

RULE 21 WORKING GROUP, ISSUE F PRELIMINARY BRIEFING NOTE

Gridworks

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Disclaimer: the representations here are Gridworks alone and subject to correction. This document is only intended to provide an initial basis for discussion. Party positions and understandings may be different.

Issue F

What interconnection rules should the Commission adopt to account for the ability of DERMS and aggregator commands to address operational flexibility need.

Preliminary Background

Issue 27 in Working Group Three addressed DERMS:

Issue 27: What should be the operational requirements of smart inverters? What rules and procedures should the Commission adopt for adjusting smart inverter functions via communication controls?

The background section for Issue 27 in the Working Group Three Final Report included the following text. The full text of Proposal 27-b on DERMS is given in the Annex below.

The Working Group considered the functional capabilities of smart inverters as approved during Phases I-III of the Smart Inverter Working Group (SIWG). These functional capabilities include Phase I Autonomous Functions (approved April 2015), Phase II Communication Capabilities (approved April 2017), and Phase III Advanced Functions. The Phase I Functions became mandatory for all new interconnection requests as of 2017. The Phase II Communications Capabilities are currently scheduled to become mandatory in August 2019, but the Commission is considering proposals to delay that compliance deadline. The Phase III Functions have a range of deadlines...

.... The Working Group, over a series of six joint calls with interested parties from the SIWG, considered a variety of smart inverter use cases with potential economic and/or safety and reliability benefits that could make use of these functional capabilities, and whether technical standards or functions are existing or forthcoming that are needed to enable those use cases. Based on discussion of the capabilities and use cases, as well as safety and reliability requirements, the Working Group and SIWG then set out to assess, prioritize, categorize and recognize the operational requirements of smart inverters and procedures for changing settings, in terms of what should be considered first by the Commission, in terms of what additional technical work or standards are needed before operationalization is possible, in terms of future development of DERMS systems by the utilities, and in terms of what is expected to have the most benefit to both generation customers and utilities....

...The Working Group and SIWG also defined and considered a series of use cases that are detailed in Annex G. In particular, eight use cases were seen as important to harnessing the grid benefits of distributed resources in the future: (a) scheduled power reduction; (b) dynamic power reduction; (c) scheduled voltage correction; (d) dynamic voltage correction; (e) operational flexibility; (f) capacity; (g) constant voltage boost; (h) voltage reduction. These use cases are included in this report to signal the types of use cases that stakeholders think should be operationalized in the future, while recognizing that existing utility technology cannot support many of them at present. With regard to the use cases, the Working Group is not recommending any specific Commission action at this time....

.... In relation to the second question of Issue 27 on rules and procedures for adjusting smart inverter functions via communication controls, the Working Group recognized that many...use cases would require utilities to send signals to DERs based on grid conditions and react to data received from DERs through the development of “DERMS” communication and control systems. DERMS are software platforms that can control or send signals to DERs over a variety of different time intervals, to perform actions for grid reliability management and/or grid services. DERMS can work in concert with Advanced Distribution Management Systems (ADMS), which monitor DERs and grid conditions for automated grid management decision making. Some of the use-case descriptions in Annex G elaborate on how DERMS could be used.

Each of the utilities has performed multiple tests and pilots of DERMS, but ongoing use of DERMS is still limited. DER providers have partnered with utilities for those pilots, some of which have used communications technology that had not yet been widely introduced into the marketplace. It has been a learning process for utilities and DER providers alike. Most stakeholders share a vision of DERMS becoming widespread, but there are conflicting interpretations of how quickly that can be achieved.

Scope of Issue

1. What should be the scope of Issue F?
2. Beyond Issue 27, do other issues from Working Group Two or Working Group Three overlap with Issue F?
3. How do we account for the fact that Issue 27 proposals have not yet been ruled upon?
4. Are there specific use cases that we should concentrate on in relation to DERMS, that can provide the highest value in the short-term or medium-term?
5. Within which current or future market frameworks do we interpret “aggregator commands” and “operational flexibility need”?

ANNEX: FULL TEXT OF ISSUE 27-B FROM WORKING GROUP THREE FINAL REPORT

Proposal 27-b. Non-consensus

The Commission should convene a workshop within 90 days of the Working Group Three Final Decision, in which utilities will present their DERMS roadmaps, followed by comments from parties. Roadmaps by utilities should include visions, tentative milestones, and major challenges.

Supported by: CALSSA, Clean Coalition, GPI, JKB Energy, PG&E, SCE (conditional; see Discussion section), Sunrun, Tesla

Opposed by: SDG&E, TURN

Proponent position by CALSSA:

Several of the smart inverter use cases require utility DERMS. Customers have been required to install inverters with advanced functionality, but in order to make full use of those functions utilities need to work on their portion of the capabilities. Issue 27 considers what is necessary to make use of smart inverter capabilities, and the utility side of the equation is an important element.

The utilities have conducted pilots to test DERMS capabilities and plan to conduct further pilots. These pilots are important for utilities to gain experience and confidence. However, they should be part of a larger plan, and development of that plan should involve a public process.

TURN position:

A showing needs to be made, whether cost benefit or otherwise, to show that if the utilities need to build communications systems to utilize Phase 3 functions, the benefits to ratepayers will more than offset the costs to ratepayers. The analysis also needs to show that the benefits won't disproportionately be received by a small percentage of customers while other ratepayers are paying for the communications systems.

Utility positions:

PG&E is optimistic that certain direct control use cases related to Smart Inverter voltage functions and advanced functions could provide distribution grid services beyond autonomous use cases. However, PG&E's current utility operational systems are not yet capable of using these advanced SI functions to their fullest extent. Utility investment in an Advanced Distribution Management System (ADMS) and DERMS software would provide visibility and control of SI-enabled DERs to the utility and could allow DERs to fully realize their value through dynamic management for distribution grid services.

PG&E has filed its plans for ADMS/DERMS technology development in its Grid Modernization Chapter in its 2020 General Rate Case. However, due to the upcoming 1/29/19 bankruptcy filing and the company's focus on projects related to safety,

compliance, and risk mitigation following the 2017 and 2018 wildfires, it is possible that certain aspects of ADMS/DERMS implementation may be delayed and/or pushed into the future.

PG&E: Additional DERMS demonstration work is needed by the IOUs (PG&E DERMS 2.0 project, which is currently on hold due to work reprioritization activities following the 2017 and 2018 wildfire seasons). Example use cases that could be pursued through additional DERMS demonstration work include:

- Constrained generation profile use case (i.e. alternative interconnection mitigation)
- Cybersecurity standard development/demonstration of end-to-end cybersecurity testing and implementation
- Measurement and verification of DERs' ability to provide a distribution grid service beyond simply mitigating the adverse impacts of high DER penetration

SCE is supportive of an informative workshop that outlines SCE's vision, tentative milestones, and major challenges. However, because DERMS has been reviewed within SCE's last GRC, it would be out of scope for this discussion to address further stakeholder modifications, proprietary tools, vendor contracts, Cybersecurity specifications and other sensitive information. SCE is supportive of an open dialog with stakeholders to share DERMS operational plans and maximize its capability with DER operations bounded by GRC approval limitation. SCE does not support TURN's position as justification for DERMS and other related tools to be reviewed outside the GRC due to their project nature as compared to only reviewed under an interconnection rulemaking.

SDG&E is opposed to this proposal, but rather suggests that a workshop be convened to actually assess the maturity of the DERMS commercial software vendors to support necessary use cases at scale, while providing robustness and security. Per the "Smart Inverters & DERMS: An Overview of Ongoing Research Efforts at EPRI" presentation convened by the Energy Division on April 11, 2019, it is obvious that the state of DERMS is nascent and undergoing significant research and development, making any substantive development timelines for the IOUs problematic. Additionally, DERMS deployment is predicated upon these same vendors' roadmaps, which the California IOUs have minimal influence. SDG&E's point solution vendor for DERMS/microgrid product have actually changed their business model to reflect the lack of a robust market for DERMS software.

SDG&E believes that the Commission should provide clarity on the role of DERS in helping to achieve State policy goals. This clarity will provide the necessary guidance for SDG&E to effectively implement its Distributed Energy Resource Management System (DERMS) toward those goals. This clarity will also provide guidance on the roles and responsibilities of DER market participants. In all cases, SDG&E believes that the Commission should mandate end-to-end testing procedures for smart inverter communications and functionality, such that any interconnected system delivers as expected for the benefit of consumers and for overall grid reliability.