Exh. WGKL-JC-6

Feasibility Study for Williston G Solar, LLC 2900 kW Solar Project

GMP CID 96004 QP-740

Located at 483 Mountain View Road; Williston, VT 05495
Connected to the GMP 19G3 Circuit at Pole 11/12 (Tag 201451)

Twarog, Cam

08/05/2025

Document Revision No.	Date	Author	Comments
0	11/20/2024	Cam Twarog	Creation of the document
1	12/06/2024	Cam Twarog	Initial Draft
2	07/25/2025	Cam Twarog	Revision of Feasibility Study for increased capacity
3	08/05/2025	Cam Twarog	Revision of Feasibility Study to 2900 kW capacity

This document provides Green Mountain Power's results of its Feasibility analysis for the proposed Project. This Feasibility analysis complies with the Vermont Public Utility Commission Rule 5.512 (D) Preliminary Screening Criteria . If the proposed Project fails a given criterion, supplemental analysis has been included. To the extent that the supplemental analysis confirms that the Project may have adverse impacts on safety or reliability, further study will be required.

GREEN MOUNTAIN POWER CORPORATION

163 ACORN LANE • COLCHESTER, VT 05446-6611 • PHONE (802) 864-5731 • FAX (802) 655-8419 • callcenter@greenmountainpower.com

SECTION 1

Project Description and Notes

Project and Distribution System Description

Williston G Solar, LLC propose to install a 3000 kW-AC Solar (the Project) in Williston, Vermont. The Project requests to interconnect to Green Mountain Power (GMP) on the GMP 19G3 distribution circuit in the vicinity of Taglet 201451 (the Point of Interconnection or POI). This circuit has a 7.2/12.47 kV grounded-wye configuration and is supplied by the GMP Essex Hill Top substation. This substation serves the 19G5, 19G6, and 19G7 circuits via the No. 4 power transformer and serves the 19G3 and 19G4 circuits via the No. 2 power transformer. The Project would be located approximately 1.77 circuit miles from the substation. The No. 2 power transformer at the substation has a base/top nameplate rating of 10/14 MVA whose voltage is regulated via three 668-amp bus regulators connected one per phase.

As of 10/02/2024, the application date for the Project, the total of installed and proposed distributed energy resources (DER) on the Essex substation was 20,019 kW, including the Project. The total DER on the No. 2 power transformer was 14,000 kW, including the Project. The total DER on the 19G3 was 9663 kW, including the Project.

The existing installed and proposed projects shall be included in the analysis as part of the total or aggregate distributed resources as necessary.

Substation/Circuit Protection and Loading

Location	Equipment and Control Type	Maximum Loading (kW)[1]	Minimum Loading (kW)[1]	Total DER Proposed and Connected (kW)
Essex No. 2 Power Transformer	34.5 kV Bank Breaker, with electro-mechanical and electronic	5,663 kW 7/6/2023 18:00	1,867 kW 5/5/2024 8:00	14,000
19G3 Circuit	12.47 kV Breaker with electronic relays	2,503 kW 7/6/2023 13:15	686 kW 9/9/2024 8:00	9,663
Tag 57087	Single Blade Solid Disconnects	1,045 kW 7/6/2023 13:15	265 kW 9/9/2024 8:00	9,391

Relevant Studies

- QP 702 Williston F Mountain View Solar LLC Feasibility Study –

[1] Circuit level loads are two full years plus current year SCADA and AMI data, prior to application date. The amount of distributed generation on-line at the time of the peak was estimated and is included in these figures. Line loads are based on CymDIST load flow calculations.

163 ACORN LANE • COLCHESTER, VT 05446-6611 • PHONE (802) 864-5731 • FAX (802) 655-8419 • callcenter@greenmountainpower.com

- Reconductoring of primary overhead from taglet 34892 to taglet 57103 (approximately 2,600 feet) to 477ACSR covered wire.
- Material and installation costs to install a single (1) phase voltage transformer (VT) on the line side of the 19G3 distribution feeder to implement a live line block reclosing scheme.

The Project has been studied assuming the above upgrades have been implemented. If the projects referenced above do not move forward to interconnection, or if the Project wishes to interconnect prior to said projects, the above requirements and costs may become the Project's responsibility.

Existing Materials

There is an existing CYMDIST unbalanced load flow model.

Modeling Assumptions:

- The Project is proposing to interconnect a three-phase DER to a 3-phase line. The following analysis will assume that the Project is interconnecting at taglet 736137. A riser pole will be added at an existing vault at this location, and a pole-mounted PCC recloser with primary metering package will be installed at this new pole.
- This project has been studied with a 3-phase, overhead line extension from taglet 736137 to the Project's switchgear (approximately 1100 feet). This conductor is assumed to be 1/0 AAC 15 kV covered wire.
- The project has been studied with 25 feet of reconductoring between taglet 57103 and 737369 from 1/0 AAAC to 477 ACSR.
- This project has been studied with the existing 300 kW solar project at taglet 201452 as disconnected (this project will be deconstructed as per Williston G Solar's site plan).
- This Project has been studied as being served from its normal supply, in this case the 19G3. There are alternate supplies to this location; and in the event of a resupply situation the Project may need to be taken off line for the duration of the resupply.
- The minimum daytime load was determined by analyzing the minimum loads during "daylight" hours between 8:00am and 4:00pm. This date generally falls within the spring and fall months of April, May, September, or October. Otherwise, a conservative estimate of 30% of the peak load will be noted and used.
- The modeling for this analysis utilizes the electrical one-line diagram submitted for the Project. The Project proposes to install 1 pad mounted 1,400 kVA, 12470/7200 volt grounded-wye to 600/346 volt grounded-wye transformer and 1 pad mounted 1,600 kVA, 12470/7200 volt grounded-wye to 600/346 volt grounded-wye transformer. The impedance of the transformers is assumed to be 5.75%.
- Unless otherwise specified, the power factor for PV projects is assumed to be 100% and the power factor for synchronous and induction generators is assumed to be +/-98%, and +/-93%, respectively.
- The short circuit contribution from the Project is assumed to be 150% of the Project's AC capacity.
- The inverter connection type is a three phase, no or low impedance continuous bond to the GMP neutral, also known as an ineffectively grounded connection.
- The inverters shall be required to operate with a total demand distortion (TDD) that complies with IEEE 1547 which references IEEE 519 specifically for harmonic contribution limits.

163 ACORN LANE • COLCHESTER, VT 05446-6611 • PHONE (802) 864-5731 • FAX (802) 655-8419 • callcenter@greenmountainpower.com

- Regarding voltage flicker for inverter based PV systems; GMP finds that inrush current is not a significant indicator of sudden voltage drop as it would be for rotating machine generators. To measure the sudden change in voltage, GMP's voltage flicker test for inverter based PV systems shall be used to test the impact of the Project to the distribution circuit. The voltage flicker test will consider the cloud shading effects on the PV modules. The cloud shading effect will consider the output drop of 70% for the PV system being studied, i.e. a drop in output from the nameplate ratings to 30% of the nameplate ratings before any voltage regulation can react to the change of voltage. If other PV systems are located within close proximity to the Project being studied, these systems may be included in the voltage flicker test. The percent difference in voltage readings at the Project's POI, and at any point in the distribution circuit, shall be validated using the GE flicker table. If the cloud shading results in less than a 1.8% change in primary voltage at any point on the distribution circuit, the Project passes the voltage flicker test.
- GMP Protection Criteria:
    - Non-fault currents shall not exceed 83% of the phase pickup of an electronic recloser under the conditions of minimum load and 100% generation.
    - For reach, the pick-up level shall not be less than 3.0 for bolted LLL and LG faults.
- GMP Thermal Criteria:
    - The aggregate proposed and installed DER on the feeder under study, including the Project, with generation output at 100% and minimum load, shall not exceed:
        - 90% of a conductor's ampacity rating (both overhead and underground conductor);
        - 100% of a sectionalizing fuse's continuous rating;
        - 100% of a sectionalizer's continuous rating;
        - 100% of a switch's continuous rating;
        - 100% of a load tap changer's continuous rating;
        - 100% of a recloser's continuous rating; and
        - 100% of a regulator's continuous rating, without load bonus.
    - The aggregate proposed and installed DER on the feeder under study, including the Project, with generation output at 100% and *no load*, shall not exceed:
        - 100% of the power transformer's top nameplate on a per-winding basis.
- Further information on GMP assumptions and requirements can be found in the Green Mountain Power Interconnection Guidelines for Distributed Energy Resources at https://greenmountainpower.com/wp-content/uploads/2017/01/Final-2021-DER-Guidelines-2-2021-03-19.pdf

163 ACORN LANE • COLCHESTER, VT 05446-6611 • PHONE (802) 864-5731 • FAX (802) 655-8419 • callcenter@greenmountainpower.com

SECTION 2

Rule 5.512 (D) Criteria

Criteria that are not passed will be colored in red.

1) **The proposed interconnection point is on a distribution line.**

   Pass

2) **The aggregated Export Capacity, including the capacity of the Project, on a distribution circuit will not cause any distribution equipment, including but not limited to conductors, substation transformers, line stepdown transformers, substation breakers, regulators, fuse cutouts, and line reclosers, or customer equipment on the system, to exceed the equipment's thermal ratings.**

   Fail -- The aggregated Export Capacity causes thermal rating exceedances discussed in section 3.

3) **The proposed Project's Nameplate Rating, in aggregation with other Generation Resource Nameplate Ratings on the distribution circuit, will not cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers) or Interconnection Requester equipment on the system to exceed 87.5% of the short-circuit interrupting capability; nor will the Project be proposed for a circuit that already exceeds 87.5% of the short-circuit interrupting capability.**

   Pass - After review, GMP finds the maximum fault current contribution from the aggregate generation does not exceed 87.5% of the short-circuit interrupting capability of any existing protective device or equipment.

4) **The proposed Project will have no adverse impact on existing protection Coordination.**

   Pass - After review, GMP finds the proposed Project has no adverse impact on existing protection Coordination

5) **The proposed Project, in aggregation with other Export Capacity on the distribution circuit, will not result in potential for Transmission Ground Fault Overvoltage (TGFOV).**

   Pass – After review, GMP finds no TGFOV concerns

6) **The proposed Project, in aggregation with other Export Capacity on the distribution circuit, will not cause unintentional islanding. The proposed Project does not require additional unintentional islanding protection.**

   Pass – After review, GMP finds no unintentional islanding concerns.

7) **For interconnection of a proposed single-phase or effectively grounded three-phase Project where the primary distribution system is three-phase, four-wire, the Project will be connected line-to-neutral. For interconnection**

163 ACORN LANE • COLCHESTER, VT 05446-6611 • PHONE (802) 864-5731 • FAX (802) 655-8419 • callcenter@greenmountainpower.com

of a proposed single-phase or three-phase Project where the primary distribution system is three-phase, three-wire, the Project will be connected line to line.

Conditional pass

This circuit is a three phase, four wire multi-grounded neutral system, otherwise known as "grounded wye". The proposed Project will be connected through a grounded wye-grounded wye transformer. This Project connection is considered as ineffectively grounded with three phase inverter based sources.

The Project can proceed with interconnection provided the following are met:

- *Due to its size, the Project is required to install a PCC recloser.*

GMP also requires the inverters used for this project to comply with the Inverter Source Requirement Document of ISO New England (ISO-NE SRD). As part of the ISO-NE SRD requirements, GMP requires the Project to enter "momentary cessation" for over voltage conditions while operating in the "Permissive Operation" mode (Table III: Inverters Voltage Ride-through Capability and Operational Requirements). GMP requires the inverters to enter "Permissive Operation with Momentary Cessation" with a Maximum Response of 0.1s. If the proposed inverters are not capable of this Maximum Response Time, a Category III inverter shall be used instead which can comply with this requirement (IEEE 2018 6.4.2 Table 16). Inverter responses to under voltages while operating in the Permissive Operation mode are specified in the ISO-NE SRD at footnotes a and b.

8) **The proposed Project is not located in an area where there are known or posted transient stability limitations to Projects located in the general electric vicinity, including but not limited to known harmonic issues.**

   Pass - After review, GMP finds the project not to be in an area of known or posted transient stability limitations.

9) **The proposed Project will not affect the Interconnecting Utility's 's ability to maintain voltages consistent with Standard ANSI C84.1.**

   Pass - After review, GMP finds no voltage issues adhering to ANSI C84.1

10) **Voltage drop caused by starting Generation Resource is within acceptable limits, meaning that inrush current caused by the startup of the proposed Project up to once per hour is not greater than 3% of the available fault current or does not cause greater than a 3% voltage deviation at the Point of Interconnection as modeled in an unbalanced load flow. Voltage drop due to starting the proposed Project more than once per hour meets a tighter inrush-current tolerance to be determined by the Interconnecting Utility. This criterion is applicable only to synchronous or induction Projects.**

    N/A – The project isn't a project utilizing a synchronous or induction generator

163 ACORN LANE • COLCHESTER, VT 05446-6611 • PHONE (802) 864-5731 • FAX (802) 655-8419 • callcenter@greenmountainpower.com

11) The Interconnection Requester affirms that the proposed Project meets the applicable codes and standards of Section 5.520 or is a certified equipment package under Section 5.519.

Pass -The inverters proposed for this project are nineteen (24) CHINT POWER SYSTEMS SCH125KTL-DO/US-600 and CHINT POWER SYSTEMS SCH100KTL-DO/US-600 which are compliant with GMP required UL1741 and IEEE 1547 standards. If another type of inverter is substituted, GMP shall be made aware of this proposed change.

12) Flicker caused by the proposed Project must comply with IEEE Standard 1547.

Pass - The test for voltage drop is discussed above in Section 1 under Modeling Assumptions. There are 2 solar projects, with a capacity of 4,686.4 kW and 1,375 kW, that are adjacent to the Project. Because these other solar projects are within one-quarter mile of the Project, GMP considers them to be in close proximity and has included it in the cloud shading analysis. For cloud shading, the maximum voltage change at the Project's POI is 0.5%, which is acceptable.

13) For Projects that will not export to the grid, the voltage drop caused by Inadvertent Export is within acceptable limits, meaning that voltage change at the primary level caused by the loss of load at the Project point of interconnection is less than 3%.

Pass

14) Identification of affected Vermont utilities and/or Non-Jurisdictional Affected Utilities. These entities must identify no adverse impact on their Affected Systems

Because the Project's capacity exceeds 1,000 kW, GMP is required to submit a generator notification form to ISO-NE per ISO-NE Planning Procedure 5-1. ISO has already approved this request.

163 ACORN LANE • COLCHESTER, VT 05446-6611 • PHONE (802) 864-5731 • FAX (802) 655-8419 • callcenter@greenmountainpower.com

SECTION 3

Supplemental Review

This section assesses whether failed criteria identified in Section 2 can be addressed, to ensure safe and reliable interconnection of the Project, using known solutions that would not require a System Impact Study. This supplemental review may also address potential issues that are not covered in the preliminary review screening criteria.

Preliminary Review Summary

The Project did not pass the following criteria:

Criterion 2: Thermal Ratings
Criterion 14: Affected Utilities

Protection Device Loading & Coordination: Pass

This test considers whether the total generation beyond a protective device can cause enough current flow that would erroneously cause the protective device to operate. This test considers a worst-case scenario of no load with generation at 100%; if that screen fails, a less conservative scenario of *minimum* load with generation at 100% is then considered. The results are presented below:

- Station high-side breaker: The high-side breaker at the Essex Hilltop No. 2 transformer is set at 285 amps per phase pick-up. GMP sets the continuous current limit through this breaker at 285/1.2 or 237.5 amps. Under the conditions described above, there would be a maximum current flow of 160 amps through this breaker.

- 19G3 substation recloser: The 19G3 circuit breaker is set at 560 amps per phase pick-up. GMP sets the continuous current limit through this breaker at 560/1.2 or 467 amps. Under the conditions described above, there would be a maximum current flow of 440 amps through this breaker.

The existing protective devices on the 19G3 were reviewed to ensure proper coordination with the additional generation. The addition of the Project does not result in mis-coordination.

Thermal Loading: FAIL

This test considers whether current flow due to generation can result in thermal overloads on equipment including, but not necessarily limited to, overhead conductors, cables, switches, regulators, and, reactors. Refer to Section 1-Modeling Assumptions for GMP thermal criteria.

After review, GMP found the following thermal overload issues resulting from this interconnection.

- The line segment from taglet 57103 to taglet 737369 (approximately 0.02 miles) is made up of 1/0 AAAC wire. The rating for this segment is 210 amps, respectively. Under the conditions described above, there would be a

163 ACORN LANE • COLCHESTER, VT 05446-6611 • PHONE (802) 864-5731 • FAX (802) 655-8419 • callcenter@greenmountainpower.com

maximum current flow of 333 amps through a section of 1/0 AAAC wire, or 123 amps over GMP's thermal loading criteria

- This conductor must be upgraded to 477 ACSR covered wire.

- The line regulators at taglets 57094, 57095 and 57097 are currently rated at 328 amps. At minimum load, these regulators see a maximum current of 425 amps, or 97 amps over GMP's thermal loading criteria.

  - These regulators must be upgraded to 438-amp regulators.

Substation and Transmission Capacity: Pass

This test considers whether current flow due to generation can overload the substation transformer, high-side fusing (or breaker) or, the transmission line entering the substation. When all feeders connected to the station are considered, a total of 14,000 kW of reverse flow would occur if the load was at 0% while the generation was at 100%. The top nameplate rating of the substation transformer is 14 MVA. After review, GMP found no violations.

System Voltages: Conditional Pass

Steady state voltage: Pass

This test considers whether there could be reverse power flow on any regulators, and if so, whether they are capable of proper regulation in the reverse direction. This test also considers whether there are any other steady state voltage issues (i.e. voltages that fall outside of the limits specified by ANSI C84.1)

- **Reverse flow controls:** Pass – There are a set of bus regulators on the Essex T2 regulating the 19G3 and 19G4 circuits as well as a set of line regulators at taglets 57094, 57095 and 57097. At minimum load and maximum generation, there would be reverse flow through these regulators. The controls for these regulators are capable of, and have been set for, reverse flow.
- **Voltage levels:** Pass – In the most conservative case of peak generation and no load, steady state voltages are found to be inside ANSI limits.

- **Voltage imbalance:** Pass – The imbalance in all sections of the three-phase line serving three-phase or two-phase load is less than 3% both before and after this Project.

Ground Fault Over Voltage (GFOV): Conditional Pass

- **GFOV on the distribution system**: Conditional Pass - The possibility of GFOV on the distribution system (DGFOV) is of concern when the minimum load to generation ratio is less than 2. After review, the minimum load to aggregate generation ratio on the circuit is less than 2.

  DGFOV will be addressed by the required PCC recloser.

163 ACORN LANE • COLCHESTER, VT 05446-6611 • PHONE (802) 864-5731 • FAX (802) 655-8419 • callcenter@greenmountainpower.com

- **GFOV on the subtransmission**: Pass - The possibility of ground fault over voltage on the transmission system (TGFOV) is a concern when there is a reverse flow of power onto the transmission system that cannot be dampened during line-to-ground faults on the transmission**.** TGFOV can also occur with no reverse flow when the minimum load-to-generation ratio for the section of the transmission system at issue is less than 2. The minimum load-to-generation ratio on the Essex Hilltop 34.5 kV subtransmission supply is less than 2.

  The Essex Hilltop Bus No.2 currently has bus differential scheme in place. This scheme mitigates any concern for TGFOV at this location

- **GFOV beyond a stepdown**: Pass - There are no transformers, stepdown or otherwise, between the Project and the station bus excluding the Project's local GSU.

Flicker Voltage Fluctuation: Conditional Pass

- **Natural transients** (fast moving cloud cover): Pass - This test considers whether voltage fluctuation due to rapidly moving clouds is within limits. This issue was covered under Section 2, Criterion 7. Voltage fluctuation due to rapidly moving clouds is within limits.

- **Generator Reconnection:** Conditional Pass – Traditionally, inverter-based distributed generation is assumed to reconnect to a system, following the operation of a protective device that caused the generation to go off-line, five minutes after healthy grid voltage is detected. GMP is concerned, however, that simultaneous reconnection of substantial amounts of distributed generation can result in temporary high voltages and excessive voltage regulator operation. Given the large amount of distributed generation on this circuit, GMP requires that the Project reconnect at six minutes following the detection of healthy voltage.

- **Generator Synchronization:** Pass – This generation connects to GMP via an inverter which complies with IEEE & UL standards.

163 ACORN LANE • COLCHESTER, VT 05446-6611 • PHONE (802) 864-5731 • FAX (802) 655-8419 • callcenter@greenmountainpower.com

Unintentional Islanding: Pass

GMP considers whether the proposed Project, along with other distributed energy resources (DER) on the Affected System, is capable of supporting an unintentional island. To test for the possibility of unintentional islanding, GMP employs the following test:[2]

- First, GMP ensures that the Project's inverters meet applicable standards for anti-islanding.

  After review, GMP finds that the Project's inverters are compliant with GMP required UL1741 and IEEE 1547 standards

- Second, GMP considers the size of the Project, and for each line segment upstream of the Project, considers the aggregate amount of DER on that line segment, the percentage of this DER that is rotating machine or non-certified, and the line segment's minimum load.

  After review, GMP finds that each line segment upstream of the Project shall be equipped with a reclose block protection strategy. The only line segment upstream of the Project is denoted by the substation 19G3 breaker and the PCC recloser. The substation 19G3 breaker is not presently equipped with reclose block, however QP 702 is required to install reclose block on the 19G3 breaker before Williston G Solar LLC can interconnect. If QP 702 drops out, the Project will be required to install reclose block on the 19G3 breaker.

Monitoring and Control: Pass

Based on the Project's size, GMP requires the ability to monitor the Project's status and output. This requirement shall be met by the installation of a GMP PCC recloser. The Project will be responsible for the recurring monthly cost of the SCADA communications to the PCC recloser.

Impact to Other Utilities: Pass

Because the Project's capacity exceeds 1,000 kW, GMP is required to submit a generator notification form to ISO-NE per ISO-NE Planning Procedure 5-1. ISO has already approved this request.

[2] GMP recognizes that, even if a project passes its anti-islanding test, it is theoretically possible for an unintentional island to form. Specifically, an unintentional island could form in the very rare instance that: 1) a circuit switching device is opened in a *non-fault* situation; 2) at the moment of switching, downstream of this device, there is a near-perfect match between real power generation and load; and 3) at the moment of switching, downstream of this device, there is a near-perfect match between reactive power generation and load. GMP notes that from a worker and public safety perspective, this situation is analogous to that of a customer's back-up generator inadvertently feeding back onto a part of the distribution system that may otherwise be considered to be de-energized. As a result, and to maximize safety, GMP relies on its existing operational practices to protect the public and its workers. Among these is the practice that, at all times, lines are considered to be energized until a qualified GMP employee is on site to verify that the line has in fact been de-energized and is safe to be approached.

163 ACORN LANE • COLCHESTER, VT 05446-6611 • PHONE (802) 864-5731 • FAX (802) 655-8419 • callcenter@greenmountainpower.com

SECTION 4

Conclusion

The Project can move forward, without a System Impact Study or Facilities Study, on the condition that the following measures are completed before interconnection:

1) Construction of a riser pole from existing GMP vault, three-phase line extension using 1/0 covered wire, a primary metering package, and disconnect switch. The GMP facilities need to be accessible by GMP trucks and the exact location of the take-off pole and line extension poles to be determined by site visit with the Distribution Designer.

2) Installation of a Viper-S PCC recloser. The Project will be responsible for the recurring monthly cost of the SCADA communications to the PCC recloser.

3) The following upgrades to the primary system are required:
    a. The existing 328-amp 19G3 line regulators at taglets 57094, 57095 and 57097 must be upgraded to 438-amp units.
    b. Reconductoring of approximately 25 feet of three-phase overhead line, between taglets 57103 and 737369 from 1/0 AAAC to 477 ACSR Spacer Cable.

4) GMP requires that the inverters used for this project comply with the Inverter Source Requirement Document of ISO New England (ISO-NE SRD). As part of the ISO-NE SRD requirements, GMP requires the Project to enter "momentary cessation" for over voltage conditions while operating in the "Permissive Operation" mode (Table III: Inverters Voltage Ride-through Capability and Operational Requirements). GMP requires the inverters to enter "Permissive Operation with Momentary Cessation" with a Maximum Response of 0.1s. If the proposed inverters are not capable of this Maximum Response Time, a Category III inverter shall be used instead which can comply with this requirement (IEEE 2018 6.4.2 Table 16). Inverter responses to under voltages while operating in the Permissive Operation mode are specified in the ISO-NE SRD at footnotes a and b.

5) GMP requires the Project's inverters reconnect using a Soft-Start Ramp rate of 2% of maximum current output per second with a modified reconnection time of six minutes.

6) The Project is required to execute a Project Notice to Proceed with the appropriate GMP distribution designer when the Project is physically ready for interconnection to GMP's system.

7) Approval of generation notification form with ISO-NE.

8) The Project must also wait for the upgrades identified in: QP 702 Williston F Mountain View Solar LLC to be completed or opt to complete those upgrades as part of this Project.

163 ACORN LANE • COLCHESTER, VT 05446-6611 • PHONE (802) 864-5731 • FAX (802) 655-8419 • callcenter@greenmountainpower.com

Upgrades not resulting from the Project but are required before interconnection (GMP or other project's responsibility):

1) Reconductoring of primary overhead from taglet 34892 to taglet 57103 (approximately 2,600 feet) to 477ACSR covered wire.
2) Implementation of a live line reclose blocking scheme on the 19G3 circuit breakers.

Note that at the time of this report, the longest lead-time material for the GMP portion of this Project is approximately thirty-six (36) weeks. Lead times for all materials required for this Project are subject to change based upon manufacturer availability and delivery times. GMP will order materials for this Project when the customer provides payment. GMP cannot guarantee the availability of materials out of its stock.

ALL WORK ON THIS SIDE IS THE RESPONSIBILITY OF GREEN MOUNTAIN POWER (GMP). EXACT CONFIGURATION OF EQUIPMENT TO BE DETERMINED BY GMP.

ALL WORK ON THIS SIDE IS THE RESPONSIBILITY OF PV SYSTEM OWNER

EXISTING GMP 3Ø, 12.47kV DISTRIBUTION ESSEX #19 SUBSTATION CIRCUIT 19G3

EXISTING GMP POLE POLETAG #57103 - PROPOSED POINT OF INTERCONNECTION
LAT/LONG: 43.289806, -72.554722

EXISTING GMP POLE MOUNTED RECLOSER AND RISER POLETAG #201451 TO BE UTILIZED FOR PROJECT

EXISTING GMP 3Ø, 12.47kV, UNDERGROUND LINE

NEW UNDERGROUND CABLE FROM MTC VAULT TO RISER

GMP RISER POLE WITH SOLID BLADE CUTOUTS

POINT OF COMMON COUPLING AT GMP METER

NEW GMP MTC
VAULT MOUNTED
600A

NEW GMP METER
POLE MOUNTED
M
PTs
CTs

PROJECT METER
POLE MOUNTED
M
(3) PTs 60:1
(3) CTs 200:5

11

RISER POLE, CUSTOMER OWNED WITH FUSED CUTOUTS. TRANSITION UNDERGROUND TO XFMR-1 AND CONTINUE OVERHEAD TO XFMR-2

TO XFMR-2, SEE SHEET E-301 FOR CONTINUATION

SPAN POLE (TYP)
150' MAX SPACING TO XFMR-2

EQUIPMENT PAD #1

STEP-UP TRANSFORMER XFMR-1
7
12,470/7200V GRD WYE
1600kVA
600Y/346V GRD WYE

AC SWITCHBOARD SWBD-1
5
INCOMING SECTION
MAINS SECTION
3P 2000A
SPD
2000:5
FEEDER SECTION
2000A, 3Ø-4W 600Y/346V/AIC, 65kAIC

INVERTER RACK

METER ENCLOSURE
12
METER #1

MAIN DAS ENCLOSURE
10
POWER SUPPLY
FIBER TO SUB DAS AT MPZ-2

HOUSE MINI-POWER ZONE, MPZ-1
GFCI RECEP.
SPARE
20A 1P
20A 1P
20A 1P
30A 2P
600V:120/240V
3kVA
9

15A 3P
20A 2P

175A 3P
TO INVERTER, INV-1-1 (125.0kW, (11) STRINGS)
TO INVERTER, INV-1-2 (125.0kW, (11) STRINGS)
TO INVERTER, INV-1-3 (125.0kW, (11) STRINGS)
TO INVERTER, INV-1-4 (125.0kW, (11) STRINGS)
TO INVERTER, INV-1-5 (125.0kW, (11) STRINGS)
TO INVERTER, INV-1-6 (125.0kW, (11) STRINGS)
TO INVERTER, INV-1-7 (125.0kW, (11) STRINGS)
TO INVERTER, INV-1-8 (125.0kW, (11) STRINGS)
TO INVERTER, INV-1-9 (125.0kW, (10) STRINGS)
TO INVERTER, INV-1-10 (125.0kW, (10) STRINGS)
TO INVERTER, INV-1-11 (125.0kW, (10) STRINGS)
TO INVERTER, INV-1-12 (100.0kW, (9) STRINGS)
TO INVERTER, INV-1-13 (100.0kW, (9) STRINGS)

UTILITY INTERCONNECTION NOTES:

1. TRANSFORMERS WILL BE PAD MOUNTED AND CUSTOM BUILT TO MATCH NUMBER OF INVERTER POWER BLOCKS. TRANSFORMER WINDING CONFIGURATION TO BE CONFIRMED BY UTILITY.
2. ALL THE EQUIPMENT SIZES SHOWN ARE PRELIMINARY.
3. EXISTING DISTRIBUTION LINE VOLTAGE IS ASSUMED TO BE 12.47KV. TO BE VERIFIED WITH UTILITY.
4. UTILITY TO CONFIRM PRIMARY SIDE INFORMATION.
5. EXISTING RECLOSER POLE AND UNDERGROUND CONDUCTORS TO EXISTING CONCRETE PAD SHALL BE UTILIZED FOR UTILITY SCOPE. MTC VAULT TO REPLACE CONCRETE PAD AND NEW CABLING TO BE PROVIDED TO METERING POLE

PV SYSTEM RATING		
MODULE MANUFACTURER	ZNSHINE	
MODULE PART #	ZXM7-UHLDD144	
MODULE WATTAGE	580	WATTS
TOTAL # MODULES	6,552	MODULES
TOTAL STC POWER RATING kW (DC)	3.80	kWDC
TOTAL SYSTEM RATING kW (AC)	2900	kWAC
PV SERIES STRING RATINGS		
# OF SERIES IN STRING	26	MODULES
MAX Voc USING NREL HOURLY TEMP DATA	1487.00	VOLTS
MAX STRING CURRENT (Isc)	14.35	AMPS
STC POWER RATING (PER STRING)	15,080	WATTS

REV	BY	DESCRIPTION	DATE
0	ZB	ISSUED FOR IX APPLICATION	09/13/2024
1	ZB	RESIZED TO 2.375 MWac	10/10/2024
2	AK	RESIZED TO 3.0 MWac	05/28/2025
3	AK	DOWNSIZED TO 2.9 MWac	07/30/2025

encore RENEWABLE ENERGY®
50 LAKESIDE AVE #110
BURLINGTON, VT 05401
802.861.3023

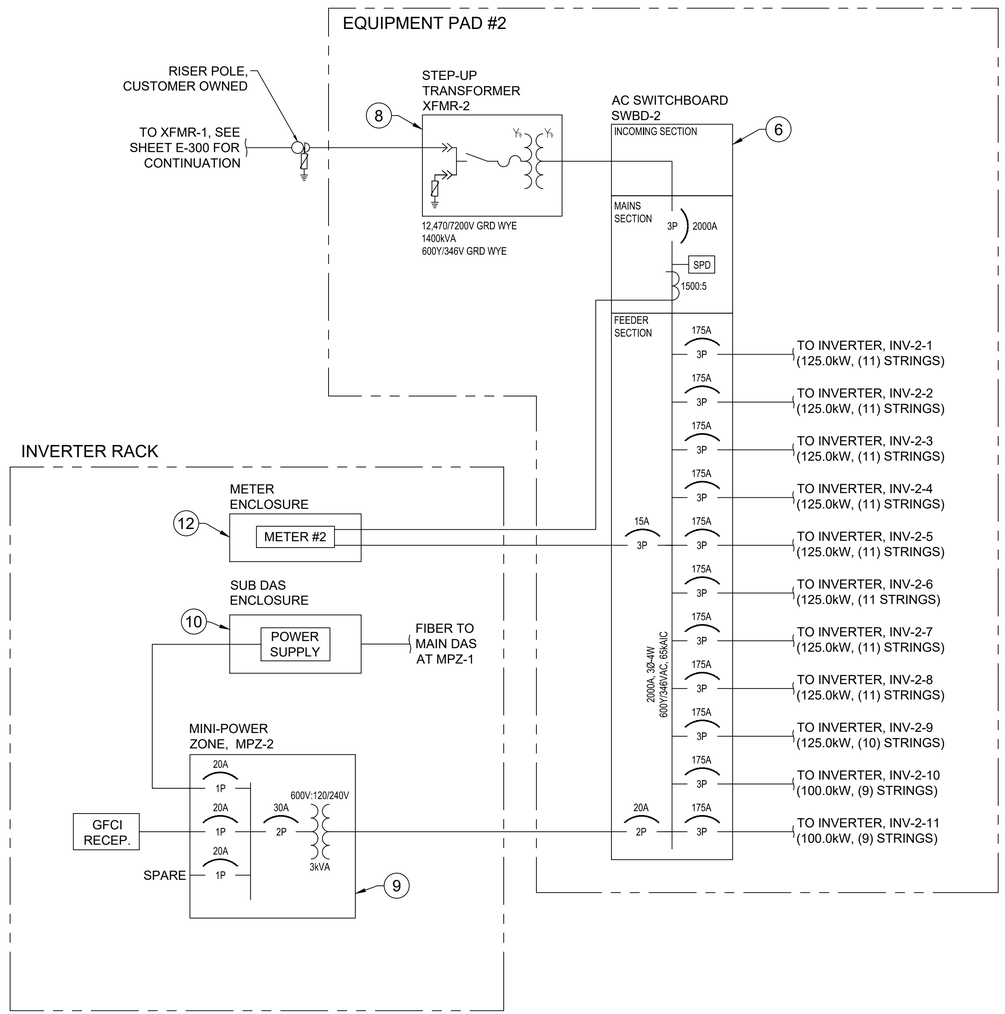
GLOBAL FOUNDRIES - GROUP G
KATIE LANE SOLAR
483 MOUNTAIN VIEW RD
WILLISTON, VT 05495
44.469306, -73.102917
CHITTENDEN COUNTY
UTILITY: GMP

STATE OF VERMONT
BRIAN P. BROWNING
No. 7013
PROFESSIONAL ENGINEER

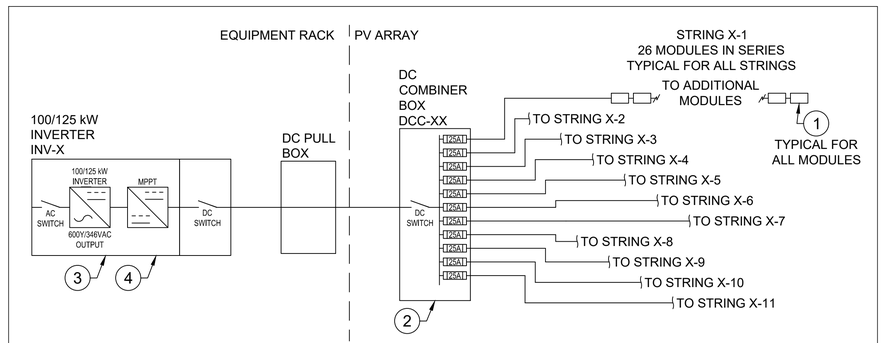
ONE LINE DIAGRAM
INTERCONNECT, XFMR-1 & SWBD-1

E-300

G:\SHARED DRIVES\ENCORE\PROJECTS\ACTIVE DEVELOPMENT\VT\GLOBAL FOUNDRIES FAB 9\WILLISTON G KATIE LANE SOLAR, LLC\ENGINEERING\6. ELECTRICAL DRAWINGS\1- ONE LINE - SLD\WORKING\E-300_GF-G_ONE_LINE_N.DWG



PV SYSTEM - BILL OF MATERIALS (APPLIES TO PV-300 THRU PV-302)		
ITEM	**QTY**	**DESCRIPTION**
1	6,552	PV MODULE, 580 WATT, MONOCRYSTALLINE, BIFACIAL, (144) HALF-CELLS, ZNSHINE ZXM7-UHLDD144, MODULE SPECS: Vmp = 42.80; Imp = 13.56; Voc = 51.50; Isc = 14.35
2	24	DC COMBINER BOX, 1500VDC, 275A, (11) DC INPUTS, LOAD BREAK DISCONNECT NEMA 3R ENCLOSURE, SOLARBOS OR EQUAL
3	20	PV INVERTER, 125.0 kW, 860-1450 VDC INPUT, 870-1300 VDC MPPT, CENTRALIZED WIRE-BOX, 600Y/342V 3-PHASE GROUNDED WYE OUTPUT, CHINT POWER SYSTEMS MODEL CPS-SCH125KTL-DO/US-600
4	4	PV INVERTER, 100.0 kW, 860-1450 VDC INPUT, 870-1300 VDC MPPT, CENTRALIZED WIRE-BOX, 600Y/342V 3-PHASE GROUNDED WYE OUTPUT, CHINT POWER SYSTEMS MODEL CPS-SCH100KTL-DO/US-600
5	1	AC SWITCHBOARD: 600Y/346V; 3Ø-4W; 2000A RATED BUS; 65kAIC RATING; (1) 2000A-3P MAIN BREAKER; (13) 175AT-3P, (1) 15AT-3P BREAKER FOR METER; (1) 20AT-2P FOR MPZ; 2000:5 CT'S
6	1	AC SWITCHBOARD: 600Y/346V; 3Ø-4W; 3000A RATED BUS; 65kAIC RATING; (1) 2000A-3P MAIN BREAKER; (11) 175AT-3P; (1) 15AT-3P BREAKER FOR METER; (1) 20AT-2P FOR MPZ; 1500:5 CT'S
7	1	TRANSFORMER, 1600kVA, 12,470Y/7, 200V GRD WYE PRIMARY, 600Y/346V GRD WYE SECONDARY, LOOP-FEED, 200A RATED BUSHING WELLS, PRIMARY NEUTRAL BUSHING TO BE FULLY INSULATED, 5.75% IMPEDANCE +/- 7.5%, X/R=7.0
8	1	TRANSFORMER, 1400kVA, 12,470Y/7,200V GRD WYE PRIMARY, 600Y/346V GRD WYE SECONDARY, LOOP-FEED, 200A RATED BUSHING WELLS, PRIMARY NEUTRAL BUSHING TO BE FULLY INSULATED, 5.75% IMPEDANCE +/- 7.5%, X/R=7.0
9	2	MINI-POWER ZONE, 600V PRIMARY, 120/240V 1Ø-3W SECONDARY, 3kVA, 12-CIRCUIT, NEMA 3R ENCLOSURE
10	2	DATA ACQUISITION SYSTEM (DAS), TO INCLUDE: INVERTER DIRECT MONITORING; WEATHER STATION WITH POA IRRADIANCE, CELL TEMP, AMBIENT TEMP SENSORS.
11	1	PRIMARY METER, 15KV RATED 200:5 CURRENT TRANSFORMERS, 15KV RATED 60:1 VOLTAGE TRANSFORMERS, CABLING TO BE PROVIDED FOR THE CT AND VT WIRING FROM TRANSFORMERS TO THE POLE MOUNTED METER. METER TO BE WIRED VIA ETHERNET TO THE MAIN DAS ENCLOSURE.
12	2	SECONDARY METER, 600V RATED. METER TO BE WIRED VIA ETHERNET TO THE MAIN DAS ENCLOSURE.



125 kW INVERTER WIRING WITH CENTRAL WIRING BOX & DC COMBINER BOX

NOTES:
1. CONFIGURATION SHOWN IS TYPICAL FOR ALL INVERTERS.
2. INVERTERS WILL HAVE EITHER 9, 10, OR 11 STRINGS PER SWBD DIAGRAMS.

REV	BY	DESCRIPTION	DATE
0	ZB	ISSUED FOR IX APPLICATION	09/13/2024
1	ZB	RESIZED TO 2.375 MWac	10/10/2024
2	AK	RESIZED TO 3.0 MWac	05/28/2025
3	AK	DOWNSIZED TO 2.9 MWac	07/30/2025

encore RENEWABLE ENERGY®
50 LAKESIDE AVE #110
BURLINGTON, VT 05401
802-861-3023

GLOBAL FOUNDRIES - GROUP G
KATIE LANE SOLAR
483 MOUNTAIN VIEW RD
WILLISTON, VT 05495
44.469306, -73.102917
CHITTENDEN COUNTY
UTILITY: GMP

STATE OF VERMONT
BRIAN P. BROWNING
No. 7013
PROFESSIONAL ENGINEER

ONE LINE DIAGRAM
XFRM-2 & SWBD-2, INVERTER WIRING

E-301

G:\SHARED DRIVES\ENCORE\PROJECTS\ACTIVE DEVELOPMENT\VT\GLOBAL FOUNDRIES FAB 9\WILLISTON G KATIE LANE SOLAR, LLC\ENGINEERING\6. ELECTRICAL DRAWINGS\1. ONE LINE - SLD\WORKING\E-300_GF-G_ONE_LINE_IX.DWG