# Lowell Light and Power

**Policy 6**

**Engineering and Operating Policies**

# Lowell Light and Power

**Engineering and Operating Policies**

**Policy 6-1**

**Subject:** Line Extensions and Service Availability

**Policy:**

LL&P shall provide electrical service subject to the following conditions:

**A.** The standard service furnished by LL&P for all classes of customers shall be single-phase, 60 hertz alternating current at a nominal voltage of 120/240 volts. At the discretion of LL&P, single-phase service at a nominal voltage of 120/208 volts may be supplied.

**B.** Three-phase, 60 hertz alternating current may be furnished by LL&P where sufficient capacity in existing facilities is available. Occasionally it may be necessary for LL&P to install additional facilities in order to furnish three-phase service at the voltage requested by the customer. If the calculated revenue margin for the customer's three phase load is less than the carrying costs of LL&P's additions or improvements to existing facilities, an aid-in-construction contract will be required and payable when billed.

**C.** An aid-in-construction payment will be required for cases where the customer requests service at a voltage not available at his site and there is sufficient capacity with another available voltage to serve his electrical load.

**D.** Primary line extensions required to reach the property of a new customer will normally be constructed on public road right-of-ways or within dedicated utility easements adjacent to public road right-of-ways

**E.** An aid-in-construction payment may be required for any service, materials and/or construction required for that customer beyond what LL&P normally provides.

Revised June 4, 2009
Revised March 12, 2015

# Lowell Light and Power

**Engineering and Operating Policies**

**Policy 6-2**

**Subject:** Services and Service Entrance Equipment

**Policy:**

**A.** Only 1 service drop, either overhead or underground, will be supplied to a building or other structure without approval by the Electric Distribution Manager or other LL&P designee who has inspection authority.

**B.** Any building requiring service of 400 amperes or less, not exceeding 250 volts, single or three-phase, overhead or underground shall use "self-contained" metering.

Revised June 4, 2009
Revised March 12, 2015

# Lowell Light and Power

**Engineering and Operating Policies**

**Policy 6-3**

**Subject:** Meter Sockets

**Policy:**

LL&P shall participate in the cost of meter sockets, meter centers or repair parts. Meter sockets shall be suitable for the application intended. All meter sockets shall be furnished and installed by the customer or his agent and shall be included in equipment inspected by the state approved electrical inspector.

The Electric Distribution Manager or designee shall determine suitability for the application. LL&P shall not make electrical connection to any equipment deemed unsuitable for the purpose intended regardless of approval by the approved state electrical inspector.

All commercial single phase meter sockets require a “lever“ by-pass handle.
A 400 amp residential single phase meter socket requires a “lever” by-pass handle.

For the convenience of the customer and electrician, LL&P shall make available 100 amp and 200 amp underground and overhead meter sockets and hubs that do not require primary and/or secondary current transformers. Those meter sockets and hubs may be obtained by presentation of the appropriate copy of the electrical permit for the facility on which the meter socket is to be installed. Payment of a fee equal to the sum of LL&P’s cost of equipment and applicable overheads is expected when billed.

Revised June 4, 2009
Revised March 12, 2015

# Lowell Light and Power

**Engineering and Operating Policies**

**Policy 6-4**

**Subject:** Underground Primary and Secondary Distribution Lines

**Policy:**

LL&P will furnish and provide underground primary and secondary distribution lines subject to the following requirements:

**A.** Developer or owner shall be responsible for all ditching and backfilling associated with the installation of underground primary and secondary distribution lines.

**B.** All underground primary and secondary distribution lines installed in the LL&P service district and owned by the utility shall be in conduit and meet or exceed the standards of the National Electrical Safety Code (NESC) and the National Electrical Code (NEC) for underground service. Developer or owner shall provide and install the complete conduit system for the underground primary and secondary cables.

**a.** LL&P will furnish and install underground secondary conductors for single-phase residential applications only. The size and number of the secondary conduits shall be as determined by LL&P.

**b.** LL&P will not furnish or install underground electrical services or secondaries for non-residential customers.

**c.** The developer or owner shall consult with LL&P prior to construction to determine the point of connection to the underground service, the proper meter location, and routing of the underground service.

**d.** It is required that a representative from LL&P inspect the conduit installation before it is covered and maintain a photograph record of the inspection.

**C.** Care shall be exercised by the developer or owner in backfilling the ditches for underground services. Foreign matter (bricks, concrete blocks, boards, bottles, trash, etc.) shall not be placed in ditches. Earth and all material used in the ditches are to be tamped to provide proper support for the conduits. Large rocks shall not be used as backfill within 6 inches of the conduit. In the event the conduit or service conductors are damaged during backfilling, the developer or

owner shall be responsible for providing the excavation required for LL&P to make repairs to the conductor (owner responsible for repair of conduit). Developer or owner shall be responsible for installing a plastic warning tape furnished by LL&P 6 to 12 inches above the conduits during backfilling.

**D.** LL&P will furnish and install the material to make the connections from the underground service to the distribution facilities.

**E.** Developer or owner may be required to pay for all or a portion of LL&P's current installation costs for underground facilities in excess of the costs for the standard overhead services.

**F.** The developer or owner is responsible for assuring that the final integrity of the site maintains all the parameters necessary to meet or exceed national guidelines for buried underground cabling.

Revised June 4, 2009
Revised November 13, 2014

# Lowell Light and Power

**Engineering and Operating Policies**

**Policy 6-5**

**Subject:** Swimming Pool Installations

**Policy:**

Swimming pools (permanently installed or storable), wading pools, hot tubs, spas, or any other similar installations shall not be installed or placed under any outdoor electrical wires including but not limited to electrical power transmission, distribution, or service drop conductors in the city or serviced by LL&P.

Areas that shall be clear of overhead open wiring include:

**A.** Over pools and similar installations located outdoors and that area extending 10 feet horizontally from the inside wall(s) of such.

**B.** Diving structures, platforms, towers, and other similar apparatus around such installations and that area extending 10 feet horizontally from the apparatus and away from the installation, as provided in the National Electric Safety Code (NESC); Part 2, section 234, figure 234-3 and table 234-3.

Any installation placed so as to violate any provision of the above, where such installation was made on or after April 19th, 1999, shall be made to comply with all costs incurred by LL&P borne by the property owner.

Revised June 4, 2009
Revised March 12, 2015

# Lowell Light and Power

**Engineering and Operating Policies**

**Policy 6-6**

**Subject:** New Customers or Additional Load

**Policy:**

It shall be the responsibility of the electrician to consult with LL&P prior to design or installation of service equipment and associated wiring as to the availability of desired voltage, phases, amperage, etc., and to submit in writing detailed information to allow LL&P to properly size distribution equipment. Forms for this purpose shall be made available at the LL&P office.

It shall be the responsibility of the electrician to consult with LL&P for the purpose of determining the physical location of the riser or underground service and meter socket. Meter sockets shall not be located on LL&P owned poles unless specifically required by the Distribution Manager or other LL&P designee.

Revised June 4, 2009
Revised March 12, 2015

# Lowell Light and Power

**Engineering and Operating Policies**

**Policy 6-7**

**Subject:** Service Reconnection Requiring Inspection

**Policy:**

Electrical service shall not be restored or reconnected to any facility that will require an electrical inspection because of work performed or damage incurred at the facility until an inspection has been performed by the appropriate and authorized inspecting agency and LL&P has been notified that the facility is approved for reconnection except as follows:

After repairs have been made by qualified personnel, electrical service may be restored to facilities that have been disconnected because of damage resulting from acts of nature or vehicles and damages are limited to exterior electrical equipment, specifically, the riser and/or meter socket. Reconnection does not affect the requirement for inspection applying to the repair. A notice of approval by the appropriate and authorized inspecting agency must be received by LL&P within seven (7) calendar days. Failure to receive a notice of approval may require that electrical service be disconnected without notice until such notice of approval is received by LL&P.

Revised June 4, 2009
Revised March 12, 2015

# Lowell Light and Power

**Engineering and Operating Policies**

**Policy 6-8**

**Subject:** Electric Service Extension – LL&P Contribution

**Objectives:**

To provide a method by which Lowell Light and Power will extend electric lines and facilities to serve Applicants that have made a written application for electric service within the retail service area of Lowell Light and Power.

**Policy Content:**

**A.** In the event that upgrading, construction, or extension of facilities is required to provide service to the Applicant, Lowell Light and Power will furnish the facilities required but not to exceed a cost greater than the allowable construction credit established for the service classification being applied for, unless the Applicant makes an in-aid-to-construction contribution.

**B.** The estimated construction investment shall include the costs of materials, equipment, engineering and labor, including administration overheads, fringe benefits, and the costs of service transformers and metering equipment, needed to complete the construction for service to the Applicant. The estimated construction investment will include only the non-betterment costs of the construction required to provide service to the Applicant. A non-betterment cost excludes the costs of replacement or addition of facilities solely for the benefit and at the election of Lowell Light and Power.

**C.** Where the estimated construction investment exceeds the established allowable construction credit, Lowell Light and Power receive from the Applicant an "In-Aid-To-Construction" contribution. The in-aid-to-construction contribution will be determined as the monetary difference of the non-betterment portion of the estimated construction investment less the allowable construction credit established by this policy.

**D.** The allowable construction credits established by this policy are as follows:

**a.** The service furnished to a customer of Lowell Light and Power is subject to the following maximum contributions to serve the load. Costs in excess of the amounts listed below are subject to an in aid to construction contribution.

| | | |
|---|---|---|
| Residential (RS121) | $1,237 | per Connection |
| Residential (RS121) Development (3 Years) | $592 | per Lot |
| Residential (RS121) Development (5 Years) | $933 | per Lot |
| General Service (GS221) | $0.1578 per annual kWh estimated sales | |
| General Service (GSD222) | $22.37 per annual kW estimated sales | |
| General Service (GSDPM223/GSDTO224) | $24.04 per annual kW estimated sales | |

**b.** Customers who make connections under this policy are required to sign a Five year contract with Lowell Light and Power for service under the proposed rate. Customers are not allowed to change rates during the five year period without prior approval of Lowell Light and Power. Lowell Light and Power may assess a charge equal to the difference between the amount of time serviced under the rate and the remaining time on the Five year contract:

For Example: If the initial cost of connection was $1,500.00, and customers disconnect after four years, the following charge will be assessed:
1/5 times 1,500.00 = $300.00 charge to the customer.

**c.** Customers with an existing service who are requesting an upgrade of the facilities to serve additional load, Lowell Light and Power will contribute the following amounts based on the additional (new) load.
(Amount times the estimated annual usage of new load)

1. Residential $0.1637 per annual kWh's of estimated sales
2. Small General Service $0.1578 per annual kWh's of estimated sales
3. Demand Secondary $22.37 per KW X total annual KW
4. Transmission/Primary Demand $24.04 per KW X total annual kW

**E.** A development period of five (5) years will apply to all extensions which require an in-aid-to-construction contribution. This five year development period will commence with the date service is first supplied to the Applicant. If, during this five year period one or more additional service applications, or an upgrade in use that includes a residence, are requested to be served from the line extension, the in-aid-to-construction contribution will be recalculated to include the additional Applicants or the upgrade in use to a residence. If the recalculated contribution(s) is determined to be less, Lowell Light and Power will refund the pro-rata difference.

# Lowell Light and Power

**Responsibility:**

**A.** The governing body of Lowell Light and Power shall be responsible for the annual review of this program to determine if the policy continues to meet the objectives of Lowell Light and Power.

Revised June 4, 2009
Revised March 12, 2015
Revised September 14, 2017

# Lowell Light and Power

**Engineering and Operating Policies**

**Policy 6-9**

**Subject:** Power Line Clearance

**Policy:**

To protect the safety of Lowell's citizens and the reliability of its electric system, the utility conducts a power line clearance program to maintain the required safe clearance between vegetation and the aerial high voltage electric conductors.

The clearance program shall be conducted in a manner consistent with the following standards and requirements (as they may be modified from time to time):

**A.** "Tree Line USA" utility requirements as prescribed by the National Arbor Day Foundation, including techniques specified by:

- **a.** Pruning Trees Near Electric Utility Lines, by Dr. Alex Shigo
- **b.** American National Standards Institute (ANSI) A-300 (for tree care operations)

**B.** Michigan Public Service Commission Adopted Rules for Utilities (Rule 460.3505)

**C.** National Electric Safety Code (Rule 218)

**D.** ANSI Z133.1 (for arboricultural operations) including Rule 3.11 "Electrical Hazard Definition"

**E.** City of Lowell Policy: "Removal of Trees within the Public Street Right-of-way"

**F.** MIOSHA safety rules: To preserve the health of trees, the utility shall make every effort to avoid the following practices:

**G.** Topping (except when approval to remove the tree is withheld and there is no other reasonable means to restore the required clearance)

**H.** Tipping

**I.** Rounding over

**J.** Removing branch collars

**K.** Leaving long stubs (except when approval to remove the tree is withheld and there is no other reasonable means to restore the required clearance)

Trees shall be pruned so that re-growth is naturally directed away from the electric conductor. It shall be recognized that pruning is a temporary measure and trees shall be pruned to maintain the necessary minimum clearance for an average 2 – 4 year growth period/trimming cycle. Growth characteristics of the tree species shall be considered. Except as required during emergency power restoration efforts, all trimming or removal of trees in the City street right-of-way shall be done only with the expressed approval of the Department of Public Works Director or the City Manager. If such approval to trim to the minimum clearance standards is withheld, the written opinion of a certified independent arborist shall be provided by the City to justify the failure to maintain the minimum clearance standards. The utility shall document all discrepancies between the utility's trimming/removal requirements and approvals given (or withheld) by the DPW Director or City Manager. Written records of such discrepancies shall be provided to both LL&P's General Manager and City Manager.

Branches overhanging a high voltage conductor shall be removed unless such removal is deemed unnecessary (in the written opinion of a certified independent arborist).

When a tree is removed from City property or the property of a City resident or business, the utility shall remove the tree stump and restore the lawn.

Prior to conducting line clearance work, the utility shall notify the adjacent property owner (in-person, whenever possible) and advise them of the pruning work required and any options that may be considered.

Any property owner disputing the required pruning of a tree on their private property shall be provided a ten calendar-day period in which to obtain a written and signed opinion of an ISA Certified Arborist. The opinion must specifically state the lesser extent of pruning required (in the Arborist's professional judgment) to eliminate the potential electrical hazard for the duration of the utility's normal trimming cycle. If such a qualified opinion is provided per the requirement, the utility shall limit its pruning of that specific tree to the extent specified by the Arborist.

When a tree is removed from the right-of-way within the city limits, the utility shall provide a contribution of $250 to the City Tree Fund.

Following line clearance trimming, the utility shall remove all debris and brush. Wood 4" in diameter and larger shall be left for property owner (if so requested) or removal shall be arranged by LL&P for pick-up by others.

Revised June 4, 2009; March 12, 2015

# Lowell Light and Power

**Engineering and Operating Policies**

**Policy 6-10**

**Subject:** Electric Interconnection Policy

**Policy:**

**Introduction**

This generator interconnection requirements document outlines the process, requirements, and agreements used to install or modify generation projects with aggregate generation capacity ratings of 20 kW or less, and designed to operate in parallel with Lowell Light and Power (hereinafter referred to as "Utility") electrical system.

These requirements are intended to assure adequate protection to the Utility equipment, employees, customers, and the general public. Technical requirements are defined according to the type of generation, location of the interconnection, and mode of operation (Flow-back or Non-Flow-back). The process is intended to provide an expeditious interconnection to the Utility's electric system that is both safe and reliable.

This document has been presented to Lowell Light and Power Board of Directors, and approved on Thursday, September 14, 2017.

The term "Project" will be used throughout the document to refer to electric generating equipment and associated facilities that are not owned by the Utility. The term "Project Developer" means a person that owns, operates, or proposes to construct, own, or operate a Project.

This document does not address other Project concerns such as environmental permitting, local ordinances, or fuel supply. Nor does it address agreements that may be required with by Utility and or transmission provider, or state and federal licensing, to market the Project's energy. An interconnection request does not constitute a request for transmission service.

The Utility reserves the right to adjust requirements stated herein on a case-by-case basis.

# Lowell Light and Power

**Interconnection and Parallel Operating Agreement for Category 1 Projects 20 kW or Less**

This Interconnection and Parallel Operating Agreement ("Interconnection Agreement") is entered into on_____ , by Lowell Light and Power (Utility) and _____, (Utility Customer), and if applicable _____, (Property Owner). The Utility and the Customer are sometimes also referred to as "Parties" or individually as "Party". Customer shall be the "Project Developer" as used in and for purposes of the applicable Michigan Electric Utility Generator Interconnection Requirements (Interconnection Requirements).

**A. Recitals**

**a.** Customer is an electric service customer of the Utility in good standing and has submitted an Application for Interconnection (Application) to the Utility.

**b.** Customer desires to interconnect an electric generating facility with maximum aggregate capacity of 20 kilowatts ("kW") or less (the "Customer Facility" or "Project") with the Utility's electric distribution system and operate the Project in parallel with the Utility's Electric Distribution System, under the Utility's Interconnection Requirements for Category 1 (20 kW or less) Projects.

**c.** For purposes of this Interconnection Agreement, "interconnect" means establishing a connection between a non-utility generating resource (in this case the Project) and the Utility's Electric Distribution System. "Operate in parallel" means generating electricity from a non-utility resource (in this case the Project) that is connected to the Utility's system. In all cases, terms shall have the meaning as defined in the Standards.

**d.** Interconnection of the Customer Facility or Project, with the Utility's Electric Distribution System is subject to this Agreement, the Application, the Interconnection Requirements, the Standards, and applicable utility fees.

**e.** This Agreement does not address any purchase or sale of electricity between the Utility and the Customer, nor does it create any agency, partnership, joint venture, or other business arrangement between or among the Utility, Customer, and/or Property Owner.

## B. Agreement

NOW THEREFORE, in consideration of the above recitals, the mutual covenants contained herein and for good and valuable consideration, the Parties agree as follows:

### a. Description of Customer Facility

The Customer Facility must be built with the following ratings, which shall not be changed without 30 days advanced written notice to the Utility according to the notice requirements herein:

**1.** Photovoltaic /Solar ("PV") Array Rating:_____kW
Certified test Record number (UL1741 Scope 1.1A):_____kW
Wind Turbine ("WT") Rating: _____kW
Hydrolelectric Turbine ("HT") Rating: _____kW
Fuel Cell ("FC") Rating:_____kW
Other (Specify type and rating):_____kW
Service Type (*Circle One)*: Single Phase Three Phase
Voltage Level: _____
Equipment Specifications: Make: _____
Model: _____ Serial No._____

**2.** Customer Facility Location

_____

Type equation here.**3.** Customer's Account Number:

_____

Property Owner's Account Number (If applicable): _____

**4.** The Customer Facility is planned to be ready for parallel operation or about: _____

**b. Interconnection Facilities**

If it is necessary for the Utility to install certain interconnection facilities ("Interconnection Facilities"), and make certain modifications in order to establish an interconnection between the Customer Facility and the Utility's Electric Distribution System, the interconnection facilities and modifications shall be described to the Customer /Project Developer prior to commencing any work.

**c. Design Requirements, Maintenance and testing of Customer Facilities and Project**

**1.** Customer shall be responsible for the design and installation of the Project and obtaining any required governmental authorizations and/or permits which may include, but shall not be limited to permits, zoning and easements to clear rights-of-way for the installation and maintenance of the Project. Project Developer shall reimburse Utility for its costs and expenses to acquire any easements and/or permits necessary to extend the Utility's facilities to the point of interconnection.

**2.** Customer shall, at its own expense, install and properly maintain protective relaying equipment and devices to protect its equipment and service, and the equipment and service of the Utility and its customers, from damage, injury and interruptions, and will assume any loss, liability, or damage to the Project caused by lack of or failure of such protection. Protective relaying equipment and devices must meet standards as outlined in IEEE 1547 "Standard for Distributed Resources Interconnected with Electric Power Systems," and tested and certified by Underwriters Laboratories according to testing standard UL 1741. Results of such testing shall be provided to the Utility. Prior to the Project operating in parallel with the Utility's electric system, Project Developer shall provide satisfactory evidence to the Utility that it has met Interconnection Requirements including, but not limited to, the receipt of approval from local governmental agencies/bodies, and local building/electrical code inspections and subsequent approvals.

**3.** At its own expense, the Customer shall perform operational testing at least five (5) days prior to the installation of any Interconnection Facilities by the Utility. The Customer shall contact the Utility and arrange for a mutually agreeable time for

performing these tests. Utility may send qualified personnel to the Project to inspect the facility and observe the testing and operation of the Project. Customer shall provide the Utility with a written report explaining all test results, including a copy of the generator commissioning test report and UL certificate of compliance.

**4.** Customer shall operate and maintain the Project in a safe and prudent manner and in conformance with the applicable laws and regulations. Project Developer shall obtain and maintain any governmental authorizations and permits required for the construction and operation of the Project.

**d. Disconnection**

The Utility shall be entitled to disconnect the Project from the Utility's Electric System, or otherwise refuse to connect the Project if: (a) Customer has not complied with any one of the technical requirements contained in the applicable Interconnection Requirements; (b) the electrical characteristics of the Project are not compatible with the characteristics of the Utility's Electric System;
(c) an emergency condition exists on the Utility's Electrical System; (d) Project's protective relaying equipment fails; (e) the Utility determines that the Project is disrupting service to any of the Utility's customer(s); (f) disconnection is required to allow for construction, installation, maintenance, repair, replacement, removal, investigation, inspection, or testing of any part of the Utility's Electric System facilities; (g) if a required installation (e.g., telephone/communication line) fails or becomes inoperable and is not repaired in a timely manner, as determined by the Utility; or (h) Customer commits a material breach of this Agreement.

**e. Access to Property**

**1.** At its own expense, Customer shall make the Project Facility site available to the Utility 24 hours per day, 365 days per year. The site shall be free from hazards and shall be adequate for the operation and construction of the Interconnection Facilities. The Utility, its agents, and employees shall have full right and authority of ingress and egress at all reasonable times across the property at which the Project is located for the purpose of installing, operating, maintaining, inspecting, replacing, repairing, and removing of Interconnection Facilities. The right of ingress

and egress shall not unreasonably interfere with the Project Developers or (if different) Property Owner's use of property.

**2.** The Utility may enter the property on which the Project is located to inspect, at reasonable hours, Customers protective devices and read or test meters. The Utility will make reasonable efforts to provide Customer or Property Owner, if applicable, at least 24 hours' notice prior to entering said property in order to afford Customer or Property Owner the Opportunity to remove any locks (if key not provided to the Utility), or encumbrances to entry; *provided however,* that the Utility may enter the property without notice (removing, at Customers expense, any lock or other encumbrance to entry) and disconnect the Interconnection Facilities if the Utility believes that disconnection is necessary to address a hazardous condition, and/or to protect persons, Utility Facilities, or the property of others from damage or interference caused by the Project.

**3.** By executing the Interconnection Agreement, Customer and/or Property Owner, if applicable, consents and agrees to provide access to its property on which the Project Facility is located to the Utility as described in this section, but does not assume or guarantee other performance obligations of the Project Developer and/or Property Owner, if applicable, under this Interconnection Agreement.

**f. Indemnity and Liability**

**1.** Unless caused by the sole negligence or intentional wrongdoing of the other party, each Party to the Interconnection Agreement shall at all times assume all liability for, and shall defend, hold harmless, and indemnify the other Party and its directors, officers, employees, and agents from any and all, damages, losses, claims, demands, suits, recoveries, costs, legal fees, and expenses: (a) for injury or death of any person of persons whomsoever occurring on its own system; or (b) for any loss, destruction of, or damage to any property of third persons, firms, corporations, or other entities occurring on its own system, including environmental harm or damage; or (c) arising out of or resulting from, either directly or indirectly, its own Interconnection Facilities; or (d) arising out of or resulting from, either directly or indirectly, any electric energy furnished to it hereunder after such energy has been delivered to it by such other Party. The provisions of this

section shall survive termination or expiration of the interconnection agreement.

**2.** The Provision of Section 4 shall not be construed to relieve any insurer of its obligations to pay any insurance claims in accordance with the provision of any valid insurance policy.

**3.** Notwithstanding anything in this Section or any other provision of this Interconnection Agreement to the contrary, any liability of a Party to the other Party shall be limited to direct actual damages, and all other damages at law or in equity are hereby waived. Under no circumstances shall a Party be liable to the other Party, whether in tort, contract, or other basis in law or equity for any special, indirect, punitive, exemplary, or consequential damages, including lost profits. The indemnification obligations and limits on liability in this Section shall continue in full force and effect notwithstanding the termination or expiration of this Interconnection Agreement, with respect to any event or condition giving rise to an indemnification obligation that occurred prior to such termination or expiration.

**g. Breach and Default**

A breach of this Interconnection Agreement ("Breach") shall occur upon the failure of a Party to perform or observe any material term or condition of the Interconnection Agreement, the Standards, or the Interconnection Requirements. Upon a Breach by one Party, the non-breaching Party shall give written notice of such Breach to the breaching Party. The Party in Breach shall have 30 days from the date of the written notice to cure such Breach. If the Breach is not cured within the 30 day period provided for herein, the Party in Breach shall be deemed to be in default ("Default"). The non-defaulting Party shall have the right to terminate the Interconnection Agreement by written notice, shall be relieved of any further obligation hereunder, and may pursue any and all remedies available to it by law or in equity.

**h. Governing Law**

This Interconnection Agreement Shall be interpreted, governed, and construed under the laws of the State of Michigan.

**i. Amendment, Modification, or Waiver**

Any amendments or modifications to this Interconnection Agreement shall be in writing and agreed to by both Parties. The failure of any Party at any time to require performance of any provision hereof shall in no manner affect its right at a later time to enforce the same. No waiver by any Party of the Breach of any term or covenant contained in this Interconnection Agreement, whether by conduct or otherwise, shall be deemed to be construed as a further or continuing waiver of any such Breach or a waiver of the Breach of any other term or covenant unless such waiver is in writing.

**j. Notices**

Any notice required under the Interconnection Agreement shall be in writing and mailed or personally delivered to the Party at the address below. Written notice is effective within three days of depositing the notice in the United States mail, first class postage prepaid. Personal notice is effective upon delivery. Written notice of any address changes shall be provided. All written notices shall refer to the Project Developers Utility (electric utility) account number, as provided in section 1 of this Agreement. All written notices shall be directed as follows:

Notice to Utility:

Lowell Light and Power
Attention Electric Distribution and Transmission Manager
127 N. Broadway Street
Lowell, MI 49331

Notice to Customer:

_____

_____

Notice to Property Owner (if other than Customer):

_____

_____

**k. Term of Agreement and Termination**

This Agreement shall become effective upon execution by all parties and, if applicable, the Property Owner, and it shall continue in full force and effect until terminated upon 30 days written notice by either Party, upon Default of either Party as set forth in Section 7, upon mutual agreement of both parties, or upon a change in ownership of either the Customer Facility or the property at which the Customer Facility is located, absent a valid assignment under Section 14.

**l. Entire Agreement**

This Agreement supersedes all prior discussions and agreements between the Parties with respect to the subject matter hereof and constitutes the entire agreement between the Parties hereto.

**m. No Third Party Beneficiary**

The terms and provisions of this agreement are intended solely for the benefit of each Party, and it is not the intention of the Parties to confer third-party beneficiary right upon any other person or entity.

**n. Assignment and Binding Effect**

This Agreement shall not be assigned by a Party without the prior written consent of the other Party. Any attempt to do so will be void. Subject to the preceding, this Agreement is binding upon, inures to the benefit of, and in enforceable by the Parties and their respective successors and assigns. Customer agrees to notify the Utility in writing upon the sale or transfer of the Customer Facility. This Agreement shall terminate upon such notice unless the Utility consents to an assignment.

**o. Severability**

If any provision of the Agreement is determined to be partially or wholly invalid, illegal, or unenforceable, then such provision shall be deemed to be modified or restricted to the extent necessary to make such provision valid, binding, and enforceable; or, if such provision cannot be modified or restricted in a manner so as to make such provision valid, binding, or enforceable, then such provision shall be deemed to be excised from this Agreement and the validity, binding effect, and enforceability of the

remaining provisions of this Agreement shall not be affected or impaired in any manner.

**p. Signatures**

The Parties to this Agreement hereby agree to have two originals of this Agreement executed by their duly authorized representatives. This Agreement is effective as of the later or latest of the dates set forth below.

**Lowell Light and Power**

Signature:_____ Date_____

Name (printed):_____ Title:_____

**Customer**

Signature:_____ Date:_____

Name (printed):_____ Title:_____

**Property Owner (if applicable)**

Signature:_____ Date:_____

Name (printed):_____ Title _____

# Lowell Light and Power

## Interconnection Requirements

The following discussion details the technical requirements for interconnection of Projects 20kW or less. For Projects within this capacity rating range, Lowell Light and Power (Utility) has made a significant effort to simplify the technical requirements. This effort has resulted in adoption of IEEE Std. 1547, Standard for Interconnecting Distributed Resources with Electric Power Systems, being incorporated herein by reference.

### A. Major Component Design Requirements

The data requested in Appendix B, for all major equipment and relaying proposed by the Project Developer must be submitted as part of the initial application for review and approval by the Utility. The Utility may request additional data be submitted as necessary during the study phase to clarify the operation of the Project.

Once installed, the interconnection equipment must be reviewed and approved by the Utility prior to being connected to the Utility's electric system and before parallel operation is allowed.

#### a. Data

The data that the Utility requires to evaluate the proposed interconnection is documented on a "fill-in-the-blank" checklist by generator type in Appendix B.

A site plan, one-line diagrams, and interconnection protection system details of the Project are required as part of the application data. The generator manufacturer supplied data package should also be supplied.

#### b. Isolating Transformers(s)

If a Project Developer installs an isolating transformer, the transformer must comply with the current ANSI Standard C57.12.

The type of generation and electrical location of the interconnection will determine the isolating transformer connections. Allowable connections are detailed in the "Specific Requirements by Generator Type" section later in this document. Note: some utilities do not allow an isolation transformer to be connected to a grounded utility system with an ungrounded secondary (Utility side) winding configuration, regardless of the Project type. Therefore, the Project Developer is encouraged to consult with the Utility prior to submitting an application.

**c. Isolation Device**

After review, this device may not be required by the Utility. If required and/or installed, this device would be placed at the Point of Common Coupling (PCC). It can be a circuit breaker, circuit switcher, pole top switch, load-break disconnect, etc., depending on the electrical system configuration. The following are required of the isolation device:

1. Must be approved for use on the Utility system
2. Must comply with current relevant ANSI and/or IEEE Standards
3. Must have load break capability, unless used in series with a three-phase interrupting device
4. Must be rated for the application
5. If used as part of a protective relaying scheme, it must have adequate interrupting capability. The Utility will provide maximum short circuit and X/R ratios available at the PCC upon request
6. Must be operable and accessible by the Utility at all times (24 hours a day, 7 days a week)
7. The Utility will use this isolation device as a protective tagging point. The device must have a visible open break, provisions for padlocking in the open position, and it must be gang operated. The label must be permanent with the use of a lamacoid placard. If the device has automatic operation, the controls must be located remote from the device.

**d. Interconnection Lines**

Any new line construction to connect the Project to the Utility's electric system will be undertaken by the Utility at the Project Developer's expense.

**B. Relaying Design Requirements**

Regardless of the technology of the interconnection for simplicity for all Projects in this capacity rating range, the interconnection relaying system must be certified by a nationally recognized testing laboratory to meet IEEE Std. 1547. The data submitted for review must include information from the manufacturer indicating such certification, and the manufacturer must placard the equipment such that a field inspection can verify the certification.

A copy of this standard may be obtained (for a fee) from the Institute of Electrical and Electronics Engineers
(www.ieee.org).

**a. Momentary Paralleling**

For situations where the Project will only be operated in parallel with the Utility's electric system for a short duration (100 milliseconds or less), as in a make-before-break automatic transfer scheme, no additional relaying is required. Such momentary paralleling requires a modern integrated Automatic Transfer Switch (ATS) system which is incapable of paralleling the Project with the Utility's electric system. The ATS must be tested, verified, and documented by the Project Developer for proper operation at least every two years. The Utility may be present during this testing.

**b. Automatic Reclosing**

The Utility employs automatic multiple-shot reclosing on most of their circuit breakers and circuit reclosers to increase the reliability of service to its customers. Automatic single-phase overhead reclosers are regularly installed on distribution circuits to isolate faulted segments of these circuits.

The Project Developer is advised to consider the effects of Automatic reclosing (both single-phase and three- phase) to assure that the Project's internal equipment will not be damaged. In addition to the risk of damage to the Project, an out-of-phase reclosing operation may also present a hazard to Utility equipment since this equipment may not be rated or built to withstand this type of reclosing. The Utility will determine relaying and control equipment that needs to be installed to protect its own equipment from out-of-phase reclosing. Installation of this protection will be undertaken by the Utility at the Project Developer's expense.

**c. Single-Phase Sectionalizing**

The Utility also installs single-phase fuses and/or reclosers on its distribution circuits to increase the reliability of service to its customers. Three-phase generator installations may require replacement of fuses and/or single-phase reclosers with three-phase circuit breakers or circuit reclosers at the Project Developer's expense.

# Lowell Light and Power

## Specific Requirements by Generator Type

### A. Synchronous Projects

An isolation transformer may be required for three-phase Synchronous Generator Facilities. Except as noted below, the isolation transformer must be incapable of producing ground fault current to the Utility system; any connection except delta primary (Project side), grounded-wye secondary (Utility side) is acceptable. A grounded- wye – grounded-wye transformer connection is acceptable on if the Project's single line-to-ground fault current contribution is less than the Project's three-phase fault current contribution at the PCC. Protection must be provided for internal faults in the isolating transformer; fuses are acceptable.

### B. Induction Projects

No isolation transformer is required between the generator and the secondary distribution connection. If an isolation transformer is used for three-phase installations, any isolation transformer connection is acceptable except grounded-wye (Utility side), delta (Project side). Protection must be provided for internal faults in the isolating transformer; fuses are acceptable. The Utility does not require the Project Developer to provide any protection for Utility system ground faults.

### C. Relay Setting Criteria

The relay settings for Projects less than 20 kW must conform to the values specified in IEEE Std. 1547.

### D. Maintenance and Testing

The Utility reserves the right to test the relaying and control equipment that involves protection of the Utility electric system whenever the Utility determines a reasonable need for such testing exists.

The Project Developer is solely responsible for conducting and documenting proper periodic maintenance on the generating equipment and its associated control, protective equipment, interrupting devices, and main Isolation Device, per manufacturer recommendations.

Routine and maintenance checks of the relaying and control equipment must be conducted in accordance with provided written test procedures which are required by IEEE Std. 1547, and test reports of such testing shall be maintained

by the Project Developer and made available for Utility inspection upon request. [NOTE: IEEE 1547 requires that testing be conducted in accordance with written test procedures, and the nationally recognized testing laboratory providing certification will require that such test procedures be available before certification of the equipment.]

**E. Installation Approval**

The Project Developer must provide the Utility with five business days advance written notice of when the Project will be ready for inspection, testing, and approval.

Prior to final approval for Parallel Operation, the Utility reserves the right to inspect the Project and require action to assure conformance to the requirements stated herein.

# Lowell Light and Power

## Miscellaneous Operational Requirements

Miscellaneous requirements include synchronizing equipment for Parallel Operation, reactive requirements, and system stability limitations.

### A. Operating in Parallel

The Project Developer will be solely responsible for the required synchronizing equipment and for properly synchronizing the Project with the Utility electric system.

Voltage fluctuation at the PCC during synchronization is limited by IEEE Std. 1547.

These requirements are directly concerned with the actual operation of the Project with the Utility:

**a.** The Project may not commence parallel operation until approval has been given by the Utility. The completed installation is subject to inspection by the Utility prior to approval. Preceding this inspection, all contractual agreements must be executed by the Project Developer.

**b.** The Project must be designed to prevent the Project from energizing into a de-energized Utility line. The Project's circuit breaker or contactor must be blocked from closing in on a de-energized circuit.

**c.** The Project shall discontinue parallel operation with a particular service and perform necessary switching when requested by the Utility for any of the following reasons:

**1.** When public safety is being jeopardized.

**2.** During voltage or loading problems, system emergencies, or when abnormal sectionalizing or circuit configuration occurs on the Utility system.

**3.** During scheduled shutdowns of Utility equipment that are necessary to facilitate maintenance or repairs. Such scheduled shutdowns shall be coordinated with the Project.

**4.** In the event there is demonstrated electrical interference (i.e., voltage flicker, harmonic distortion, etc.) to the Utility's customers, suspected to be caused by the Project, and such interference exceeds the current system standards, the Utility reserves the right, at the Utility's initial expense, to install special test equipment as may be required to perform a disturbance analysis and monitor the operation and control of the Project to evaluate the quality of power produced by the Project. If the Project is proven to be the source of the interference and that interference exceeds the Utility's standards or generally accepted industry standards, then it shall be the responsibility of the Project Developer to eliminate the interference problem and to

reimburse the Utility for the costs of the disturbance monitoring installation, removal, and analysis, excluding the cost of the meters or other special test equipment.

**5.** When either the Project or its associated synchronizing and protective equipment is demonstrated by the Utility to be improperly maintained, so as to present a hazard to the Utility's system or its customers.

**6.** Whenever the Project is operating isolated with other Utility customers, for whatever reason.

**7.** Whenever the Utility notifies the Project Developer in writing of a claimed non-safety related violating of the Interconnection Agreement, and the Project Developer fails to remedy the claimed violation within ten working days of notification, unless within that time either the Project Developer files a complaint with the Board seeking resolution of the dispute or the Project Developer and Utility agree in writing to a different procedure.

If the Project has shown an unsatisfactory response to requests to separate the generation from the Utility system, the Utility reserves the right to disconnect the Project from parallel operation with the Utility electric system until all operational issues are satisfactorily resolved.

**B. Reactive Power Control**

Synchronous generators that will operate in the Flow-back Mode must be dynamically capable of providing 0.90 power factor lagging (delivering reactive power to the Utility) and 0.95 power factor leading (absorbing reactive power from the Utility) at the Point of Receipt. The Point of Receipt is the location where the Utility accepts delivery of the output of the Project. The Point of Receipt can be the physical location of the billing meters or a location where the billing meters are not located, but adjusted for line and transformation losses.

Induction and Inverter-Type Projects that will operate in the Flow-back Mode must provide for their own reactive needs (steady state unity power factor at the Point of Receipt). To obtain unity power factor, the Induction or Inverter-Type Project can:

**a.** Install a switchable Volt-Ampere reactive (VAR) supply source to maintain unity power factor at the Point of Receipt; or

**b.** Provide the Utility with funds to install a VAR supply source equivalent to that required for the Project to attain unity power factor at the Point of Receipt at full output.

There are no interconnection reactive power capability requirements for Synchronous, Induction, and Inverter-Type Projects that will operate in the Non-Flow-back Mode.

**C. Cite Limitations**

The Project Developer is responsible for evaluating the consequences of unstable generator operation or voltage transients on the Project equipment and determining, designing, and applying any relaying which may be necessary to protect that equipment. This type of protection is typically applied on individual generators to protect the generator facilities.
The Utility will determine if operation of the Project will create objectionable voltage flicker and/or disturbances to other Utility customers and develop any required mitigation measures at the Project Developer's expense.

Projects must be limited in size to 20% of the main-line or taps minimum load at the project location.

# Lowell Light and Power

## Revenue Metering Requirements

The Utility will own, operate, and maintain all required billing metering equipment at the Project Developer's expense.

### A. Non-Flow-back Projects

A Utility meter will be installed which only records energy deliveries to the Project.

### B. Flow-back Projects

Special billing metering will be required. The Project Developer may be required to provide, at no cost to the Utility, a dedicated dial-up voice-grade circuit (POTS line) to allow remote access to the billing meter by the Utility. This circuit shall be terminated within 10 feet of the meter involved.

The Project Developer shall provide the Utility access to the premises at all times to install, turn on, disconnect, inspect, test, read, repair, or remove the metering equipment. The Project Developer may, at its option, have a representative witness this work.

The metering installations shall be constructed in accordance with the practices which normally apply to the construction of metering installations for residential, commercial, or industrial customers. For Projects with multiple generators, metering of each generator may be required. When practical, multiple generators may be metered at a common point provided the metered quantity represents only the gross generator output.

The Utility shall supply the Project Developer all required metering equipment and the standard detailed specifications and requirements relating to the location, construction, and access of the metering installation and will provide consultation pertaining to the meter installation as required. The Utility will endeavor to coordinate the delivery of these materials with the Project Developer's installation schedule during normal scheduled business hours.

### C. Communication Circuits

The Project Developer is responsible for ordering and acquiring the telephone circuits required for the Project interconnection. The Project Developer will assume all installation, operating, and maintenance costs associated with the telephone circuits including the monthly charges for the telephone lines and any rental equipment required by the local telephone provider. However, at the Utility's discretion, the Utility may select an alternative communication method

such as wireless communications. Regardless of the method, the Project Developer will be responsible for all costs associated with the material and installation, whereas the Utility will be responsible to define the specific communication requirements.

The Utility will cooperate and provide utility information necessary for proper installation of the telephone circuits upon written request.

All telephone circuits (both voice and data) must be analog circuits.

# Lowell Light and Power

Application ID # _____

**APPENDIX A to Electric Interconnection Policy**

**Customer Checklist for Utility Interconnection**

☐ Submit an application with payment of applicable processing fee(s) to the Lowell Light & Power

- ✓ Interconnection inverter must be UL1741 Listed or IEEE1547 compliant.
- ✓ Electrical single-line diagram, site-specific plan view, and catalog cuts must be included with application.
- ✓ An approved lockable disconnect for Light and Power's use must be provided.

☐ Send Application to:
ATTN: Ryan Teachworth, Electric Distribution and Transmission Manager
Lowell Light and Power
127 N. Broadway Street
Lowell, MI 49331

☐ Receive contingent interconnection approval from Lowell Light and Power.

☐ Parties execute Interconnection Agreement

☐ Get electrical/building permit from Kent County Code Enforcement. Follow the National Electrical Code (NEC) required

☐ Obtain city/township zoning approvals.

☐ Complete the generating facility installation.

☐ Lowell Light and Power enables/installs bi-directional meter(s).

☐ Get inspections from Kent County.

☐ Submit *Certificate of Completion* to Lowell Light and Power.

☐ Start generating energy.

Questions? Contact Lowell Light and Power's Electric Distribution and Transmission Manager, Ryan Teachworth, at: 616-897-8402

# Lowell Light and Power

Application ID # _____

**APPENDIX B to Electric Interconnection Policy**

**Application for Interconnection**

This application is considered complete when it provides all applicable and correct information required below. Additional information to evaluate the application may be required.

Processing Fee

A non-refundable processing fee of $300 must accompany this application. Processing fee includes time and expenses meter programming, site inspection, and account management.

**Interconnection Customer**

Name _____

Contact Person _____

Address _____

City, State ZIP _____

Daytime Phone _____ Evening Phone _____

Fax ___ Email Address _____

**Contact (if different than Interconnection Customer)**

Name _____

Contact Person _____

Address _____

City, State ZIP _____

Daytime Phone _____ Evening Phone _____

Fax _____ Email Address _____

**Generating Facility Information**

Location _____ Utility Account # _____

Inverter Manufacturer _____ Model _____

Nameplate Rating _____ kW _____ kVA _____ Volts

Single Phase _____ or Three Phase _____

# Lowell Light and Power

Application ID # _____

**Attach an Electric Single-Line Diagram, facility plan view, and equipment catalog information to assist Lowell Light and Power in its review.**

Energy Source: _____Solar _____Wind _____Hydro _____Other (Describe):

Is the equipment UL1741 listed? _____ Yes _____ No

Does equipment comply with IEEE Standard 1547 _____ Yes _____ No

**Attach manufacturer's cut-sheet showing Listing/Standard compliance.**

Estimated Installation Date_____ Estimated In-Service Date:_____

**Interconnect Customer Signature**

I hereby certify that, to the best of my knowledge, the information provided in this application is true. I agree to abide by Lowell Light and Power's Electric Interconnection Policy, and return the Certificate of Completion when the generating facility has been installed.

_____ _____

Signature Title

_____

Date

---

***UTILITY Use Only***

Contingent Approval to Interconnect the Generating Facility

Interconnection of the Generating Facility is approved contingent upon the terms and conditions included within the Electric Interconnection Policy, and return the Certificate of Completion.

_____ _____

Utility Representative Title

_____

Date

Utility waives inspection/witness test? Yes__ No_____

# Lowell Light and Power

Application ID # _____

**Generating Facility Certificate of Completion**

**Interconnection Customer**

Name _____

Contact Person _____

Address _____

City, State ZIP _____

Daytime Phone _____ Evening Phone _____

Fax _____ Email Address _____

Location (if different) _____ Utility Account # _____

**Electrician**

Name _____

Contact Person _____

Address _____

City, State ZIP _____

Daytime Phone _____ Evening Phone _____

Fax _____ Email Address _____

MI License # _____ Date of Utility Contingent Approval for Interconnection _____

**Inspection** (Completed by local electrical wiring inspector, or attach a signed electrical inspection.)

The Generating Facility has been installed and inspected in compliance with the local electrical inspecting authority having jurisdiction.

_____ _____

Inspector's Signature Inspector's Name (please print)

_____

Date

# Lowell Light and Power

**Engineering and Operating Policies**

**Policy 6-11**

**Subject:** Tree Trimming on Private Property

**Objectives:**

To provide a method for LL&P to trim or remove trees on private property for the purpose of one or more of the following: (1) Restoring power to the property owner's dwelling or facility; (2) Eliminating the realistic possibility that a tree may cause the loss or interruption of power to the property owner's dwelling or facility; (3) Eliminating the realistic possibility that a tree may cause damage to LL&P's infrastructure (equipment, service lines, transformer, etc.)

**Policy:**

Tree trimming maintenance may be done at the request of the property owner whose tree(s) is/are involved or at the request of LL&P, together with written permission and waiver and release from the property owner, under one of the three following conditions:

**A.** A tree or portion of a tree has already fallen causing a loss of power to the property owner's dwelling or facility.

**B.** A tree or portion of a tree is broken and/or dead and, at the sole discretion of the LL&P staff, poses a realistic threat to cause the loss or interruption of power supply to the property owner's dwelling or facility.

**C.** A tree or portion of a tree is broken and/or dead and, at the sole discretion of the LL&P staff, poses a realistic threat to Lowell Light & Power's infrastructure (equipment, service lines, transformer, etc.).

In order for LL&P to perform tree trimming maintenance, the property owner must sign a waiver and release to indemnify LL&P of any potential damage that may be caused to its real and/or personal property as a result of LL&P's tree trimming maintenance and/or related activities.

In the event the property owner is not the current account holder/occupant, as in the case of a rental property, reasonable efforts will be made to notify the current account holder/occupant of the property and obtain a signed waiver and release prior to performing the tree maintenance.

# Lowell Light and Power

LL&P will remove and dispose of all large debris (tree trunk, limbs greater than 3” in diameter, etc.) when the tree maintenance is completed. Smaller items such as saw dust, twigs, and leaves are not considered “large debris”.

Adopted April 10, 2018