BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Update Distribution Level Interconnection Rules and Regulations.	FILED PUBLIC UTILITIES COMMISSION AUGUST 14, 2025 SACRAMENTO, CALIFORNIA RULEMAKING 25-08-004

ORDER INSTITUTING RULEMAKING TO UPDATE DISTRIBUTION LEVEL INTERCONNECTION RULES AND REGULATIONS

The Commission opens this rulemaking to consider refinements to the interconnection of distributed energy resources (DER) under Electric Tariff Rule 21 (Rule 21) of Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company, and the equivalent tariff rules of the small and multi-jurisdictional electric utilities (SMJUs). The purpose of this proceeding is to update and improve Rule 21 and associated interconnection procedures concerning the safety and reliability of the electric grid as distributed technologies continue to evolve, promote greater transparency and certainty around interconnection processes, and to contain costs for all ratepayers that use the electric grid.

Opening comments on this Order Instituting Rulemaking (OIR) are due within sixty (60) days of issuance of this OIR and reply comments are due within twenty (20) days of opening comments.

1. Background

Rule 21 is a tariff that describes the interconnection, operating and metering requirements for certain generating and storage facilities seeking to connect to the electric distribution system.[1] This tariff provides customers wishing to install generating or storage facilities on their premises with the ability to request access to the electric grid while protecting the safety and reliability of the distribution and transmission systems at the local and system levels.

The Commission's first iteration of Rule 21 was adopted in 1982 to meet the needs of small, non-utility-owned generating facilities encouraged by the Public Utility Regulatory Policies Act (PURPA).[2] The Commission revisited Rule 21 in 1999 to establish a more standardized and transparent engineering analysis for the interconnection of distributed generation, especially generation that offsets on-site load. The modified Rule 21 facilitated the interconnection of tens of thousands of net energy metered and non-exporting generation facilities between 1999 and 2011 through standards and procedures designed to preserve the safety and reliability of the electric grid.

On September 22, 2011, the Commission opened Rulemaking (R.) 11-09-011 to "address the key policy and technical issues essential to timely, non-discriminatory, cost-effective and transparent interconnection."[3] During that proceeding, the Commission adopted three substantive decisions: Decision (D.) 12-09-018,[4] D.14-12-035,[5] and D.16-06-052.[6]

[1] Because some of the small and multi-jurisdictional electric utilities may use different rule numbering systems, "Rule 21" as used in this order also refers to any equivalent or related tariff rules. Each investor owned utility is responsible for administration of Rule 21 in its service territory. In some cases, Rule 21 may also govern interconnection of generating and storage facilities to the transmission system (*See e.g.,* Rule 21, Section B.1).

[2] This act is commonly known as PURPA, 95–617, 92 Stat. 3117, enacted November 9, 1978.

[3] Order Instituting Rulemaking 11-09-011 at 5.

[4] D.12-09-018 adopted a settlement agreement focused on the interconnection study process.

[5] D.14-12-035 adopted revisions to Rule 21 to require "smart" inverters for Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company.

[6] D.16-06-052 enhanced the Rule 21 Pre-Application Report, created a Unit Cost Guide, enhanced the behind-the-meter electric storage interconnection process, and established a pilot program to institute a cost certainty envelope for interconnections triggering a distribution upgrade.

On July 21, 2017, the Commission opened R.17-07-007 to consider various updates to Rule 21, including whether to incorporate the results of the Integration Capacity Analysis (ICA)[7] developed in R.14-08-013, the interconnection of energy storage devices, development of standards for smart inverters, transmission cluster study thresholds, design changes to projects already under review, timelines for estimating and constructing grid upgrades, and cost allocation for grid upgrades.[8] During the course of that proceeding, the Commission adopted four substantive

[7] The purpose of the ICA is to provide information on the distribution system's ability to interconnect additional load and/or generating resources. For interconnecting generating resources, the ICA value is a reflection of a distribution circuit's "hosting capacity" for adding additional distributed generation without requiring further distribution upgrades. The ICA helps interconnection applicants make decisions about project siting and sizing.

[8] Order Instituting Rulemaking 17-07-007 at 1-2.

decisions: D.19-03-013,[9] D.20-09-035,[10] D.21-06-002,[11] and D.22-04-003.[12] These decisions were informed by and adopted many recommendations from four working groups created and utilized throughout the course of the proceeding. From 2021 through 2024, the Commission continued to assess, reject, approve, and modify advice letters and other utility actions ordered by those four decisions.

In the time that has passed since the scoping of R.17-07-007, the DER landscape in California changed substantially, with new technology configurations—especially related to battery storage and electric vehicles—evolving from the prototype phase to the commercialization phase. These developments call for additional updates and improvements to interconnection requirements to preserve

[9] D.19-03-013 adopted proposals from the Working Group One Final Report dated March 15, 2018. These proposals addressed how DER aggregators are treated in Rule 21; incorporating the ICA into Rule 21 to inform project siting decisions, streamline the Fast Track process, and facilitate interconnection process automation; and how to coordinate the ICA in Rule 21 with energization Rules 2, 15, and 16.

[10] D.20-09-035 adopted certain proposals from the Working Group Two Final Report, the Working Group Three Final Report and the Vehicle-to-Grid (V2G) Alternating Current (AC) Interconnection Technical Sub-Group Report. These proposals addressed a large number of issues, including establishing Limited Generation Profiles to avoid triggering distribution upgrades; establishing standardized interconnection timelines; considering itemized vs estimated cost billing for distribution upgrades; allowing third-party construction of upgrades; coordinating between Rule 21 and Wholesale Distribution Access Tariff projects; improving interconnection application web portals; clarifying requirements for interconnecting electric vehicles; calculating Cost of Ownership charges; defining operational requirements for smart inverters; implementing a streamlined notification-only approach for non-export interconnection projects; and clarifying the requirements and system design for allowing limited-export and non-export inverter-based systems for solar and storage.

[11] D.21-06-002 adopted proposals from the Working Group Four Final Report dated August 12, 2020. These proposals addressed changes to Rule 21 anti-islanding screen parameters to reflect research on islanding risks from interconnecting inverter-based systems like solar and storage; changes to interconnection procedures to facilitate implementation of California's new Zero Net Energy building codes; the merits of a stakeholder forum to address safety and environmental risks of interconnection; and adoption of new rules to allow Distributed Energy Resource Management Systems (DERMS) to provide operational flexibility and thereby make more efficient use of existing hosting capacity.

[12] D.22-04-003 upheld the existing interconnection processes for SMJUs, with very limited exceptions.

the safety and reliability of the grid, promote greater transparency and certainty around interconnection processes for customers and developers, and to responsibly contain costs for all ratepayers that use the electric grid.

2. Preliminary Scoping Memo

The preliminary scope of issues in this OIR is set forth below, in accordance with the Commission's Rules of Practice and Procedure (Rules), Rule 7.1(d).

In response to this OIR, parties should provide comments on the issues raised. The assigned Commissioner will later issue a Scoping Memo and Ruling that will establish the issues, sequence, procedural path, and schedule in greater detail.

The preliminary topic areas and questions are as follows:

1. **Electrical Independence Tests.** This topic area includes potential interim and/or long-term reforms for electrical independence processes under Screens Q and R.[13]
   a. Should the Commission consider any interim changes to Rule 21 Screens Q and R evaluation criteria? If so:
      i. What problem would this interim change be addressing?
      ii. Should the Commission consider an interim modification instead of, or in addition to, a longer-term Screen Q or Screen R reform, and if so, why?
      iii. Would an interim solution ensure these projects do not create reliability, safety, or other concerns, including costs borne by other ratepayers?
      iv. What interim mechanism do you propose, and what type of resources would that mechanism screen (including project size, compensation mechanisms and locations)? What volume and proportion of overall resources in the Rule 21 queue would be impacted?

[13] Screen Q evaluates whether an interconnection request requires upgrades to the transmission system. Screen R evaluates whether an interconnection request is electrically independent of other interconnection quests earlier in the queue. If upgrades are found to be necessary under either screen, the interconnection request may be studied under the California Independent System Operator's (CAISO) Transmission Cluster Study Process. (Rule 21, Sections G.3.a and G.3.b.).

b. Should the Commission consider a longer-term reform for Screens Q and R or consider replacing Screens Q and R with another type of screening process, and why? If so:

   i. What type of reforms or new screening process do you recommend and why?

   ii. Should those reforms be staged, or do you recommend they be implemented concurrently?

   iii. How would a long-term reform prevent costs being borne by other ratepayers?

2. **Interconnection Processes.** This topic area includes compliance with interconnection timeline benchmarks, disputes, and the Expedited Interconnection Dispute Resolution Process, and utilizing ICA in project evaluations.

   a. Should the Commission take measures to improve Investor Owned Utilities' (IOUs') compliance with the interconnection timeline benchmarks established in D.20-09-035?[14] If so, what measures do you recommend?

   b. What are the most common areas of dispute between IOUs and developers during the interconnection process? What mechanisms are best suited to resolving such disputes? What potential modifications to the existing Expedited Interconnection Dispute Resolution (EIDR)[15] process established in compliance with statute may best support dispute resolution while minimizing costs that are recovered in rates?

   c. How should the Commission ensure the IOUs' practices and processes comply with the requirement to utilize ICA values in conducting Rule 21 screens on interconnection projects?

---

[14] D.20-09-035 established standard timelines for interconnection (*e.g.,* 60 business days for design and another 60 business days for construction of interconnection-related distribution upgrades), established a benchmark of 95% compliance for each of 19 individual timelines within the interconnection process, and set forth timeline compliance reporting requirements for the IOUs. (D.20-09-035 at 82-98.)

[15] On October 12, 2017, the Commission approved Resolution ALJ-347 establishing the EIDR as authorized by Assembly Bill 2861 (Ting, 2016). The EIDR will issue binding determinations to electric distribution grid interconnection disputes based on the recommendations of a technical panel.

3. **Interconnection Pathways and Standards.** This topic area includes permanent and temporary solutions and updates to technical requirements for interconnecting different equipment, including: electric vehicle interconnection pathways, non-exporting resource interconnection requirements, Underwriters Laboratory (UL) 1741 requirements in Rule 21, equipment type testing requirements for new equipment**,** Rule 21 updates for alignment with industry interconnection and equipment standards, and updates to Rule 21 smart inverter settings.

    a. Do new technologies for non-exporting storage systems, including non-exporting vehicle-to-grid (V2G) systems for electric vehicle charging stations and home and building backup power, pose new challenges for interconnection that merit consideration of changes to Rule 21 for these technologies?

    b. Should the Commission order any changes to Rule 21's equipment Type Testing requirements[16] to improve interconnection processes when new equipment not fully covered by existing standards is being introduced for the first time?

    c. Should the Commission require updates to Rule 21 smart inverter settings to operationalize available smart inverter functionalities to provide additional benefits to the electric system for ratepayers? Which functions are being utilized and to what degree, and which non-utilized functions could support grid reliability or other distribution system operations? Should some deactivated functions be activated by default? What are the cost and benefits?

    d. What updates are required to Rule 21, if any, to account for and align with updated industry interconnection and equipment standards, including but not limited to

[16] Type Testing is part of the Rule 21 equipment and certification criteria to ensure interconnection equipment has been tested and certified to ensure safety and reliability of the grid (Rule 21, Section L.3). Type Testing provides a basis for determining that equipment meets the specifications for being designated as Certified Equipment. Once designated as Certified Equipment via a one-time test, future testing of the same equipment for subsequent interconnection applications is not required.

Institute of Electrical and Electronics Engineers (IEEE) 1547-2018 and IEEE 2030.5-2023?[17]

4. **Cost Sharing of Upgrade Costs and Responsibility for Upgrade Costs Due to Load Reduction.** This topic area includes potential cost sharing among multiple interconnection customers whose applications may be related to the same distribution circuit upgrade, as well as the separate issue of responsibility for upgrade costs resulting from a Sustained Load Reduction[18] in service load by customer(s) on a circuit.

    a. What process should be adopted for determining the need for upgrades triggered by a sustained or permanent reduction in customer service load(s) on a circuit?

    b. Who should be responsible for upgrade costs caused by a sustained or permanent reduction in customer service load(s)?

    c. Should the Commission adopt a process by which distribution upgrade costs can be allocated across (*i.e.,* shared by) multiple interconnection customers when upgrades are triggered by one or more interconnection applications?

    d. Under what circumstances is upgrade cost sharing appropriate?

    e. Should upgrade cost sharing also apply to Limited Generation Profile customers? If so, how?

    f. Should the Commission consider the potential impact of upgrade cost sharing on Federal Energy Regulatory Commission-jurisdictional Wholesale Distribution Access

[17] The IEEE 1547-2018 standard addresses interconnection, safety, and interoperability of DERs with the grid and the IEEE 2030.5-2023 standard addresses DER communication and control protocols.

[18] Resolution E-5296 defined Sustained Load Reduction on a circuit as "a permanent decrease in the load (exclusive of the addition of any generation Distributed Energy Resources) of one or more customers on that circuit resulting from business wind-downs, unanticipated addition of energy efficiency or other load management technologies, and/or other permanent circumstances that reduce the load of one or more customers on that circuit."

Tariff (WDAT) projects interconnecting on the same or related distribution circuits? If so, how and why?

5. **Tariff Implementation Costs.** This topic area includes potential modifications to Rule 21's fees, cost allocation rules, and other requirements that may impact or reduce costs related to implementing the interconnection tariff.

    a. Does the issue of cost allocation for utility costs incurred when a customer uses the interconnection option of notification-only process[19] for like-for-like replacement of interconnection equipment such as inverters, require further consideration and resolution?

    b. What should the cost allocation be for IOUs to provide the improved itemized billing practices for further applicant and customer clarity that were adopted in D.20-09-035?[20]

    c. Identify all the costs associated with Rule 21 interconnections that are recovered through rates from other customers. Are there other modifications to Rule 21 that could result in reduction of costs associated with interconnection that are recovered in rates?

    d. Are there other modifications to Rule 21 that could provide more cost certainty to interconnection customers prior to interconnection application?

6. **Net Energy Metering- and Net Billing Tariff-Related Updates to Rule 21.** This topic area includes updates to align Rule 21 treatment of Net Energy Metering (NEM) and the Net Billing Tariff (NBT) with recent NBT updates related to non-export additions to existing systems and definitions of system size.

---

[19] The notification-only option of like-for-like interconnection equipment replacement by a customer was proposed in Rule 21 Working Group One and discussed in D.19-03-013 for Issue 3 Process Option 2. A utility balancing account was ordered as an interim measure.

[20] Proposal 15a from the Rule 21 Working Group Three Final Report (2019) was adopted in Ordering Paragraph 31 of D.20-09-035.

a. Should the Commission require any changes to Rule 21 to allow NEM "system size" to be defined in a consistent manner with the established NBT definition?[21]

b. Should the Commission require any changes to Rule 21 to define interconnection requirements for non-export capacity additions to existing NEM systems, as allowed in NBT Resolution E-5301?

7. **Communications and Interoperability of DERs.** This topic area includes consideration of costs and standards for communications and interoperability of inverter-based resources.

   a. If requirements or needs for DER bidirectional communications with IOUs' systems were to change, what changes would need to be made to Rule 21 communications' requirements?

   b. What are the cost implications of interoperability of distribution-connected generation, including smart inverters, power control systems, Distributed Energy Resource Management Systems (DERMS),[22] and other communication and control technologies? How might interoperability be achieved cost effectively?

   c. What are ways to reduce the costs associated with DERMS that get socialized among ratepayers? What are the estimated DERMS costs associated with DER communications and interoperability, and what are potential alternative sources of funding for these costs?

8. **Utilities' WDAT Processes and Relationship to Rule 21.**

   a. What should the Commission consider related to consistency between WDAT and Rule 21? In what ways should they be consistent and why? What considerations should be taken into account?

---

[21] That is, as the lessor of inverter nameplate rating and California Energy Commission's Alternative Current rating.

[22] DERMS are a suite of technologies that enable utilities more optimized and cost-effective control over the operations of the distribution systems and DERs throughout their territory (*e.g.,* controlling generation output or load draw to manage local capacity constraints).

3. Opportunity for Comments

The Commission invites comment on the Preliminary Scoping Memo and issues identified in this document. Party comments may also address:

1. Whether there are additional issues that should be included in the scope of this proceeding;
2. The preliminary schedule and appropriate prioritization or sequencing of topics and activities that should be handled in this proceeding leading to Commission decision(s), including whether workshops are necessary;
3. Any objections to the preliminary determinations;
4. Any specific issues previously addressed or already underway in other Commission proceedings that require coordination with this rulemaking.

Commenting parties shall file comments within 60 days after the issuance date of this OIR. Reply comments shall be filed within 20 days after the final date to file comments. The Commission will use parties' comments to identify areas that need clarification and may consider the addition of specific issues or questions related to the items described in Section 2 on the scope of this proceeding.

4. Categorization and Need for Hearing

Rule 7.1(d) requires that an OIR preliminarily determine the category of the proceeding and the need for a hearing. We preliminarily determine that this proceeding is quasi-legislative as defined in Rule 1.3(g). This determination is not appealable, but will be confirmed or changed via ruling by the assigned Commissioner. Certain tracks may be categorized as ratesetting. The assigned Commissioner's determination as to category is subject to appeal pursuant to Rules 7.3 and 7.6.

We anticipate that the issues in this proceeding may be resolved through a combination of filed comments and workshop(s), and that evidentiary hearings will not be necessary. Any person who objects to the preliminary hearing determination shall state the objections in their comments on this OIR. The assigned Commissioner will determine the need for hearing in the scoping ruling issued following a prehearing conference.

5. Preliminary Schedule

The preliminary schedule for this proceeding is presented below.

Event	Date
Opening Comments on OIR filed and served.	60 days from issuance of OIR
Reply Comments filed and served.	20 days from issuance of OIR
Prehearing Conference	Within 30 days after reply comments filed
Scoping Memo	Within 60 days after reply comments filed

The assigned Commissioner or the assigned Administrative Law Judge (ALJ) may change the schedule to promote efficient and fair administration of this proceeding. Today's decision sets a due date for comments and reply comments on the OIR. The schedule for the remainder of the proceeding will be adopted in the assigned Commissioner's Scoping Memo and Ruling.

It is the Commission's intent to complete this proceeding within 18 months as required by Public Utilities Code Section 1701.5.

If there are any workshops in this proceeding, notice of such workshops will be posted on the Commission's Daily Calendar to inform the public that a decision-maker or an advisor may be present at those meetings or workshops. Parties shall check the Daily Calendar regularly for such notices.

6. Respondents

Bear Valley Electric Services; Liberty Utilities, LLC; Pacific Gas and Electric Company; PacifiCorp, dba Pacific Power; Southern California Edison Company; and San Diego Gas & Electric Company are named as respondents to this rulemaking.

7. Service of OIR

In the interest of broad notice, this OIR will be served on the official service lists for R.17-07-007 (Order Instituting Rulemaking to Consider Streamlining Interconnection of Distributed Energy Resources and Improvements to Rule 21), R.20-05-003 (Order Instituting Rulemaking to Continue Electric Integrated Resource Planning and Related Procurement Processes), R.20-08-020 (Order Instituting Rulemaking to Revisit Net Energy Metering Tariffs Pursuant to Decision 16-01-044, and to Address Other Issues Related to Net Energy Metering), R.21-06-017 (Order Instituting Rulemaking to Modernize the Electric Grid for a High Distributed Energy Resources Future), R.23-12-008 (Order Instituting Rulemaking Regarding Transportation Electrification Policy and Infrastructure), R.24-01-018 (Order Instituting Rulemaking to Establish Energization Timelines), R.25-01-005 (Order Instituting Rulemaking on Customer-Generated Renewables for Priority Communities) and R.25-04-010 (Order Instituting Rulemaking for Oversight of Energy Efficiency Portfolios, Policies, Programs, and Evaluation).

Service of the OIR does not confer party status or place any person who has received such service on the Official Service List for this proceeding. Instructions for obtaining party status or being placed on the official service list are given below.

8. Addition to Official Service List and Subscription Service

Addition to the official service list is governed by Rule 1.9(f). Upon request, any person will be added to the "Information Only" category of the official service list. Any person intending to make such a request should do so promptly in order to ensure timely service of comments and other documents and correspondence in the proceeding. (*See* Rule 1.9(f).) The request must be sent to the Process Office by e-mail (process office@cpuc.ca.gov) or letter (Process Office, California Public Utilities Commission, 505 Van Ness Avenue, San Francisco, California 94102). Please include the Docket Number of this rulemaking in the request.

Persons who file responsive comments to the OIR will automatically become parties to the proceeding (*see* Rule 1.4(a)(2)) and will be added to the "Parties" category of the official service list upon such filing.

In order to assure service of comments and other documents and correspondence in advance of obtaining party status, persons should promptly request addition to the "Information Only" category as described above; they will be removed from that category upon obtaining party status.

Persons may monitor the proceeding by subscribing to receive electronic copies of documents in this proceeding that are published on the Commission's website. There is no need to be on the official service list in order to use the subscription service. Instructions for enrolling in the subscription service are available on the Commission's website at http://subscribecpuc.cpuc.ca.gov/.

9. Filing and Service of Comments and Other Documents

Filing and service of comments and other documents in the proceeding are governed by the Rules. Parties are instructed to only serve documents on the assigned Commissioner, advisors to the assigned Commissioner, and the assigned ALJ by electronic copy and not by paper copy, unless specifically instructed to do otherwise.

When serving any document, each party must ensure that it is using the current official service list on the Commission's website.

Persons who are not parties but wish to receive electronic service of documents filed in the proceeding may contact the Process Office at process_office@cpuc.ca.gov to request addition to the "Information Only" category of the official service list pursuant to Rule 1.9(f).

The Commission encourages those who seek information-only status on the service list to consider the Commission's subscription service as an alternative. The subscription service sends individual notifications to each subscriber of formal efilings tendered and accepted by the Commission. Notices sent through subscription service are less likely to be flagged by spam or other filters. Notifications can be for a specific proceeding, a range of documents and daily or weekly digests.

10. Intervenor Compensation

Intervenor compensation is permitted in this proceeding. Pursuant to Public Utilities Code Section 1804(a)(1), a customer who intends to seek an award of compensation must file and serve a notice of intent to claim compensation by 30 days after the prehearing conference (See Rule 17.1(a)(1)). Parties that are not familiar with participation in Commission proceedings may contact the Commission's Public Advisor to learn more about the Intervenor Compensation process.

11. Public Advisor

Any person or entity interested in participating in this rulemaking who is unfamiliar with the Commission's procedures or has questions about the electronic filing procedures is encouraged to obtain more information at https://www.cpuc.ca.gov/about-cpuc/divisions/news-and-public-information-office/public-advisors-office%20 or contact the Commission's Public Advisor 1 866 849 8390 or 1 866 836 7825 (TTY), or send an e-mail to public.advisor@cpuc.ca.gov.

O R D E R

IT IS ORDERED that:

1. This Order Instituting Rulemaking is adopted pursuant to Rule 6.1 of the Commission's Rules of Practice and Procedure.
2. The preliminary categorization is quasi-legislative.
3. The preliminary determination is that evidentiary hearings are not needed.
4. The preliminary scope of issues is as stated above in Section 2.
5. The preliminary schedule is as stated in Section 5.

6. Bear Valley Electric Services; Liberty Utilities, LLC; Pacific Gas and Electric Company; PacifiCorp, dba Pacific Power; Southern California Edison Company; and San Diego Gas & Electric Company are respondents to this Order Instituting Rulemaking.

7. Respondents shall, and any other person may, file comments responding to this Order Instituting Rulemaking within 60 days of the issuance date of this order. Reply comments shall be filed within 20 days after the final date to file comments.

8. The Executive Director will cause this Order Instituting Rulemaking to be served on all respondents and the service lists for Rulemakings (R.) 17-07-007, R.20-05-003, R.20-08-020, R.21-06-017, R.23-12-008, R.24-01-018, R.25-01-005, and R.25-04-010.

9. Any party that expects to claim intervenor compensation for its participation in this rulemaking must file its notice of intent to claim intervenor compensation within 30 days of the prehearing conference.

This order is effective today.

Dated August 14, 2025, at Sacramento, California.

ALICE REYNOLDS
President
DARCIE L. HOUCK
JOHN REYNOLDS
KAREN DOUGLAS
MATTHEW BAKER
Commissioners