

	Executive Summary for Interconnection Study	
		Page 1 of 7
	Small Generating Facility	Version 1.0 – 07/18/2016
Project	City of Beacon 1.98 MW Inverter Based PV Interconnection Project, Beacon, NY	

**Executive Summary for
City of Beacon
Impact Study**

**100 Dennings Ave
Beacon, NY 12508**

**1.98 MW Inverter Based,
Photovoltaic Generation**

Interconnection to CHG&E 13.2 kV System

	Executive Summary for Interconnection Study	Page 2 of 7
	Small Generating Facility	Version 1.0 – 07/18/2016
Project	City of Beacon 1.98 MW Inverter Based PV Interconnection Project, Beacon, NY	

Executive Summary

TRC has completed the Impact Study with direction from Central Hudson Gas & Electric (CHG&E) (“the Company”), for the proposed interconnection of the City of Beacon (“Interconnecting Customer” or “IC”) 1,980 kW PV Facility (“the Facility”) to its 13.2 kV distribution system (“the Project”) and presents the conclusions of the study herein. The requirements specified are exclusive to this project and are based upon the information submitted by the Interconnecting Customer at the time the Interconnection Application (“IA”) was submitted. Any further design changes made by the Interconnection Customer post IA without CHG&E knowledge, review, and/or approval will render the findings of this report null and void.

Pursuant to applicable New York jurisdictional requirements, the proposed Facility is a distributed generator consisting of a 1,980 kW photovoltaic (“PV”) renewable system. The Facility will be located at 100 Dennings Ave., Beacon, NY 12508 and interconnect to the Central Hudson Gas & Electric (CHG&E) electric system via the 13.2 kV distribution feeder 8085 (“Point of Interconnection” or “POI”).

The purpose of this study was to:

- Conduct, as applicable, steady-state, short circuit, and extreme contingency analyses and perform assessments of reliability performance of the Company’s Electric Power System (“EPS”) within the area of interconnection, with and without the proposed Facility, in accordance and applicable with reliability standards and study practices, and in compliance with the applicable codes, standards, and guidelines to determine the incremental impact and any potential adverse impacts associated with the interconnection of the Facility to the EPS.
- Determine any System Modifications required.
- Develop a cost estimate of facilities required to interconnection the Facility to the EPS.

	Executive Summary for Interconnection Study	Page 3 of 7
	Small Generating Facility	Version 1.0 – 07/18/2016
Project	City of Beacon 1.98 MW Inverter Based PV Interconnection Project, Beacon, NY	

- Provide a report describing the results of the Impact Study.

Customer Document Revisions

The Interconnecting Customer shall provide additional and/or revised documentation as described in the list below. The following list is intended as a convenient summary of documents for re-submission, however, the Interconnecting Customer is required to comply with all items listed and discussed in this document. Omission of an item from the following summary list that is referenced elsewhere in this document does not release the Interconnecting Customer from providing the necessary documents:

The Interconnecting Customer shall submit a revised three-line diagram and/or other technical information that provides for:

1. A 600A primary side utility generator disconnect switch is provided, however, in order for the isolation device to be fully acceptable, the switch must be a gang operated load break switch, have a visible break, lockable in the open position, and accessible to Company personnel 24 hours a day, 7 days a week.
2. Due to potential high generation to load ratios on the feeder and possible Load Rejection Overvoltage (LROV), the Customer must provide details for the mitigation of this condition. The Company reserves the right to request an additional Overvoltage set point or a modification of an existing setting to mitigate this condition.

Results

The results of this study indicate that the generator can connect to Central Hudson’s Electric Power System under normal system configuration based on the standards and upgrades identified in this study. Please note that when the generator is not supplied by the 8085 feeder and is in an alternate configuration, the Facility cannot operate interconnected to the Area EPS.

As part of the study, the following indicate the results witnessed during the CESIR:

- Under light load conditions excess generation from the Facility will back feed onto the substation 13.2kV Bus, however backfeed on to the substation transformer is not expected.

	Executive Summary for Interconnection Study	Page 4 of 7
	Small Generating Facility	Version 1.0 – 07/18/2016
Project	City of Beacon 1.98 MW Inverter Based PV Interconnection Project, Beacon, NY	

- Voltages as high as 125.4 V were noted at the Facility’s interconnecting transformer.
- The PV system will not create thermal loading problems on the 8085 feeder or the Tioronda Substation. The installation of this system will however require replacing the three (3) 140K fuses (P64210) with (3) solid blades and settings changes to existing electronic reclosers (P27121 and 111252) for proper coordination between the protective devices.
- Voltage fluctuations at the PCC are within acceptable limits as defined in CHG&E interconnection protection requirements standard.
- Fault current contribution as a result of this project is within acceptable limits.
- The proposed system meets Central Hudson’s effective grounding requirements.
- Unintentional islanding was not determined to be a risk.

To resolve the issues identified above, the following mitigation upgrades are required:

- To mitigate the above issues the following protective upgrades are required for proper sectionalizing and coordination of the line and substation protective devices with the new facility installed, as well as for adequate equipment capacity to serve the new facility:
 - New CHG&E recloser installation will be required at the PV site
 - The customer will be required to extend the existing 13.2kV distribution line near pole # P73453 (before the 3-100k fuses feeding City of Beacon’s existing account) for new service to the PV site. The PCC will be on the load side of the Company’s primary meter which will be located one pole span downstream from the new pole top recloser.
 - Replace the three (3)140K fuses at P64210 with (3) solid blades.
 - Settings changes to the existing electronic reclosers at P27121 and 111252 will be required.

Estimated Cost

	Executive Summary for Interconnection Study	Page 5 of 7
	Small Generating Facility	Version 1.0 – 07/18/2016
Project	City of Beacon 1.98 MW Inverter Based PV Interconnection Project, Beacon, NY	

The total estimated cost of the work associated with the interconnection of the Facility, is \$58,200 +/-25%.

Description	Cost (\$)
System Modifications:	
Primary service feed: Electronic recloser	\$57,500
Add ground element to existing 560A Type E recloser at P27121 and 111252 and replace existing 140K fuses on P64210 with solid blades	\$700
Tioronda Substation Modifications:	
<i>Provide additional relaying in the event of low level faults on the Company's 115 kV system</i>	\$0
Total	\$58,200

This estimate will be deemed withdrawn if not accepted by the Customer within ninety (90) calendar days of receipt of the study.

Estimated Schedule

Please be advised there is lead time for equipment purchases. The company will not order any equipment required until payment is received. The estimated time for the Company to complete construction of the System Modifications is 6-9 months.

The interconnection schedule is contingent on the Interconnecting Customer's successful compliance with the requirements outlined in this report and timely completion of its obligations. The schedule for the Company's work shall be addressed during the development, or after the execution, of the Interconnection Agreement.

The project was found to be feasible. It will be allowed to interconnect with certain modifications and additions to the local CHG&E distribution Electric Power System (EPS) the

	Executive Summary for Interconnection Study	
		Page 6 of 7
	Small Generating Facility	Version 1.0 – 07/18/2016
Project	City of Beacon 1.98 MW Inverter Based PV Interconnection Project, Beacon, NY	

Interconnecting Customer’s equipment. The estimated cost for the Company’s work associated with the Project is **\$58,200 +/- 25%**.

Please note that the customer will be responsible for extending the existing distribution line at pole # P73453 (upstream from existing 3-100k fuses currently feeding City of Beacon’s account) as part of new service for this site. Please contact Central Hudson’s New Business Department for further details. The cost of extending the distribution line, as well as for new service requirements were not included as part of this CESIR.

If it is determined that power quality or reliability issues occur as a direct result of the proposed 1,980 kW PV site, CHG&E will require the Interconnecting Customer to disconnect the PV system until mitigation has been implemented at the customer’s cost, to correct the issue.

Note: Authorization for parallel operation will not be issued without a fully executed Interconnection Agreement, receipt of the necessary insurance documentation, and successful completion of the Company approved witness testing. Such authorization shall be provided in writing.

	Executive Summary for Interconnection Study	
		Page 7 of 7
	Small Generating Facility	Version 1.0 – 07/18/2016
Project	City of Beacon 1.98 MW Inverter Based PV Interconnection Project, Beacon, NY	

Revision History

<u>Version</u>	<u>Date</u>	<u>Description of Revision</u>
1.0	07/18/2016	Executive Summary for the City of Beacon DG Interconnection Project.