Smart Inverter Working Group
Responding to Questions re: Implementing ICA in Rule 21

November 10, 2022

1:00 p.m. – 2:30 p.m.

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Agenda

1. Welcome & Introductions
2. Questions & Answers

Integration Capacity Analysis (ICA) and Application of Rule 21 Screens A through P

Discuss the use of the ICA in Limited Generation Profiles (LGP) and the application of LGP value for Rule 21 screens.

For SCE
- ICA can support the application and utilization of Limited Generation Profiles (LGP)
- ICA data can be downloaded and be used by customer to generate monthly limits (12 limits) which can be used for interconnection application, review, and approval of LGP projects
- Additional language should be developed and inserted within Screen M building on what has been developed for the Nameplate and Typical fixed PV profile applications.

For PGE: Same as SCE

For SDG&E: Same as SCE

Integration Capacity Analysis (ICA) and Application of Rule 21 Screens A through P

Discuss the Rule 21 screens that will be studied using LGP and those that need to be studied using gross nameplate rating

For SCE

Screen M, N, O and some aspects of P will be studied using LGP. The exact Rule 21 language should be discussed with stakeholders. The additional LGP language should build on recent changes to Screen M which supports Nameplate and Typical PV profile interconnection applications

Note: See slide 5 for screens which will be evaluated using Nameplate Rating

For PGE: Same as SCE

For SDG&E: Same as SCE

Integration Capacity Analysis (ICA) and Application of Rule 21 Screens A through P

Justify the use of gross nameplate for the Rule 21 screens identified above and discuss logistics of why LGP/ICA values cannot be used. This should include a detailed description on how the ICA does not account for these screens.

For SCE

The following screens are evaluated on Nameplate and not included in ICA calculations
   Screen F: ICA does not calculate SCCR to determine if SCCR is ≤ 10%
   Screen G: ICA does not calculate impact of increased short circuit on protection and devices and equipment
   Screen H: ICA does not account for line configuration loading per table G-1 of Rule 21

Note: Screens A-E are also not included in ICA calculation. The evaluation is not based on nameplate rating but will depend on aspects of each screen

For PGE: Same as SCE

For SDG&E: Same as SCE

Q1. When the IOUs reported on both the ICA criteria and methodology and the assumptions for loading conditions, confirm if these are the same as any assumptions/thresholds they would use in a full study.

SCE

- Pre ICA development, loading conditions assumptions for interconnection studies used absolute minimum load (non typical PV) or day-time minimum load (typical PV)

- With utilization of ICA in the interconnection process, loading conditions are correlated with generation output

- ICA methodology will remove the study assumptions where peak generation output can occur at a different time than minimum load

PGE: Same as SCE.

SDG&E: Same as SCE

Q2. How is the reverse power flow used outside the OpFlex (which criteria does it play into or how is it reported)?

SCE: Reverse flow is allowed into the low side of the substation but not allowed from substation low side bus to high side bus

PG&E: Same as SCE.

SDG&E: Same as SCE.

Q3. Explanation of the 90 and 10% loading: Clarify how this is arrived at and used in determining the 576 profile.

- **SCE** interprets the question as asking how are the ICA inputs (576 loading profiles) created:
  - All 576 profiles are created from historical 8760 profiles following a "dense-rank" methodology resulting in:
    - A 288 profile for max loading conditions
    - A 288 profile for min loading conditions

- **PG&E:** ICA uses a 12-month historical window to collect 90th and 10th percentile loading for circuits, banks, and customers. Using these, a 576 representative historical time-series for load is developed. That represents 24 hours, 12 months, and maximum (90th percentile) and minimum (10th percentile) load.

- **SDG&E:** Same as PG&E.

Q4. What is the ICA doing or not doing with respect to smart inverter functionality.

- **SCE:** Volt-Var smart inverter functionality is accounted for the in the most current release of ICA (based on PTO date of Sep 9, 2017).

- **PG&E:** ICA does not consider smart inverter functionalities.

- **SDG&E:** ICA does not consider smart inverter functionalities.

Q5. Difference in the voltage thresholds: For PG&E confirm that their 2.5% assumption was in their planning guidelines.

- **PG&E:** Confirmed.

Q6. Is PG&E open to aligning its flicker criteria in the ICA to the same 3% level that the other two IOUs have?
a. Is that value used for the screens as well?

- PG&E: This is the same criteria used in planning and interconnection process. The 2.5% criteria is aimed to match ICA inputs and assumptions to the extent possible to PG&E's internal standards and guidelines.

Q7. Confirmation for all 3 IOUs that back-feed at the circuit level is fine (across busbars), but back-feed to transmission is what triggers the ICA failure

SCE:

- ICA-SG allows for back feed from circuit to the low-side busbars

- ICA-OF does not allow back feed to low-side busbars

- Back-feed from the low-side to the high-side is not allowed for both ICA-SG and ICA-OF

PG&E: Same as SCE.

SDG&E: Same as SCE

Q8. Confirmation that ICA does not differentiate between weekends and weekdays

- **SCE:** Confirmed

- **PG&E:** Confirmed.

- **SDG&E**: Confirmed

Q9. ICA modelling questions

a. When evaluation voltage criteria, do the IOUs consider the Volt/VAR function?

- **SCE:** Yes - For existing generation interconnections with PTO dates after September 9, 2017, Smart Inverter Volt-Var functionalities are modeled in our latest Release.

- **PG&E:** No.

- **SDG&E:** No.

Q.9. ICA modelling questions

b. When evaluation thermal criteria (VARs heat wires), do the IOUs consider the Volt/VAR function?

- **SCE:** Yes - For existing generation interconnections with PTO dates after September 9, 2017, Smart Inverter Volt-Var functionalities are modeled in our latest Release.

- **PG&E:** No.

- **SDG&E**: No.

Q.9. ICA modelling questions

c. How is the ability to adjust the settings on protection devices reflected in the ICA?

- If we have systems failing on protection where the mitigation can be to change the setting on the protection device, how is that mitigation identified?
- Is the "voltage variation" criteria strictly related to flicker?

- **SCE:**
  - The ICA values are derived based on existing settings and does not reflect any ability to adjust the settings on the protection device
  - Mitigation associated with failing of protection device would be mitigated as part technical evaluation in the Interconnection Process
  - Yes

- **PG&E:** Same as SCE.

- **SDG&E:** Same as SCE.

Questions?

Q&A and Discussions

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