



DATE: April 28, 2017

TO: Jason Pause, Electric Distribution Systems,
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FROM: Joint Utilities of New York – Interconnection Technical Working Group

RE: 03/29/17 ITWG Meeting Follow-Ups – JU Response to draft EPRI Report

Pursuant to your request, here is the response from the Joint Utilities of New York (“JU”) regarding EPRI’s recommendations in the draft report “Harmonizing Distributed Generation Interconnection Practices in NY State: Technical Review Processes”. The response reflects the position of all of the utilities identified on this letterhead, although it does not necessarily apply to network systems. This feedback is preliminary in nature and will evolve as the JU have the opportunity to review the report in further detail and additional follow-up discussions with EPRI occur.

General Feedback and Discussion

At the March 29th ITWG meeting, the JU, DPS Staff, developers, and EPRI were in consensus that the JU will defer automating the preliminary screens until the recommended changes have been accepted. The implications of this change in regards to meeting previous IOAP deadlines stated in the March 9th DSIP order were understood and accepted. Any standards currently under development will require the JU to review and discuss prior to incorporation into a new screen, e.g. IEEE 1547.1, ANSI C62.92.6, etc.

Recommendations

1. Modify SIR preliminary screens to simplify review and approval¹

Assuming the preliminary screens become automated, and the supplemental screens become required, the JU have the following comments:

- If circumstances specific to an application prevent the automated completion of any screen, an Engineer's review will be required.
- Although the JU supports separating the automated and non-automated tasks, upon passing the preliminary screens, an Engineer must complete several tasks prior to granting preliminary approval. For example, an Engineer must review the three line drawing and other technical documentation for consistency, accuracy, and achievement of technical requirements. Some examples include: effective grounding, point of common coupling (PCC), protective device settings and coordination. The JU anti-islanding criteria must also be applied. Additionally, system upgrades such as PCC reclosers, transformers, distribution regulators, etc. may be required even if all screens pass, as well as a cost estimate for those upgrades will need to be provided.
- The preliminary screening must consider all interconnected and queued DG on the line section, feeder, or substation being evaluated in a screen.
- The preliminary screening must consider reverse flow.
- Current timelines and costs for completing the supplemental review must be reconsidered. The pilots proposed in Recommendation 3 may serve as a basis to inform the cost and time requirements for review.
- Developers often do not opt for the supplemental review, as there is an associated time and cost, and they expect to fail and require a CESIR anyway. Therefore the supplemental review should remain at the option of the developer for systems 500 kW and above for all voltage classes, or for systems 300 kW and above interconnecting to utility voltage classes at 5kV and below.
- The JU needs clarification on when EPRI is recommending short hand calculations to be utilized.

¹ For inverter-connected systems greater than 50kVA, where the site passes initial review of submittals, and the service is adequate and configuration compatible.

2. Recast supplemental screens for clarity and increased use

The JU support recasting the supplemental screens for clarity. If all supplemental screens pass, an Engineer must review the three line drawing and other technical documentation for consistency, accuracy, and achievement of technical requirements. Some examples include: effective grounding, short circuit, ferroresonance, point of common coupling, and protective device settings and coordination. The JU's anti-islanding criteria must also be applied, as well as any criteria to account for systems backfeeding. Additionally, system upgrades may be required even if all screens pass, and a cost estimate will need to be provided. The JU also agree that the time and cost required to complete a supplemental review will need to be revisited if the recommendations are adopted. More than 20 business days may be required to complete the supplemental review based on these changes. The JU has the following additional comments:

- If circumstances specific to an application prevent the automated completion of any screen, an Engineer's review will be required.
- Because a load flow analysis may be required during the supplemental review process to determine the need for system upgrades, the supplemental review should remain at the option of the developer for systems 500 kW and above for all voltage classes, or for systems 300 kW and above interconnecting to utility voltage classes at 5kV and below.

3. Run several utility pilots to test drive the new supplemental screening

The JU support running pilots to test drive the screening. In addition to testing the functionality of the screening, the pilots will serve as a basis to set the timelines and cost requirements for the Supplemental Screening. However, the JU require the pilots be on newly received applications, as it would be impossible to replicate the system conditions at the time the application was submitted, as well as how the previous queue impacted a given application's review process.

4. Adopt uniform criterion to scope and report CESIR studies

The JU support adding consistency to the CESIR reporting where feasible, so long as it provides the flexibility to incorporate differences in utility systems.

5. Provide a mechanism in SIR to address unforeseen site incompatibilities

Screens must be designed to identify any potential issues prior to commissioning, as it can be difficult and costly to mitigate issues in a timely fashion for various reasons. However, the JU support a mechanism to address problems discovered during commissioning or after installation and acceptance. This may include installing recording device(s) for monitoring and data analysis over a period of time, disconnecting DG from system, determining and implementing mitigation solution(s), etc. The JU recommends that the IPWG work through contractual changes necessary for inclusion in the next SIR update to strengthen this mechanism.

Preliminary and Supplemental Screens

Preliminary Screens A – F

The JU have the following comments and recommendations regarding EPRI's proposed preliminary screens:

- The JU's anti-islanding criteria must be applied prior to the Supplemental Analysis if all preliminary screens pass.
- Any changes to the language of the supplemental screens in regards to comparing requirements across voltage class should clarify where the breakpoint voltages fall (i.e. "Greater than 5kV" as opposed "5kV and above").
- Both queued and interconnected DG must be considered in addition to the proposed solar PV.
- The JU must evaluate the total aggregate DG on the section, feeder, and substation to determine if an equipment rating will be exceeded on all applicable screens.
- The JU propose an additional screen for systems 300 kW and above interconnecting to utility systems operating at 5kV voltage classes and below – if the application fails this screen it would fail the preliminary screens and require supplemental review or a CESIR.
- Screen D – The JU need greater familiarity with ANSI C62.92.6 before it can be adopted. The JU propose a presentation or webinar be held with EPRI to familiarize themselves with any new standards.
- Screen E – Until feeder specific information is incorporated into the screen in the future, the JU must manually complete the calculations at the sub-feeder level.
- Screen F –
 - The JU need clarification on whether the screen is for DG < 10% or < 15% of feeder rating.
 - The JU needs clarification on how the source impedance data factors into the calculation.
 - EPRI's conductor value for R is the conductor size and not impedance value. Obtaining the impedance value R (EPS, max.) typically requires the use of power flow analysis. And neither version of the screen considers the distance from the substation in the equation.
 - Is Table 2 for overhead, underground, or both types of distribution constructed lines? Considering the value of R in ohms/mile is determined from power flow analysis, advice is needed on what available data could be used as a "rule of thumb" for this screen.

Supplemental Screens G – I

The JU have the following comments and recommendations regarding EPRI’s proposed supplemental screens:

- Screen G - The updated Screen G includes the recommendation to flag for when supplemental protection is necessary, but does not cover the many facets of system protection evaluation. The JU Unintentional Islanding Protection Practice is simply one component of the protective device review. Examples of additional protective device review that is required include; effective grounding, protective coordination and coverage, device settings, AC and DC control schematics, reclose blocking locations, design and settings, and 3V0 protection.
- Screen H – The JU supports testing for IEEE 519 compliance in addition to simple voltage variation. Screen H does not provide specific guidance on how it should be evaluated, and the JU would expect a CESIR to still be required.
- Screen I - EPRI’s definition of “average” as part of Screen I “ V_{LL} is average at PCC” is unclear, as well as how the JU would accurately collect that information.
 - The JU recommend Screen I be changed to, “ V_{LL} at the PCC exceed ANSI limits?” in addition to EPRI providing clarification on the values and units of the proposed equations.

Harmonizing CESIR Studies, Screening and Reporting

The JU supports EPRI’s recommendation to move towards consistency in the reporting of analysis and results for screening and CESIR results, with the following additional comments:

- All items explicitly stated in the SIR will continue to be reviewed.
- Flicker or harmonic interaction should not be omitted from review simply because analysis is difficult to conduct because these power quality concerns will negatively impact other customers. IEEE 519 compliance must be studied during CESIRs rather than after a project is installed.
- Voltage – LTC or regulator tap movement impacts must be included in expected results. Commercially available load flow software is not capable of performing this analysis on a time series basis. The prescriptive approach to voltage analysis must be discussed further to determine what is feasible at this time and to account for differences in individual utility systems, data availability, and software capabilities.
- Thermal Capacity – The minimum load shall not be subtracted from the generation capacity because it may be unknown at a specific location, or may change as the utility system operates in an alternate configuration.
- Operational Protection/Safety - Protective coordination should be listed as its own category in addition to fault current rise. Protective coordination needs to be reviewed for every installation, not simply as a component of fault current rise. For example, installation of a new protective device at the PCC or potentially cascading effects from thermally overloading upstream fuses requires upstream coordination studies. Reduction of breaker reach must evaluate each protective device between the PCC and the substation. Finally, effective

grounding is much broader than ground-fault overvoltage, and includes reviewing the effective grounding of the solar PV installation.

Appendix B: Additional Short Hand Calculations to Address Higher Penetrations

The JU seeks clarification on when these calculations will be applied in addition to clarifying the values and units of the proposed equations.

Appendix C: Screening and CESIR Report Templates

The JU have the following comments on this section:

- Supplemental Screening Analysis Report
 - Proposed change of “Ratings of the DG and connection point” to simply “System Size (kW)”
 - “Next steps” are the same as options (ii), (iii), and (iv) as in preliminary screening results letter
- CESIR Technical Review Report Template
 - The next step after a CESIR is completed is to further discuss results with the utility if needed and then either (1) make 25% or 100% upgrade payment listed within results or (2) withdraw application. The CESIR report should not suggest a construction schedule, inspections, forms, or “checklists”. These items will be provided upon receipt of 25% of the payment for utility system upgrades and detailed engineering is completed.
 - For “Project address and description (include ratings of the DG and the grid at the point of planned connection),” only ratings that are exceeded which require upgrades should be listed in the summary.
 - Preliminary screening results should not be provided within the CESIR report to keep the document concise and CESIR results clear. Specifically because developers/customers would have already had an understanding of the preliminary screens to make decision to move forward with CESIR.
 - The JU need further clarification on what should be provided in the “Method and Data Requirements” and “Expected Compared to Actual Results” sections listed in the template.