet Vertical
Public streets, Alleys, Roads, Parking Areas Subject To Truck Traffic,& All Non-Residential Driveways	18 Feet Vertical

9.6.1 Minimum Vertical Clearances to Structures

Minimum allowed Vertical Clearances Over Structures For Service Cable With a Bare Neutral conductor (Not exceeding 300 Volts to Ground)

Location	Required Minimum Vertical Clearance
Decks Attached to Residential Property	12 Feet Vertical Clearance
Shed-metallic roof not accessible to pedestrians	8 Feet Vertical Clearance
Shed – Non-M metallic Roof Not Accessible to Pedestrians	3.5 Feet Vertical Clearance
Shed – Non-Metallic Roof Flat Walk Able	10 Feet Vertical Clearance
Stairs To Building, Including Landing	10 Feet Vertical Clearance
Swimming Pools Including Diving Boards For a Distance Of 10 Feet Horizontally In Any Direction, Wading Pools, and Hot Tubs.	Cannot Be Placed Under IMLD Service or Primary Conductors.

9.6.1. A Vertical Clearance Illustration



10 Temporary Electric Service

10.1 General

- Temporary services will be provided at construction sites for a maximum period of one calendar year after connection to the IMLD distribution system. The intent of these services is to provide temporary power during new construction or renovation. IMLD reserves the right to determine the justification for temporary service at the time of request and thereafter until removal. Remember that Temporary electrical service is not in lieu of or a substitute for a fully inspected permanent service in any residence or building.

- IMLD allows two categories of temporary services; the home builder temp (HBL) and the temporary power loop (TPL). The HBL is used during the construction of a single or two family residences. When construction is competed at this location another new home or building is frequently built adjacent to the one just completed. In these cases the HBL may be used for the new adjacent construction if it is not moved, however if it requires relocation it becomes a TPL. In this case IMLD often uses the same service cable and attachment pole but redirects it to the new adjacent construction site. TPL temporary services are used to supply power during the construction of commercial or multifamily building projects, temporary offices, construction trailers/sites. Often during phases of a project a TPL is moved closer to the work site, IMLD considers this as a new location requiring new fees, permits and inspection by the Ipswich wiring Inspector. IMLD must make all connections (or removals) from the IMLD distribution facilities. Violation will result in immediate termination of service by IMLD.
- Temporary services indicate to the IMLD that a new load will soon be permanently connected to our infrastructure. For this reason the owner or owner's representative should be prepared to discuss and document planned electrical loads that will result from the new construction. Later in this process an IMLD representative will meet with the owner's electrical contractor to determine the exact revenue meter location. If the new building foundation is in place, the final metering location will be marked. If the foundation is not in place, the building plans and plot map will be used to finalize the metering location. IMLD reserves the right to have the final say on service and revenue meter location.
- Temporary services cannot cross property lines and they must meet all National Electric Safety Code Requirements including clearance requirements.

10.2 Applying for Temporary Service (Available at secondary voltages only)

Two completed IMLD forms must be submitted when applying for a temporary service. These forms are available on line or may be picked up at the Utilities Office.

- **Application for Electricity-Temporary Service Form**– This form is to establish a customer account used for billing and recording all money exchanges associated with this (new) account. (Application to be created later by IMLD)

- **Service Request Form** - After a filled out form is received by IMLD one of our employees will visit your site to stake the service location, calculate any applicable fee, and plan the connection to IMLD distribution facilities.

Remember:

A separate application has to be made for your wiring permit and inspection.

10.3 Costs for Temporary Service

There will be no fee for temporary services that requires maximum of two poles (with all associated infrastructure) going to the service point of attachment. There will be a fee charged inclusive of all IMLD costs for all temporary services extending beyond our two pole complimentary installation policy. This charge will be based on the total labor and other costs plus the total costs of any non-reusable materials. Labor costs include the hourly cost of IMLD labor and equipment. Any materials used solely for the temporary service, and deemed non-reusable by IMLD will be billed to the customer. Rates and material costs are subject to periodic change without notice.

Upon completing the application for service and a field visit by an IMLD representative, applicable Temporary Service costs (if any) will be estimated for the customer. This estimate will be based on information supplied by the customer, as well as information gathered during our site visit. The customer will later be required to pay the final fee calculated by IMLD prior to the connection and installation of the electric revenue meter.

Please note that if IMLD representatives travel to a site at an agreed upon time but cannot make the final connections due to blocked physical access, clearance deficiencies, installation deficiencies, or other conditions beyond our control an additional charge will be assessed for the return trip.

10.4 Optional Connections to IMLD Electric Grid

Customer needing temporary service may choose the most optimum method for connecting to IMLD distribution facilities, so long as IMLD has the facilities available to meet the request. Recognizing that it is often economical to use the temporary service as a preliminary step in making the final connections to the residence or small commercial site IMLD allows the following customer selected options:

1. Overhead to a temporary customer erected and owned structure.
2. Underground from a temporary customer owned structure to a padmount transformer, secondary hand hole or pedestal.
3. Underground from a customer owned structure that is designed as the permanent meter pedestal for the residence to IMLD OH lines.
4. Underground from a customer owned structure that is designed as the permanent meter pedestal for the residence to a padmount or secondary hand hole or pedestal.

10.4.1 Option 1: Overhead Temporary Service

Overhead temporary services are connected from existing or newly constructed IMLD overhead distribution facilities with overhead service cable and connections from the IMLD pole to the temporary service structure erected and wired by the customer. This is the most common temporary service, when there are overhead poles and wires in the vicinity of the new construction.

If no overhead lines are present in the area an IMLD representative will meet with the customer at the site to determine how best to supply the temporary service. Information gathered at this meeting will be used to estimate the total customer temporary service fee. If your location is a known underground distribution area such as an underground residential area, please go to sections 10.4.2, 10.4.3, and 10.4.4Underground Temporary Services.

Specific Option 1 Temporary Service Requirements:

- IMLD shall specify the location of temporary service pole or beam structure. Any structures installed prior to the IMLD visit and locating are subject to relocation.
- Locations for the temporary structures feed from the overhead shall be placed no less than 10’ from the existing IMLD pole but less than 100’ from the IMLD pole.
- Temporary structures feed from the overhead will be a minimum of 20’ in length, with a top diameter (or width) of 6” of sound wood. 6” X 6” Pressure treated beams work well.
- The temporary structure will be set no less than 4’ into the earth and back filled and tampered to secure the structure.

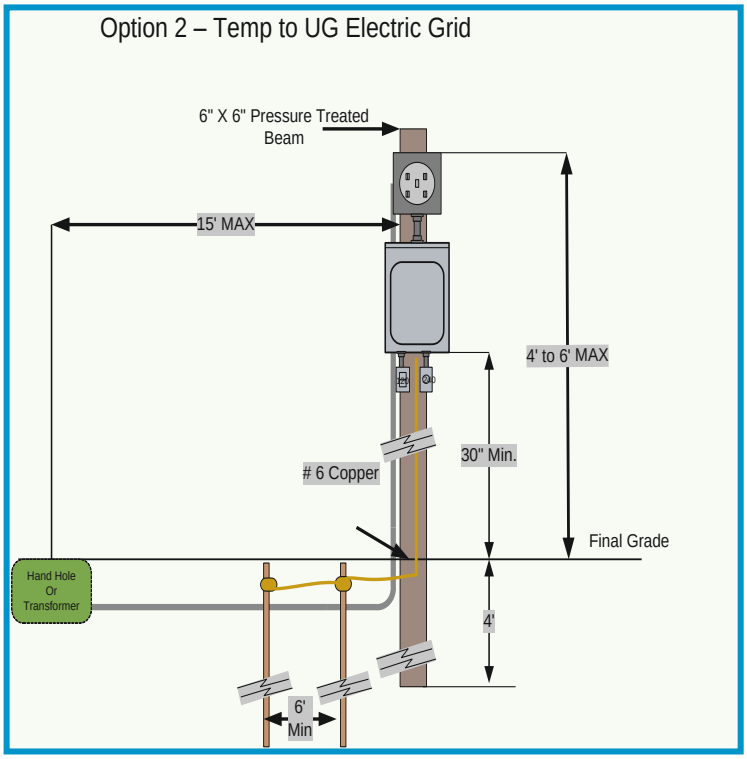
- The temporary structure must be back-guyed or adequately braced to support 400 lbs. of tension. Minimum bracing requires at least two 2" x 4" braces attached securely no more than 6' below the top of the temporary service, staked into the earth 10' from the base of the temporary service. Braces are at a 90º angle to each other.
- A service attachment point for the service wire will allow for the minimum height above ground for the attachment to be 15 feet.
- All applicable NEC and NESC codes shall be followed during the erection of the temporary service, including but not limited to ground rods, grounding, and clearances over traveled ways, roadways, attachment of the service cable, etc.
- Temporary service locations shall have the address (i.e. 101 Main Street, Lot3) clearly and permanently marked on the meter structure so as to be legible from the nearest traveled way.
- Temporary service locations shall be placed so the electric meter faces the traveled way.
- Note – surplus/junk equipment such as 60 Ampere sockets or 60 Ampere fuse panels are not acceptable for temporary services.

10.4.2 Option 2: Underground Temporary Service (also see 10.4.3 & 10.4.4)

The IMLD facilities are underground and the customer will be required to connect to those facilities. This may include a secondary hand hole or transformer. The customer will erect a temporary wood post that will support the required meter, breakers and outlets.

Specific Option 2 Temporary Service Requirements:

- IMLD shall specify the location of temporary service post. Any structures installed prior to the IMLD visit and locating are subject to relocation.



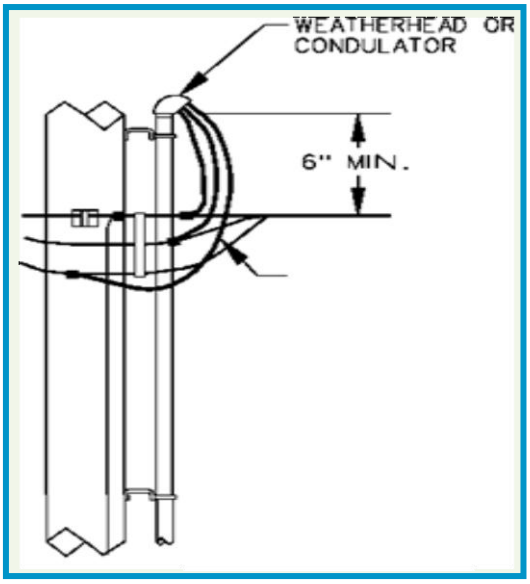
- Locations for the temporary service post from the UG source of power will be a maximum of 15 feet.
- Temporary posts will be a minimum of 10’ of sound pressure treated 6” X 6” lumber.
- The temporary structure will be set no less than 4’ into the earth and back filled and tampered to secure the structure.
- Use caution when digging in an area with known UG utilities. Remember you are required to call Dig Safe (1-888-DIG-SAFE)
- All applicable NEC and NESC codes shall be followed during the erection of the temporary service, including ground rods, conduit, etc.
- An IMLD representative will advise and clearly mark the trench to the UG facilities the contractor may be asked to open.
- Temporary service locations shall have the address (i.e. 101 Main Street, Lot3) clearly and permanently marked on the meter structure so as to be legible from the nearest traveled way.
- Temporary service locations shall be placed so the electric meter faces the traveled way.
- Note – surplus/junk equipment such as 60 Ampere sockets or 60 Ampere fuse panels are not acceptable for temporary services.
- Reference appendices – Temporary Service Option 2UG Drawing.

10.4.3 Option3: UG from Permanent Pedestal to IMLD OH

When the customer installs underground facilities that will connect to IMLD overhead facilities the customer may be required to use a meter pedestal for both the temporary and final metering point. In this case a temporary breaker panel will be mounted on a board and wired into the meter socket. Connections to IMLD electric distribution facilities will be permanent, using a pole riser for both the temporary and final service.

Specific Option 3 Temporary Service Requirements:

- IMLD shall specify the location of pedestal service, while making an effort to accommodate the customer's desired location. Any structures installed prior to the IMLD visit become subject to relocation. Note that while we recognize the customers desire to choose the permanent service location, IMLD has to make the final decision based on all local easement and electric distribution facilities requirements.



- Service Mast (Post) shall be either two 2" X 8" pressure treated wood members bolted together or a single pressure treated 4"X4" post. The meter socket will be mounted on pressure treated ¾ inch plywood or pressure treated 1 inch thick boards attached to the aforementioned service mast.
- The structure will be set no less than 3' into the earth and cemented to secure the structure. Caution before digging in any area —remember you must call Dig Safe (1-888-DIG-SAFE)
- All applicable NEC and NESC codes shall be followed during the erection of the temporary service, including ground rods, conduit, slip joints, etc.

- Customer shall install schedule 40 (gray) PVC underground conduit at a minimum. This to be concrete encased (at least 3" on all sides) the sweep at the base of the pole and the riser pipe shall be Rigid Conduit for the first 10 feet up the pole. Riser poles may revert back to Schedule 40 PVC after the first 10 feet (above ground level).
- Customer will supply necessary secondary (120/204 Volt) cable and riser pipe for the pole – see UG to OH services –permanent service section 11.4.3 for details.
- Temporary service locations shall have the address (i.e. 101 Main Street, Lot 3) clearly marked on the meter structure so as to be legible from the nearest traveled way. This may be removed when the residence or building has an occupancy permit and can be easily identified by IMLD.
- The pedestal location shall be placed so the electric meter faces the traveled way.
- Reference appendices – Temporary Service Option 3 UG to OH Drawing.

10.4.4 Option 4: UG from Permanent Pedestal to IMLD UG

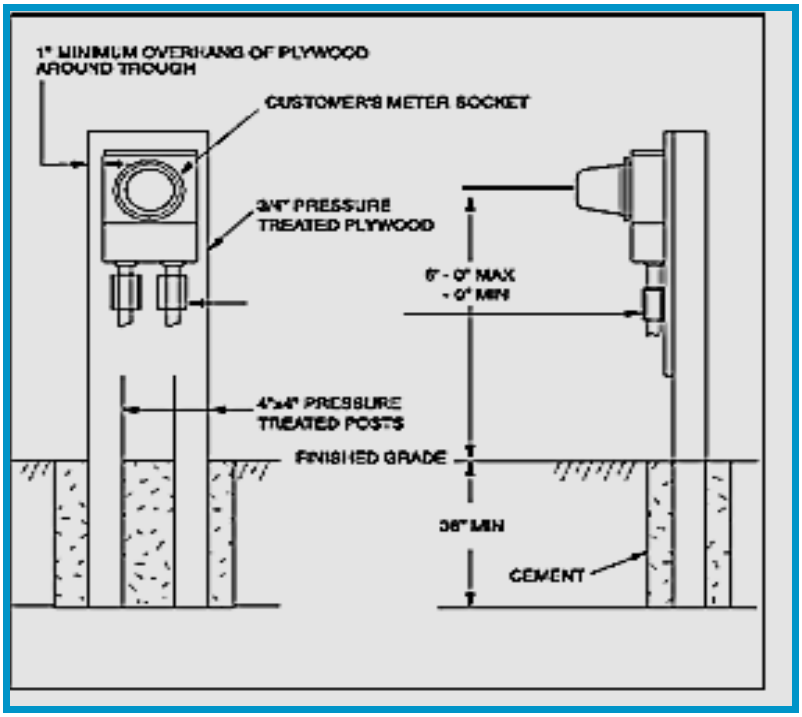
IMLD facilities are underground and the customer will be required to connect to those facilities. This may include a secondary hand hole or transformer. To do so the customer chooses to use a meter pedestal as both the temporary and final metering point. The customer having elected the permanent pedestal metering option will erect the pedestal. A temporary breaker panel will be mounted on a board and wired to the meter socket. Connections to IMLD electric distribution system will be permanent, using the final required service size wire run in concrete encased conduit.

Specifically:

- IMLD shall determine and specify the location of pedestal service however customer input will be considered. . Any structures installed prior to the IMLD visit and locating are subject to relocation. Note we recognize the nature of a permanent service

location, but the location must meet all local easement and distribution system requirements.

- Service Mast (Post) shall be either two 2" X 8" pressure treated wood members bolted together or a single pressure treated 4"X4" post. The meter socket will be mounted on pressure treated ¾ inch plywood attached to the aforementioned service mast post.



- The structure will be set no less than 3' into the earth and cemented to secure the structure. Caution you are digging in an area with known UG utilities—Call Dig Safe
- All applicable NEC and NESC codes shall be followed during the erection of the temporary service, including ground rods, conduit, slip joints, etc.
- Customer will install concrete encased conduit (at least 3" on each side) to the point of connection to IMLD UG Distribution system as designated by IMLD.
- Customer will supply necessary secondary cable from the pedestal to the point of underground attachment – see UG to UG services –permanent service.

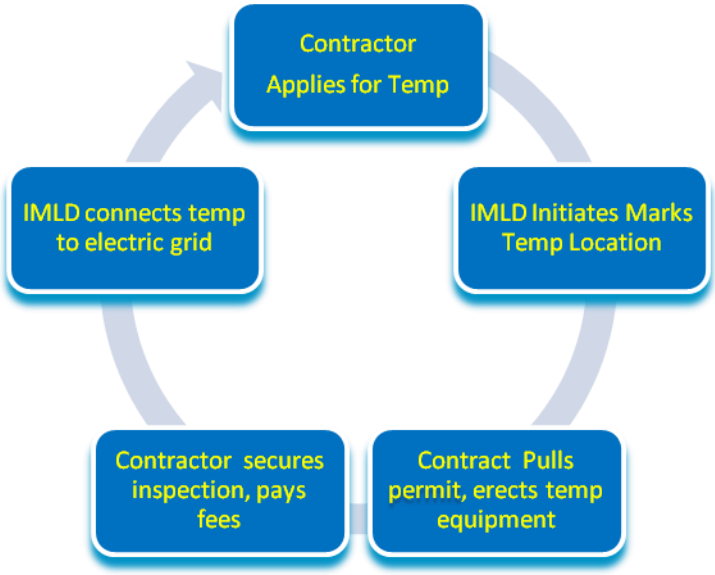
- Temporary service locations shall have the address (i.e. 101 Main Street, Lot 3) clearly and marked on the meter structure so as to be legible from the nearest traveled way. This may be removed when the residence or building has an occupancy permits and can be easily identified by IMLD.
- The pedestal location shall be placed so the electric meter faces the traveled way.

10.5 Responsibilities Associated with Temporary Service

The following lists the general division of work between the contractor/customer and IMLD. This is subject to change without notice and the contractor may be required to perform additional tasks under unusual situations.

10.5.1 Customer/Contractor:

- Visit the IMLD on line or in person to complete the required application for new service and the Service Request forms. (Attachments to be created).
- Meet on-site with an IMLD representative to determine the location of the temporary service.
- The IMLD required fee will then be determined and submitted to the customer in a timely fashion.
- Apply for and obtain a wiring permit as required with the Ipswich Wiring Inspector.
- Call Dig Safe (1-888-Dig Safe) for the underground utilities to be marked prior to any digging.
- Install the required temporary service equipment for either overhead or underground connection to the IMLD system. See above and also the appendices for required construction.
- Pay the required non-refundable fee to IMLD for the temporary service.
- Notify the Wiring Inspector that an inspection is required and gain the Inspector's approval of the temporary service equipment.
- Notify the IMLD that the temporary service is approved for connection and the Ipswich wiring permit number.



10.5.2 IMLD responsibility:

- Meet with the customer to determine an acceptable location of the temporary service.
- Provide an estimated fee to the customer in a timely fashion.
- Check prior to installing power to the temporary that all National Electric Safety Codes for clearances to buildings and roadways will be met.
- Install the service OH service lines to the temporary structure to bring power when applicable.
- Install underground feed temporaries and connect the customer's cables to the IMLD distribution facilities.
- Install a billing meter in the socket.
- De-energize the temporary service after notification by the customer that it is no longer needed.
- Note that upon notification IMLD will attempt to connect within 3 business days, weather permitting.

11 Residential Electric Service – New, Upgrade or Relocation

11.1 General

IMLD residential services to single and multiple family housing units are generally provided at 120/240V single-phase (up to 400 amperes).

Very large homes and multi-family dwellings that require a 400 ampere main breaker will be generally supplied using a single 120 /240 volt padmount transformer. For residential dwellings with a main switch above 400 amperes IMLD will work with the customer or contractor in an effort to achieve the required power in the most economical, sensible and safe manner. Generally this will involve one or more 120/208 volt three-phase padmount transformer(s) located on the customer's premises. These transformers will require a primary voltage feed from the IMLD distribution facilities.

11.2 Costs for Permanent Service

IMLD will connect a customer to the IMLD overhead distribution facilities at no additional charge if they are located within approximately 300 feet of the our overhead distribution facilities (terrain and angle dependent) with IMLD supplying and installing *up to* two poles and two sections of wire and a service drop. Please see the IMLD policy in section 34.1.1 (page 56) of this handbook for residence requiring longer connecting facilities.

- Customers connecting to the IMLD 120/240V distribution facilities via underground conductors to a pole, transformer, or secondary hand hole will be connected at no additional charge, however the trenching, conduit, wire, terminators, pole riser, 15KV Cable testing and other costs associated with the UG service are the customers' responsibility. The customer shall demonstrate that their new 15KV cable is ready for connection to the IMLD distribution facilities via applicable "industry standard" DC high voltage acceptance tests. These tests shall be conducted as specified in the latest version of International Electrical Testing Association (NETA) acceptance test standards and shall be conducted by a recognized independent testing company. The customer shall provide IMLD certified test report sheets for all cables tested by the testing company prior to IMLD energizing the cable for the first time.

Please see the IMLD policy on Page 36 section 11.4.3(B) of this handbook for underground secondary voltage connections.

A single or three-phase transformer will be supplied by IMLD to residential customers and IMLD will make necessary connections to the distribution facilities at no charge. This includes the connections in the transformer and at the riser pole. All other charges such as trenching, conduit, primary and secondary cable, terminators, transformer base and ground grid, riser, etc. are the customer's responsibility. Please see the IMLD policy Page 36 section 11.6 of this handbook for transformers located on residential customer premises for service.

11.3 Applying for Permanent Service

To apply for permanent service the customer, their contractor or electrician is required to complete three forms – see Forms in Appendix. (To be created later)

- **Application for Electricity for Permanent Service** – this 4 part form is to establish a customer account for the billing associated with energy used and also serves to track any required non-refundable fees or deposits. The customer will be required to come to the IMLD office to complete the form, show suitable identification, and make any financial transactions.
- **Service Request**- Initiates the required work and visits by an IMLD representative to stake a location, calculate the fees (if any) and prepare for the connection to the IMLD grid. You may be provided a Service Request number as a reference for the job.
- **Customer Load Data**- IMLD needs to provide sufficient service to customers, including transformers and service cable, to insure adequate voltage. The load data sheet allows IMLD to understand the load that must be supplied at your new residence so that we properly size our facilities.

Also note that application has to be made separately to the Ipswich wiring inspector for the required permits and inspections.

11.4 Optional Connections to IMLD Distribution Facilities

Customer may choose how they wish their residence to be connected to the IMLD electric system if the facilities are available and they agree to the additional charges necessary to accomplish the desired task.

11.4.1 Residential Overhead Service

The most basic service connection is a service drop from an existing or a new pole to the service entrance on a house. Typically IMLD can reach the customer within the maximum (no charge) allotment of two poles, two sections of wire, and a service drop. The meter location and service attachment point are tagged early in the project by IMLD. Upon final inspection by the Wiring Inspector the IMLD will route service cable to the homeowner's service point of attachment, and install the revenue meter in the customer's socket, and energize the service upon approval of the wire inspector and completion of our other service work.

The customer is required to provide an easily accessible, clear path (both aerial & on the ground), devoid of trees, wetlands, and other obstacles, where our crews can route your service cable. IMLD will provide a maximum of two utility poles with associated infrastructure at no cost to the customer. The customer will be responsible for all poles and other infrastructure beyond this 2 Pole Limit. See Section 30.1.1 on Page 56 for details. Please note that tall growing vegetation planted under power lines could encroach on your power line. IMLD will not be held responsible for such growth therefore it is the customer's responsibility to keep such growth away from private lines. Remember the easiest way to manage this is to avoid planting vegetation under power lines.

11.4.2 Residential Underground Service (See A, B, or C Below)

11.4.2(A) Underground Service Required in this Area

Customer may be in an area that requires the service to the residence to be underground with no new aerial wires. Ipswich requires all new developments to be supplied via underground residential design guidelines. This may also include underground requirements in areas of the Town designated as only allowing underground service entrances. The Building Inspector, Wiring Inspector, as well as IMLD may assist in determining the requirements and options available to you.

Note: In areas where OH lines and poles exist and more than one residence desires to tap onto IMLD overhead distribution facilities (underground to pole top service connection), IMLD may elect to install a riser of sufficient size to service the anticipated residential loads. In these situations IMLD will complete the customer connections in a hand hole on the lot line. These customers will tap onto the IMLD distribution facilities in this manhole.

11.4.2(B) Underground Service to Homes fed from overhead Infrastructure

In existing overhead service areas (OH) the customer shall tap (120/240 Volt secondary)) to the IMLD distribution facilities via underground conduit. The customer will be responsible for any required trenching, conduit, wire, concrete to protect the conduit, the service riser on the pole as well a meter socket and the service conductors. If concrete encased steel conduit is used, IMLD will drive a ground rod at the pole and ground the conduit system to this ground rod. If the customer chooses to use gray PVC electrical grade conduit (40 or 80) encased in concrete they must use a steel sweep (36" 90 degree) at the pole. Additionally they will be required to install a properly sized grounding wire in the conduit that will be used to bond to the steel conduit, the IMLD ground rod, and service entrance equipment. IMLD will make the final connections at the pole including attaching all riser poles above 10 feet (safety issue) and the installation of a suitable meter. No additional fees will be charged for the work

11.4.2(C) Underground is already in your Area (120/240 Voltage tap)

In existing underground service areas (UG) the customer will be required to meet the IMLD system via underground conduit and wires to the existing hand hole or transformer using electrical grade gray PVC schedule 40 below ground (concrete encased) schedule 80 above ground (or steel conduit as an alternative). The service entrance shall be connected to the underground conduit via a slip joint to allow for settling of the construction site without damage to the service. The customer will be responsible for any required trenching, conduit, wire, concrete to protect the conduit, the service riser on the pole as well a meter socket and service. IMLD will make the final connections at the hand hole or transformer. No additional fees will be charged for the work

11.4.2 Underground Service to Meter Pedestal (See A or B Below)

Customers building new residences may elect to have the meter and service to their location connected using a pedestal meter, typically located some distance away from the house.

Conduit to the customer's service panel as well as other utilities is then run underground from the pedestal into the basement area of the house.

11.4.3(A) Pedestals in IMLD Overhead distribution Service Area

The procedure will be the same as when the meter is on the house with IMLD making the final connections at the pole and installing the meter. The customer will be responsible for any required trenching, conduit, wire, concrete to protect the conduit, the service riser on the pole as well a meter socket and service. If concrete encased steel conduit is used for the run, IMLD will drive a ground rod at the pole and ground the conduit system. If the customer chooses to use gray PVC electrical grade conduit (40 or 80) encased in concrete they will use a Rigid Conduit steel sweep (36" 90 degree) and rigid steel riser at the pole. In addition they will be required to run an additional wire in the conduit to bond to the steel conduit, the IMLD ground rod, thru the PVC and back to the service entrance. IMLD will make the final connections at the pole including installation of (customer supplied) riser pole above 10 feet (safety issue) and the installation of a suitable revenue meter. No additional fees will be charged for the work.

11.4.3(B) Pedestals in IMLD Underground Service Area

The procedure for a pedestal will be the same as when the meter is on the house with IMLD making the final connections at the transformer or hand hole. In existing underground service areas (UG) the customer will be required to meet the IMLD system via underground conduit and wires to the existing hand hole or transformer using electrical grade gray PVC schedule 40 below ground (concrete encased) schedule 80 above ground (or rigid steel conduit as an alternative). The service entrance shall be connected to the underground conduit via a slip joint to allow for settling of the construction site without damage to the service. The customer will be responsible for any required trenching, conduit, wire, concrete to protect the conduit, the service riser on the pole as well a meter socket and service. IMLD will make the final connections at the hand hole or transformer. No fees will be charged for the work

11.5 Residential Service with a 400 Ampere Main

Large homes requiring a 400 Amperes main breaker will require the installation of a single-phase 15kV to 120/240V padmount transformer on the customer's premises. The underground conductors shall then be routed to a customer to a pedestal or house mounted revenue meter.

Residential customers requiring this type of installation due to load requirements will be supplied the transformer and final connection to the IMLD distribution facilities at no additional charge. This includes the connections in the transformer and the riser pole. All other items such as trenching, conduit, primary and secondary cable, terminators, transformer base and ground grid, riser, etc. are the customer's responsibility. All work must as a minimum meet NEC requirements. IMLD requires conduit be concrete encased for durability and safety.

11.6 Residential Service Greater than 400 Amperes (Large Homes / Multi-Family)

Homes requiring a main breaker over 400 Amperes will generally require the installation of a three-phase120/208V padmount transformer on the customer's premises. At these locations the customer must route the necessary underground cables from the transformer to either a building mounted revenue meter or a pedestal revenue meter.

Customers requiring this type of installation will be supplied the transformer and final connection to the IMLD distribution facilities at no additional charge inclusive of the required connections in the transformer and on the riser pole. All other tasks such as trenching, conduit, primary and secondary cable, terminators, transformer base and ground grid, riser, etc. are the customer's responsibility. All work must as a minimum meet NEC requirements. IMLD requires conduit be concrete encased for durability and safety.

11.7 Responsibilities Associated with Residential Permanent Service

- A customer's premises may be connected to the department's aerial distribution facilities via an underground connection where the customer installs and maintains the entire underground service inclusive of the riser pole. Ownership of all service equipment located on customer's property shall remain the property of the customer. The service connection when located in the public way shall become the property of IMLD. Although owned by IMLD it shall be repaired and maintained by IMLD at the customer's expense and related charges will be applied to the customer's account.
- If for any reason it becomes necessary for the department to relocate any of its pole, wire, or cable facilities by which a customer is served, the customer shall change the location of its point of delivery to a point readily accessible from the new location. The cost of this work is the responsibility of the customer.
- Electric service must not be used in such manner at to cause unusual fluctuation or disturbance in the department's supply system and in the case of violation of this rule, the department may discontinue service, or require the customer to modify his

installation and/or equipment using approved controlling devices that will eliminate such disturbance.

- The customer will be required to pay the cost of any special installation necessary for service at other than standard voltages or for service with closer voltage regulation than required by standard practice. The excess cost will represent the difference in costs between the special installation and a normal installation.
- Applications involving extension requiring abnormal construction which would result in extraordinary costs, such as crossing rivers, railroads, ponds, extending to an island, use of submarine cable, and other special conditions, are considered as special cases. Customers or other parties requesting such extensions shall be responsible for all costs incurred including maintenance and repair costs in the future.

11.7.1 Underground Easements and Plans

- The owner, developer, and contractor shall be monetarily responsible for providing, granting and furnishing an easement for all electric facilities. Typical electric utility easement requirements are stated below:
  A. A ten (10) foot wide strip or cable easement along all front and or street property lines.
  B. A five (5) foot wide street crossing easement from front property line to front property line wherever cable crossings are required.
  C. A twenty-two feet wide by twelve feet deep (22'W X 12'D) equipment easement for sectionalizing cabinet and or a padmount transformer installation.
  D. A twelve feet wide by twelve feet deep (12'W X 12'D) equipment easement for padmount transformer installation at the front lot corner(s) and located equally on each lot.
- Note that since easement requirements are project dependent project easement requirements will vary both upward and downward from the above stated requirements.
- IMLD Residential service easements should be determined during the planning stage however late stage design changes may be required after open trench inspection.
- Two professionally produced copies of "Underground As Built" drawings showing all underground conduits, sweeps, distance between sweeps, property lines, structures, and utility easements, must be provided to the department engineering office prior

to energizing of any underground circuits. The total cost for your primary underground installation must also be submitted.

- Deeded private primary underground line easements are required by IMLD. A copy of this deed must be provided to IMLD prior before we energized. The size and scope of these easements will be dictated by IMLD after a site visit.

12 Commercial Electric Service

12.1 General

- IMLD can often provide adequate power to small commercial enterprises requiring no larger than a 400 ampere 120/240 single Phase service via existing overhead facilities.
- Check with IMLD to determine if IMLD can deliver Three Phase 277 /480 Volt power to any specific location.
- Larger customers must provide IMLD with site electrical one line drawing(s) and a completed load data sheet(s) so that IMLD can plan the utility infrastructure needed to accommodate your service. IMLD will provide up one transformer up to a size of 500KVA at no cost to the customer. Transformers larger that 500KVA will be purchased, owned, and maintained by the customer. IMLD will install and outfit one new utility pole (if necessary) to accommodate a new 15kV customer's service. IMLD will provide a maximum of 500KVA transformation at any single site. All transformers beyond 500KVA will be purchased, owned, and maintained by the customer.
- IMLD will supply the facility revenue meter(s), all complex metering accessories such as PT's and CT's that supply load information to the IMLD revenue meter. These metering accessories will also provide IMLD electric demand and power factor information. All revenue meters are owned by IMLD therefor we have exclusive right to all of the generated information.
- The customer will be responsible for all trenching, conduit, primary and secondary cable, terminators, transformer, transformer Pad (for transformer placement), and necessary ground grid(s), transformer protective stanchions if necessary.
- The customer will be responsible for the installation of all the necessary equipment in accordance with the latest NEC standards.
- The customer shall demonstrate that their new 15kV cable is ready for connection to the IMLD distribution facilities via applicable "industry standard" DC high voltage

acceptance tests. These tests shall be conducted as specified in the latest version of International Electrical Testing Association (NETA) acceptance test standards and shall be conducted by a recognized independent testing company. The customer shall provide IMLD certified test report sheets for all cables tested by the testing company prior to IMLD energizing the cable for the first time.

Note: The Ipswich Wiring Inspector is responsible for approving all the electric facilities from the secondary of the transformer to the customers building. IMLD will require final wire inspector approval prior to energizing the transformer.

12.2 Special Charges for Commercial Service
Only One of These Applies >> (A, B of C Below)

(A) No Special Charges if Applicable to your project:

IMLD will extend a single-phase or three-phase overhead distribution lines along a public or private way to serve a commercial or industrial customer at no additional charge, if the customers load data sheet along with any other information provided by the customer indicates that the cost of our infrastructure upgrade will be recovered within the first five (5) years of service use.

(B) Special Charges Applicable at onset of the Project

If the load data information submitted by the customer indicates (at the onset of a project) that the IMLD infrastructure upgrade costs related to said project will not be recovered within the first 5 years of service, then the customer will be required to contribute to the cost of said upgrade. The charge assessed to the customer will be the difference between our infrastructure upgrade costs and the expected revenue flow to IMLD exclusive of IMLD power purchase costs for power consumed at this customer's site. Payment of this charge is mandatory before IMLD orders any of the new infrastructures from our suppliers.

(C) Special Charges May be Accessed during the first five Years of Service

If it becomes apparent to IMLD any time prior to the end of the 5th year of IMLD service that IMLD will not recoup the initial infrastructure upgrade costs made in behalf of said customer(again within the first five years of service) the customer will be responsible for the special charge noted below.
IMLD reserves the right to access any commercial or industrial customer during the first full 5 years of service for IMLD initial infrastructure upgrades.
The formula used to calculate this charge will be the same one used in Special Charge Case B Above. Should IMLD issued a bill under these circumstances payment in full is due within 60 days of the date of issue of this bill.

12.3 Applying for Commercial Service

The customer or electrician or general contractor shall make application for permanent service. This is accomplished by the submittal of completed IMLD form(s) applicable to this process.

Application for Electricity for Permanent Service – This 4 part form establishes a customer account for the billing associated with energy use, but this form also serves to track any required non-refundable fees and or deposits. Further, this form must be filled out at the IMLD office located at 272 High Street Ipswich after showing suitable identification. A financial transaction may also be required at this time.

- **Service Request**- Initiates the required work and visits by an IMLD representative to stake the location, gather information needed to calculate the fee (if any) and prepare for the connection to the IMLD distribution facilities. You may be given a Service Request number as a reference for the job.
- **Customer Load Data** – IMLD needs to provide sufficient service to customers, including transformers and service cable, to insure adequate voltage. The load data sheet allows IMLD to understand your loading characteristic so IMLD can properly size the distribution facilities need for your site.

12.4 Detail for Overhead or Underground Customer Facilities

12.4.1 Overhead service to small commercial business

Small commercial establishments in areas of existing IMLD OH system will be served from the existing system if there is proper voltage of adequate capacity to service your enterprise now and into the reasonable future (see 12.2C above).

Depending on the infrastructure in the area the service may be provided from overhead or underground distribution facilities.

The customer will be responsible for any required trenching, conduit, wire, protective concrete, conduit including the service riser on the pole as well a revenue meter socket and all service conductors. If concrete encased steel conduit is used for the run, IMLD will drive a ground rod at the pole that will be used to ground the conduit system. If the customer chooses to use gray PVC electrical grade conduit (40 or 80) encased in concrete they must use a steel sweep (36" 90 degree) at the pole and a steel riser. In addition they will be required to run an additional wire in the conduit to bond to the steel conduit, the IMLD ground rod, thru the PVC and back to the service entrance. IMLD will make the final connections at the pole including attaching the any riser pole above 10 feet (safety issue) and the installation of a suitable revenue meter. IMLD will charge the customer based on time and materials for this work. In the case of Underground services, the customer is responsible for trenching, conduit, concrete encasement, cable, rise pole(s), and other associated items.

12.4.2 Padmount transformer for medium to large commercial customers

After medium to large usage commercial customers submit a completed IMLD Customer Load Data sheet IMLD will determine how best to serve these new load requirements. IMLD normally services larger loads through a padmount transformer or transformers set on the customer's property. Padmount transformer(s) and other infrastructure as outlined in 12.1 will be purchased and installed by the customer. IMLD will supply and install the revenue meter(s), revenue metering equipment, poles (2) necessary to connect the transformers to the IMLD 15kV distribution facilities, and any other equipment as stated in 12.1.

The customer is required to provide all trenching, conduit, risers, primary and secondary cable, terminators, a suitable locations for the transformers, transformer box pads and ground grids, transformer protective stanchions if necessary, etc. The customer is also responsible for the installation of all the necessary equipment in accordance with the latest NEC standards.

The customer is also responsible for everything stated in 12.1 as a customer responsibility. The Town of Ipswich Wiring Inspector is responsible for approving all the electric facilities from the secondary of the transformer to the customers building. IMLD will require a final inspection by the Inspector prior to energizing the transformer.

12.5 Responsibilities Associated with Commercial Permanent Service

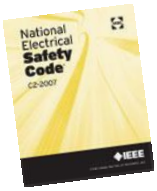
- A customer's premises may be connected to the department's aerial distribution facilities via an underground connection where the customer installs and maintains the entire underground service inclusive of the riser pole. Ownership of all service equipment located on customer's property shall remain the property of the customer. The service connection when located in the public way shall become the property of IMLD. Although owned by IMLD it will be maintained by IMLD at the customer's expense.
- If for any reason it becomes necessary for the department to relocate any of its pole, wire, or cable facilities by which a customer is served, the customer shall change the location of its point of delivery to a point readily accessible from the new location. The cost of this work is the responsibility of the customer.
- Electric service must not be used in such manner at to cause unusual fluctuation or disturbance in the department's supply system and in the case of violation of this rule, the department may discontinue service, or require the customer to modify his installation and/or equipment using approved controlling devices that will eliminate such disturbance.
- The customer will be required to pay the cost of any special installation necessary for service at other than standard voltages or for service with closer voltage regulation than required by standard practice. The excess cost will represent the difference in costs between the special installation and a normal installation.
- Applications involving extension requiring abnormal construction which would result in extraordinary costs, such as crossing rivers, railroads, ponds, extending to an island, use of submarine cable, and other special conditions, are considered as special cases. Customers or other parties requesting such extensions shall be responsible for all costs incurred including maintenance costs.

12.5.1.1 Underground Easements and Plans

- The developer and/or contractor shall be monetarily responsible for providing, granting and furnishing an easement for all electric facilities. Typical electric utility easement requirements are stated below:
  A. A ten (10) foot wide strip or cable easement along all front and or street property lines.
  B. A five (5) foot wide street crossing easement from front property line to front property line wherever cable crossings are required.
  C. A twenty-two feet wide by twelve feet deep (22'W X 12'D) equipment easement for sectionalizing cabinet and or a padmount transformer installation.
  D. A twelve feet wide by twelve feet deep (12'W X 12'D) equipment easement for padmount transformer installation at the front lot corner(s) and located equally on each lot.
- Note that since easement requirements are project dependent project easement requirements will vary both upward and downward from the above stated requirements.
- IMLD Residential service easements should be determined during the planning stage however late stage design changes may be required after open trench inspection.
- Two professionally produced copies of "Underground As Built" drawings showing all underground conduits, sweeps, distance between sweeps, property lines, structures, and utility easements, must be provided to the department engineering office prior to energizing of any underground circuits. The total cost for your primary underground installation must also be submitted.
- Deeded private primary underground line easements are required by IMLD. A copy of this deed must be provided to IMLD before we energize these services. The size and scope of these easements will be dictated by IMLD after a site visit.

13 Requirements and Compliance with Electric Codes

The IMLD requirements stated in this manual are not intended to supersede or conflict with the pertinent standards and regulations of the National Board of Fire Underwriters or with any state or municipal rule now in effect or which may later be enacted. The latest revision of the National Electric Code of the National Board of Fire Underwriters is a minimum requirement. Some requirements in addition to those in the latest edition of the National Electric Code are contained herein because the IMLD deems them advisable for the public safety and the safety of IMLD representatives. Service Connection will not be made until approval is received from the appropriate State and/or Ipswich inspection authority when required. The IMLD has no obligation to determine whether or not the customer's wiring and installations are proper and safe or comply with the National Electrical Code, National Electric Safety Code, or other codes or regulations in effect at the customer's location. However, if it comes to the attention of the IMLD that the customer's wiring and electrical installations are not proper and safe, or do not comply with such codes, the IMLD reserves the right to refuse or discontinue service until such time as the issues are resolved.



14 Revision of Requirements

The contents of this Electric Service Requirements Manual are effective as dated and supersede all similar requirements previously issued. Revisions of this information shall be made as and when necessary and the IMLD reserves the right to make such revisions. The IMLD cannot guarantee to give notice of revisions to persons who may have received this book. **IT SHALL BE THE RESPONSIBILITY OF THE CUSTOMER/CONTRACTOR TO VERIFY WITH IMLD THAT THEY HAVE THE LATEST VERSION OF THESE ELECTRIC SERVICE REQUIREMENTS PRIOR TO CONSTRUCTION.** All installations and services shall be required to comply with the most recent set of requirements.

15 Diversion of Electricity

Diversion of electrical energy is defined as any method, or device, used by any agent to unlawfully and/or intentionally prevent, or interfere with, an electric meter from duly registering the proper quantity of electricity supplied by the IMLD. It is also the unlawful to intentionally take electrical current from any wire of the IMLD without written consent from IMLD. The diversion of electrical energy by any method or device is a serious act against the

IMLD as well as all the other IMLD customers, as these acts result in higher operating expenses for the IMLD, thus increased electric rates in general. In addition diversion of electricity has the potential of creating hazardous situations to humans an animal's alike. The Commonwealth of Massachusetts has enacted laws (Chapter 164, Sections 127 and 127A) that provide penalties for diversion and tampering with electric lines and energy metering.

- Where there is suspicion of meter tampering or theft of electrical energy, such person, or persons, responsible shall be liable for the energy so diverted and shall be subject to civil or criminal prosecution.
- Bypassing of meters during construction, relocation or while upgrading an electric service requires approval of IMLD including the initial date of said bypass and the final date of the work requiring said bypass so an estimated bill can be generated. NOTE: Any bypass of a meter by a customer or a contractor working for said customer will be treated and investigated as a diversion unless IMLD has been notified and issued a bypass control number.
- IMLD will estimate our monitory loss and will bill the customer that amount. Should the customer not be forthcoming with payment in a timely fashion IMLD will pursue payment through the court legal system. Voluntary payment of our clam (before court action) will not demonstrate any guilt or innocence by the customer.

16 Rate Selection Assistance

IMLD will assist in the selection of the available rate, or rates, best suited to the customer's use of electricity at the time of installation. It is strongly urged that customers, contractors, architects, electricians, consultants, and design engineers take advantage of this assistance prior to installation of the end users' electric service.

17 Adequate Wiring

The latest edition of the NEC outlines in detail the recognized minimum safe practices which should be followed when installing electric wiring and equipment. Compliance with the Code only assures that the installation will conform to recognized safe practices. The customer's consultant should aid the customer in obtaining a wiring installation that is not only safe, but is adequate to his present and future needs.

18 Special Cases

Careful consideration will be given to special or unusual conditions encountered by our customers. The IMLD reserves the right (on a limited basis) to allow a departure from any handbook requirement(s) when, in our judgment, conditions warrant a requirement wavier. IMLD also reserves the right to wavier or modify any requirement when it is deemed in the best interest of IMLD. Such departure will never be considered as establishing a precedent to be applied across the board.

19 Written Confirmation upon request

Information furnished by the IMLD will be put in writing upon request. The IMLD assumes no responsibility for misunderstandings resulting from verbal communications.

20 Damage to Our Equipment (Customer Responsibility)

The customer shall be responsible for safekeeping of property of the IMLD on their premises and, in the event of damage, shall pay to the IMLD any cost of inspection and repairs. The customer shall protect the equipment of the IMLD on their premises and shall not permit any person, except an authorized representative of the IMLD, to break any seals upon or do any work on any meter or other apparatus of the IMLD located on the customer's premises.

21 IMLD Access to Premises

The IMLD shall have the right of free and unobstructed access to a customer's premise for pertinent IMLD business, and also to all property furnished by the IMLD installed therein. This access shall be available at all reasonable times while service is furnished to the customer and on or after its termination for the purpose of reading meters, inspection and repair of devices used in connection with its services, removing its property, or for any other proper purpose. Identification will be shown upon request.

22 Unauthorized Attachment to Poles

IMLD in the interest of public safety and safety of IMLD workers forbids the unauthorized attachment of any flags, banners, signs, clothes lines, antennas, basketball hoops, or similar items to any of its poles. It forbids the use of its poles for any placards, political posters, or

any advertising matter. No privately owned lighting (flood or street lights) may be placed on any pole. The Utility reserves the right to remove any such unauthorized attachment without notice and dispose of the removed items in an appropriate manner.

23 Construction in the Proximity to Conductors

Construction in proximity to any electrical conductor shall not be started until the Utility has been contacted and it has been determined that such construction will not violate the requirements of the applicable electrical codes, national electrical safety codes, laws of the state, and/or local municipal authorities.

A. IMLD shall be contacted 72 hours prior to work near any overhead facilities and schedule a safety site meeting. Such activities include *but are not limited to* working near overhead primary or secondary such as staging near a residence or building, digging near poles that could cause a pole to fall, use of cranes or other hoisting devices, the removal of trees that involve lowering near or between phases, etc. An IMLD representative will meet at the site with the customer to help determine if and how the job can be performed safely. Incidental activities such as the safety meeting and covering wires with temporary rubber insulating hose are provided by IMLD again at no charge to the customer. Any required line work, bracing, lifting relocating temporarily or permanently may be billable at published rates. Under no circumstances **may work start until IMLD determines that each party involved has developed a good solid safety plan for this project.**
B. Swimming pools shall not be constructed in proximity or under any IMLD electrical conductor per the applicable electrical codes.
C. The relocation of any pole, transformer or other IMLD Equipment for the convenience of the customer, including relocation for construction, view, etc. if such relocation is feasible will be billable to the requesting party and payable prior to the commencement of work.

The cost of relocation electrical facilities to comply with A, B and C above shall be borne solely by the customer.

24 Conditions of Service

IMLD makes every effort to maintain its distribution facilities at the highest possible standards, but assumes no liability as a result of any failure of its service or equipment. The IMLD reserves the right to interrupt service to a customer without notice when repairs or changes make such a procedure necessary or appropriate, and also to restore service without notice when such work is completed.

- Any equipment which might endanger life or damage property under conditions of low voltage, two-phase or single-phase operation, should be provided with suitable automatic protection by the customer.
- Should the supply of service be curtailed, changed, interrupted, or become impaired because of accident, strike, legal process, federal, state, or municipal interference, or any cause whatsoever beyond the Utility's control and except as caused by willful default or neglect on its part, the IMLD shall not be liable for damages, direct or consequential, resulting from such interruption, impairment, curtailment, or change.

25 Voltage Sensitive Equipment

Customers owning, or planning to purchase computers, reproduction equipment, X-ray, data processing equipment, or similar devices should be aware that this type of equipment can be extremely sensitive to power system transients or loss of voltage. Customers should consult the manufacturer of their equipment for suitable devices to protect against these conditions.

The IMLD will not assume responsibility for voltage variations which may be caused by protective equipment operation, switching, lightning surges, or by other conditions normal or of an emergency in nature.

26 Losses, Damage or Injury

The IMLD cannot and will not be responsible for any losses, damages, or injury resulting from:

- Any cause resulting from the actions of the customer’s electrician or contractor.
- The customer's wiring or appliances if faulty, improperly grounded/connected, used or inappropriately sized for the customer's service.
- The customer's intentional or unintentional overloading of the service provided.
- The customer's non-compliance with the Guidelines.

- Tampering with or alteration of Utility's meters, lines, transformers or other equipment whether or not located on the customer's premises.
- Any other cause not resulting from the sole negligence of the Utility.
- Tree trimming activities throughout the town regardless of the need.

27 Life Support systems

IMLD recognizes some customers may rely on life support equipment connected to electric service supplied by the Utility.

- The IMLD strongly encourages these customers to report this condition to the Department.
- The IMLD shall not be responsible for any life or health threatening incidents these customers may incur due to variation of electric service. IMLD urges these customers to have adequate back-up power or a suitable plan.
- IMLD will keep an updated list and tie to known planned outages for customer notification when possible.
- IMLD requires customers to update the records annually to remain on our list of customers requiring IMLD electrical service for life support.

28 Standby or Back-up Generators

Many homes are equipped with emergency standby generators. While IMLD understands the value these bring to our customers during power outages, please be aware that faulty installation can cause fatal injuries to IMLD linemen working on damaged power lines. Further an incorrectly installed backup generator could exposed the general public to the same fate should a power line fall to the ground. Finally, if a standby generator is not properly isolated it will sustain severe damage possibly resulting in fire, personnel injury and or death when IMLD restores power to your home or business. To prevent such occurrences IMLD requires that all standby back-up generators be equipped with either an automatic or manual double pole double throw transfer switch that isolates the standby generator from IMLD lines at all times (including during switching operations). To insure compliance if a generator has been installed or is going to be installed IMLD requires the customer or the customer's electrician to notify the IMLD. This must be accomplished by the homeowner or installing electrician submitting a completed "Back-Up Generator registration form" to IMLD.

All standby generators shall be installed by a licensed electrician and they are subject to town electrical permitting and subsequent electrical inspection.

29 Dig Safe

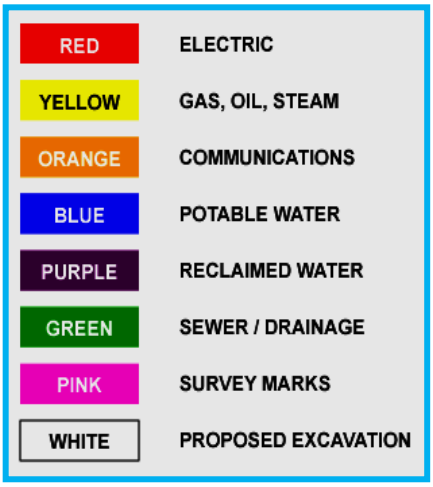
- Massachusetts Statute Chapter 82 Section 40 requires all excavators (hand or using mechanized equipment) working on public ways or private property to contact the Dig Safe office at least 72 hours before digging or excavating on public or private property. Dig Safe can be reached at: **1-888-Dig-Safe**. Their offices are at 331 Montvale Ave., Woburn, MA 0180

- IMLD marks all known underground lines. Privately owned lines will not be marked.
- Dig Safe is a Public Utility Underground Utility Damage Prevention System which operates in Massachusetts, New Hampshire, Maine, Rhode Island and Vermont. A call to Dig Safe notifies the appropriate Utility to mark their underground lines. Dig Safe operates during regular business hours, excluding holidays and weekends, and is available for emergency calls 24 hours a day, 7 days a week.

- Excavation Activities Defined: The Underground Utility Damage Prevention System defines excavation activities as "activities involving the removal of earth, rock or other materials in the ground, disturbing the subsurface of the earth, or the demolition of any structure, by the discharge of explosives or the use of powered or mechanized equipment, including but not limited to digging, trenching, blasting, boring, drilling, hammering, post driving, wrecking, razing or tunneling, within 100 feet of an underground Utility easement (which includes private property), or the area of a public right-of-way in which an underground Utility facility is located. Excavation activities shall not include the

tilling of the soil for agricultural purposes or activities relating to routine public highway maintenance."

- Responsibility: The excavator is responsible for knowing and understanding the Underground Utility Damage Prevention System. Any person or Utility who violates this law is liable for damages and subject to fines and penalties. Massachusetts Statute sets the fines for a first offense at $1000 and subsequent offenses up to $10,000.
- Pre-marking: The proposed excavation areas shall be pre-marked, prior to calling Dig-Safe. Premark with white paint, stakes, or other suitable white markings to identify the general scope of the excavation. Pre-marking is not required if the actual excavation will be continuous and will exceed 500 feet in length; or, if the boundaries of the excavation can be described in a way that precisely identifies the boundaries of the excavation, to the owner of the underground Utility facility.
- Dig Safe will mark the area with color coded paint to indicate the types of utilities in the area and their location. Note the use of white to indicate the proposed excavation.
- Horizontal or Directional Boring: When excavation activities involve horizontal or directional boring, the excavator shall expose underground facilities to verify their location and depth, in a safe manner, at each location where the work crosses a facility and at reasonable intervals when paralleling an underground facility. The exposure shall occur after the Dig-Safe procedure, and prior to boring.



30 Unauthorized Work on Electric Facilities

Customers and their Contractors are prohibited from working on, or in, Ipswich Municipal Light Department Facilities. Specifically, they shall not install, remove, maintain, or adjust equipment on, or in, Utility owned poles, terminating cabinets, padmounted transformers, secondary pedestals, secondary hand holes, manholes or switchgear.

If the IMLD becomes aware that individuals are violating this prohibition, the Utility will write the offender a letter asking them to Cease and Desist. Copies will go to the Electricians Licensing Board, State Utility Regulators, and OSHA. Failure to comply with this requirement

will result in the initiation of procedures with state regulators and safety officials. The following are exceptions:

- Installation of service riser equipment that is installed on a pole, within 10 feet of the grade, by persons standing on the ground.
- Installation of conduits, and cables, into device foundations prior to initial energizing.
- Installation of conduits, and cables, into device foundation subsequent to initial energizing, but, under the direct supervision of IMLD Personnel.
- Other work deemed appropriate by the responsible IMLD Personnel.

This prohibition is not directed toward personnel or contractors employed by IMLD. And, it is not directed toward customers, or their contractors, working on customer owned facilities, unless those facilities are mounted upon, or within, IMLD owned facilities.

31 Modification of Service Equipment after Initial IMLD Power Up

Customers and their Contractors are prohibited from modifying service equipment, without prior the notification and consent of IMLD. Examples of modifications that require prior notification and consent Include but are not Limited To:

- Replacing a Service Entrance cable fed from IMLD owned overhead service.
- Connecting a new, or relocated, building, trailer or structure, to a pre-existing service. (This does not apply to connections made from the main panel in the pre-existing building).
- Changes in the buildings or structures that reduce clearances to, or increase access to, IMLD owned overhead or underground service.
- Changes in the buildings or structures that reduce clearances to, or reduce access to, a meter socket.
- Replacing a customer owned underground service fed from a pedestal meter. Note: Pole revenue meters are not allows by IMLD, should any exist they are grandfathered. However upon the failure of any of the services components the IMLD will require the removal of the pole meter.
- Replacing, or adding, a main panel for the purpose of increasing capacity.
- Other actions that may create safety concerns, NEC violations, equipment overloads, or that would be contradictory to these Service Requirements or Utility Tariffs.

32 Services (under 600 volts)

32.1 Service Connections

All connections, both permanent and temporary between the customers' wiring and IMLD's distribution lines or equipment shall only be made by the Ipswich Municipal Light Department.

- IMLD will not permit, tolerate or authorize connections by anyone other than IMLD personnel without the prior approval of IMLD.
- IMLD shall be the final authority in determining the size and characteristics of the wire used for the interconnection of the IMLD distribution facilities to the customer's electrical service.

33.2 Overhead Service Drop Requirements

- IMLD requires a sufficient length of service entrance conductor (three feet or more) be left to allow for proper connection to the IMLD service drop. This includes adequate wire for a drip loop to prevent water from wicking into the service panel and for making up the required connections.
- IMLD requires an anchor point for the service drop be installed by the customer prior to the arrival of the crew. IMLD will provide customers a D-eye, bolt, washers and nuts to allow the service to effectively be anchored to the frame of the house, not the sheathing or siding of the house. Should the anchor point be determined to not be of sufficient strength the service will not be connected until the anchor point is brought up to standard.
- The service attachment point on all structures (residential or commercial) must be of sufficient height so that the service drop will have the required clearances above buildings, road ways, structures, and also have horizontal clearances as specified in the NESC. Further the attachment point shall be no less than 15 feet and no more than 25 feet. Special cases such as smaller homes may require a service mast to provide sufficient height. For customer owned services such as private pole lines, the NEC regulations shall apply.
- Commercial and Industrial customers should be aware that IMLD distribution facilities vary by location. We offer only single-phases service in some areas while in other areas we offer both single and three phase services. Loads in excess of 50kVA are typically serviced via an underground cable to a padmount transformer rather than utilizing

overhead lines. Experience tells us that heavy use customers served from overhead lines often need a utility pole less than 100 feet from the service attachment point or an interim pole to support the service conductor weight. Should this be the case labor and material costs will be invoiced to the customer. Contact IMLD to determine the best solution under the constraints of our distribution facilities. To this end we strongly recommend discussing the planned work prior to final design or cost estimating. Be sure to provide us with plenty notice since padmount transformer lead time runs as long as 6 months.

33.3 Utility Pole Service-not allowed

IMLD **does not** allow revenue metering for residential, commercial or industrial customers to be mounted on utility poles. Special meter applications such as pole mounted School Zone flashing warnings, Cable Company Pole Mounted Amplifiers (with a self-contained meter), and other special cases may be allowed for the benefit of the town by IMLD but does not set a precedent or change the policy in any way.

33.4 UG Service from Overhead Lines

Upon a customer request and acceptance by IMLD or where physical conditions require it, an underground service may be installed from the overhead secondary lines. The customer is responsible for the installation of the conduits, ground rods, riser pipe, and conductors and will own and maintain the service conduits and conductors. IMLD will rack the secondary on the pole and make the final connections to the IMLD distribution facilities.

33.5 From Underground Lines

The Town of Ipswich has designated some areas of town to be or served only by underground distribution. All new services in these locations shall be installed to meet the requirements of this underground designation.

33.6 Commercial and Underground Services (Single-phase120/240V)

All commercial underground services both secondary and primary shall be installed, owned and maintained by the customer. In these cases all policy requirements stated below apply.

- The customer retains ownership and is responsible for all maintenance.
- All services, primary from the Riser Pole and secondary to the structure shall be installed in electrical grade conduit.

- The customer shall provide a suitable location off the traveled way for required padmount transformers. This location must meet with required clearances to buildings, natural gas meters and LPG storage tanks as required under the NESC. IMLD will notify the customer if protective stanchions are required at the selected location.
- The customer will prepare the transformer area to prevent sinking or movement of the transformer; install a ground grid, provide for a transformer box pad base to accommodate termination of the primary and secondary conduits.
- Should the transformer secondary terminals be unable to accommodate the secondary conduits going to multiple locations, the customer will provide a secondary hand hole of sufficient size to make the required interface.
- Sufficient cable (10 feet minimum from the base of the transformer) shall be provided by the customer for the utility use at the base of all padmounted transformers.
- The customer shall supply IMLD with approved secondary connectors for any secondary cable larger than 350 MCM that need attachment to any connection pad within the transformer.
- Where Commercial customers are receiving secondary power from IMLD overhead facilities and are then transitioning to a secondary underground service, all cables must be installed in continuous conduits. These conduits are to be routed from the transformer to the base of the pole where the customer will leave 40 feet of cable and the riser conduits at the base of the pole.
- Due to the dangers presented by pole top facilities neither our customers nor their contractors are allowed access or approach to any pole top area. IMLD will finish the installation from this location. IMLD recognizes that wire theft can be a problem therefore it is recommended that the customer coordinates work schedules with IMLD to minimize the possibility theft loss of wire.

33.7 Commercial and Underground Services (3-phase120/208Y or 277/480Y)

The same terms and conditions apply as with a single-phase installation except the customer will need to install a primary conductor for each of the three phases between the riser pole and the transformer.

34 Primary and Secondary Line Extensions and or Upgrade

34.1 Utility Installed Line Extensions-Overview

IMLD provides service to new customer from existing infrastructure when possible to minimizing costs to our ratepayers. Recognizing that not all new customers can be served from existing facilities IMLD has a set policy that provides for a maximum of two poles, two sections of wire, and a service drop to facilitate new customer connection to the IMLD distribution facilities.

IMLD will advise customers requiring large single-phase services that cannot be served from the overhead lines. In these cases the customer will be required to install underground service cables at their own expense. This entire installation remains the property and responsibility of the customer therefore IMLD will not maintain repair or replace any of this customer owned infrastructure.

34.1.1 Overhead Facilities – line extensions

- IMLD will provide a maximum of two poles, two sections of primary or secondary wire, including neutral conductor, and a service drop at no additional charge. When two new residential customer locations require a common line extension they will receive a maximum of four poles, and four sections of wire and so forth. Should a fourth customer connect at any time, the line will be considered to be serving an area and future structures connecting to the now existing line will be eligible for two pole line extensions onto private property.
- Should a line need to be constructed beyond the two poles, the customer can request an estimate for the required work. The IMLD estimate will reflect a monetary allowance for both materials and labor for the two poles and sections of wire allowed each customer. The customer can then hire IMLD to build the line or use private contractor. The pole line beyond the first two poles discussed in bullet 1 above, will be considered a private pole line and the customer or customers served by the line will retain ownership and responsibility for maintenance and repair of the line.
- Private Lines and equipment should be constructed along a driveway or access road to facilitate travel by utility service vehicles weighing up to 15 tons. IMLD will not travel on substandard roadways under any circumstances. IMLD reserves the right to determine if a roadway meets our travel requirements.

- Private Pole lines are required to meet IMLD facilities in the public way, where the lines can be connected and or disconnected from the IMLD distribution facilities.
- Private Pole lines built by third parties are not subject to any allowance or credits whatsoever from IMLD.
- Deeded easements in perpetuity for IMLD equipment placed for the purpose of serving a customer or customers must be granted by the property owners prior to installation of IMLD equipment and electric service.
- Deeded easements in perpetuity for the flow of power over a private pole line for the purpose of serving a customer or customers must be granted by the property owner(s) prior to receiving service.
- Private poles and lines cannot be given, transferred, or sold to the IMLD and must remain private once so designated.
- When a private pole line requires replacement (or customer requested relocation), IMLD will generate an estimate using the two pole, two sections of wire policy. Construction can begin after acceptance and payment by the customer has ensued. Should the owner desire the existing facilities to be removed (in the case of relocation) a similar estimate will be generated for the required work of removal and disposal of the retired private pole line.
- Property owners are required to maintain vegetation clearance to their power lines. A private tree service (qualified to work around power lines) may be contracted to maintain proper vegetation clearances. If required the power line can be deenergized for safety by IMLD. Please notify IMLD one week in advance of planned shutdowns.
- Private poles, lines, transformers, fuses, lightning arrestors, breakers or any other private asset installed and operating for purpose of energy delivery will not be inspected, maintained, relocated, repaired or in any manner be serviced by IMLD. Private poles or equipment that are in a failed mode (i.e. pole over or a wire down) or are not able to deliver energy will be cut free from the IMLD network to allow for both the public safety and restoration of the IMLD other connected IMLD distribution facilities. Re-connection (energizing the line) will take place only upon repair of the fault by other qualified entities and if deemed necessary an inspection by the Ipswich wiring inspector as well as IMLD.
- If the customer requests IMLD to make repairs the IMLD reserves the right to first determine if the line is safe to work on. Once deemed safe to work they will be put on

a private line restore waiting list. All Repairs will be billed on a time a material basis using current hourly rate for the truck, crew and materials used. Please understand that during a storm or other emergency, IMLD must focus on restoring as many customers as possible with each repair. A private pole line serving a customer thus becomes of lower priority. This said customers served by private lines should understand that repairs on their lines will be completed at or near the end of the storm or emergency condition restoration process.

34.1.2 Underground Facilities – line extensions:

- Underground facilities can be used to connect to the IMLD distribution facilities to residential, commercial and industrial customers. In general during the construction of underground facilities, the customer's responsibility includes but is not limited to trenching, ditch preparation, conduit, concrete encasement, risers, cable, terminators, cable testing and certification, back filling, transformer pad, and transformer grounding. IMLD will provide a transformer along with labor and materials for the connection to the IMLD distribution facilities.
- Be advised that IMLD requires "As Built" drawings detailing all new underground layouts. These drawings must show the location of all underground conduits, sweeps, distance between sweeps, junction boxes, and electrical easements. IMLD also requires the customer to submit the total cost of the primary voltage installation.
- Secondary underground feeds from IMLD distribution facilities are acceptable for all single-phase residential or commercial rated at 120/240 volts up to a 200 amperes. Conduit and wires are run from the customer's revenue meter to the IMLD pole. IMLD will make the final connections at the pole top location. Customer installed facilities remain the property and responsibility of the customer. Secondary service runs are generally limited to 600 feet from the transformer to ensure adequate voltage. IMLD should be contacted if distances approaching 600 feet are being considered so that voltage checks can be conducted. These tests will help determine if voltage levels will remain adequate at the proposed new meter location.
- Primary 15kV class underground cable with a concentric neutral shall be installed by the customer between the IMLD supplied transformer and the existing IMLD facilities or an IMLD riser pole to facilitate the connection. The customer is responsible for the installation and testing of the cable, conduit, terminators, secondary cable, connectors,

transformer pad (fiberglass for single-phase transforms and concrete for three-phase transformers), ground, and etc. The customer will maintain ownership and responsibility for the underground facilities.

- IMLD will service single-phase 120/240 volt services up top 400 amperes from a single-phase padmounted transformer. The customer will supply and install the primary and secondary cables to the riser and building respectively.
- Customers requiring three-phase loads that cannot be served from the existing pole line shall install three-phase primary conductors from a transformer to a rise pole. In addition secondary cables shall be installed from the IMLD transformer to the building. IMLD will make all final connections at the transformer and to IMLD primary infrastructure.

35 100 or 200Ampere Service OH Service 120/240 volts;

IMLD allows for and connects **only 1 service drop per house**. All stated distances below are approximations; the actual distances will be determined by the terrain, including clearances, wetlands and right of way angles, etc.

- **Within 120 feet of existing IMLD facilities:** IMLD will provide a service drop and the connectors for services up to 120 feet of existing IMLD facilities provided the service cable when attached to the pole and building meets all NESC clearance requirements. IMLD will provide the service cable and connectors to attach to either the customer provided service mast or the IMLD provided, customer installed D-eye attachment point and hardware.
- **Within 300 - 400 feet of existing IMLD facilities**
  IMLD will provide and install up to two poles, a service drop and connectors. IMLD will provide the service cable and connectors to attach to either the customer provided service mast or the IMLD provided D-eye attachment point and hardware. If IMLD provides a D-eye and or hardware it must still be installed by the customer. It is the responsibility of the customer to create and maintain an IMLD easement ROW clear of trees for the placement of the equipment and for repairs and or maintenance. Said easement must grant full access to the property within the ROW.
- **300 - 400 feet beyond existing IMLD facilities:**

IMLD will prepare an estimate of the costs to provide service OH along a pole line, either carrying secondary voltage or primary voltage to a transformer located on the customer's property. The cost estimate will exclude the first two poles and sections of wire because these are always provided at no cost to the customer.

36 400 Ampere Single-Phase Service at 120 /240 Volts

Large residences or multi-family units requiring a 400 ampere main breaker shall be served via a single-phase120/240V padmount transformer that will be located on the customer's property. The customer will be responsible for all trenching, conduit, concrete encasement, primary and secondary cable, transformer grounding distribution system and base, terminators, steel conduit for the pole riser and granting an easement to the IMLD. IMLD will provide a transformer and the required riser pole (new or existing) for the connection of the 15kV primary. In addition IMLD will install the customer supplied riser conduit with associated items needed to secure this conduit to the riser pole.

- The importance of constructing your underground infrastructure to our specifications cannot be overstated. Consider the following ramifications.

    1. If you primary underground infrastructure is not constructed to our minimum specifications IMLD never assume ownership by purchase, gift, line extension, or for any other reason. IMLD will categorize these lines "substandard always to remain private". To insure this IMLD will also attach a Municipal Lien Certificate on the property to notify future owners of the property of a non-compliance with IMLD specifications.

    2. If a customer desires to feed additional revenue meters (homes or businesses) off a substandard line one of the following actions need to be completed.

        - The substandard underground must be upgraded to meet IMLD specifications. When finished IMLD must sign off declaring the upgrade as meeting our specifications prior to any new service connections by IMLD.

        - Additional connection can be completed without upgrade if appropriate language is put into the deeds of all participating connections. This language must describe the underground system and clearly state that it

is private with the cost of all maintenance and or repairs divided equally among all participants.

37 Revenue Metering

All energy supplied by IMLD shall be measured by a revenue meters that is appropriate for billing purposes. All revenue metering and revenue metering equipment shall comply with the requirements of this article. In addition all revenue meter sockets for self-contained meters must be approved for the use by a recognized testing agency.

37.1 Revenue Meter Control

Revenue Meters shall be provided, installed, modified, maintained, moved, and removed only by authorized IMLD employees. No changes in revenue metering equipment of any nature whatsoever are to be undertaken. Meter boards, meter banks, sockets, protective enclosures and other such equipment where required, are to be furnished and installed by the customer. IMLD requirements and the Massachusetts electrical code shall govern such installations. It is the customer's responsibility to assure that customer owned revenue metering equipment has been tested and is in working order prior to being energized by IMLD.

37.2 Damaged Installations

Where in the judgment of IMLD, a revenue meter installation has been subject to damage be it physical, electrical, water entry, etc. the customer will assume all costs for repair or replacement to meet IMLD satisfaction in remedy of the problem. IMLD may at its discretion interrupt power until satisfactory remediation of any said problem has been achieved.

37.3 Security Policy

No person including electrical contractors and property owners shall by-pass IMLD revenue metering equipment or install any jumpers in a revenue meter socket without first securing permission from IMLD meter operations. Contractors are required to install transparent polycarbonate cover and ring on empty sockets prior to our meter installation. IMLD will then install the proper metering after all IMLD and town inspection requirements are complete. IMLD will issue an undisputable estimate of power consumed with appropriate bill to property

owner(s) when it is determined power has not been metered for any period of time (intentional or unintentional).

Meter seals may not be cut or damaged by any contractor or property owner without IMLD permission.

37.4 Meter Tampering –Warning

IMLD maintains an in house tampering watch based on billing irregularities and other forms of in house monitoring and we will aggressively investigate all reported meter tampering.

Do not tamper with any part of our revenue meter installation including instrument transformers, wiring, and meter equipment under penalty of law.

Massachusetts law provides penalties for tampering with revenue meters or equipment owned by an electric utility. These are clearly stated in Massachusetts General Laws, Chapter 164, Section 127 and Section 127A. In fact Section 127A states statutory liability to offender shall be triple the amount of damages or $1000, whichever is greater.

Since IMLD is consumer owned we have a special responsibility to all customers to collect all due revenue for power provided. To help fulfill this responsibility IMLD welcomes anonymous calls regarding theft or unmetered service. Calls may be directed to the IMLD operations manager.

IMLD reserves the right to use an underground wire locating device to follow underground power lines from our pole to any revenue meter location.

37.5 Revenue Meter Locations

- Outdoor revenue meter locations are required for all new, relocated, rebuilt, or enlarged building inclusive of both commercial and residential customers. Exceptions to this requirement will be considered on a very limited basis mostly to accommodate a special need. Exceptions to this rule can only be issued by the operations manager.
- Both indoor and outdoor locations shall be readily accessible at all times without notification to IMLD for meter reading, testing and servicing. Access will be considered inadequate if our employees have to gain access through adjacent property, fence climbing, or any other obstruction. We assume no responsibility for damage to shrubbery, flowers, in gaining access to our revenue meters.

- In multiple occupancy buildings, both commercial and residential, permission may be granted for revenue meters to be located indoors at a common location accessible to all occupants and IMLD. IMLD must be supplied with all keys, codes, or other necessary entry information so that we have access to indoor revenue metering at all times.
- Revenue metering locations are not permitted in locations subject to excessive moisture, dust, heat, chemical fumes, or in any hazardous area. IMLD will have the final say on acceptability of all proposed locations. IMLD shall maintain final say if environmental conditions change at any time such that IMLD requires revenue meter relocation at the customer's expense.

37.6 Meter Height Requirements

Outdoor revenue meter sockets should be mounted so that the face of the meter is less than 6 feet above finish grade. The center line of the meter shall not be more than 6 feet, nor less than 3 feet above finish grade. We require a clear area of 3 feet in front of each revenue meter for all active services.

Multiple meter bank installations shall be mounted so that the center of the highest meter or meters is not more than 6 feet and the center of the bottom meter is no less than 3 feet above floor (indoors) or finish grade (outdoors).

It is desirable to keep the bottom revenue meter no lower than 4 feet at the center line from finish grade (outdoor installations) if at all possible.

37.7 Revenue Meter Mounting

All revenue metering enclosures shall be mounted securely and plum. All mounting hardware and devices must be approved for its application.

37.8 Revenue Meter Installation on Poles

IMLD does not allow Revenue Meters to be mounted on its poles.

37.9 Revenue Meter Installation on Pedestals

Residential and small commercial customers are permitted to mount revenue meters on a free- standing pedestal that has been approved by IMLD.

37.10 Revenue Meter Clearances

Ample workspace shall be provided around revenue meters to allow for reading, testing, and servicing. A clearance of 3 feet is required in all directions around the front of all meters including cabinet enclosures per Massachusetts Electrical Code. This code states that these clearances must be maintained at all times.

37.11 Multiple Revenue Meter Idenity When Located at a Single Site

This equipment must be permanently marked for proper floor & suite, by the owner or installing contractor. Service cannot be provided until this requirement is satisfied. To Standardize identification it is required that each meter be identified as Left or Right, Front or Rear, and floor number, for area served by said meter. These identifications shall be as viewed when approaching the front of the building. The layout of the meters shall approximate the building layout. Random revenue meter placement is not acceptable.

37.12 Removing or Moving Of Revenue Metering Equipment

Our technicians are solely authorized to complete removal, relocation or alteration, wiring, installation or removal of all metering equipment. Violators of this requirement may be prosecuted. Notes:

- If metering equipment is lost or destroyed IMLD will seek restitution from the responsible party and /or the property owner.
- If special need(s) or circumstances exist IMLD may grant specific permission to perform these tasks to persons we deem as qualified.

37.13 Instrument Transformer Installations

It is the responsibility of the customer or the customer's electrician to contact the IMLD metering technician for the proper dimensions and mounting provisions for all metering transformers. The appropriate equipment shall be provided and installed by the customer's electrician.

37.14 Padmount Revenue Metering

Where a single new customer is supplied from a padmounted transformer, IMLD will consider allowing instrument transformers (only) inside the padmounted transformer enclosure.

37.15 Primary Metering

If a customer is to be primary metered the customer will be responsible for the purchase of all necessary equipment related to this installation and all other costs associated with these installation.

37.16 Revenue meter connections

The service side (line side) conductors shall always be connected to the top terminals of the revenue meter socket. Load side conductors will then be connected to the bottom terminals.

Ipswich Electric Department

Net Metering Policy

As Adopted 12/03/06

By the Ipswich Light Commission

38 Net Metering

Purpose:

The Ipswich Municipal Light Department recognizes that some customers are interested alternative energy options which include on-site generation. In response to this interest the Board of Light Commissioners have adopted a policy to provide economic incentives to invest in small scale wind, solar and other distributed electric generating facilities allowing all customers to connect on-site generation facilities up to 10kw, onto the Town's electrical grid.

Net Metering:

Ipswich Utilities Department will enter into an agreement with customer-generators that own a net metering facility. A net metering facility is an electric generation facility that uses solar, wind, fuel cell, hydroelectric or combined heat and power systems to generate the electric power. The rated generating capacity of any one customer-generator's facility may not exceed 10 kilowatts.[1] The net metering facility must be located on property owned by the customer-generator and must operate in parallel with the Utility's existing transmission and distribution facilities. The primary intent of the net metering facility must be to offset all or part of the customer-generator's own electric power requirements.

The customer-generator must complete an Ipswich Utilities Department Net Metering Application and sign a Net Metering and Interconnection Agreement. The customer-generator will be required to pay all applicable application fees in addition to Electrical Permit fees.

[1] **Customer Generator Facilities greater than 10 kilowatts will be reviewed on a case-by-case basis.**

The customer-generator shall build, operate and maintain the net metering facility so that it meets or exceeds all applicable safety and performance standards established by the Massachusetts State Building Codes, the Massachusetts DTE, the National Electric Code, the Institute of Electrical and Electronics Engineers, and Underwriters Laboratories. The customer-generator shall provide a safety disconnect device located adjacent to the Utility's metering equipment and shall be accessible to Utility personnel at all times. The disconnect switch must be lockable by means of a padlock in either the open or closed position. The Utility shall have the option of requiring ongoing testing of the disconnect equipment. The Utility may disconnect the customer-generator's net metering facility from the power system any time it deems that the safety and stability of the Utility's system may be compromised. The Utility may limit the cumulative generating capacity of all net metering systems to one-half of one percent of its historic single-hour peak load (as of 2006 this limit is 14 –10kw systems).

Ipswich Utilities Department will install bi-directional metering equipment that is capable of registering the flow of electricity in each direction at the sole expense of the customer-generator.[2] The Ipswich Utilities Department will be responsible for the maintenance and service of the bi-directional metering equipment. During a billing period, if the customer-generator uses more electricity than it feeds back onto the Utility's system, the customer-generator will be billed based on the rate applicable to the customer-generator's class of service. If during a billing period, the customer-generator feeds back on to the Utility's system more electricity than supplied by the Utility, the customer-generator will be billed the minimum charge applicable to the customer-generator's class of service and be credited for the excess electricity generated and fed on to the Utility system. For the billing period ending in March of each year (or at the termination of service), if any unused credits have accumulated during the previous twelve months, the Utility will credit the customer-generator's account an amount equal to the unused credited kilowatt hours times the average of the PPFA (Purchase Power Fuel Adjustment) cost plus 1 cent for the previous 12-month period.

[2] **Costs associated with the purchase of meters will be waived for projects, which are installed within two years of the date of adoption of this policy.**

The Ipswich Utilities Department shall not be liable, directly or indirectly, for permitting or continuing to allow the attachment of a net metering facility, or for the acts or omissions of the customer-generator that cause property damage, or loss, or injury, including death, to any party.

Systems will be required to be inspected every two years and when transfer of ownership occurs.

Application Process and Forms

Interconnection policy for 10 kw or less residential or small commercial solar, wind, combined heat and power, or hybrid system.

Customers must not interconnect their generating facility with the utility's distribution facilities until they receive written authorization from Ipswich Utilities Department. Unauthorized interconnections may result in injury to persons and damage to equipment or property for which the customer may be liable.

Application Process and Forms

You must provide information about your specific installation, such as manufacturer, model number and rating. You will be required to pay the installation cost for a new bi-directional meter.

Single-Line Diagram

The Single-Line Diagram must show all devices for the system equipment ratings, wire sizes and a visible, accessible and lockable disconnect switch ("safety switch"). Please note that the disconnect switch must be installed in a readily accessible location normally within **10 feet** of the customer's service panel, where utility personnel can operate the switch at any time.

Requirements

In order for Ipswich Utilities Department to approve your project, you must meet the following regulatory and safety requirements:

- **Certified Inverters**. You must choose an inverter that meets Ipswich Utilities certification requirements.

- **Approved Disconnect Switches**. Your disconnect switch must be a blade-type switch ("knife switch"). The pullout switches commonly used in air-conditioning units and spas are not acceptable and will not be approved. Additionally, the customer is solely responsible for the maintenance of all fuses in fused blade-type disconnect switches.
- **Protection Equipment**. It may be necessary for Ipswich Utilities Department to install, possibly at your expense, protection equipment necessary to ensure safe and reliable operation of the utility's facilities. The need for protective equipment will vary, depending on a number of factors, including the location of your facility within the Ipswich Utilities Department circuit.

Pre-Parallel Inspections

Upon notification of the generator's readiness for the pre-parallel inspection, scheduling an inspection can take up to 10 days for certified generators with no external relays and up to 30 days for all other generators due to the availability resources. The following items must be completed prior to the scheduling of the inspection:

1. Execute all required agreements.
2. Install net generation electric output meter (utility owned).
3. Provide a copy of the final signed building permit.
4. Completion of all electric work by Ipswich Utilities Department.

Once you have submitted the above documents, the utility's engineering staff will begin review of your project. As soon as the utility receives the Final, Signed application, we will contact you to schedule an onsite inspection and bi-directional meter installation. After passing the inspection, you will receive written approval from the utility to operate your system in parallel with the utility's electric grid.

To ensure that the application package is complete, refer to the following table:

Item	General Comments
Application	Make sure that ALL applicable sections for you generator are completed.
Application Fee	Electronic applications will not be deemed complete until the check is received (unless exempt).
Site Plan	Show generator location with respect to building, transformer, main switchboard, utility disconnect switch and other pertinent electrical

Item	General Comments
	equipment.
Single Line Drawing	Must include net generation meter (if required) and utility disconnect switch with manufacturer and model number.
Three Line Drawing	Required if the generator is not certified or an external relay is used.
Proposed Relay Settings	Required if the generator is not certified or an external relay is used.
Protection Operating Description	Required if the generator is not certified or an external relay is used.

38.1 Interconnection Appliction Form (10KW or smaller)

Standard Form Interconnection Application and Agreement for Power Systems 10KW or Smaller (2 Pages)

Section 1. Customer Information

Name . _____ .

Mailing Address: . _____ .

City: . _____ . State: . _____ . Zip Code: . _____ .

Street Address (If Different that above) .

Daytime Phone **Section 1. Customer Information**

Utility Customer Account Number (as state on your utility bill) . _____ .

Section 2. Generating Facility Information

System Type (Circle One) Solar Wind Hydro Fuel Cell Generator

Size (KW AC) . _____ . Class 1 Generator: Yes No

Inverter Manufacture _____ Inverter Model: . _____ .

Inverter Serial Number . _____ . Inverter Po9wer Rating . _____ .

Inverter Location) . _____ .

Disconnect Type: Separate Manual Disconnect > Location) . _____ .

Meter Removal (If the generator owner elects not to install a manual disconnect device that is accessible to this utility then this utility shall not be liable when a service meter is removed to disconnect the generator thereby interrupting all utility electric service to the customer site without notice).

Section 3 Planned Installation Information

Licensed Electrician: _____. Contractor # State: _____.

Mailing Address: _____.

City: _____. State: _____. Zip Code: _____.

Daytime Phone: _____. Planned Installation date _____.

Section 4. Certifications

The generating facility must meet or exceed all requirements of applicable IEEE standards and all equipment must be Underwriters Laboratory (UL) listed or have other nationally recognized testing laboratory listing.

Signed (Equipment Vendor): _____. Date: _____.

Print Name _____. Company:: _____.

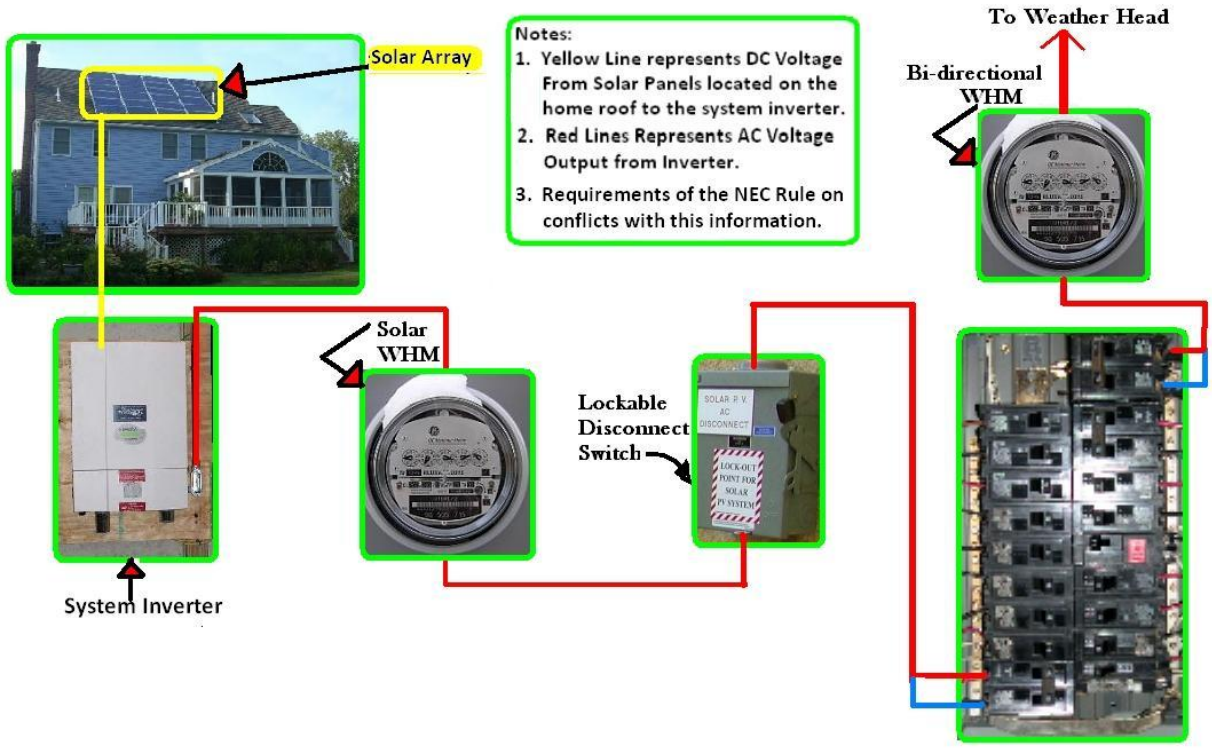
Listing _____. (UL or other NRTL)

Section 5. Utility and Building Division and Approval (to be completed by utility after installation)

Application Approved : _____. Date: _____.

System Inspected By _____. Date: _____.

38.2 Photvoltaic Utiility Required Equipment



1. Meter Sockets are to be furnished and installed by the customer's electrician.
2. Meters shall be supplied and owned by this utility.
3. The new Bi-Directional Meter will be installed in the existing meter socket provided it is in good condition as determined by the company. If it is not in good condition it shall be replaced at the customer's expense.
4. To assure the safety of the Company's employees and its other customers, the Customer shall install equipment to prevent the flow of electricity into the Company's system when the Company's supply is out of service. This equipment shall be subject to the company's approval. In addition the PV system must have a lockable system isolation disconnect switch installed outside in very close proximally to both the solar production meter and bi-directional meter. This isolation switch shall be identified by the words "PV System Isolation Disconnect Switch" on a red plastic plate with white lettering at least ¼' in height.