



Rule 21 Working Group 2

CONFERENCE CALL

JUNE 20, 2018

415-429-8160

REMOTE ACCESS: [HTTP://WWW.UBERCONFERENCE.COM/GRIDWORKS/](http://www.uberconference.com/gridworks/)

Agenda

2:00 – 2:05: Intros and agenda

2:05 – 3:20: PG&E & SDG&E

3:20 – 3:30: SCE follow up items?

3:30 – 3:45: Motion to adjust WG schedule

3:45 – 4:00: Remaining agenda items and identifying topics for June 27 in person meeting

- Volt-var and Screen P (volunteer: CALSSA)
- Milestones and queue management (volunteer: CALSSA)
- Changes to timelines and application fees (volunteer: CALSSA)
- Screen J threshold (volunteer: CALSSA)
- IOU updates (PG&E, SDG&E, SCE)
- Automation (GPI/Clean Coalition, potentially PG&E)
- Other stakeholder-led proposals, Issue 8/9? (other stakeholders)

Rule 21 Working Group 2

Issue 8 Discussion ***DRAFT PG&E***

20 June 2018

DRAFT – SUBJECT TO CHANGE



Presentation Overview

Summary

PG&E is supportive of ICA and has been discussing internally the stakeholder's proposals. In this evaluation we found:

- Technical challenges with producing ICA values (systems have been crashing)
- ICA results may be favorable for some projects and not others
- ICA results can inform queuing discussions as part of Issue 20 in the OIR

PG&E is proposing a validation study to sample projects and evaluate the ICA results. This study will help define:

- Technical requirements for ICA and refresh
- Inform Interconnection Rules

Presentation Objectives

- Present PG&E's proposed validation on ICA Implementation for Interconnection

Presentation Outline

- ICA Goals 1 through 3
- ICA Goal 1 Transparency of Information from Maps
- ICA Goal 2 Transparency of Study Track Eligibility
- ICA Goal 3 Transparency of Study Results



Integration Capacity Analysis and Automation

Goal of ICA is to inform DER siting and improve interconnection process

- “The first and most developed use case for the ICA is to improve interconnection, which includes a more automated and transparent interconnection process and the publication of data that helps customers design systems that do not exceed grid limitations” – ICA Working Group Report page 3
 - This translates into 1 goal:
 - **Goal 1: Transparency of Information from Maps.** What areas should be avoided?
- “The ICA values identified at a point of interconnection are expected to replace and/or supplement the size limitations in the Fast Track eligibility criteria and will be able to address and/or improve the technical screens in the Rule 21 Fast Track process which are part of the ICA methodology” – ICA Working Group Report page 8
 - This translates into 2 goals:
 - **Goal 2: Transparency of Study Track Eligibility.** Will this size project remain in Fast Track?
 - **Goal 3: Transparency of Study Results.** Will this project see upgrades?
- With these three goals in mind, the working group draft proposals are:
 - **Proposal 1: Replace Fast Track Eligibility with ICA**
 - **Proposal 2: Replace Certain Screens with ICA**

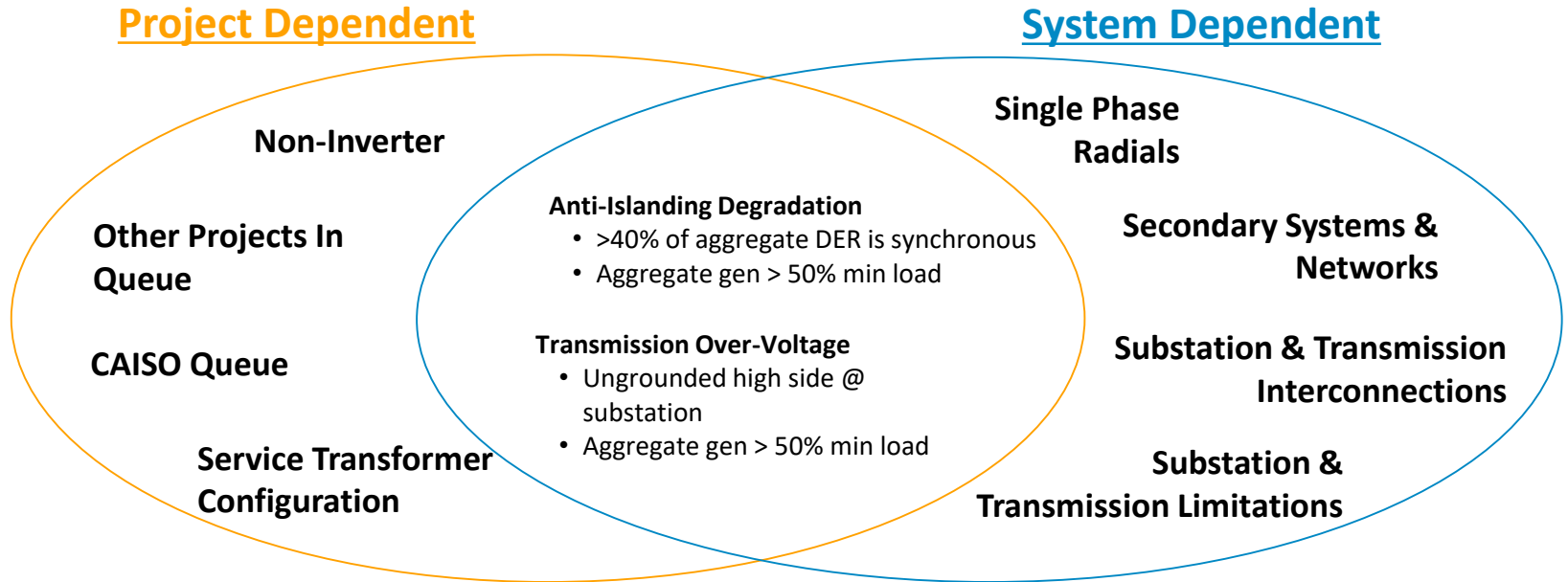
<https://drpwg.org/wp-content/uploads/2016/07/ICA-WG-Final-Report.pdf>



Goal 1: Transparency of Information from Maps

Goal 1: Transparency of Information from Maps. What areas should be avoided?

- PG&E's goal is to provide information on all distribution circuits to the extent possible



Confidentiality: Some circuits do not meet Customer Privacy rules and therefore ICA information will not be made available

Time: ICA values are posted monthly and there are many non-Utility controlled factors (major configuration change, queue update, new interconnection requests) that affects the ICA value given the grid and interconnection queue is dynamic.

Quality Control: ICA leverages lots of data and algorithms to build projections and the values to be posted. Many of the databases that are utilized depend on manual processes to populate them. Many controls are in place and are being built to QC/QA the databases.



Goal 2: Transparency of Study Track Eligibility

“Developers should be able to submit a Rule 21 Fast Track application for DER interconnection up to the identified ICA value at the proposed point of interconnection, based on ICA figures shown on the map, **changes in queued DER since the last map update and in the underlying data**, and be able to pass those screens representing criteria the ICA has evaluated. The Rule 21 proceeding should identify processes and procedures which are required to support safety and reliability, while maximizing the ICA values to improve the interconnection process including, but not limited to, procedures associated with the evaluation procedures to account for frequency of updates, queued generation, **ICA value at the time of interconnection**, and resolution of screens not addressed by current ICA methodology.” – ICA Working Group page 8

Related to this goal is **Proposal 1: Replace Fast Track Eligibility with ICA**

Current High Level Application Processing Steps



Fast Track Eligibility Criteria:

Non-Export: no threshold

NEM – 1: no threshold

NEM – 2 and Exporting: 3 MW on 12kV or higher

Fast Track Eligibility Criteria (PG&E’s Rule 21 Language):

Non-Exporting Generating Facilities and NEM-1 Generating Facilities are eligible for Fast Track evaluation regardless of the Gross Nameplate Rating of the proposed Generating Facility. NEM-2 Generating Facilities and Exporting Generating Facilities with a Gross Nameplate Rating no larger than 3.0 MW on a 12 kV or higher voltage interconnection point for PG&E are also eligible for Fast Track evaluation.

For an Exporting Generating Facility that agrees to the installation of Distribution Provider-approved protective devices at Applicant’s cost such that the Exporting Generating Facility’s net export will never exceed the Fast Track eligibility limits, the Generating Facility’s net export will be considered for purposes of Fast Track eligibility. However, these Interconnection Requests will be required to complete Supplemental Review and Applicants should pre-pay for Supplemental Review at the time the Interconnection Request is submitted.



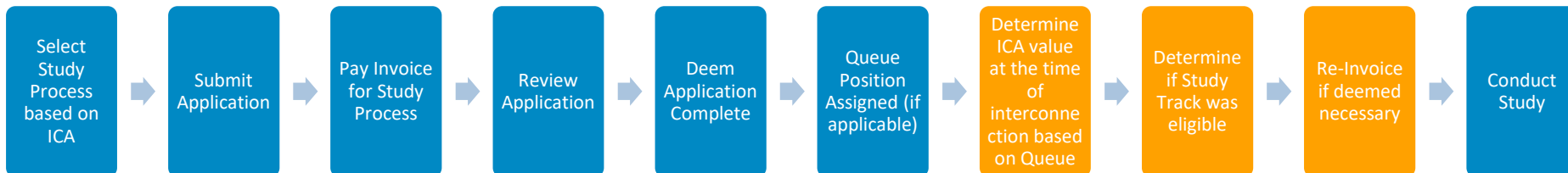
Goal 2: To Be Concepts

Conceptual To-Be for **Proposal 1: Replace Fast Track Eligibility with ICA** and address changes in queued DER since the last map update and in the underlying data, and ICA value at the time of interconnection

Current High Level Application Processing Steps



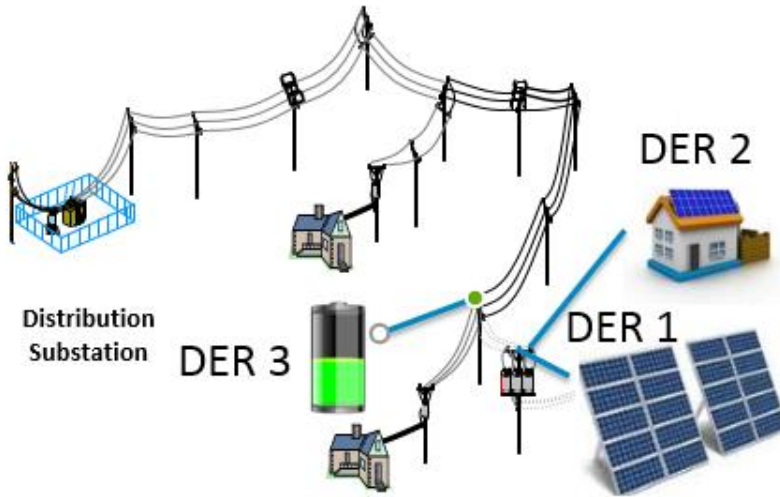
Conceptual High Level To Be Processing Steps



- New Potential Steps:
 - Determine ICA Value at time of Interconnection
 - Include changes in queue positions
 - Determine if ICA Value changed such that project is not eligible for Fast Track
 - Re-Invoice if Study Track is not eligible



Goal 2: Proposed Study



DER	Type	ICA based on Queue	App Date	Deemed Complete	Queue Position	Fast Track Eligible
DER 1	1MW Export	1.2MW to 0.7MW	6/10	Incomplete, Additional info sent 6/16	2	No 1MW > 0.7MW
DER 2	0.1MW NEM-2	1.2MW	6/12	6/14	N/A	Yes 0.1MW < 1.2MW
DER 3	400kW Storage	1.2MW to 1.1MW	6/15	6/18	1	Yes 0.4MW < 1.1MW

1.2MW is the posted ICA value on 6/1

	Project < ICA	Project > ICA
ICA > 3MW	Larger Projects that would not have qualified for Fast Track now qualify for Fast Track	No different than today. Project goes to Detailed Study
ICA < 3MW	No different than today. Project goes to Fast Track	Projects that would have qualified for Fast Track now are required to go Detailed Study

Proposed Validation to determine what are the requirements for ICA to meet the Transparency goal:

- How often will ICA value change such that your project moves from “Project < ICA” to “Project > ICA”?
- The study will document what was the posted ICA value at the application for DER 1 and determine what the ICA value for that project is based on Queue. In the above example, because project DER 1 did not submit a complete application, its Queue position is behind DER 3 which was submitted after but was deemed complete therefore ICA value was modified to include DER 3.
- Learnings to inform Issue 20 Queuing in the OIR
 - Issue 20: Queuing: How should the Commission coordinate Commission-jurisdictional and Federal Energy Regulatory Commission-jurisdictional interconnection rules for behind-the-meter distributed energy resources, including modification of queuing rules for Rule 21 and Wholesale Distribution Access Tariff (WDAT) projects seeking to interconnect at the same location, clarification of the rules for projects wanting to transfer between the Rule 21 and WDAT queues, and streamlining of the transfer process?



Goal 3: Transparency of Study Results

Screen M 15% of Peak Load is the main screen that moves projects over to Supplemental Review

Screens N through P are the Supplemental Review screens that determines whether upgrades are required or additional study is required

ICA provides analysis that models the following qualities to determine what amount of generation causes issues

- Thermal
- Power Quality/Voltage
- Protection
- Safety/Reliability

ICA has the potential to replace screens thus **Proposal 2: Replace Certain Screens with ICA**. PG&E proposes to conduct a validation for:

ICA validation

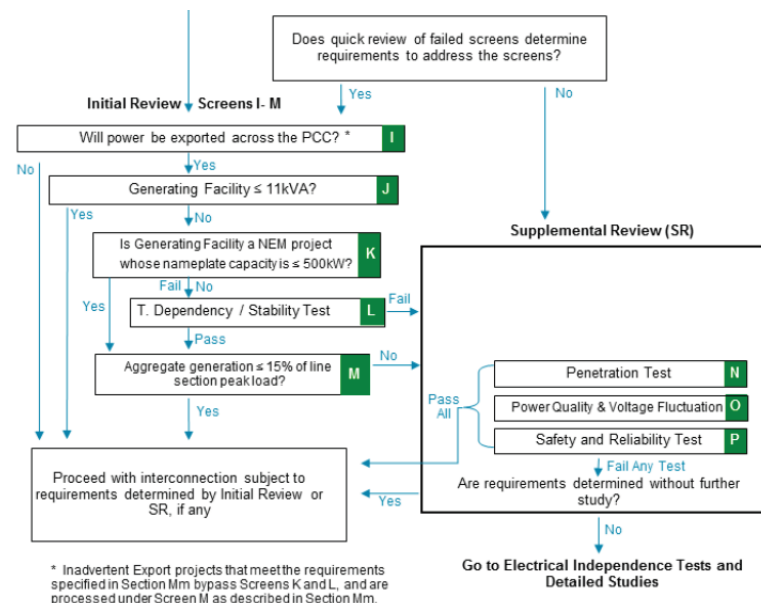
- Validation proposes to validate the ICA values and compare study results of real projects with the current method and ICA
- Validation to determine how often Screen M (Transmission High Voltage and Transmission Anti-Islanding Situation surfaces)

ICA posted values may not be the ICA value at the time of study

- Validation proposed to determine how often ICA values change from the posted value, by how much, and how many project results differ from expectations set by the posted ICA value.

ICA can be 0

- Validation proposed to understand what drives ICA of 0, how often, and how to address



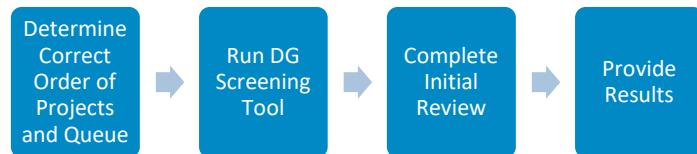
	Project < ICA	Project > ICA
ICA > 15% Peak	Project that would have previously failed Screen M now passes	No different than today.
ICA < 15% Peak	No different than today. Project goes to Fast Track	Project that would have previously passed Screen M now fails



Goal 3: To Be Concepts

Conceptual To-Be for **Proposal 2: Replace Certain Screens with ICA** and address changes in queued DER since the last map update and in the underlying data, and ICA value at the time of interconnection

Current High Level Application Processing Steps



Conceptual High Level To Be Processing Steps



- New Potential Step:
 - Run ICA Analysis if criteria to re-run met
- ICA re-run criteria to be determined
 - For example, if project size to ICA value ratio is greater than 50% and other projects proposed interconnection on same feeder
- Note ICA runs for feeders



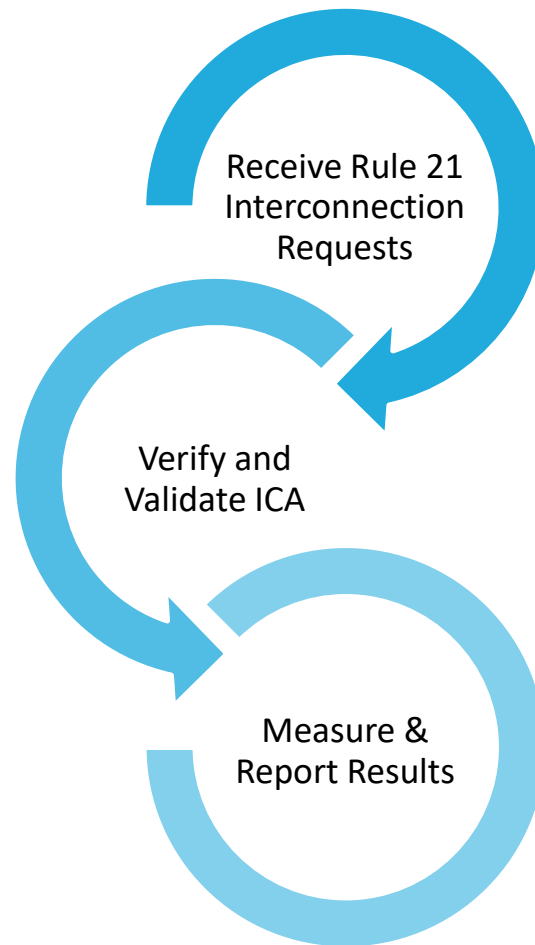
A  Sempra Energy[®] utility



Rule 21 & ICA Coordination Timetable



SDG&E's Proposed Rule 21 Timetable



Receive Rule 21 Interconnection Request



- SDG&E will continue to ensure and maintain the safety and reliability of our system
- SDG&E is estimating to receive approximately less than 50 requests per year that would meet the Rule 21 Framework
- ICA values to be published and be a reference for interconnection customers
- Duration: Time to be tracked as initial review screens are processed. Goal is to stay within our current initial review time period.

Verify & Validate ICA Data



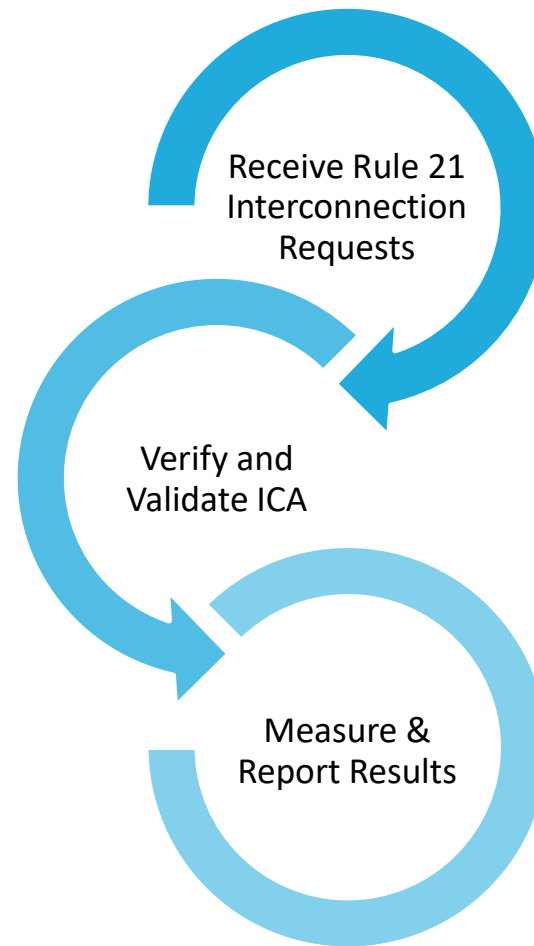
- ICA values to be verified and validated for the circuit and location of interconnection
- SDGE to confirm that the current ICA methodology will **supplement** and **improve**, but will not replace or displace any of the Rule 21 screens until first vetted and verified
- Current Rule 21 Technical Framework to be completed in parallel with the use of ICA values in the Rule 21 Framework
- ICA values that contribute to the Rule 21 Technical Screens to be validated & verified only & not to be used for screen approval
- Duration: Goal is to stay within current durations, exceptions to be noted on report

Measure & Report Results



- Create table to measure and report:
 - Validation of ICA Values
 - Validation of Rule 21 Screens
 - Durations of Technical Review Screens that use ICA
- SDG&E will provide the report to the Commission
 - SDG&E wants to see how future enhancements to ICA data could supplement and improve Rule 21 screens
- Duration: Update per interconnection request received & report out annually

SDG&E's Proposed Rule 21 Timetable



Duration TBD when ICA rolled out & Interconnections Received & Can Change Based on Future CPUC Decisions/Orders.

Motion to adjust WG schedule



Rule 21 OIR Phases and Working Groups Current Schedule

The OIR is structured into different phases and working groups

Working Groups 3 through 6 are to discuss and file Reports on 18 Issues between Sept 1, 2018 – March 1, 2019,
- i.e. on average 3 Issues per month

Phase	Working Group	Title	Schedule	Target Proposed Decision
1	1	Urgent and/or Quickly Resolved Issues [6 Issues]	Oct – March 2018	Fall 2018
	2	Integration Capacity Analysis and Streamlining Interconnection Issues [5 Issues]	March – Sept 2018	
	3	Planning, Construction, and Billing of Distribution Upgrades Issues [6 Issues]	Sept – March 2019	Summer 2019
	4	Application Processing and Review Issues [9 Issues]		
	5	Smart Inverter Issues and Coordination with Rulemaking 14-10-003 (Smart Inverter Working Group) [2 Issues]		
	6	Safety and Environmental Issues [1 Issue]		
2	7	Ratesetting Issues Requiring Coordination with Rulemaking 14-08-013 (Distribution Resources Plan) [1 Issue]	TBD	TBD
3	8	Small and Multi-Jurisdictional Utility Rules [1 Issue]	TBD	Spring 2020

DRAFT – SUBJECT TO CHANGE – NOT APPROVED BY IOU MANAGEMENT



Rule 21 OIR Schedule Adjustment DRAFT Proposal

The Working Group requests the adjustment in schedule as shown below and reclassification of working groups and issues.

The revised schedule provides:

- A schedule that can work for both utilities and stakeholders, i.e., discuss ~1 Issue per month
- A grouping of issues that address recent activities such as Title 24
- Prioritization of issues that connect to other proceedings and upcoming requirements
 - Propose to move Issue 10 in Working Group 2 to Working Group 6
- Results in the Proposed Decision being issued one-year later, unless bifurcated

Phase	Working Group	Title	Schedule	Target Proposed Decision
1	1	Urgent and/or Quickly Resolved Issues [6 Issues]	Oct – March 2018	Fall 2018
	2	Integration Capacity Analysis and Streamlining Interconnection Issues [5 Issues propose to move 1 Issue to Working Group 6]	March – Sept 2018	
	3	Programs [6 Issues]	Sept 2018 – Feb 2019	Summer 2020
	4	Applications [4 Issues]	Mar 2019 – Sept 2019	
	5	SI Operations [2 Issues]	June 2019 – Sept 2019	
	6	Distribution Upgrades and Construction [6 Issues]	Oct 2019 – Mar 2020	
2	7	Ratesetting Issues Requiring Coordination with Rulemaking 14-08-013 (Distribution Resources Plan) [1 Issue]	April 2020 +	TBD
	8	Small and Multi-Jurisdictional Utility Rules [1 Issue]	April 2020 +	Fall 2020



Rule 21 OIR Working Group 3 and Beyond

- See next slides for details on each Issue Number listed in this table

2018				2019								2020							
Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr+
Programs				Applications								Distribution Upgrades and Construction							
ZNE, EV Tree				Cost Sharing, Anti-Island Queue				App Portal				SE							
19, 14, 23				18, 13, 20				22				17, 16, 15, 12, 10, 24							
Storage Related				SI Operations								Multi-Juris, DRP, Safety							
21, 25, 26				27, 28								29, 30							

Legend

10. Coordination Rule 2, 15, 16
11. Non-Export Storage
12. Timelines and Enforcement
13. Cost Sharing
14. Tree Mortality
15. Itemized Billing
16. Third Party Construction
17. Interconnection Facilities
18. Anti-Islanding
19. ZNE
20. Queuing
21. Metering Storage
22. Application Portals
23. EV
24. Cost of Ownership
25. Expedited Storage
26. DC Meter
27. SI Operations
28. IDER Coordination
29. DRP Coordination
30. Small and Multi-Jurisdictional Rates
- SE. Safety and Environmental Risks

DRAFT – SUBJECT TO CHANGE – NOT APPROVED BY IOU MANAGEMENT

Appendix

- Detail Slides on Issues and Current Working Group Structure



Rule 21 Working Group 1 Issues

7 Issues originally in Working Group 1, 1 was moved to Working Group 2

- Under Working Group 1, there are 6 issues in the draft Working Group 1 report:
 - Issue 1: **Fast Track Screen Q**: Should the Commission modify Fast Track Screen Q to minimize the number of distributed energy resource projects subjected to transmission cluster studies and, if so, how?
 - Issue 2: **Complex Metering Solutions**: Should the Commission clarify the definition of “complex metering solutions” for storage facilities and, if so, how?
 - Issue 3: **Material Modifications**: How should the Commission clarify the definition of a “material modification” to a project and what should be the procedures for processing these modifications? Note: the proposals are bifurcated to discuss changes to (1) pending applications and (2) modifications to existing facilities (i.e. retrofits)
 - Issue 4: **Telemetry**: As the penetration levels of distributed energy resources increase, what changes to telemetry requirements should the Commission adopt to ensure adequate visibility while minimizing cost?
 - Issue 5: **Activation of Latent Smart Inverters**: Should the Commission require activation of advanced functionality in Phase 1 compliant inverters installed before September 9, 2017, and if so, how?
 - Issue 7: **ITCC**: Is there inconsistent application of the requirement to pay the Income Tax Component of Contribution charges across the Utilities? If yes, how should the Commission address the inconsistency?



Rule 21 Working Group 2 Issues

5 Issues in Working Group 2 on ICA, Aggregators & non-exporting systems

- Under Working Group 2, there is:
 - Issue 6: **Aggregation**: Should the Commission require the Utilities to develop forms and agreements to allow distributed energy resource aggregators to fulfill Rule 21 requirements related to smart inverters? If yes, what should be included in the forms and agreements?
 - Issue 8: **ICA**: How should the Commission incorporate the results of the Integration Capacity Analysis into Rule 21 to inform interconnection siting decisions, streamline the Fast Track process for projects that are proposed below the integration capacity at a particular point on the system, and facilitate interconnection process automation?
 - Issue 9: **Conditions of Operations**: What conditions of operations should the Commission adopt in interconnection applications and agreements to allow distributed energy resources to perform within existing hosting capacity constraints and avoid triggering upgrades?
 - Issue 10: **Coordination Rule 2, 15, 16**: How can the Commission coordinate the Integration Capacity Analysis and each Utility's Rule 21 processes with the Rule 2, 15, and 16 processes in order to improve efficiency of the overall interconnection process? This is a coordination issue at this time. However, modifications to Rules 2, 15, or 16 will be addressed if necessary.
 - Issue 11: **Non-Export Storage**: Should the Commission adopt a notification – based approach in lieu of an interconnection application for non-exporting storage systems that have a negligible impact on the distribution system? If so, what should the approach entail?



Rule 21 Working Group 3 Issues

6 Issues in Working Group 3 on Implementation Phase of DER Interconnections

- Under Working Group 3, there is:
 - Issue 12: **Timelines and Enforcement:** Should the Commission improve certainty around timelines for distribution upgrade planning, cost estimation, and construction? Should the Commission consider adopting enforcement measures with respect to these timelines? If so, what should those measures be?
 - Issue 13: **Cost Sharing:** Should the Commission adopt a process for distribution upgrade cost sharing among developers, and if so, what should the process be?
 - Issue 14: **Tree Mortality:** Should the Commission establish a forum to ensure coordination between this proceeding and other proceedings or venues where the Commission is addressing the resolution of disputes and facilitation of interconnection agreements for forest bioenergy facilities in high hazard zones, pursuant to the Governor's Emergency Order on Tree Mortality?
 - Issue 15: **Itemized Billing:** Should the Commission require itemized billing for distribution upgrades to enable customer comparison between estimated and billed costs and verification of the accuracy of billed costs?
 - Issue 16: **Third Party Construction:** Should the Commission encourage third party construction of upgrades to support more timely and cost-effective interconnection, and if so, how?
 - Issue 17: **Interconnection Facilities:** Utilities commonly require wholesale systems interconnecting under Rule 21 to install separate interconnection facilities when existing facilities serving on-site load may have sufficient capacity. Is the requirement to install separate facilities necessary to support safe and reliable interconnection? If not, how should the Commission address this utility practice?



Rule 21 Working Group 4 Issues (1 of 2)

9 Issues in Working Group 4 on Application Processing

- Under Working Group 4, there is:
 - Issue 18: **Anti-Islanding**: Should the Commission adopt changes to anti-islanding screen parameters to reflect research on islanding risks when using UL 1741-certified inverters in order to avoid unnecessary mitigations? If yes, what should those changes entail?
 - Issue 19: **ZNE**: Should the Commission adopt streamlined interconnection procedures (e.g. standard configurations eligible for expedited review) to facilitate implementation of California Zero Net Energy building codes and, if so, what should those procedures entail?
 - Issue 20: **Queuing**: How should the Commission coordinate Commission-jurisdictional and Federal Energy Regulatory Commission-jurisdictional interconnection rules for behind-the-meter distributed energy resources, including modification of queuing rules for Rule 21 and Wholesale Distribution Access Tariff (WDAT) projects seeking to interconnect at the same location, clarification of the rules for projects wanting to transfer between the Rule 21 and WDAT queues, and streamlining of the transfer process?
 - Issue 21: **Metering Storage**: How should the Commission implement determinations to be made in Rulemaking 15-03-011 regarding measurement and metering of storage facilities to enable multi-use applications and track station power consumption?
 - Issue 22: **Application Portals**: Should the Commission require the Utilities to make improvements to their interconnection application portals? If yes, what should those improvements be?



Rule 21 Working Group 4 Issues (2 of 2)

9 Issues in Working Group 4 on Application Processing

- Under Working Group 4, there is:
 - Issue 23: **Electric Vehicles**: Should the Commission consider issues related to the interconnection of electric vehicles and related charging infrastructure and devices and, if so, how?
 - Issue 24: **Cost of Ownership**: Should the Commission modify the formula for calculating the Cost-of-Ownership charge and, if so, how?
 - Issue 25: **Expedited storage**: Should the Commission make any revisions to the expedited process for eligible non-exporting storage facilities in response to pilot program data collected by the Utilities between July 1, 2017 and June 30, 2018, in order to support tariff principles of technological neutrality and consistency across the Utilities?
 - Issue 26: **DC meter**: Should the Commission adopt a direct current (DC) metering standard for DC applications, including Net Energy Metering (NEM) – paired storage systems and microgrids? If so, what should the standard be?



Rule 21 Working Group 5, 6, 7, & 8 Issues

5 Issues in Working Group 5,6,7, and 8

- Under Working Group 5, there is:
 - Issue 27: **Smart Inverter Operations**: 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?
 - Issue 28: **IDER Coordination**: How should the Commission coordinate with the Integrated Distributed Energy Resource proceeding to ensure operational requirements are aligned with any relevant valuation mechanisms?
- Under Working Group 6, there is:
 - **Safety and Environmental Risks**: Should the Commission establish a forum, either within this proceeding or externally, to develop interconnection safety standards to address safety and environmental risks as the interconnection of distributed energy resources devices grows?
- Under Working Group 7, there is:
 - Issue 29: **Ratesetting Issues Requiring Coordination with DRP**: Should the Commission address cost allocation issues that arise in connection with new upgrade practices in distribution resource planning?
- Under Working Group 8, there is:
 - Issue 30: **Small and Multi-Jurisdictional Utility Rates**: What revision to Rule 21 and equivalent tariffs are required for small and multi-jurisdictional utilities?