

Solar Industry Perspectives on the JU Proposal for New Supplemental Anti-islanding Protection Methodology

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Albany, NY

November 8, 2016

Solar Industry Perspective

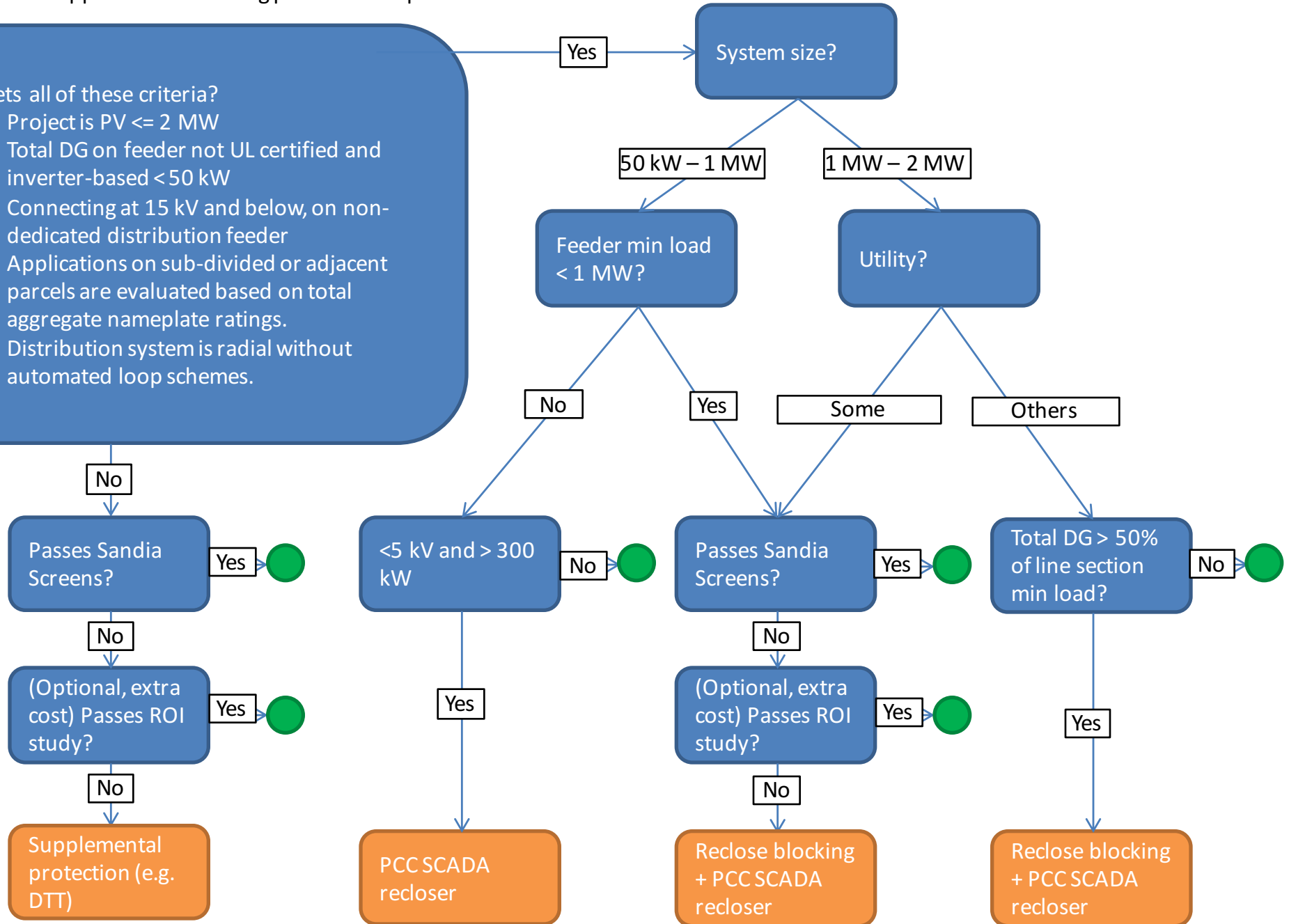
- The solar industry appreciates the serious efforts undertaken by the JU in their analysis and outreach and is supportive of the overall direction of the JU proposal in its use of reclose blocking as the primary form of supplemental anti-islanding protection when the Sandia Screens and an optional ROI study are failed
- Our recommendations are to simplify the screening pathways and expand the number of systems subject to the new protection methodology consistent with our conclusions at the previous ITWG meeting that:
 1. There is a meaningful body of research showing inverter anti-islanding functionality is adequate and effective under a variety of simulated and real-world conditions.
 2. The risk of harm from unintentional islands exceeding 2 seconds does not represent a substantive increase in the existing risk profile of distribution utilities or a unique type of constraint on future operational flexibility.
 3. Utilities with high solar penetration in California, Hawaii, and Arizona do not generally require DTT, and their systems continue to operate safely and reliably.

Solar Industry Understanding of the JU Proposal

● = no supplemental islanding protection required

Meets all of these criteria?

- Project is PV ≤ 2 MW
- Total DG on feeder not UL certified and inverter-based < 50 kW
- Connecting at 15 kV and below, on non-dedicated distribution feeder
- Applications on sub-divided or adjacent parcels are evaluated based on total aggregate nameplate ratings.
- Distribution system is radial without automated loop schemes.

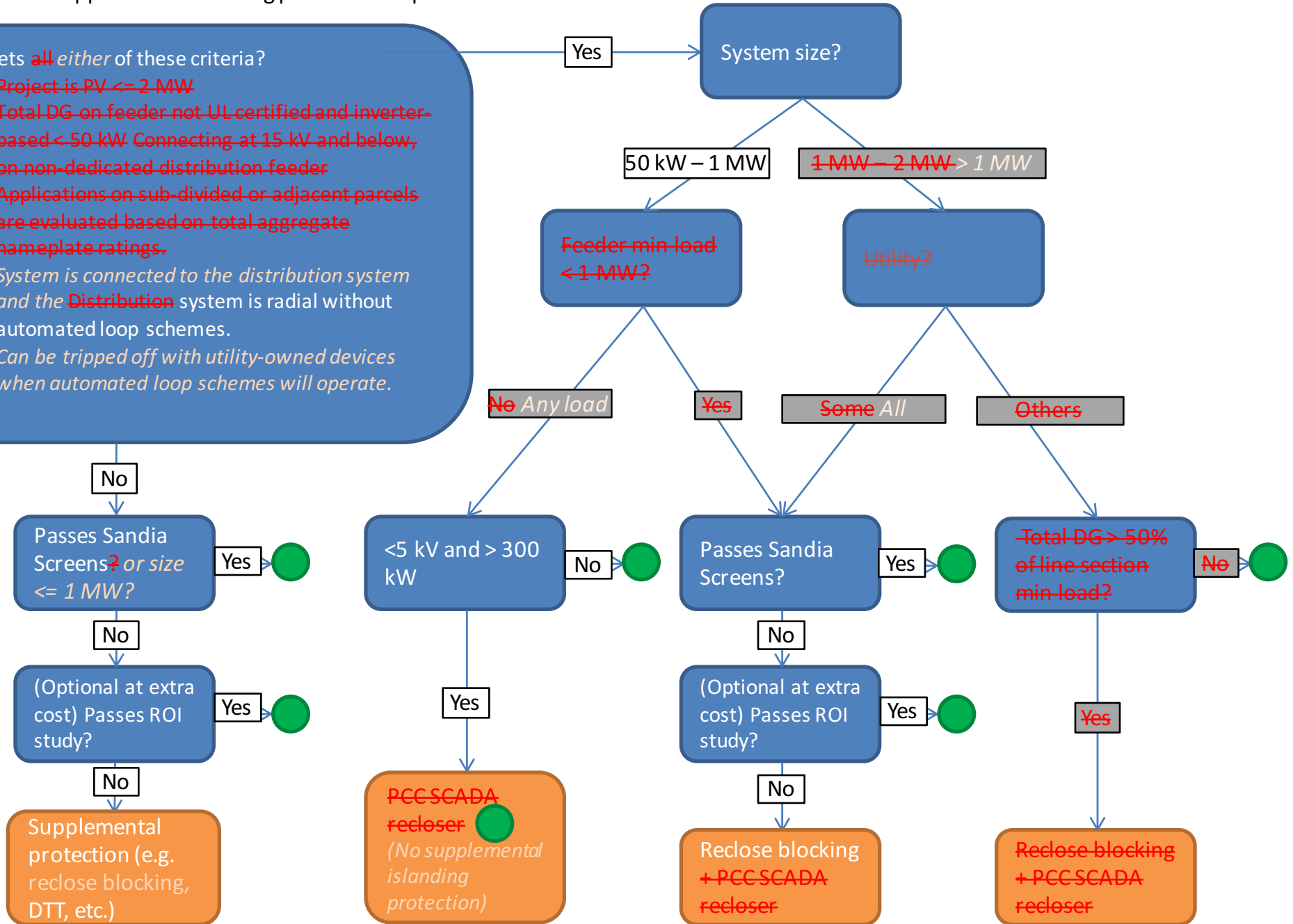


JU Proposal – Solar Industry Redline

 = no supplemental islanding protection required

Meets ~~all~~ *either* of these criteria?

- ~~Project is PV <= 2 MW~~
- ~~Total DG on feeder not UL certified and inverter-based < 50 kW. Connecting at 15 kV and below, on non-dedicated distribution feeder~~
- ~~Applications on sub-divided or adjacent parcels are evaluated based on total aggregate nameplate ratings.~~
- System is connected to the distribution system and the **Distribution** system is radial without automated loop schemes.
- Can be tripped off with utility-owned devices when automated loop schemes will operate.



JU Proposal – Solar Industry Redline

Questions concerning the inclusion of PCC reclosers

- While then current monitoring and control practices of Utilities have been discussed at the ITWG, we are aware of changes to those requirements that have been proposed or are under consideration other than those presented here and the solar representatives have yet to receive a clarified JU position on monitoring and control in the draft requirements matrix.
- **The solar industry recommends that requirements for PCC SCADA enabled reclosers be discussed separately at a later date under “monitoring and control” and not be included in the present discussion unless they alleviate on their own the need for supplemental anti-island protection.**

JU Proposal – Solar Industry Redline

Questions concerning the requirement that all systems over 2 MW or those interconnected at >15 kV still face the potential for supplemental anti-islanding protection like DTT

- The solar industry recognizes systems of <2 MW are the current focus as they represent that vast majority of queued DG due to the current net-metering limits
- However, the new SIR governs systems up to 5 MW and the solar industry questions the technical justification for requiring reclose blocking on a 1.99 MW system that fails the Sandia Screens and an optional ROI study but DTT on a 2.1 MW system under the same circumstances.

JU Proposal – Solar Industry Redline

Questions concerning the requirement that all systems over 2 MW or those interconnected at >15 kV still face the potential for supplemental anti-islanding protection like DTT

- The solar industry also questions the limitation of the new methodology to lines of 15 kV or below. For example, in parts of Upstate this proposal could require a 50 kW system on a 34.5 kV distribution circuit to undergo a detailed risk of islanding study and (if failed) to implement DTT rather than reclose blocking.
- **The solar industry recommends that both the size and voltage limits be eliminated for all systems connected to the distribution system. Failing that, we would recommend that the voltage limit be eliminated and the size limit raised to at least 5 MW**

JU Proposal – Solar Industry Redline

Question on the requirements for systems between 50 kW and 1 MW on lines with minimum loads < 1MW

- In the current JU proposal it would appear that a single 50 kW system proposed for installation on a line at or less than 15 kV with a minimum load of 999 kW may still “trigger the need for Sandia Screening, ROI Studies, and reclose blocking schemes”
- **The solar industry recommends that all systems under 1 MW generally pass without additional screening and require no supplemental anti-islanding protection. For such system, the Utilities would reserves the right to require Sandia Screening based on unique feeder characteristics such as low minimum loads and may, offer ROI studies and/or require reclose blocking if the screens are failed.**

JU Proposal – Solar Industry Redline

Questions concerning the aggregation of projects on subdivided or adjacent parcels

- The solar industry recognizes the goal of avoiding developers having the ability to game anti-islanding protection by breaking up one system into multiple parts on adjacent properties.
- The solar industry believes that our recommended elimination of the 2 MW cap on systems where reclose blocking is available in lieu of DTT and our proposed recommendations on systems below 1 MW will adequately address this potential issue
- **The solar industry recommends eliminating this element of the screening criteria**

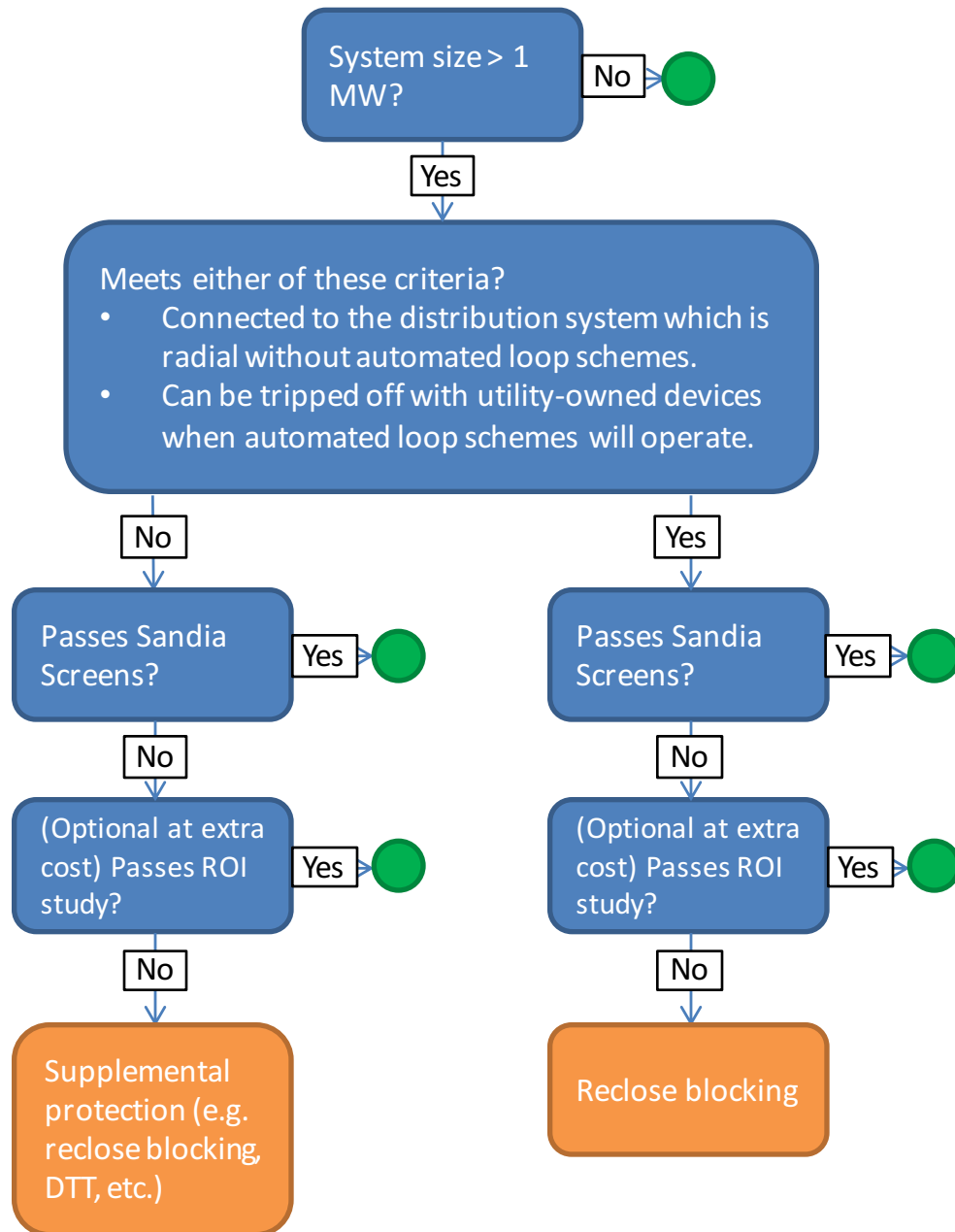
JU Proposal – Solar Industry Redline

Questions concerning the dual track of requirements for systems > 1 MW

- The solar industry has questions regarding the following from the JU proposal
 - “Reclose blocking schemes are required if aggregate DER is greater than 50% of line section minimum load. In lieu of this requirement, some utilities may apply the Sandia screens for each line section”
- The solar industry questions the basis for replacing the more robust Sandia Screens (including the already conservative 67% of minimum load screen) with a 50% threshold in some, but not all, Utility territories
- **The solar industry recommends that all systems over 1 MW be subject solely to the full set of Sandia Screens**

Solar Industry Proposal for Islanding Protection

● = no supplemental islanding protection required



Notes:

1. Applicable to inverter-based generation of all sizes, connecting to the distribution system at all voltage levels on shared or dedicated feeders.
2. DG that is equipped with DTT should not be included in the Sandia screens or other screens.
3. For systems ≤ 1 MW, the Utility reserves the right to require Sandia Screening based on unique feeder characteristics such as low minimum loads and may, under such exceptional circumstances, offer ROI studies and/or require reclose blocking if the Sandia Screens are failed.
4. If implementation of reclose blocking is infeasible or excessively costly, alternative supplemental islanding protection such as DTT may be considered.
5. If DTT is required based on penetration of rotating DG, implementation of DTT on the rotating DG system should be explored as an option.

JU Projects to Mitigate Cost Impacts of DTT

- The solar industry welcomes the JU efforts to identify more cost effective supplemental anti-islanding protection and looks forward to cooperating with such efforts wherever possible
- While important for the future for the subset of projects that will remain subject to DTT, the solar industry perspective is that the JU proposal as amended by our recommendations would substantially reduce the need for high-cost supplemental anti-islanding protection while maintaining the safety and reliability of the distribution system

Legal and Regulatory Requirements

- Apart from the technical issues outline above, the solar industry has serious concerns regarding the feasibility of the following from the JU proposal.

“As a result of these proposed changes, the NYSSIR will need to be updated to require proof of insurance and liability from the developer or customer for equipment and public damage in the event an island is formed.”

Legal and Regulatory Requirements

- The solar industry sees no realistic possibility at present to provide the type of insurance called for due to the following:
 - No other utility jurisdictions of which we are aware has a similar requirement and thus this is not a standard insurance product readily available on the market.
 - To create such a product the Utilities would have to have demonstrated the forensic capability to determine
 - Precisely when and where an unintentional island formed and how long it lasted
 - Why reclose blocking did not successfully protect equipment from reclosing out of phase if that is what occurred
 - Whether or not the island could have formed in the absence of the solar facility or facilities on the line
 - Which solar facilities successfully tripped off in less than 2 seconds as required and what the relative contribution to any property damage or personal injury was for each solar facility that did not go off-line in time (For example, if you have three facilities that tripped in 5, 7, and 10 seconds respectively knowing precisely when the damage or injury occurred would be needed to assign liability)

Legal and Regulatory Requirements

- The very low probability of unintentional islands forming and persisting for any extended period greatly complicates the technical challenges with detection and assignment of liability as there is, and will continue be, extremely little real-world experience with which to test equipment or analysis schemes
- **Given the lack of available insurance products and the substantive technical barriers to forensic analysis that, in our view, make the development of such insurance impossible in the near-term, the solar industry strongly recommends against adopting this element of the JU proposal.**

Legal and Regulatory Requirements

- Finally, the solar industry also has serious concerns regarding the following from the JU proposal.

“In addition, the utility shall be able to reserve the right to require DTT at the developer’s expense, should problems arise or non-inverter based generation be added to the feeder.”

Legal and Regulatory Requirements

- The solar industry has significant concerns regarding the open-ended and ambiguous nature of this requirement, particularly the “should problems arise” language.
- As with the issues surrounding insurance, the technical barriers to forensic analysis and the ability to identify the nature and cause of “problems” if they arise would make the justification of adding DTT retrospectively to a system or systems difficult (and likely impossible at present)
- If spinning DG is proposed at a future date that would trigger concerns over anti-islanding protection than it is that facility that should be required to install the protection as it is their addition that would impose the new risk to the system not the existing inverter-based DG

Legal and Regulatory Requirements

- Going back 5, 10, 15 years after installation and requiring a \$250,000 or more upgrade like DTT should have a very high bar for proof of responsibility as the possibility of such a financial burden could readily make projects un-financeable and substantially impair the development of the solar industry
- **Thus, the solar industry strongly recommends that the conditions under which the retroactive addition of protection schemes like DTT are allowed be specific and detailed and that they rely on clearly specified and validated technical bases for forensic analysis to assign liability.**
- **The solar industry also strongly recommends that, if spinning or other DG systems are proposed that trigger future concerns over anti-islanding protection than it is those facilities that should be required to install the protection.**

Solar Industry Proposal on Implementation

- Given the upcoming queue management process and the importance of current DTT requirements to impairing project viability the solar industry views a rapid adoption and implementation of a new methodology uniformly across utility territories as being of vital importance
- The solar industry also views the inclusion of projects already submitted and whose CESIRs are complete as critical as many of these projects currently face requirements for DTT that would no longer be technically justifiable under the new methodology

Solar Industry Proposal on Implementation

- As such, we recommend that
 - That a delay of no more than 20 business days be allowed between adoption and implementation of the new methodology during which time the Utilities can develop their cost estimates for reclose blocking
 - All projects who pay for their CESIRs after the agreed upon implementation delay be studied under the new scheme
 - Projects whose CESIRs are underway, whose CESIRs are completed but who have yet to pay 100% of their estimated upgrade costs, or whose CESIRs are completed and have paid 100% of their estimated upgrade costs but for whom procurement has not yet begun, may request that they be re-studied under the new methodology after the agreed upon implementation delay.
 - For projects that have already paid 25% of upgrade costs, any monies already spent by the Utility on engineering work will be retained in the revised cost estimate while any overpayment of the 25% if DTT is removed will be credited to the developer and accounted for when 100% payment of the new upgrade costs is made.

Solar Industry Proposal on Implementation

- Upon request, such projects should be re-processed per the above flowchart (up to but not including the ROI studies) by the Utilities within 20 business days and the developers given either an updated CESIR with no supplemental protection required, or the option to do a ROI study or accept an updated CESIR with supplemental islanding protection
- Upon receiving the results of an optional ROI study, the Utilities should provide an updated CESIR within 5 business day

Solar Industry Proposal on Implementation

- Given the potential bottleneck in the ROI studies we also recommend that each Utility should, as part of their monthly interconnection queue reporting, notify DPS of the number of projects requesting ROI studies as well as the maximum, minimum, and average time for those studies
- Finally, given the potential for a bottleneck in the deployment of reclose blocking technology, the solar industry recommends that if a system is ready to connect with all other upgrades having been completed and implementation of the new reclose blocking is expected to take longer than 90 business days, that reclose intervals be temporarily extended where possible to allow interconnection of systems prior to completion of reclose blocking.

Other Uses of DTT for Future Consideration

- In implementing these changes to supplement anti-islanding protection, the solar industry also recommends that the impact of the new methodologies on other uses of DTT be considered both by the JU and by the ITWG
- In particular, the use of DTT in combination with 3V0 ground fault protection of the transmission system by one of the Utilities remains a concern for the solar industry as the requirement of DTT would substantively limit the usefulness of the new cost sharing mechanism developed by the Interconnection Policy Working Group

Conclusion

- The solar industry welcomes the overall direction of the JU proposal and supports the adoption of reclose blocking as the primary form of supplemental anti-islanding protection when the Sandia Screens and an optional ROI are failed
- Our recommendations to simplify the screening pathways, address the legal and regulatory issues, and expand the number of systems potentially subject to reclose blocking as opposed to DTT is consistent with our understanding of the state-of-the-art research on anti-islanding protection with inverter based DG and is consistent with the best practices from other states with high DG penetration