PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Agenda ID #21092

ENERGY DIVISION **RESOLUTION E-5230**

December 1, 2022

R E S O L U T I O N

Resolution E-5230. Approves in part, modifies, and seeks clarity on Pacific Gas and Electric Company's, Southern California Edison Company's, and San Diego Gas & Electric Company's proposals to implement Limited Generation Profiles and allow inverters to be set using different export values at different times of the year.

PROPOSED OUTCOME:

- This Resolution approves in part, modifies, and seeks clarity on Pacific Gas and Electric Company's (PG&E), Southern California Edison Company's (SCE), and San Diego Gas & Electric Company's (SDG&E) Advice Letters providing recommendations regarding the standard review, certification requirements, and interconnection processes necessary for implementation of the Limited Generation Profile proposal and proposal that would allow an inverter approved for non-export and limited-export to be set using different maximum export value settings at different times of the year.
- This Resolution orders PG&E, SCE and SDG&E to participate in at least two half-day workshops to discuss outstanding issues and file new advice letters updating their proposals.

SAFETY CONSIDERATIONS:

- There are no safety considerations associated with this resolution.

ESTIMATED COST:

- There are no costs associated with this resolution.

By PG&E Advice Letter 6141-E, SCE Advice Letter 4455-E, and SDG&E Advice Letter 3721-E filed on March 30, 2021.

SUMMARY

Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E), collectively the large investor-owned utilities (Large IOUs), submitted Tier 3 Advice Letters (ALs) to comply with Ordering Paragraphs (OPs) 15 and 51 of Decision (D.) 20-09-035 (the Decision). OP 15 and OP 51 required the Large IOUs to provide recommendations regarding the standard review, certification requirements, and interconnection processes necessary for implementation of the Limited Generation Profile (LGP) proposal (Issue 9) and allow an inverter approved for non-export and limited-export to be set using different maximum export value settings at different times of the year (Proposal A-B 3) (collectively "the Proposals). In the ALs the Large IOUs outlined the interconnection process in five phases, including review, certification requirements, approval, and performance evaluation process to implement the Proposals.

This current Resolution approves in part and modifies the Large IOUs' proposals. This current Resolution finds the ALs largely comply with OPs 15 and 51. There are issues, however, in both the protested items and the Large IOUs' proposals, that call for further discussion and clarification.

The Large IOUs are therefore directed to participate in at least two half-day workshops. Additional workshops may be held at Energy Division's discretion. The workshops shall be recorded and publicly posted on Energy Division's web site. The workshops shall commence no later than 30 days after issuance of this Resolution. The Large IOUs are ordered to submit Tier 3 ALs no later than 90 days after issuance of this Resolution to address the topics identified in this Resolution as well as those raised in the workshops.

BACKGROUND

A. Rulemaking 17-07-007

The California Public Utilities Commission (Commission) initiated Rulemaking (R.) 17-07-007 on July 13, 2017 to consider refinements and, if necessary, revise the rules and regulations governing the interconnection of generation, distributed energy resources (DERs) and storage facilities to the electric distribution systems of the Large IOUs. The Large IOUs' rules and regulations pertaining to the interconnection of generating

facilities are set forth in Electric Rule 21 Tariff (Rule 21). As part of R.17-07-007 the Large IOUs and other stakeholders participated in four working groups. The working groups relevant to the set of ALs discussed in this Resolution are:

- Working Group Two – Discussed issues regarding the application of the Integration Capacity Analysis (ICA)[1] into Rule 21 and streamlining interconnection issues.

- Working Group Three – Discussed issues regarding timelines, billing, construction upgrades, application portals, electric vehicle interconnection, and the use of smart inverters.

D. 20-09-035, issued on September 30, 2020, directed the Large IOUs to submit ALs proposing revisions to Rule 21 addressing recommendations of Working Group Two and Three. OPs 15 and 51 of the Decision state (bold indicates the topics addressed by the Tier 3 ALs submitted and this Resolution; the remaining topics cannot proceed until action is taken by an external standards' making organization):

- OP 15: **The counter proposal from … [the Large IOUs] to resolve Issue 9 is adopted with modification.** … **Within six months of issuance of this decision, Utilities shall submit a Tier 3 Advice Letter providing recommendations (as applicable) regarding the standard review, certification requirements, and interconnection processes necessary for implementation of the proposal.** Within 60 days of adoption of a certification scheme for the Limited Generation Profile, Utilities shall modify the Rule 21 Interconnection Application Process to allow a distributed energy resources customer to include a Limited Generation Profile with their application, require the customer to enable generation profile limiting functionality, and allow Utilities opportunity to alter the profile if safety and reliability concerns warrant it. **Retroactive alterations to generation profiles shall not reduce generation to below a pre-defined static level, i.e., the lowest Integrated Capacity Analysis – Static Grid typical profile value identified at the time of the Interconnection Application. As part of the proposal, Utilities shall: i) allow customers to utilize a smart inverter's ability to increase its**

[1] The ICA is a tool developed in the Distribution Resources Plans (R.14-08-013) proceeding and informs developers of the hosting capacity a circuit has (i.e., how much capacity is available before a grid upgrade is required).

> **output on a monthly basis; and ii) use a 10 percent buffer, which shall be revisited….**[2]

- OP 51: **A modified Proposal A-B 3 is adopted** but shall not be implemented until nine months after technical specifications standards, and a certification scheme for a Limited Generation Profile have been approved by the standards approving bodies. Within 90 days of such approval, … [the Large IOUs] shall [seek] … to modify their Rule 21 tariffs to allow an inverter approved for non-export and limited export to be set using different maximum export value settings at different times of the year, when meeting the qualifications for either Proposal A-B 1[3] or A-B 2.[4] … **Within six months of issuance of this decision, Utilities shall submit a Tier 3 Advice Letter providing recommendations (as applicable) regarding the standard review, certification requirements, and interconnection processes necessary for implementation of the proposal. The discussions and Tier 3 Advice Letter required in this ordering paragraph may be combined with those required in Ordering Paragraph 15.**[5]

The Decision resolved Issue 9 and Proposal A-B 3 of Working Groups Two and Three, respectively. As stated in the Decision:

> Issue 9 looks at the conditions of operations the Commission should adopt to allow distributed energy resources to perform within existing hosting capacity constraints and avoid triggering [distribution grid] upgrades… The purpose of resolving Issue 9… is to utilize the Integration Capacity Analysis data to allow modern inverters, storage, and other technologies to confidently respond to grid conditions while ensuring safety and reliability.[6]

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[2] D.20-09-035 at 209-210.
[3] "Proposal A-B 1 requires Rule 21 to be modified to specifically allow the use of a power control system for non-export and limited export interconnection applications…." D. 20-09-035at 158.
[4] Proposal A-B 2 "would update Rule 21 language to allow the use of a power control system for non-export and limited-export applications. Further, Proposal A-B 2 would require that, to be treated as inadvertent export, a generating facility must meet…six of … specifications…" D.20-09-035 at 160.
[5] D.20-09-035 at 224.
[6] D.20-09-035 at 51.

and

> This proposal [A-B 3] would allow an inverter approved for non-export and limited-export to be set using different maximum export value settings at different times of the year and at the discretion of the utility until a future scheduling standard is released. Proposal A-B 3 would require the inverter to meet the qualifications for non-export or limited-export under Proposal A-B 1 or A-B 2.[7, 8]

B. Issue 9: Limited Generation Profiles (LGP)

The purpose of LGP is to allow a generator to interconnect generation capacity "which exceeds the minimum annual Interconnection Capacity Analysis-Static Grid (ICA-SG) value while remaining below the maximum ICA-SG at any given time."[9,10] The figure below illustrates an interpretation of the Decision's OP 15 language in order to demonstrate the LGP at a conceptual level. The blue line depicts the maximum yearly ICA-SG value. The red line shows the monthly minimum ICA-SG value, with the 10% buffer adopted in the Decision, added for safety. Given the shown ICA-SG values, this would be the LGP submitted at time of application. The minimum value of the red line is 1.14 MW in September, while the maximum is 2.80 MW in February.

[7] D.20-09-035 at 162.
[8] Proposal A-B-1 and Proposal A-B-2 allow the use of a Power Control System (PCS) for non-export and limited-export applications. PCS are systems or devices that electronically limit or control the Alternating Current (AC) or Direct Current (DC) of a generating facility to a programmable limit or level.
[9] Working Group Two Report at 119.
[10] "There are two types of ICA profiles… [1] ICA-Static Grid ("ICA-SG") 576 profile: This profile is the minimum ICA values at each of the 576 hours for the most limiting of these categories: thermal, voltage, power quality and protection. [2] ICA-Operational Flexibility ("ICA-OF") 576 profile: This profile is the minimum ICA values at each of the 576 hours for the most limiting of these categories: thermal, voltage, power quality, protection *and safety*. Where the safety ICA is not the lowest of all the categories, ICA-OF and ICA-SG are the same…The minimum annual ICA-OF value is the ICA's most conservative assessment of the system's ability to interconnect new DER. The maximum value for ICA-SG is the least conservative scenario. In between lies…the minimum annual ICA-SG." Working Group Two Report at 66.

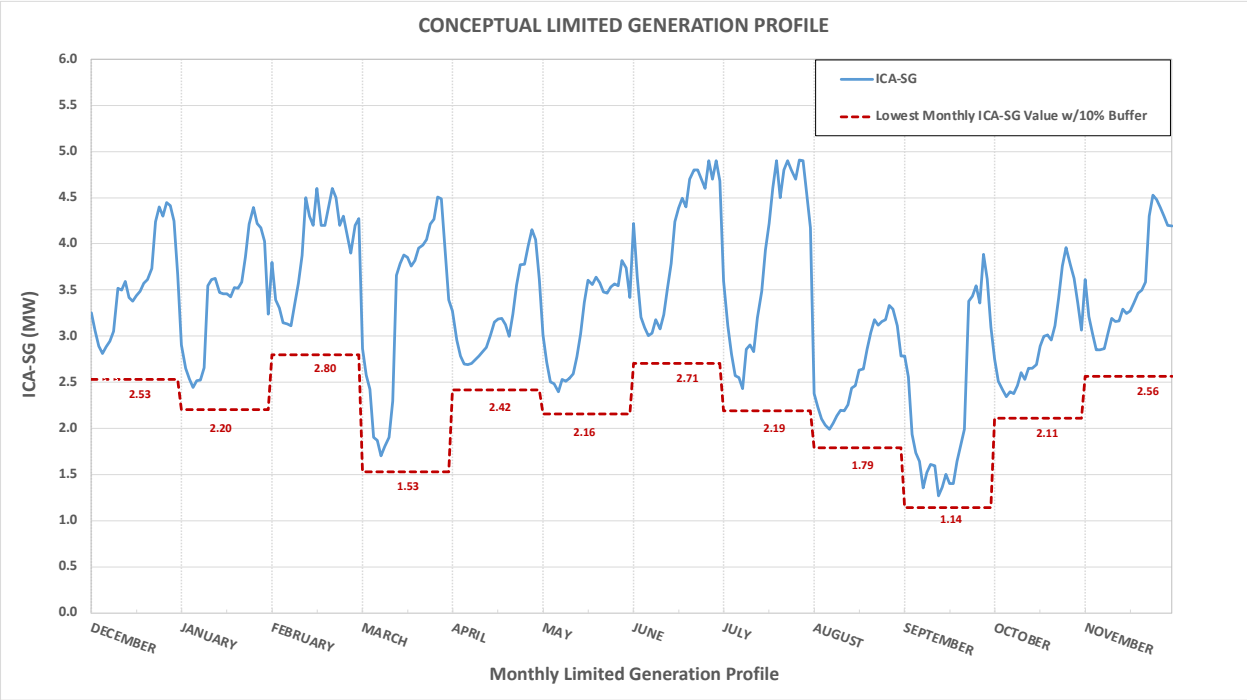

Figure 1: Conceptual Illustration of the use of Limited Generation Profile.[11]

As conceptually illustrated above, a photovoltaic (PV) system, using a controlled generation export profile, would be able to take advantage of the available ICA-SG hosting capacity as published at the time of interconnection to determine a varying export profile so as not to exceed the ICA-SG values and therefore avoid triggering costly grid upgrades. The use of LGP (henceforth referred to the "LGP-option") limits export of power to the electric grid.

C. PG&E AL 6141-E, SCE AL 4455-E, SDG&E AL 3721-E

PG&E AL 6141-E, SCE AL 4455-E, and SDG&E AL 3721-E were submitted on March 30, 2021, to comply with the requirements of OP 15 and OP 51 of the Decision. OP 15 and OP 51 required the Large IOUs to provide recommendations (as applicable) regarding the standard review, certification requirements, and interconnection processes necessary for implementation of the Proposals. In the ALs the Large IOUs outlined the interconnection process in five phases: (1) Customer Preparation, (2) Interconnection Request, (3) Technical Evaluation, (4) Interconnection

[11] Source: Adapted from Smart Inverter Working Group January 21, 2021 Large IOU Presentation "Supporting Ordering Paragraphs 15 (Issue 9 …) and 51."

Agreement/Permission to Operate, and (5), Operation Performance. The Large IOUs also provided information on the implementation requirements and changes needed in their systems to implement the Proposals.

The content of the ALs are discussed in-depth in the Discussion section of this Resolution.

PG&E submitted a substitute sheet on April 27, 2021, addressing an error and stated:

> In PG&E's Advice Letter 6141-E, PG&E inadvertently switched Ordering Paragraph (OP) 15's timeline requirements with OP 51's timeline requirements in the table on page 8. These substitute sheets revise the advice letter, so the timeline requirements match with their corresponding Ordering Paragraph.[12]

NOTICE

Notice of PG&E AL 6141-E, SCE AL 4455-E, and SDG&E AL 3721-E were made by publication in the Commission's Daily Calendar. The Large IOUs state that they served copies of the ALs to the interested parties on the GO-96-B, R.11-09-011, and R.17-07-007 service lists.

PROTESTS/RESPONSES

The Interstate Renewable Energy Council, Inc. (IREC) submitted a timely protest on April 19, 2021, to the ALs. The Large IOUs submitted timely responses on April 26, 2021.

The protested issues and the Large IOUs' responses are discussed in depth in the Discussion section of this Resolution.

DISCUSSION

A. Summary

PG&E AL 6141-E, SCE AL 4455-E, and SDG&E AL 3721-E, submitted to comply with OP 15 and OP 51 of the Decision, are approved in part and modified herein. We find

[12] PG&E Substitute Sheets for Advice 6141-E at 1.

these ALs largely comply with OPs 15 and 51. There are issues, however, in both the protested items and the Large IOUs' proposals, that call for further discussion and clarification. In Section C of the Discussion we determine which sections of the Large IOUs' proposals have adequately addressed the topics discussed and which require further clarity.

As discussed in further depth below, the Large IOUs are therefore directed to participate in at least two half-day workshops, which may be expanded to full-day workshops at Energy Division's discretion, to address and clarify outstanding topics identified in this Resolution's discussion section. The Large IOUs are expected to address topics identified by Energy Division as needing discussion and prepare relevant presentations. Energy Division will compile a list of topics from stakeholders and place them on the agenda if they lie within the scope of the ALs or the OPs directing them and the scope in this Resolution. The Large IOUs shall issue presentations ahead of the workshops to allow parties to prepare for the workshops. Deadlines for circulating the agenda and workshop materials shall be coordinated by Energy Division. Agenda items may also be discussed through the SIWG ahead of the scheduled workshops and the Large IOUs are ordered to attend and participate in these discussions. We delegate to Energy Division to determine whether subsequent workshops shall be held beyond the two days initially required by this Resolution. Workshops will be noticed to the R.17-07-007 service list and announced through the SIWG or other appropriate venues. The workshops shall commence no later than 30 days after issuance of this Resolution. The workshops shall be recorded and publicly posted on Energy Division's web site. The Large IOUs are ordered to file subsequent Tier 3 ALs no later than 90 days after issuance of this Resolution to address the topics identified in this Resolution as well as those raised in the workshops.

The subsequent ALs shall specify which items have reached consensus within the workshop participants and which items have not reached consensus. If an item has not reached consensus, the Large IOUs shall provide details as to the bases for lack of consensus and the alternative proposals, if any. This requirement is applicable to all topics identified in this Resolution. The Large IOUs shall also update their proposals as appropriate. The subsequent ALs shall also distinguish sections that have already been approved per this Resolution and those that have been modified due to the discussions.

During the discussions directed herein and in the subsequent ALs any arguments for the safety and reliability of the grid or concerns about the current capabilities of the grid must be justified and substantiated and include detailed arguments of the most likely outcome and possible consequences if those actions are not taken. References to Rule 21 must include the section being referenced—the Commission finds a general reference such as "as allowed in Rule 21"[13] unconstructive to the record without a clear citation. References to the ICA must also include a citation, such as a report, if available.

We now discuss the protested topics, the Large IOUs' proposals, and topics that need further discussion and are to be included in the subsequent ALs.

B. PG&E AL 6141-E, SCE AL 4455-E, and SDG&E AL 3721-E.

In PG&E AL 6141-E, SCE AL 4455-E, and SDG&E AL 3721-E the Large IOUs outlined the interconnection process to implement the Proposals in five phases, including review, certification requirements, approval, and performance evaluation process to implement the Proposals:

1. Customer Preparation Phase – Includes details on actions to be taken by a customer and responsibilities prior to submittal of the interconnection request.

2. Interconnection Request Phase – Includes details on customer responsibilities.

3. Technical Evaluation Phase – Includes details on the application of Initial Review Screens in Rule 21 and evaluation of the ICA-SG profiles to meet the 10% buffer adopted in the Decision.

4. Interconnection Agreement/Permission to Operate (PTO) Phase – Includes details on execution of and updates to the interconnection agreements needed, field performance verifications, and issuance of PTO.

[13] In replies to protest, SCE stated "Inverters that only produce power but do not rely on a control system to limit export would only be required to report power production, as allowed in Rule 21." SCE Reply at 3.

5. Operation Performance Phase – Includes detail on how monitoring will be performed for systems that have telemetry and those that do not.

Details on the Large IOUs' proposals are included in Appendix A of this Resolution.

The ALs were protested by IREC on the three topics listed below: [14]

- Quarterly Reporting (Interconnection Agreement/Permission to Operate Phase) – The Large IOUs have proposed to require customers whose systems do not have telemetry to provide quarterly generation output data to verify the generating facility is limiting its output power to the approved limits.
- Use of Gross Nameplate Rating (Technical Evaluation Phase) – The Large IOUs propose to apply the applicable Rule 21 Initial Review Screens A through L based on nameplate capacity.
- Proposals for Limited Generation Profiles – The Large IOUs' have not addressed future reductions to Limited Generation Profiles.

IREC also made the following requests:

- To allow non-certified devices to use Limited Generation Profiles by mutual agreement.
- To align the timeline for implementation of OPs 15 and 51 and publishing all technical requirements for Power Control Systems (PCS).[15]

Issue 1. The Large IOUs' Requirement of Quarterly Reports

IREC requests the Commission to reject the Large IOUs' proposed quarterly reporting requirements "because they are designed to evaluate if a certified system performs according to its accreditation, when the entire point of certification is to ensure that a device performs according to its accreditation."[16] IREC argues that "there is no mention

[14] IREC's Protest to San Diego Gas & Electric's Advice Letter 3721-E, Pacific Gas & Electric's Advice Letter 6141-E, and Southern California Edison's Advice Letter 4455-E at 3-8.
[15] PCS are systems or devices that electronically limit or control the Alternating Current (AC) or Direct Current (DC) of a generating facility to a programmable limit or level.
[16] IREC's Protest to San Diego Gas & Electric's Advice Letter 3721-E, Pacific Gas & Electric's Advice Letter 6141-E, and Southern California Edison's Advice Letter 4455-E at 4.

of this requirement in the Working Group Two Final Report's discussion of Issue 9, Working Group Three Final Report's discussion of Issue A-B, or D.20-09-035."[17] IREC further states

> it is not clear how such reporting could be accomplished using equipment that is available today. For example, Power Control Systems today are not required to keep a record of exports, so this data may not be available… The export schedule provided by the Power Control System should be treated as a setting just like the limited export value addressed by Issues A and B…. If the utilities clearly articulate the need for the reporting, identify reasonable means for collecting the actual data that is necessary and how they will use or process that data then IREC would be happy to engage constructively on this topic. As it stands right now, the reporting requirement is not adequately explained or justified and should be rejected.[18]

Large IOUs' Responses to Issue 1

PG&E and SCE reply that it is good utility practice to verify that installed systems perform as expected.[19,20] SCE further states:

> …The proposed customer reporting requirements will ensure that customers are aware of the system requirements for the duration of the interconnection agreement and the generating facility continues to meet the performance requirement. The reporting will also help build confidence that these systems perform as designed…the proposed requirements correlate with the complexity of the interconnected systems. Inverters that only produce power but do not rely on a control system to limit export would only be required to report power production, as allowed in Rule 21. These LGP projects are more complex and therefore

[17] IREC's Protest to San Diego Gas & Electric's Advice Letter 3721-E, Pacific Gas & Electric's Advice Letter 6141-E, and Southern California Edison's Advice Letter 4455-E at 4.
[18] IREC's Protest to San Diego Gas & Electric's Advice Letter 3721-E, Pacific Gas & Electric's Advice Letter 6141-E, and Southern California Edison's Advice Letter 4455-E at 4.
[19] PG&E Reply at 3.
[20] SCE Reply at 2.

> require a different level of requirements. This concept applies to all generation projects where the complexity (size, technology, Point of Interconnection, etc.) dictates the interconnection requirements.[21]

PG&E and SDG&E state that quarterly reporting "could be as minimal as providing maximum monthly output values and timestamps [constituting] 24 datapoints a year for a Utility to verify customer's Power Control Systems abides by the Limited Generation Profile values approved through the interconnection process."[22] SCE states "… the generating facility owner would only need to report one peak monthly export value for each month in the quarter, or three (3) values per quarter and twelve (12) values per year."[23]

Resolving Issue 1: Quarterly reporting is not required. The Large IOUs are directed to discuss this process further.

We agree with IREC: (1) that the quarterly reporting was not discussed in the Working Group Two and Three Final Reports of Issue 9 and of Issue A-B 3, respectively, nor in the Decision; and (2) with the need to clearly articulate the reporting process. We therefore decline to adopt the requirement of quarterly reporting for systems that do not have telemetry; we find there is lack of justification in the ALs to require it. We will, therefore, revisit this topic. We direct the Large IOUs to discuss this process in greater detail and ensure any such requirement would not impose undue burden to the customer or ratepayers through unnecessary costs. The discussions should consider the uncertainties presented in Working Group Two and Three Reports, the recommendations offered, and their limitations. For example, in response to the Large IOUs' concerns about LGP, The Utility Reform Network (TURN) proposed "that generation be monitored and measured in real-time..."[24] but did not consider systems that could not be monitored without the addition of external data acquisition systems (e.g., systems that do not have telemetry). The discussions should include, but not be limited to, perceived gaps in certification standards, including details on if and how certification to the standards would or would not suffice; additional clarity on how the

[21] SCE Reply at 2-3.
[22] PG&E Reply at 3 and SDG&E Reply at 2.
[23] SCE Reply at 3.
[24] Working Group Two Report at 123-124.

reporting process would work; an identification of reasonable means for collecting the data; articulation of how this data will be used or processed; enumeration of the anticipated costs involved, if any, for the customer/generator; a comprehensive statement of any additional infrastructure required; and criteria for developing guidelines on how the customer must provide information to the Large IOUs. In the discussions and subsequent ALs the Large IOUs shall articulate the capabilities of all tools (e.g., Advanced Meter Infrastructure) currently available through infrastructure they control to facilitate or replace the reporting requirement.

Issue 2: Use of Gross Nameplate Rating

IREC argues that:

> The IOUs propose to evaluate Screens D, I, J, and K using Gross Nameplate Rating instead of the limited export value as required in the Commission-approved consensus proposal A-B 1 [approved in OP 49 of the Decision]. Consistent with D.20-09-035 OP 49 and the October 30, 2020, Advice Letters [filed to comply with OP 49 [25]] the IOUs should not use the Gross Nameplate Rating when evaluating Screens D, I, J, K, M, N, O, and P for Power Control System with an open-loop response time of 2 seconds or less. The Advice Letters should also discuss the consideration of limited export values in Supplemental Review pursuant to Order Paragraph 50 and proposal A-B 2.[26]

Large IOUs' Responses to Issue 2

In replies the Large IOUs argue that "[b]ecause OP 9 requires that ICA-SG values be used, then the same utilization of ICA values must be applied to OP 51 (proposal A-B #3)."[27]

[25] Modifications to Rule 21 in compliance with OP 49 (Proposal A-B 1) and 50 (Proposal A-B 2) were filed on August 6, 2021 in PG&E AL 6286-E, SCE AL 4559-E, SDG&E AL 3822-E. Supplemental ALs were filed thereafter. PG&E AL 6286-E, 6286-E-A, and 6286-E-B; SCE AL 4559-E and 4559-E-A; and SDG&E AL 3822-E, 3822-E-A and 3822-E-B were approved by Energy Division disposition letter dated March 3, 2022.
[26] IREC's Protest to San Diego Gas & Electric's Advice Letter 3721-E, Pacific Gas & Electric's Advice Letter 6141-E, and Southern California Edison's Advice Letter 4455-E at 6.
[27] PG&E Reply at 4, SCE Reply at 3, SDG&E Reply at 3

The Large IOUs further argue in replies:

> Given that ICA- SG values do not account for screens D, J, and K, then it is appropriate to evaluate screen D using gross nameplate rating. Further, Screen I is a question of export versus non-export; because all LGP projects will be exporting projects, then screen I is irrelevant.[28]

SDG&E further argues:

> Using the LGP in lieu of gross nameplate rating within Rule 21 screens is imprudent, as subsequent revisions to LGP through OP 16 implementation can change the original agreed-upon generation output. Not studying the generation [gross] nameplate rating impair[s] the IOU's ability to implement subsequent upward revisions in allowable generation…. Additional Screens M, N, O & P should be studied at the gross nameplate capacity such that an IOU's ability to implement subsequent upward LGP revisions in allowable generation is not impaired.[29]

Resolving Issue 2: Further discussions are needed to justify the use of gross nameplate for the Rule 21 screens.

We find there is lack of record on this topic with regards to how Proposal A-B 3 and Issue 9 differ from the requirements adopted for Proposals A-B 1 and A-B 2.

OP 49 and OP 50 adopted Proposal A-B 1 and A-B 2, respectively, of the Working Group Three Report. In OP 49 and OP 50 the Decision stipulated the applicability of the screen as follows:

- OP 49: Utilities shall evaluate limited-export interconnections applications as such: limited export value can determine the impacts to the grid and in Screens D, I, J, K, M, N, O, and P; and Screens F and G will be based on the generating facility's nameplate rating.[30]

[28] PG&E Reply at 4, SCE Reply at 3, SDG&E Reply at 3.
[29] SDG&E Reply to Protest of Advice Letter 3721-E at 3.
[30] D.20-09-035 at 223.

- OP 50: Upon meeting the six specifications [to be treated as inadvertent export], the Utilities shall review the facility as such: apply Screens A through M using the aggregate nameplate inverter rate; during Supplemental Review the applicant shall identify … the frequency of inadvertent export, the real power level in watts of inadvertent export and the time duration of inadvertent export; if distribution upgrades are identified, Screen P shall recognize power control parameters taking into account local feeder conditions; and only the largest facility in the line section shall be used for aggregate evaluation for subsequent interconnection requests. Utilities shall consider a customer's operating profile and the magnitude, duration, and frequency of anticipated export during the review of Screen P.[31]

While we are inclined to agree that the same study process used for Proposal A-B 1 should apply for Issue 9 and Proposal A-B 3, as both are limited export applications, we note the concerns expressed by the Large IOUs. They note that Issue 9 uses the ICA and the ICA does not take into account some of the Rule 21 Fast Track screens. We, therefore, find there may be missing information from the record to make a determination on the matter. Should the Large IOUs continue to propose the use of gross nameplate rating for screens D, J and K, the Large IOUs are directed to discuss these concerns further during the workshops directed herein and in the subsequent ALs. This discussion should provide further information on the similarities and differences between the proposals in question and articulate the concerns and most likely outcomes for utilizing the limited export value adopted in Proposals A-B 1 and A-B 2 for A-B 3 and Issue 9. The discussions shall also include the Supplemental Review screens. We find a mere statement "Given that ICA- SG values do not account for screens D, J, and K, then it is appropriate to evaluate screen D using gross nameplate rating" without proper justification and details unconvincing. Accordingly, the Large IOUs are directed to fully justify their arguments.

The discussions should refer to how the Decision adopts Proposal A-B 3 and how the Working Group Three Report states the screens should be applied, which we discuss

[31] D.20-09-035 at 223-224.

below. Below we also address SDG&E's response regarding upward revisions in allowable generation.

Regarding the study process for the Rule 21 screens, we note that in adopting Proposal A-B 3 the Decision, in OP 51, directs the Large IOUs to:

> … modify their Rule 21 tariffs to allow an inverter approved for non-export and limited export to be set using different maximum export value settings at different times of the year, **when meeting the qualifications for either Proposal A-B 1 or A-B 2** [emphasis added].[32]

The Working Group Three Report described the A-B 3 proposal as follows:

> Proposal A-B 3: An inverter approved for non-export and limited-export can be set using different maximum export value settings at different times of the year, if it qualifies under Proposal A-B #1 ([open loop] response time less than 2 seconds) or Proposal A-B #2-a ([open loop] response time between 2-10 seconds) ...[33]

The Working Group Three Report also commented on the application of the screens for Proposal A-B 3 as follows:

> Review Process:
>
> - Same as Proposal A-B #1, using temporal profile, if the [open loop] response time is less than two seconds
> - Same as Proposal A-B #2-a, using temporal profile, if the [open loop] response time is between two seconds and ten seconds
>
> Proponent position by CALSSA:
>
> Smart inverter Phase III Function 8 (Scheduling) will enable systems to have different maximum export values at different parts of the year… **this**

[32] D.20-09-035 at 224.
[33] Working Group Three Report at 135.

> **option would be used to implement the Issue 9 proposal** [emphasis added]….[34]

The discussions in the workshops and subsequent ALs shall address the Decision language and the Working Group Three Report statements.

Regarding SDG&E's response, OP 15 addresses an increase to output, stating "[a]s part of the proposal, Utilities shall: i) allow customers to utilize a smart inverter's ability to increase its output on a monthly basis." This increase, however, is with regards to the varying LGP submitted at time of interconnection application and not future upward revisions of the LGP (i.e., modifications to the LGP with values above those submitted at the time for interconnection). Discussions for LGP only contemplated a reduction of export power for safety and reliability reasons, not an increase. It is the Commission's understanding that any proposal to increase the power export value would require a new interconnection application and agreement. Accordingly, the generating facility would have to undergo the interconnection process again, including re-evaluation under the screens in Rule 21. Therefore, we find SDG&E's argument on this matter unconvincing.

Issue 3: Reductions to Limited Generation Profiles.

IREC expresses that "[The ALs] do not provide any additional specificity regarding the IOUs' proposals for whether and how to reduce Limited Generation Profiles."[35]

Large IOUs' Responses to Issue 3

PG&E and SCE are "committed to finding a resolution that is fair for all interconnection applicants (Rule 21 and WDAT) and that does not create safety concerns."[36] SDG&E states it "is continuing to collaborate with the SIWG on implementation of D.20-09-035 requirements related to ICA and LGP in a way that is fair to all applicants."[37]

[34] Working Group Three Report at 136.
[35] IREC Protest at 7.
[36] PG&E Reply at 5, SCE Reply at , SDG&E Reply at 4.
[37] SDG&E Reply at 3.

Resolving Issue 3: Addressing reductions to Limited Generation Profiles Is discussed in Resolution E-5211.

This topic has been addressed in Resolution E-5211, which was adopted by the Commission on October 6, 2022, and issued on October 10, 2022.[38] Therefore, this topic is not discussed herein.

Issue 4: Use of non-certified devices to use Limited Generation Profiles by mutual agreement.

IREC argues for the use of non-certified devices, stating:

> customers may want to implement Limited Generation Profiles using non-certified devices…. New technologies also may enter the market that do not fit the certification standard. For these reasons, Rule 21 should allow the use of non-certified devices to implement Limited Generation Profiles, provided the customer and IOU mutually agree.[39]

Large IOUs' Responses to Issue 4

The Large IOUs do not agree that non-certified devices should be used for the use of LGP option by mutual agreement. SDG&E argues that "LGP inverter settings should be vetted through national standards development organizations working on smart inverter requirements, who have robust testing and vetting practices to safely implement distributed generation."[40] PG&E and SCE both state that OP 15 (Issue 9) and OP 51 (Proposal A-B 3) contemplate and require the use of certified systems, and that the use of mutually agreed use of non-certified devices leads to disagreements, inconsistencies and disputes.[41] PG&E further states "[the] use of certified systems ensures consistency. And … the review and approval of non-certified devices takes

[38] Resolution E-5211 rejects without prejudice PG&E AL 6058-E, SCE AL 4404-E, and SDG&E AL 3678-E which were submitted to specify whether and how reductions to a customer's Limited Generation Profile are determined, per OP 16 of the Decision. Resolution E-5211 orders the Large IOUs to participate in a minimum of two full-day workshops to confer with stakeholders on outstanding issues to comply with OP 16.
[39] IREC Protest at 7.
[40] SDG&E Reply at 4.
[41] PG&E at 5, SCE Reply at 4.

time, which could be utilized on other interconnection issues to better serve customers."[42]

Resolving Issue 4: The use of non-certified devices for the Limited Generation Profile option is not mandatory.

We deny IREC's request on the use of non-certified devices. We affirm that the Large IOUs have the ability to allow non-certified devices by mutual agreement and nothing in our resolution of this issue impedes that ability. We, however, do not impose such a requirement.

We agree with the Large IOUs that Issue 9 and Proposal A-B 3 contemplated and required the use of certified devices. The use of non-certified devices was not discussed in the Working Groups or in the Decision. We recognize that technology is emerging, and new technologies may become available that do not yet have standards governing their performance. Should this become an issue in the future, per D.21-06-002 OP 17,[43] Energy Division will be compiling a list of topics to revisit in a future interconnection rulemaking.

Issue 5: Alignment of the timeline for implementation of OPs 15 (Issue 9) and 51 (Proposal A-B 3) and Publication of Technical Requirements.

Timelines:

IREC requests that

> Energy Division should instruct the IOUs to file a Tier 2 Advice Letter modifying Rule 21 to allow the use of Limited Generation Profiles within 60 days of adoption of a certification scheme for the Limited Generation Profile. No modification to D.20-09-035 would be necessary if the IOUs fully comply with the requirement within 60 days…OP 51 requires IOUs to implement these changes and allow the use of Limited Generation

[42] PG&E Reply at 5.

[43] Decision 21-06-002 in R.17-07-007 resolved remaining issues from the Rule 21 Working Group 4 Report. OP 17 at 92 states "Commission Energy Division is authorized to seek informal comments on new interconnection issues and potential revisions to interconnection policies…The comments shall be used to draft the preliminary scope in an Order Instituting Rulemaking for the successor interconnection rulemaking."

> Profiles in the Rule 21 process within 9 months; OP 15 does not include a[n] implementation timeline. Accordingly, the Energy Division should instruct the IOUs to implement the entire proposal within 9 months. Here again no modification to D.20-09- 035 is necessary.[44]

Large IOUs' Responses

In its reply, SDG&E agrees that OP 15 should be implemented within the same timeframe as OP 51. PG&E and SCE did not provide replies to this topic. But in the ALs, the Large IOUs state that due to the similarities between OP 15 and OP 51, the Large IOUs proposed and the SIWG accepted that these two OPs should be implemented together as one.[45]

Publication of Technical Requirements

IREC argues "To promote transparency and provide customers certainty regarding the technical requirements necessary for Power Control Systems to take advantage of Limited Generation Profiles in Rule 21, the Commission should require the IOUs to publish all such technical requirements…"[46] and that these requirements should be included in the Tier 2 AL required by OP 51.

Large IOUs' Responses

The Large IOUs do not support a requirement to publish technical requirements and state that they must have experience using UL Power Control Systems to develop and specify the requirements.[47]

However, PG&E and SCE "commit to publishing technical requirements after observing the application of installed projects and learning the technical aspects of the control system."[48] SDG&E did not express this commitment in its response.

[44] IREC Protest at 8.
[45] PG&E AL 6141-E at 8, SCE AL 4455-E at 2, SDG&E AL 3721-E at 3.
[46] IREC Protest at 8.
[47] PG&E Reply at 6, SCE Reply at 5, SDG&E Reply at 4.
[48] PG&E Reply at 6, SCE Reply at 5.

Resolving Issue 5: Timelines for the implementation of OP 15 and OP 51 are aligned. The Large IOUs are not required to publish technical requirements of Power Control Systems at this moment.

Timelines:

The Decision is silent on the implementation timeline once certification standards are approved for Issue 9 (OP 15); but for Proposal A-B 3 (OP 51) the implementation timeline was set at nine months from such approval. The Decision differed in the timing for updates to Rule 21 once certification standards are approved. IREC proposes the timelines be aligned as shows in the figure below,[49] and the Large IOUs have proposed implementing OP 15 and OP 51 together.

	OP 15	OP 51	IREC Proposal
Timing for updates to Rule 21 once certification standards are approved	Update within 60 days	Update within 90 days	Update within 60 days
Implementation timeline once certification standards are approved	No timeline provided	9 months	9 months

We find the ALs updating Rule 21 for OP 15 and OP 51 have been aligned by mutual agreement as shown in the figure. We appreciate the Large IOUs' flexibility and willingness to align Rule 21 updates simultaneously for OP 15 and OP 51.

OP 15 is silent on the process for tariff modifications, if any are required, to implement Issue 9 but mentions modifications to the Rule 21 Interconnection Application Process. We clarify that "Interconnection Application Process" would include Rule 21 tariff modifications. Therefore, if tariff modifications are required for Issue 9, the Large IOUs shall submit modifications to Rule 21 in the Tier 2 AL ordered per OP 15 of the Decision, which is due within 60 days of adoption of a certification scheme. Due to the mutually agreed upon timeline, the AL may be combined with the AL required in OP 51 of the Decision.

Publication of Technical Requirements:

This request by IREC is denied and the Large IOUs are not required to publish technical requirements for Power Control Systems for the LGP within the Tier 2 ALs ordered in

[49] IREC Protest at 8.

OP 51. This determination is specific to systems that have been certified to the relevant standards.

While we support transparency, publishing of technical requirements was not a requirement in the Decision's adoption of Issue 9 or A-B 3, nor was it discussed previously in the Working Groups. PG&E and SCE, however, commit to publishing technical requirements after real-world installations are performed. We support this commitment. Therefore, we direct the Large IOUs to discuss the publication of and the specific technical requirements needed by developers with the SIWG no later than 18 months after the implementation of the Proposals. Any further revisions to the technical requirements shall also be discussed with the SIWG no less than three months before the intended change. Changes must be justified and explained.

Because requirements may change over time, we find it would be unduly burdensome to continuously update Rule 21 with the technical requirements. Therefore, no later than twenty months after the implementation of the Proposals the Large IOUs shall publish these technical requirements on their Rule 21 and Distributed Generation/Distribution Interconnection Handbook web sites, or otherwise appropriate web site, for developers to use as reference. The Large IOUs are ordered to announce this publication to the R.17-07-007 service list and the successor interconnection rulemakings; further revisions to the technical requirements shall also be announced to the R.17-07-007 service list and the successor interconnection rulemakings. The announcement shall be made on the day of publication.

C. Proposals submitted in PG&E AL 6141-E, SCE AL 4455-E, and SDG&E AL 3721-E.

OP 15 and 51 of the Decision required the Large IOUs to file Tier 3 Advice Letters providing recommendations on the review, certification requirements, and interconnection processes to implement the LGP and A-B 3 proposals. The Large IOUs' proposals describe the interconnection processes as required by the Decision. Appendix A lists the proposals as filed in the ALs.[50] Within these proposals, the Large IOUs have included review and certification requirements, as required by the Decision. The Large IOUs have largely complied with OP 15 and 51. We find, however, there are

[50] PG&E AL 6141-E at 9-13, SCE AL 4455-E at 3-5, SDG&E AL 3721-E at 3-5.

topics that need further clarification before we can approve them. The Large IOUs are directed to discuss these topics in the workshops.

In consideration of the significant time that has passed since the filing of the ALs, the Large IOUs shall discuss any updates to the proposals that their subsequent experiences indicate may be warranted. The Large IOUs shall also differentiate between "export power" and "output power" and make clear that the LGP option is intended to manage the amount of export power to the electric grid and not output power that may be consumed on-site. The Large IOUs are directed to go over the proposal to address any questions stakeholders may have and determine whether each step is appropriate and complete. Approval in this Resolution of any step within the process outlined in the Large IOUs' proposals should not be interpreted to mean that those steps are not amendable if there is reason to do so based on workshop discussions. The steps shall be updated if needed to add any additional clarity required or incorporate new learnings. Any changes to the steps in the process must be justified.

Phase 1. Customer Preparation Phase:

We approve the Large IOUs' Customer Preparation Phase as filed with two modifications:

1) In Step 1.a the Large IOUs refer to "three-phase electrical node." For transparency, and for those not familiar with the ICA, the Large IOUs shall clarify the use of three-phase electrical nodes[51] and any planned changes to the ICA that may expand the ICA to single phase nodes.

2) In Step 1.b the Large IOUs shall clarify the term "monthly" and specify the schedule upon which a LGP profile must be updated.

[51] See "California Distribution Resources Plan (R. 14-08-013) Integration Capacity Analysis Working Group Final ICA WG Long Term Refinements Report" at 23 which states "Conducting ICA on single phase circuits is currently not possible due to incomplete or less accurate information on single phase laterals."

Phase 2. Interconnection Request Phase:

We approve the Large IOUs' Interconnection Request Phase as filed with two modifications:

1) In Step 2.b

    a. The Large IOUs use the terminology "Limited Generation Values." We ask the Large IOUs, for consistency and clarity, to use the term "Limited Generation Profile values" or other agreed upon term to distinguish the Limited Generation Profile process from other limited generation processes.

    b. The Large IOUs generally specify the customer should provide the information within the application portal or an alternate method as may be determined by the Large IOUs. The Large IOUs shall clarify if a common scheduling format may be used to supply this information, and if not, the reasons for it. A common scheduling format across the Large IOUs may facilitate the interconnection process by having customers provide the same type of information in one format across the Large IOU interconnection portals instead of using different formats. We note that a format that facilitates automated upload and supports industry standard functionality is in line with streamlining interconnection, one stated goal of this proceeding. Additionally, the Large IOUs shall clarify what is meant by "alternative method."

2) In Step 2.c.i:

    a. More clarity is needed with regards to the statement provided by SCE and SDG&E that "additional requirements for control information will be determined and provided." SCE and SDG&E should clarify whether this information is part of the technical specifications discussed in Issue 5. Should PG&E also adopt this or similar language, PG&E shall meet these requirements.

    b. SDG&E defines "PCS" as "Power Control Settings." SDG&E shall align this language to reflect "Power Control Systems."

c. PG&E states "When certification information becomes available, PG&E will maintain a list of approved UL PCS that customers can select from during the application process." SCE and SDG&E state "Additional requirements for control information will be determined and provided once the UL PCS standard is approved." It is unclear if these requirements are part of the technical requirements the Large IOUs have committed to publishing as discussed in Issue 5. The Large IOUs shall clarify the difference.

Phase 3. Technical Evaluation Phase:

The Commission finds this phase lacks detail and clarity. Therefore, the Technical Evaluation Phase is not approved as filed. The Large IOUs shall discuss the associated timing to conduct the Technical Evaluation to avoid conflict with the updates to the ICA values. We remind the Large IOUs that per OP 4 of D.20-09-035:

> [The Large IOUs] shall track when the Integration Capacity Analysis outdated values lead to Interconnection Requests failing the Initial Review…. [and] shall also track the costs associated with the updates necessitated by the outdated values and provide the data in … [a] reporting document ….[52]

We also modify the Technical Evaluation Phase as discussed below:

1) In 3.a the Large IOUs propose to apply all the Initial Review Screens (A-L) based on the Nameplate capacity. This shall be clarified and updated as applicable; the Large IOUs shall abide by the requirements set forth in this Resolution.

2) In Step 3.b

   a. The Large IOUs state that queue assignments will be based on nameplate capacity. More clarity shall be provided with regards to what this implies for the interconnection queue and specific details on how it would function. We remind the Large IOUs that in D.20-06-017[53] the

[52] OP 4 of D.20-09-035 at 206.
[53] D.20-06-017 in R.19-09-009. "Decision Adopting Short-Term Actions to Accelerate Microgrid Deployment And Related Resiliency Solutions" at 30.

Commission declined to adopt a proposal which would have allowed eligible projects to move ahead of other projects in the queue.

b. SCE and SDG&E state that the nameplate capacity will be used as a baseline for subsequent impact studies, monthly ICA updates and other studies. This step shall be updated based on results of workshop discussions as directed in Resolving Issue 2. The Large IOUs shall also discuss if exceptions need to be made for certain studies.

3) In Step 3.d.i the Large IOUs state that if the export request for each of the 12 months is at or below the 90% of each month's minimum ICA-SG value then the project can continue with its evaluation. This step shall be updated as needed based on discussions related to Resolving Issue 2.

4) In Step 3.d.ii the Large IOUs state "If all Initial review screens (A-L) are met including 3.d.i (all requested values are below 90% of each month's ICA values)" then the project will pass the Rule 21 Fast Track screens. This step shall be updated as needed based on discussions per Resolving Issue 2.

5) In 3.d.iii the Large IOUs propose to inform the customer if the export request for one or more of the 12 months of LGP is not at or below the 90% ICA-SG limit. The Large IOUs shall clarify how this will be communicated, within what timeline in the review process it will be communicated, and agree on a format for communicating the appropriate values to be utilized in order to expedite the response from the customer and streamline interconnection process. The Large IOUs shall discuss the significance to the queue position and if the customer will preserve their queue position under these circumstances. The Large IOUs shall also clarify how future grid conditions that warrant a change to the LGP will be communicated to the customer and the time required to change the LGP. This step shall also be updated as needed based on workshop discussions.

6) In 3.d.iii SDG&E shall correct its language to reflect "at or below 90%" instead of only "below 90%."

7) In 3.d.iv the Large IOUs state that if the customer does not respond within 5 business days of the notification to update the LGP so that all values are at or below the 90% ICA-SG profile values the project will be evaluated using full

nameplate capacity without monthly limits. We interpret this step to mean that unless a new LGP is proposed by the customer upon notification by the Large IOU to stay within the ICA-SG values, the application will default to a non-LGP option application and the studies will be conducted as a regular interconnection request without LGP and the customer will be responsible for any electric grid updates if they proceed with the application. The Large IOUs shall clarify this in the workshop discussions and include this clarification in the subsequent ALs.

The Large IOUs shall also clarify any additional changes required for this step based on the outcome of discussions towards Resolving Issue 2, and abide by previous direction regarding material modifications. Additionally, the Large IOUs shall discuss the timeline for review of the screens, and consequences if the customer does not respond to notice within the time allowed. Among the topics to be discussed: Would the customer lose the queue position if the customer still requested LGP treatment? Does this timeline allow the developer to reasonably be able to contact equipment manufacturers and get clarity on technical questions around inverter capabilities? The Large IOUs shall justify the need for such a short response period, and how it aligns with other similar Rule 21 timeline requirement.

8) In 3.d.v PG&E states that additional tools may be necessary to complete the LGP profile evaluation. PG&E shall provide clarity on whether the tools are PG&E tools or the customer's tools, and justify such needs. Should the SCE and SDG&E adopt this statement, this requirement will also apply.

<u>Phase 4. Interconnection Agreement/PTO Phase</u>

We approve the Large IOUs' Interconnection Agreement/PTO Phase as filed with modifications as discussed below:

1) In 4.a.ii:

    a. The Large IOUs state they shall "take actions including termination of agreement" if operating specifications are not followed. The Large IOUs shall provide clarity regarding how this may affect future interconnection applications by the same customer, including whether the customer would be allowed, after termination of the agreement, to interconnect

again under the LGP option and, if so; any additional requirements imposed due to not having followed operating specifications before. The Large IOUs shall also provide clarity on the details of the process, and timing to revoke PTO and how disconnection of the non-complying system will occur.

b. The Large IOUs state that they must "Update Interconnection Agreement to require prompt action by the customer if operating specifications are not followed and if not clarify that utility may take actions…." The Large IOUs shall detail the terminology that will be used to "clarify that utility may take actions." Details should include what actions will be taken, the timeline for such action, and relevant Rules (e.g., Rule 2) that are applicable in such a situation.

c. PG&E uses the term "if multiple instances." PG&E shall clarify this term, including how the term "multiple" is defined and the timeframe of the recurrence (e.g., one instance every 10 years vs. one instance every 10 days). If SCE and SDG&E also adopt this type of language in aligning the language of the processes, they shall abide by this requirement.

2) In 4.a.iii the Large IOUs require customers to provide quarterly reporting data. The Large IOUs shall update this step based on the outcome of the discussions set forth in this Resolution.

3) In 4.b the terms "field performance verification" and "commissioning testing" are used when discussing updates to the interconnection agreements. The Large IOUs shall clarify the purpose and need for field performance verification and commissioning testing, and the difference between the testing performed by the Large IOUs as opposed to that required by certification to a standard and how it fits into current Rule 21 requirements. This requirement shall be applied to any step where mention of such verification or testing is needed by the Large IOUs. The Large IOUs shall also discuss other possible methods to verify this, including using a remote inspection and using IEEE 2030.5 to verify performance. We remind the Large IOUs that "commissioning testing should

only be utilized in cases where the benefit of such testing can be expressly demonstrated."[54]

4) In Section 4.c the Large IOUs express that PTO will be issued once field performance evaluation or commissioning testing shows compliance with the approved limitations. The Large IOUs shall clarify if this step will ensure that during the field performance verification/commissioning testing phase the generating facility complies with the LGP requirements. They should also specify whether this will make the proposed quarterly reporting unnecessary and why or why not.

5) In 4.b.ii PG&E states that it will review, discuss, and agree on the verification procedures. More clarity is needed whether this is solely at PG&E's discretion or if it involves the customer. Should SCE and SDG&E also adapt similar language when aligning the process language, they shall also abide by this requirement.

Phase 5. Operation Performance Phase

We approve the Large IOUs' Operation Performance Phase as filed with the following exceptions:

1) Step 5.a requires monitoring the performance of a generating facility via telemetry. The Large IOUs shall clarify whether they are seeking to impose this as a requirement, or if the Large IOUs are merely reserving the right to

[54] Resolution E-5000, issued on July 12, 2019 (at 27) states:

> We do not see merit in limiting utility testing that is necessary in order to maintain the safety and reliability of the grid. Furthermore, we recognize that utility-led testing can help utility engineers build comfort with new technologies and ensure the safety and reliability of the grid. As such, we encourage the IOUs to carry out some limited testing. Such testing should be demonstrably in the interest of grid safety and reliability, should provide increased understanding of advanced inverter capabilities, and should not lead to undue delays in the interconnection process.
>
> The above encouragement, however, does not constitute authorization to carry out utility-led testing on all systems. We reject any assertion that commissioning testing should be required prior to the interconnection of any significant portion of systems. Commissioning testing should only be utilized in cases where the benefit of such testing can be expressly demonstrated.

implement this step. Given the abundance of circuits and nodes in the Large IOUs' service territories, we note that this step may require new infrastructure including further backend systems to accomplish. If seeking to impose this as a requirement, the Large IOUs shall provide an estimate of the scope of backend system and infrastructure expansion required in the subsequent AL, costs associated with it, and estimate the length of time required for full deployment of these systems to provide to the Commission information on potential scale of such work.

2) Step 5.b concerns the proposed requirement of quarterly generation export/output data for customers without telemetry. This issue of quarterly reporting has already been discussed in this Resolution. The Large IOUs shall abide by the requirements set forth in this Resolution.

D. Aligning Language Across the Large IOUs' Tariffs and Proposals

There are inconsistencies in language across the Large IOUs' proposals.[55] We remind the Large IOUs that it is the Commission's goal to align the language of each Large IOUs' tariffs and processes as much as possible (unless circumstances call for diverse treatment).[56] The Large IOUs are ordered to meet and confer to determine consistent language in the proposals to be submitted in the new subsequent ALs including language to the sections that have been approved in this Resolution. Should there be a need to deviate from consistent language, the Large IOUs shall explain why the language in their process differs from that of the other IOUs. The Large IOUs shall also align timelines for the various phases in the proposals submitted.

[55] See Appendix A.

[56] Resolution E-5035 at 9 states "As established in D.00-12-037 and reasserted in D.12-09-018 and D.14-04-003, it is the policy of the CPUC that, to the extent that it is practicable, the Utilities should maintain consistent tariffs in order to promote transparency and efficiency. We reassert that policy here. Except as necessitated by the differences between utility electric systems or operating protocols, the Utilities should maintain standardized Rule 21 language."

E. Implementation of Limited Generation Profiles Using Current Smart Inverter Functions -- The Large IOUs are directed to discuss the possibility and challenges with implementing the LGP-option before standards are approved.

Based on the record for Issue 9, there is general agreement that the technology needed to implement the LGP-option already exists and can be implemented before scheduling standards are approved. OP 15 (Issue 9) directs the Large IOUs to modify the Rule 21 Interconnection Application Process after adoption of a certification scheme, and implementation of Proposal A-B 3, as stated in OP 51, is to occur nine months after technical specifications standards, and a certification scheme for a LGP have been approved by the standards approving bodies. We note, however, that the Decision does consider utilization of LGP prior to the approval of the standards. The Decision states:

> This proposal [A-B 3] would allow an inverter approved for non-export and limited-export to be set using different maximum export value settings at different times of the year **and at the discretion of the utility until a future scheduling standard is released** [emphasis added] ….[57]

In the proposal adopted by OP 51, the proponent's (CALSSA's) position states:

> Smart inverter Phase III Function 8 (Scheduling) will enable systems to have different maximum export values at different parts of the year… **Until a standard is developed to test performance of the function, utilities will have the discretion to accept equipment functionality and will establish a mechanism for validating proposed profiles** [emphasis added].[58]

Furthermore, in discussing the implementation of Limited Generation Profile the Working Group Two Report states "The Working Group generally agreed that the **technology needed for a DER facility to implement a scheduled generation profile is already available** [emphasis added] …."[59] and the need to "[u]pdate the interconnection procedures to allow customers which have certified Phase III inverters

[57] D.20-09-035 at 162.
[58] Working Group Three Report at 136.
[59] Working Group Two Report at 120-121.

to use Phase III Function 3 (Limit Maximum Real Power Mode) in order to limit maximum power output based on seasons of the year."[60]

To expedite the use of available hosting capacity it is prudent, therefore, for the Large IOUs to discuss any challenges to implement Issue 9 and Proposal A-B 3 using current smart inverter settings.[61] The Large IOUs shall elaborate on challenges and concerns as stated in the Working Group Reports[62] and discuss and propose solutions. The Large IOUs shall determine which functional elements are already present in commercially available inverters, and which are not, to establish LGP functionality prior to the approval of standards. Should implementation of Issue 9 and Proposal A-B 3 be feasible before approval of standards, the Large IOUs shall outline a clear process and the requirements, including technical, to be considered in the implementation of the LGP option. The Large IOUs shall also establish a mechanism for validating proposed profiles. If the implementation of this mechanism is not feasible, the Large IOUs shall clearly articulate the reasons. We remind the Large IOUs that the subsequent ALs shall specify which items have reached consensus within the workshop participants and which items have not reached consensus. If an item has not reached consensus, the Large IOUs shall provide details as to the bases for lack of consensus and the alternative proposals, if any.

F. Implementing More Than 12 LGP Values Per Year—Definition of Monthly Profiles and 288-hour Requirement

In the Working Group Two Report discussion of LGP (Issue 9), the original proposal proposed to submit the yearly LGP in a standard 288-hour format.[63] The Large IOUs counter proposal, which was modified and adapted by the Decision, also proposed to submit the LGP in a standard 288-hour format.[64]

The Large IOUs expressed concern with the original proposal, among which were lack of experience and infrastructure to work with generator controls and lack of

[60] Working Group Two Report at 125.
[61] The Large IOUs' counter proposal, which was adopted in the Decision, specifically refers to leveraging smart inverter Phase III Function 3 (Limit Maximum Real Power Mode).
[62] See for example Working Group Two Report at 123.
[63] Working Group Two Report at 122.
[64] Working Group Two Report at 126.

infrastructure to realize the needed generation reductions and the PG&E DERMS 2.0 pilot under EPIC was exploring how LGP could be enforced.[65] Although these concerns were stated for the original proposal, they are valid for the Large IOUs' counter proposal as well.

In adopting a modified version of the Large IOUs' counter proposal, the Decision modified the proposal such that the "frequency of changes is expanded to monthly limits to align with the Integration Capacity Analysis."[66,67] The Decision, however, did not specify that the monthly profile was limited to only one value. The Decision addressed the frequency of change and did not restrict the number of values within a month to be only one. The adopted 288-hour format includes 24 values per each of the 12 months of the year. Essentially this amounts to customers submitting the same value 24 times a month, on a monthly basis for a year when one value would suffice. The Large IOUs are therefore directed to discuss the 288-hour format and how it may allow for more than one value per month. Given that the Working Group Two Report was filed October 31, 2018, four years from the current date, we expect there is now more information and experience available to the Large IOUs to allow this. The Large IOUs shall discuss their learnings and best practices in the workshops and propose how implementation of more than one value per month may be accomplished to better take advantage of the available capacity on a circuit to accomplish the goals of Issue 9.

COMMENTS

Public Utilities Code section 311(g)(1) provides that this resolution must be served on all parties and subject to at least 30 days public review. Please note that comments are due 20 days from the mailing date of this resolution. Section 311(g)(2) provides that this 30-day review period and 20-day comment period may be reduced or waived upon the stipulation of all parties in the proceeding.

The 30-day review and 20-day comment period for the draft of this resolution were neither waived nor reduced. Accordingly, this draft resolution was mailed to parties

[65] Working Group Two at 123.
[66] D.20-09-035 at 51.
[67] See also D.20-09-035 at 55.

for comments, and will be placed on the Commission's agenda no earlier than 30 days from today.

FINDINGS

1. D. 20-09-035, issued by the Commission on September 30, 2022, directed the Large IOUs to submit ALs proposing revisions to Rule 21 addressing recommendations of Working Groups Two and Three and the V2G AC Interconnection Subgroup.
2. PG&E AL 6141-E, SCE AL 4455-E, and SDG&E AL 3721-E were submitted on March 30, 2021, to comply with the requirements of OP 15 and OP 51 of D. 20-09-035.
3. PG&E AL 6141-E, SCE AL 4455-E, and SDG&E AL 3721-E were timely protested by IREC. The Large IOUs submitted timely responses.
4. The Large IOUs propose Quarterly Reporting from generating systems that do not use telemetry.
5. IREC protests the Quarterly Reporting.
6. The Quarterly Reporting needs further discussion and details.
7. The Large IOUs propose to use gross nameplate capacity in studying the Rule 21 interconnection screens for Issue 9 and Proposal A-B 3.
8. IREC argues the same study process for Proposal A-B 1 and A-B 2 should be used.
9. There is a lack of record on how the use of the ICA affects Issue 9 and Proposal A-B 3.
10. It is prudent to continue discussion on the use of nameplate capacity for the Rule 21 screens and address how the use of ICA affects Issue 9 and Proposal A-B 3, and how the applicability differs from that of Proposal A-B 1 and A-B 2.
11. Reductions to Limited Generation Profiles has been addressed in Resolution E-5211. This topic is therefore not discussed in this Resolution.
12. By mutual agreement the Large IOUs have agreed to implement the timelines of OP 15 (Issue 9) and 51 (Proposal A-B 3) together.
13. IREC requests the Commission to require the Large IOUs to publish technical requirements necessary for Power Control Systems to take advantage of Limited

Generation Profiles and that these should be filed in a Tier 2 AL within 60 days of adoption of a certification scheme for the Limited Generation Profile.

14. The Large IOUs do not support the request to publish technical requirements within 60 days of adoption of a certification scheme for the Limited Generation Profile but commit to publishing technical requirements after observing the application of installed projects and learning the technical aspects of the control systems.
15. The Large IOUs are not required to publish technical requirements of Power Control Systems at this moment as it was not previously discussed.
16. It is prudent to wait until the Large IOUs gain some real-world experience with Limited Generation Profile and Power Control Systems before publishing technical requirements.
17. It is prudent for the Large IOUs to discuss the publication of and the specific technical requirements needed by developers after the implementation of the Proposals.
18. The Large IOUs' proposals describe the interconnection processes for the Proposals as required by the Decision.
19. The Large IOUs have largely complied with OP 15 and 51.
20. There are topics within the Large IOUs' proposals that call for further clarification.
21. It is reasonable to require (1) further discussions in workshops on the Large IOUs' proposals as discussed in Discussion Section D of this Resolution, and (2) for the Large IOUs to include further details, and updates, in the subsequent ALs to gain clarity on the Large IOUs' proposals.
22. More than a year has elapsed since the filing of the Advice Letters submitted in compliance with OPs 15 and 51.
23. It is prudent for the Large IOUs to update any relevant language and information in the subsequent ALs.
24. There are inconsistencies in language across the Large IOUs' proposals.

25. Per the Commission's goal to align the language of each Large IOUs' tariffs and processes as much as possible it is prudent for the Large IOUs to meet and confer and align the language in the proposals as much as possible.
26. The record shows there is general agreement that the LGP-option may be implemented before approval of any new standards.
27. It is prudent to explore the LGP-option before standards are approved to better utilize the available electric grid capacity.
28. Given the record for Issue 9, the Large IOUs are obligated to explore how to implement the LGP-option before standards are approved and establish a mechanism for validating proposed profiles.
29. To better utilize existing hosting capacity as determined by the ICA, it is prudent to explore how to implement more than one LGP value per month.

THEREFORE IT IS ORDERED THAT:

1. This Resolution approves in part, modifies, and seeks clarity on Pacific Gas and Electric Company's Advice Letter 6141-E, Southern California Edison Company's Advice Letter 4455-E, and San Diego Gas & Electric Company's Advice Letter 3721-E.

2. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company are ordered to participate in at least two half-day workshops to discuss all material articulated in the Discussion section of this Resolution. Workshops are to commence no later than 30 days after issuance of this Resolution. The Large IOUs are expected to address topics identified by Energy Division as needing discussion and prepare relevant presentations. The Large IOUs shall issue presentations ahead of the workshops to allow parties to prepare for the workshops. Deadlines for circulating the agenda and presentations shall be coordinated with Energy Division. Agenda items may also be discussed through the SIWG ahead of the scheduled workshops and the Large IOUs are ordered to attend and participate in these discussions.

3. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company are ordered to submit subsequent Tier 3 Advice

Letters, within 90 days, after issuance of this Resolution. The Advice Letters should contain all material articulated in the Discussion section of this Resolution, including the approved sections of their proposals and any modifications warranted for those steps as discussed in this Resolution.

4. Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company are directed to discuss the publication of and the specific technical requirements needed by developers with the SIWG no later than 18 months after the implementation of the Proposals. Any further revisions to the technical requirements shall also be discussed with the SIWG no less than three months before the intended change. No later than twenty months after the implementation of the Proposals the Large IOUs shall publish these technical requirements on their Rule 21 and Distributed Generation/Distribution Interconnection Handbook web sites, or otherwise appropriate web site, for developers to use as reference. The Large IOUs are directed to announce this publication to the R.17-07-007 service list and the successor interconnection rulemakings; further revisions to the technical requirements shall also be announced to the R.17-07-007 service list and the successor interconnection rulemakings. The announcement shall be made on the day of publication.

5. If tariff modifications are required for Issue 9 adopted in D.20-09-035, Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company shall submit modifications to Rule 21 in the Tier 2 Advice Letter ordered per Ordering Paragraph 15 of D. 20-09-035, which is due within 60 days of adoption of a certification scheme. The Advice Letter may be combined with the Advice Letter required in Ordering Paragraph 51 of the D. 20-09-035.

This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed, and adopted at a conference of the Public Utilities Commission of the State of California held on December 1, 2022; the following Commissioners voting favorably thereon:

_____
RACHEL PETERSON
Executive Director

Appendix A

PG&E AL 6141-E; SCE AL 4455-E; SDG&E AL 3721-E

Submitted to Comply with OP 15 and 51 of D.20-09-035

Large IOUs' Proposals for Issue 9 and Proposal A-B 3

Note: Alternate, additional, and discrepancies in, language used by different Large IOUs are shown in Brackets with the name of the corresponding Large IOU.

1. Customer Preparation Phase:

a. In this phase, customers who intend to use this operational method are to download the [SCE and SDG&E: Integration Capacity Analysis (ICA)] [PG&E: ICA] profiles from Utility ICA [PG&E: maps] [SCE and SDG&E: portals] (when ICA values are available) for the three-phase electrical node that will be used for the interconnection request.

   [PG&E: Customers will download a CSV[68] file (containing ICA values) from the PG&E ICA map.]

b. [PG&E and SDG&E: Customer] [SCE: Customers] should examine and conform the downloaded data to inform [PG&E and SCE: applicant] [SDG&E: application] of the minimum monthly [SDG&E: ICA Static Grid (ICA-SG)] [PG&E and SCE: ICA-SG] values from the ICA-SG profile.

c. [PG&E and SDG&E: Customer] [SCE: Customers] should determine monthly export values to not exceed 90% of the monthly minimum ICA-SG values as determined in (b).

d. [PG&E and SDG&E: Customer] [SCE: Customers] shall select a certified control system that can control the export limit to not exceed the values determined in (c).

e. [PG&E and SDG&E: Customer] [SCE: Customers] shall capture the name of the Distribution Feeder (circuit) name, the three-phase electrical node identifier

[68] Comma-separated variable file.

[(PG&E: CSV Line Section)] [SCE and SDG&E: (Node ID)], and the date of when the data extraction took place. This information will be needed when the customer submits the Interconnection Request.

[PG&E: In summary, customers will then use the ICA data to come up with their generation LGP and provide monthly generation output values with their applications, similar to what is shown below:

Limited Generation Profile Values	
Month	**kW**
January	2100
February	1900
March	2400
April	1300
May	2100
June	1800
July	2300
August	1300
September	2100
October	1800
November	2100
December	1800
Project Nameplate (kW)	3000
Distribution Circuit Name	Circuit Name
CSV Line Section	CSV Line Section
Date of ICA Profile Extraction	Date

]

2. Interconnection Request Phase:

a. [PG&E and SDG&E: Customer is] [SCE: Customers are] to provide the information that is typical and general to all interconnection requests.

b. [PG&E and SDG&E: Customer is] [SCE: Customers are] to provide the Limited Generation Values as determined in 1.c and the information for 1.e within [PG&E: PG&E's Customer Connect Interconnection application portal] [SCE: the utility's the interconnection application portal or via an alternative method as may be determined and provided by the utility] [SDG&E: SDG&E's

interconnection portal or alternative method as may be determined and provided by SDG&E].

i. [PG&E: Currently, the Customer Connect interconnection application portal is not able to accept this information. The tool will need to undergo significant updates to be able to accept and process this new information]

c. [PG&E and SDG&E: Customer] [SCE: Customers are] to provide information on [PG&E: their] certified control systems [PG&E: within PG&E's Customer Connect interconnection application portal.] [SCE: with the interconnection request information.] [SDG&E: within interconnection request information.]

i. [PG&E: The UL PCS] [SCE: Given that the UL Power Control System (PCS)] [SDG&E: Given that the Underwriters Laboratories (UL) Power Control Settings (PCS)] standard for this type of application has not been approved and thus no control systems have provided certification information [PG&E: yet. When certification information becomes available, PG&E will maintain a list of approved UL PCS that customers can select from during the application process.] [SCE and SDG&E: it is not clear if additional information for these types of systems will need to be provided. Additional requirements for control information will be determined and provided once the UL PCS standard is approved.]

3. Technical Evaluation Phase:

a. [PG&E, SCE, SDG&E] will apply all the applicable Initial Review Screens (A-L) based on the Nameplate capacity.

b. Queue assignments will be based on Nameplate Capacity. [SCE and SDG&E: This Nameplate Capacity will be used as a base line for subsequent impact studies, monthly ICA updates, and other applicable studies.]

c. [PG&E, SCE, SDG&E] will verify that it has the most updated ICA value corresponding to the customer provided three-phase electrical node [PG&E: (CSV Line Section)] [SCE and SDG&E: (Node ID)] from 1.e.

d. [PG&E, SCE, SDG&E] will evaluate most updated ICA-SG profile and determine if the requested export values are at or below 90% of each month minimum ICA-SG value for each of the 12 months.

   i. If the export request for each of the 12 months is at or below the 90% of each month's minimum ICA-SG value, then the project can continue with its evaluation.

   ii. If all Initial review screens (A-L) are met including 3.d.i (all requested values are below 90% of each month's ICA values) [PG&E and SDG&E: then] the project [PG&E and SDG&E: would] [SCE: will] pass Fast Track.

   iii. If the export request for one or more of the 12 months is not at or below the 90% of [PG&E: the specific] [SCE and SDG&E: each] month's minimum ICA-SG value, then [PG&E, SCE, SDG&E] will inform the customer and [PG&E: will allow] [SCE and SDG&E: the customer will be allowed] 5 Business Days (BD) [PG&E: for the customer] to update [PG&E: their proposed limited generation profile such that all monthly values are at or below 90% ICA-SG profile values.] [SCE: its requested profile to be at or below] [SDG&E: its requested profile to be below] [SCE and SDG&E: 90% ICA-SG for all 12 months.]

   iv. If customer does not respond within 5 BD of the notification, [PG&E, SCE, SDG&E] will [PG&E: then] proceed to evaluate the project using full nameplate [PG&E: without] [SCE: with not] [SDG&E with no] monthly limits.

   v. [PG&E: It should be noted that additional tools may be necessary to complete this profile evaluation efficiently and accurately.]

4. Interconnection Agreement and Permission to Operate (PTO) Phase:

a. Execute Interconnection Agreements. The interconnection agreements should be updated to reflect the operational requirement including:

   i. Update Interconnection Agreements to ensure that the Generating Facility control systems meet the approved operating specification.

ii. Update Interconnection Agreement to require prompt action by the customer if operating specifications are not followed and [PG&E: if not clarify that] [SCE and SDG&E: to allow] [PG&E and SCE: utility] [SDG&E: SDG&E] [PG&E: may] [SCE and SDG&E: to] take actions including termination of agreement [PG&E: if multiple instances of not operating according to the approved limits occur].

iii. Update Interconnection Agreement to require that the customer provide [PG&E: in] [SCE: on] [PG&E and SCE: a quarterly basis] export performance data (profile export) [PG&E and SDG&E: on a quarterly basis to] [PG&E: the utility] [SDG&E: SDG&E].

b. Perform [PG&E: field performance verification] [SCE and SDG&E: commissioning testing]

i. Customer shall [PG&E: provide written field verification procedure [SCE and SDG&E: complete, and where necessary, provide the results of commissioning testing] per Rule 21 Section L.5.a [PG&E: 10 BD prior to field verification].

ii. [PG&E: PG&E will review, discuss, and agree on the verification procedures]

iii. [PG&E: PG&E and customer will agree on field verification date.]

c. [*Note: SDG&E has this item as a sub-bullet under (b)*] [PG&E and SCE: Permission to Operate (PTO)] [SDG&E: PTO] will be issued if [PG&E: field performance evaluation] [SCE and SDG&E: commissioning testing] shows compliance with the approved limitations [PG&E: and once all the agreements and documentation (such as AHJ release) has been completed or provided.] [SCE and SDG&E: once all the agreements, documentation (such as AHJ release), and all other requirements have been provided and are complete.]

5. Operation Performance Phase:

a. For systems which have telemetry, [PG&E, SCE or SDG&E] will monitor the performance of the generating facility.

b. For systems which do not have telemetry, the customer must provide quarterly generation [PG&E: export] [SCE and SDG&E: output] data which can be used to determine if the generating facility is limiting its [PG&E: export] [SCE and SDG&E: output] to the approved limits.