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**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to Modernize the Electric Grid for a High Distributed Energy Resource Future.

Rulemaking 21-06-017

**ADMINISTRATIVE LAW JUDGE’S RULING SEEKING COMMENTS REGARDING FUTURE GRID STUDY REPORT**

Attached to this ruling is the final report on the Future Grid Study (FGS Report) conducted in this proceeding by the Commission’s consultant, Gridworks. The FGS Report focuses on Track 2 of this proceeding: Distribution System Operational Needs and System Operator Roles and Responsibilities. This Ruling seeks comments on the FGS Report, including responses to specific questions posed in this ruling. Parties shall file comments no later than December 6, 2024 and reply comments no later than January 10, 2025.

**1. Background**

As stated in the August 11, 2023 *Assigned Commissioner’s Amended Scoping Memo and Ruling* (Amended Scoping Memo), the Commission launched Rulemaking (R.) 21-06-017 to study the impacts of high penetrations of distributed energy resources on the grid, identify better forecasting strategies, and plan and operate a distribution system that can support a large number of distributed energy resources on the grid in the future, *i.e.*, a “High DER Future.” Track 2 of this proceeding focuses on the distribution system operator (DSO).

The Amended Scoping Memo lays out the following two issues for Track 2: (1) What are the operational needs necessary to efficiently operate a high

distributed energy resource grid, unlock economic opportunities for distributed energy resources to provide grid services, limit market power, reduce ratepayer costs, increase equity, support grid resiliency, and meet State policy objectives; and (2) What are the existing gaps and barriers in achieving the needs identified above within our current Distribution System Operator (Utilities)? What are the potential solutions in overcoming these barriers?

The Amended Scoping Memo also adopted a schedule for this track, which included a Future Grid Distribution System Operation workshop series followed by a workshop report and a proposed decision. As discussed in the following section, Gridworks hosted three public workshops (February 8, 2024, March 12, 2024, May 1, 2024) earlier this year. This ruling provides the workshop report, referred to herein as the Future Grid Study Report (FGS Report).

## **2. Overview of Future Grid Study Report**

The FGS Report is the culmination of the three workshops facilitated by Gridworks during the first half of 2024. The workshops provided parties and other stakeholders an opportunity to collaborate to modernize the electric grid for a future with a high number of distributed energy resources on the California electric grid. As described below, the FGS Report offers a comprehensive account of the three workshop topics: (1) distribution system operational needs to enable a “High DER Future”; (2) the gaps between current distribution system operational capabilities and identified operational needs; and (3) a set of recommendations to address the identified gaps.

Following a detailed description of the workshop focused on Identifying Operational Needs (Workshop 1), the FGS Report provides details on the ten broad categories of operational needs identified by workshop participants.

1. Distributed energy resources Visibility to Distribution System Operator
2. Distributed energy resources Visibility to the California Independent System Operator (CAISO)
3. Distributed energy resources dispatchability/control
4. Operational planning and analysis
5. Reliability Coordination at Transmission-Distribution interface
6. Distributed energy resources Technical Performance Standards
7. Cybersecurity
8. Open access to distribution system
9. Layered system architecture from bottom-up
10. Animate distribution-level markets/granular pricing

The FGS Report notes that, in preparation for the workshop on Assessing Gaps (Workshop 2), parties and stakeholders were invited to assess both the importance and urgency of the ten categories of operational needs. The FGS Report describes the presentations and discussion of Workshop 2, which largely include an overview of future DSO capabilities and the progress of related technology. During Workshop 2, the three large electric investor-owned utilities (IOUs or Utilities) also discussed policy gap perspectives and recommendations.<sup>1</sup> As the purpose of Workshop 2 was to determine the gaps between current distribution system operational capabilities and identified operational needs, the FGS Report provides the following six key takeaways: (1) Utilities are planning and implementing significant upgrades in their capabilities to operate “High DER Grids;” (2) Proposed future capabilities depend on the Utilities’ progress in

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<sup>1</sup> Pacific Gas and Electric Company (PG&E), San Diego Gas & Electric (SDG&E) and Southern California Edison (SCE).

implementing their Grid Modernization Plans; (3) Significant gaps appear in the operational interface between CAISO and Distribution System Operators; (4) The pace of developing grid services markets appears to be falling behind the adoption of distributed energy resources; (5) There are diverging approaches to enabling a “High DER Future;” and (6) Data sharing and transparency in distributed energy resource interconnection remain friction points.

The purpose of the final workshop, Workshop 3, was to develop recommendations. Gridworks focused the discussion in Workshop 3 on five topics: (1) implementation of flexible generation interconnection; (2) scoping of Utility system upgrades to support dynamic rates; (3) distributed energy resource visibility to DSOs and to CAISO; (4) a roadmap for distribution-level grid services from Flexible Load Energization;<sup>2</sup> and (5) data sharing in a High DER Future. For each one of these topics, the FGS Report provides the related operational needs (from Workshop 1), an overview of the workshop discussion, stakeholder recommendations, and Gridworks’ recommendations for next steps.

In the conclusion section of the FGS Report, Gridworks provides a list of uncertainties and remaining gaps. This is followed by a table of stakeholder recommendations for each operational need. The FGS Report also includes several appendices, which provide additional details from the workshops.

### **3. Questions for Parties**

The Commission seeks party comments on the FGS Report and, in particular, responses to the questions below.

1. The FGS Report includes a wide range of stakeholder input and recommendations from three public workshops. Please

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<sup>2</sup> Flexible Load Energization refers to the approach of setting variable firm and non-firm import limits for a distributed energy resource. (Study Report at 37.)

- review the report (Attachment 1) to ensure it accurately reflects stakeholder input from the workshops. If there are discrepancies, please identify the sections, provide specific details and suggested corrections, and identify any inaccuracies, inconsistencies, or omissions from the workshop discussion in the sections of the FGS Report. Comments should be limited to workshop discussions and proposed recommendations.
2. The FGS Report outlines ten key operational needs, categorized as broad themes, that are essential for realizing a High DER future. These needs were identified based on insights and discussion from **Workshop 1 - Identifying Operational Needs**. (*Refer to Attachment 1, pages 24-29, "Outcome: Operational Needs for a High DER Future" section.*) Based on the stakeholder survey during workshop facilitation, the FGS Report findings show that the following three operational needs are considered high priority with sufficient urgency to justify implementation within 1-2 years:<sup>3</sup>
    - i. DER Visibility to the Distribution System Operator,
    - ii. DER dispatchability/control, and
    - iii. Open access to the distribution system
    - a) Do you agree that the above operational needs are the highest priority and need to be implemented within 1-2 years? If so, why?
    - b) If you disagree with any of the above-identified high-priority needs, which three operational needs should be prioritized and why? Please include a timeline for implementation and explain your reasoning for supporting the priorities.
  3. **Diverging approaches to enabling a High DER Future –** Following Workshop 1, the workshop series highlighted a diverging approach to long-term visions for a High DER Future between the IOUs' top-down "grid orchestration"

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<sup>3</sup> See Figure 12: Urgency of Implementing Operational Needs in the Study Report at 29.

approach<sup>4</sup> where DSOs are central in coordinating DERs and the bottom-up, open-access vision<sup>5</sup> recommended by other stakeholders. (Refer to Attachment 1, page 36, "Key Takeaways from Workshop 2".)

- a) Which approach do you support, the top-down "grid orchestration" approach<sup>6</sup> or the bottom-up, open-access vision<sup>7</sup> for a High DER future? Please explain your reasoning for supporting the chosen approach and what steps should be taken in this proceeding to implement this vision. How do these steps align with the DSO's roles and responsibilities?
  - b) How do the operational needs identified in question 2 above align with your recommendation for question 3 (a) above?
  - c) Based on the discussions and perspectives presented during the workshop series, do stakeholders envision a hybrid approach that could bridge the gap between the IOU vision of grid orchestration and the bottom-up, open-access vision? If so, what might such a hybrid model entail?
4. In **Workshop 2, Assessing Gaps**, the stakeholders focused on identifying gaps and barriers to achieving the operational needs from Workshop 1. During Workshop 2, the IOUs also presented roadmaps for DERs and/or Grid Orchestration and Automated Distribution Management Systems (ADMS) and DER Management Systems (DERMS) capabilities<sup>8</sup> in relation to the operational needs identified from Workshop-1. (See pages 58-82 of Attachment 1,

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<sup>4</sup> The Study Report at 15 -16, 30-35

<sup>5</sup> The Study Report at 21 -23

<sup>6</sup> Topic 3a of Workshop 3 provides an opportunity for stakeholders to offer and discuss their ideas for new use cases for DER visibility to the DSO (key to grid orchestration)

<sup>7</sup> Topic 4 of Workshop 3 provides an opportunity for stakeholders to offer and discuss their ideas for new use cases for potential distribution-level grid services market opportunities (key to bottom-up, open-access)

<sup>8</sup> The Study Report at 30-35.

"APPENDIX A: OPERATIONAL NEEDS GAP ASSESSMENT" for a detailed assessment of the gaps.) The following questions focus on operational needs and use cases articulated specifically for DER/Grid Orchestration by leveraging ADMS/DERMS capabilities.

- a) Which operational needs and use cases can be operationalized by addressing gaps and barriers to DER/Grid Orchestration and ADMS/DERMS capabilities? How do these steps align with the DSO's roles and responsibilities?
- b) What specific steps should be addressed in this proceeding to advance DER operationalization? How do these steps align with the DSO's roles and responsibilities?
- c) The IOUs recommended a working group/task force(s) to collaborate on a framework that enables advanced DER/Grid Orchestration.<sup>9</sup> Do you agree with this recommendation, and if so, what are the key factors to consider in forming and setting goals for work products for this group? If you disagree, what alternative approaches should be considered?
- d) In Workshops 1 and 2, the IOUs outlined a "grid orchestration" vision for a high-DER future. The terminology and Grid Modernization Plans (*See Attachment 1, Appendix B*) indicate a significant role for DSOs in orchestrating DERs. However, despite pilot work underway (*See Attachment 1, Appendix C*), there are still gaps in the timelines for developing and implementing operational capabilities. What improvements should be made to the ongoing pilot program? How can the ongoing and proposed pilots guide further actions to address the gaps? In your

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<sup>9</sup> The Study Report at 15 -16, 30-35.

response, identify the gaps and the proposed enhancements.

- e) Is there a benefit in reviewing the five nearest-term pilot programs or functions the utilities can roll out and determining the technical requirements for those options? Explain your reasoning.
5. The FGS Report compiled stakeholder recommendations as five topic summaries based on input and discussion during **Workshop 3 - Developing Recommendations to Address Gaps**. The FGS Report also includes Gridworks' recommendations for the next steps. (Refer to the "Stakeholder Recommendations ..." and "Gridworks Recommended Next Steps ..." sections in Workshop 3, pages 39 – 51 of Attachment 1.)
- a) Please rank the five topics in order of priority and explain your reasoning ("1" being the highest priority). Please include subtopics 3a and 3b as you rank the five topics.
  - b) Which recommendations from stakeholders and/or Gridworks do you support for each topic and why?
  - c) Regarding topic 3b in the FGS Report, DER Visibility to the CAISO, how do we ensure interoperability and visibility between the DSO and the CAISO for DER visibility to the CAISO?
  - d) Do you have recommendations on other operational needs that were not included in the final workshop?<sup>10</sup> If so, please list the operational need(s) and your specific recommendation.
  - e) If any of your recommendations require coordination with other proceedings beyond the scope of the High DER Proceeding, please provide specific details about

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<sup>10</sup> The Study Report at 37.



the necessary coordination, including the relevant proceedings and issues involved.

Comments shall be filed no later than December 6, 2024 and replies shall be filed no later than January 10, 2025. This timeline allows for a thorough review of the FGS Report by parties and considers the holiday season. Hence, extensions of time will not be considered. Parties should plan accordingly.

**IT IS RULED** that:

1. Parties shall file and serve comments regarding the Future Grid Study Report, including responses to the questions in Section 3 above. The comments shall be filed and served no later than December 6, 2024.

2. Reply comments shall be filed and served no later than January 10, 2025.

Dated October 17, 2024 , at San Francisco, California.

/s/ KELLY A HYMES

Kelly A. Hymes  
Administrative Law Judge

/s/ MANISHA LAKHANPAL

Manisha Lakhanpal  
Administrative Law Judge

/s/ JUSTIN REGNIER

Justin Regnier  
Administrative Law Judge