

Resiliency & Microgrids Working Group

Microgrid Integration and Interconnection

Resiliency and Microgrids Team, Energy Division
February 24, 2022



California Public
Utilities Commission

WebEx and Call-In Information

Join by Computer:

<https://cpuc.webex.com/cpuc/onstage/g.php?MTID=efd715eb6969ed9c22d12a1fc9ff96f83>

Event Password: RMWG (case sensitive)

Meeting Number: 2498 770 3241

Join by Phone:

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(Staff recommends using your computer's audio if possible.)

Notes:

- Today's presentations are available in the meeting invite (follow link above) and will be available shortly after the meeting on <https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/resiliency-and-microgrids/resiliency-and-microgrids-events-and-materials>.
- The meeting will not be recorded and there will not be meeting minutes.

WebEx Logistics

- All attendees are muted on entry by default.
- Questions can be asked verbally during Q&A segments using the “raise hand” function.
 - The host will unmute you during Q&A portions [and you will have a maximum of 2 minutes to ask your question].
 - Please lower your hand after you’ve asked your question by clicking on the “raise hand” again.
 - If you have another question, please “re-raise your hand” by clicking on the “raise hand” button twice.
- Questions can also be written in the Q&A box and will be answered verbally during Q&A segments.

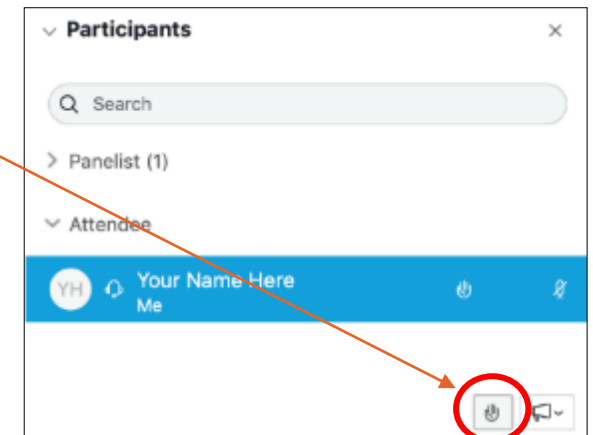
WebEx Tip

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Access the written Q&A panel here

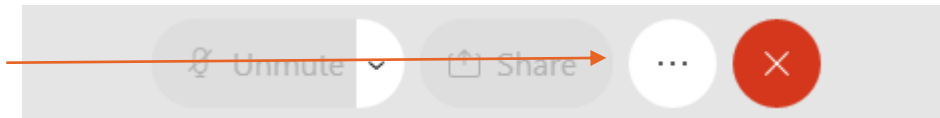


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WebEx Event Materials

Event Information: Resiliency and Microgrids Working Group Meeting


Registration is required to join this event. If you have not registered, please do so now. [English](#) : [San Francisco Time](#)

Event status: Not started ([Register](#))

Date and time: Tuesday, March 2, 2021 9:30 am
Pacific Standard Time (San Francisco, GMT-08:00)
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Duration: 1 hour

Description:



Event material: [RMWG Meeting Material_EXAMPLE.docx](#) (31.7 KB)

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Preliminary Resiliency & Microgrids Working Group Schedule

Month	Resiliency and Microgrids Working Group Topics			
February	Standby Charges	Multi-Property Microgrid Tariff		
March				
April				
May				
June			Value of Resiliency	
July				
August				
September				Microgrid Interconnection
October				
November	Customer-Facing Microgrid Tariff Revisit			
December				
January				
February				

Interconnection: Working group participants will discuss interconnection and related issues as they specifically relate to microgrids. Topics will include interconnection requirements for grid-connected mode microgrid operations, controls, communications, and islanded mode microgrid operations where interconnection requirements are not applicable.

Agenda

- | | |
|--|----------------------|
| I. Introduction <i>(Patrick Saxton, CPUC)</i> <ul style="list-style-type: none">• WebEx logistics, agenda review | 2:00p – 2:05p |
| II. DC Metering Standards <i>(Patrick Saxton, CPUC)</i> <ul style="list-style-type: none">• Presentation and Q&A | 2:05p – 2:30p |
| III. Selective De-Energization within Microgrid Boundary
<i>(Patrick Saxton, CPUC)</i> <ul style="list-style-type: none">• Presentation and Q&A | 2:30p – 3:00p |
| IV. Recap of Prior Meeting Topics and Proposed Recommendations <i>(Patrick Saxton, CPUC)</i> <ul style="list-style-type: none">• Presentation and Q&A | 3:00p – 3:55p |
| V. Closing Remarks, Adjourn <i>(Patrick Saxton, CPUC)</i> | 3:55p – 4:00p |

DC Metering Standards

- P.U.C. § 8371 (f)
 - Develop a standard for direct current metering in the commission's Electric Rule 21 to streamline the interconnection process and lower interconnection costs for direct current microgrid applications
- SCE updated the RMWG on August 12, 2021
 - In compliance with D.21-01-018 OP 11
- ANSI C12.32-2021
 - Electricity Meters For The Measurement Of DC Energy

DC Metering Standards

- Certified power control systems (PCS) are now explicitly allowed in Rule 21 for DC-coupled battery energy storage systems
 - Solution for most NEM integrity scenarios
- What use cases, within CPUC jurisdiction, exist for DC metering beyond NEM integrity and non-export
 - July 23, 2020, ALJ ruling requesting comment on R.19-09-009 Track 2 proposals
 - August 12, 2021, Resiliency and Microgrids Working Group

DC Metering Standards

- Use cases on the developer side of microgrid projects
- Use cases for sub-metering (e.g., EV charging)
- Did not identify any additional use case for DC metering relative to interconnection
- Statutory direction to develop standard for DC metering in Rule 21

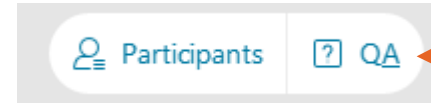
DC Metering Standards – Proposed Recommendation

- In a CPUC proceeding, propose modifying Rule 21 Section J – Metering, Monitoring, and Telemetry to reference ANSI C12.32-2021
 - Responsive to statutory requirement
 - Are there unintended consequences?
 - Other pros or cons?
 - Informal written feedback requested by Monday, April 4
 - Send to Patrick.Saxton@cpuc.ca.gov

Q&A and Discussion

WebEx Tip

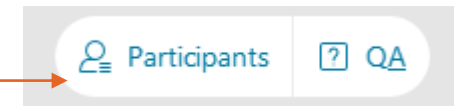
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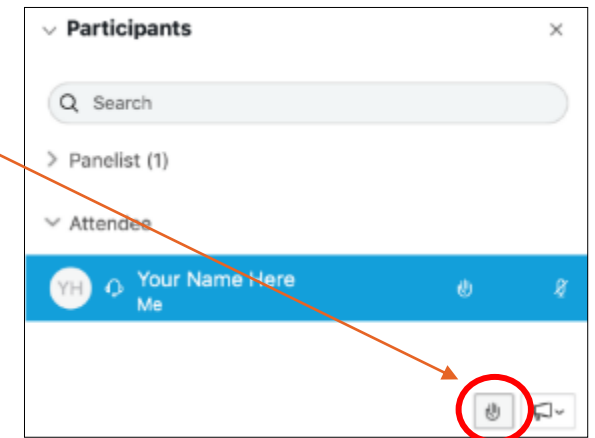
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Selective De-energization within MG Boundary

- Scenarios where not all loads within a microgrid boundary would be energized during islanded-mode
 - De-energize non-critical load within utility microgrid boundary
 - De-energize customers within a microgrid boundary (utility or community) who wish to exclude themselves
 - Others?

Selective De-energization within MG Boundary

- Reasons to allow selective de-energization
 - Reduce load to extend duration of microgrid
 - Reduce load to prioritize critical facilities
 - Reduce load to avoid use of generation that emits criteria air pollutants or GHGs
- Allow opt-out by a customer
 - Already has own backup power
 - Avoid fees (hypothetical)
 - Doesn't like electricity

Selective De-energization within MG Boundary

- Questions
 - Is there a need?
 - Do implementable solutions exist?
 - Manual disconnection
 - Smart meter remote disconnect?
 - Direct load control switch
 - Large enough current rating?
 - Approaches used in demand response?

Selective De-energization within MG Boundary

- Questions (continued)
 - What if there is unplanned re-energization of the customer or load while the microgrid is still in islanded-mode?
 - If no associated generation (load only) duration is reduced
 - Risks if there is associated generation?
 - Should CPUC or utilities further consider this issue?
or
 - Microgrid developers handle on a case-by-case basis?

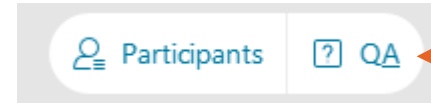
Selective De-energization within MG Boundary

- No proposed recommendation
 - Unclear if needed
 - Lack of information
- Informal written feedback requested by Monday, April 4
 - Questions from previous slides
 - General thoughts and comments
 - Send to Patrick.Saxton@cpuc.ca.gov

Q&A and Discussion

WebEx Tip

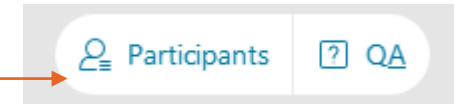
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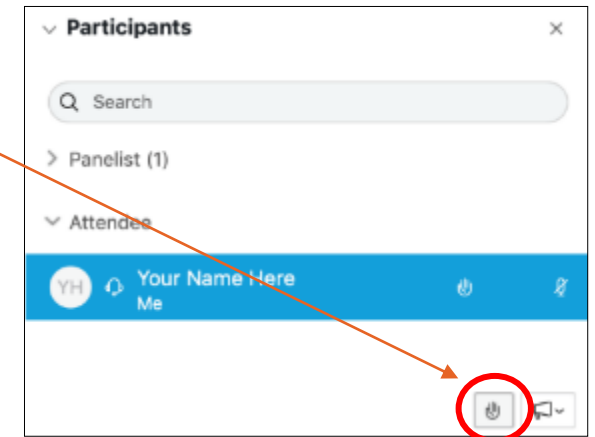
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Objective of RMWG* Interconnection Meetings

- Identify microgrid specific issues that may impede interconnection process for microgrids with resources that can parallel with grid
- Inform the multi-property microgrid tariff efforts
- Identify other actions (excluding financing and compensation) that could improve regulatory landscape for microgrids

* RMWG is an informal working group

Recap of Prior Meeting Topics & Proposed Recommendations

- DC metering standard
 - Recommendation on slide 10
- Microgrid specific gaps in existing interconnection studies when there are only behind-the-meter resources?
 - None identified
 - Recommend no modifications

Recap of Prior Meeting Topics & Proposed Recommendations

- Should additional interconnection application single-line diagram templates be developed?
 - Interest from a few stakeholders but no specifics
 - Existing single-line diagram templates not used frequently
 - More complex microgrids less likely to have standardized design
 - Recommend do not develop additional templates

Recap of Prior Meeting Topics & Proposed Recommendations

- Should a glossary of microgrid terminology be developed?
 - There are definitions in PG&E's CMEP and CMET and in the IOUs proposed Microgrid Incentive Program
 - Potential for a separate glossary to be duplicative or inconsistent
 - Recommend do not develop separate glossary
 - Ambiguity for some terms (e.g., microgrid controller)
 - Clarification needed?

Recap of Prior Meeting Topics & Proposed Recommendations

- Do operating parameters need to be developed for microgrids?
 - For microgrids operating over utility distribution grid when in islanded-mode
 - Rule 2 is adequate for voltage, frequency, and power quality
 - Operating agreement between utility and microgrid operator
 - SCE Advice Letter 4647-E (pending) addressing technical requirements for behind-the-meter microgrids
- Recommend do not develop additional operating parameters

Recap of Prior Meeting Topics & Proposed Recommendations

- Develop explicit requirements for microgrid controllers?
 - No for utility owned or utility supplied controllers
 - No for customer owned controllers that never operate in parallel with the grid (e.g., non-export, break-before-make)
 - Possibly for customer owned controllers that operate in parallel with the grid (e.g., control exporting resources, seamless transitions)
- Are existing smart inverter requirements adequate?
 - No recommendation at this time
 - Written informal feedback requested

Recap of Prior Meeting Topics & Proposed Recommendations

- Wholesale Distribution Access Tariff/Wholesale Distribution Tariff
 - FERC jurisdictional, not CPUC
 - Draft DER Action Plan 2.0 Elements 3D and 3F
 - Several stakeholders advocated for CPUC to take more active role in proposing changes
 - Discussed within Energy Division – no clear path
 - Recommend interested stakeholders develop straw proposals or specific proposed modifications
 - In what ways, if any, are these microgrid specific?
 - Energy Division continue exploring options for venue/forum

Recap of Prior Meeting Topics & Proposed Recommendations

- Recommend for further consideration in Microgrid Multi-Property Tariff portion of R.19-09-009 Track 4 Phase 2
 - Timelines for microgrid studies and system upgrades not under existing Electric Rules
 - If under existing Electric Rules but no timelines specified, consider developing timelines
 - Pre-application report for multi-property microgrid projects that are not part of Microgrid Incentive Program or PG&E's CMEP

Recap of Prior Meeting Topics & Proposed Recommendations

- Recommend for further consideration in Microgrid Multi-Property Tariff portion of R.19-09-009 Track 4 Phase 2 (continued)
 - Define what hardware-in-the-loop controller testing can be completed by vendor
 - Define acceptance criteria for vendor hardware-in-the-loop controller testing
 - Define required field commissioning

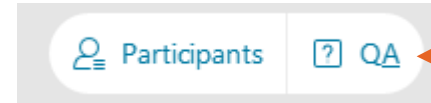
Recap of Prior Meeting Topics & Proposed Recommendations

- Recommend for further consideration in Microgrid Multi-Property Tariff portion of R.19-09-009 Track 4 Phase 2 (continued)
 - When multiple DERs are controlled as a single entity, allow for single interconnection application and study DERs together
 - Applicable to single-property microgrids also
 - IOUs previously indicated not feasible, in the near term, to jointly study generation and new load (to be confirmed)
 - Others?

Q&A and Discussion

WebEx Tip

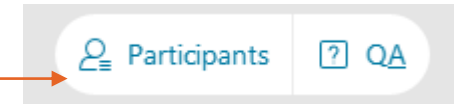
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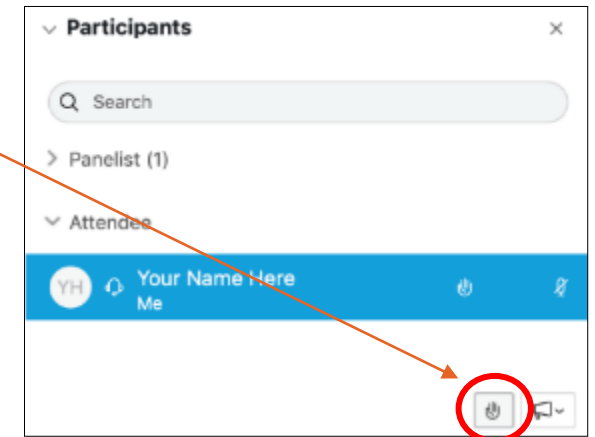
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Closing

Written Feedback on Proposed Recommendations

- **Please provide informal written feedback on proposed recommendations by Monday April 4, 2022**
 - Send to Patrick.Saxton@cpuc.ca.gov
 - Comments will be summarized and recommendations updated (if necessary)
 - Summarized comments and updated recommendations will be sent to R.19-09-009 service list
- **No additional RMWG meetings scheduled at this time**



California Public Utilities Commission

Patrick.Saxton@cpuc.ca.gov

<https://www.cpuc.ca.gov/resiliencyandmicrogrids/>