

Rule 21 Working Group Four
Workshop #2 – In-Person Meeting
3/11/ 2020
Meeting Notes

Agenda, 3/11 in-person meeting

Time	Duration	Item
10:00-10:15	15 min	Introductions, agenda, and regulatory updates
10:15-11:30	45 min	Issue 18 —review of questions and answers and follow-up —review of problem statements —issue proponents and process for developing proposals
11:30-12:00	30 min	Issue 19 —presentations of proposals by issue proponents
12:00-1:00	60 min	Lunch
1:00-2:30	90 min	Issue 19 (continued) —presentations of proposals by issue proponents (continued) —review of problem statements and scope proposals —structured discussion on proposals, scope, and further steps
2:30-3:30	60 min	Issue F —issue brief by Gridworks —party comments on scope, positions, and background —issue proponents and process for developing proposals
3:30-3:45	15 min	Wrap-up, next calls and meetings

Action Items

Issue 18	3/24 Mike Jensen (PG&E) will work with other IOUs and share a comparison of the different practices among the three utilities 4/10 Proponents (CALSSA/SunStreet/SunPower, XUtility, and possibly GPI) to provide issue proposals
Issue 19	3/24 All parties submit comments to Gridworks on existing three proposals (CALSSA, GPI, Clean Coalition) 3/24 SDG&E to provide a counterproposal (could be a joint IOU proposal) 3/24 weeks: All parties to send comments to Gridworks on problem statement
Issue F	3/25 CALSSA presents a preliminary proposal on next WG call. (confirmed by CALSSA) 4/10 Jason Bobruk (SolarEdge) and Annie Cwiklinski (Tesla) develop and share the experience of other jurisdictions on DERMS, specifically for operational flexibility. 4/10 IOUs to provide descriptions of what they are doing in relation to DERMS

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Regulatory Updates:

Roger Salas (SCE) indicated that IEEE1547.1 has been approved as of 3/5/2020 which triggers the SWIG working group to address cyber security requirements. Jason Bobruk (SolarEdge) mentioned that this has also triggered manufacturers to start taking actions as now it's published, R & D teams can be mobilized to start adjusting the product firmware.

Issue 18:

The discussion of Issue 18 began with a review of the spreadsheet compiled by Gridworks: [Issue 18 questions and answers compilation and follow-up questions](#).

Follow-up Questions - XUtility: Mike Jensen (PG&E) will make relevant parts of the PG&E report available to all parties by the next meeting. and PG&E and XUtility had a conference call (scheduled for 03/16) to clarify the following questions in order to include in the proposal.

1. What's the problem?
2. What's the best way to identify it?
3. What's the right mitigation?

XUtility jointly with PG&E can come up with the options analysis and Mike Jensen (PG&E) is working with his team and other utilities to come up with the data. XUtility and PG&E can have offline discussions and collaboratively develop a proposal and Tim McDuffie (Smart Grid Solutions) will share Sandia reports with everyone that will help to figure out the options to propose.

Follow-up Question - CALSSA: Mike Jensen (PG&E): In response to Question 12 and 13b: Inverters can go 0.85 leading and lagging power factor, even synchronous generators can go 0.9 leading and lagging power factor. The Sandia study looked at the grid support function for inverters and based on that study inverter to inverter type 1, type 2 and mixed type 3, grid support function actually assists with anti-island capability and it depends on the speed of the DER. It needs to be discussed how the grid support function interacts with a machine-based generator.

Brad Heavner (CALSSA) and Tam Hunt (GPI), Tim McDuffie (Smart Grid Solutions) and Connel Chris (Fronius) suggested not to take extreme measures as inverters are anti islanding certified and with the increased functionality of inverters to the grid support, there is no concrete evidence that this leads to anti-islanding failure. "In order to have an island you need to have real-power matching and reactive-power matching, you need to have all (three) to go beyond 2 seconds."

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Mike Jensen: As the inverters are certified alone and not in aggregate, therefore there is no evidence that they would **not** fail in the presence of a machine. Mike Jensen (PG&E) and Danielle Weizman (SDG&E) jointly suggested to take a proactive approach rather than reactive approach to mitigate risk.

Supplementary Action: Initial offline discussions between proponents and PG&E and other IOUs to come up with proposals. These will be presented to the whole Working Group and everyone will have a chance to discuss and comment.

There was also a discussion about UL3001, and that certain types of anti-islanding could be better than others, and problems would be lessened if there could be some standardization. Tim McDuffie said that we need to understand better what types of anti-islanding techniques specific inverter types are using.

Follow-up Questions - IREC: Mike Jensen (PG&E) suggested that utilities need to start tracking the types of islanding. Standardizing this could solve a lot of issues but, the only caveat may be consequences to power quality and stability issues. Tim McDuffie (Smart Grid Solutions) agreed to start tracking what type of anti-islanding the inverters are using. In general, most of them are type 1 and 2.

Derek Pearson requested to be involved in the meeting next week.

Follow up questions - GPI: Mike Jensen (PG&E) will coordinate with SCE to respond to question 3.

Additional Question: Proponents are interested to understand what additional protections are used by SCE and SDG&E. Mike Jensen (PG&E) explained that the risk of island in PG&E is greater as the SDG&E system is more robust and they are using high speed differential and relay in all transmission and sub transmission lines, in case of fault they trip load ends quickly. Also, on the bank side, they have high and low side breakers which isolate quickly, they got two banks for the bus, thus risk of island is diminished. Mike Jensen will discuss and share a quick summary of the differences by our next call on 3/25. Other proponents will have offline discussions with the relevant parties if required and come up with a proposal by our next in person meeting on 4/15.

Issue 18—Review of Problem Statements

Discussion on the [Problem statement by IREC](#): Brad Heavner (CALSSA), Mike Jensen (PG&E), Tim McDuffie (Smart Energy Solutions), Tam (GPI), Connell Chris (SDE) – Agreed on IREC problem statement.

Agreement: the Working Group agreed to adopt this as a problem statement for issue 18.

Discussion on the [Problem Statement alternative version from 2/12 meeting](#) : Gary Holdsworth (SCE) and Annie Cwiklinski (Tesla) suggested keeping it as well, as it points out where the lack of consensus is so it can be used to develop a proposal and will be helpful to make a decision.

Tim McDuffie: CPUC engineer should look at this.

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Issue 18 - Issue Proponents and Process for Developing Proposal

Discussion on CALSSA preliminary proposal:

1. Perform analysis on reactive power matching
2. Calculate the generation-to-load ratio based on hourly and monthly values
3. Allow a site-specific risk-of-islanding study if a project fails the screens

Discussion: Mike Jensen (PG&E) commented that point 1 is possible, he will coordinate with the distribution team to check if #2 can be done in real time, and on point 3 he would look at what other utilities are doing. Tim McDuffie suggested to propose alternate mitigation techniques for #3, while XUtility suggested developing a proposal to check the impact of the timeline about point 3 as this site-specific study by a 3rd party will extend interconnection by a month.

Action Items: CALSSA to work on the proposal (18), by next in person meeting. Tam Hunt (GPI) will create a proposal depending on PG&E response and reach out to Brad to check the overlap. Mike Jensen and other utilities will share relevant data required by GPI. Tim McDuffie to share data of East Coast Utilities with Jason Bobruk (Solar Edge).

Issue 19: Presentation of Proposals by Issue Proponents

CALSSA, SunStreet, and SunPower presented their [Issue 19 Proposal](#).

Comments:

Todd Farhat (SunStreet) mentioned two major challenges from the proposal.

- When a homeowner comes on board, the process stops and builders have to get signatures/approval from homeowners, which delays the process. All IOUs agreed that once builders sign the document, regardless of when the homeowner comes in, [that should constitute the interconnection request]. Currently SDG&E has updated the process and SCE and PG&E are also in agreement.
- The current process needs meter # and account #: the ultimate goal is to get the system work by builders before the homeowner moves in and be able to submit interconnection applications and get PTO, nothing in Rule 21 stops that. SDG&E and SCE are already doing it while PG&E is not yet doing it.

Lee Trevino (PG&E) suggested to mention multiple units instead of specifying “5 or more units.” He also suggested modifying point 3 and breaking it into two items, as the number of units can be easily answered and the issue about the amount of size change needs research from utilities to provide recommendations. About the transformer size change issue, he mentioned that there is a distribution impact as well as impact to the services itself, if aggregated size doesn’t change then there is no impact to the transformer size. If

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the individual units change but the aggregated size remains the same, there could potentially be an impact to the size of the service facility. He suggested to consider both of those, the allowable change overall – if it's a multiple unit project, total generation and then the individual units.

XUtility raised the concern that this proposal is developing a solution for large scale development and not community solar solutions are addressed.

Tam Hunt (GPI) presented his [Issue 19 proposal](#). He noted that currently utilities take 10 business days after the initial request and often due to multiple iterations, the process takes sometimes 2 months or longer. Automation of portals can reduce this step to 1-3 business days (BD) for projects that don't need correction and reduce time for each round of corrections. As IOUs have already at least partially automated these steps but most in NEM context, 30KW and below. These could be applied to larger processes too and ZNE projects too.

Questions and Comments on GPI Proposal:

Gary suggested to reflect outside influences as the same issue is discussed in 3 separate proceedings. Tam mentioned that these issues are not covered in microgrid proceedings at the moment but may come later, he suggested discussing them now as previous WGs referred them to future discussions.

Sophie Meyer (CPUC) said the microgrid proceeding can make recommendations, and so the Rule 21 Working Group is not exclusively able to make recommendations related standard configurations.

Issue 19: Comments on Scope by Parties

Clean Coalition presented [comments on scope and Standard SLDs](#) .

The presentation was followed by an extended discussion on Issue 19 scope.

Roger Salas (SCE) suggested to not duplicate the work of other proceedings. SCE is comfortable with developing standard SLDs but doesn't feel comfortable with developing SLD for more complicated applications. He further mentioned that SLD for existing systems can be standardized, but it would be difficult to propose additional standardized SLDs for systems we haven't encountered yet.

Action: Brad to circulate SLD from use cases and Tam Hunt (GPI) to figure out the overlaps. Kathryn Enright (SCE) suggested that parties could check comments on the microgrid proceeding that are public record. Roger to share those comments.

Mike Jensen (PG&E) on construction timelines in terms of transformer upgrade mentioned that a transformer is like a recloser, if 1MW is added to the system then it is required to put a new recloser to

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protect the back feeding/export power. Lee (PG&E) further added that these upgrades can delay the PTO for existing projects, but for new houses, the likelihood of this issue is rare.

Action Items:

3/24 All parties to comments/agreement with Gridworks on problem statement,

3/24 All parties submit formal comments to Gridworks on existing three proposals (CALSSA, GPI, Clean Coalition) and problem statements.

Breakout Room Discussions:

The group was divided into small groups to answer the following questions about Issue 19 scope.

1. What is in scope and out of scope?
2. What is still missing from our proposals or thinking on Issue 19?
3. Does anyone have counter proposals?
4. How long will it take us to complete Issue 19?

Action Items:

3/24 All parties submit formal comments on existing three proposals (CALSSA, GPI, Clean Coalition)

3/24 SDG&E to provide a counterproposal (could be a joint IOU proposal)

Breakout Groups Discussion Sticky Notes:

The corkboard contains the following sticky notes:

- 1. What is in scope and out of scope?**
 - Group 3: Fronius: nothing seemed out of scope; GPI: ditto
 - Group 5: in scope - ZNE streamlining
 1. Templates
 - a. include but don't duplicate Microgrid
 - b. VNEM
 - c. Non-NEM
 - d. grid services?
 2. Confirm that utility will identify upgrade needs in time for occupancy

- 2. What is still missing from our proposals or thinking on Issue 19?**
- Group 3: Fronius: shouldn't add anything additional than what was discussed; Gary (SCE): not against streamlining but need to coordinate across forums; GPI: current list of proposals seems adequate; Tesla: be careful about duplication and overlap between forums
- 3. Does anyone have counter-proposals?**
- Group 3: Fronius; SCE (Gary); Andy
- Concerns with the proposal for address-only application; SDG&E - already spending less than 3 business days for approval
- 4. How long will it take us to complete Issue 19?**
- Group 3: GPI: 2 months for discussion; 12 months for decision; SCE: longer than we need
- What is the overlap with Microgrid OIR?**
- Microgrid OIR could have bearing on R21 scope; lets not discuss things that have already been validated by the PUC, nor things that have effect other proceedings
- What are the new things we are addressing with this WG?
- IOU Group: We don't want to expand R21 scope into issues where there is overlap, unless there is a compelling, incremental need to ZNE that the other proceedings don't address;
- Group 3: overlaps with microgrid OIR suggestion to add to scope: add existing service, residential projects up to 30 kW to the scope of standardized diagrams; PV up to 30 kW paired with energy storage up to 10 kW

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Issue F - Scope

[Issue F preliminary briefing note](#) was presented by Gridworks

Brad Heavner (CALSSA): Issue F is not primarily related to Issue 27, but rather is left from Issue 8 about operational flexibility requirements for ICA. The Operational Flexibility criterion is severely limiting based on the Issue 8 proposals. Further work was anticipated during Issue 8 discussions, including DERMs as one way to address the limitation of the operational flexibility requirements. We now have ICA with two levels and operational flexibility criteria. It's an ICA question more than about DERMs use cases discussions.

As per Brad Heavner this conversation was done four years ago about DERMs development – while testing products, the structure of how it's going to work can be developed.

As per Roger Salas (SCE) suggested revisiting the issue as it's too early to address it. The problem is, how to deal with the technology available and how can we deal with technology that we cannot operate?

Danielle Weizman (SDG&E) suggested to identify complexities that needs to be answered including operational needs that an aggregator or DER can satisfy and something that a commission can adopt. This is an exercise in education also. The visibility of DER generation could be adapted for planning by the CPUC as well as for DERMs roadmaps. DERs are the biggest source of generation but they don't have visibility.

Jason Bobruk (SolarEdge) suggested to put the rules in place as they are supplying smart inverters across the country and they are providing adequate grid services, the issue is with the California market – capability is available and missing an opportunity by not using it.

Action: Jason Bobruk (SolarEdge) to share the data with IOUs about what other states are doing.

Brad Heavner (CALSSA) mentioned that the major challenge at the moment is not the lack of decision but lack of certainty about whether it goes from operational flexibility in ICA to other use cases in connection with DERMS. Roger Salas (SDE) indicated that Issue F is looking for operational flexibility, while issue 27 uses a specific use case of operational flexibility and he suggested letting the Commission develop a proposal for issue 27.

Brad Heavner: Issue 27 is about Smart inverters- what needs to do at the inverter side, Issue F is more from the utility side, what are the rules for using this in operational flexibility.

Roger Salas (SCE): are we duplicating Issue 8?

Sophie Meyer (CPUC): Issue F gives us clear guidance that we should be making decisions about DERMS in Working Group Four.

Next steps could include look at existing DERMs roadmaps.

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Meeting total Participants: 55 participants

Andrew Salazar, CPUC	Mac Roche, Gridworks
Andy Schwartz, Tesla	Marc Hutton, Public Advocate Office
Annie Cwiklinski, Tesla	Mary Brown, SCE
Brad Heavner, CALSSA	Matt Gonzales, PG&E
Brian McCollough, CPUC	Mazyar Zeinali, XUtility
CEC Renewable -	Messay Betru, CEC
Connel Chris, Fronius	Melissa Reed, SDG&E
Danielle Weizman, SDG&E	Mike Jensen PG&E
David Brown, PG&E	Pat Saxton, CPUC
Derek Pearson Pearson, Artwel-Electric	Peter Klauer, California Independent System Operator
Elise Brancato, Tesla	Rehana Aziz, Gridworks
Eric Martinot, Gridworks	Roger Salasr, SCE
Erin McDonough, Tesla	Rustom Dessai, PG&E
Gary Holdsworth, SCE	Sahm White, Clean Coalition
Harold Hirsch, PG&E	Shawnmarie Gonzalez, PG&E
Jackie Piero Nuvve Corporation	Sophie Meyer, CPUC
Jason Bobruk, SolarEdge	Steve Sherr, Foundation Windpower
Jennifer Kamphuis, SDE	Steven Rymsha, Sunrun
Jin Noh, CESA	Tam Hunt, GPI
Jeff Healy, SDG&E	Ted Howard, Small Business Utility Advocate
Jose Gerbar, Nuvve	Todd Farhat, Sunstreet
Jose Aliaga Caro, CPUC	Travis Snyder, Snyder
Julain Rojas Ramirez, SCE	Trenton Jean, Tesla
Kathryn Enright, SDG&E	Trinity Burruss, Colfax council member.
Katie Wu, Gridworks	Tim McDuffie, Smart Grid Solutions