

The Joint Utilities of New York	<b>UNINTENTIONAL ISLANDING PROTECTION PRACTICE FOR GENERATION CONNECTED TO THE DISTRIBUTION SYSTEM</b>	Page 1 of 7
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## 1.0 GENERAL

- 1.1 The purpose of this document is to address and outline changes in the Joint Utilities of New York's (JU) policy on reviewing and implementing protective practices in regards to the potential for unintentional islanding of distributed generation (DG). Specifically, this document will focus on requirements associated with solar PV installations.
- 1.2 The JU reserve the right to make future additions to this document as their unintentional islanding protection practices continue to evolve with future versions of relevant standards or screening procedures e.g. IEEE 1547, UL 1741, Sandia screens, etc.
- 1.3 The JU may reclose at any distribution electric power system (EPS) segment at any time without checking for de-energized segments as a part of normal system operations to maintain service reliability. It is important to identify this possibility to the DG operator as it is the responsibility of the DG operator to trip off within 2 seconds in the event the EPS utility source is not present.
- 1.4 During DG impact evaluation, when DG on the circuit causes the utility's system protective devices to be unable to trip for end of line faults, appropriate measures will be taken to correct this protection gap. The JU may require device setting adjustments, additional protection devices, and/or customer impedance grounding.
- 1.5 The requirements outlined below in regards to unintentional islanding mitigation risks are only applicable for DG proposed to be interconnected to radial distribution systems. It does not standardize requirements for network systems or distribution automation/loop feeds.
- 1.6 The requirements below are for UL 1741 certified inverter based DG only, up to 5MW nameplate rating, and does not include rotating machine based DG.
- 1.7 Where used within this document, reclose blocking is a voltage supervised reclose permissive feature required at any mid-line automated interrupting device identified through the steps outlined. Where this feature is required, each mid-line device is also required to be SCADA equipped through the utility's distribution network.
- 1.8 Acceptance of the criteria outlined in this document is contingent upon documentation from NYS DPS Staff and the Interconnection Policy Working Group (IPWG) of their commitment to discuss legal and cost allocation items, as agreed to in our November 8, 2016 Interconnection Technical Working Group Meeting:
  - 1.8.1 Recognition of the general power quality and electric service reliability impacts on the broader customer base, including limitations of instantaneous reclosing, fuse saving, and distribution automation.

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- 1.8.2 Commitment from the IPWG to address insurance requirements and other necessary New York State Standardized Interconnection Requirements updates due to any potential increased risk associated with relaxing direct transfer trip (DTT) requirements, and cost allocations due to need for DTT after interconnection.

## 2.0 TERMS

- 2.1 Line section: As used within this document a line section shall describe any EPS circuit segment that can be isolated via an automatic interrupting device such as a sectionalizer, recloser, circuit breaker, or fuse. Distribution feeders may contain multiple line sections. Depending on the DG size to load ratio, multiple line sections may require review and be screened accordingly per the steps outlined.

## 3.0 ISLANDING RISK MITIGATION METHODS

- 3.1 Special conditions outlined within this section are required at minimum, regardless of the screening outcomes applicable in the following sections.
- 3.2 Each utility at its discretion may implement more relaxed requirements. However, there may be situations that require deviation from the typical requirements to ensure safety and reliability of the utility system.
- 3.3 Sandia screening<sup>i</sup> and subsequent risk of islanding (ROI) studies may be required if any of the following conditions are not met:
- 3.3.1 Proposed interconnection is for solar PV systems up to 5MW nameplate rating.
  - 3.3.2 Individual interconnection applications on three (3) sub-divided or adjacent parcels are permitted and evaluated based upon total aggregate nameplate ratings (up to 5MW aggregate).
  - 3.3.3 Aggregate DG on the feeder or line section that is not UL 1741 certified, inverter based generation shall be less than 50kW.
  - 3.3.4 Interconnection is to the distribution system.
  - 3.3.5 Distribution systems are radial without automated loop schemes.
- 3.4 If a project passes all conditions described in item 3.3, and if the aggregate total of the proposed DG project and interconnected/queued projects ahead of the proposed DG project for a line section ranges from 50kW to 1MW:
- 3.4.1 A PCC recloser with SCADA communication is required for monitoring, protection and control if the following condition is met:

<sup>i</sup> See <http://energy.sandia.gov/wp-content/gallery/uploads/SAND2012-1365-v2.pdf>, M. Ropp, et al., "Suggested Guidelines for Assessment of DG Unintentional Islanding Risk", SAND2012-1365, SANDIA NATIONAL LABORATORIES (2012) (the "Sandia Report"), recognized by the Joint Utilities of New York for risk of islanding evaluation.

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3.4.1.1 DG  $\geq$  300 kW and is connected to  $\leq$  5 kV EPS.

3.4.2 No additional unintentional islanding protection is required if the following conditions are met:

3.4.2.1 DG  $<$  1 MW and is connected to  $>$  5 kV EPS.

OR

3.4.2.2 DG  $<$  300 kW and is connected to  $<$  5 kV EPS.

AND 1 of the below

3.4.2.3 Line Section minimum loading is greater than 1MW.

OR

3.4.2.4 Project passes Sandia screens and/or optional Risk of Islanding (ROI) study.

3.4.3 A PCC recloser and primary line reclose blocking are required if the following conditions are met:

3.4.3.1 DG  $<$  1 MW and is connected to  $>$  5 kV EPS.

OR

3.4.3.2 DG  $>$  300 kW and is connected to  $<$  5 kV EPS.

And both of the below

3.4.3.3 Minimum line section loading is less than 1MW.

3.4.3.4 Project fails Sandia screening and either (1) a subsequent ROI study is declined by the developer/applicant or, (2) the project fails the Risk of Islanding (ROI) study.

3.5 If a project passes all the conditions described in item 3.3, and if the aggregate total of the proposed DG project and interconnected/queued project for a line section ahead of the proposed DG is greater than 1MW, a PCC recloser with SCADA communication is required for monitoring, protection and control.

3.5.1 No additional anti-islanding requirements if one of the following conditions are met (the condition evaluated is at the utility's discretion):

3.5.1.1 Size of aggregate DG on the line section is  $\leq$  50% of minimum line section load.

3.5.1.2 Project passes Sandia screens and/or Risk of Islanding (ROI) study

3.5.2 Primary line reclose blocking will be required if the following conditions are met (the condition evaluated is at the utility's discretion)::

3.5.2.1 Size of aggregate DG on the line section is  $>$  50% of minimum line section load.

3.5.2.2 Project fails Sandia screening and either (1) a subsequent ROI study is declined by the developer/applicant or, (2) the project fails the Risk of Islanding (ROI) study.

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3.6 Cases where additional EPS protection schemes, including but not limited to direct transfer tripping, may be required include:<sup>ii</sup>

- 3.6.1 Line faults (phase and ground where applicable) cannot be cleared by the DG protective device or the utility's PCC recloser.
- 3.6.2 The PV system cannot be tripped offline with utility-owned devices when automated sectionalizing schemes operate.
- 3.6.3 Unique arrangements not explicitly defined within this document.

3.7 See flow charts (Appendix 1) that depict these requirements.

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<sup>ii</sup> While the intent of this unintentional islanding protection policy is to encourage DG installations while minimizing inhibitive impacts to the DG installation, the Joint Utilities reserve the right and flexibility to enforce protective measures deemed essential for the safety and reliability of the EPS.

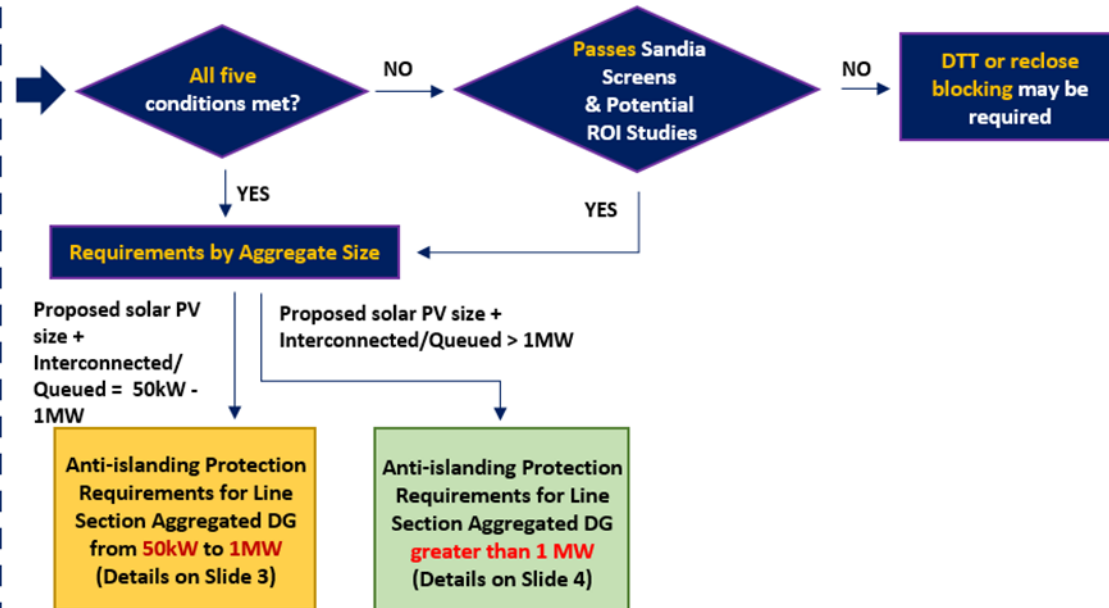
### **Appendix 1: Unintentional Islanding Prevention Requirements**

#### **Preliminary Assessment: Determine Requirements for Eliminating DTT**

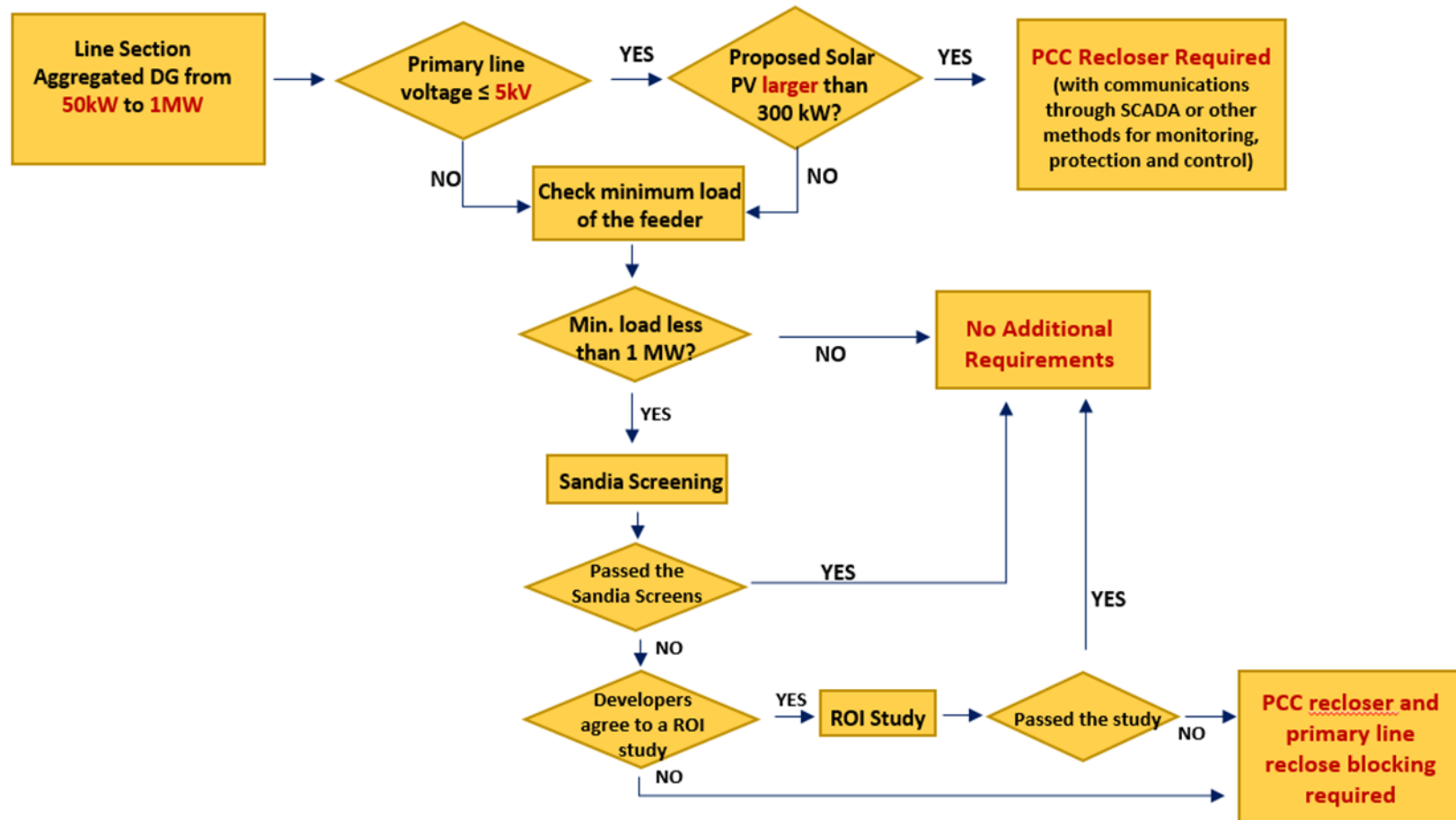
*Each utility at its discretion may implement more relaxed requirements. However, there may be situations that require deviation from the typical requirements to ensure safety and reliability of the utility system.*

##### **Five-Parameter Conditions**

1. Proposed interconnection is for a solar PV system with up to **5 MW** nameplate rating.
2. Individual interconnection applications on up to 3 **sub-divided or adjacent parcels** are permitted, and evaluated based upon total **aggregate** nameplate ratings (up to 5MW aggregate).
3. Aggregate DG on the feeder that is not UL 1741 certified, inverter-based generation shall be **less than 50 kW**.
4. Interconnection is to the **distribution** system.
5. Distribution systems are **radial** without automated loop schemes.



### Anti-islanding Protection Requirements for Line Section Aggregated DG from 50kW to 1MW



**Anti-islanding Protection Requirements for Line Section Aggregated DG greater than 1 MW**

