2024 Future Grid Study

Workshop #3
Developing Recommendations to Address Gaps

GRIDWORKS

May 1, 2024 | 11am-5pm Pacific
Virtual/Zoom

OVERVIEW OF FUTURE GRID WORKSHOP SERIES

Workshop #1 Identify Operational Needs	Workshop #2 Gap Assessment	Workshop #3 Develop Recommendations
• Focus: Scoping Question 1	• Focus: Scoping Question 2	• Focus: Scoping Question 2
• Develop list of future grid needs through panel discussions	• Identify gaps between current operations and future grid needs	• Recommend to the Commission actions to address identified gaps.

Post Workshop:

Gridworks assembles workshop reports into the *Future Grid Study:*

- provides account of identified operational needs, gaps, barriers, and required actions.

Parties comment on Gridworks' *Future Grid Study*, forming a record for decision-making.

NEXT STEPS

Today's presentations and a recording of today's workshop will be available at gridworks.org/initiatives/california-future-grid-study

Workshop #3 Summary posted on the Gridworks California Future Grid Study page and distributed via email

Gridworks assembles workshop reports into the Future Grid Study: provides account of identified operational needs, gaps, barriers, and required actions.

- Anticipated Summer 2024

Parties comment on Gridworks' Future Grid Study, forming a record for decision-making.

TODAY'S OBJECTIVES

A. Review the Operational Needs and Gaps identified in response to key questions in the Amended Scoping Memo in Rulemaking R.21-06-017.

"What are the operational needs necessary to efficiently operate a high DER grid, unlock economic opportunities for DERs to provide grid services, limit market power, reduce ratepayer costs, increase equity, support grid resiliency, and meet State policy objectives?"

"What are the existing gaps and barriers in achieving the needs identified above within our current Distribution System Operator (Utilities)?"

B. Co-create solutions to the identified gaps and barriers.

"What are the potential solutions in overcoming these barriers?"

AGENDA

#	Agenda Item	Duration	Start Time
1	Introductions	10 min	11:00am
2	Remarks from Commissioner Darcie L. Houck	5 min	11:10am
3	Operational Needs & Gaps Matrix Overview	10 min	11:15am
Developing Recommendations to Address Gaps			
4	Topic 1: Implementation of Flexible Generation Interconnection	30 min	11:25am
5	Topic #2: IOU System Upgrades to Support Dynamic Rates	30 min	11:55am
lunch		**30 min**	**12:25pm**
6	Topic #3: DER Visibility to a) DSOs and b) CAISO	75 min	12:55pm
break		***15 min***	**2:10pm**
7	Topic #4: Roadmap for Distribution-Level Grid Services from Flexible Load Energization	80 min	2:25pm
break		***15 mins***	**3:45pm**
8	Topic #5: Data Sharing in a High DER Future	50 min	4:00pm
9	Next Steps and Closing	10 min	4:50pm

HOW TO PARTICIPATE

We want you to participate actively!

Please do so by using the **Zoom** "**raise hand**" function and **chat**

Please *stay on mute* unless you are speaking

Operational Needs & Gaps Matrix Overview

Jay Griffin, Gridworks

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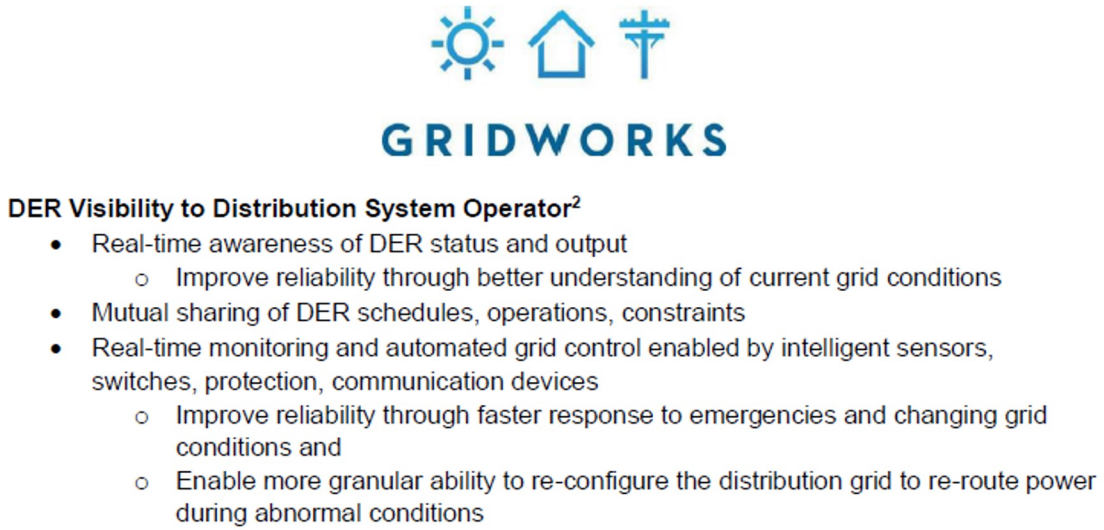
Summary of Operational Needs



- Gridworks compiled list of operational needs from Workshop #1 presentations and participant comments
- Grouped common themes under the ten topics in the summary document
- Topics reflect the feedback received in the workshop and include overlap in some themes
- Today's workshop will further discuss the list of operational needs and next steps

PRELIMINARY GAP ANALYSIS

1. Reviewed IOU Workshop #2 Presentations
    1. SCE focus – slides 10-11
    2. SDG&E focus – slide 13,15
    3. PG&E focus – slides 18-20

2. Reviewed IOU Grid Modernization Progress Reports (provided by Energy Division)

3. Initial assessment of:
    1. Expected capability in 2024 (Column D)
    2. Expected capability with Grid Mod Plans fully implemented (Column E)
    3. Remaining gap (Column F)

Next Steps: Gridworks will continue refining the gap analysis and the final version will be included in the Future Grid Study

PRELIMINARY GAP ANALYSIS

	GAP ANALYSIS		
Operational Need	***Expected Capability in 2024***	***Expected Capability with Grid Mod Plans Fully Implemented****	***Remaining Gap***
DER Visibility to Distribution System Operator			
Real-time awareness of DER status and output	**All IOUs** - Enabled for 2024 for DER > 1MW. **PG&E** - Situational awareness for initial microgrid locations and DERs participating in capacity use cases. Situational awareness includes topographical visibility in Network Management System; ability to isolate CAISO DER via SCADA switch if operational emergency calls for it. **SDG&E** - In-flight project, PIVA: Photovoltaic Integration over Virtual Airgap, to quantify "True Load"	Real-time awareness enabled for DER > 1MW. Capabilities improving for smaller-scale DER and priority use cases.	Pending confirmation from IOUs if any remaining gap(s).

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**not all components of the IOUs' grid modernization plans have been approved, funded and implemented*

Developing Recommendations to Address Gaps

Jay Griffin, Gridworks

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Increasing Operational Flexibility of DERs Improves Use of Existing Grid

Static

- One Capacity Value
- No Adjustments

Variable

- Multiple Capacity Values
- Adjustments are Scheduled

Dynamic

- Multiple Capacity Values
- Adjustments are made in response to communication from DSO

TOPIC 1: IMPLEMENTATION OF FLEXIBLE GENERATION INTERCONNECTION

Policy?

Use of Limited Generation Profiles can enable more flexible generation interconnection

R.17-07-007 (Interconnection):

- D.20-09-035 - Incorporate the results of the Integration Capacity Analysis (ICA) into the interconnection process through Limited Generation Profiles (LGP)
- Resolution E-5296 - Adopts three different 24-value profiles and provides customer choice

R.21-06-017 (High DER):

- Track 1 - Staff Proposal: ICA and Data Portal Improvements
- Track 3 – SIOWG Report: In Firm/Non-Firm Capacity agreements the LGP would become the firm-capacity limits, while allowing for additional non-firm capacity to meet grid needs

Technical Feasibility?

Ongoing and upcoming software upgrades can enable use of Limited Generation Profiles

- Advanced Distribution Management Systems (ADMS), Distributed Energy Resources Management System (DERMS), and ICA data portals anticipated to support use of LGPs

TOPIC 1: IMPLEMENTATION OF FLEXIBLE GENERATION INTERCONNECTION

Discussion Questions:

1. What milestones should the CPUC monitor to ensure this operational need is fully implemented in the IOUs' Grid Modernization Plans?

2. What other actions should the CPUC consider taking to implement Flexible Interconnection?

TOPIC 2: IT UPGRADES TO SUPPORT DYNAMIC RATES

Policy?

Discussions underway to develop guidelines for dynamic rates and to determine needed systems and processes to enable those rates.

R.22-07-005, Track B (Demand Flexibility)

Develop policies to achieve widespread customer adoption of automated demand flexibility solutions throughout the state

Ensure IOUs comply with CEC's adopted Load Management Standards (LMS)

Amendments for dynamic hourly, cost-based rates

Technical Feasibility?

TBD depending on outcomes of R.22.07-005

TOPIC 2: IT UPGRADES TO SUPPORT DYNAMIC RATES

Discussion Questions:

1. What milestones should the CPUC monitor to ensure this operational need is implemented in future upgrades to IOU IT systems?

2. What other actions should the CPUC consider taking to implement Dynamic Pricing?

30 Minute Break

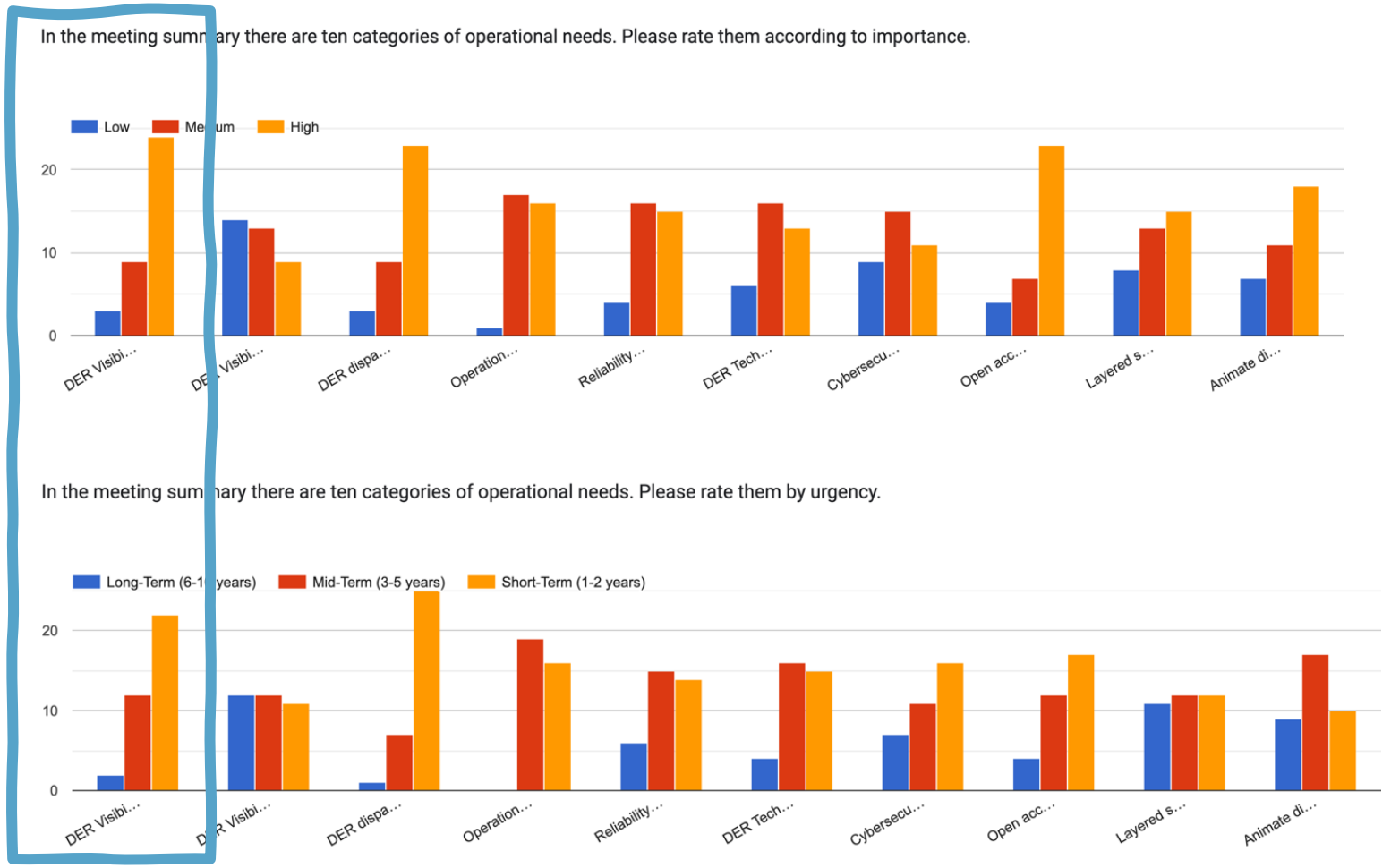
Please be back at 12:55pm

TOPIC 3A: DER VISIBILITY TO DSOs

Real-time awareness of DER status and output

Mutual sharing of DER schedules, operations, constraints

Real-time monitoring and automated grid control enabled by intelligent sensors, switches, protection, communication devices



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TOPIC 3A: DER VISIBILITY TO DSOs

Discussion Question:

1. What milestones should the CPUC monitor in the IOUs' Grid Modernization Plans to understand if this capability is met?

TOPIC 3B: DER VISIBILITY TO CAISO

Coordinated visibility of specific DER information to understand and anticipate their impacts on grid operations

Need enhanced data collection, access, and reporting

For planning and forecasting processes to improve grid asset utilization;
short term load forecasting accuracy; and
ISO market optimization and dispatch.

Situational awareness of both market participating and non-participating DERs is critical for CAISO operations

Mutual sharing of DER schedules, operations, constraints

Enable multiple uses, avoid operational conflicts.
Eventually, enable market coordination.

Primary Gaps

1. What is the correct level of visibility to the CAISO?
2. How to coordinate use of DERs that could be used for grid services at either/both distribution and transmission level?

TOPIC 3B: DER VISIBILITY TO CAISO

Discussion Questions:

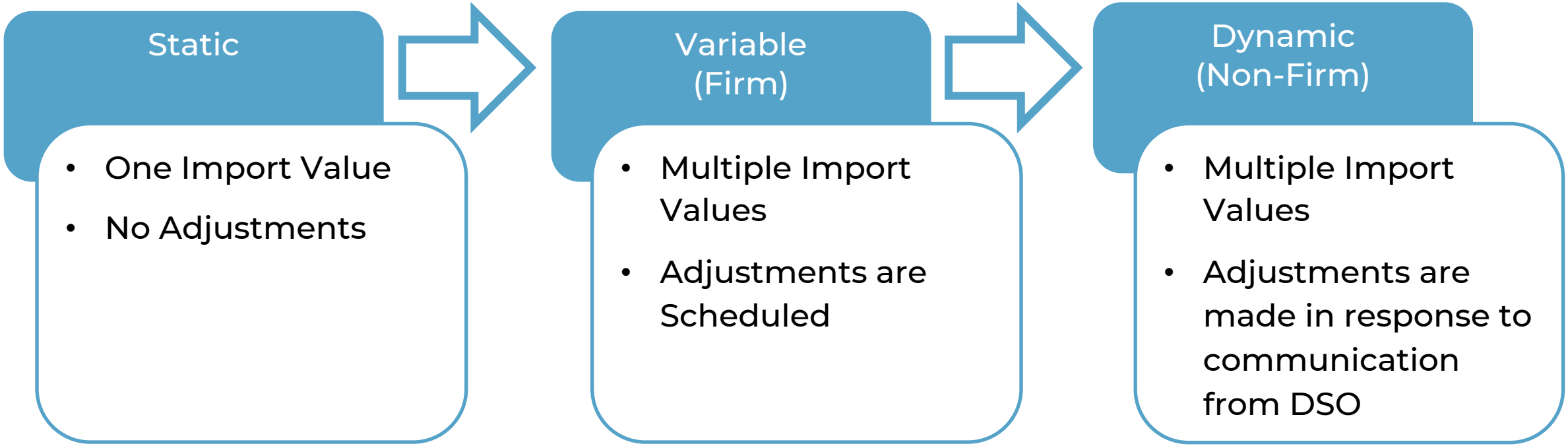
1. What actions can the CPUC take to address this gap?

2. What other actions outside of CPUC jurisdiction can stakeholders take to address this gap?

15 Minute Break

Please be back at 2:25pm

TOPIC 4: DISTRIBUTION-LEVEL GRID SERVICES FROM FLEXIBLE LOAD ENERGIZATION



TOPIC 4: DISTRIBUTION-LEVEL GRID SERVICES FROM FLEXIBLE LOAD ENERGIZATION

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Discussion Questions:

1. What near-term actions should the CPUC consider taking to support Firm Import Limits and flexible (Non-Firm) load energization.

2. What actions should the CPUC consider taking to develop distribution-grid services (building on Firm Import Limits and flexible (Non-Firm) load energization)? For example,
    1. reducing net load in constrained areas in response to a control signal by the DSO
    2. reducing contingent loading of grid infrastructure to enable operational flexibility to safely and reliably reconfigure the distribution system to restore customers

15 Minute Break

Please be back at 4:00pm

TOPIC 5: DATA SHARING IN A HIGH DER FUTURE

Workshop 1 Input:

CAISO

- Coordinated visibility of specific DER information to understand and anticipate their impacts on grid operations
- Technology type, location, size, operational behavior and performance at various granularities
- Need data for operational forecasting, need data to understand DER response

The Climate Center

- Regulatory framework to address control of grid & customer data

Cal Advocates

- Manage data access for all data relevant to distribution grid operation: Track DER performance and interconnection characteristics, DER state-of-charge, cost of operation, historical performance, aggregator data, real-time prices. Manage confidentiality and data access.

UCAN

- Data Hub: “API of APIs” ensures data access for all parties
- DER Register: database tracks location / capabilities of DER5

TOPIC 5: DATA SHARING IN A HIGH DER FUTURE

Discussion Question:

1. What actions should the CPUC consider taking to enhance data access?

NEXT STEPS

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FEEDBACK SURVEY

Help Gridworks improve its facilitation services!

Please take 2 minutes to complete the feedback survey -

https://forms.gle/jv1G4SGZrwVFEago9

HOW CAN WE HELP?

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