

ICA WG Background Q & A

May 19, 2016

(1) Why do the IOUs believe that multiple approaches to calculating ICA should be considered?

- a. Currently, the confidence level is low or unknown in the application of the streamlined ICA method to Rule 21 Fast-Track interconnection
- b. The purpose of the pilots and Demo A is to test/evaluate the ICA. Predefining one specific method will limit stakeholder engagement and creativity.
- c. SCE and SDG&E would need additional time and resources to adjust the tools to complete the streamlined ICA analysis, and would cause the suspension of iterative power flow analysis and ICA to be used in rule 21 fast track application process.

(2) Why does PG&E want to explore detailed approaches if commission ruled to use the PG&E streamlined method?

- a. Multiple methods enhance innovation, especially at this early stage. We may find that streamlined serves certain needs well and detailed serves other needs well. Moreover, when multiple methods return similar results, we have increased confidence (triangulation, or convergent validity).
- b. PG&E wants to gain better confidence if ICA is to be used in CA Rule 21

(3) What are the concerns in only using the streamlined ICA approach to modify the Rule 21 Fast-Track Process?

- a. PG&E acknowledges that EPRI declares streamlined approaches can be used in interconnection, but would like additional benchmarking for validation. PG&E proposes to perform benchmark comparison of “detailed” versus “streamlined” in similar fashion as EPRI to ensure similar conclusions as EPRI for more confidence in applying streamlined ICA to further streamline CA Rule 21 interconnection.
- b. SDG&E believes that a streamlined approach is not appropriate for every project, and as DER penetration grows to high levels, the streamlined approach will not be able to deal with problems concerning voltage regulating devices, harmonics, power quality, and other operational issues. Iterative power flow can appropriately model the devices on the power system to mimic real time operations, and thus will be required in a high-DER scenario.
- c. SCE believes that the iterative power flow approach to calculating ICA is more directly aligned to the current generation interconnection process. The iterative power flow approach mimics the analysis distribution engineers use to assess the impacts of any change to the distribution system. Furthermore, the iterative power flow approach accounts for the dynamic nature of the distribution system. As DER are added onto the distribution system, the power flow on the system will change as load, generation, and certain system components adjust based on their operating parameters. For example, capacitor banks will turn on and off as needed based on the need for voltage or VAR support. Only the iterative power flow approach will account for these changes properly, and provide a higher level of certainty to interconnection.

(4) If utilities are ruled to pivot to either streamlined or detailed approaches to ensure more consistency, what would it take to do so?

- a. For SDG&E to implement a streamlined method, SDG&E would either hire an outside consultant, or spend several months of in-house effort to develop such a tool. Most importantly, all work would be suspended on using an iterative powerflow tool for ICA and ICA could not be used for Rule 21 fast track application process. Given the work done by PG&E, the roadmap is there, but adapting the methodology to SDG&E’s system would take time and resources. SDG&E would have to build the data extraction module, as well as the

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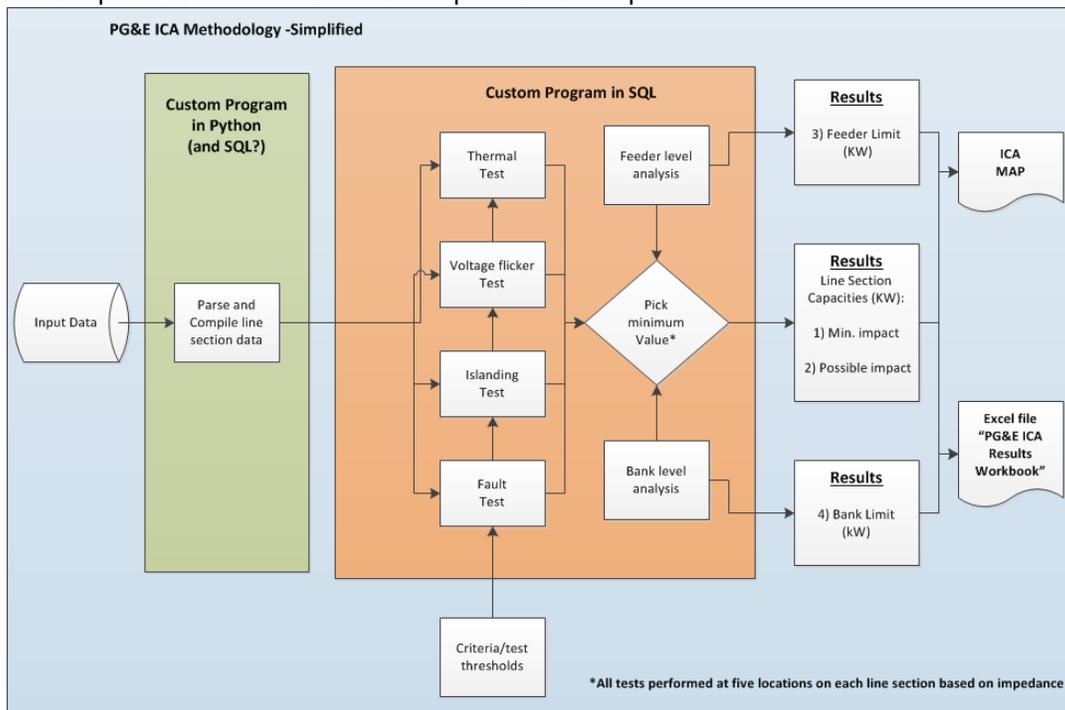
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processing tool to perform the streamlined calculations. Once these are built, QA would have to be performed to determine whether the tools are performing as designed. SDG&E estimates that the time required to develop these tools is approximately 3-6 months, depending on what challenges are encountered during development. Cost for this development would depend on whether the tools were developed in house or via a consultant, and have not yet been determined.

- b. For SCE to adopt the streamlined ICA Methodology, SCE will have to suspend all work on using an iterative power flow tool for ICA and would have to redo the following: Design, Development, Test/Validate, and Stabilize the ICA Methodology. SCE estimates 5-7 months of engineering work to get the ICA Methodology implementation plan to a point that would be ready for implementation for the analysis of the SCE Distribution System. This engineering work would require dedicated resources and re-evaluation of SCE's current plan to publish this information by July 1st, 2017, as stated within the SCE DRP Filing.
- c. PG&E is exploring detailed approaches within EPIC 2.23. PG&E is uncertain of the processing requirements necessary to run detailed approach across PG&E's large and complex circuits. The EPIC project will shed light on specific processing requirements that may be needed for detailed approach to meet use case scope of ICA (i.e multiple hours, multiple DER types, substation, single phase, portfolios) . As requested by ruling, PG&E will explore computational efficiencies in demo project to help answer this question. PG&E also wants to explore a blended approach in which both approaches are utilized to increase confidence, reduce processing times, and meet multiple use cases.

(5) Why do SDG&E and SCE believe their methodologies are consistent with the baseline methodology?

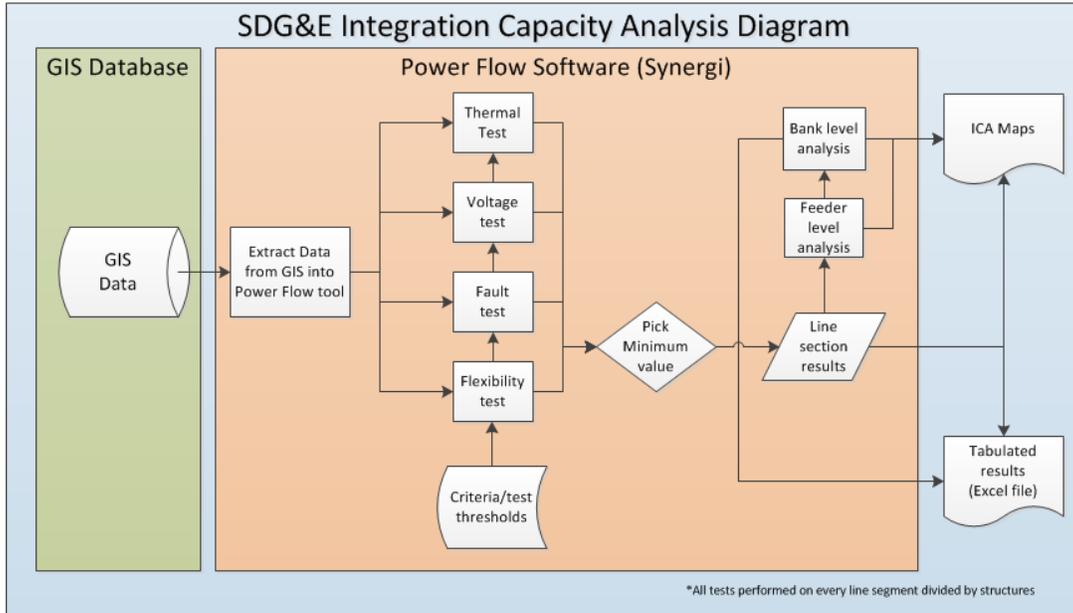
Consider the diagram below, put together by ORA to describe the process used by PG&E in their DRP filing, and by extension, the baseline methodology. This flowchart shows each of the steps used in the baseline methodology, similar to the methodology outlined for constructing our house. The orange and green boxes represent the tools used to complete these steps.



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Now consider the following diagram, which shows the methodology SDG&E is proposing to use in its demonstration A project.



This methodology is almost identical to the baseline methodology, except that the tools used to complete each step are different than those used in the baseline methodology. SCE's methodology is similar with the exception of using a different vendor for the power flow tool. For these reasons, the IOUs believe that their respective ICA approaches are consistent and should be allowed to proceed through demonstration A, so that the working group can decide whether to choose one or all to move forward for long-term ICA development.