NARUC
National Association of Regulatory Utility Commissioners

# Distributed Energy Resource Interconnection Cohort

Kickoff Meeting
March 5, 2026

Energy Markets & Planning
BERKELEY LAB

INTERCONNECTION INNOVATION e-XCHANGE
U.S. DEPARTMENT OF ENERGY

# PRIOR WORK ON DER AND INTERCONNECTION

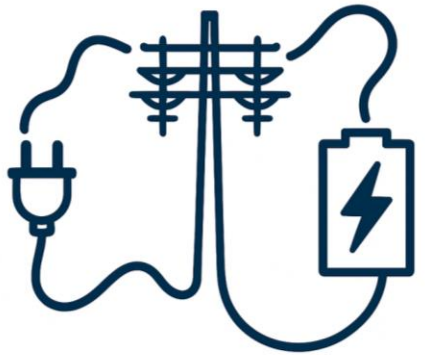
- DER Integration & Compensation Resource Library (2024)
- *ADER Fundamentals* (2024)
- Cohort & webinar series: Planning for a Modern Distribution System (2024)
- Virtual workshop series: Aggregated DER Hot Topics (2024)
- Webinar series: The Modern Landscape for DER-Integration & Compensation (2023)

# Distributed Energy Interconnection Cohort

## Kickoff Meeting

Grace Relf, Lawrence Berkeley National Laboratory
Jeff Loiter, National Association of Regulatory Utility Commissioners

March 5, 2026



*This work was funded by the Interconnection Innovation e-Xchange (i2X), a U.S. Department of Energy initiative supported by the Office of Critical Minerals and Energy Innovation, under Contract No. DE-AC02-05CH11231.*

# Agenda

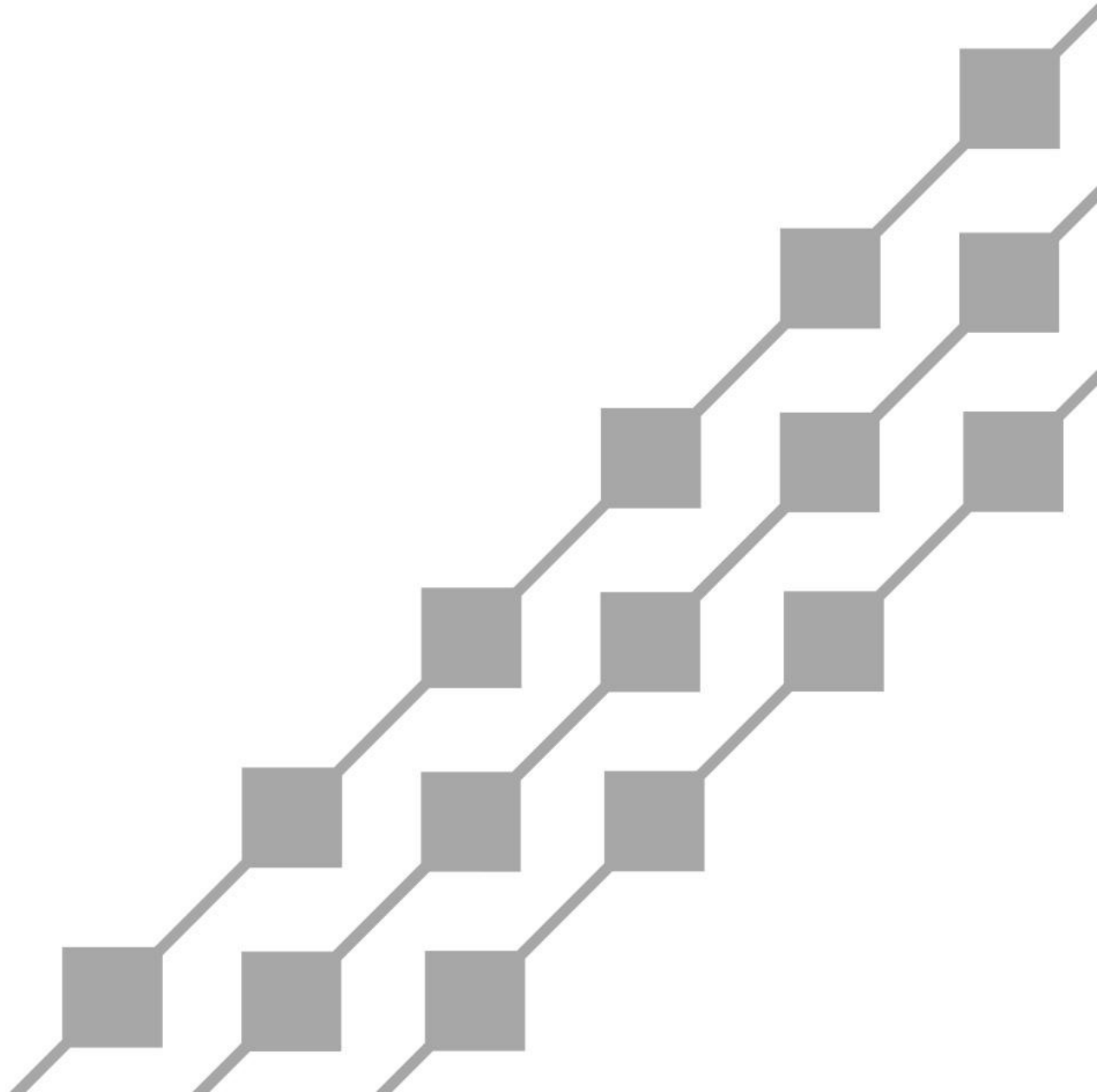
- Welcome
- Presentation from Hawaiian Electric on DER interconnection improvements
- Overview of the i2X initiative and cohort objectives
- Gather information on participant interests
- Discuss topics of interest
- Closing and next steps

Energy Markets & Planning
BERKELEY LAB

INTERCONNECTION INNOVATION e-XCHANGE
U.S. DEPARTMENT OF ENERGY

Hawaiian Electric

# Hawaiian Electric CER Overview



# Customer Energy Resources (CER)

A customer energy resource is any resource located at a customer site that can be used as a resource by either the customer or the utility, but ideally both.

# CER's Mission & Vision

**Mission**

Provide exceptional service in helping every customer participate in Customer Energy Resources (CER) in a way that is safe and sustainable for all customers

**Vision**

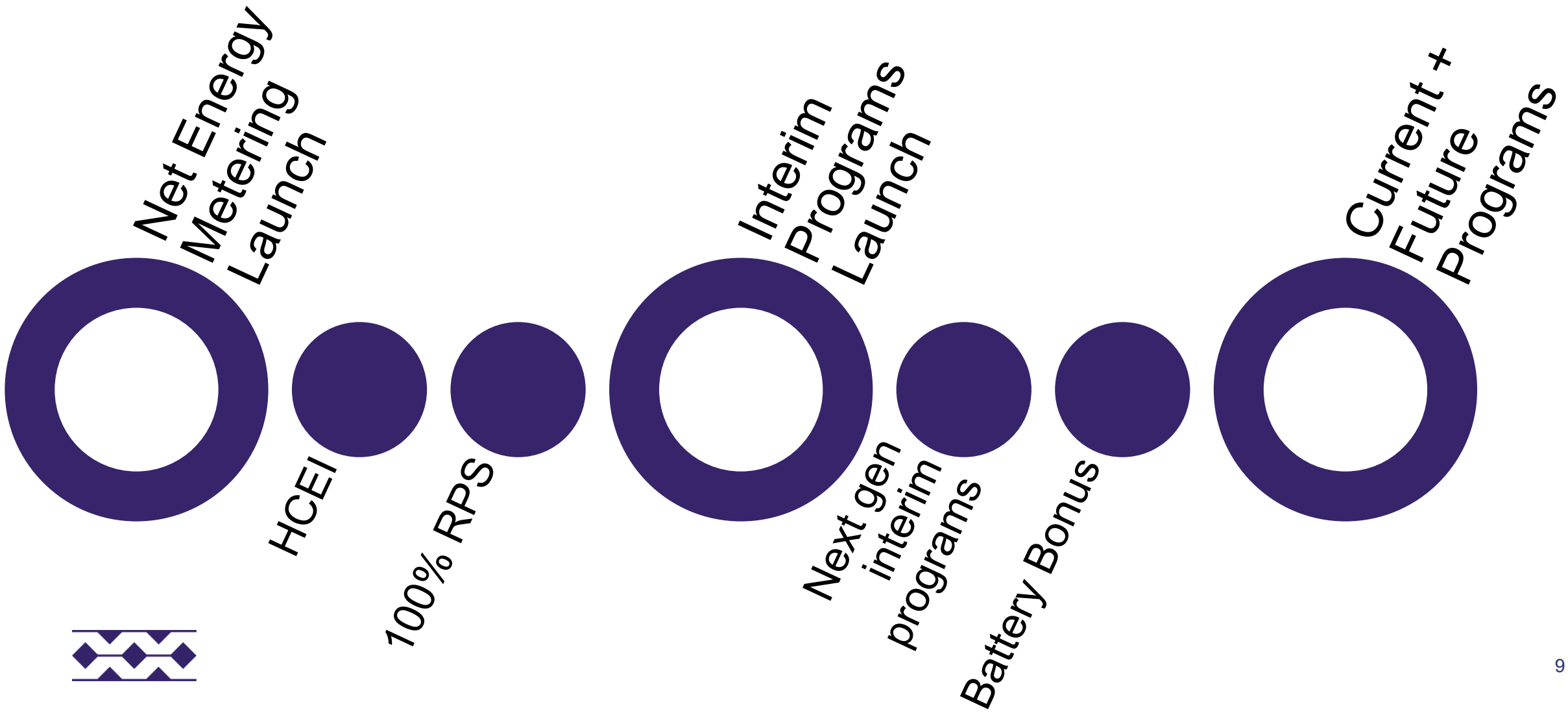
Every customer is a CER customer

# What is an interconnection?

Official definition: The physical connection of any Distributed Generating Facility to the Distribution System, including the facilities required to provide electric distribution service to a Customer, using electric wires, switches, and related equipment located on either side of the point of common coupling as appropriate to their purpose and design to allow the physical connection of the Distributed Generating Facility to the Distribution System.

In layman's terms: All of the physical components needed to connect a DER system to the grid.

# A brief history of interconnections



# A brief history of Hawaiian Electric processing interconnections

## Pre-2005

- Interconnection Wild West

## 2014

- Massive overhaul – integration challenges, transparency, application backlog

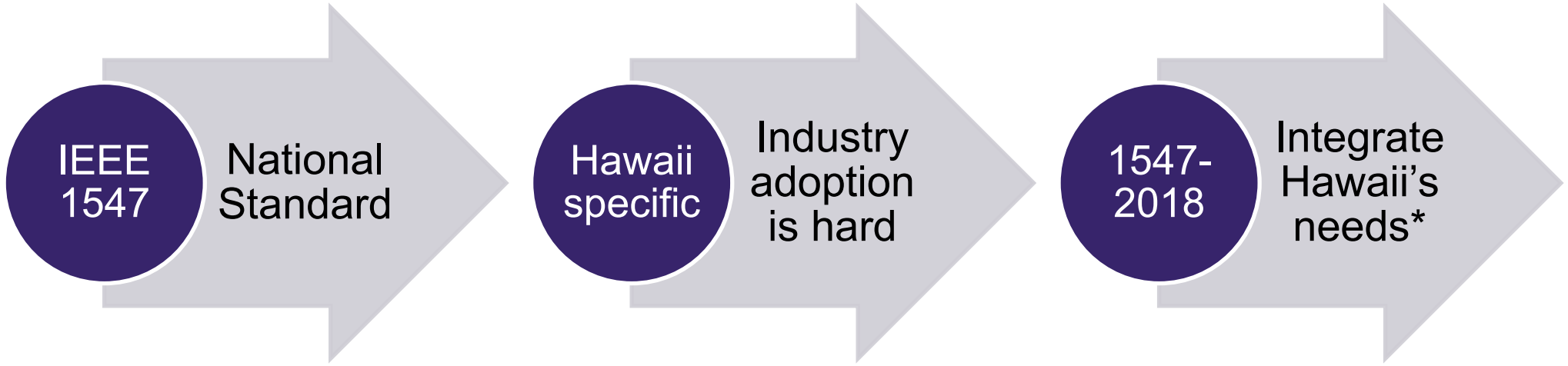
## 2017

- Online processing via Customer Interconnection Tool
- Consolidate processing across all service territories

## The Future

- Database consolidation
- Backend system integration

# Key technical policy evolution



# The future

- How do we streamline interconnection and grid services?
- How do we make grid service enrollment as easy as possible?
- How do we bolster telecommunication to CER?
- How much cost-effective CER is left out there?
- How quickly can we acquire that CER?
- How do we enable equitable access to CER?
- How do we overcome new technical challenges?
- How do community solar and wheeling fit into CER?

# Overview of i2X Initiative and Cohort Objectives

# i2X Mission and Key Elements

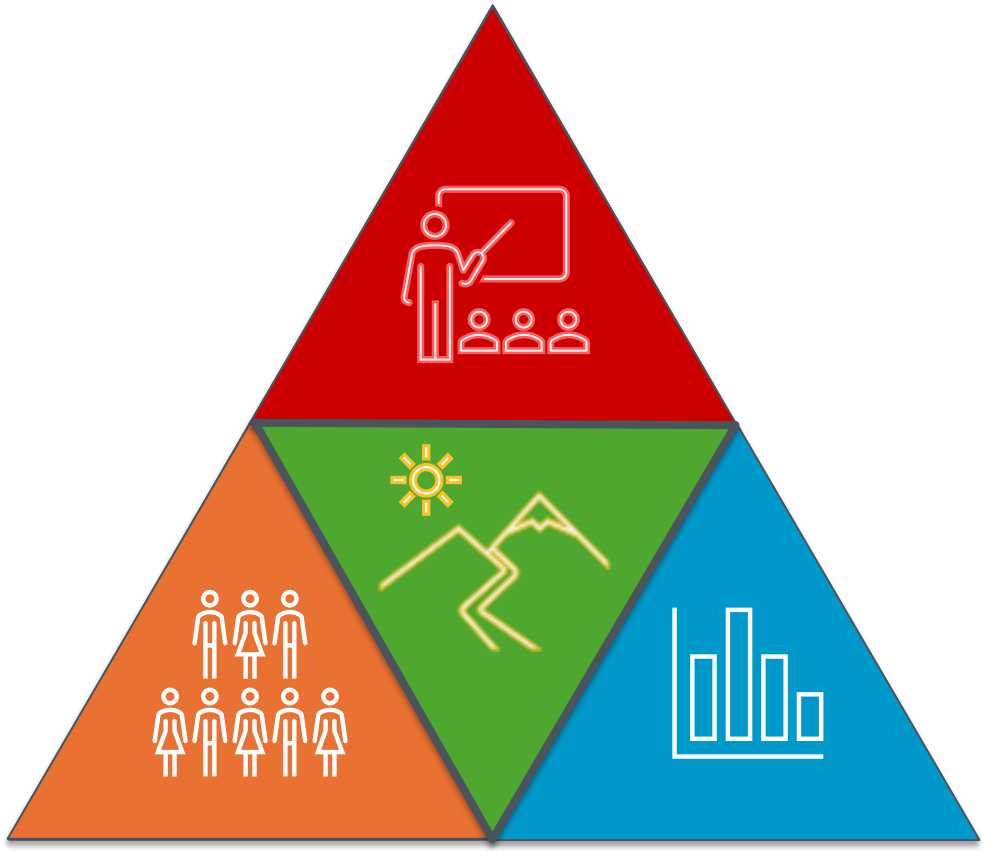
To enable **simple**, **fast**, and **affordable** interconnection while enhancing the **reliability** and **security** of our electric grid.

**Strategic Roadmaps**

**Stakeholder Engagement**

**Data & Analytics**

**Research & Innovation**



# i2X Interconnection Cost Reduction Solutions for Distribution (iCRS-D)

SCAN ME

INTERCONNECTION INNOVATION e-XCHANGE
U.S. DEPARTMENT OF ENERGY

## PIA

energywerx

## $4 Million

*to address distribution grid interconnection challenges*

## Lead organizations

*to each manage a multi-stakeholder partnership*

- **Promote Economic Efficiency**
- **Increase Data Access & Transparency**
- **Streamline Interconnection Services**

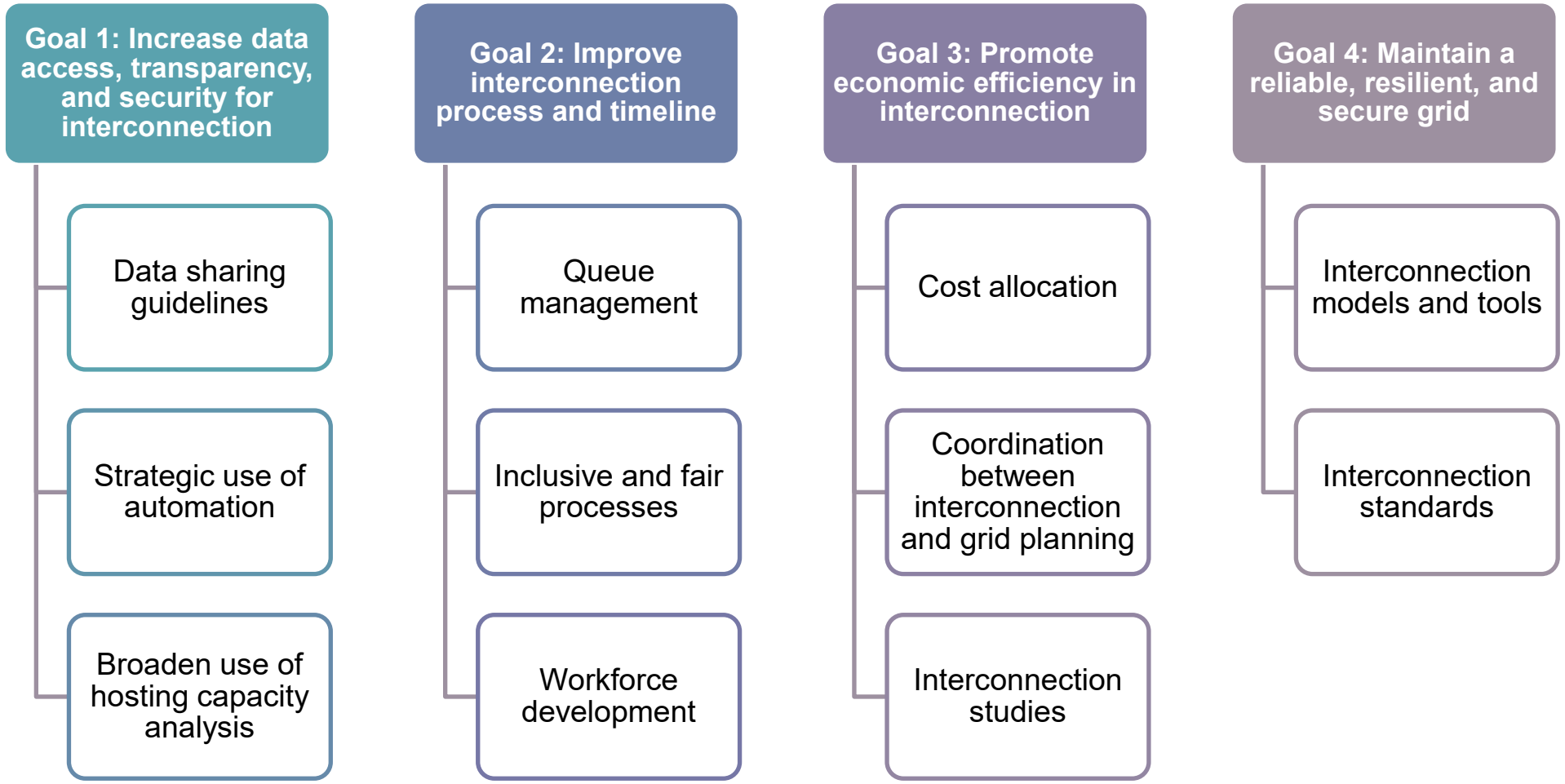
## Lighthouse Project

*to pilot scalable interconnection innovations*

## Due April 16th at 3pm ET

*with office hours March 16th and April 2nd at 3PM ET*

# U.S. Department of Energy's DER Interconnection Roadmap



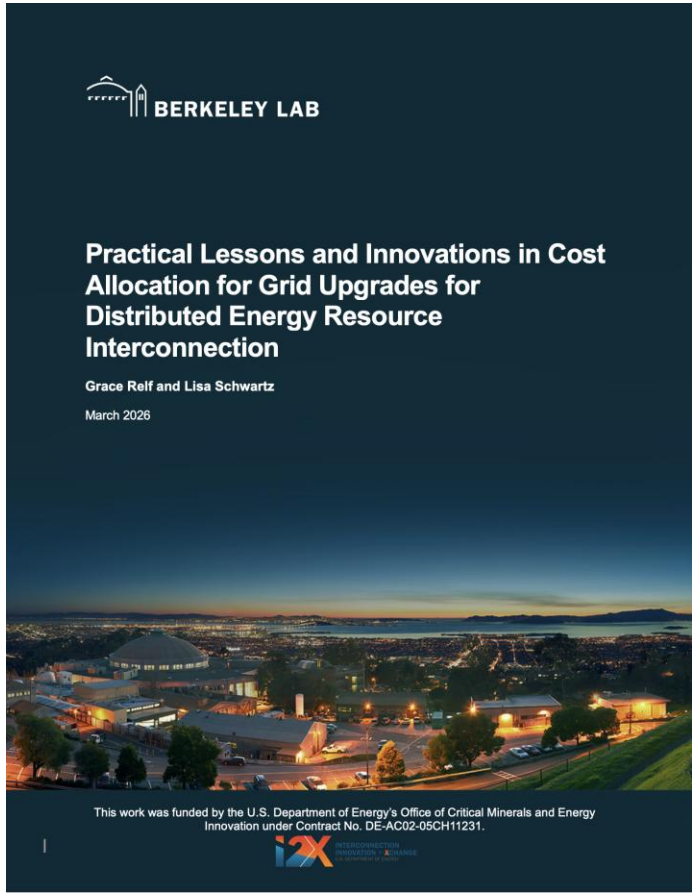
# Measurable Success Targets for 2030

| | Target | System Size* | 2030 Target Value |
|---|---|---|---|
| Timing | (1) Median time from DER interconnection request to agreement§ | < 50 kW | Within 1 day† |
| | | 50 kW–5 MW | < 75 days |
| | | ≥ 5 MW | < 140 days |
| Access | (2) Completion rate from entering the queue to execution of interconnection agreement | < 50 kW | > 99% |
| | | 50 kW–5 MW | > 90% |
| | | ≥ 5 MW | > 85% |
| Data | (3) Availability of public state-level interconnection queue data | All | 50 states, Washington, D.C., and territories have public, detailed, and current queue data |
| Reliability | (4) No BPS disturbance events exacerbated by inaccurate DER modeling | All | 0 |
| Resilience | (5) Lower Customer Average Interruption Duration Index (CAIDI)‡ | All | 25% improvement (e.g., from 4 to 3 hours per occurrence) |

* System size thresholds will vary across utilities and jurisdictions.
§ For systems that do not trigger system upgrades.
† Defined as 1 business day.
‡ CAIDI with loss of load removed but major event days included.

# Berkeley Lab Resources

- Berkeley Lab is conducting research and developing tools on a variety of DER interconnection topics.
- Forthcoming technical documents
  - Cost allocation for grid upgrades
  - Automating DER interconnection processes
  - DER interconnection queues, timelines, and costs
- Additional resources
  - Forthcoming online DER interconnection cost and timeline data dashboard
  - Forthcoming cost allocation toolkit with model documents, checklists, and calculator
  - Educational trainings and webinars (including slides and recordings)
  - Technical assistance for states




**Find out more: https://emp.lbl.gov/interconnection-innovation-e-xchange**

# NARUC's DER Interconnection Cohort - Objectives

- Objectives
  - Support an interested group of utility regulatory commissions to better understand DER interconnection practices and advance solutions
  - Provide participants with practical information and actionable templates, frameworks, and model language for jurisdictions to adapt for their specific circumstances
  - Support peer-sharing and continuous learning
- Approach
  - Identify participants' major DER interconnection challenges and topics of interest
  - Use a variety of approaches to support learning and progress on identified topics
- Logistics and expectations
  - Meet on a regular basis, with input from participants informing frequency and timing of meetings
  - Engage actively by attending as many meetings as possible and participating generously in conversations
  - Create a collaborative space by sharing openly and respecting others' contributions

# Topic Ideas

- Data transparency on interconnection queues, timelines, and costs
- Cost allocation for interconnection-related distribution system upgrades
- Adoption of interconnection technical standards
- Automating the interconnection process
- Interconnection studies and queue management practices
- Hosting capacity analysis and maps
- Performance incentive mechanisms for interconnection improvements
- Coordinating interconnection with distribution system planning

# Activity Ideas

- Subject matter expert presentations
- Small group discussions on specific topics and questions
- Participants bring questions/challenges and receive input and coaching from peers and experts
- “Lightning talks” – short updates/presentations from participants
- Developing data templates and other materials for use in your state
- Office hours with subject matter experts

# Questions?

# Participant Questionnaire

**Instructions:**

- Visit https://forms.gle/tt3KjqC3MPk8Z6VTA or scan the QR code to fill out the questionnaire.

# Discussion of Questionnaire Results – Substantive Issues and Topics

- What issues did you select as primary DER interconnection challenges in your state and why?
- What impacts are you seeing from those challenges?
- What topics of interest did you select and why?
- What additional topics do you have interest in (topics not listed in the questionnaire)?
- What other drivers led you to choose those topics (e.g., ongoing docketed proceedings, legislation, state goals)?

# Discussion of Questionnaire Results – Activities and Outcomes

- What types of activities did you select and why?
- What additional activities are you interested in (that were not listed in the questionnaire)?
- Would you be willing to share a “lightning talk” on a topic your state is working on? If so, what topic?
- What types of work products would be most useful to your state (e.g., data sharing templates, model questions to ask utilities and stakeholders, model regulatory language)?
- What are the primary outcomes this cohort should aim to achieve?
- What would make the time spent valuable and worthwhile for you?
- Do you have any other suggestions for this cohort?

# Next Steps

- **Join i2X Connect to interact with cohort members and other interconnection stakeholders:** https://groups.energy.gov/i2xconnect/.
- NARUC will circulate the questionnaire more broadly for those unable to attend this meeting.
- NARUC and Berkeley Lab will review input from this meeting and additional questionnaire responses to identify key topics, associated activities, and meeting timing and frequency.
- Be on the lookout for additional information on the cohort and subsequent meeting information.

Thank you!

## Contacts

**Grace Relf:** gerelf@lbl.gov, 510-926-0943
**Jeff Loiter:** jloiter@naruc.org, 202-656-2128
**Lisa Schwartz:** lcschwartz@lbl.gov, 510-926-1091

## For more information

***Download*** our publications: https://emp.lbl.gov/publications
***Sign up*** for our email list: https://emp.lbl.gov/mailing-list
***Follow*** us on social media: @BerkeleyLabEMP.bsky.social and @BerkeleyLabEMP

## Acknowledgements

This work was funded by the Interconnection Innovation e-Xchange (i2X), a U.S. Department of Energy initiative supported by the Office of Critical Minerals and Energy Innovation, under Contract No. DE-AC02-05CH11231.

## Disclaimer



## Copyright Notice