



NH PUC 11 MAY 16 AM 10:31

Debra Howland  
Executive Director  
NH PUC  
21 South Fruit Street  
Concord, NH 03301

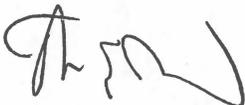
May 10, 2016

Dear Ms. Howland,

On behalf of Barrett Bilotta of Milton Town Solar, LLC please accept our submission of the attached 2 copies of the application for REC registration for the 750kW AC project in Milton, NH. The original was previously mailed to you on May 6. You should already have received an electronic copy.

Please let me know if there is any additional information required to process this.

Sincerely,



Ted Vasant

Enclosures: 2 copies each of;  
REC Eligibility Application  
Copy of the Interconnection Agreement  
Copy of the DES permit

<b>New Hampshire Public Utilities Commission</b>	<b>For PUC use only:</b>		
	<b>REC #</b>		

**Class I or II REC Eligibility Application For Customer-Sited Solar Sources Greater than 100 Kilowatts**

1. Class I <input type="checkbox"/>	Class II <input checked="" type="checkbox"/>	<b>GIS Facility Code</b>	NON76844	2. This facility is part of an aggregation.	yes <input type="checkbox"/>	no <input checked="" type="checkbox"/>
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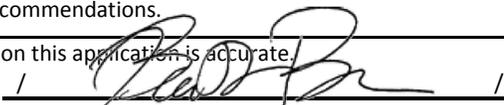
3. If yes to #2, the facility is part of the \_\_\_\_\_ aggregation.

To qualify as a REC eligible facility, PUC 2505.02 (b) requires the source to provide the following information:

Contact Information						
	Name	Address	City	State	ZIP	
Facility Owner	Milton Town Solar, llc	1 Pleasant St, unit 1A-21,	Westford	MA	01886	
	Phone 1 603-834-1653	Phone 2	Email	bbilotta@goldengoosecapital.com		
Facility Location	<i>(if facility is named)</i>		<i>(if different from owner address)</i>			
	42 White Mountain Highway, Milton, NH 03851					
Mailing Address	<i>(if different from owner address and/or facility location)</i>					
Phone						
Facility Operator	<i>(if a separate operator manages the facility)</i>					
Phone						
Application Filed by	<i>(if different from owner)</i>					
	Phone 1	Phone 2	Email			
Installer Company	American Capital Energy					
Installer Contact	Jeff Gadomski					
	Phone	978-944-7304	Email			
Electrician	Pro Star Electric					
	Phone	617-544-8410	License #	11602	Email	
Equipment Vendor	<i>(if not provided through the installer)</i>					
	American Capital Energy					
	phone					Email
Independent Monitor Name (IM)	Tom Kelly			<i>To obtain a GIS Facility Code contact</i>		
Independent Monitor Company	Natural Capital, LLC			James Webb, Registry Administrator 408.517.2174, jwebb@apx.com		

Facility Information						
<i>(from interconnection agreement)</i>	<i>(if assigned)</i>		<i>(mm/dd/year)</i>	<i>(if different)</i>	<i>(mm/dd/year)</i>	
Gross Nameplate Capacity (kwh)	750kW	ISO-NE Asset ID #	Initial Date of Operation	05/15/16	Date of Commercial Operation	05/31/16
	Manufacturer	Quantity	Model # <i>(if available)</i>	Rated Output/unit	Total Rated Capacity	
Panels	Canadian Solar	3,154	CS6X-315P	315 Watt	993,510	(DC)
Inverter(s)	Solectria	22	PVI36TI, PVI28TI, PVI23TI	varies	750,000	(AC)
Revenue Meter	Yes	Provide a <u>brief</u> statement describing how the generation facility is connected to the distribution facility:				

New Service - The only load on site is from the PV system

		Other Requirements							
yes	no	The facility has been certified under another non-federal jurisdiction's RPS. If "yes", provide attachments from each of the states where certification has been received.							
<input type="checkbox"/>	<input checked="" type="checkbox"/>								
Massachusetts	<input type="checkbox"/>	Connecticut	<input type="checkbox"/>	Rhode Island	<input type="checkbox"/>	Maine	<input type="checkbox"/>	All certifications have been attached.	<input type="checkbox"/>
N/A	yes	All regulatory approvals related to REC requirements, including all reviews, approvals or DES permits are attached.							
<input type="checkbox"/>	<input checked="" type="checkbox"/>								
	<input checked="" type="checkbox"/>	Proof of the facility's interconnection agreement is attached.							
yes	no	The facility's output is reported to and verified by ISO-NE.							
<input checked="" type="checkbox"/>	<input type="checkbox"/>								
I agree		The information provided on this application for New Hampshire Renewable Energy Certificate eligibility is accurate.							
<input checked="" type="checkbox"/>									
The project described in this application will meet the metering requirements of Puc 2506 including:									
I agree		Electricity generation in megawatt hours shall be reported to the GIS quarterly with a statement that the submission is accurate by the owner of the source, the IM, or a designated representative.							
<input checked="" type="checkbox"/>									
I agree		A revenue quality meter is used to measure the electricity generated.							
<input checked="" type="checkbox"/>									
I agree		The facility owner has certified to the IM that the meter operates according to manufacturing standards.							
<input checked="" type="checkbox"/>									
I agree		The meter shall be maintained according to the manufacturer's recommendations.							
<input checked="" type="checkbox"/>									
The Undersigned declares under penalty of perjury that the information provided on this application is accurate.									
								 Typed signature required	

Contact Barbara Bernstein at [Barbara.bernstein@puc.nh.gov](mailto:Barbara.bernstein@puc.nh.gov) or 603-271-6011 with questions and comments.



## RECORD OF SOLID WASTE MANAGEMENT FACILITY PERMIT MODIFICATION

Issued by the NH Department of Environmental Services (Department)  
pursuant to RSA 149-M and Part Env-Sw 315 of the New Hampshire Solid Waste Rules (Rules)

**I. PERMIT/FACILITY IDENTIFICATION:**

**Permit No.:** DES-SW-TP-94-051  
**Permittee:** Town of Milton, NH  
**Facility Name:** Milton Municipal Landfill  
**Facility Location:** 803 White Mountain Highway, Milton, NH  
**Facility Type:** Unlined Landfill  
**Permit Modification Type:** I-B

**II. FILE REFERENCE/RECORD OF APPLICATION:**

**Date(s) Received:** March 17, 2015 and July 27, 2015  
**WMD Document Log #(s):** 16036 and 16771, respectively

**III. MODIFICATIONS:** Post-closure use of the landfill for installation and operation of a solar-panel array is approved as proposed in the documents referenced above in Section II, subject to the terms and conditions provided in Section IV below.

**IV. TERMS AND CONDITIONS:** 13 conditions are attached on pages 2 – 3. .

**V. EFFECTIVE DATE:** Date of signature below.

**VI. AUTHORIZING SIGNATURE:** The permit identified in Section I above is hereby modified as specified in Section III above. This authorization is based on information provided to the Department by the permittee in documents referenced in Section II above. If the information is false, misleading or incomplete, the modification may be revoked or suspended in accordance with Part Env-Sw 306 of the New Hampshire Solid Waste Rules.

**BY EXERCISING ANY RIGHTS UNDER THIS PERMIT, THE PERMITTEE HAS AGREED TO ALL TERMS AND CONDITIONS OF THE PERMIT.** Failure to comply with the terms and conditions of the permit could result in administrative, civil or criminal enforcement action and penalties, and suspension or revocation of the permit. No liability is incurred by the State of New Hampshire by reason of any approval of this solid waste facility. No warranty/guarantee is intended or implied by reason of any advice given by the Department or its staff.

This permit modification shall not eliminate the permittee's obligation to obtain all requisite federal, state or local permits, licenses or approvals, or to comply with all other applicable federal, state, district and local permits, ordinances, laws, approvals or conditions relating to the facility.

A handwritten signature in black ink, appearing to read "Michael J. Wimsatt".

Michael J. Wimsatt, P.G., Director  
Waste Management Division

September 16, 2015  
Date

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## Section IV. Terms and Conditions

(continued from page 1)

### Pre-Construction Requirements:

- (1) Prior to commencing construction, the permittee shall provide written confirmation and detailed supporting documentation by a qualified licensed professional engineer or professional geologist to show that groundwater monitoring wells #s MW-2S, MW-3B, TW-1, TW-2 and TW-3 have been properly decommissioned, per the requirements of the facility's Groundwater Management Permit #198403093-M-004 dated April 2, 2013 and as requested by the Department in correspondence to the permittee dated February 24, 2014.
- (2) Prior to commencing construction, the permittee shall update the facility's approved post-closure monitoring and maintenance plan (Post-Closure Plan) to reflect all of the requirements specified in condition (12) on page 3 of this approval. The permittee shall place a copy of the updated Post-Closure Plan in the operating record of the facility and shall also submit an electronic copy to the DES in .pdf format with a signed statement certifying that the content of the document is complete and accurate with respect to the requirements listed in condition (13).
- (3) Prior to commencing construction, all gas vents, landfill gas monitoring wells, groundwater monitoring wells, and other above-ground structures and appurtenances within and in the vicinity of the solar array footprint and construction area shall be flagged and protected from possible damage by construction equipment and activities.
- (4) Prior to commencing construction, all equipment to be used on the landfill cap shall be reviewed to ensure added wheel-load or track pressures 12-inches above the geomembrane will be less than 4.5 pounds per square inch (psi).
- (5) Prior to commencing construction, the permittee shall file a Notice of Intent to Construct per Env-Sw 1104.02 and receive written confirmation of receipt by the Department.

### Construction Requirements.

- (6) The permittee shall comply with the construction requirements in Env-Sw 1104, including the reporting requirements in Env-Sw 1104.07.
- (7) Pursuant to Env-Sw 1104.06, a qualified professional engineer knowledgeable in landfill design and construction (the "Engineer") shall supervise the overall construction of the solar array. The Engineer shall be present at the site during the placement of crushed stone and ballast block; rack/panel construction; and when construction equipment (including small, off-road vehicles) is operating on the landfill.
- (8) The permittee shall assure that the load limits provided in condition (4) above are not exceeded.
- (9) Any damage to the cap or wear of the vegetative layer that occurs during construction shall be promptly repaired.
- (10) The permittee shall take precautions as may be necessary to protect the health and safety of workers and the general public during construction the solar array, specifically including but not limited to monitoring



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landfill gas as needed and modifying work practices if landfill gas is detected at levels deemed unsuitable for worker exposure.

### Post Construction Requirements.

- (11) Nothing in this approval shall change the permittee's obligation to provide proper post-closure monitoring and maintenance of the facility in accordance with RSA 149-M, the NH Solid Waste Rules (Env-Sw 100 – Env-Sw 2000) and the facility's approved closure plan of record. If installation or operation of the solar array prevents the permittee from meeting any of those obligations, this approval for post-closure use of the landfill for solar array placement and operation shall be deemed terminated and the permittee shall ensure that all solar array equipment and ballast blocks (including crushed stone) are removed and that the landfill capping system and other closure systems are restored to their original condition.
- (12) At the end of the contract between the permittee and the solar array project developer, the permittee shall ensure that all equipment and ballast blocks (including crushed stone) are removed and that the landfill capping system and other closure systems are restored to their original condition.
- (13) The permittee shall provide post-closure monitoring and maintenance of the facility in accordance with:
- (a) RSA 149-M;
  - (b) Env-Sw 807;
  - (c) The Post-Closure Requirements provided in Section 6.0 of the Milton Landfill Post-Closure Plan and Engineering report dated January 17, 2002 prepared by CMA engineers as modified by subsequent DES letter approvals;
  - (d) The additional provisions for maintenance and decommissioning of the solar array as specified in the March 17, 2015 application document referenced in Section II on page 1 of this approval; and
  - (e) The following additional provisions for so long as the solar array exists at the facility:
    - (i) The permittee shall take precautions as may be necessary to protect the health and safety of workers and the general public during construction of the solar array, specifically including but not limited to monitoring landfill gas as needed and modifying work practices if landfill gas is detected at levels deemed unsuitable for worker exposure.
    - (ii) The permittee shall no less than annually make a visual survey of the surface of the landfill capping system to assess whether placement of the solar array has resulted in differential settlement and shall report such finding to the Department in the annual facility post-closure report.

## GENERATOR INTERCONNECTION AGREEMENT

This INTERCONNECTION AGREEMENT, dated *October 7<sup>th</sup>*, 2015 is entered into by and between **Milton Town Solar, LLC**, (hereinafter referred to as the "Interconnector"), and Public Service Company of New Hampshire, dba Eversource Energy, a New Hampshire corporation having its principal place of business in Manchester, New Hampshire (hereinafter referred to as "Eversource").

WHEREAS, Interconnector desires to interconnect its 750 kW photovoltaic generating facility located in Milton, New Hampshire, with the electric system of Eversource in accordance with applicable New Hampshire Public Utilities Commission ("NHPUC") Orders and applicable laws; and

WHEREAS, Interconnector and Eversource executed an Interconnection Agreement effective August 21, 2015 related to the originally proposed 644 kW (the "Original Agreement"); and

WHEREAS, Interconnector desires to, and Eversource agrees to, provide for the interconnection of the expanded 750 kW Facility with the electric system of Eversource, its successors and permitted assigns; and

WHEREAS, it is necessary that certain agreements be made prior to the interconnection of the expanded Facility to ensure the safety, reliability and integrity of Eversource's electric system and the operation of the Facility;

NOW, THEREFORE, in consideration of the mutual promises set forth herein the parties do hereby agree to terminate the Original Agreement and further agree as follows:

### Article 1. Interconnection and Voltage Characteristics.

The interconnection point shall be that point at which the Facility interconnects with the 34.5 kV electric system of Eversource, as more fully described in Attachment A. Under this Agreement, the Interconnector shall receive and pay for the services necessary for the purpose of connecting the Facility with the Eversource electrical distribution system. The execution of this Agreement does not constitute a request for, or the provision of, transmission or distribution service. Interconnector is responsible for (a) all arrangements to effect any deliveries of electric energy from the Facility in accordance with the appropriate retail or FERC-jurisdictional tariffs and (b) arranging for its

purchase of retail power (such as back-up or stand-by power). This Agreement does not cover sales of power, capacity, energy or market products generated from the Facility, nor does it provide any assurance that the Facility is eligible for net metering.

Unless Eversource converts its interconnection circuit, all electric energy delivered to Eversource's system from the Facility shall be 34.5 kV, three phase, sixty hertz. If the Eversource circuit is converted to a different voltage in the future, the Interconnector shall be responsible for all Facility interconnection modifications necessitated by the conversion.

#### Article 2. Interconnection and Protection Requirements.

Interconnector shall install or provide for the installation of all interconnection, protection, and control equipment as specified in the Interconnection Report ("Report") originally dated August 5, 2015, and revised October 2, 2015, attached as Attachment A hereto, and incorporated herein by reference thereto, to ensure the safe and reliable operation of the Facility in parallel with the Eversource system. The Report may be modified from time to time in accordance with this Article 2 as set forth below, and to account for any modifications to the Facility as set forth in Article 5 below. The Interconnector will be responsible for all study costs associated with the development of the Report, and those costs associated with the equipment and its installation, required by the Report as set forth in Article 3 below. Metering of the output from the Facility shall be conducted pursuant to the terms of the Report.

The Interconnector may not operate the Facility in parallel with the Eversource System until:

- (a) the conditions for initial parallel operation of the Facility set forth in the Report have been met;
- (b) commissioning and testing of the Facility has been completed in accordance with the Report and to the satisfaction of Eversource;
- (c) the Interconnector has paid Eversource all funds due pursuant to Article 3 of this Agreement;
- (d) Interconnector has complied with the insurance requirements of Article 7;
- (e) Interconnector has provided Eversource a description of the Facility that incorporates all final design changes, including all design changes made during construction; and
- (f) Eversource has provided formal written authorization stating that operation of the Facility in parallel with the Eversource System is authorized by Eversource.

The Interconnector shall obtain each consent, approval, authorization, order or acceptance from FERC and/or ISO-NE necessary for the Interconnector or any entity that, directly or indirectly, through one or more intermediaries, controls, or is controlled by, or is under common control with the Interconnector (each, an "*Affiliate*") to sell any power, capacity, energy or market products from the Facility into the wholesale power market prior to making any such wholesale sales. The Interconnector shall indemnify, defend and hold harmless Eversource, its trustees, directors, officers, employees, agents and affiliates from any costs, damages, fines or penalties, including reasonable attorneys' fees, directly resulting from Interconnector's or its Affiliate's non-compliance with any provision of this Article 2; provided, however, that such indemnification obligation shall be subject to the limitation of liability set forth in Article 7.

Up to the interconnection point, unless otherwise provided for in the Report, all equipment shall be the sole property of Interconnector. Interconnector shall have sole responsibility for the operation, maintenance, replacement, and repair of the Facility, including the interconnection equipment owned by the Interconnector.

The Interconnection Report is subject to, and is based upon, current Eversource standards, as may be amended from time to time, regarding protection and control equipment requirements sufficient to ensure the safe and reliable operation of the Eversource electric distribution system. Interconnector hereby acknowledges that such Eversource standards are periodically reviewed and modified pursuant to standard utility practice, and that Interconnector is responsible for compliance with such standards, at its sole cost, as these standards may be modified from time to time. Additionally, the costs of any such review of the Interconnection Report in Attachment A performed by Eversource will be the responsibility of the Interconnector. Interconnector is responsible for any and all additional costs to ensure that all relevant protection and control equipment, software, hardware, and their capabilities meet then current Eversource standards for interconnection of generating facilities to the Eversource electric distribution system. Eversource will notify Interconnector if upgrades or changes to Interconnector's protection and control equipment are necessary by issuing a new or updated Interconnection Report. Within a mutually agreeable period following the issuance of a new or updated Interconnection Report the Interconnector shall modify the Facility, at the Interconnectors sole expense, to meet the revised requirements thereof. Any disputes will be addressed in accordance

with Article 9 of this Agreement.

Prior to the interconnection to Eversource's system under this agreement, Interconnector shall have tested, and every twelve months thereafter, Interconnector shall test, or cause to be tested, all protection devices including verification of calibration and tripping functions; and Interconnector shall provide Eversource with a copy of the tests and results. The Interconnector shall ensure that any such test is performed by an individual or company that Eversource has authorized to perform the testing function.

If either party reasonably determines that the operation or use of any portion of the protection system will or may not perform its protective function, Interconnector shall immediately open the interconnection between Eversource's system and the Facility. Interconnector shall promptly notify Eversource of this action and the reason for this action. The interconnection shall remain open until Interconnector has satisfactorily cured the defect. Any repair or replacement of Interconnector's equipment shall be at no cost to Eversource, except Eversource shall be responsible for any loss or damage requiring repair or replacement of all or a portion of the Interconnector's equipment as a result of the negligence or misconduct of Eversource, its agents or employees.

#### System Metering

The facility will be equipped a 4 channel (4X Configuration) recording meter. The new meter will capture Watt-hours delivered, lagging Var-hours, Watt-hours received, and leading Var-hours.

A customer owned, dedicated phone line to the meter is required to be operational at all time.

All costs of metering equipment and installation shall be borne by the Interconnector. Eversource shall retain ownership and maintenance responsibilities for the metering equipment. The metering equipment must consist of Eversource approved components.

The customer shall allow Eversource reasonable access to the metering for, but not limited to, meter reading, meter testing, and meter maintenance.

### Delivery Point

For the purpose of establishing ownership, operation and maintenance responsibilities, the location of facility energy delivery to Eversource (the "Delivery Point") must be defined. At this site, the Delivery Point is defined in Attachment A.

### Description of Responsibilities

Eversource will own and maintain all equipment up to the Delivery Point. Interconnector will own and maintain all equipment from the Delivery Point into and throughout the Facility. However, Eversource will own the metering equipment, to be maintained by Eversource at the Interconnector's expense.

### Article 3. General Payment Terms.

**Interconnection Costs.** The Interconnector is responsible for paying all costs associated with Interconnection of the Facility incurred by Eversource, including (a) testing costs, (b) costs associated with installing, testing and maintaining the communications infrastructure necessary to provide protection and/or monitoring of the Facility, (c) construction, modification and Upgrade costs (as defined in the paragraph below) necessary to accommodate the Interconnection, and (d) any ongoing maintenance costs and other charges deemed necessary by Eversource to maintain the Interconnection (all such costs described in this sentence, the "Interconnection Costs").

**Distribution Upgrades.** Eversource shall design, procure, construct, install, and own the distribution system upgrades described in the Report (the "Upgrade(s)"). The actual cost of the Upgrades, including overheads, shall be the sole responsibility of the Interconnector.

**Initial Cost Estimate.** The Report contains a good-faith estimate of the initial Interconnection Costs (the "Initial Cost Estimate").

**Billing and Payment Procedures for Interconnection Costs.** The Interconnector shall pay

Eversource the amount set forth in the Initial Cost Estimate (the "Initial Payment") within thirty (30) days of the Effective Date, subject to extension by mutual agreement of the Parties.

Eversource will not incur Interconnection Costs prior to receipt of the Initial Payment. Actual incurred Interconnection Costs may vary from those costs included in (a) the Report, or (b) the Initial Cost Estimate. Eversource shall invoice the Interconnector for all Interconnection Costs as such costs are incurred to the extent that they exceed the Initial Payment, and the Interconnector shall pay each such invoice within thirty (30) days of receipt, or as otherwise agreed to by the Parties. Within ninety (90) days following the date on which Eversource determines that Eversource has received all of the necessary information Eversource has requested from its employees, agents, contractors and/or subcontractors working on, or providing services in connection with, the design and construction of the Interconnection, Eversource shall provide the Interconnector with an accounting report detailing any Underpayment (as such term is defined below) or Overpayment (as such term is defined below) made by the Interconnector with respect to the Initial Payment (the "True-up Report"). To the extent that the actual Interconnection Costs accrued up to the date of the Initial Interconnection exceed the Initial Payment (an "Underpayment"), Eversource shall invoice the Interconnector for an amount equal to the Underpayment and the Interconnector shall pay such amount to Eversource within thirty (30) days of such invoice. To the extent that the Initial Payment exceeds the actual Interconnection Costs accrued up to the date of the Initial Interconnection (an "Overpayment"), Eversource shall refund to the Interconnector an amount equal to the Overpayment within thirty (30) days of the provision of the True-Up Report. Any and all Interconnection Costs incurred by Eversource after the date of the True-up Report shall be billed in accordance with this provision.

Taxes. The Parties shall comply with all applicable federal and state tax laws.

#### Article 4. Right of Access.

Eversource Right to Access. The Interconnector shall allow Eversource access to Eversource equipment and Eversource facilities located on the Facility's premises (the "***Eversource Property***"). To the extent that the Interconnector does not own all or part of the real property on which Eversource is required to locate Eversource Property in order to serve the Facility, the Interconnector shall procure and provide to Eversource all necessary rights, including easements, for

access to Eversource Property. Additionally, Eversource shall have the right to enter the property of Interconnector at mutually agreed upon reasonable times and shall be provided reasonable access to Interconnector's metering, protection, control, and interconnection equipment to review for compliance with this Agreement. Upon request, Eversource shall provide Interconnector with a copy of any notes, reports or other documents made relating to any such inspection or review.

Isolation Device. Eversource shall have access to the Isolation Device (as described in the Report) of the Facility at all times. Interconnector is responsible for obtaining any and all property rights, including easements, which will permit Eversource access to such Isolation Device.

Right to Review Information. Eversource shall have the right to review and obtain copies of the Interconnector'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 the Facility or its Interconnection. Eversource shall treat such information as confidential and shall use such information solely for the purposes of determining compliance with the operating requirements of Eversource.

Article 5. Modification of Facility.

A description of the Facility as studied is contained in the Report. Any changes to the design of the Facility as it is described and specified in the Report with respect to such Facility must be approved by Eversource in writing prior to the implementation of such design changes. Only design changes approved in accordance with this Article 5 shall be implemented. If Interconnector plans any modifications to its Facility as described in Attachment A, which modifications would reasonably be expected to affect its interconnection with the Eversource System, Interconnector shall give Eversource ninety (90) day prior written notice of its intentions. Eversource will review the modifications at the Interconnectors expense and provide a written notice of approval or notification that the modification will require revised protection and control equipment. The cost of any and all upgrades to either the Facility interconnection equipment or the Eversource electric distribution system required to permit the Facility modification shall be the responsibility of the Interconnector.

Article 6. Term of Agreement.

This Agreement shall become effective between the parties on the date of execution of this agreement. This Agreement shall remain in full force and effect subject to the suspension and termination rights contained in this Article 6.

Interconnector may terminate this Agreement by giving Eversource not less than sixty (60) days prior written notice of its intention to terminate. Eversource may terminate the interconnection under this Agreement by giving not less than sixty (60) days prior written notice should Interconnector fail to substantially perform with the interconnection, metering and other safety provisions of this Agreement, and such failure continues for more than sixty (60) days from date of notice without cure. The Eversource notice shall state with specificity the facts constituting the alleged failure to perform by Interconnector. If the parties are unable to reach agreement within 60 days on a cure for the failure to perform, either party may elect to submit the dispute to the NHPUC for resolution.

If changes in applicable federal or state statutes, regulations or orders; or changes in applicable ISO or NEPOOL requirements occur which materially affect this Agreement, the parties shall negotiate in good faith to modify this Agreement to accommodate such changes. If the parties are unable to reach agreement within 60 days, either party may elect to submit the dispute to the NHPUC for resolution.

Eversource may also terminate its obligation contained in this Agreement if applicable laws, regulations and orders mandating interconnections from qualifying facilities are repealed, or declared invalid by a Court or Regulatory Agency, and no revised law is enacted providing for such interconnection on a similar basis.

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

After termination of this Agreement, both parties shall be discharged from all further obligations under the terms of this Agreement, excepting any liability which may have been incurred before the date of such termination. Any reasonable costs incurred by Eversource to physically disconnect the Facility as a result of the termination of this Agreement shall be paid by the

Interconnector.

Article 7. Insurance, Performance Assurance, Indemnification & Limitation of Liability.

A. Insurance Requirements.

General Liability. In connection with the Interconnector's performance of its duties and obligations under this Agreement, the Interconnector shall maintain, during the term of this Agreement, general liability insurance with a combined single limit of not less than:

One million dollars (\$1,000,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is less than or equal to an aggregate of 500 KW;

Three million dollars (\$3,000,000) per occurrence and in the aggregate for bodily injury and/or property damage claims where the gross nameplate rating of the Facility is greater than 500 KW.

Insurer Requirements and Endorsements. All insurance required pursuant to this Article 7 A. shall be carried by insurers qualified to underwrite insurance in New Hampshire with an A.M. Best rating of A- or better. In addition, all insurance shall: (a) include Eversource as an additional insured; (b) contain a severability of interest clause or cross-liability clause unless the Interconnector is a residential customer; (c) provide that Eversource shall not be liable to the insurance carrier with respect to the payment of premium for such insurance; and (d) provide for written notice to Eversource thirty (30) days prior to cancellation, termination, or material change of such insurance.

Evidence of Insurance. If insurance similar to the insurance provided by this endorsement is held by the additional insured noted above, the insurance provided by this endorsement is primary to that other insurance, and that other insurance shall not contribute to amounts payable under the insurance provided by this endorsement.

Prior to Eversource commencing any work on system modifications, the Interconnector shall have its insurer provide to Eversource certificates of insurance evidencing the insurance coverage required pursuant to this Article 7 A. Such certificates shall clearly indicate that such insurance policy is written on an "occurrence made" basis. Eversource may, at its discretion, require

the Interconnector to maintain tail coverage with respect to any policy written on a "claims-made" basis for a period of three years after expiration or termination of such policy.

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

B. Indemnification.

Each party will be responsible for its equipment and the operation thereof and will indemnify and save the other harmless from any and all loss by reason of property damage, bodily injury, including death resulting therefrom suffered by any person or persons including the parties hereto, employees thereof or members of the public, (and all expenses in connection therewith, including attorney's fees) whether arising in contract, warranty, tort (including negligence), strict liability or otherwise, caused by or sustained on, or alleged to be caused by or sustained on, equipment or property, or the operation or use thereof, owned or controlled by such party, except that each party shall be solely responsible for and shall bear all costs of its negligence, and willful misconduct, and claims by its own employees or contractors growing out of any workers' compensation law. The foregoing paragraph shall survive the termination of this Agreement and such termination will not extinguish any liabilities or obligations in respect of reimbursements under this paragraph, incurred up to the time of termination.

Survival of Indemnification. The indemnification obligations of each Party set forth in this Article 7 B. shall continue in full force and effect regardless of whether this Agreement has expired or been terminated, defaulted or cancelled and shall not be limited in any way by any limitation on insurance.

C. Limitation of Liability.

Except with respect to a Party's fraud or willful misconduct, and except with respect to damages sought by a third party in connection with a third party claim: (a) neither Party shall be liable to the other Party, for any damages other than direct damages; and (b) each Party agrees that it is not entitled to recover and agrees to waive any claim with respect to, and will not seek,

consequential, punitive or any other special damages as to any matter under, relating to, arising from or connected to this Agreement.

Article 8. Force Majeure.

Neither party shall be considered to be in default hereunder and shall be excused from performance hereunder if and to the extent that it shall be prevented from doing so by storm, flood, lightning, earthquake, explosion, equipment failure, civil disturbance, labor dispute, act of God or the public enemy, action of a court or public authority, withdrawal of equipment from operation for necessary maintenance and repair, or any other cause beyond the reasonable control of either party and not due to the fault or negligence of the party claiming force majeure, provided that the party claiming excuse from performance uses its best efforts to remedy its inability to perform.

Article 9. Dispute Resolution and Voluntary Arbitration.

In the event of any dispute, disagreement, or claim (except for disputes referred to the NHPUC under Article 6 of this Agreement) arising out of or concerning this Agreement, the Party that believes there is such a dispute, disagreement, or claim will give written notice to the other Party of such dispute, disagreement, or claim. The affected Parties shall negotiate in good faith to resolve such dispute, disagreement, or claim. If such negotiations have not resulted in resolution of such dispute to the satisfaction of the affected Parties within twenty (20) working days after notice of the dispute has been given, then an affected Party may submit such dispute, disagreement, or claim arising out of or concerning this Agreement to the NH PUC for resolution in accordance with Order 14,797 in DE 80-246. Upon mutual agreement of the Parties, a dispute may be submitted to arbitration and resolved in accordance with the arbitration procedures set forth below. In the event the Parties do not agree to submit such claim or dispute to arbitration, each Party may exercise whatever rights and remedies it may have in equity or at law consistent with the terms of this Agreement.

The arbitration proceeding shall be conducted by a single arbitrator, appointed by mutual agreement of the affected Parties, in Manchester, New Hampshire, under the Commercial Arbitration Rules of the American Arbitration Association in effect at the time a demand for arbitration under such rules was made. In the event that the affected Parties fail to agree upon a single arbitrator, each shall select one arbitrator, and the arbitrators so selected shall, within twenty (20) days of being selected, mutually select a single arbitrator to govern the arbitration. A decision and award of the arbitrator made under the Rules and within the scope of his or her jurisdiction shall be exclusive, final, and binding on all Parties, their successors, and assigns. The costs and expenses of the arbitration shall be allocated equitably amongst the affected Parties, as determined by the arbitrator(s). Judgment upon the award rendered by the arbitrator(s) may be entered in any court having jurisdiction. Each Party hereby consents and submits to the jurisdiction of the federal and state courts in the State of New Hampshire for the purpose of confirming any such award and entering judgment thereon.

Article 10. Operating Requirements.

General Operating Requirements. The Interconnector shall construct, interconnect, operate, and maintain the Facility and all accompanying and necessary facilities in accordance with (a) all applicable laws and requirements and, "Good Utility Practice" (as defined in Section I of the ISO New England Inc., Transmission, Markets and Services Tariff, FERC Electric Tariff No. 3); and (b) ISO-NE operating requirements in effect at the time of construction and other applicable national and state codes and standards. Following the initial Interconnection of the Facility, the Interconnector shall comply with all special operating requirements set forth in the Report. In the event that Eversource believes that the cause of any problem to Eversource originates from the Facility, Eversource has the right to install monitoring equipment at a mutually agreed upon location to determine the exact cause of the problem. The cost of such monitoring equipment shall be borne by Eversource, unless such problem or problems are demonstrated to be caused by the Facility or if the test was performed at the request of the Interconnector in which case the costs of the monitoring equipment shall be borne by the Interconnector. If the operation of the Facility interferes with Eversource's or its customers' operations, the Interconnector must immediately take corrective action to stop such interference and shall not operate the Facility until such time as such interference is stopped. If the Interconnector fails to take immediate corrective action pursuant to

the preceding sentence, then Eversource may disconnect the Facility in accord with Good Utility Practice.

No Adverse Effects: Non-interference. Eversource shall notify the Interconnector if Eversource has evidence that the operation of the Facility could cause disruption or deterioration of service to other customers served from Eversource's system or if operation of the Facility could cause damage to the Eversource system or other affected systems. (For example, deterioration of service could be caused by, among other things, harmonic injection in excess of IEEE STD 519, as well as voltage fluctuations caused by large step changes in loading at the Facility.) The Interconnector shall cease operation of the Facility until such time as the Facility can operate without causing disruption or deterioration of service to other customers served from the Eversource system or causing damage to the Eversource system or other affected systems. Each Party shall promptly notify the other Party in writing of any condition or occurrence relating to such Party's equipment or facilities which, in such Party's reasonable judgment, could adversely affect the operation of the other Party's equipment or facilities.

Eversource shall operate its system in such a manner so as to not unreasonably interfere with the operation of the Facility. The Interconnector shall protect itself from normal disturbances propagating through the Eversource system in accordance with Good Utility Practice. Examples of such normal disturbances include single-phasing events, voltage sags from remote faults on Eversource system, and outages on the Eversource system.

Safe Operations and Maintenance. The Interconnector 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 or the Report. Each Party shall be responsible for the maintenance, repair and condition of its respective lines and appurtenances on such Party's respective side of the interconnection point. Eversource and the Interconnector shall each provide equipment on its respective side of the interconnection point that adequately protects the Eversource system, personnel, and other persons from damage and injury. If Eversource has constructed or owns equipment or facilities, including but not limited to Upgrades, that were required solely as a result of the Interconnection, then, unless otherwise documented in the Report, the costs associated with the operation, maintenance, repair and replacement of such equipment or

facilities shall be the ongoing responsibility of the Interconnector and the Interconnector shall reimburse Eversource such costs.

Ongoing Maintenance: Testing of the Facility. The Parties hereby acknowledge and agree that maintenance testing of the Facility's protective relaying is imperative for safe, reliable operation of the Facility. The test cycle for such protective relaying shall not be less frequent than once every twelve (12) calendar months or the manufacturer's recommended test cycle, whichever is more frequent. The Interconnector shall provide copies of these test records to Eversource within thirty (30) days of the completion of such maintenance testing. Eversource may disconnect the Facility from the Eversource system if the Interconnector fails to adhere to these standards. The Interconnector is responsible for all ongoing maintenance costs associated with the Facility.

Article 11. Disconnection.

A. Temporary Disconnection.

Emergency Conditions. Eversource may immediately and temporarily disconnect the Facility from the Eversource system without prior notification in cases where, in the reasonable judgment of Eversource, the continued connection of the Facility is imminently likely to (a) endanger persons or damage property or (b) cause an adverse effect on the integrity or security of, or damage to, the Eversource system or to other electric power systems to which the Eversource system is directly connected (each, an "***Emergency Condition***"). After temporary disconnection or suspension pursuant to this paragraph, the Facility may not be reconnected or resume operation until Eversource and Interconnector are both satisfied that the cause of such Emergency Condition has been corrected. If the Interconnector fails to correct the Emergency Condition within ninety (90) days from the time that Eversource has temporarily disconnected the Facility due to such an event, Eversource may elect to terminate this Agreement and/or permanently disconnect the Facility.

Routine Maintenance, Construction and Repair. Eversource shall have the right to disconnect the Facility from the Eversource system when necessary for routine maintenance, construction and repairs to the Eversource system. Eversource shall provide the Interconnector

with notice of such disconnection, consistent with Eversource's Planned and Unplanned Outage Scheduling Procedure. If the Interconnector requests disconnection by Eversource, the Interconnector will be provided with information regarding Eversource scheduling practices. Such disconnection shall be scheduled in accordance with Eversource's Planned and Unplanned Outage Scheduling Procedure. Eversource shall make reasonable efforts to work with Interconnector to schedule a mutually convenient time or times to temporarily disconnect the Facility pursuant to this paragraph.

Forced Outages. During any forced outage, Eversource shall have the right to temporarily disconnect the Facility from the Eversource system in order to affect immediate repairs to the Eversource system. Eversource shall use reasonable efforts to provide the Interconnector with prior notice of such temporarily disconnection; provided, however, Eversource may temporarily disconnect the Facility from the Eversource system without such notice pursuant to this paragraph in the event circumstances do not permit such prior notice to the Interconnector.

Non-Emergency Adverse Operating Effects. Eversource may temporarily disconnect the Facility if it is having a non-emergency adverse operating effect on the Eversource system or on other customers (a "*Non-Emergency Adverse Operating Effect*") if the Interconnector fails to correct such Non-Emergency Adverse Operating Effect within forty-five (45) days of Eversource's written notice to the Interconnector requesting correction of such Non-Emergency Adverse Operating Effect. If the Interconnector fails to correct a Non-Emergency Adverse Operating Effect within ninety (90) days from the time that Eversource has temporarily disconnected the Facility due to such an event, Eversource may elect to terminate this Agreement and/or permanently disconnect the Facility.

Modification of the Facility. Eversource has the right to immediately suspend Interconnection service and temporarily disconnect the Facility in the event any material modification to the Facility or the Interconnector's Interconnection facilities has been implemented without prior written authorization from Eversource.

Re-connection. Any temporary disconnection pursuant this Article 11 shall continue only for so long as is reasonably necessary. The Interconnector and Eversource shall cooperate with each other to restore the Facility and the Eversource system, respectively, to their normal operating states as soon as reasonably practicable following the correction of the event that led to the temporary disconnection.

B. Permanent Disconnection.

The Interconnector may permanently disconnect the Facility at any time upon thirty (30) days prior written notice to Eversource. Eversource may permanently disconnect the Facility upon termination of this Agreement in accordance with Article 6. Eversource may permanently disconnect the Facility in the event the Interconnector is unable to correct an Emergency Condition or a Non-Emergency Adverse Operating Effect in accordance with this Article 11.

Article 12. Modification of Agreement.

In order for any modification to this Agreement to be binding upon the parties, said modification must be in writing and signed by both parties.

Article 13. Confidentiality.

Eversource shall maintain the confidentiality of information provided from the Interconnector to Eversource if such information is clearly marked and labeled "Confidential" (the "**Confidential Information**"). Confidential Information shall not include information that (a) is or hereafter becomes part of the public domain, (b) previously was in the possession of Eversource, or (c) Eversource is required to disclose pursuant to a valid order of a court or other governmental body or any political subdivision thereof; provided, however, that to the extent that it may lawfully do so, Eversource shall first have given notice to the Interconnector and given the Interconnector a reasonable opportunity to interpose an objection or obtain a protective order requiring that the Confidential Information and/or documents so disclosed be used only for the purpose for which the order was issued; provided further that if such Confidential Information is requested or required by the NHPUC, Eversource shall seek protective treatment of such Confidential Information.

Article 14. Permits and Approvals.

The Interconnector is responsible for obtaining all environmental and other permits required by governmental authorities for the construction and operation of the Facility (each, a "**Required Permit**"). Eversource assumes no responsibility for obtaining any Required Permit, advising the Interconnector with respect to Required Permits, or assuring that all Required Permits have been obtained by the Interconnector. Upon written request of Eversource, the Interconnector shall promptly provide to Eversource a copy of any Required Permit.

Article 15. Default and Remedies.

A. Defaults. Each of the following shall constitute an "**Event of Default**."

(i) A Party fails to pay any bill or invoice for charges incurred pursuant to this Agreement or any other amount due from such Party to 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; provided, however, if such Party disputes such bill, invoice or other amount

due in good faith, then such failure to pay shall not constitute an Event of Default and the Parties shall resolve such dispute in accordance with Article 9;

(ii) A Party (a) fails to comply with any other provision of this Agreement or breaches any representation or warranty in any material respect and (b) fails to cure or remedy such failure or breach within sixty (60) days after notice and written demand by the other Party to cure the same or such longer period reasonably required to cure the same (not to exceed an additional ninety (90) days unless otherwise mutually agreed upon, provided that the failing or breaching Party diligently continues to cure until such failure or breach is fully cured). This provision pertains only to cure periods not specifically addressed elsewhere in this Agreement;

(iii) Interconnector modifies the Facility or any part of the Interconnection without the prior written approval of Eversource; or

(iv) A Party fails to perform any obligation hereunder in accordance with (a) applicable laws and regulations, (b) the ISO-NE operating documents, procedures, and reliability standards, and (c) Good Utility Practice.

B. Remedies. Upon the occurrence of an Event of Default, the non-defaulting 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; or (d) pursue any other remedies it may have under this Agreement or under applicable law or in equity.

Article 16. Prior Agreements Superseded.

Once effective, this Agreement with any attachments represents the entire agreement between the parties with respect to the interconnection of the Facility with the Eversource electric system and, as between Interconnector and Eversource, all previous agreements including previous discussion, communications and correspondence related thereto are superseded by the execution of this Agreement.

Article 17. Waiver of Terms or Conditions.

The failure of either party to enforce or insist upon compliance with any of the terms or conditions of this Agreement shall not constitute a general waiver or relinquishment of any such terms or conditions, but the same shall remain at all times in full force and effect. Any waiver is only effective if given to the other party in writing.

Article 18. Binding Effect, Assignment

This Agreement shall be binding upon, and shall inure to the benefit of, the respective successors and permitted assigns of the parties hereto. Eversource shall not assign this Agreement or any of its rights or obligations hereunder without the prior written consent of Interconnector except to a successor-in-interest. Eversource shall provide written notice to Interconnector of any such assignment to a successor-in-interest within fifteen (15) days following the effective date of the assignment. Interconnector shall have the right to assign this Agreement to any person or entity that is a successor-in-interest to the Facility without the consent of Eversource. In the event of any such assignment, Interconnector shall notify Eversource in writing within fifteen (15) days following the effective date of the assignment. Interconnector may make such other assignment of this Agreement as it determines, subject to the prior written consent of Eversource, which consent shall not be unreasonably withheld or delayed. Any assignment in violation of this Article shall be void at the option of the non-assigning party.

Article 19. Applicable Law.

This Agreement is made under the laws of the State of New Hampshire and, to the extent applicable, the Federal Power Act, and the interpretation and performance hereof shall be in accordance with and controlled by such laws, excluding any conflicts of law provisions of the State of New Hampshire that could require application of the laws of any other jurisdiction.

Article 20. Changes in State Regulations or Law.

Upon thirty (30) days prior written notice, Eversource may terminate this Agreement if there are any changes in NHPUC regulations or New Hampshire law that affects Eversource's ability to perform its obligations under this Agreement.

Article 21. Headings.

Captions and headings in the Agreement are for ease of reference and shall not be used to and do not affect the meaning of this Agreement.

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Article 22. Notices and Service.

All notices, including communications and statements which are required or permitted under the terms of this Agreement, shall be in writing, except as otherwise provided or as reasonable under the circumstances. Service of a notice may be accomplished and will be deemed to have been received by the recipient party on the day of delivery if delivered by personal service, on the day of confirmed receipt if delivered by telecopy, registered or certified commercial overnight courier, or registered or certified mail or on the day of transmission if sent by telecopy with evidence of receipt obtained, and in each case addressed as follows:

Interconnector: Milton Town Solar, LLC  
1 Pleasant Street Unit 1A21  
Westford MA 01886

Eversource: Public Service Company of New Hampshire  
d/b/a Eversource Energy  
780 North Commercial Street  
P. O. Box 330  
Manchester, NH 03105-0330  
Richard C. Labrecque  
Manager, Distributed Generation

Article 23. Counterparts.

This Agreement may be executed in counterparts, each of which shall be deemed an original, and all counterparts so executed shall constitute one agreement binding on all of the Parties hereto, notwithstanding that all of the Parties are not signatories to the same counterpart. Facsimile counterparts may be delivered by any Party, with the intention that they shall have the same effect as an original counterpart hereof.

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Article 24. Signatures.

Each Party hereby signifies its agreement to the all of the terms of this Agreement by its signatures hereto. Each Party represents that it has carefully reviewed this Agreement individually and with counsel and that it has knowingly and willingly executed this Agreement.

IN WITNESS WHEREOF, the parties, each by its duly authorized representative, have hereunto caused their names to be subscribed, as of the day and year first above written.

**Interconnector**

Signature: 

Name: Barrett Bilotta

Title: Managing Partner  
Duly Authorized

**Eversource Energy**

Signature: 

Name: RICHARD C. LABRECQUE

Title: MANAGER - DISTRIBUTED GENERATION  
Duly Authorized

Public Service of New Hampshire  
Interconnection Report

#N3084A Milton Town Solar (expansion)  
750 kW Photovoltaic Inverter-Based Generator

August 5, 2015

Revised October 2, 2015

**Attachment A to Interconnection Agreement by and between Milton Town Solar, LLC, and  
Public Service Company of New Hampshire**

## Executive Summary

### NOTE REGARDING THE OCTOBER 2, 2015 REVISION TO THIS STUDY

*Eversource received a revised Generator Interconnection Request form on September 15, 2015. The form was followed on September 17, 2015 by a new one-line diagram for the expanded facility. The drawing, marked as Dwg # E-1, Rev 1.0, dated 9/10/2015 by American Capital Energy, Inc. represents the proposed facility. The new facility consists of two (2) Solectria PVI 23KW inverters, two (2) Solectria 28KW inverters, and eighteen (18) Solectria 36KW inverters. The total maximum AC rating of the facility is 750 KW.*

*The remainder of this document is based on the original 644 KW project submittal. Eversource confirms that none of the results contained below are materially altered by the expanded capacity of the facility.*

Eversource, "The Company", has completed the Impact Study for the interconnection of Milton Town Solar, LLC, "the Interconnecting Customer" (IC), 644 kW (AC) photovoltaic inverter generating facility, "The Facility", to its 34.5 kV distribution system. The technical analysis and requirements specified are exclusive to this project and are based upon the facility arrangement illustrated on the following Diagrams:

Milton Landfill Site Plan

Dated 02/27/2015

Milton Town Solar, LLC One-line Diagram

Dated 03/20/2015

*Refer to Appendix A, Figures 2 – 3 for Interconnection Customers Diagrams.*

Any further design changes made by the Interconnection Customer post Interconnection Application (IA) without EVERSOURCE's knowledge, review, and/or approval will render the findings of this report null and void. If changes are anticipated EVERSOURCE should be informed immediately so that requirements and recommendations contained within this study may be revised where necessary. This will ensure that the IC is informed of EVERSOURCE requirements within a timely fashion and should eliminate delays and additional expenses which could otherwise be experienced by the IC.

### The purpose of this study was to:

1. Conduct, as applicable, steady-state, stability, short circuit, and extreme contingency analyses and perform assessments of reliability performance of the Company's Distribution System within the area of interconnection, with and without the proposed Facility. The study will determine the incremental impact and any potential adverse impacts associated with the interconnection of the Facility to the Electric Power System (EPS) and is in compliance with the applicable codes, standards, and guidelines listed below:

- a. *Eversource Technical Requirements for Non Utility Generation Interconnecting to the PSNH Distribution System, September 2013*
  - b. *Eversource Operating Procedure ED-3025 Feasibility for Interconnection of Independent Power Producers, July 19, 2012*
  - c. *PUC 900 NET METERING FOR CUSTOMER-OWNED RENEWABLE ENERGY GENERATION RESOURCES OF 1,000 KILOWATTS OR LESS*
  - d. *IEEE 1547 IEEE Standard for Interconnecting Distributed Resources with Electrical Power Systems July 28, 2003*
2. Provide a report describing the results of the Impact Study including:
    - a. Any required System Modifications
    - b. Cost estimate of facilities required to interconnect the Facility to the EPS

#### System Modifications

The study determined the interconnection of the Facility to be feasible with the following System Modifications:

1. Company to remove three (3) existing 6T fuses located on Pole #300/81 White Mountain Highway Milton, NH and install a three-phase electronic recloser with by-pass disconnects in accordance with Eversource standards.
2. Company to install a visible loadbreak on the load side (IC's side) of the recloser on Pole #300/81A.
3. Company to install approximately 150' of overhead three-phase 1/0 Al. primary to an IC installed/owned pole in the vicinity of Pole #300/81C-6 off White Mountain Highway. Install a three-phase electronic recloser with by-pass disconnects in accordance with Eversource standards.
4. IC to install new pole locations, and visible loadbreak in accordance with Eversource standards.
5. IC to install/own a three- phase, 750 kVA pad-mounted transformer which will serve proposed Facility.
6. Company to install bi-directional net meter on secondary side of interface transformer.

#### Cost Estimate

Total estimated known costs are **\$159,000.**

#### Estimated Schedule

The estimated schedule for the Company to complete construction of the System Modifications is 3 to 6 months. The schedule is contingent on the IC's successful compliance with the requirements outlined in this report and timely completion of its obligations as defined by *PUC 900 Administrative Rules*.

## **1 Introduction**

Per the revised Generator Interconnection Request Form dated 3/20/2015, Milton Town Solar, Interconnecting, Customer, (IC), has requested a Distributed Generation (DG) interconnection of a 644 kW photovoltaic (PV) renewable generator facility to EVERSOURCE's 34.5 kV distribution system. The facility is located off White Mountain Highway in Milton, NH.

### **1.1 Study Objective**

The primary objective of this Study is:

1. Identify deficiencies in the proposed Facility;
2. Identify System Modifications necessary for the facility to reliably interconnect to the Company's Electrical Power System;
3. Identify operating restrictions;

### **1.2 Project Description**

#### **1.2.1 Facility Description**

The facility consists of twenty-three (23) inverters totaling 644 kW as depicted in the ICs Project Diagrams (Appendix A, Figures 2 and 3). The three-phase 644 kW generating system consists of the following:

- Twenty-three (23) Solectria PVI 28TL 28 kW, 3-phase, 480V transformer-less inverters.
- Three (3) AC Combiner, 400 A, 480V, 3 phase, 4 wire panel boards, labeled AC combiner #1, #2, and #3.
- AC combiners #1 and #2 connect to eight (8) 28 kW inverters via 45 A breakers.
- AC combiner # 3 connects to seven (7) 28 kW inverters via 45 A breakers.
- The output of each combiner connects to a 1,000 Amp PV system disconnect, via 400 Amp breakers.
- The PV system disconnect connects to a 3 phase 1,000 Amp Electric Service Main Disconnect.
- The Main Disconnect connects to a CT cabinet which proposed to house a new Company owned bi-directional net meter.
- The CT cabinet connects to the secondary low side of an IC owned 750 kVA 3-phase, 480V wye-grounded/34.5/19.9 kVA grounded-wye pad-mounted step-up interface transformer with a 5.75% impedance and assumed X:R of 10:1.

- The high side of the interface transformer connects to the Company 34.5 kV three phase circuit.

### **1.2.2 Tasker Farm Substation**

The Tasker Farm Substation is served by one (1) 115 kV transmission line, the East Port Y170. Tasker Farm Substation has one 115 kV Delta to 34.5kV/19.9kV Grd-Y supply transformer, TB78. Transformer TB78 normally supplies the Farmington 3174, Portland St 3228 and, the Laskeys Corner 3157.

### **1.2.3 Area Electric Power System 3157X1**

The proposed location of the Facility is normally served by EVERSOURCE's 34.5/19.9 kV three-phase, 4 wire, multi-grounded wye, effectively-grounded 3157 radial circuit from the Tasker Farm Distribution Substation.

The 3157X1 circuit characteristics are as follows:

- The 3157 circuit is a 34.5 kV nominal, multi-grounded wye, effectively-grounded, regulated via a Load Tap Changer (LTC) on the TB78 supply transformer. The 3157 circuit breaker is integrated with SEL relays and the 3157X1 is protected by a Viper recloser located in the Milton – No. Rochester ROW off Elm Street. There are no reclosers between the 3157 circuit breaker and the 3157X1 source recloser. The POI is downstream of the 3157X1 recloser. There is one (1) recloser, 57X1J1, located at Pole # 300/58 White Mountain Highway. The 57X1J1 does not have any protective settings, it is being used as a SCADA fault-sensing switch only.
- There is other existing generation on the 3157/3157X1 circuit
  - Milton Mills Hydro (SESD #011) - 4 Synchronous Generators totaling 1,300 kW
  - Middleton Co-gen (SESD #377) - 1 Induction Generator, totaling 615 kW

The impact of those projects was considered in the evaluation of this project.

- There is one (1) existing capacitor bank, located on the 3157X3, with total capacitance of 900 kVAR.

### **1.2.4 Service Configuration**

The IC's existing site where the Facility is proposed is normally served by a three phase fused tap off of EVERSOURCE's 3157X1 circuit, a 34.5 kV three-phase, 4 wire, multi grounded wye, effectively-grounded, radial circuit, supplied from the Tasker Farm Substation. The tap which currently serves 803 White Mountain Highway is fused at Pole 300/81 White Mountain Highway Milton, NH. The removal of the three (3) – 6T fuses will pose an unacceptable reliability risk to the 3157X1 circuit due to significant exposure. In order to maintain the current system reliability

and prevent potential outages to the 3157X1 mainline the fuses will be replaced with a Pole Top Recloser with bypass disconnects. A visible loadbreak will be installed on the load side (IC's side) of the recloser on Pole #300/81A.

The Company will install approximately 150' of overhead three-phase 1/0 Al primary to an IC installed/owned pole in the vicinity of Pole #300/81C-6 off White Mountain Highway. Install a three-phase electronic recloser with by-pass disconnects in accordance with Eversource standards. The IC will install new pole locations, and visible loadbreak in accordance with Eversource standards. The IC will install a three-phase riser with #2 Al. cable to a IC installed/owned 750 kVA pad-mounted transformer that will serve the proposed 644 kW Facility.

The customer will be responsible for procuring and installing the appropriate pad for the new 750 kVA transformer, the customer will be responsible for any additional civil work and any additional costs associated with bringing the primary circuit to the interface transformer.

**The Delivery Point:**

For the purpose of establishing ownership, operation and maintenance responsibilities, the location of facility energy delivery to Eversource (the "Delivery Point") must be defined. At this facility the delivery point will be defined as the point at which the IC's overhead primary conductors terminate on the in-line disconnects on the load side (IC's side) of the three-phase electronic recloser to be installed in the vicinity of Pole #300/81C-6 off White Mountain Highway.

**Description of Responsibilities:**

Except as set forth in subsection a) and b) below, Eversource will own and maintain all equipment up to the delivery point and the IC will own and maintain all equipment from the delivery point into and throughout the facility.

- a) Eversource will own the metering designated "Eversource Delivery Point Metering", to be maintained by Eversource at the IC's expense.
- b) The three-phase electronic recloser to be installed in the vicinity of Pole #300/81C-6 will be owned and maintained by Eversource. Maintenance costs associated with the recloser and replacement costs, if necessary, shall be paid by the IC.

The Company's Design Personnel will determine the exact location of the Company's facilities. The Interconnecting Customer shall be responsible for obtaining all easements and/or land acquisitions required for the interconnection of this Facility in accordance with the Company's requirements.

The IC shall provide the Company with direct access to the visible load break switch, recloser, transformer, and meter along an accessible driveway or road, where the equipment is not

behind the IC's locked gate. In those cases where the IC's equipment is required to be behind the a locked gate, double locking, with both the Company's and IC's locks shall be employed.

Refer to Appendix B - Electric Power System Modifications Figure 4 POI/PCC Configuration One-Line.

### **1.2.5 Monitoring Provisions**

Per IEEE section 4.1.6 Monitoring Provisions, each Distributed Resource (DR) unit of 250kVA or more or DR aggregate of 250kVA or more at a single Point of Common Coupling shall have provisions for monitoring its connection status, real power output, reactive power output, and voltage at the point of interconnection. The project plans to install 644 kW of PV generation, therefore monitoring provisions would be required. The Company intends to meet this requirement through bi-directional metering installed at the Point of Common Coupling (PCC).

## **2 Power Flow Analysis**

The power flow analysis was substantially performed using CYMDIST 5.04 rev 12. A model of the 3157/3157X1 circuit was developed based on data extracted from the EVERSOURCE's PSSE power system model.

The analysis considered cases at the following 3157 load:

- 3157 Maximum Peak at Minimum Load 7,522 kW @ 95.6% leading Power Factor (PF)
- 3157 Minimum Peak at Minimum Load 5,889 kW @ 94.2% leading Power Factor (PF)
- 3157 Maximum Peak at Maximum Load 12,404 kW @ 95.2% leading Power Factor (PF)
- 3157 Minimum Peak at Maximum Load 10,612 kW @ 95.9% leading Power Factor (PF)

The analysis considered cases at the following Tasker load:

- Tasker Minimum Peak at Minimum Load 7,756 kW @ 95.4% leading Power Factor (PF)
- Tasker Maximum Peak at Minimum Load 9,644 kw @ 96.4% leading Power Factor (PF)
- Tasker Minimum Peak at Maximum Load 13,911 kW @ 96.5% leading Power Factor (PF)
- Tasker Maximum Peak at Maximum Load 16,310 kw @ 95.9% leading Power Factor (PF)

The following cases were analyzed for both minimum and maximum load periods:

- Steady State Analysis with existing 1,915 kW DG on and proposed 644 kW PV Facility operating at 100% PF.
- Steady State Analysis with existing 1950 kW DG on and proposed 644 kW PV Facility operating at 99% leading PF, importing VARS (~91 VARS).
- Steady State Analysis with existing 1950 kW DG on and proposed 644 kW PV Facility operating at 99% lagging PF, exporting VARS (~91 VARS).

## 2.1 General Loading Analysis

An analysis of the circuit loading, with and without the PV system operating, was performed on the 3157/3157X1 circuit and the Tasker Farm Substation. Specifically, no conductor, transformer, or voltage regulator overloads occur. All EVERSOURCE owned mainline conductor and distribution facilities are thermally large enough to accommodate the added capacity from the 644 kW PV facility.

## 2.2 Voltage Analysis

The Company is obligated to hold distribution voltages at customer service points to defined limits in ANSI Standard C84.1- 2006. Range A of the ANSI standard requires the Company to hold voltage within +/- 5% of nominal at the customer service point. Under normal operating conditions it is expected that the Company will be able to meet its obligations for ANSI C84.1 with the Facility generation at full power and the interconnecting circuit in its normal configuration. The Customer must maintain voltage at the PCC at +/- 5% of nominal under normal conditions. In addition, the Facility shall not contribute to greater than a 3.0% change in voltage on the EPS under any conditions.

A base case of the circuit was run for minimum and maximum load at time of maximum expected generation. The per unit voltage on the 34.5 kV side of the interface transformer was recorded per phase. To determine the potential highest V delta per phase on the 34.5 kVA side of the transformer the 3157X1, the LTC was locked in the model to mimic the effect the LTC delay, with the PV site on, and operating at 100% PF, or 99% leading, or 99% lagging PF.

The steady state minimum load flow results showed the largest V pu at 1.025% and V deltas on the 480 V (PCC) side of the interface transformer of 1.025% on A phase, 1.022% on B phase, and 1.022% on C phase. This occurred while the generation was running at a 99% leading PF, exporting VARS.

The steady state maximum load flow results showed the largest V pu at 1.017% and V deltas on 480 V (PCC) side of the interface transformer of 1.29% on A phase, 1.10% on B phase, and 1.20% on C phase. This occurred while the generation was running at a lagging 99% PF, exporting VARS.

In summary, there are no reports of voltage conditions on EVERSOURCE's EPS with the generation Facility at the interconnection site at full power during studied cases. Analysis shows that if the facilities are set to operate at 100% or 99% leading or lagging power factor, where the facilities are always importing or exporting VARs onto the area EPS, voltage levels can be maintained within the ANSI "A" range.

The Company will not be held liable for any power quality issues that may develop with any customers as a result of the interconnection of this Facility.

## 2.3 Flicker Analysis

Flicker may arise due to variable loads and distributed generation resources. The *IEEE Recommended Practice for Measurement and Limits of Voltage Fluctuations and Associated*

*Light Flicker on AC Power Systems*, IEEE Std. 1453-2004 provides guidance on flicker and voltage fluctuations. The flicker planning level should be no more than  $P_{st} = 0.9$  over a 10-minute period, and no more than  $P_{lt} = 0.7$  over a 120-minute period. These flicker levels use a perception-weighted average of voltage fluctuations that may occur at different frequencies, normalized such that 50% of customers would likely complain at a flicker level of 1.0.

Analysis for this impact study has determined that the potential largest V delta is 1.29% on the 480 V side of the interface transformer and 0.49% on the load side of the 3157 LTC, with this Facility operating at 100% PF or 99% leading or lagging PF.

PV output is most volatile on partly cloudy days, when sunlight hitting the array field is blocked either partially, or completely, from time to time by passing cloud cover. In some extreme cases, the fluctuating output can cause voltage fluctuations that may result in visually perceived flicker from incandescent and florescent lighting sources. For this analysis, the largest V delta observed, with the entire site turning on and off, is a very extreme and very conservative representation of PV output on a partly cloudy day. Consequently, with V delta being at such a small degree of change, experience has shown that power quality issues arising as a result of flicker from this particular facility is highly unlikely.

In summary the analysis determined that if the contribution of the PV at the Point of Common Coupling operates at a 100% PF or 99% leading or lagging PF, exporting or importing VARs onto the circuit, the predicted flicker and voltage fluctuations are expected to be acceptable, provided the area EPS is in its normal configuration.

The Company reserves the right to disconnect the facility if abnormal conditions develop. If power quality issues develop on the 3157/3157X1 due to the interconnection of the PV facility flicker meters may need to be installed at the site to determine if there are any objectionable variations.

### 3 Short Circuit and Protection Analysis

ControlPoint Technologies performed a protection review of this proposed interconnection of a 644 kW inverter based generator facility to its 34.5 kV, multi-grounded wye, effectively grounded circuit. The review focused on the system protection scheme, project interface, and transfer trip requirements. This review identified EPS enhancements that are necessary to complete the interconnection project and its ability to comply with the relevant provisions of the EVERSOURCE, P&CE NUG Design Guidelines for Developers, September 2013, along with the PUC 900 NET METERING FOR CUSTOMER-OWNED RENEWABLE ENERGY GENERATION RESOURCES OF 1,000 KILOWATTS OR LESS, as applicable. Please note that applicable sections of P&CE guideline and PUC 900 document are referenced for information purposes and may not comprise the entirety of applicable sections.

#### 3.1 Fault Current Contributions

Table 4 Pre and Post Facility Fault Current, summarizes the generation effect on fault current levels at the 34.5 kV side of the Delivery Point interface transformer and the 34.5 kV 3157 Tasker Station Bus. These fault currents are within existing equipment ratings and will not upset existing device coordination on the circuit. The customer is responsible for ensuring that their own equipment is rated to withstand the available fault current according to the NEC, which specifies that the fault current should be no more than 80% of the device interrupting rating.

Fault Location	Fault Type	Pre-Project Amps	Post- Project Amps	Δ%
34.5 kV Tasker	Line to Grd	4,083	4,084	0.02
	Three Phase	3,786	3,787	0.03
34.5 kV PCC	Line to Grd	2,212	2,213	0.05
	Three Phase	2,611	2,614	0.11

**Table 1 Pre & Post Facility Fault Current**

A short circuit model of the 3157/3157X1 was developed using ASPEN Oneliner based on EVERSOURCE provided impedance data, device settings, and circuit one-lines. The model includes both existing Milton Hydro and Middleton Cogen and the pre and post values are with both Facilities on line. The model assumes the installation of:

- One (1) 750 kVA three-phase, 480V wye-grounded/34.5/19.9 kVA grounded-wye pad-mounted step-up interface transformer with a 5.75% impedance and assumed X:R of 10:1.
- Inverters are current limited devices that are characterized to only supply positive sequence fault current which is limited to approximately 120%. ASPEN does not facilitate the modeling of an inverter therefore a conventional generator was modeled with the following impedances to mimic the characteristics of an inverter:

- (1) Sub transient Positive Sequence Impedance,  $Z1 = 0.82 + j0$
- (2) Transient Positive Sequence Impedance,  $Z1 = 0.82 + j0$
- (3) Synchronous Positive Sequence Impedance,  $Z1 = 0.82 + j0$
- (4) Negative Sequence Impedance,  $Z2 = 0.82 + j0$
- (5) Zero Sequence Impedance,  $= 999 + j0$

If a different configuration, transformer winding configuration, or impedances are used, the Short Circuit and Protection Analysis will need to be re-evaluated at additional expense to the IC.

### **3.2 System Coordination Review**

As part of the protection analysis a system protective device coordination review was completed on the 3157/3157X1 circuit, with and without the Facility interconnected.

In order to maintain the current system reliability and prevent potential outages to the 3157X1 mainline, the fuses at Pole #300/81 White Mountain Highway will be replaced with a Pole Top Recloser. Additionally a new Pole Top Recloser will be installed in the vicinity of Pole #300/81C-6, the Point of Interconnection (POI). Initial coordination analysis found this to be feasible with the modification of existing 3157 Breaker and 3157X1 Source Recloser settings, assuring optimal coordination between all devices.

### **3.3 Safety Considerations**

Refer PUC 905.01, Requirements for Disconnect Switches, No facility which connects to the electric grid by means of a single-phase or 3-phase inverter that complies with PUC 906.01 shall be required to install and maintain a manual disconnect switch for utility use, unless:

- (1) The customer-generator's revenue meter is not routinely accessible to the utility;
- (2) The facility uses multiple inverters connected in series; or
- (3) The utility connection is through a transformer rated meter.
- (4) For purposes of this section, a "transformer rated meter" means a meter panel or switchboard employing the use of potential and current transformers.

The project will not require a disconnect switch.

### **3.4 Interface Transformer**

The Company reserves the right to specify the winding connections for the transformer between the Company's voltage and the Facility's voltage (Interface Transformer) as well as whether it is to be grounded or ungrounded at the Company's voltage. Per PUC 905.03 Configuration of the Transformer Serving the Customer-Generators Generation Site, for 3-phase distributed generators connected to 4-wire multi-grounded distribution systems, the step-up transformer may be an existing grounded-wye to grounded-wye transformer.

The project one-line is proposing the installation of a new, EVERSOURCE owned, three 750 kVA pad mounted interface transformer configured such that the primary winding is 34.5 kV grounded wye/19.9 kV primary and a 480 V grounded wye/277 V secondary. The proposed configuration will not be a source of zero sequence fault current for faults on the EPS. The proposed configuration is in compliance with EVERSOURCE NUG Design Guidelines and PUC 900 Administrative Rules.

### **3.5 Inverter Requirements**

Per the PUC 900 Administrative Rules, Section 906.01 Inverter Requirements,

A net energy metered project which connects to the electric grid by means of a single-phase or 3-phase inverter shall be deemed to be compliant with the technical specifications for the generation unit itself, as established by PUC 900, if the unit complies with the minimum requirements set forth in the following national standards:

- (1) The "IEEE Standard 1547 (2003) for Interconnecting Distributed Power Resources with Electric Power Systems" issued by the Institute of Electrical and Electronic Engineers, Inc., New York, NY, 2003; and
- (2) The "UL 1741, Standard for Inverters, Converters, Controllers with Interconnection System Equipment for Use with Distributed Generation Resources", issued by Underwriters Laboratories, Inc., of 333 Pfingsten Road, Northbrook, Illinois 60062, 2010.

The IC is proposing the installation of twenty-three (23) Solectria PVI 28TL 28 kW, 3-phase, 480V transformer-less inverters, which are UL 1741 and IEEE 147 certified and approved, per the provided Solectria inverter specification sheet.

### **3.6 Internal Inverter Voltage Protection Functions**

The IC is proposing the installation of twenty-three (23) Solectria PVI 28TL 28 kW, 3-phase, 480V transformer-less inverters, which are UL 1741 and IEEE 1547 certified and approved, per the provided Solectria inverter specification sheet.

The IC must provide the Company with internal inverter relay settings in order to confirm compliance with IEEE 1547.

### **3.7 Frequency Settings**

The IC is proposing the installation of twenty-three (23) Solectria PVI 28TL 28 kW, 3-phase, 480V transformer-less inverters, which are UL 1741 and IEEE 147 certified and approved, per the provided SMA inverter specification sheet.

Additionally, the DG shall cease to energize the area EPS within 2 seconds, refer to IEEE1547 and UL1741. The Interconnection system's response to abnormal frequencies, Section 4.2.3.2.1 requires that NPCC Directory 12 Figure 1 Curve "Standards for Setting Under frequency Trip

Protection for Generators” for the Eastern Interconnection be followed. It is important that clearing time should be the time that the relay trips plus breaker operating time.

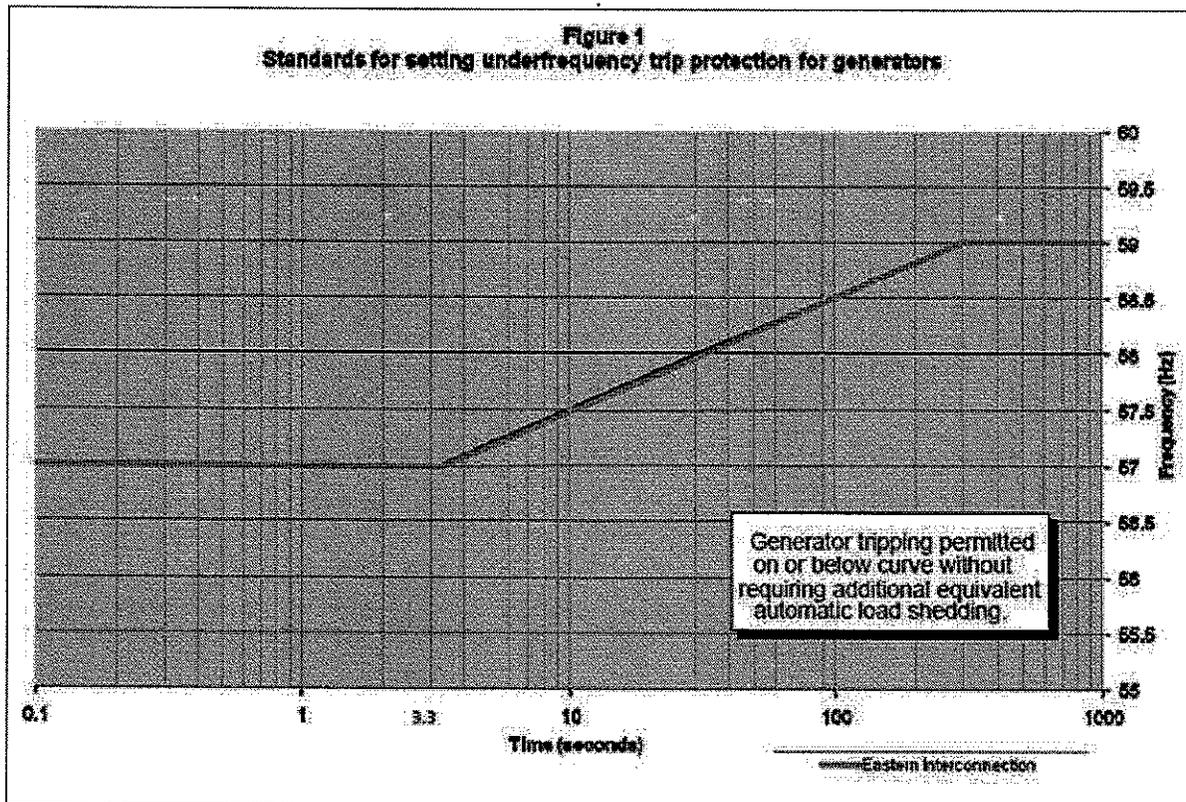


Figure 1 NPCC Directory 12 Figure 1 Curve

The under frequency setting points should also comply with the NPCC standard for setting under frequency trip protection. Per the NPCC Directory 12 Figure 1 Curve, if the setting falls above the curve, there must be an equivalent amount of load shed when tripped,

The IC must provide the Company with internal relay settings in order to confirm compliance with the NPCC Directory 12 Figure 1 Curve requirements for the **Eastern Interconnection**.

### 3.8 Service Quality and Harmonics

Per Section IV - B of the P&CE NUG Design Guidelines for Developers, The connection of the facility to the EVERSOURCE system must not reduce the quality of service currently existing on the EVERSOURCE system. Voltage fluctuations flicker, and excessive voltage and current harmonic content are among the service quality considerations. Harmonic limitations should conform to the latest IEEE guidelines and/or ANSI standards. Refer to table below for IEEE 1547-2003 guidelines:

Individual harmonic order h (odd harmonics) <sup>1</sup>	h < 11	11 < h < 17	17 < h < 23	23 < h < 35	35 < h	Total demand distortion (TDD)
Percent (%)	4.0	2.0	1.5	0.6	0.3	5.0

**Table 2 Maximum harmonic current distortion in percent of current (I)<sup>2</sup>**

### 3.9 Additional Requirements

- (1) Protection of the generating facility equipment for problems and/or disturbances which might occur internal or external to the facility is the responsibility of the generation facility owner. Any fault located within the generating facility should be detected and interrupted by generating facility equipment at the generating facility. The settings for such equipment whose failure to perform properly during such a fault could result in loss of service to EVERSOURCE customers will typically be developed by the generating facility and reviewed by EVERSOURCE. EVERSOURCE's involvement with such equipment is limited to ensuring that coordination exists with upstream EVERSOURCE devices, and that the critical interrupting device is capable of interrupting the EVERSOURCE fault duty which exists at the point of application.
- (2) No operation of the facility's generation is allowed until all EVERSOURCE requirements have been met, all related systems, are in place, calibrated, and proven functional, and the Developer has received formal signoff from the Supplemental Energy Sources Department (SESD). This requirement may be waived by EVERSOURCE for a given system if generation is required to demonstrate the proper functioning of that system.

### 3.10 Unintentional Islanding

Per IEEE 1547 section 4.4.1 Unintentional Islanding, for an unintentional island in which the DG energizes a portion of the Area EPS through the PCC, the DG interconnection system shall detect the island and cease to energize the Area EPS within two seconds of the formation of an island.

The project was screened for the potential of islanding during abnormal operating conditions per the *Suggested Guidelines for Anti-Islanding Screening* study in order to evaluate the need for a Detailed Anti-Islanding (AI) study for DG interconnections. The study was conducted by Sandia Labs and Northern Plains Power Technologies for the US DOE. The study has been a useful tool used to evaluate whether inverter based interconnections would need a more detailed AI study based on the interconnection circuit parameters. The screening looks at load to generation match (aggregate), amount and type of other DG on interconnection circuit, and VAR match. The screening criteria<sup>3</sup> provide guidelines to determine whether a detailed Anti-Islanding study,

<sup>1</sup> Even harmonics are limited to 25% of the odd harmonic limits above.

<sup>2</sup> 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).

<sup>3</sup> Screening criteria derived from the Sandia Report on "Suggested Guidelines for Anti-Islanding Screening".

which determines the need for Direct Transfer Trip, will be required. The following are the guidelines used to determine this requirement:

**Step 1:** Determine whether the proposed DG is greater than 2/3 of minimum load. If it is then you would move on to step 2 - 4. If not a study would not be required.

**Step 2:** If  $Q_{pv} + Q_{load}$  is within 1% of  $Q_{cap}$  than a study would be prudent.

**Step 3:** If there are rotating machines greater than 25% of the total aggregate DG a study would be prudent.

**Step 4:** If there are multiple PV inverter manufacturers and no single manufacturer's product makes up at least 2/3 of the total DG in the potential island, then further study may be prudent. If the situation is such that more than 2/3 of the total DG is from a single manufacturer, then the risk of unintentional islanding can be considered negligible.

The evaluation determined that a ROI detailed study is not required for any potential islands since the total generation does not exceed 2/3 of the minimum load. A detailed anti-islanding study is not recommended, provided the customer can provide documentation that certifies the inverters are UL 1741-2005/ IEEE1547 compliant

### **3.11 Direct Transfer Tripping**

DTT is not required for this interconnection.

### **3.12 Protection Scheme Summary**

The IC must submit an updated one-line that meets all the requirements specified within this document, along with any required settings to the Company for review and approval before an interconnection application can move forward.

## **4 Testing**

The generating facility has full responsibility for ensuring that the protective system and the associated devices are maintained in reliable operating condition. EVERSOURCE reserves the right to inspect and test all protective equipment at the generator site whenever it is considered necessary. This inspection may include tripping of the breakers.

Refer to PUC 900 Administrative Rules, Sections 905.04 and 905.05 for Initial and Periodic Testing.

After installation of the generation facility and before final approval and interconnection to the electric grid, the customer-generator shall, in addition to the certifications required in connection with the interconnection application, conduct a loadbreak test on the generator, as described in (b) below, to confirm that the anti-islanding controls are functioning.

- (1) When conducting a loadbreak test, the customer-generator shall demonstrate that after the main disconnect switch or circuit breaker of the residence or building is opened, the generation unit shuts down within 2 seconds.
- (2) If the generation unit fails to shut down within 2 seconds after conducting the test as provided in (b) above, the customer-generator shall inform its distribution utility.

As a generator facility which interfaces with the electric grid by an inverter, the customer-generator shall, if requested to do so by its distribution utility, conduct a loadbreak test, as described in PUC 905.04(b), once per year after installation.

## 5 Cost Estimates

The non-binding good faith cost planning grade estimate for the Company's work associated with the interconnection of this Facility to the EPS, as identified in this report, are **\$159,000**, and includes the breakdown of items listed in *Table 4 Cost Estimates*, below:

Eversource Work Item	Total Customer Costs
<b>System Modifications PSNH</b>	<b>Total \$</b>
<b>Pole #300/81 Recloser and Pole #300/81A Loadbreak</b>	<b>\$75,000</b>
<b>POI/PCC loadbreak, recloser</b>	<b>\$75,000</b>
<b>Secondary Bi-directional meter</b>	<b>\$5,000</b>
<b>Existing Protective Device Setting Changes</b>	<b>\$4,000</b>
<b>SUBTOTAL</b>	<b>\$159,000</b>
	<b>Total \$</b>
<b>Totals</b>	<b>\$159,000</b>

**Table 3 Cost Estimates**

This planning grade estimate is based on information provided by the Interconnecting Customer for the study, and is prepared using historical cost data from similar projects.

## 6 Conclusion

The project was found to be feasible. It will be allowed to interconnect with certain modifications and additions to the local EVERSOURCE Electric Power System (EPS). The estimated planning grade cost for the Company's work associated with the Project is **\$159,000**.

The Company will be responsible for the following modifications and additions to the EPS:

1. Company to remove three (3) existing 6T fuses located on Pole #300/81 White Mountain Highway Milton, NH and install a three-phase electronic recloser with by-pass disconnects in accordance with Eversource standards.
2. Install a visible loadbreak on the load side (IC's side) of the recloser on Pole #300/81A.

3. Company to install approximately 150' of overhead three-phase 1/0 Al. primary to an IC installed/owned pole in the vicinity of Pole #300/81C-6 off White Mountain Highway. Install a three-phase electronic recloser with by-pass disconnects in accordance with Eversource standards.
4. IC to install new pole locations, and visible loadbreak in accordance with Eversource standards.,
5. IC to install and own a three- phase, 750 kVA pad-mounted transformer which will serve proposed Facility.
6. Company to install bi-directional net meter on secondary side of interface transformer.

The IC will be responsible for:

1. Install concrete transformer pad 76" x 70" x 36" pad per SPC P-015 and P-016 Company standards.
2. Any additional civil work and any additional costs associated with delivering the primary circuit to the interface transformer.

The Power Flow Analysis confirmed no reports of thermal concerns, voltage, or flicker fluctuations given that the Facility operates at a 100% PF or 99% leading or lagging PF, exporting or importing VARs onto the circuit. The Company reserves the right to disconnect the facility if abnormal conditions develop.

The customer must submit a PE stamped electrical one-line along with the required inverter relay settings, that meets all the requirements specified within this document, to EVERSOURCE for review and approval.



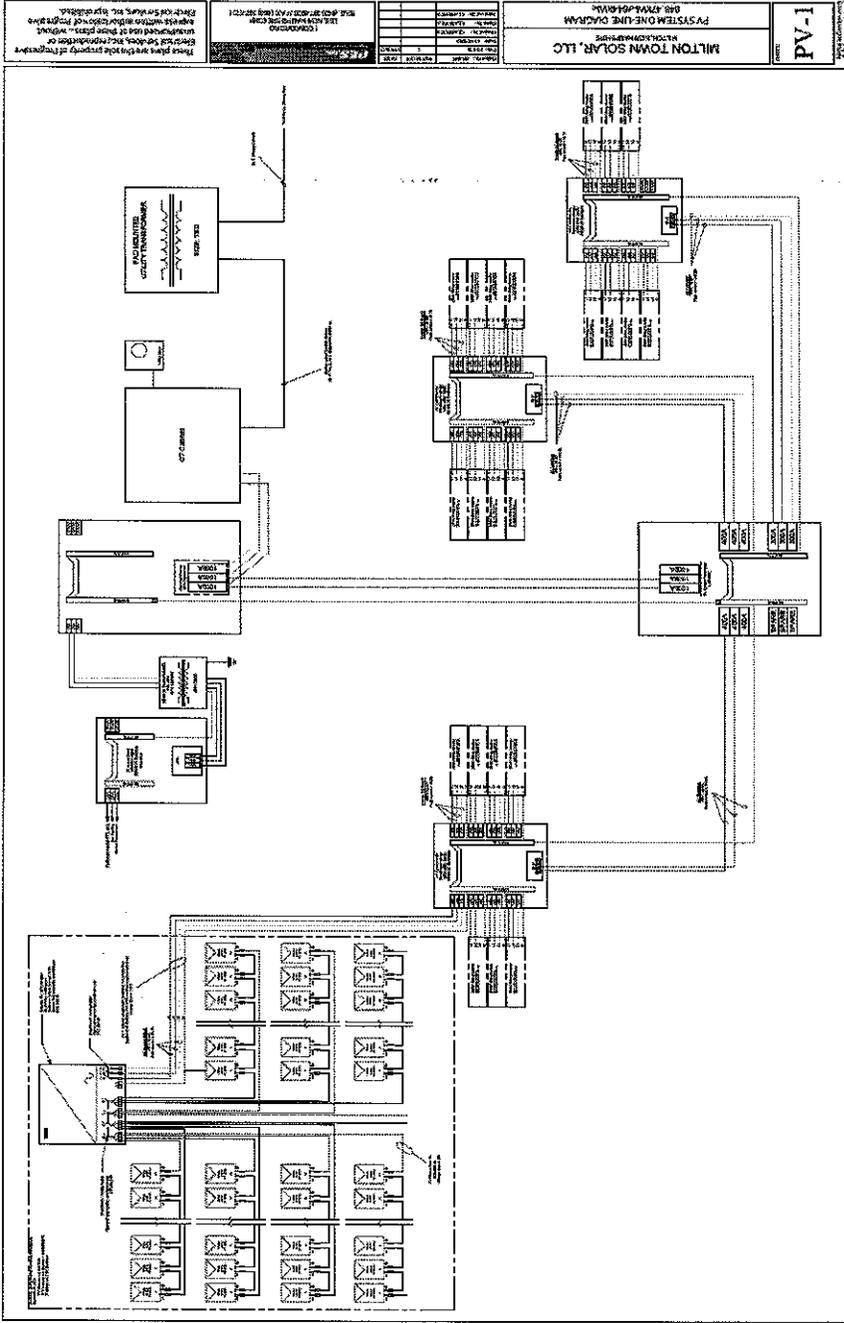


Figure 3 Milton Town Solar, LLC PV One-Line Diagram

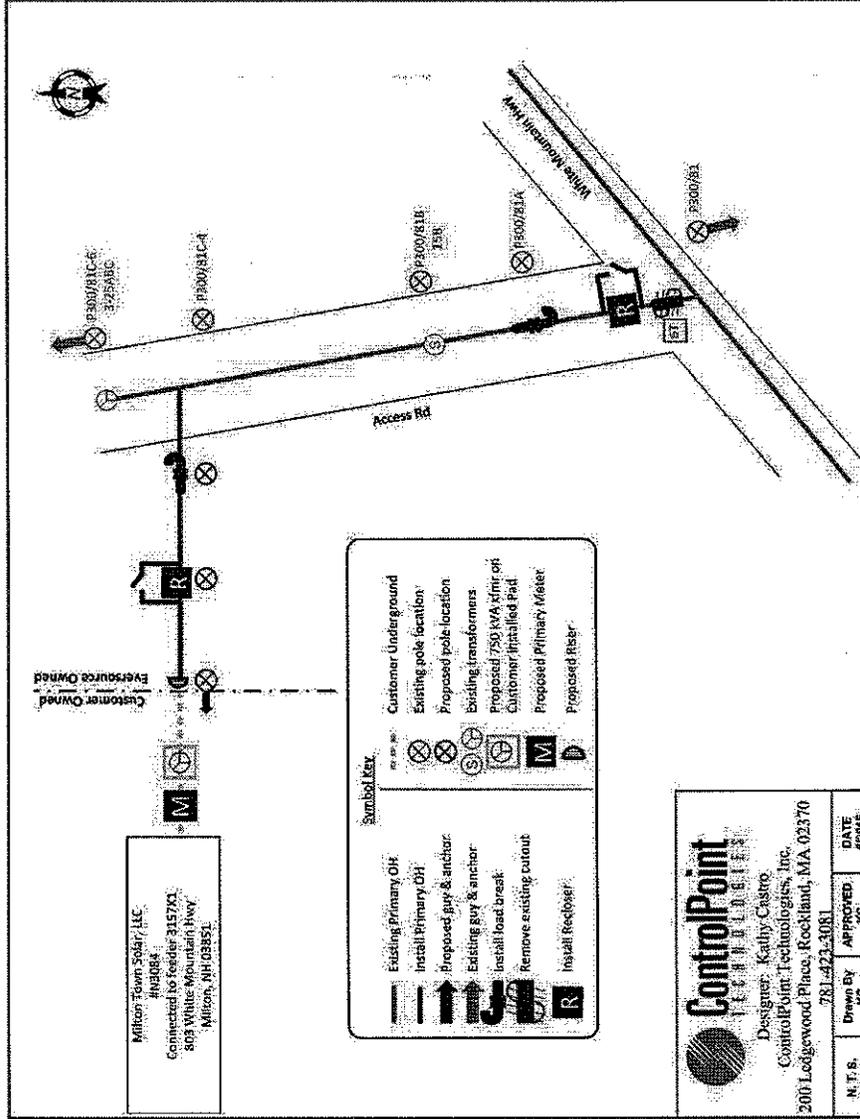


Figure 4 POI/PCC Configuration One-Line

**ControlPoint**  
TECHNOLOGIES

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	KC	KC	6/2015