



BRAINTREE ELECTRIC LIGHT DEPARTMENT

**DISTRIBUTED GENERATION
INTERCONNECTION POLICY**

EFFECTIVE DATE: September 1, 2016

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Exhibits

1. Exhibit A - Simplified Process Interconnection Application (Facilities meeting the requirements of Section 3.1):
 - a. Instructions
 - b. Simplified Process Interconnection Application and Service Agreement
 - c. Certificate of Completion for Simplified Process Interconnection (Attachment 1)
 - d. Terms and Conditions for Simplified Process Interconnection (Attachment 2)
2. Exhibit B - Expedited/Standard Process Interconnection Application (all other Facilities)
 - a. Instructions
 - b. Expedited/Standard Process Interconnection Application
 - c. Certificate of Completion for Expedited/Standard Process Interconnection (Attachment 1)
3. Exhibit C - Supplemental Review Agreement (for projects which have failed one or more screens in the Expedited Process)
4. Exhibit D - Impact Study Agreement (used for the Standard Process)
5. Exhibit E - Detailed Study Agreement (for more detailed study under the Standard Process, where substantial System Modifications are required)
6. Exhibit F - Interconnection Service Agreement (for the Expedited/Standard Process)
7. Exhibit G - Agreement Between the Department and the Department's Retail Customer (required when the retail customer is not the owner and/or operator of the Facility)
8. Exhibit H - Voltage Performance Requirements from IEEE Standard 1547-2003
9. Exhibit I – BELD Solar Rate Acknowledgment Form (to be signed and submitted with application).

Executive Summary

This document ("DG Interconnection Policy") describes the process and requirements for an Interconnecting Customer to connect a customer-owned power-generating facility that is intended to operate in parallel with the Braintree Electric Light Department's ("Department") Electric Power System ("Department's EPS"), including discussion of technical and operating requirements, and other matters, except as provided under the applicable ISO-NE tariff and/or under the Qualifying Facility regulations in 220 CMR 8.04.

Related important information may be found in the Department's tariffs (rates) and its Terms and Conditions for Electric Service. The terms for Net Metering vary according to the power rating of the facility and are set forth in the tariffs. In the event that the kW output of the Facility exceeds the limits set forth in the Department's tariffs, a separate Purchase Power Agreement shall be required.

The Interconnecting Customer should consult the Department before designing in detail, purchasing or installing any equipment, in order to verify the nominal utilization voltages, frequency, and phase characteristics of the service to be supplied, the capacity available, and the general suitability of the proposed equipment for operation at the intended location. The Interconnecting Customer shall cause its Facility to be designed, constructed and operated in accordance with all aspects of the Department's DG Interconnection Policy. In no case will the facility be permitted to operate in such a manner as to disrupt or cause deterioration of service to other customers.

Three possible paths for interconnection of the Interconnecting Customer's Facility are available.

1. **Simplified** — This process is for Listed inverter-based Facilities with a power rating of 10 kW or less single phase or 25 kW or less three-phase depending on the service configuration, under certain conditions. If the Department determines that the facility meets the requirements for review under the Simplified Process, the fees to review the interconnection are waived and the duration of the review and approval period is reduced.
2. **Expedited** — This process is for Listed Facilities not eligible for the Simplified Process that pass certain pre-specified screens. This process takes into account the relative location on the power system and any pre-existing conditions, both of which can affect the interconnection requirements. If the Department determines that the facility meets the requirements for review under the Expedited Process, the fees to review the interconnection are reduced and the duration of the review and approval period is also reduced.
3. **Standard** — This process is for all facilities not qualifying for either the Simplified or Expedited interconnection processes.

Review fees and time frames specific to each of the above paths are set forth herein. The Interconnecting Customer shall furnish complete application documents in a timely manner.

The Interconnecting Customer shall be responsible for all costs associated with the installation and construction of the Facility and associated interconnection equipment on the Interconnecting Customer's side of the Point of Common Coupling. The Interconnecting Customer shall be responsible for all costs reasonably incurred by Department that are attributable to the proposed interconnection for designing, constructing, operating and maintaining the System Modifications. Interconnection Customers shall furnish and maintain insurance according to the limits specified herein, which are a function of the power rating of the facility.

Authorization to interconnect will be provided once the Interconnecting Customer has met all terms of the interconnection process as outlined herein.

1.0 Introduction

This document ("DG Interconnection Policy") describes the process and requirements for an Interconnecting Customer to connect a customer-owned power-generating facility that will operate in parallel with the Braintree Electric Light Department's ("Department") Electric Power System ("Department's EPS"), including discussion of technical and operating requirements, and other matters, except as provided under the applicable ISO-NE tariff and/or under the Qualifying Facility regulations in 220 CMR 8.04.

1.1 Applicability

- a. Applicants should refer to the Department's Terms and Conditions for Electrical Service and in the Department's tariffs (electric rates) for additional and supplemental information.
- b. **Momentary Parallel Operation Only:** Specific requirements for momentary paralleling to the Department's EPS with back-up generation are described within Section 4.2.9, Interconnection Requirements.
- c. If the Facility will always be isolated from the Department's EPS, (i.e., it will never operate in parallel to the Department's EPS), then this DG Interconnection Policy does not apply.

1.2 Definitions

The following words and terms shall be understood to have the following meanings when used in this DG Interconnection Policy:

Affected System: Any neighboring EPS not under the control of the Department (i.e., a municipal electric light company or other regulated utility).

Affiliate: A person or entity controlling, controlled by or under common control with a Party.

Anti-Islanding: Describes the ability of a Facility to avoid unintentional islanding through some form of active control technique.

Application: (Interconnection Application) The notice (which will serve as the Notice of Intent to Interconnect under 220 C.M.R. §§ 8.0 et seq. when required) provided by the Interconnecting Customer to the Department in the form shown in Exhibits A and B, which initiates the interconnection process.

Area EPS: The Department's EPS. This term is used in the Institute of Electrical and Electronics Engineers (IEEE) Standard 1547-2003, "IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems" ("IEEE Standard 1547-2003").

Class I Net Metering Facility: A plant or equipment that is used to produce, manufacture, or otherwise generate electricity and that is not a transmission facility and that has a design capacity of 60 kilowatts or less.

Class II Net Metering Facility: A plant or equipment with a generating capacity of more than 60 kilowatts but less than or equal to 500 kW.

Class III Facility: A plant or equipment with a generating capacity of more than 500 kW.

Customer: Department's retail customer host site or premises, may be the same as Interconnecting Customer.

Department: Braintree Electric Light Department and/or its Board of Commissioners.

Department's EPS: The electric power distribution system owned, controlled or operated by the Department used to provide service to its Customers.

Detailed Study: The final phase of engineering study, if necessary, conducted by the Department to determine substantial System Modifications to its EPS, resulting in project cost estimates for such modifications that will be required to provide the requested interconnection service.

DG: Distributed Generation.

DR: Distributed Resource, the Facility. (This term is used in IEEE Standard 1547-2003).

Expedited Process: As described in Section 3.2, process steps for Listed Facilities from initial Application to final written authorization, using a set of technical screens to determine grid impact.

Facility: A source of electricity owned and/or operated by the Interconnecting Customer that is located on the Customer's side of the PCC, and all facilities ancillary and appurtenant thereto, including interconnection equipment, which the Interconnecting Customer requests to interconnect to the Department's EPS.

FERC: Federal Energy Regulatory Commission.

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

Impact Study: The engineering study conducted by the Department under the Standard Process to determine the scope of the required modifications to its EPS and/or the Facility to provide the requested interconnection service.

In-Service Date: The date on which the Facility and System Modifications (if applicable) are complete and ready for service, even if the Facility is not placed in service on or by that date.

Interconnecting Customer: Entity that owns and/or operates the Facility interconnected to the Department's EPS, with legal authority to enter into agreements regarding the construction or operation of the Facility. An entity which owns the Facility interconnected to the Department's EPS solely as part of a financing arrangement, which could include the acquisition of the tax credits related to the Facility, but is neither the Customer nor the operator of that Facility, shall not be considered the Interconnecting Customer hereunder.

Interconnection Service Agreement: An agreement for interconnection service, the form of which is provided in Exhibit F, between the Interconnecting Customer and the Department. The agreement also includes any amendments or supplements thereto entered into by the Interconnecting Customer and the Department.

Islanding: A situation where electrical power remains in a portion of an electrical power system when the Department's transmission or distribution system has ceased providing power for whatever reason (emergency conditions, maintenance, etc.). Islanding may be intentional, such as when certain segregated loads in a Customer's premises are provided power by a Facility after being isolated from the Department's EPS after a power failure. Unintentional Islanding, especially past the PCC, is to be strictly avoided.

ISO-New England, Inc ("ISO NE"): The Independent System Operator established in accordance with the NEPOOL Agreement and applicable FERC approvals, which is responsible for managing the bulk power generation and transmission systems in New England.

Isolated: The state of operating the Facility when electrically disconnected from the Department's EPS on the Interconnecting Customer's side of the PCC.

Local EPS: The customer premises within which are contained the Facility. (This term is used in the IEEE Standard 1547-2003).

Listed: A Facility that has successfully passed all pertinent tests to conform with IEEE Standard 1547.1.

Metering Point: For meters that do not use instrument transformers, the point at which the billing meter is connected. For meters that use instrument transformers, the point at which the instrument transformers are connected.

NEPOOL: New England Power Pool.

Net Metering: shall mean the process of measuring the difference between electricity delivered by a Distribution Department and electricity generated by a Class I or Class II Net Metering Facility and fed back to the Distribution Department, in accordance with the applicable Tariffs.

Non-islanding: Describes the ability of a Facility to avoid unintentional islanding through the operation of its interconnection equipment.

NPCC: Northeast Power Coordinating Council.

On-Site Generating Facility: A class of Interconnecting Customer-owned generating Facilities with peak capacity of 60 kW or less, as defined in 220 C.M.R. § 8.00.

Parallel: The state of operating the Facility when electrically connected to the Department's EPS (sometimes known as grid-parallel).

Parties: The Department and the Interconnecting Customer.

Point of Common Coupling (PCC): The point where the Interconnecting Customer's local electric power system connects to the Department's EPS. The Department will specify the location of the PCC at a particular Interconnecting Customer site.

Point of Delivery: A point on the Department's EPS where the Interconnecting Customer makes capacity and energy available to the Department. The Point of Delivery shall be specified in the Interconnection Service Agreement.

Point of Receipt: A point on the Department's EPS where the Department delivers capacity and energy to the Interconnecting Customer. The Point of Receipt shall be specified in the

Interconnection Service Agreement.

Qualifying Facility: A generation Facility that has received certification as a Qualifying Facility from the FERC in accordance with the Federal Power Act, as amended by the Public Utility Regulatory Policies Act of 1978, as defined in 220 C.M.R. § 11.04.

Radial Distribution Circuit: Electrical service from an EPS consisting of one primary circuit extending from a single substation or transmission supply point arranged such that the primary circuit serves Interconnecting Customers in a particular local area.

Screen(s): Criteria by which the Department will determine if a proposed Facility's installation will adversely impact the Department's EPS, applicable to the Simplified and Expedited Processes as set forth in Section 3.0.

Simplified Process: As described in Section 3.1, process steps from initial Application to final written authorization for certain inverter-based Facilities of limited scale and minimal apparent grid impact.

Standard Process: As described in Section 3.3, process steps from initial Application to final written authorization for Facilities that do not qualify for Simplified or Expedited treatment.

Supplemental Review: Additional engineering study to evaluate the potential impact of the Facility on the Department's EPS so as to determine any requirements for processing the Application through the Expedited Process.

System Modification: Modifications or additions to distribution-related Department facilities that are integrated with the Department's EPS for the benefit of the Interconnecting Customer.

Unintentional Islanding: A situation where the electrical power from the Facility continues to supply a portion of the Department's EPS past the PCC when the Department's EPS has ceased providing power for whatever reason (emergency conditions, maintenance, etc.).

Witness Test: The Department's right to witness the commissioning testing. Commissioning testing is defined in IEEE Standard 1547-2003.

1.3 Forms and Agreements

The following documents are incorporated herein as Exhibits:

1. Exhibit A - Simplified Process Interconnection Application (Facilities meeting the requirements of Section 3.1):
 - a. Instructions
 - b. Simplified Process Interconnection Application and Service Agreement
 - c. Certificate of Completion for Simplified Process Interconnection (Attachment 1)
 - d. Terms and Conditions for Simplified Process Interconnection (Attachment 2)
2. Exhibit B – Expedited/Standard Process Interconnection Application (all other Facilities)
 - a. Instructions

- b. Expedited/Standard Process Interconnection Application
- c. Certificate of Completion for Expedited/Standard Process Interconnection (Attachment 1)
3. Exhibit C - Supplemental Review Agreement (for projects which have failed one or more screens in the Expedited Process)
4. Exhibit D - Impact Study Agreement (used for the Standard Process)
5. Exhibit E - Detailed Study Agreement (for more detailed study under the Standard Process, where substantial System Modifications are required)
6. Exhibit F – Interconnection Service Agreement (for the Expedited/Standard Process), for which some or all of the following Attachments will be developed.
 - a. Attachment 1 - Description of Facilities, including demarcation of PCC
 - b. Attachment 2 - Description of System Modifications
 - c. Attachment 3 - Costs of System Modifications and Payment Terms
 - d. Attachment 4 - Special Operating Requirements, if any
7. Exhibit G – Agreement Between the Department and the Department’s Retail Customer (required when the retail customer is not the owner and/or operator of the Facility)
8. Exhibit H – Voltage Performance Requirements from IEEE Standard 1547-2003
9. Exhibit I – BELD Solar Rate Acknowledgement Form (to be signed and submitted with application).
10. Exhibit J – One line drawing for residential and commercial PV/Solar installations (Last Attachment - Page 79)

2.0 Basic Understandings

Interconnecting Customer intends to install a Facility on the Customer's side of the PCC that will be connected electrically to the Department's EPS and operate in parallel, synchronized with the voltage and frequency maintained by the Department during all operating conditions. It is the responsibility of the Interconnecting Customer to design, procure, install, operate, and maintain all necessary equipment on its property for connection to the Department's EPS. The Interconnecting Customer and the Department shall enter into an Interconnection Service Agreement to provide for parallel operation of an Interconnecting Customer's Facility with Department's EPS. The form of this agreement is attached as Exhibit F to this DG Interconnection Policy and shall be in accordance with Section 1.3. If the Interconnecting Customer is not the Customer, an Agreement between the Department and the Department's Customer must be signed and included as an attachment to the Interconnection Service Agreement; a form of this agreement is attached as Exhibit G.

The interconnection of the Facility with the Department's EPS must be reviewed for potential impact on the Department's EPS under the process described in Section 3.0 and meet the technical requirements in Section 4.0, and must be operated as described under Section 6.0. In order to meet these requirements, an upgrade or other modifications to the Department's EPS may be necessary. Subject to the requirements contained in this DG Interconnection Policy, the Department or its Affiliate shall modify the Department's EPS accordingly. Unless otherwise agreed in writing, the Department will build and own, as part of the Department's EPS, all facilities necessary to interconnect the Department's EPS with the Facility up to and including terminations at the PCC. The Interconnecting Customer shall pay for all System Modification costs as set forth in Section 5.0.

The Interconnecting Customer should consult the Department before designing in detail, purchasing or installing any equipment, in order to verify the nominal utilization voltages, frequency, and phase characteristics of the service to be supplied, the capacity available, and the suitability of the proposed equipment for operation at the intended location. Attempting to operate a generator at other than its nameplate characteristics may result in unsatisfactory performance or, in certain instances, injury to personnel and/or damage to equipment. The Interconnecting Customer shall be responsible for ascertaining from the Department, and the Department will diligently cooperate in providing, the service characteristics of the Department's EPS at the proposed PCC. The Department will in no way be responsible for damages sustained as a result of the Interconnecting Customer's failure to ascertain the service characteristics at the proposed PCC.

The Facility should operate in such a manner that does not compromise, or conflict with, the safety or reliability of the Department's EPS. The Interconnecting Customer should design its equipment in such a manner that faults or other disturbances on the Department's EPS do not cause damage to the Interconnecting Customer's equipment.

Authorization to interconnect will be provided once the Interconnecting Customer has met all terms of the interconnection process as outlined herein.

All electrical capacity and energy will be delivered to and received from the Interconnection Customer in accordance with the Department's tariffs and/or Power Purchase Agreements. This DG Interconnection Policy does not cover general distribution service needed to serve the Interconnecting Customer. Please refer to the Department's Terms and Conditions for Electric Service. This DG Interconnection Policy does not cover the use of the distribution system to export power, or the purchase of excess power unless covered under 220 C.M.R. §§ 8.00 et al.

3.0 Process Overview

Three possible paths for interconnection of the Interconnecting Customer's Facility are available. They are described below and detailed in Figure 1. Tables 1 and 2, respectively, describe the timelines and fees for these paths. Unless otherwise noted, all times in the DG Interconnection Policy are based on Department business days, under normal work conditions.

4. **Simplified** — This process is for Listed inverter-based Facilities with a power rating of 10 kW or less single phase or 25 kW or less three-phase depending on the service configuration, under certain conditions. **NOTE: Residential systems must not exceed 10kW (DC rating).**
5. **Expedited** — This process is for Listed Facilities that pass certain pre-specified screens.
6. **Standard** — This process is for all facilities not qualifying for either the Simplified or Expedited interconnection processes.

In the event that the kW output of the Facility exceeds the limits set forth in the Department's tariffs (rates), a separate Purchase Power Agreement shall be required. Depending on the need, the Parties may also agree to modify the Interconnection Service Agreement.

All proposed new sources of electric power without respect to generator ownership, dispatch control, or prime mover that plan to operate in parallel with the Department's EPS must submit a completed Interconnection Application (Application) and pay the appropriate application fee to the Department with which it wishes to interconnect. The Application will be acknowledged by the Department, and the Interconnecting Customer shall be notified of the Application's completeness. Interconnecting Customers who are not likely to qualify for Simplified or Expedited Process may opt to go directly into the Standard Process path. All other Interconnecting Customers must proceed through a series of screens to determine their ultimate interconnection path.

3.1 Simplified Process

Interconnecting Customers using Listed single-phase inverter-based Facilities with power ratings of 10 kW or less at locations receiving single-phase service from a single-phase transformer, or using Listed three-phase inverter-based Facilities with power ratings of 25 kW or less at locations receiving three-phase service from a three-phase transformer configuration, and requesting an interconnection on an EPS where the aggregate installed plus proposed distributed generation capacity on the circuit is less than 7.5% of the impacted distribution circuit's annual peak load qualify for interconnection via the Simplified Process. (10kW max. rating for residential customer)

The Simplified Process is as follows:

- a. Application process:
 - i. The Interconnecting Customer shall submit a Simplified Process Application filled out properly and completely (Exhibit A).
 - ii. The Department will acknowledge to the Interconnecting Customer receipt of the Application within 5 business days of receipt.
 - iii. The Department will evaluate the Application for completeness and notifies the Interconnecting Customer within 15 business days of receipt that the Application is or is not

complete and, if not, advise what is missing.

- iv. In conjunction with item iii, the Department will verify that the Facility's equipment passes screens 1, 2, and 3 in Figure 1 and advise the Interconnecting Customer that the Facility qualifies for the Simplified Process.
- b. If approved, the Department will sign the Application approval line and return it to the Interconnecting Customer. In certain rare circumstances, the Department may require the Interconnecting Customer to pay for minor System Modifications. If so, a description of work and an estimate will be sent back to the Interconnecting Customer for approval. The Interconnecting Customer would then approve via a signature and payment for the minor System Modifications. If the Interconnecting Customer approves, the Department will perform the System Modifications. Then, the Department will sign the Application approval line and send it to the Interconnecting Customer.
- c. Upon receipt of signed Application, the Interconnecting Customer shall install the Facility. Following installation and prior to interconnection to the EPS, the Interconnecting Customer shall arrange for an inspection of the completed installation by the local electrical wiring inspector and the inspector shall sign off on the Certificate of Completion. If the Facility was installed by an electrical contractor, the contractor shall also sign off on the Certificate of Completion.
- d. The Interconnecting Customer shall return the Certificate of Completion to the Department.
- e. Following receipt of the Certificate of Completion, the Department may inspect the Facility for compliance with standards and/or arrange for a Witness Test. The Interconnecting Customer shall not operate in parallel with the EPS until a Witness Test has been performed or has been previously waived on the Application Form. The Department is obligated to complete this Witness Test within 10 business days of the receipt of the Certificate of Completion. If the Department does not inspect in 10 business days or by mutual agreement of the Parties, the Witness Test is deemed waived.
- f. Assuming the wiring inspection and Department inspection and/or Witness Test is satisfactory, the Department will provide notification that interconnection is authorized by sending a copy of the fully executed Simplified Process Interconnection Application and Service Agreement (Exhibit A) to the Interconnecting Customer. If the Witness Test is not satisfactory, the Department has the right to disconnect the Facility, and will provide information to the Interconnecting Customer describing clearly what is required for approval.
- g. If the Interconnecting Customer does not substantially complete construction within 12 months after receiving approval from the Department, the Department will require the Interconnecting Customer to reapply for interconnection.

3.2 Expedited Process

Interconnecting Customers that do not qualify for the Simplified Process and that do not opt to immediately enter into the Standard Process must pass a series of screens before qualifying for Expedited interconnection. Depending on whether one or more screens are passed, additional steps may be required. The Expedited Process is as follows:

- a. Application process:
 - i. The Interconnecting Customer shall submit an Expedited/Standard Application filled out

properly and completely (Exhibit B).

- ii. The Department will acknowledge to the Interconnecting Customer receipt of the Application within 5 business days of receipt.
 - iii. The Department will evaluate the Application for completeness and notifies the Interconnecting Customer within 15 business days of receipt that the Application is or is not complete and, if not, advise what is missing.
- b. The Department will conduct an initial review which includes applying the screening methodology (Screens 1 through 8 in Figure 1).
- c. The Department reserves the right to conduct internal studies if deemed necessary and at no additional cost to the Interconnecting Customer, such as but not limited to: protection review, aggregate harmonics analysis review, aggregate power factor review and voltage regulation review. Likewise, when the proposed interconnection may result in reversed load flow through the Department's load tap changing transformer(s), control modifications necessary to mitigate the effects may be made to these devices by the Department, at the Interconnecting Customer's expense, or the Facility may be required to limit its output so reverse load flow cannot occur or to provide reverse power relaying that trips the Facility.

As part of the Expedited Process, the Department will assess whether any System Modifications are required for interconnection, even if the project passes all of the applicable Screens. If the needed modifications are minor, and the nature of the modifications can be determined within the time and cost allotted for the internal review and any internal studies (as part of the application process), then the modification requirements, reasoning, and costs for these minor modifications will be identified and included in the executable Interconnection Service Agreement. If the requirements cannot be determined within the time and cost allotted for the initial review and any internal studies, the Department may require that the project undergo additional review to determine those requirements. The time allocated for additional review is a maximum of 10 hours of engineering time.

If after this review, the Department still cannot determine the requirements, the Department will document the reasons why and will meet with the Interconnecting Customer to determine how to move the process forward to the Parties' mutual satisfaction. In all cases, the Interconnecting Customer shall pay for the cost of modifications as discussed in Section 5.0.

- d. Assuming all applicable Screens are passed, the Department will send to the Interconnecting Customer an executable Interconnection Service Agreement and a quote for any required System Modifications or reasonable Witness Test costs.
- e. If one or more Screens are not passed, the Department will provide a Supplemental Review Agreement (Exhibit C). If the Interconnecting Customer executes the agreement, the Department will conduct the review. If the Supplemental Review determines that the requirements for processing the Application through the Expedited Process can be met, including any System Modifications, then the modification requirements, reasoning, and costs for these modifications as defined in Section 5.0 will be identified and included in an executable Interconnection Service Agreement sent to the Interconnecting Customer for execution.

If the Supplemental Review determines that the requirements for processing the Application through the Expedited Process cannot be met, the Department will include a proposed Impact Study Agreement (Exhibit D) as part of the Standard Process, which will include an estimate of the cost of the study. Even if a proposed project initially fails a particular Screen in the Expedited

Process, if Supplemental Review shows that it can return to the Expedited Process then it will do so. Supplemental Review includes up to 10 hours of engineering time.

- f. The Interconnecting Customer shall return the signed Interconnection Service Agreement (Exhibit F) which is then executed by the Department.
- g. The Interconnecting Customer shall complete the installation and, if required and upon receipt of payment, the Department will complete the System Modifications.
- h. The Department will inspect the completed installation for compliance with standards and perform Witness Testing.
- i. The Interconnecting Customer shall send a signed Certificate of Completion (Exhibit B - Attachment 1) to the Department.
- j. Assuming the wiring inspection is satisfactory, the Department will notify the Interconnecting Customer in writing that interconnection is authorized.

3.3 Standard Process

The Standard Process has the longest maximum time period and highest potential costs. There are two ways to enter the Standard Process:

1. Interconnecting Customers may choose to proceed immediately to the Standard Process.
Application process:
 - i. The Interconnecting Customer shall submit an Expedited/Standard Application filled out properly and completely (Exhibit B).
 - ii. The Department will acknowledge to the Interconnecting Customer receipt of the Application within 5 business days.
 - iii. The Department will evaluate the Application for completeness and notify the Interconnecting Customer within 15 business days of receipt that the Application is or is not complete and, if not, advise what is missing.
2. Based upon the results of the initial and Supplemental Reviews, Interconnecting Customers may be required to enter the Standard Process.

The Standard Process is as follows:

- a. The Department will conduct an initial review that includes a scoping meeting/discussion with the Interconnecting Customer to review the Application. At the scoping meeting the Department will provide pertinent information such as:
 - i. The configuration of the distribution line(s) that would be used for interconnection;
 - ii. The existing peak loading on and thermal capability (rating) of the line(s);
 - iii. The available fault current on the line(s) at the proposed location.
- b. The Department will provide an Impact Study Agreement (Exhibit D), including a cost estimate for the study. Where there are other potentially Affected Systems, and no single Party is in a

position to prepare an Impact Study covering all potentially Affected Systems, the Department will coordinate but not be responsible for the timing of any studies required to determine the impact of the interconnection request on other potentially Affected Systems. The Interconnecting Customer shall be directly responsible to the potentially Affected System operators for all costs of any additional studies required to evaluate the impact of the interconnection on the potentially Affected Systems. The timelines in Table 1 will be affected if ISO-NE determines that a system impact study is required. This will occur if the Interconnecting Customer's Facility is greater than 5 MW and may occur if the Interconnecting Customer's Facility is greater than 1 MW.

- c. Once the Interconnecting Customer executes the Impact Study Agreement and pays pursuant to the terms thereof, the Department will conduct the Impact Study.
- d. If the Department determines, in accordance with Good Utility Practice, that the System Modifications to the Department's EPS are not substantial, the Impact Study will determine the scope and cost of the modifications as defined in Section 5.0. If the Department determines, in accordance with Good Utility Practice, that the System Modifications to the Department's EPS are substantial, the Impact Study will produce an estimate for the modification costs (within $\pm 25\%$) and a provide a Detailed Study Agreement (Exhibit E) and cost for Interconnecting Customer's approval.
- e. Once the Interconnecting Customer executes the Detailed Study Agreement and pays pursuant to the terms thereof, the Department will conduct the Detailed Study.
- f. Upon completion of any necessary studies, the Department shall send the Interconnecting Customer an executable Interconnection Service Agreement (Exhibit F), including a quote for any required System Modifications and reasonable Witness Test costs.
- g. The Interconnecting Customer shall return the signed Interconnection Service Agreement.
- h. The Interconnecting Customer shall complete the installation and the Department will complete the System Modifications, if required.
- i. The Department will inspect the completed installation for compliance with requirements and attend the Witness Test, if required.
- k. The Interconnecting Customer shall send a signed Certificate of Completion (Exhibit B - Attachment 1) to the Department.
- j. Assuming inspection is satisfactory, Department will notify the Interconnecting Customer in writing that interconnection is authorized.

3.4 Time Frames

Unless otherwise noted, all days in the DG Interconnection Policy reference Department business days, under normal work conditions.

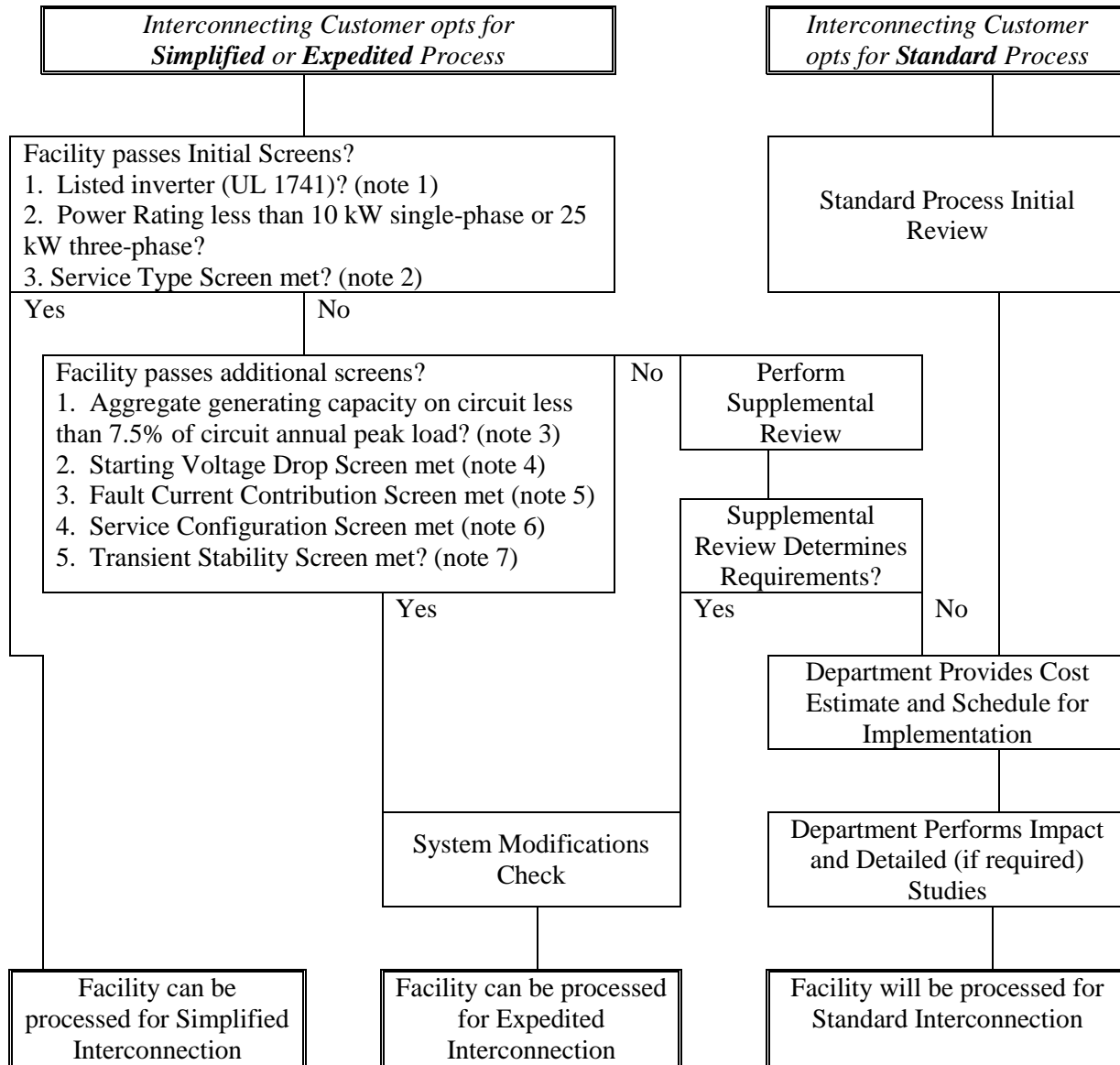
Table 1 lays out the maximum timeframes allowed under the Simplified, Expedited, and Standard Review processes. The maximum time allowed for the Department to execute the entire Simplified Process is 15 days. The maximum time allowed for the Department to execute the entire Expedited Process on a radial system is 35 days where no Supplemental Review is needed and 55 days where it is needed. The maximum time allowed for the Department to execute the entire Standard Process is 130 days for the Standard Review Process if the Customer goes directly to Standard Review and 150 days if the Customer goes from the Expedited Process into Standard Review. The Department's

clock is stopped when awaiting information from the Customer and any delays caused by Customer will interrupt the applicable clock. Moreover, if an Interconnecting Customer fails to act expeditiously to continue the interconnection process or delays the process by failing to provide necessary information within the longer of 15 days or half the time allotted to the Department to perform a given step, or as extended by mutual agreement, then the Department may terminate the Application and the Interconnecting Customer must re-apply. However, the Department will be required to retain the work previously performed in order to reduce the initial and Supplemental Review costs incurred for a period of no less than 1 year. If the Interconnecting Customer does not initiate construction within twelve (12) months of signing the Interconnection Agreement, the Department may require the customer to provide evidence that the project is moving toward construction. In the event that the Customer cannot provide such evidence, the Department reserves the right to require additional study or require the Customer to reapply for interconnection. Situations that could trigger enforcement of this time limit are: (1) material changes on the distribution circuits (e.g. load changes, circuit reconfiguration) or (2) a second Application for interconnection received by the Department on a circuit from the same substation. The same rights of the Department to require the customer to reapply for interconnection pertains if the interconnecting customer, after initiating construction, does not complete construction within twenty-four months. Notwithstanding these maximum time frames, the Department shall endeavor to meet the Customer's needs.

3.5 Fee Schedules

Table 2 lays out the fees required for Interconnecting Customers to apply for interconnection. There are no fees for those facilities that qualify for the Simplified Process (except in certain unique cases where a System Modification would be needed, which would be paid for by the Interconnecting Customer). Those qualifying for the Expedited Process will pay a \$3/kW Application fee (minimum of \$300 and maximum of \$2,500) plus \$125/hour up to 10 hours (\$1,250) for Supplemental Review, when applicable, plus the actual cost as defined in Section 5.0 of any required System Modifications. Those on the Standard Process path would pay the same Application fee as in the Expedited Process path as well as the actual cost as defined in Section 5.0 of any required System Modifications, plus the actual cost of any Impact and Facility Studies, if required.

Figure 1 - Schematic of the Distributed Generation Interconnection Process



Explanatory Notes to Accompany Figure 1

Note 1. A Listed Facility has successfully passed all pertinent tests to conform to IEEE Standard 1547-2003. IEEE Standard 1547-2003 includes design specifications, operational requirements, and a list of tests that are required for Facilities. IEEE Standard 1547.1 describes how to conduct tests to demonstrate compliance with provisions of IEEE Standard 1547-2003. To meet Screen 3 or 4, Interconnecting Customers must provide information or documentation that demonstrates how the Facility is in compliance with the IEEE Standard 1547.1. A Facility will be deemed to be in compliance with IEEE Standard 1547.1 if the Department previously determined it was in compliance. Applicants who can demonstrate Facility compliance with IEEE Standard 1547.1, with the testing done by a nationally recognized testing laboratory, will be eligible for the Expedited Process, and may be eligible for the Simplified process upon review by the utility.

Massachusetts has adopted UL1741 (Inverters, Converters and Charge Controllers for Use in Independent Power Systems) and UL2200 (Stationary Engine Generator Assemblies) as the standard for power systems to comply with IEEE Standards 1547-2003 and 1547.1. Equipment listed to UL1741 or UL2200 by a nationally recognized testing laboratory will be considered to be in compliance with IEEE Standards 1547 and 1547.1. An Interconnecting Customer should contact the Facility equipment supplier(s) in order to confirm that it has been listed to one or both of these Standards.

In addition, California and New York have adopted rules for expediting Application review and approval of Facility interconnections onto electric distribution systems. Facilities in these states must meet the applicable commission approved tests and/or criteria for expedited procedures in these states. The Department will accept a Facility as eligible for "Listed" and a candidate for the Massachusetts Simplified or Expedited Process if it has been approved for such expedited procedures, or approved for interconnection, in California or New York. It is the Interconnecting Customer's responsibility to determine if, and submit verification that, the proposed Facility has been so approved in California or New York.

Note 2. This screen includes a review of the type of electrical service provided to the Interconnection Customer, including the service transformer configuration and service type to limit the potential for creating unacceptable voltage imbalance, over-voltage or under-voltage conditions, or service equipment overloads on the Department's EPS due to a mismatch between the size and phasing of the energy source, the service loads fed from the service transformer(s), and the service equipment ratings.

To be eligible for the Simplified Process, a Listed inverter-based Facility must be either (1) a single-phase unit on a customer's local EPS receiving single-phase secondary service at the PCC from a single-phase service transformer, or (2) a three-phase unit on a customer's local EPS receiving three-phase secondary service at the PCC from a three-phase transformer configuration.

Note 3. On a typical radial distribution EPS circuit ("feeder") the annual peak load is measured at the substation circuit breaker, which corresponds to the supply point of the circuit.

Note 4. This Screen only applies to Facilities that start by motoring the generating unit(s) or the act of connecting synchronous generators. The voltage drops should be less than the criteria below. There are two options in determining whether Starting Voltage Drop could be a problem. The option to be used is at the Department's discretion:

Option 1: The Department may determine that the Facility's starting inrush current is equal to or less than the continuous ampere rating of the Facility's service equipment.

Option 2: The Department may determine the impedances of the service distribution transformer (if present) and the secondary conductors to the Facility's service equipment and perform a voltage drop calculation. Voltage drops caused by starting a generating unit as a motor must be less than 2.5% for primary interconnections and 5% for secondary interconnections.

Note 5. The purpose of this Screen is to ensure that fault (short-circuit) current contributions from all Facilities will have no significant impact on the Department's protective devices and EPS. All of the following criteria must be met when applicable:

- a. The proposed Facility, in aggregation with other generation on the distribution circuit, will not contribute more than 10% to the distribution circuit's maximum fault current under normal operating conditions at the point on the high voltage (primary) level nearest the proposed PCC.

- b. The proposed Facility, in aggregate with other generation on the distribution circuit, will not cause any distribution protective devices and equipment (including but not limited to substation breakers, fuse cutouts, and line reclosers), or Interconnecting Customer equipment on the EPS to exceed 85% of the short-circuit interrupting capability. In addition, the proposed Facility will not be installed on a circuit that already exceeds 85% of the short-circuit interrupting capability.
- c. When measured at the secondary side (low side) of a shared distribution transformer, the short-circuit contribution of the proposed Facility must be less than or equal to 2.5% of the interrupting rating of the Department's service equipment.

Coordination of fault-current protection devices and systems will be examined as part of this Screen.

Note 6. This Screen includes a review of the type of electrical service provided to the Interconnecting Customer, including line configuration and the transformer connection to limit the potential for creating over voltages on the Department's EPS due to a loss of ground during the operating time of any anti-islanding function.

Primary Distribution Line Type	Type of Interconnection to Primary Distribution Line	Result/Criteria
Single-phase	Single phase, line-to-neutral	Pass Screen
Three-phase, four wire	Effectively-grounded 3 phase or single-phase, line-to-neutral	Pass Screen

If the proposed generator is to be interconnected on a single-phase transformer shared secondary, the aggregate generation capacity on the shared secondary, including the proposed generator, will not exceed 20 kilovolt-ampere ("kVA").

If the proposed generator is single-phase and is to be interconnected on a center tap neutral of a 240 volt service, its addition will not create an imbalance between the two sides of the 240 volt service of more than 20% of nameplate rating of the service transformer.

Note 7. The proposed Facility, in aggregate with other Facilities interconnected to the distribution low voltage side of the substation transformer feeding the distribution circuit where the Facility proposes to interconnect, will not exceed 10 MW in an area where there are known or posted transient stability limitations to generating units located in the general electrical vicinity (e.g., 3 or 4 transmission voltage level buses from the PCC).

Table 1 — Time Frames (Note 1)

Review Process	Simplified	Expedited	Standard
Eligible Facilities	Listed Small Inverter	Listed DG	Any DG
Acknowledge receipt of Application	5 days	5 days	5 days
Review Application for completeness	15 days	15 days	15 days
Complete Review of All Screens (Note 2)	(Part of Review Application)	20 days	
Complete Supplemental Review (if needed)	20 days or Standard Process	20 days	
Complete Standard Process Initial Review	N/A		20 days
Send Follow-on Studies Cost/Agreement	N/A		5 days
Complete Impact Study (if needed)	N/A		55 days
Complete Detailed Study (if needed)	N/A		30 days
Send Executable Agreement	2 days	2 days	7 days
Total Maximum Days	22/42 days	47/67 days (Note 3)	147/167 days (Note 4)
Notice/Witness Test	1 day with 10 day notice or by mutual agreement	1-2 days with 10 day notice or by mutual agreement	By mutual agreement

Note 1. All days listed apply to Department business days under normal work conditions. All numbers in this table assume a reasonable number of applicants under review. All timelines may be extended by mutual agreement. Any delays caused by Interconnecting Customer will interrupt the applicable clock. Moreover, if an Interconnecting Customer fails to act expeditiously to continue the interconnection process or delays the process by failing to provide necessary information within the longer of 15 days or half the time allotted to the Department to perform a given step, or as extended by mutual agreement, then the Department may terminate the Application and the Interconnecting Customer must reapply. However, the Department will be required to retain the work previously performed in order to reduce the initial and Supplemental Review costs incurred for a period of no less than one (1) year. The timelines in Table 1 will be affected if ISO-NE determines that a system impact study is required. This will occur if the Interconnecting Customer's Facility is greater than 5 MW and may occur if the Interconnecting Customer's Facility is greater than 1 MW.

Note 2. Department delivers an executable agreement form. Once the Interconnection Service Agreement is delivered by the Department, any further modification and timetable will be

established by mutual agreement.

Note 3. Shorter time applies to Expedited Process without Supplemental Review, longer time applies to Expedited Process with Supplemental Review.

Note 4. 130 day maximum applies to an Interconnecting Customer opting to begin directly in Standard Process, and 150 days is for an Interconnecting Customer who goes through initial Expedited Process first. In both cases this assumes that both the Impact and Facilities Studies are needed. If the Detailed Study is not needed, the timelines will be shorter.

Table 2 — Fee Schedules

	Simplified	Expedited	Standard
Eligible Facilities	Listed Small Inverter	Listed DG	Any DG
Application Fee (covers Screens)	\$0 (Note 1)	\$3/kW minimum \$300 maximum \$2,500	\$3/kW minimum \$300 maximum \$2,500
Supplemental Review or Additional Review (if applicable) (Note 2)	N/A	Up to 10 engineering hours at \$125/hr \$1,250 maximum (Note2)	N/A
Standard Interconnection Initial Review	N/A	N/A	Included in Application fee (if applicable)
Impact and Detailed Study (if Required)	N/A	N/A	Actual cost (Note 3)
Facilities Upgrades	N/A (Note 4)	Actual cost	Actual cost
O&M (Note 5)	N/A	TBD	TBD
Witness Test	\$0	Actual cost, up to \$300 + travel time (Note 6)	Actual Cost

Note 1. If the Department determines that the Facility does not qualify for the Simplified Process, it will let the Interconnecting Customer know what the appropriate fee is.

Note 2. Supplemental Review and additional review are defined in Section 3.2.

Note 3. This is the resultant cost to the applicant. Any funds not that were previously collected as part of the the Application fee previously but not expended will be applied toward the costs of these studies.

Note 4. Not applicable except in certain rare cases where a System Modification would be needed. If

so, the modifications are the Interconnecting Customer's responsibility.

Note 5. O&M is defined as the Department's operations and maintenance carrying charges on the incremental costs associated with serving the Interconnecting Customer.

Note 6. The fee will be based on actual cost up to \$300, unless Department representatives are required to do additional work due to extraordinary circumstances or due to problems on the Interconnecting Customer's side of the PCC (e.g., Department representative required to make two trips to the site), in which case Interconnecting Customer shall cover the additional cost.

4.0 Interconnection Requirements

4.1 General Design and Operating Considerations

The Interconnecting Customer shall design the Facility in compliance with all aspects of the Department's DG Interconnection Policy. The Interconnecting Customer shall cause its Facility to be designed, constructed and operated in accordance with applicable specifications that meet or exceed those provided under this Section of the DG Interconnection Policy. The Interconnection Customer shall maintain the various components of the Facility in accordance with the equipment manufacturer's recommended schedule.

4.1.1 Transient Voltage Conditions

Because of unusual events on the Department's EPS, there will be transient voltage fluctuations, which will result in voltages exceeding the limits of the normal (steady state) operating range. These transient voltage fluctuations, which generally last only a few milliseconds, arise due to EPS disturbances including, but not limited to, lightning strikes, clearing of faults, and other switching operations. The magnitude of transient voltage fluctuations varies with EPS configuration, location, grounding methods utilized, local short circuit availability, and other parameters, and will vary from point-to-point and from time-to-time.

These unavoidable transients are generally of too short duration and insufficient magnitude to have any adverse effects on general service Applications. They may, however, cause malfunctions in equipment highly sensitive to voltage changes, and protective devices may operate to shut down such devices. The magnitude, duration and frequency of transient fluctuations will vary due to EPS configuration and/or circuit arrangement. In addition, disturbances of indeterminate magnitude and duration may occur on infrequent occasions due to short circuits, faults, and other unpredictable conditions.

Response to transient voltages should be evaluated as part of the design of the Facility.

4.1.2 Noise and Harmonics

The introduction of abnormal noise/harmonics can cause abnormal neutral current flow, and excessive heating of electrical equipment. Harmonics may also cause distortion in TV pictures, telephone interference, and malfunctions in digital equipment such as computers. The permissible level of harmonics is dependent upon the voltage level and short circuit ratio at a given location. IEEE Standard 1547-2003 provides guidelines for these levels at the PCC. However, the Department is in no way making a recommendation regarding the level of harmonics that a given piece of equipment can tolerate nor is it making a recommendation as to the permissible level within the Interconnecting Customer's Facility.

4.1.3 Frequency

The interconnected electric power system in North America, which is maintained at 60 hertz ("Hz") frequency on its alternating current services, is subject to certain deviations. The usual normal deviation is approximately $\pm 1/20$ cycle ($\pm 0.083\%$). The usual maximum instantaneous deviation from the standard 60 Hz is $\pm 1/10$ cycle ($\pm 0.17\%$), except on infrequent occasions when the deviation may reach $\pm 2/10$ cycle ($\pm 0.33\%$). These conditions are subject to occur at any time of the day or night and should be considered in the design of the Facility. All are measured on a 60 Hz base.

4.1.4 Voltage Level

All electricity flow across the PCC shall be in the form of single-phase or three-phase 60 Hz alternating current at a voltage class determined by mutual agreement of the Parties.

4.1.5 Power Factor and Machine Reactive Capability

All Facilities shall adhere to minimum power factor requirements, in accordance with the applicable Tariff under which the Customer takes service, and/or the Department's Terms and Conditions for Electrical Service.

Facilities greater than or equal to 1 MW interconnected with the Department's EPS shall be required to provide reactive capability to regulate and maintain EPS voltage at the PCC as per NEPOOL requirements. The Department and NEPOOL shall establish a scheduled range of voltages to be maintained by the Facility. The reactive capability requirements shall be reviewed as part of the Impact Study and Facilities Study.

4.2 Protection Requirements for New or Modified Facility Interconnections

4.2.1 Industry Standards

Any Facility desiring to interconnect with the Department's EPS or modify an existing interconnection must meet minimum specifications, where applicable, as set forth in the following documents and standards and per the requirements of this Section.

- i. IEEE Standard 1547-2003, "IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems."
- ii. UL Standard 1741, "Inverters, Converters and Charge Controllers for Use in Independent Power Systems."
- iii. IEEE Standard 929-2000, "IEEE Recommended Practice for Utility Interface of Photovoltaic (PV) Systems."

The specifications and requirements listed herein are intended to mitigate possible adverse impacts caused by the Facility on the Department's equipment and personnel and on other Interconnecting Customers of the Department. They are not intended to address protection of the Facility itself or its internal load. It is the responsibility of the Facility to comply with the requirements of all appropriate standards, codes, statutes and authorities to protect itself and its loads.

The Department shall not be responsible for the protection of the Facility. The Facility shall be responsible for protection of its system against possible damage resulting from parallel operation with the Department so long as the Department adheres to Good Utility Practice. If requested by the Interconnecting Customer, the Department will provide system protection information for the line terminal(s) directly related to the interconnection. This protection information contained herein is provided exclusively for use by the Interconnecting Customer to evaluate protection of its Facility during parallel operation.

At its sole discretion, the Department may consider approving alternatives that satisfy the intent of the requirements contained in this Section.

4.2.2 Protection Requirements - General

All Facilities must meet protection and performance requirements as set forth in relevant sections of IEEE Standard 1547-2003 (Exhibit H).

4.2.3 Protection Requirements for Facilities that Qualify for the Simplified Process

- a. **UL Listing:** The inverter-based Facility shall be considered Listed if it meets requirements set forth in Section 3.1 "Simplified Process".
- b. **External Disconnect Switch:** For Listed inverters, the Department may require an external disconnect switch (or comparable device by mutual agreement of the Parties) at the PCC with the Department or at another mutually agreeable point that is accessible to Department personnel at all times and that can be opened to isolate the Facility from the Department's EPS. The switch shall be gang operated, have a visible break when open, be rated to interrupt the maximum generator output and be capable of being locked open, tagged and grounded on the Department side by Department personnel. The visible break requirement can be met by opening the enclosure to observe the contact separation. The Department shall have the right to open this disconnect switch in accordance with this DG Interconnection Policy.

4.2.4 Protection Requirements for All Other Facilities

- a. **Non Export Power:** If the Parties mutually agree that non-export functionality will be part of the interconnection protection equipment then it will include one of the following: (1) a reverse power relay with mutually agreed upon delay intervals, or (2) a minimum power function with mutually agreed upon delay intervals, or (3) other mutually agreeable approaches, for example, a comparison of nameplate rating versus certified minimum Customer premises load.
- b. **NPCC Requirements:** The Interconnecting Customer shall comply with NPCC criteria. For the interconnection of some larger units, the NPCC criteria may additionally require:
 - i. **Protective Relaying:** The Department may require the Facility to be equipped with two independent, redundant relaying systems in accordance with NPCC criteria, where applicable, for the protection of the bulk power system if the interconnection is to the bulk power system or if it is determined that delayed clearing of faults within the Facility adversely affects the bulk power system.
 - ii. **Load Shedding:** During system conditions where local area load exceeds system generation, NPCC Emergency Operation Criteria requires a program of phased automatic under frequency load shedding of up to 25% of area load to assist in arresting frequency decay and to minimize the possibility of system collapse. Depending on the point of connection of the Facility to the Department's EPS and in conformance with the NPCC Emergency Operating Criteria, the Facility may be required to remain connected to the EPS during the frequency decline to allow the objectives of the automatic load shedding program to be achieved, or to otherwise provide compensatory load reduction, equivalent to the Facility's generation lost to the system, if the Interconnecting Customer elects to disconnect the Facility at a higher under-frequency set point.
- c. **Disconnect Switch:** The Facility shall provide a disconnect switch (or comparable device

mutually agreed upon by the Parties) at the point of Facility interconnection that can be opened for isolation. The switch shall be located outdoors and easily accessible to Department personnel at all times. The switch shall be gang operated, have a visible break when open, be rated to interrupt the maximum generator output and be capable of being locked open, tagged and grounded on the Department side by Department personnel. The visible break requirement can be met by opening the enclosure to observe the contact separation. The Department may disconnect the Facility in accordance with Section 7.0 of this DG Interconnection Policy.

- d. **Transfer Tripping:** A direct transfer tripping system, if one is required by either the Interconnecting Customer or by the Department, shall use equipment generally accepted for use by the Department and shall, at the option of the Department, use dual channels.

4.2.5 Additional Protection Requirements for Induction and Synchronous Generator Facilities

- a. **Interconnection Interrupting Device:** An interconnection Interrupting Device such as a circuit breaker shall be installed to isolate the Facility from the Department's EPS. If there is more than one Interrupting Device, this requirement applies to each one individually. The Interconnection Interrupting Device must be capable of interrupting the current produced when the Facility is connected out of phase with the Department's EPS, consistent with Section 4.1.8.3 of JEFF Standard 1547-2003 which states, "the interconnection system paralleling-device shall be capable of withstanding 220% of the interconnection system rated voltage."
- b. **Synchronizing Devices:** The Interconnecting Customer shall designate one or more Synchronizing Devices such as motorized breakers, contactor/breaker combinations, or a fused contactor (if mutually agreeable) to be used to connect the Facility's generator to the Department's EPS. This Synchronizing Device may be a device other than the interconnection Interrupting Device. The Synchronizing Device must be capable of interrupting the current produced when the Facility is connected out of phase with the Department's EPS, consistent with Section 4.1.8.3 of IEEE Standard 1547-2003 which states, "the interconnection system paralleling-device shall be capable of withstanding 220% of the interconnection system rated voltage."
- c. **Step-Up Transformer Winding Configurations and Grounding:** The Department reserves the right to specify the winding connections for the transformer between the Department's voltage and the Facility's voltage ("Step-Up Transformer") as well as whether it is to be grounded or ungrounded at the Department's voltage. In the event that the transformer winding connection is grounded-wye/grounded-wye, the Department reserves the right to specify whether the generator stator is to be grounded or not grounded. The Interconnecting Customer shall be responsible for procuring equipment with a level of insulation and fault-withstand capability compatible with the specified grounding method.
- d. **Voltage Relays:** Voltage relays shall be frequency compensated to provide a uniform response in the range of 40 to 70 Hz.
- e. **Protective Relaying Redundancy:** For induction generators greater than 1/15 of on-site minimum verifiable load where on-site capacitors are not present, or where the induction generator is rated greater than 200 kW, and for all synchronous generators, protective relays utilized by the Facility shall be sufficiently redundant and functionally separate so

as to provide adequate protection, consistent with the Department's practices and standards, upon the failure of any one component.

- f. **Protective Relay Hard-Wire Requirement:** Unless otherwise authorized by the Department, protective relays must be hardwired to the device they are tripping. Interposing micro-processor based or programmable logic controllers (or similar) are not permitted in the trip chain between the relay and the device being tripped.
- g. **Protective Relay Supply:** Where protective relays are required in this Section, their control circuits shall be DC powered from a battery/charger system or a UPS. Solid-state relays shall be self-powered, or DC powered from a battery/charger system or a UPS. If the Facility uses a Department-acceptable non-latching interconnection contactor, AC powered relaying shall be allowed, provided the relay and its method of Application are fail safe, meaning that if the relay fails or if the voltage and/or frequency of its AC power source deviate from the relay's design requirements for power, the relay or a separate fail-safe power monitoring relay acceptable to the Department will immediately trip the generator by opening the coil circuit of the interconnection contactor.
- h. **Current Transformers ("CT"):** CT ratios and accuracy classes shall be chosen such that secondary current (under short circuit conditions) is less than 100 amperes and such that transformation errors are consistent with Department practices. CTs used for revenue class metering must have a secondary current of 20 amperes or less.
- i. **Voltage Transformers ("VT") and Connections:** The Facility shall be equipped with a direct voltage connection or a VT, connected to the Department side of the Interrupting Device. The voltage from this VT shall be used in an interlock scheme, if required by the Department. For three-phase Applications, a VT for each phase is required. All three phases must be sensed either by three individual relays or by one relay that contains three elements. If the voltage on any of the three phases is outside the bounds specified by the Department, the unit shall be tripped. If the Facility's Step-Up Transformer is ungrounded at the Department voltage, this VT shall be a single three-phase device or three single-phase devices connected from each phase to ground on the Department's side of the Facility's Step-Up Transformer, rated for phase-to-phase voltage and provided with two secondary windings. One winding shall be connected in open delta, have a loading resistor to prevent ferroresonance, and be used for the relay specified in these requirements.

4.2.6 Additional Requirements for Induction Generator Facilities

- a. **Self-Excitation:** A Facility using induction generators connected in the vicinity of capacitance sufficient to self-excite the generator(s) shall meet the requirements for synchronous machines. The capacitors that enable self-excitation may actually be external to the Facility. The Department will not restrict its existing or future Application of capacitors on its lines nor restrict their use by other Interconnecting Customers of the Department to accommodate a Facility with induction machines. If self-excitation becomes possible due to the installation of or presence of capacitance, the protection requirements of the Facility may need to be reviewed and revised, if applicable.
- b. **Power Factor Correction:** The Facility may be required to install capacitors to limit the adverse effects of drawing reactive power from the EPS for excitation of the generator. Capacitors for supply of reactive power at or near the induction generator with a kilovolt-ampere reactive ("kVAr") rating greater than 30% of the generator's kW rating may cause the generator to become self-excited. (If self-excitation can occur, the Facility shall be

required to provide protection as specified in synchronous machines requirements.)

4.2.7 Additional Requirements for Synchronous Generator Facilities

- a. **Ungrounded Transformers:** If the Facility's Step-Up Transformer connection is ungrounded at the Department's voltage, the Facility shall be equipped with a zero sequence over-voltage relay fed from the open delta of the three-phase VT specified in the Voltage Transformers and Connections Section 4.2.3.i.
- b. **High-Speed Protection:** The Facility may be required to use high-speed protection if time-delayed protection would result in degradation in the existing sensitivity or speed of the protection systems on the Department's EPS.
- c. **Breaker Failure Protection:** The Facility may be required to provide local breaker failure protection, which may include direct transfer tripping to the Department's protective devices in order to detect and clear faults within the Facility that cannot be detected by the Department's back-up protection.
- d. **Communications Channels:** The Interconnecting Customer is responsible for procuring any communications channels necessary between the Facility and the Department's equipment or substation(s), and for providing protection from transients and over-voltages at all ends of these communication channels. The Interconnecting Customer shall also bear the ongoing cost to lease these communication channels. Examples include, but are not limited to, connection to a line using high-speed protection, transfer tripping, generators located in areas with low-fault currents, or back up for generator breaker failure.

4.2.8 Protection System Testing and Maintenance

- a. The Department shall have the right to witness the commissioning testing as defined in IFEE Standard 1547-2003 at the completion of construction and to receive a copy of all test data. The Facility shall be equipped with whatever equipment is required to perform this test.

Testing typically includes, but is not limited to:

- i. CT and CT circuit polarity, ratio, insulation, excitation, continuity and burden tests
 - ii. VT and VT circuit polarity, ratio, insulation and continuity tests
 - iii. Relay pick-up and time delay tests, Functional breaker trip tests from protective relays
 - iv. Relay in-service test to check for proper phase rotation and magnitudes of currents and voltages
 - v. Breaker closing interlock tests
 - vi. Paralleling and disconnection operation
- b. Prior to final approval by the Department or anytime thereafter, the Department reserves the right to test the Interconnecting Customer's equipment related to the protection of the Department's EPS.
 - c. The Interconnecting Customer has the full responsibility for the proper periodic maintenance of its generating equipment and its associated control, protective equipment

and interrupting devices.

- d. The Interconnecting Customer is responsible for the periodic maintenance of those relays, interrupting devices, control schemes, and batteries that involve the protection of the Department's EPS. A periodic maintenance program, mutually agreeable to both the Department and to the Interconnecting Customer is to be established in each case. The Department shall have the right to monitor the periodic maintenance performed.
- e. For relays installed in accordance with the NPCC Criteria for the Protection of the Bulk Power System, maintenance intervals shall be in accordance with such criteria. The results of these tests shall be summarized by the Interconnecting Customer and reported in writing to the Department.
- f. The Department reserves the right to install special test equipment as may be required to monitor the operation of the Facility and its control or for evaluating the quality of power produced by the Facility at a mutually agreed upon location. The cost of this testing will be borne by the Department unless there is shown to be a problem associated with the Facility or if the test was performed at the request of the Interconnecting Customer.
- g. Each routine check shall include both a calibration check and an actual trip of the circuit breaker or contactor from the device being tested. Visually setting a calibration dial, index or tap is not considered an adequate calibration check.
- h. Inverters with field adjustable settings for their internal protective elements shall be periodically tested if those internal elements are being used by the Facility to satisfy the requirements of this Section.

4.2.9 Protection Requirements — Momentary Paralleling of Standby Generators

- a. Protective relays to isolate the Facility for faults in the Department's EPS are not required if the paralleling operation is automatic and takes place for less than one-half of a second. An Interrupting Device with a half-second (30 cycles) timer is required as a fail-safe mechanism.
- b. Parallel operation of the Facility with the Department's EPS shall be prevented when the Department's line is dead or out of phase with the Facility.
- c. The control scheme for automatic paralleling must be submitted by the Interconnecting Customer for review and acceptance by the Department prior to the Facility being allowed to interconnect with the Department's EPS.

4.2.10 Protection System Changes

- a. The Interconnecting Customer must provide the Department with reasonable advance notice of any proposed changes to be made to the protective relay system, relay settings, operating procedures or equipment that affect the interconnection. The Department will determine if such proposed changes require re-acceptance of the interconnection per the requirements of this Section.
- b. In the future, should the Department implement changes to the EPS to which the Facility is interconnected, the Interconnecting Customer shall be responsible, at its own expense, for identifying and incorporating any necessary changes to its protection equipment. These

changes to the Facility's protection equipment are subject to review and approval by the Department.

5.0 Responsibility for Costs of Interconnecting a Facility

5.1 Review and Study Costs

The Interconnecting Customer shall be responsible for the reasonably incurred costs of the review by the Department and any interconnection studies conducted as defined by Table 2 ("Fee Schedules") of Section 3.0 of this DG Interconnection Policy that are necessary solely to determine the requirements of interconnecting the Facility with the Department's EPS.

5.2 Interconnection Equipment Costs

The Interconnecting Customer shall be responsible for all costs associated with the installation and construction of the Facility and associated interconnection equipment on the Interconnecting Customer's side of the PCC.

5.3 System Modification Costs

The Interconnecting Customer shall be responsible for all costs reasonably incurred by Department that are attributable to the proposed interconnection for designing, constructing, operating and maintaining the System Modifications.

5.4 Separation of Costs

Should the Department combine the installation of System Modifications with additions to the Department's EPS to serve other customers or interconnecting customers, the Department shall not include the costs of such separate or incremental facilities in the amounts billed to the Interconnecting Customer for the System Modifications required pursuant to this DG Interconnection Policy.

The Interconnecting Customer shall only pay for that portion of the interconnection costs resulting solely from the System Modifications required to allow for safe, reliable parallel operation of the Facility with the Department's EPS.

5.5 Normal Payment Procedure

All Application, study fees and System Modification costs (except as noted below) are due in full prior to the execution of the work, as outlined in this DG Interconnection Policy.

6.0 Operating Requirements

6.1 General Operating Requirements

The Interconnecting Customer shall operate and maintain the Facility in accordance with the applicable manufacturer's recommended maintenance schedule and in compliance with all aspects of the Department's DG Interconnection Policy. The Interconnecting Customer shall continue to comply with all applicable laws and requirements after interconnection has occurred. In the event the Department has reason to believe that the Interconnecting Customer's installation may be the source of problems on the Department's EPS, the Department has the right to install monitoring equipment at a mutually agreed upon location to determine the source of the problems. If the Facility is determined to be the source of the problems, the Department may require disconnection as outlined in Section 7.0 of this DG Interconnection Policy. The cost of this testing will be borne by the Department unless the Department demonstrates that the problem or problems are caused by the Facility or if the test was performed at the request of the Interconnecting Customer.

6.2 No Adverse Effects; Non-interference

The Department shall notify Interconnecting Customer if there is evidence that the operation of the Facility could cause disruption or deterioration of service to other Customers served from the same Department's EPS or if operation of the Facility could cause damage to Department's EPS or Affected Systems. The deterioration of service could be, but is not limited to, harmonic injection in excess of IEEE Standard 1547-2003, as well as voltage fluctuations caused by large step changes in loading at the Facility. Each Party shall notify the other of any emergency or hazardous condition or occurrence with its equipment or facilities which could affect safe operation of the other Party's equipment or facilities. Each Party shall use reasonable efforts to provide the other Party with advance notice of such conditions.

The Department shall operate the EPS in such a manner so as to not unreasonably interfere with the operation of the Facility. The Interconnecting Customer shall protect itself from normal disturbances propagating through the Department's EPS, and such normal disturbances shall not constitute unreasonable interference unless the Department has deviated from Good Utility Practice. Examples of such disturbances could be, but are not limited to, single-phasing events, voltage sags from remote faults on the Department's EPS, and outages on the Department's EPS. If the Interconnecting Customer demonstrates that the Department's EPS is adversely affecting the operation of the Facility and if the adverse effect is a result of a Department deviation from Good Utility Practice, the Department shall take appropriate action to eliminate the adverse effect.

6.3 Safe Operations and Maintenance

Each Party shall operate, maintain, repair, and inspect, and shall be fully responsible for, the facility or facilities that it now or hereafter may own unless otherwise specified in this Agreement. Each Party shall be responsible for the maintenance, repair and condition of its respective lines and appurtenances on their respective side of the PCC. The Department and the Interconnecting Customer shall each provide equipment on its respective side of the PCC that adequately protects the Department's EPS, personnel, and other persons from damage and injury.

6.4 Access

The Department shall have access to the disconnect switch of the Facility at all times.

6.4.1 Department Right to Access Department-Owned Facilities and Equipment

If necessary for the purposes of this DG Interconnection Policy and in the manner it describes, the Interconnecting Customer shall allow the Department access to the Department's equipment and the Department's facilities located on the Interconnecting Customer's or Customer's premises. To the extent that the Interconnecting Customer does not own all or any part of the property on which the Department is required to locate its equipment or facilities to serve the Interconnecting Customer under this DG Interconnection Policy, the Interconnecting Customer shall secure and provide in favor of the Department the necessary rights to obtain access to such equipment or facilities, including easements if the circumstances so require.

6.4.1 Department and Interconnecting Customer Representatives

Each Party shall provide and update as necessary the telephone number that can be used at all times to allow either Party to report an emergency.

6.4.2 Right to Review Information

The Department shall have the right to review and obtain copies of Interconnecting Customer's operations and maintenance records, logs, or other information such as, unit availability, maintenance outages, circuit breaker operation requiring manual reset, relay targets and unusual events pertaining to Interconnecting Customer's Facility or its interconnection with the Department's EPS. This information will be treated as customer-confidential and only used for the purposes of meeting the requirements of Section 4.2.8.

7.0 Disconnection

7.1 Temporary Disconnection

Emergency Conditions: The Department shall have the right to immediately and temporarily disconnect the Facility without prior notification in cases where, in the reasonable judgment of the Department, continuance of such service to the Interconnecting Customer is imminently likely to (i) endanger persons or damage property or (ii) cause a material adverse effect on the integrity or security of, or damage to, the Department's EPS or to the electric systems of others to which the Department's EPS is directly connected. The Department shall notify the Interconnecting Customer promptly of the emergency condition. The Interconnecting Customer shall notify the Department promptly when it becomes aware of an emergency condition that affects the Facility that may reasonably be expected to affect the Department's EPS. To the extent information is known, the notification shall describe the emergency condition, the extent of the damage or deficiency, or the expected effect on the operation of both Parties' facilities and operations, its anticipated duration and the necessary corrective action.

Routine Maintenance, Construction and Repair: The Department shall have the right to disconnect the Facility from the Department's EPS when necessary for routine maintenance, construction and repairs on the Department's EPS. The Department shall provide the Interconnecting Customer with a minimum of seven calendar days advance notice of the planned outage. If the Interconnecting Customer requests disconnection by the Department at the PCC, the Interconnecting Customer shall provide a minimum of seven days notice to the Department. Any additional notification requirements will be specified by mutual agreement in the Interconnection Service Agreement. The Department shall make an effort to schedule such curtailment or temporary disconnection with the Interconnecting Customer.

Forced Outages: During any forced outage, the Department shall have the right to suspend interconnection service to effect immediate repairs on the Department's EPS; provided, however, the Department shall use reasonable efforts to provide the Interconnecting Customer with prior notice. Where circumstances do not permit such prior notice to the Interconnecting Customer, the Department may interrupt Interconnection Service and disconnect the Facility from the Department's EPS without such notice.

Non-Emergency Adverse Operating Effects: The Department may disconnect the Facility if the Facility is having an adverse operating effect on the Department's EPS or other customers that is not an emergency, and the Interconnecting Customer fails to correct such adverse operating effect after written notice has been provided and a maximum of 45 days to correct such adverse operating effect has elapsed.

Modification of the Facility: The Department shall notify the Interconnecting Customer if there is evidence of a material modification to the Facility and shall have the right to immediately suspend interconnection service in cases where such material modification has been implemented without prior written authorization from the Department.

Re-connection: Any curtailment, reduction or disconnection shall continue only for so long as reasonably necessary. The Interconnecting Customer and the Department shall cooperate with each other to restore the Facility and the Department's EPS, respectively, to their normal operating state as soon as reasonably practicable following the cessation or remedy of the event that led to the temporary disconnection.

7.2 Permanent Disconnection

The Interconnecting Customer has the right to permanently disconnect at any time with 30 days written notice to the Department.

The Department may permanently disconnect the Facility upon termination of the Interconnection Service Agreement in accordance with the terms thereof.

8.0 Metering, Monitoring, and Communication

This Section sets forth the rules, procedures and requirements for metering, monitoring and communication between the Facility and the Department's EPS where the Facility exports power or is net metered or is otherwise subject to NEPOOL requirements. The Interconnecting Customer shall be responsible for reasonable and necessary costs incurred by the Department for the purchase, installation, operation, maintenance, testing, repair and replacement of metering and data acquisition equipment as specified in the Attachments to the Interconnection Service Agreement. The Interconnecting Customer's metering (and data acquisition, as required) equipment shall conform to rules and applicable operating requirements.

The type of metering equipment to be installed at a Facility is dependent on the size of the Facility. Specific metering requirements for Facilities can be found in the applicable Tariffs.

8.1 Metering, Related Equipment and Billing Options

The Department shall furnish, read and maintain all revenue metering equipment. The Department shall own the meter and the Interconnecting Customer shall pay to the Department any monthly customer charges required by the applicable Tariff(s), as may be amended from time to time.

The Interconnecting Customer shall provide suitable space within the Facility for installation of the metering, and communication equipment at no cost to the Department. The Interconnecting Customer shall furnish and maintain all meter mounting equipment such as or including meter sockets, test switches, conduits, and enclosures.

If the Metering Point and the Point of Receipt or Point of Delivery are not at the same location, the metering equipment shall record delivery of electricity in a manner that accounts for losses occurring between the Metering Point and the Point of Receipt or Point of Delivery. Losses between the Metering Point and Point of Receipt will be reflected pursuant to applicable Department, NEPOOL or ISO-NE criteria, rules or standards.

All metering equipment, including self-contained meters and instrument transformers and meters, shall meet ANSI C12.1 Metering Accuracy Standards and ANSI C57.13 accuracy requirements for instrument transformers.

All metering equipment installed pursuant to this DG Interconnection Policy and associated with the Facility shall be routinely tested by the Department at the Interconnecting Customer's expense, in accordance with applicable Department and/or ISO-NE criteria, rules and standards. If, at any time, any metering equipment is found to be inaccurate by a margin allowed under applicable criteria, rules and standards, the Department shall cause such metering equipment to be made accurate or replaced. The cost to repair or replace the meter shall be borne by the Department. Meter readings for the period of inaccuracy shall be adjusted so far as the same can be reasonably ascertained; provided, however, no adjustment prior to the beginning of the preceding month shall be made except by agreement of the Parties. Each Party shall comply with any reasonable request of the other concerning the sealing of meters, the presence of a representative of the other Party when the seals are broken and the tests are made, and other matters affecting the measurement of electricity delivered from the Facility. If either Party believes that there has been a meter failure or stoppage, it shall immediately notify the other.

All metering equipment that is equipped with remote access capability shall meet the requirements contained in NEPOOL Operating Procedure No. 18, "Metering and Telemetering Criteria". The Customer shall be responsible for providing all necessary leased telephone lines (or other Department approved communication means) and any necessary protection for leased lines and shall

furthermore be responsible for all communication required by ISO-NE, or by ISO-NE's designated satellite. The Interconnecting Customer shall maintain all communication and transducer equipment at the Facility in accordance with ISO-NE criteria, rules and standards. The Department will purchase, own and maintain all communication equipment located on the Interconnecting Customer's Facilities, if the Interconnecting Customer desires, at the Interconnecting Customer's expense. The Interconnecting Customer shall provide, install and own Department- approved or Department-specified test switches in the transducer circuits.

Units over 1 MW: Shall be equipped with bi-directional, interval meters with remote access.

Facilities of 5 MW or greater: Facilities are required by NEPOOL Operating Procedure No. 18 to provide communication equipment and to supply accurate and reliable information to system operators regarding metered values for MW, MVAR, volt, amp, frequency, breaker status and all other information deemed necessary by ISO NE and the NEPOOL Satellite (REMVEC).

8.2 Additional Monitoring and Communication Requirements

In the event that the amount of distributed generation on the Department's EPS increases significantly, additional monitoring and communication may be required by the Department pursuant to a future proceeding.

9.0 Dispute Resolution

Any dispute pertaining to this DG Interconnection Policy shall be put in writing and presented to the General Manager of the Braintree Electric Light Department. Both sides shall attempt to negotiate and resolve the dispute within 30 calendar days.

If the dispute cannot be resolved, it will be up to either party to bring legal action in an appropriate Massachusetts court.

10.0 Insurance Requirements

10.1 General Liability

- a. In connection with the Interconnecting Customer's performance of its duties and obligations under the Interconnection Service Agreement, the Interconnecting Customer shall maintain, during the term of the Agreement, general liability insurance with a combined single limit of not less than:
 - i. Five million dollars (\$5,000,000) for each occurrence and in the aggregate if the Gross Nameplate Rating of Interconnecting Customer's Facility is greater than five (5) MW;
 - ii. Two million dollars (\$2,000,000) for each occurrence and five million (\$5,000,000) in the aggregate if the Gross Nameplate Rating of Interconnecting Customer's Facility is greater than 500 kW and less than or equal to five (5) MW;
 - iii. One million dollars (\$1,000,000) for each occurrence and in the aggregate if the Gross Nameplate Rating of Interconnecting Customer's Facility is greater than sixty (60) kW and less than or equal to 500 kW;
- b. Consistent with 220 CMR 11.04, no insurance is required for customers with facilities eligible for Class 1 Net Metering (facilities less than or equal to sixty (60) kW). However, the Department recommends that the Interconnecting Customer obtain adequate insurance to cover potential liabilities.
- c. Any combination of General Liability and Umbrella/Excess Liability policy limits can be used to satisfy the limit requirements stated above.
- d. The general liability insurance required to be purchased in this Section 10 may be purchased for the direct benefit of the Department and shall respond to third party claims asserted against the Department (hereinafter known as "Owners Protective Liability"). Should this option be chosen, the requirement of Section 10.2.a will not apply but the Owners Protective Liability policy will be purchased for the direct benefit of the Department and the Department will be designated as the primary and "Named Insured" under the policy.
- e. The insurance hereunder is intended to provide coverage for the Department solely with respect to claims made by third parties against the Department.
- f. In the event the Commonwealth of Massachusetts, or any other governmental subdivision thereof subject to the claims limits of the Massachusetts Tort Claims Act, G.L. c. 258 (hereinafter referred to as the "Governmental Entity") is the Interconnecting Customer, any insurance maintained by the Governmental Entity shall contain an endorsement that strictly prohibits the applicable insurance company from interposing the claims limits of G.L. c. 258 as a defense in either the adjustment of any claim, or in the defense of any lawsuit directly asserted against the insurer by the Department. Nothing herein is intended to constitute a waiver or indication of an intent to waive the protections of G.L. c. 258 by the Governmental Entity.

10.2 Insurer Requirements and Endorsements

All required insurance shall be carried by reputable insurers qualified to underwrite insurance in MA having a Best Rating of "A-". In addition, all insurance shall, (a) include Department as an additional

insured; (b) contain a severability of interest clause or cross-liability clause; (c) provide that Department shall not incur liability to the insurance carrier for payment of premium for such insurance; and (d) provide for thirty (30) calendar days' written notice to Department prior to cancellation, termination, or material change of such insurance; provided that to the extent the Interconnecting Customer is satisfying the requirements of subpart (d) of this paragraph by means of a presently existing insurance policy, the Interconnecting Customer shall only be required to make good faith efforts to satisfy that requirement and will assume the responsibility for notifying the Department as required above.

If the requirement of clause (a) in the paragraph above prevents Interconnecting Customer from obtaining the insurance required without added cost or due to written refusal by the insurance carrier, then upon Interconnecting Customer's written Notice to Department, the requirements of clause (a) shall be waived.

10.3 Evidence of Insurance

Evidence of the insurance required shall state that coverage provided is primary and is not in excess to or contributing with any insurance or self-insurance maintained by Interconnecting Customer.

The Interconnecting Customer is responsible for providing the Department with evidence of insurance in compliance with this DG Interconnection Policy on an annual basis.

Prior to the Department commencing work on System Modifications, and annually thereafter, the Interconnecting Customer shall have its insurer furnish to the Department certificates of insurance evidencing the insurance coverage required above. The Interconnecting Customer shall notify and send to the Department a certificate of insurance for any policy written on a "claims-made" basis. The Interconnecting Customer shall maintain extended reporting coverage for three years on all policies written on a "claims-made" basis.

In the event that an Owners Protective Liability policy is provided, the original policy shall be provided to the Department.

10.4 Self-Insurance

If the Interconnecting Customer has a self-insurance program established in accordance with commercially acceptable risk management practices, the Interconnecting Customer may comply with the following in lieu of the above requirements as reasonably approved by the Department:

- a. The Interconnecting Customer shall provide to Department, at least thirty (30) calendar days prior to the Date of Initial Operation, evidence of such program to self-insure to a level of coverage equivalent to that required.
- b. If the Interconnecting Customer ceases to self-insure to the standards required hereunder, or if the Interconnecting Customer is unable to provide continuing evidence of Interconnecting Customer's financial ability to self-insure, the Interconnecting Customer agrees to promptly obtain the coverage required under Section 10.1.a.

This section shall not allow any Governmental Entity to self-insure where the existence of a limitation on damages payable by a Government Entity imposed by the Massachusetts Tort Claims Act, G.L. c. 258, or similar law, could effectively limit recovery (by virtue of a cap on recovery) to an amount lower than that required in Section 10.1.a.

Exhibit A

Simplified Process Interconnection Application and Service Agreement

(Instructions, please do not submit this page)

General Information: To submit an Application to interconnect a generating Facility using the Simplified Process (reference Section 3.1 of the DG Interconnection Policy for eligibility) please fill out and submit the attached Application form completely, including your signature in the space provided. Interconnections that may be eligible for this Simplified Process include UL 1741-Listed inverter-based Facilities with power ratings of <10 kW single-phase or <25 kW three-phase. Please attach any documentation provided by the inverter manufacturer concerning the UL1741 listing provided by the manufacturer.

Submittal of Application: Mail the completed Application and supporting documentation to the Braintree Electric Light Department at the address shown on the Application form.

The Simplified Process is as follows:

- a. Application process:
 - i. The Interconnecting Customer shall submit a Simplified Process Application filled out properly and completely (Exhibit A).
 - ii. The Department will acknowledge to the Interconnecting Customer receipt of the Application within 5 business days of receipt.
 - iii. The Department will evaluate the Application for completeness and notifies the Interconnecting Customer within 15 business days of receipt that the Application is or is not complete and, if not, advise what is missing.
 - iv. In conjunction with item iii, the Department will verify that the Facility's equipment passes screens 1, 2, and 3 (refer to Figure 1 of the DG Interconnection Policy) and advise the Interconnecting Customer that the Facility qualifies for the Simplified Process.
- b. If approved, the Department will sign the Application approval line and return it to the Interconnecting Customer. In certain rare circumstances, the Department may require the Interconnecting Customer to pay for minor System Modifications. If so, a description of work and an estimate will be sent back to the Interconnecting Customer for approval. The Interconnecting Customer would then approve via a signature and payment for the minor System Modifications. If the Interconnecting Customer approves, the Department will perform the System Modifications. Then, the Department will sign the Application approval line and send it to the Interconnecting Customer.
- c. Upon receipt of signed Application, the Interconnecting Customer shall install the Facility. Following installation and prior to interconnection to the EPS, the Interconnecting Customer shall arrange for an inspection of the completed installation by the local electrical wiring inspector and the inspector shall sign off on the Certificate of Completion. If the Facility was installed by an electrical contractor, the contractor shall also sign off on the Certificate of Completion.
- d. The Interconnecting Customer shall return the Certificate of Completion to the Department.
- e. Following receipt of the Certificate of Completion, the Department may inspect the Facility for compliance with standards and/or arrange for a Witness Test. The Interconnecting Customer

shall not operate in parallel with the EPS until a Witness Test has been performed or has been previously waived on the Application Form. The Department is obligated to complete this Witness Test within 10 business days of the receipt of the Certificate of Completion. If the Department does not inspect in 10 business days or by mutual agreement of the Parties, the Witness Test is deemed waived.

- f. Assuming the wiring inspection and Department inspection and/or Witness Test is satisfactory, the Department will provide notification that interconnection is authorized by sending a copy of the fully executed Simplified Process Interconnection Application and Service Agreement (Exhibit A) to the Interconnecting Customer. If the Witness Test is not satisfactory, the Department has the right to disconnect the Facility, and will provide information to the Interconnecting Customer describing clearly what is required for approval.
- g. If the Interconnecting Customer does not substantially complete construction within 12 months after receiving approval from the Department, the Department will require the Interconnecting Customer to reapply for interconnection.

Contact Information: You must provide the contact information for the legal applicant (i.e. the Interconnecting Customer). If other parties are responsible for interfacing with the Department, you should provide their contact information as well.

Ownership Information: Please enter the legal names of the owner or owners of the Facility. Include the percentage ownership (if any) by any other company or public utility holding company, or by any entity owned by either.

Generating Facility Information: Please consult a recent electric bill from the Department and enter the Account Number and Meter Number on this Application. If the facility is to be installed in a new location, a temporary number may be assigned by the Department.

UL 1741 Listed: The standard UL 1741, "Inverters, Converters, and Controllers for Use in Independent Power Systems," addresses the electrical interconnection design of various forms of generating equipment. Many manufacturers choose to submit their equipment to a Nationally Recognized Testing Laboratory (NRTL) that verifies compliance with UL 1741. This term "Listed" is then marked on the equipment and supporting documentation.

Exhibit A
Simplified Process Interconnection Application and Service Agreement

(Please Print)

Date Prepared: _____

Contact Information

Legal Name and address of Interconnecting Customer (or Department name, if appropriate)

Customer or Department Name: _____

Contact Person, if Department: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Telephone (Daytime): _____ (Evening): _____

Facsimile Number: _____ E-Mail Address: _____

Alternative Contact Information (e.g., installation contractor or coordinating company, if appropriate)

Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Telephone (Daytime): _____ (Evening): _____

Facsimile Number: _____ E-Mail Address: _____

Electrical Contractor Contact Information (if appropriate):

Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Telephone: _____ Facsimile Number: _____

Ownership Information (include % ownership by any electric utility): _____

Generating Facility Information

Address of Facility: _____

City: _____ State: _____ Zip Code: _____

Account Number: _____ Meter Number: _____

Inverter Manufacturer: _____ Model Name and Number: _____

Quantity: ____ Nameplate Ratings: _____ (kW) _____ (kVA) _____ (AC Volts)) ____ (Phases, 1 or 3)

System Design Capacity: _____ (kW) _____ (kVA) DC-STC rating (if Solar PV): _____ (KW)

Prime Mover: Turbine Photovoltaic Reciprocating Engine Fuel Cell Other _____

Energy Source: Solar Wind Hydro Diesel Natural Gas Fuel Oil Other _____

IEEE 1547.1 (UL 1741) Listed? Yes ___ No ___

Estimated Install Date: _____ Estimated In-Service Date: _____

Customer Signature

I hereby certify that, to the best of my knowledge, all of the information provided in this Application is true and I agree to the Terms and Conditions on the following page:

Interconnecting Customer Signature: _____ Title: _____ Date: _____

Please list and attach any documentation provided by the inverter manufacturer describing the inverter's UL listing.

Approval to Construct Facility (For Department use only)

The Facility is approved for construction and contingent upon the terms and conditions of this Agreement and agreed upon system modifications per BELD Engineering Department.

Are system modifications required? Yes No To be Determined

Department Inspection and Functional Test Required: Yes ___ No ___

Department Signature: _____

Title: _____ Date: _____

Exhibit A - Attachment 1

Certificate of Completion for Simplified Process Interconnection

Installation Information:

Check if owner-installed

Customer or Department Name (print): _____

Contact Person, if Department: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Telephone (Daytime): _____ (Evening): _____

Facsimile Number: _____ E-Mail Address: _____

Address of Facility (if different from above): _____

City: _____ State: _____ Zip Code: _____

Electrical Contractor's Name (if appropriate): _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Telephone (Daytime): _____ (Evening): _____

Facsimile Number: _____ E-Mail Address: _____

Date of approval to install Facility granted by the Department: _____

Application ID number: _____

Inspection:

The system has been installed and inspected in compliance with the local Building/Electrical Code of: _____ (City/County) _____ (State)

Signed (Local Electrical Wiring Inspector, or attach signed electrical inspection): _____

Name (printed): _____ Date: _____

As a condition of interconnection you are required to mail or fax a copy of this form along with a copy of the signed electrical permit to:

Name: Sean Murphy

Department: Braintree Electric Light Department

Address: 150 Potter Rd., Braintree, MA 02184

Fax: No: 781-348-1003

Exhibit A - Attachment 2

Terms and Conditions for Simplified Process Interconnection

1. **Construction of the Facility.** The Interconnecting Customer may proceed to construct the Facility once the Approval to Install the Facility has been signed by the Department.
2. **Interconnection and operation.** The Interconnecting Customer may interconnect with the Department's system only after all of the following have occurred:
 - 2.1. **Municipal Inspection.** Upon completing construction, the Interconnecting Customer shall arrange for the Facility to be inspected or otherwise certified by the local electrical wiring inspector.
 - 2.2. **Fully Executed Certificate of Completion.** The Interconnecting Customer sends the fully executed Certificate of Completion to the Department at the address noted.
 - 2.3. **The Department has completed or waived the right to inspection.**
 - 2.4. **Fully Executed Simplified Process Interconnection Application and Service Agreement:** The Department provides a copy of the fully executed document to the Interconnecting Customer.
3. **Department Right of Inspection.** Within ten (10) business days after receipt of the Certificate of Completion, the Department may, upon reasonable notice and at a mutually convenient time, conduct an inspection of the Facility to ensure that all equipment has been appropriately installed and that all electrical connections have been made in accordance with the DG Interconnection Policy. The Department has the right to disconnect the Facility in the event of improper installation or failure to return Certificate of Completion. If the Department does not inspect in 10 days or by mutual agreement of the Parties, the Witness Test is deemed waived.
4. **Safe Operations and Maintenance.** The Interconnecting Customer shall be fully responsible to operate, maintain, and repair the Facility.
5. **Access.** The Department shall have access to the disconnect switch (if required) of the Facility at all times.
6. **Disconnection.** The Department may temporarily disconnect the Facility to facilitate planned or emergency Department work.
7. **Metering and Billing.** All Facilities approved under this Agreement qualify for net metering, as per the applicable Tariff, approved by the Department, as may be modified from time to time, and the following is necessary to implement the net metering provisions:
 - 7.1. **Interconnecting Customer Provides Meter Socket.** The Interconnecting Customer shall furnish and install, if not already in place, the necessary meter socket(s) and wiring in accordance with the requirements of the applicable Tariff and accepted electrical standards.
 - 7.2. **Department Installs Meter.** The Department shall furnish and install the necessary meter(s) within ten business days after receipt of the Certificate of Completion if inspection is waived, or within 10 business days after the inspection is completed, if such meter is not already in place.
8. **Indemnification.** Except as the Commonwealth is precluded from pledging credit by Section 1 of Article 62 of the Amendments to the Constitution of the Commonwealth of Massachusetts, and except as the Commonwealth's cities and towns are precluded by Section 7 of Article 2 of the Amendments to the Massachusetts Constitution from pledging their credit without prior legislative authority, the Interconnecting Customer shall indemnify and hold harmless the Braintree Electric Light Department, its commissioners, managers, employees, agents, consultants, attorneys and

assigns from and against any and all losses, claims, damages, costs, demands, fines, judgments, penalties, payments and liabilities, together with any costs and expenses (including attorneys' fees) incurred in connection with, resulting from, relating to or arising out of the construction, installation, operation, maintenance and repair of the Facility, including the customer's failure to comply with the Department's Terms and Conditions or any abnormality or failure in the operation of the Facility, or any adverse impact to the Department's system or its other customers.

9. **Limitation of Liability.** The Braintree Electric Light Department shall not be liable to the Interconnection Customer or any other person for any loss, injury, damage, casualty, fees or penalties, asserted on the basis of any theory, arising from, related to or caused by the construction, installation, operation, maintenance or repair of the Facility, and associated equipment and wiring, except to the extent of its own gross negligence or willful misconduct, but only to the extent permitted by law. Neither by inspection nor non-rejection nor in any other way does the Department give any warranty, expressed or implied as to the adequacy, safety or other characteristics of any equipment, wiring or devices, installed on the customer's premises, including the Facility.
10. **Termination.** This Agreement may be terminated under the following conditions:
 - 10.1. **By Mutual Agreement.** The Parties agree in writing to terminate the Agreement.
 - 10.2. **By Interconnecting Customer.** The Interconnecting Customer may terminate this Agreement by providing written notice to Department.
 - 10.3. **By Department.** The Department may terminate this Agreement (1) if the Facility fails to operate for any consecutive 12 month period, or (2) in the event that the Facility impairs the operation of the electric distribution system or service to other customers or materially impairs the local circuit and the Interconnecting Customer does not cure the impairment.
12. **Assignment/Transfer of Ownership of the Facility.** This Agreement shall survive the transfer of ownership of the Facility to a new owner when the new owner agrees in writing to comply with the terms of this Agreement and so notifies the Department.
13. **DG Interconnection Policy.** These Terms and Conditions are pursuant to the Department's Distributed Generation Interconnection Policy, as the same may be amended from time to time ("DG Interconnection Policy"). All defined terms set forth in these Terms and Conditions are as defined in the DG Interconnection Policy, which can be obtained from the Department.

Exhibit B

Expedited/Standard Process Interconnection Application

(Instructions, please do not submit this page)

General Information

If you wish to submit an Application to interconnect your generating facility using the Expedited or Standard Process, please fill out all pages of the attached Application form. Once complete, please sign, attach the supporting documentation requested and enclose an Application fee of \$3/kW (minimum of \$300 and maximum of \$2,500). As part of the Application review, the additional cost of any studies that are required to facilitate interconnection will be determined.

Contact Information: You must provide as a minimum the contact information of the legal applicant. If another party is responsible for interfacing with the Department (utility), you may optionally provide their contact information as well.

Ownership Information: Please enter the legal names of the owner or owners of the generating facility. Include the percentage ownership (if any) by any electric service company (utility) or public utility holding company, or by any entity owned by either.

Generating Facility Information

Account and Meter Numbers: Please consult a recent electric bill from the Department and enter the Account Number and Meter Number on this Application. If the facility is to be installed in a new location, a temporary number may be assigned by the Electric Department.

UL 1741 Listed: The standard UL 1741, "Inverters, Converters, and Controllers for Use in Independent Power Systems," addresses the electrical interconnection design of various forms of generating equipment. Many manufacturers choose to submit their equipment to a Nationally Recognized Testing Laboratory (NRTL) that verifies compliance with UL 1741. This "listing" is then marked on the equipment and supporting documentation.

DEP Air Quality Permit Needed: A generating facility may be considered a point source of emissions of concern by the Massachusetts Department of Environmental Protection (DEP). Therefore, when submitting this Application please indicate whether your generating facility will require an Air Quality Permit. You must answer these questions, however, your specific answers will not affect whether your Application is deemed complete. Please contact the DEP to determine whether the generating technology planned for your facility qualifies for a DEP waiver or requires a permit.

Exhibit B
Generating Facility Expedited/Standard Process Interconnection Application

(Please Print)

Date Prepared: _____

Contact Information

Legal Name and address of Interconnecting Customer (or Department name, if appropriate)

Customer or Department Name: _____

Contact Person, if Department: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Telephone (Daytime): _____ (Evening): _____

Facsimile Number: _____ E-Mail Address: _____

Alternative Contact Information (e.g., installation contractor or coordinating company, if appropriate)

Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Telephone (Daytime): _____ (Evening): _____

Facsimile Number: _____ E-Mail Address: _____

Electrical Contractor Contact Information (if appropriate):

Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Telephone: _____ Facsimile Number: _____

Ownership Information (include % ownership by any electric utility): _____

Generating Facility Information

Address of Facility: _____

City: _____ State: _____ Zip Code: _____

Account Number: _____ Meter Number: _____

Inverter Manufacturer: _____ Model Name and Number: _____

Quantity: ____ Nameplate Ratings: _____ (kW) _____ (kVA) _____ (AC Volts)) ____ (Phases, 1 or 3)

System Design Capacity: _____ (kW) _____ (kVA) DC-STC rating (if Solar PV): _____ (KW)

Prime Mover: Turbine Photovoltaic Reciprocating Engine Fuel Cell Other _____

Energy Source: Solar Wind Hydro Diesel Natural Gas Fuel Oil Other _____

IEEE 1547.1 Listed: Yes___ No___ IEEE 1547.1 Listed: Yes___ No___

DEP Air Quality Permit required: Yes___ No___ Not Sure ___ Permit applied for: Yes___ No___

Cogeneration Facility: Yes___ No___ Intention to Export Power: Yes___ No___

Anticipated Export Power Purchaser: _____

Export Form: Simultaneous Purchase/Sale___ Net Purchase/Sale___ Net Metering___ Other___

If Other, Specify: _____

Est. Install Date: _____ Ext. In-Service Date: _____ Agreement Needed By: _____

Certifications

I hereby certify that, to the best of my knowledge, all of the information provided in this Application is true:

Interconnecting Customer Signature: _____ Title: _____ Date: _____

(below is for Department use)

The information provided in this Application is complete:

Department Signature: _____ Title: _____ Date: _____

Generating Facility Technical Detail (furnish all applicable detail for each proposed machine)

List components of the generating facility that are currently certified or listed to national standards:

	<u>Equipment Type</u>	<u>Manufacturer</u>	<u>Model</u>	<u>National Standard</u>
1.	_____	_____	_____	_____
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____

Total Number of Generating Units in Facility: ___ Power Factor (Aggregate, Normal Operation, %): ___

Max Adjustable Leading Power Factor (%): ___ Max Adjustable Lagging Power Factor (%): ___

Inverter-type Generator Characteristic Data (if Applicable)

Max. Design Fault Contribution Current (amperes): _____ Instantaneous or RMS: _____

Harmonics Characteristics: _____

Start-up power requirements (kVA): _____

Rotating-type Generator Characteristic Data (if Applicable)

Rotating Frequency (rpm): ___ Neutral Grounding Resistor, Size (ohms, if used): _____

Synchronous Generating Units, Additional Information (if Applicable)

Synchronous Reactance, X_d : ___(PU)

Transient Reactance, X'_d : ___(PU)

Sub-transient Reactance, X''_d : _____(PU) Zero Sequence Reactance, X_0 : _____ (PU)
Neg. Sequence Reactance, X_2 : _____(PU) kVA Base: _____(kVA)
Field Voltage: _____(Volts) Field Current: _____(amperes)

Induction Generating Units, Additional Information (if Applicable)

Rotor Resistance, R_r : _____(ohms) Rotor Reactance, X_r : _____(ohms)
Stator Resistance, R_s : _____(ohms) Stator Reactance, X_s : _____(ohms)
Magnetizing Reactance, X_m : _____(ohms) Short Circuit Reactance, X_d'' : _____(ohms)
Exciting Current: _____(amperes) Temperature Rise: _____(over ambient)
Frame Size: _____
Total Rotating Inertia, H: _____ Per Unit on kVA Base: _____(PU)
Reactive Power Required (No Load): _____(VARs)
Reactive Power Required (Full Load): _____(VARs)

Induction Generating Units Started by Motoring, Additional Information (if Applicable)

Motoring Power: _____(kW) Design Letter: _____
Locked Rotor: _____(amperes) Method of Starting: _____

Interconnection Equipment Technical Detail

Transformer required between the generator and the point of interconnection: Yes ___ No ___
Transformer provided/owned by Interconnecting Customer: Yes ___ No ___

Transformer Data for Interconnecting Customer-Owned Transformer (if applicable)

Nameplate Rating: _____(kVA) Single or Three Phase: _____
Transformer Impedance: _____(% , on transformer kVA Base)
If Three Phase:
Transformer Primary: _____(Volts) Delta ___ Wye ___ Wye-Grounded ___ Other ___
Transformer Secondary: _____(Volts) Delta ___ Wye ___ Wye-Grounded ___ Other ___

Transformer Fuse Data, for Interconnecting Customer-Owned Fuse (if applicable)

(Attach copy of fuse manufacturer's Minimum Melt & Total Clearing Time-Current Curves)
Manufacturer: _____ Type: _____ Size: _____(amperes) Speed: _____

Interconnecting Circuit Breaker (if applicable)

Manufacturer: _____ Type: _____ Voltage Rating: _____ (Volts)
Load Rating: _____ (amperes) Interrupting Rating: _____ (amperes) Trip Speed: _____ (cycles)

Interconnection Protective Relays (if applicable)

(List of Functions and Adjustable Setpoints for protective equipment or software (If microprocessor-controlled):

<u>Setpoint Function</u>	<u>Minimum</u>	<u>Maximum</u>
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____

List of Protective Devices (if applicable, if Discrete Components)

(Enclose copy of any proposed Time-Overcurrent Coordination Curves)

Manufacturer: _____ Type: _____ Style/Catalog No.: _____ Proposed Setting: _____
Manufacturer: _____ Type: _____ Style/Catalog No.: _____ Proposed Setting: _____
Manufacturer: _____ Type: _____ Style/Catalog No.: _____ Proposed Setting: _____
Manufacturer: _____ Type: _____ Style/Catalog No.: _____ Proposed Setting: _____
Manufacturer: _____ Type: _____ Style/Catalog No.: _____ Proposed Setting: _____
Manufacturer: _____ Type: _____ Style/Catalog No.: _____ Proposed Setting: _____

Current Transformer Data (if applicable)

(Enclose copy of Manufacturer's Excitation & Ratio Correction Curves)

Manufacturer: _____ Type: _____ Accuracy Class: _____ Proposed Ratio Connection: _____
Manufacturer: _____ Type: _____ Accuracy Class: _____ Proposed Ratio Connection: _____

Voltage Transformer Data (if applicable)

Manufacturer: _____ Type: _____ Accuracy Class: _____ Proposed Ratio Connection: _____
Manufacturer: _____ Type: _____ Accuracy Class: _____ Proposed Ratio Connection: _____

General Technical Detail

Furnish a site electrical One-Line Diagram, showing the primary and secondary configuration of all generating facility equipment, current and voltage circuits, and protection and control schemes, stamped by a Licensed Massachusetts Professional Engineer (PE).

Furnish a site map indicating the precise physical location of the proposed generating facility (e.g., USGS topographic map or other diagram or documentation).

Furnish a scale drawing of the project site indicating the proposed location of the equipment and the proposed location of the PPC.

Furnish supporting documentation detailing the operation of the protection and control schemes.

Furnish copies of applicable schematic drawings for all protection and control circuits, relay current circuits, relay voltage circuits, and alarm/monitoring circuits (if applicable).

Furnish any other information deemed pertinent to the installation of the Facility.

Exhibit B - Attachment 1

Certificate of Completion for Expedited/Standard Process Interconnections

Installation Information:

Check if owner-installed

Customer or Department Name (print): _____

Contact Person, if Department: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Telephone (Daytime): _____ (Evening): _____

Facsimile Number: _____ E-Mail Address: _____

Address of Facility (if different from above): _____

City: _____ State: _____ Zip Code: _____

Electrical Contractor's Name (if appropriate): _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Telephone (Daytime): _____ (Evening): _____

Facsimile Number: _____ E-Mail Address: _____

Date of approval to install Facility granted by the Department: _____

Application ID number: _____

Inspection:

The system has been installed and inspected in compliance with the local Building/Electrical Code of: _____ (City/County) _____ (State)

Signed (Local Electrical Wiring Inspector, or attach signed electrical inspection): _____

Name (printed): _____ Date: _____

As a condition of interconnection you are required to send/fax a copy of this form along with a copy of the signed electrical permit to:

Name: Sean Murphy
Department: Braintree Electric Light Department
Address: 150 Potter Rd., Braintree, MA 02184
Fax: No: 781-348-1003

The facility shall not be operated in parallel with the Department's EPS until:

1. The Department has performed Witness Testing
2. The Parties have fully executed the Interconnection Service Agreement (Exhibit F).

Exhibit C - Supplemental Review Agreement

This Agreement, dated _____, is entered into by and between _____
_____ ("Interconnecting Customer") and the Braintree Electric Light Department
“(Department”), for the purpose of setting forth the terms, conditions and costs for conducting a
Supplemental Review relative to the Expedited Process as defined in Section 1.0 and outlined in Section
3.0 of the DG Interconnection Policy. This Supplemental Review pertains to Application
_____ (the Interconnecting Customer's Application ID number).

1. If the Supplemental Review determines the requirements for processing the Application through the Expedited Process including any System Modifications, then the modification requirements, reasoning, and costs for these modifications will be identified and included in an executable Interconnection Service Agreement sent to the Interconnecting Customer for execution. If the Supplemental Review does not determine the requirements, it will include a proposed Impact Study Agreement as part of the Standard Process which will include an estimate of the cost of the study.
2. The Interconnecting Customer agrees to provide, in a timely and complete manner, all additional information and technical data necessary for the Department to conduct the Supplemental Review not already provided in the Interconnecting Customer's Application.
3. All work pertaining to the Supplemental Review that is the subject of this Agreement will be approved and coordinated only through designated and authorized representatives of the Department and the Interconnecting Customer. Each party shall inform the other in writing of its designated and authorized representative, if different than what is in the Application.
4. The Department shall perform the Supplemental Review for a fee not to exceed \$1,250. The Department anticipates that the Supplemental Review will cost \$ _____. No work will be performed until payment is received.

Please indicate your acceptance of this Agreement by signing below.

Interconnecting Customer: _____ Date: _____

Exhibit D - Impact Study Agreement

This Agreement, dated _____, is entered into by and between _____
_____ ("Interconnecting Customer") and the Braintree Electric Light
Department ("Department"), for the purpose of setting forth the terms, conditions and costs for
conducting an Impact Study relative to the Standard Process as defined in Section 1.0 and outlined in
Section 3.0 of the DG Interconnection Policy. This Impact Study pertains to Application _____
(the Interconnecting Customer's Application ID number).

1. The Interconnecting Customer agrees to provide, in a timely and complete manner, all additional information and technical data necessary for the Department to conduct the Impact Study not already provided in the Interconnecting Customer's Application.
2. All work pertaining to the Impact Study that is the subject of this Agreement will be approved and coordinated only through designated and authorized representatives of the Department and the Interconnecting Customer. Each party shall inform the other in writing of its designated and authorized representative, if different than what is in the Application. The Department may retain an outside service firm or consultant to perform the Impact Study.
3. Where there are other potentially Affected Systems, and no single Party is in a position to prepare an Impact Study covering all potentially Affected Systems, the Department will coordinate but not be responsible for the timing of any additional studies required to determine the impact of the interconnection request on other potentially Affected Systems. The Interconnecting Customer shall be directly responsible to the potentially Affected System operators for all costs of any additional studies required to evaluate the impact of the interconnection on the potentially Affected Systems. The Department will not proceed with this Impact Study without the Interconnecting Customer's consent to have the other studies conducted.
4. If the Department determines, in accordance with Good Utility Practice, that the System Modifications to the Department's EPS are not substantial, the Impact Study will determine the scope and cost of the modifications. If the Department determines, in accordance with Good Utility Practice, that the System Modifications to the Department's EPS are substantial, the Impact Study will produce an estimate for the modification costs (within $\pm 25\%$) and a Detailed Study Agreement and its estimated cost.
5. Impact Study, together with any additional studies contemplated in Paragraph 3, shall form the basis for the Interconnecting Customer's proposed use of the Department's EPS and shall be furthermore utilized in obtaining necessary third-party approvals of any required facilities and requested distribution services. The Interconnecting Customer understands and acknowledges that any use of study results by the Interconnecting Customer or its agents, whether in preliminary or final form, prior to NEPOOL 18.4 approval, should such approval be required, is completely at the Interconnecting Customer's risk.
6. The Impact Study fee of \$ _____ is due in full prior to the execution of the Impact Study.
7. The Department will, in writing, advise the Interconnecting Customer in advance of any cost increase for work to be performed up to a total amount of increase of 10% only. All costs that exceed the 10% increase cap will be borne solely by the Department. Any such changes to the Department's costs for the work shall be subject to the Interconnecting Customer's consent. The Interconnecting Customer shall, within thirty (30) days of the Department's notice of increase, authorize such increase and make payment in the amount up to the 10% increase cap, or the Department will suspend the work and the corresponding agreement will terminate.

8. Final Accounting: Upon request by the Interconnecting Customer, the Department within ninety (90) business days after completion of the construction and installation of the System Modifications described in an attached exhibit to the Interconnection Service Agreement, shall provide Interconnecting Customer with a final accounting report of any difference between (a) Interconnecting Customer's cost responsibility under the Interconnection Service Agreement for the actual cost of such System Modifications, and (b) Interconnecting Customer's previous aggregate payments to the Department for such System Modifications. To the extent that Interconnecting Customer's cost responsibility in the Interconnection Service Agreement exceeds Interconnecting Customer's previous aggregate payments, the Department shall invoice Interconnecting Customer and Interconnecting Customer shall make payment to the Department within forty-five (45) days. To the extent that Interconnecting Customer's previous aggregate payments exceed Interconnecting Customer's cost responsibility under this agreement, the Department shall refund to Interconnecting Customer an amount equal to the difference within forty-five (45) days of the provision of such final accounting report.
9. In the event this Agreement is terminated for any reason, the Department shall refund to the Interconnecting Customer the portion of the above fee or any subsequent payment to the Department by the Interconnecting Customer that the Department did not expend or commit in performing its obligations under this Agreement. Payments for work performed shall not be subject to refunding except in accordance with Paragraph 11 below.
10. Nothing in this Agreement shall be interpreted to give the Interconnecting Customer immediate rights to wheel over or interconnect with the Department's EPS.
11. Except as the Commonwealth is precluded from pledging credit by Section 1 of Article 62 of the Amendments to the Constitution of the Commonwealth of Massachusetts, and except as the Commonwealth's cities and towns are precluded by Section 7 of Article 2 of the Amendments to the Massachusetts Constitution from pledging their credit without prior legislative authority, Interconnecting Customer and Department shall each indemnify, defend and hold the other, its directors, officers, employees and agents (including, but not limited to, affiliates and contractors and their employees), harmless from and against all liabilities, damages, losses, penalties, claims, demands, suits and proceedings of any nature whatsoever for personal injury (including death) or property damages to unaffiliated third parties that arise out of, or are in any manner connected with, the performance of this Agreement by that party, except to the extent that such injury or damages to unaffiliated third parties may be attributable to the negligence or willful misconduct of the party seeking indemnification.
12. Notwithstanding the foregoing, the Interconnecting Customer hereby waives recourse against the Department and its Affiliates for, and releases the Department and its Affiliates from, any and all liabilities arising from or attributable to incomplete, inaccurate, or otherwise faulty information supplied by the Interconnecting Customer.
13. If either party materially breaches any of its covenants hereunder, the other party may terminate this Agreement by serving notice of same on the other party to this Agreement.
14. This agreement shall be construed and governed in accordance with the laws of the Commonwealth of Massachusetts.
15. All amendments to this Agreement shall be in written form executed by both Parties.
16. The terms and conditions of this Agreement shall be binding on the successors and assigns of either Party.

17. This Agreement will remain in effect for a period of up to two years from its effective date.
18. This Agreement may be terminated under the following conditions:
- a. The Parties agree in writing to terminate the Agreement.
 - b. The Interconnecting Customer may terminate this agreement at any time by providing written notice to Department.
 - c. The Department may terminate this Agreement if the Interconnecting Customer either: (1) has not paid the fee or, (2) has not responded to requests for further information in accordance with provisions in the DG Interconnection Policy.

Interconnecting Customer

Braintree Electric Light Department

Name: _____

Name: _____

Title: _____

Title: _____

Date: _____

Date: _____

Exhibit E - Detailed Study Agreement

This Agreement, dated _____, is entered into by and between _____
_____ ("Interconnecting Customer") and the Braintree Electric Light
Department ("Department"), for the purpose of setting forth the terms, conditions and costs for
conducting an Detailed Study relative to the Standard process as defined in Section 1 and outlined in
Section 3 of the DG Interconnection Policy. This Detailed Study pertains to Application Number (the
Interconnecting Customer's Application ED number).

1. The Interconnecting Customer agrees to provide, in a timely and complete manner, all additional information and technical data necessary for the Department to conduct the Detailed Study not already provided in the Interconnecting Customer's Application.
2. All work pertaining to the Detailed Study that is the subject of this Agreement will be approved and coordinated only through designated and authorized representatives of the Department and the Interconnecting Customer. Each party shall inform the other in writing of its designated and authorized representative, if different than what is in the Application. The Department may retain an outside service firm or consultant to perform the Impact Study.
3. Where there are other Affected Systems identified by the Impact Studies, and no single Party is in a position to prepare a Detailed Study covering all Affected Systems, the Department will coordinate but not be responsible for the timing of any additional studies required to determine the System Modifications of the interconnection request on other Affected Systems. The Interconnecting Customer shall be directly responsible to the Affected System operators for all costs of any additional studies required to evaluate the impact of the interconnection on the Affected Systems. The Department will not proceed with this Detailed Study without the Interconnecting Customer's consent to have the other studies conducted.
4. The Department will provide an estimate of the costs of the System Modifications required as a result of the Detailed Study.
5. The Detailed Study, together with any additional studies contemplated in Paragraph 3, shall form the basis for the Interconnecting Customer's proposed use of the Department's EPS and shall be furthermore utilized in obtaining necessary third-party approvals of any required facilities and requested distribution services. The Interconnecting Customer understands and acknowledges that any use of study results by the Interconnecting Customer or its agents, whether in preliminary or final form, prior to NEPOOL 18.4 approval, should such approval be required, is completely at the Interconnecting Customer's risk.
6. The Detailed Study fee of \$ _____ (except as noted below) is due in full prior to the execution of the Detailed Study.
7. The Department will, in writing, advise the Interconnecting Customer in advance of any cost increase for work to be performed up to a total amount of increase of 10% only. All costs that exceed the 10% increase cap will be borne solely by the Department. Any such changes to the Department's costs for the work shall be subject to the Interconnecting Customer's consent. The Interconnecting Customer shall, within thirty (30) days of the Department's notice of increase, authorize such increase and make payment in the amount up to the 10% increase cap, or the Department will suspend the work and the corresponding agreement will terminate.
8. Final Accounting Upon request by the Interconnecting Customer, the Department within ninety (90) business days after completion of the construction and installation of the System Modifications described in an attached exhibit to the Interconnection Service Agreement, shall provide

Interconnecting Customer with a final accounting report of any difference between (a) Interconnecting Customer's cost responsibility under the Interconnection Service Agreement for the actual cost of such System Modifications, and (b) Interconnecting Customer's previous aggregate payments to the Department for such System Modifications. To the extent that Interconnecting Customer's cost responsibility in the Interconnection Service Agreement exceeds Interconnecting Customer's previous aggregate payments, the Department shall invoice Interconnecting Customer and Interconnecting Customer shall make payment to the Department within forty-five (45) days. To the extent that Interconnecting Customer's previous aggregate payments exceed Interconnecting Customer's cost responsibility under this agreement, the Department shall refund to Interconnecting Customer an amount equal to the difference within forty-five (45) days of the provision of such final accounting report.

9. In the event this Agreement is terminated for any reason, the Department shall refund to the Interconnecting Customer the portion of the above fee or any subsequent payment to the Department by the Interconnecting Customer that the Department did not expend or commit in performing its obligations under this Agreement. Payments for work performed shall not be subject to refunding except in accordance with Paragraph 11 below.
10. Nothing in this Agreement shall be interpreted to give the Interconnecting Customer immediate rights to wheel over or interconnect with the Department's EPS.
11. Except as the Commonwealth is precluded from pledging credit by Section of Article 62 of the Amendments to the Constitution of the Commonwealth of Massachusetts, and except as the Commonwealth's cities and towns are precluded by Section 7 of Article 2 of the Amendments to the Massachusetts Constitution from pledging their credit without prior legislative authority, Interconnecting Customer and Department shall each indemnify, defend and hold the other, its directors, officers, employees and agents (including, but not limited to, affiliates and contractors and their employees), harmless from and against all liabilities, damages, losses, penalties, claims, demands, suits and proceedings of any nature whatsoever for personal injury (including death) or property damages to unaffiliated third parties that arise out of, or are in any manner connected with, the performance of this Agreement by that party, except to the extent that such injury or damages to unaffiliated third parties may be attributable to the negligence or willful misconduct of the party seeking indemnification.
12. Notwithstanding the foregoing, the Interconnecting Customer hereby waives recourse against the Department and its Affiliates for, and releases the Department and its Affiliates from, any and all liabilities arising from or attributable to information supplied by the Interconnecting Customer.
13. This agreement shall be construed and governed in accordance with the laws of the Commonwealth of Massachusetts.
14. All amendments to this Agreement shall be in written form executed by both Parties.
15. The terms and conditions of this Agreement shall be binding on the successors and assigns of either Party.
16. This Agreement will remain in effect for a period of up to two years from its effective date.
17. This Agreement may be terminated under the following conditions:
 - a. The Parties agree in writing to terminate the Agreement.
 - b. The Interconnecting Customer may terminate this agreement at any time by providing written

notice to Department.

- c. The Department may terminate this Agreement if the Interconnecting Customer either: (1) has not paid the fee or, (2) has not responded to requests for further information in accordance with provisions in the DG Interconnection Policy.

Interconnecting Customer

Braintree Electric Light Department

Name: _____

Name: _____

Title: _____

Title: _____

Date: _____

Date: _____

Exhibit F - Interconnection Service Agreement

1. Parties. This Interconnection Service Agreement ("Agreement"), dated as of _____ ("Effective Date") is entered into, by and between the Braintree Electric Light Department, a Massachusetts municipal light plant with a principal place of business at 150 Potter Rd., Braintree, MA 02184 (hereinafter referred to as the "Department"), and _____ a _____ corporation with a principal place of business at _____ ("Interconnecting Customer").

- a. The Department and the Interconnecting Customer are collectively referred to as the "Parties".
- b. Terms used herein without definition shall have the meanings set forth in Section 1.2 of the Department's DG Interconnection Policy, which is hereby incorporated by reference.

2. Basic Understandings. This Agreement provides for parallel operation of an Interconnecting Customer's Facility with the Department's EPS to be installed and operated by the Interconnecting Customer at _____ (Facility name, address, and end-use customer account number, if applicable). A description of the Facility is provided as Attachment 1. If the Interconnecting Customer is not the Customer, an Agreement between the Department and the Department's Retail Customer, attached as Exhibit G to the DG Interconnection Policy, must be signed and included as an Attachment to this Agreement.

The Interconnecting Customer has the right to operate its Facility in parallel with the Department's EPS immediately upon successful completion of the protective relays testing as witnessed by the Department and receipt of written notice from the Department that interconnection with the Department's EPS is authorized ("Authorization Date").

3. Term. This Agreement shall become effective as of the Effective Date. The Agreement shall continue in full force and effect until terminated pursuant to Section 4 of this Agreement.

4. Termination. This Agreement may be terminated under the following conditions:

4.1 The Parties agree in writing to terminate the Agreement.

4.1.1 The Interconnecting Customer may terminate this agreement at any time by providing sixty (60) days written notice to Department.

4.1.2 The Department may terminate this Agreement upon the occurrence of an Event of Default by the Interconnecting Customer as provided in Section 18 of this Agreement.

4.1.3 The Department may terminate this Agreement if the Interconnecting Customer either: (1) fails to energize the Facility within 12 months of the Authorization Date; or, (2) permanently abandons the Facility. Failure to operate the Facility for any consecutive 12 month period after the Authorization Date shall constitute permanent abandonment unless otherwise agreed to in writing between the Parties.

4.1.4 The Department, upon 30 days notice, may terminate this Agreement if there are any changes in Department regulations or state law that have a material adverse effect on the Department's ability to perform its obligations under the terms of this Agreement.

- 4.2 **Survival of Obligations.** The termination of this Agreement shall not relieve either Party of liabilities and obligations, owed or continuing at the time of termination. Sections 5, 10, 12, 13, and 25 as it relates to disputes pending or for wrongful termination of this Agreement shall survive the termination of this Agreement.
- 4.3 **Related Agreements.** Any agreement attached to and incorporated into this Agreement terminate concurrently with this Agreement unless the Parties have agreed otherwise in writing.
5. **General Payment Terms.** The Interconnecting Customer shall be responsible for the System Modification costs and payment terms identified in Attachment 2 of this Agreement and any approved cost increases pursuant to the terms of the DG Interconnection Policy. Attachment 3 will include a payment and construction schedule for both parties.
- 5.1 **Cost or Fee Adjustment Procedures.** The Department will, in writing, advise the Interconnecting Customer in advance of any cost increase for work to be performed up to a total amount of increase of 10% only. All costs that exceed the 10% increase cap will be borne solely by the Department. Any such changes to the Department's costs for the work shall be subject to the Interconnecting Customer's consent. The Interconnecting Customer shall, within thirty (30) days of the Department's notice of increase, authorize such increase and make payment in the amount up to the 10% increase cap, or the Department will suspend the work and the corresponding agreement will terminate.
- 5.2 **Final Accounting.** Upon request by the Interconnecting Customer, the Department within ninety (90) business days after completion of the construction and installation of the System Modifications described in an attached exhibit to the Interconnection Service Agreement, shall provide Interconnecting Customer with a final accounting report of any difference between (a) Interconnecting Customer's cost responsibility under the Interconnection Service Agreement for the actual cost of such System Modifications, and (b) Interconnecting Customer's previous aggregate payments to the Department for such System Modifications. To the extent that Interconnecting Customer's cost responsibility in the exceeds Interconnecting Customer's previous aggregate payments, the Department shall invoice Interconnecting Customer and Interconnecting Customer shall make payment to the Department within 45 days. To the extent that Interconnecting Customer's previous aggregate payments exceed Interconnecting Customer's cost responsibility under this agreement, the Department shall refund to Interconnecting Customer an amount equal to the difference within forty five (45) days of the provision of such final accounting report.
6. **Operating Requirements**
- 6.1 **General Operating Requirements.** Interconnecting Customer shall operate and maintain the Facility in accordance with the applicable manufacturer's recommended maintenance schedule, in compliance with all aspects of the Department's DG Interconnection Policy. The Interconnecting Customer shall continue to comply with all applicable laws and requirements after interconnection has occurred. In the event the Department has reason to believe that the Interconnecting Customer's installation may be the source of problems on the Department's EPS, the Department has the right to install monitoring equipment at a mutually agreed upon location to determine the source of the problems. If the Facility is determined to be the source of the problems, the Department may require disconnection as outlined in Section 7.0 of the DG Interconnection Policy. The cost of this testing will be borne by the Department unless the Department demonstrates that the problem or problems are caused by the Facility or if the test was performed at the request of the Interconnecting Customer.

- 6.2 No Adverse Effects; Non-interference.** Department shall notify Interconnecting Customer if there is evidence that the operation of the Facility could cause disruption or deterioration of service to other Customers served from the same Department's EPS or if operation of the Facility could cause damage to Department's EPS or Affected Systems. The deterioration of service could be, but is not limited to, harmonic injection in excess of IEEE Standard 1547-2003, as well as voltage fluctuations caused by large step changes in loading at the Facility. Each Party will notify the other of any emergency or hazardous condition or occurrence with its equipment or facilities which could affect safe operation of the other Party's equipment or facilities. Each Party shall use reasonable efforts to provide the other Party with advance notice of such conditions.

The Department will operate the EPS in such a manner so as to not unreasonably interfere with the operation of the Facility. The Interconnecting Customer shall protect itself from normal disturbances propagating through the Department's EPS, and such normal disturbances shall not constitute unreasonable interference unless the Department has deviated from Good Utility Practice. Examples of such disturbances could be, but are not limited to, single-phasing events, voltage sags from remote faults on the Department's EPS, and outages on the Department's EPS. If the Interconnecting Customer demonstrates that the Department's EPS is adversely affecting the operation of the Facility and if the adverse effect is a result of a Department deviation from Good Utility Practice, the Department shall take appropriate action to eliminate the adverse effect.

- 6.3 Safe Operations and Maintenance.** Each Party shall operate, maintain, repair, and inspect, and shall be fully responsible for, the facility or facilities that it now or hereafter may own unless otherwise specified in this Agreement. Each Party shall be responsible for the maintenance, repair and condition of respective lines and appurtenances on their respective side of the PCC. The Department and Interconnecting Customer shall each provide equipment on its respective side of the PCC that adequately protects the Department's EPS, personnel, and other persons from damage and injury.

- 6.4 Access.** The Department shall have access to the disconnect switch of the Facility at all times.

6.4.1 Department and Interconnecting Customer Representatives. Each Party shall provide and update as necessary the telephone number that can be used at all times to allow either Party to report an emergency.

6.4.2 Department Right to Access Department-Owned Facilities and Equipment. If necessary for the purposes of the DG Interconnection Policy and in the manner it describes, the Interconnecting Customer shall allow the Department access to the Department's equipment and the Department's facilities located on the Interconnecting Customer's or Customer's premises. To the extent that the Interconnecting Customer does not own all or any part of the property on which the Department is required to locate its equipment or facilities to serve the Interconnecting Customer under the DG Interconnection Policy, the Interconnecting Customer shall secure and provide in favor of the Department the necessary rights to obtain access to such equipment or facilities, including easements

6.4.3 Right to Review Information. The Department shall have the right to review and obtain copies of Interconnecting Customer's operations and maintenance records,

logs, or other information such as, unit availability, maintenance outages, circuit breaker operation requiring manual reset, relay targets and unusual events pertaining to Interconnecting Customer's Facility or its interconnection with the Department's EPS. This information will be treated as customer-confidential and only used for the purposes of meeting the requirements of Section 4.2.4 in the DG Interconnection Policy.

7. Disconnection

7.1 Temporary Disconnection

- 7.1.1 **Emergency Conditions.** Department shall have the right to immediately and temporarily disconnect the Facility without prior notification in cases where, in the reasonable judgment of Department, continuance of such service to Interconnecting Customer is imminently likely to (i) endanger persons or damage property or (ii) cause a material adverse effect on the integrity or security of, or damage to, Department's EPS or to the electric systems of others to which the Department's EPS is directly connected. Department shall notify Interconnecting Customer promptly of the emergency condition. Interconnecting Customer shall notify Department promptly when it becomes aware of an emergency condition that affects the Facility that may reasonably be expected to affect the Department's EPS. To the extent information is known, the notification shall describe the emergency condition, the extent of the damage or deficiency, or the expected effect on the operation of both Parties' facilities and operations, its anticipated duration and the necessary corrective action.
- 7.1.2 **Routine Maintenance, Construction and Repair.** Department shall have the right to disconnect the Facility from the Department's EPS when necessary for routine maintenance, construction and repairs on the Department's EPS. The Department shall provide the Interconnecting Customer with a minimum of seven calendar days planned outage notification consistent with the Department's planned outage notification protocols. If the Interconnecting Customer requests disconnection by the Department at the PCC, the Interconnecting Customer shall provide a minimum of seven days notice to the Department. Any additional notification requirements will be specified by mutual agreement in the Interconnection Service Agreement. Department shall make an effort to schedule such curtailment or temporary disconnection with Interconnecting Customer.
- 7.2.3 **Forced Outages.** During any forced outage, Department shall have the right to suspend interconnection service to effect immediate repairs on the Department's EPS; provided, however, Department shall use reasonable efforts to provide the Interconnecting Customer with prior notice. Where circumstances do not permit such prior notice to Interconnecting Customer, Department may interrupt Interconnection Service and disconnect the Facility from the Department's EPS without such notice.
- 7.1.4 **Non-Emergency Adverse Operating Effects.** The Department may disconnect the Facility if the Facility is having an adverse operating effect on the Department's EPS or other customers that is not an emergency, and the Interconnecting Customer fails to correct such adverse operating effect after written notice has been provided and a maximum of 45 days to correct such adverse operating effect has elapsed.
- 7.1.5 **Modification of the Facility.** Department shall notify Interconnecting Customer if there is evidence of a material modification to the Facility and shall have the right to immediately suspend interconnection service in cases where such material

modification has been implemented without prior written authorization from the Department.

- 7.1.6 **Re-connection.** Any curtailment, reduction or disconnection shall continue only for so long as reasonably necessary. The Interconnecting Customer and the Department shall cooperate with each other to restore the Facility and the Department's EPS, respectively, to their normal operating state as soon as reasonably practicable following the cessation or remedy of the event that led to the temporary disconnection.

7.2 Permanent Disconnection

- 7.2.1 The Interconnecting Customer has the right to permanently disconnect at any time with 30 days written notice to the Department.

- 7.2.2 The Department may permanently disconnect the Facility upon termination of the Interconnection Service Agreement in accordance with the terms thereof.

8. **Metering.** Metering of the output from the Facility shall be conducted pursuant to the terms of the DG Interconnection Policy.

9. **Assignment.** Except as provided herein, Interconnecting Customer shall not voluntarily assign its rights or obligations, in whole or in part, under this Agreement without Department's written consent. Any assignment Interconnecting Customer purports to make without Department's written consent shall not be valid. Department shall not unreasonably withhold or delay its consent to Interconnecting Customer's assignment of this Agreement. Notwithstanding the above, Department's consent will not be required for any assignment made by Interconnecting Customer to an Affiliate or as collateral security in connection with a financing transaction. In all events, the Interconnecting Customer shall not be relieved of its obligations under this Agreement unless, and until the assignee assumes in writing all obligations of this Agreement and notifies the Department of such assumption.

10. **Confidentiality.** Department shall maintain confidentiality of all Interconnecting Customer confidential and proprietary information except as otherwise required by applicable laws and regulations, the DG Interconnection Policy, or as approved by the Interconnecting Customer in the Simplified or Expedited/Standard Application form or otherwise.

11. Insurance Requirements.

11.1 General Liability

- a. In connection with the Interconnecting Customer's performance of its duties and obligations under the Interconnection Service Agreement, the Interconnecting Customer shall maintain, during the term of the Agreement, general liability insurance with a combined single limit of not less than:
 - i. Five million dollars (\$5,000,000) for each occurrence and in the aggregate if the Gross Nameplate Rating of Interconnecting Customer's Facility is greater than five (5) MW;
 - ii. Two million dollars (\$2,000,000) for each occurrence and five million (\$5,000,000) in the aggregate if the Gross Nameplate Rating of Interconnecting Customer's Facility is greater than 500 kW and less than or equal to five (5) MW;
 - iii. One million dollars (\$1,000,000) for each occurrence and in the aggregate if the Gross Nameplate Rating of Interconnecting Customer's Facility is greater than sixty (60) kW and

less than or equal to 500 kW;

- b. Pursuant to 220 CMR 11.04, no insurance is required for customers with facilities eligible for Class 1 Net Metering (facilities less than or equal to sixty (60) kW). However, the Department recommends that the Interconnecting Customer obtain adequate insurance to cover potential liabilities.
- c. Any combination of General Liability and Umbrella/Excess Liability policy limits can be used to satisfy the limit requirements stated above.
- d. The general liability insurance required to be purchased in this Section 10 may be purchased for the direct benefit of the Department and shall respond to third party claims asserted against the Department (hereinafter known as "Owners Protective Liability"). Should this option be chosen, the requirement of Section 10.2.a will not apply but the Owners Protective Liability policy will be purchased for the direct benefit of the Department and the Department will be designated as the primary and "Named Insured" under the policy.
- e. The insurance hereunder is intended to provide coverage for the Department solely with respect to claims made by third parties against the Department.
- f. In the event the Commonwealth of Massachusetts, or any other governmental subdivision thereof subject to the claims limits of the Massachusetts Tort Claims Act, G.L. c. 258 (hereinafter referred to as the "Governmental Entity") is the Interconnecting Customer, any insurance maintained by the Governmental Entity shall contain an endorsement that strictly prohibits the applicable insurance company from interposing the claims limits of G.L. c. 258 as a defense in either the adjustment of any claim, or in the defense of any lawsuit directly asserted against the insurer by the Department. Nothing herein is intended to constitute a waiver or indication of an intent to waive the protections of G.L. c. 258 by the Governmental Entity.

11.2 Insurer Requirements and Endorsements

All required insurance shall be carried by reputable insurers qualified to underwrite insurance in MA having a Best Rating of "A-". In addition, all insurance shall, (a) include Department as an additional insured; (b) contain a severability of interest clause or cross-liability clause; (c) provide that Department shall not incur liability to the insurance carrier for payment of premium for such insurance; and (d) provide for thirty (30) calendar days' written notice to Department prior to cancellation, termination, or material change of such insurance; provided that to the extent the Interconnecting Customer is satisfying the requirements of subpart (d) of this paragraph by means of a presently existing insurance policy, the Interconnecting Customer shall only be required to make good faith efforts to satisfy that requirement and will assume the responsibility for notifying the Department as required above.

If the requirement of clause (a) in the paragraph above prevents Interconnecting Customer from obtaining the insurance required without added cost or due to written refusal by the insurance carrier, then upon Interconnecting Customer's written Notice to Department, the requirements of clause (a) shall be waived.

11.3 Evidence of Insurance

Evidence of the insurance required shall state that coverage provided is primary and is not in excess to or contributing with any insurance or self-insurance maintained by Interconnecting Customer.

The Interconnecting Customer is responsible for providing the Department with evidence of

insurance in compliance with this DG Interconnection Policy on an annual basis.

Prior to the Department commencing work on System Modifications, and annually thereafter, the Interconnecting Customer shall have its insurer furnish to the Department certificates of insurance evidencing the insurance coverage required above. The Interconnecting Customer shall notify and send to the Department a certificate of insurance for any policy written on a "claims-made" basis. The Interconnecting Customer shall maintain extended reporting coverage for three years on all policies written on a "claims-made" basis.

In the event that an Owners Protective Liability policy is provided, the original policy shall be provided to the Department.

11.4 Self-Insurance

If the Interconnecting Customer has a self-insurance program established in accordance with commercially acceptable risk management practices. The Interconnecting Customer may comply with the following in lieu of the above requirements as reasonably approved by the Department:

- a. The Interconnecting Customer shall provide to Department, at least thirty (30) calendar days prior to the Date of Initial Operation, evidence of such program to self-insure to a level of coverage equivalent to that required.
- b. If the Interconnecting Customer ceases to self-insure to the standards required hereunder, or if the Interconnecting Customer is unable to provide continuing evidence of Interconnecting Customer's financial ability to self-insure, the Interconnecting Customer agrees to promptly obtain the coverage required under Section 10.1

This section shall not allow any Governmental Entity to self-insure where the existence of a limitation on damages payable by a Government Entity imposed by the Massachusetts Tort Claims Act, G.L. c. 258, or similar law, could effectively limit recovery (by virtue of a cap on recovery) to an amount lower than that required in Section 10.1.a.

11.5 Insurance Submittals

All insurance certificates, statements of self-insurance, endorsements, cancellations, terminations, alterations, and material changes of such insurance shall be issued and submitted to the following:

Attention: General Manager
Braintree Electric Light Department
150 Potter Rd.
Braintree, MA 02184
Fax: No: 781-348-1003

- 12. Indemnification.** Except as the Commonwealth is precluded from pledging credit by Section 1 of Article 62 the Amendments to the Constitution of the Commonwealth of Massachusetts, and except as the Commonwealth's cities and towns are precluded by Section 7 of Article 2 of the Amendments to the Massachusetts Constitution from pledging their credit without prior legislative authority, Interconnecting Customer and Department shall each indemnify, defend and hold the other, its directors, officers, employees and agents (including, but not limited to, Affiliates and contractors and their employees), harmless from and against all liabilities, damages, losses, penalties, claims, demands, suits and proceedings of any nature whatsoever for personal injury (including death) or property damages to unaffiliated third parties that arise out of or are in any manner connected with the performance of this Agreement by that Party except to the extent that such injury or damages to unaffiliated third parties may be attributable to the negligence or willful misconduct of the Party

seeking indemnification.

13. Limitation of Liability. Each Party's liability to the other Party for any loss, cost, claim, injury, liability, expense, including court costs and reasonable attorney's fees, relating to or arising from any act or omission in its performance of this Agreement, shall be limited to the amount of direct damage or liability actually incurred. In no event shall either Party be liable to the other Party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever.

14. Amendments and Modifications. No amendment or modification of this Agreement shall be binding unless in writing and duly executed by both Parties.

15. Permits and Approvals. Interconnecting Customer shall obtain all environmental and other permits lawfully required by governmental authorities for the construction and operation of the Facility. Prior to the construction of System Modifications the interconnecting customer will notify the Department that it has initiated the permitting process. Prior to the commercial operation of the Facility the Customer will notify the Department that it has obtained all permits necessary. Upon request the Interconnecting Customer shall provide copies of one or more of the necessary permits to the Department.

16. Force Majeure. For purposes of this Agreement, "Force Majeure Event" means any event:

- a. that is beyond the reasonable control of the affected Party; and,
- b. that the affected Party is unable to prevent or provide against by exercising commercially reasonable efforts, including the following events or circumstances, but only to the extent they satisfy the preceding requirements: acts of war or terrorism, public disorder, insurrection, or rebellion; floods, hurricanes, earthquakes, lighting, storms, and other natural calamities; explosions or fire; strikes, work stoppages, or labor disputes; embargoes; and sabotage. If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, such Party will promptly notify the other Party in writing, and will keep the other Party informed on a continuing basis of the scope and duration of the Force Majeure Event. The affected Party will specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the affected Party is taking to mitigate the effects of the event on its performance. The affected Party will be entitled to suspend or modify its performance of obligations this Agreement, other than the obligation to make payments then due or becoming due under this Agreement, but only to the extent that the effect of the Force Majeure Event cannot be mitigated by the use of reasonable efforts. The affected Party will use reasonable efforts to resume its performance as soon as possible. In no event will the unavailability or inability to obtain funds constitute a Force Majeure Event.

17. Notices.

17.1 Any written notice, demand, or request required or authorized in connection with this Agreement ("Notice") shall be deemed properly given on the date actually delivered in person or five (5) business days after being sent by certified mail, e-mail or fax with confirmation of receipt and original follow-up by mail, or any nationally-recognized delivery service with proof of delivery, postage prepaid, to the person specified below:

If to Department:

Attention: General Manager

Braintree Electric Light Department

150 Potter Rd., Braintree MA 02184

Phone: _____

FAX: _____

If to Interconnecting Customer:

Attention: _____

Phone: _____

FAX: _____

17.2 A Party may change its address for Notices at any time by providing the other Party Notice of the change in accordance with Section 17.1.

17.3 The Parties may also designate operating representatives to conduct the daily communications, which may be necessary or convenient for the administration of this Agreement. Such designations, including names, addresses, and phone numbers may be communicated or revised by one Party's Notice to the other.

18. Default and Remedies

18.1 Defaults. Any one of the following shall constitute "An Event of Default."

- (i) One of the Parties shall fail to pay any undisputed bill for charges incurred under this Agreement or other amounts which one Party owes the other Party as and when due, any such failure shall continue for a period of thirty (30) days after written notice of nonpayment from the affected Party to the defaulting Party, or
- (ii) One of the Parties fails to comply with any other provision of this Agreement or breaches any representation or warranty in any material respect and fails to cure or remedy that default or breach within sixty (60) days after notice and written demand by the affected Party to cure the same or such longer period reasonably required to cure (not to exceed an additional 90 days unless otherwise mutually agreed upon), provided that the defaulting Party diligently continues to cure until such failure is fully cured.

18.2 Remedies. Upon the occurrence of an Event of Default, the affected Party may at its option, in addition to any remedies available under any other provision herein, do any, or any combination, as appropriate, of the following:

- a. Continue to perform and enforce this Agreement;
- b. Recover damages from the defaulting Party except as limited by this Agreement;
- c. By written notice to the defaulting Party terminate this Agreement;
- d. Pursue any other remedies it may have under this Agreement or under applicable law or in equity.

19. Entire Agreement. This Agreement, including any attachments or appendices, is entered into pursuant to the DG Interconnection Policy. Together the Agreement and the DG Interconnection

Policy represent the understanding between the Parties, their agents, and employees as to the subject matter of this Agreement. Each Party also represents that in entering into this Agreement, it has not relied on any promise, inducement, representation, warranty, agreement or other statement not set forth in this Agreement or in the Department's DG Interconnection Policy.

- 20. Supersedence.** In the event of a conflict between this Agreement, the DG Interconnection Policy, or the terms of any other standard, Exhibit or Attachment incorporated by reference, the terms of the DG Interconnection Policy, as the same may be amended from time to time, shall control. In the event that the Department files a revised standard related to interconnection for Department approval after the effective date of this Agreement, the Department shall, not later than the date of such filing, notify the signatories of this Agreement and provide them a copy of said filing.
- 21. Governing Law.** This Agreement shall be interpreted, governed, and construed under the laws of the Commonwealth of Massachusetts without giving effect to choice of law provisions that might apply to the law of a different jurisdiction.
- 22. Non-waiver.** None of the provisions of this Agreement shall be considered waived by a Party unless such waiver is given in writing. The failure of a Party to insist in any one or more instances upon strict performance of any of the provisions of this Agreement or to take advantage of any of its rights hereunder shall not be construed as a waiver of any such provisions or the relinquishment of any such rights for the future, but the same shall continue and remain in full force and effect.
- 23. Counterparts.** This Agreement may be signed in counterparts.
- 24. No Third Party Beneficiaries.** This Agreement is made solely for the benefit of the Parties hereto. Nothing in the Agreement shall be construed to create any rights in or duty to, or standard of care with respect to, or any liability to, any person not a party to this Agreement.
- 25. Dispute Resolution.** Unless otherwise agreed by the Parties, all disputes arising under this Agreement shall be resolved pursuant to the Dispute Resolution Process set forth in the DG Interconnection Policy.
- 26. Severability.** If any clause, provision, or section of this Agreement is ruled invalid by any court of competent jurisdiction, the invalidity of such clause, provision, or section, shall not affect any of the remaining herein.
- 27. Signatures.** IN WITNESS WHEREOF, the Parties hereto have caused two (2) originals of this Agreement to be executed under seal by their duly authorized representatives.

Interconnecting Customer

Braintree Electric Light Department

By: _____ By: _____

Name: _____ Name: _____

Title: _____ Title: _____

The following attachments shall be included as appropriate for each specific Interconnection Service Agreement:

- Attachment 1: Description of Facilities, including demarcation of Point of Common Coupling
- Attachment 2: Description of System Modifications
- Attachment 3: Costs of System Modifications and Payment Terms
- Attachment 4: Special Operating Requirements, if any
- Attachment 5: Agreement between the Department and the Department's Retail Customer

(Exhibit G - to be signed by the Department's retail customer where the Facility will be placed, in the event that the retail customer is not the owner and/or operator of the Facility)

Exhibit G

Agreement between the Department and the Department's Retail Customer

(Note: to be signed by the Department's retail customer where the Facility will be placed, in the event that the retail customer is not the owner and/or operator of the Facility.)

Parties. This Agreement between the Department and the Department's Retail Customer ("Agreement"), dated as of _____ ("Effective Date" of this Agreement) is entered into, by and between the Braintree Electric Light Department, a Massachusetts municipal light plant with a principal place of business at 150 Potter Rd., Braintree, MA 02184 (hereinafter referred to as the "Department"), and _____, a _____ corporation with a principal place of business at _____ ("Customer"). (The Department and Customer are collectively referred to as the "Parties"). Terms used herein without definition shall have the meanings set forth in Section 1.2 of the DG Interconnection Policy, which is hereby incorporated by reference.

1. SCOPE, PURPOSE, AND RELATED AGREEMENTS

This Agreement, in conjunction with the Interconnection Service Agreement identified in Section 2.2, allows the Interconnecting Customer (as identified in Section 2.3) to utilize Customer's electrical facilities to interconnect and operate the Facility in Parallel with Department's EPS. The purpose of the Facility is to serve the Customer's electrical loads at the location identified in Section 2.1

2. SUMMARY AND DESCRIPTION OF THE PARTIES AND LOCATION OF GENERATING FACILITY

2.1 The name and address used by Department to locate the Customer or electric service account where the Facility interconnects with Department's EPS is:

Attention: _____

Address: _____

City: _____

Phone / FAX: _____

Department Account Number: _____

2.2 The Facility shall be Interconnected with the Department's EPS pursuant to an Interconnection Service Agreement between Department and Interconnecting Customer, its successors or assigns ("Interconnecting Customer") dated _____ ("Interconnection Service Agreement").

2.3 Interconnecting Customer's contact information:

Attention: _____

Address: _____

City: _____

Phone / FAX: _____

3. CUSTOMER ACKNOWLEDGMENT AND OBLIGATIONS

- 3.1 Customer acknowledges that it has authorized the Facility to be installed and operated by Interconnecting Customer in accordance with Department's DG Interconnection Policy in or adjacent to Customer's premises. Such Facility shall be used to serve all or a portion of Customer's electrical loads associated with the electric service provided by Department at the location identified in Section 2.1 above. Customer shall be solely responsible for the terms of any agreement between it and Interconnecting Customer.
- 3.2 Customer shall be solely responsible for any charges incurred under Department's electric service rates, and any other regulations and laws governing the provision of electric services. Customer acknowledges that it has been made aware of the charges and conditions related to the operation of the Facility and that the performance or lack of performance of the Facility may affect the rates and charges billed by Department for the electric power delivered to Customer. Copies of such rates are available by request to Department or on the Department's web site.
- 3.3 Any amount to be paid, or refunded to, Department for the services received by Customer as a result of the Interconnecting Customer failing to operate the Facility in accordance with the terms of the representations and warranties made under the Interconnection Service Agreement shall be paid to Department by the Customer in accordance with Department's electric rates.
- 3.4 Customer shall provide access as necessary to the Customer's premises for Department personnel, contractors or agents to perform Department's duties under the DG Interconnection Policy. The Department shall have access to the disconnect switch of the Facility at all times.

4. TERMS AND TERMINATION

- 4.1 This Agreement shall become effective as of the date referenced in the preamble. The Agreement shall continue in full force and effect until the earliest date that one of the following events occurs:
 - (a) The Parties agree in writing to terminate the Agreement.
 - (b) At 12:01 A.M. on the day following the date the Customer's electric service account through which the Generating Facility is interconnected to Department's EPS is closed or terminated.
 - (c) At 12:01 A.M. on the 31st day following the date the Interconnection Service Agreement is terminated.
 - (d) At 12:01 A.M. on the 61st day after Department provides written Notice pursuant to Section 6 below to the Customer that Customer is not in compliance with the terms of this Agreement.

5. LIMITATION OF LIABILITY

- 5.1 Each Party's liability to the other Party for any loss, cost, claim, injury, liability, or expense, including court costs and reasonable attorney's fees, relating to or arising from any act or omission in its performance of this Agreement, shall be limited to the amount of direct damage or liability actually incurred. In no event shall either Party be liable to the other Party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever.
- 5.2 Department shall not be liable to Customer in any manner, whether in tort or contract or under any other theory, for loss or damages of any kind sustained by Customer resulting from existence of, operation of, or lack of operation of the Facility, or

termination of the Interconnection Service Agreement, provided such termination is consistent with the terms of the Interconnection Service Agreement, except to the extent such loss or damage is caused by the negligence or willful misconduct of the Department.

6. NOTICES

6.1 Any written notice, demand, or request required or authorized in connection with this Agreement ("Notice") shall be deemed properly given on the date actually delivered in person or five (5) business days after being sent by certified mail, e-mail or fax with confirmation of receipt and original follow-up by mail, or any nationally-recognized delivery service with proof of delivery, postage prepaid, to the person specified below:

If to Department: Name: _____

Attention: _____

Phone: _____

FAX: _____

If to Interconnecting Customer: Name _____

Attention: _____

Phone: _____

FAX: _____

6.2 A Party may change its address for Notices at any time by providing the other Party Notice of the change in accordance with Section 6.1.

6.3 The Parties may also designate operating representatives to conduct the daily communications, which may be necessary or convenient for the administration of this Agreement. Designations, including names, addresses, and phone numbers may be communicated or revised by one Party's Notice to the other.

7. RELEASE OF DATA

Department and any agents acting on its behalf shall maintain confidentiality of all Customer confidential and proprietary information except as otherwise required by

applicable laws and regulations, the DG Interconnection Policy, or as approved in writing by the Customer.

8. ASSIGNMENT

Except as provided herein, Customer shall not voluntarily assign its rights or obligations, in whole or in part, under this Agreement without Department's written consent. Any assignment Customer purports to make without Department's written consent shall not be valid. Department shall not unreasonably withhold or delay its consent to Customer's assignment of this Agreement. Notwithstanding the above, Department's consent will not be required for any assignment made by Customer to an Affiliate or as collateral security in connection with a financing transaction. In all events, the Customer shall not be relieved of its obligations under this Agreement unless, and until the assignee assumes in writing all obligations of this Agreement and notifies the Department of such assumption.

9. NON-WAIVER

None of the provisions of this Agreement shall be considered waived by a Party unless such waiver is given in writing. The failure of a Party to insist in any one or more instances upon strict performance of any of the provisions of this Agreement or to take advantage of any of its rights hereunder shall not be construed as a waiver of any such provisions or the relinquishment of any such rights for the future, but the same shall continue and remain in full force and effect.

10. GOVERNING LAW, JURISDICTION OF COMMISSION, INCLUSION OF COMPANY'S RATES, DEFINED TERMS

- 10.1 This Agreement shall be interpreted, governed, and construed under the laws of the Commonwealth of Massachusetts without giving effect to choice of law provisions that might apply to the law of a different jurisdiction.
- 10.2 The interconnection and services provided under this Agreement shall at all times be subject to terms and conditions set forth in the rates applicable to the electric service provided by Department. Copies of such rates are available at the Department's web site or by request to Department and are incorporated into this Agreement by this reference.
- 10.3 Notwithstanding any other provisions of this Agreement, Department shall have the right to unilaterally file with the Department, pursuant to the Department's rules and regulations, an Application for change in, rates, charges, classification, service or any agreement relating thereto.
- 10.4 When initially capitalized, whether in the singular or in the plural, the terms used herein shall have the meanings assigned to them either in this Agreement or in the DG Interconnection Policy.

11. AMENDMENTS AND MODIFICATION

This Agreement can only be amended or modified by a written agreement signed by both Parties.

12. ENTIRE AGREEMENT

This Agreement, including any attachments or appendices, is entered into pursuant to the Interconnection Service Agreement and the DG Interconnection Policy. Together this Agreement,

the Interconnection Service Agreement, and the DG Interconnection Policy represent the entire understanding between the Parties, their agents, and employees as to the subject matter of this Agreement. Each party also represents that in entering into this Agreement, it has not relied on any promise, inducement, representation, warranty, agreement or other statement not set forth in this Agreement or in the Department's DG Interconnection Policy.

13. INDEMNIFICATION

Except as the Commonwealth is precluded from pledging credit by Section 1 of Article 62 of the Amendments to the Constitution of the Commonwealth of Massachusetts, and except as the Commonwealth's cities and towns are precluded by Section 7 of Article 2 of the Amendments to the Massachusetts Constitution from pledging their credit without prior legislative authority, Customer and Department shall each indemnify, defend and hold the other, its directors, officers, employees and agents (including, but not limited to, Affiliates and contractors and their employees), harmless from and against all liabilities, damages, losses, penalties, claims, demands, suits and proceedings of any nature whatsoever for personal injury (including death) or property damages to unaffiliated third parties that arise out of or are in any manner connected with the performance of this Agreement by that Party except to the extent that such injury or damages to unaffiliated third parties may be attributable to the negligence or willful misconduct of the Party seeking indemnification.

14. SIGNATURES

IN WITNESS WHEREOF, the Parties hereto have caused two originals of this Agreement to be executed under seal by their duly authorized representatives.

Interconnecting Customer

Braintree Electric Light Department

By: _____

By: _____

Name: _____

Name: _____

Title: _____

Title: _____

Exhibit H – Voltage Performance Requirements from IEEE 1547-2003

(The text and numbering in italics is excerpted from IEEE Standard 1547-2003)

4.1.1 Voltage regulation

The DR [Distributed Resource] shall not actively regulate the voltage at the PCC [unless required by NEPOOL's operating procedures]. The DR shall not cause the Area EPS service voltage at other Local EPSs to go outside the requirements of ANSI C84.1 -1995, Range A.

4.1.2 Integration with Area EPS grounding

The grounding scheme of the DR interconnection shall not cause overvoltages that exceed the rating of the equipment connected to the Area EPS and shall not disrupt the coordination of the ground fault protection on the Area EPS.

4.1.3 Synchronization

The DR unit shall parallel with the Area EPS without causing a voltage fluctuation at the PCC greater than $\pm 5\%$ of the prevailing voltage level of the Area EPS at the PCC, and meet the flicker requirements of 4.3.2.

4.1.8.2 Surge withstand performance

The interconnection system shall have the capability to withstand voltage and current surges in accordance with the environments defined in IEEE Std. C62.41.2-2002 or IEEE Std. C37.90.1-2002 as applicable.

4.2 Response to Area EPS abnormal conditions

Abnormal conditions can arise on the Area EPS that require a response from the connected DR. This response contributes to the safety of utility maintenance personnel and the general public, as well as the avoidance of damage to connected equipment, including the DR. All voltage and frequency parameters specified in these sub-clauses shall be met at the PCC, unless otherwise stated.¹⁰

4.2.1 Area EPS faults

The DR unit shall cease to energize the Area EPS for faults on the Area EPS circuit to which it is connected.

4.2.2 Area EPS reclosing coordination

The DR shall cease to energize the Area EPS circuit to which it is connected prior to reclosure by the Area EPS.

4.2.3 Voltage

The protection functions of the interconnection system shall detect the effective (rms) or fundamental frequency value of each phase-to-phase voltage, except where the transformer connecting the Local EPS to the Area EPS is a grounded wye-wye configuration, or single phase installation, the phase-to-neutral voltage shall be detected. When any voltage is in a range given in Table 1, the DR shall cease to energize the Area EPS within the clearing time as indicated. Clearing time is the time between the start of the abnormal condition and the DR ceasing to energize the Area EPS. For a DR less than or equal to 30 kW in peak capacity, the voltage set points and clearing times shall be either fixed or field adjustable. For a DR greater than 30 kW the voltage set points shall be field adjustable.

11. The isolation of a portion of the Area EPS, presenting the potential for an unintended DR island, is a special concern and is addressed in 4.4.1. Setting adjustments may only be made as approved by the authority who has jurisdiction over the DR interconnection.

The voltages shall be detected at either the PCC or the point of DR connection when any of the following conditions exist:

- (a) The aggregate capacity of DR systems connected to a single PCC is less than or equal to 30 kW,
- (b) the interconnection equipment is certified to pass a non-islanding test for the system to which it is to be connected,
- (c) the aggregate DR capacity is less than 50% of the total Local EPS minimum annual integrated electrical demand for a 15 minute time period, and export of real or reactive power by the DR to the Area EPS is not permitted.

Voltage range (% of base voltage)	Clearing time (s)
$V < 50$	0.16
$50 < V < 88$	2.00
$110 < V < 120$	1.00
$V > 120$	0.16

a. Base voltages are the nominal system voltages stated in ANSI C84. 1-1995, Table 1.
 b. DR \leq 30 kW, maximum clearing times; DR > 30 kW, default clearing times

4.2.4 Frequency

When the system frequency is in a range given in Table 2, the DR shall cease to energize the Area EPS within the clearing time as indicated. Clearing time is the time between the start of the abnormal condition and the DR ceasing to energize the Area EPS. For a DR less than or equal to 30 kW in peak capacity, the frequency set points and clearing times shall be either fixed or field adjustable. For a DR greater than 30 kW, the frequency set points shall be field adjustable. Adjustable under frequency trip settings shall be coordinated with Area EPS operations.

DR size	Frequency range (Hz)	Clearing time (s) ^a
≤ 30 kW	> 60.5	0.16
	< 59.3	0.16
> 30 kW	> 60.5	0.16
	$< (59.8 - 57.0)$ (adjustable setpoint)	Adjustable 0.16 to 300
	< 57.0	0.16

b. DR \leq 30 kW, maximum clearing times; DR > 30 kW, default clearing times

4.2.5 Loss of synchronism

Loss of synchronism protection is not required except as necessary to meet 4.3.2.

4.2.6 Reconnection to Area EPS

After an Area EPS disturbance, no DR reconnection shall take place until the Area EPS voltage is within Range B of ANSI C84.1 -1995, Table 1, and frequency range of 59.3Hz to 60.5Hz. The DR interconnection system shall include an adjustable delay (or a fixed delay of five minutes) that may delay reconnection for up to five minutes after the Area EPS steady-state voltage and frequency are restored to the ranges identified above.

4.3.1 Limitation of dc injection

The DR and its interconnection system shall not inject dc current greater than 0.5% of the full rated output current at the point of DR connection.

4.3.2 Limitation of flicker induced by the DR

The DR shall not create objectionable flicker for other customers on the Area EPS. ¹¹

4.3.3 Harmonics

When the DR is serving balanced linear loads, harmonic current injection into the Area EPS at the PCC shall not exceed the limits stated below in Table 3. The harmonic current injections shall be exclusive of any harmonic currents due to harmonic voltage distortion present in the Area EPS without the DR connected.

Table 3 — Maximum harmonic current distortion in percent of current (I)^a						
<i>Individual harmonic order h (odd harmonics)^b</i>	<i>h < 11</i>	<i>11 ≤ h < 17</i>	<i>17 ≤ h < 23</i>	<i>23 ≤ h < 35</i>	<i>35 ≤ h</i>	<i>Total Demand Distortion (TDD)</i>
<i>Percent (%)</i>	4.0	2.0	1.5	0.6	0.3	5.0
<p><i>a. I = the greater of the Local EPS maximum load current integrated demand (15 or 30 minutes) without the DR unit, or the DR unit rated current capacity (transformed to the PCC when a transformer exists between the DR unit and the PCC).</i></p> <p><i>b. Even harmonics are limited to 25% of the odd harmonic limits above.</i></p>						

4.4.1 Unintentional islanding

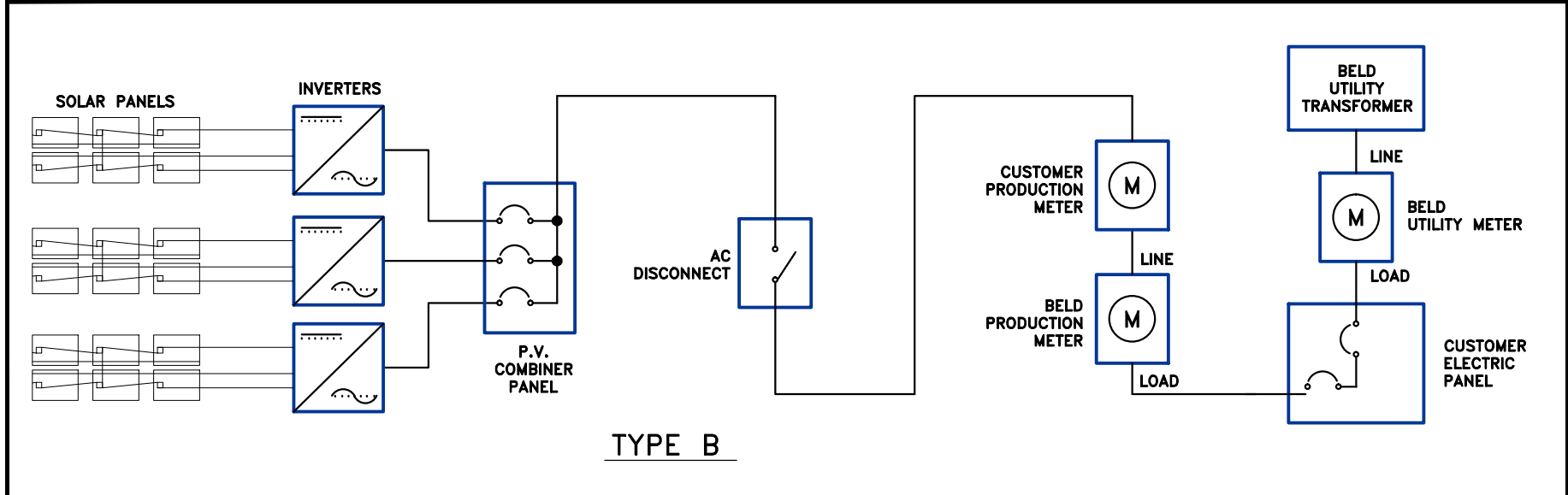
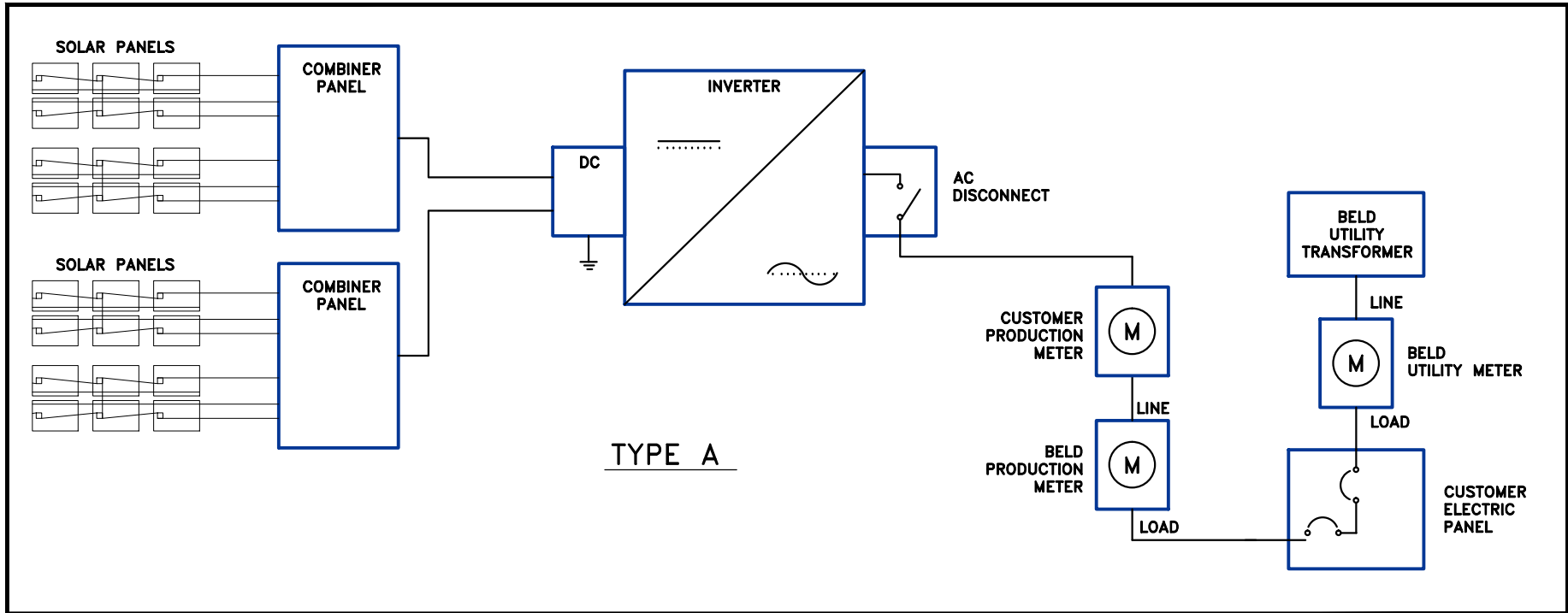
For an unintentional island in which the DR energizes a portion of the Area EPS through the PCC, the DR interconnection system shall detect the island and cease to energize the Area EPS within two seconds of the formation of an island. ¹²

11. Flicker is considered objectionable when it either causes a modulation of the light level of lamps sufficient to be irritating to humans, or causes equipment misoperation For guidance, refer to IEEE Std. 519- 2014, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems; IEEE Std. 1453-2004, IEEE Recommended Practice for Measurement and Limits of Voltage Fluctuations and Associated Light Flicker on AC Power Systems; International Electrotechnical Commission IEC/TR3 61000-3-7 Assessment of Emission Limits for Fluctuating Installations to MV, HV and EHV Power Systems, IEC 61000-4-15: Testing and Measurement Techniques – Flickermeter. Functional and Design Specifications; BS EN 61400-21:2008 Wind Turbines. Measurement and assessment of power quality characteristics of grid connected wind turbines. (note: references have been updated to current version of applicable standard)

12. Some examples by which this requirement may be met are:

1. The DR aggregate capacity is less than one-third of the minimum load of the Local EPS.
2. The DR is Listed to pass an applicable non-islanding test.
3. The DR installation contains reverse or minimum power flow protection, sensed between the Point of DR Connection and the FCC, which will disconnect or isolate the DR if power flow from the Area EPS to the Local EPS reverses or falls below a set threshold.
4. The DR contains other non-islanding means such as a) forced frequency or voltage shifting, b) transfer trip, or c) governor and excitation controls that maintain constant power and constant power factor.

Exhibit J - DG/Solar Electrical One Line Diagram



BELD
 BRAINTREE ELECTRIC LIGHT DEPARTMENT
 BRAINTREE, MASSACHUSETTS

NOTES:
 1. ALL INSTALLATIONS TO BE APPROVED BY BELD ENGINEERING.
 2. ALL INSTALLATIONS TO COMPLY WITH APPLICABLE ELECTRIC CODES AND BE INSPECTED BY LOCAL AUTHORITY HAVING JURISDICTION.

DRAWN: **NMT**
 APPD: **SM**
 DATE: **03/17/17**

TITLE: **DG/SOLAR ELECTRICAL ONE LINE DIAGRAM**