APPENDIX G

PRELIMINARY SCREENING ANALYSIS

All Preliminary Screens (A-F) shall be completed by the utility and results shall be provided to the applicant Interconnection Customer in accordance with Section 1C, Step 4.

Screen A: Is the PCC on a Networked Secondary System?

Does the proposed system connect to a secondary network system?
- Yes (fail screen)
- No (pass screen)

Screen B: Is Certified Equipment Used?

Does the applicant Interconnection Customer propose to use equipment that has been listed to meet UL 1741 (Inverters, Converters and Charge Controllers and Interconnection System Equipment for Use in Independent Power Systems) and for inverter based equipment, UL 1741 and its supplement SA by a nationally recognized testing laboratory?
- Yes (pass screen)
- No (fail screen)

Screen C: Is the Electric Power System (EPS) Rating Exceeded?

Does the maximum aggregated generation or loading capacity connected to an EPS (existing, approved and being considered and approved prior to application) exceed any EPS ratings (modified per established utility practice)?
- Yes (fail screen)
- No (pass screen)

Screen D: Is the Line and Grounding Configuration Compatible with the Interconnection Type?

1. Identify primary distribution line configuration that will serve the distributed generation or energy storage. Based on the DER interconnection and using the table below, determine compatibility with the electric power service, including, phase balance, line and grounding configuration. The following table shall be used to determine risk for ineffective grounding.

<table>
<thead>
<tr>
<th>Primary distribution line configuration</th>
<th>Type of DER connection to primary</th>
<th>Result/Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three-phase, three-wire</td>
<td>Any type</td>
<td>Pass Screen</td>
</tr>
</tbody>
</table>
Three-phase, four-wire > 5 kV
Three-phase, four-wire (For any line that has sections or mixed three-wire and four-wire)
Single-phase line-to-neutral
All others
Pass Screen
Fail. To pass, aggregate DER AC nameplate rating must be less than or equal to 10% of line-section peak load

2. Based on aggregate DERG on the feeder, is phase balancing maintained within utility limits?
   • If yes and results from table above were Items 1 and 2 pass (pass screen)
   • If yes or no and any results from table above were Item 1 or 2 fails (fail screen)

Screen E: Simplified Penetration Test

If the aggregate DER capacity on any medium voltage line section (existing and approved prior to application) is less than 15% of the annual peak load for all line sections bounded by automatic sectionalizing devices upstream of the DER?
   • Yes (pass screen)
   • No (fail screen)

Screen F: Is Feeder Capacity Area EPS System Strength Adequate for Individual and Aggregate DER?

Is the feeder available short circuit capacity at the medium voltage PCC, divided by the rating of the individual DER greater than 25? Is the feeder available short circuit capacity at the substation divided by the capacity all aggregate DERG on the feeder, greater than 25?
   • Yes to both (pass screen)
   • No to either (fail screen)
SUPPLEMENTAL SCREENING ANALYSIS

All Supplemental Screens (G-I) shall be completed by the utility and results shall be provided to the applicant/Interconnection Customer in accordance with Section I.C, Step 4.

Screen G: Supplemental Penetration and Thermal Limitation Test

Where 12 months of line section minimum load data are available, can be calculated, can be estimated from existing data, or determined from a power flow model, is the aggregate DER capacity on the Line Section less than 100% of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the DER? Are the thermal limitations of utility equipment exceeded?

Note the calculation of minimum load should consider both generation and charging modes of DER when energy storage is involved. Both generation and load limits need to be considered.

• Yes to both questions (pass screen)
• No to either question (fail screen)

Screen H: Voltage Flicker Test

1. Can it be determined within the Supplemental Review that the voltage fluctuation is within acceptable limits as defined by IEEE 1453?

Voltage flicker emission generated by each fluctuating installation (Pst) should be limited to its emission limit (E_pst). It fails the screen if Pst is higher than 0.35, then detailed voltage flicker study may be considered.

   Calculate Pst can be calculated using the following formula:
\[ P_{st} = d \times \frac{F}{d_{max}} = \frac{\Delta S}{S_{SC}} \times \frac{0.2}{2.56\%} \]

- \( d \sim \left( \frac{\Delta S}{S_{SC}} \right) \) is the relative voltage change caused by the project
- \( \Delta S \) is the power variation from the project
- \( S_{SC} \) is the available short-circuit capacity of area EPS at the PCC
- \( F \) is the shape factor related to the shape of expected voltage fluctuation
  (conservatively, \( F \) can be considered equal to 0.2 if detailed information is not available)
- \( d_{max} \) is the relative voltage change that yield \( P_{st} \) value of unity assuming rectangular voltage fluctuation (2.56% assuming 1 dip per second)

2. Can it be determined within the Supplemental Review that aggregate DER does not cause voltage excursion outside of ANSI C84.1 Range A?

2.3 Can it be determined that aggregate DER voltage excursion does not exceed 3% at the Point of Interconnection*, 5% at any location on the feeder, and half the bandwidth of the voltage regulating device set point at any voltage regulating device?

To answer Question 1:

- If \( P_{st} < 0.35 \) and answers to questions 2 and 3 are both yes (pass screen)
- If \( P_{st} > 0.35 \) and/or answers to either questions 2 or 3 are no (fail screen)

Screen I: Operating Limits, Utility and DER Protection
Adequacy and Coordination Evaluation

1. Review the installation anti-islanding protection requirements based on the latest version of the JU Unintentional Islanding Protection Practice, Version 1.2.2.9/2017 and identify utility and DER system upgrades, if required. Identify islanding related protection concerns and requirements by application of the JU flow charts. Consider operation mode options (such as energy storage back feed relay, charging limit or reactive power control options). Also, evaluate

*Supported by the Rapid Voltage Change limits in the proposed IEEE 1547 Standard revision.
2. Review DER system configuration to determine if design and operation meets utility’s effective grounding and ground source contribution requirements.
3. Identify equipment where fault current exceeds 90% of its short circuit current interrupting capability.
4. Identify any additional concerns related to utility and DER protection adequacy and protection, including but not limited to: protective device coordination and coverage, breaker ratings, fault current coordination for relay load rejection overvoltage, and 3V0 protection (where applicable).

Determine if there are any required changes in protection setting or additions.

Where equipment or concerns are identified in Items 2 through 45 that are not easily resolved within the screening process, a CESIR will be required.

If yes (fails supplemental screening), a quick review of the failure may determine the requirements to address the reason for failure; otherwise the Interconnecting Customer will be provided with information on the specific points of failure in the supplemental review results and may elect to go to the Coordinated Electric System Interconnection Review (CESIR) process.