C2C: Clean Energy *to* Communities

U.S. DEPARTMENT OF ENERGY

Clean Energy to Communities (C2C) Program Kickoff Webinar

February 1, 2023

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Agenda

- EERE's Goals and Mission
- History of Clean Energy to Communities (C2C) Program Development and Structure
- In-Depth Partnership Opportunities
  - C2C
  - Energyshed
- Q&A

Photo by Werner Slocum, NREL 66976

Housekeeping

- Audio and video are muted for participants.
- Ask questions in the Q&A box throughout the presentation. We will answer questions at the end of the presentation.
- This webinar is being recorded and will be posted on the C2C site along with the webinar slides.

Speakers

- **Alejandro Moreno**, Assistant Secretary (Acting), Deputy Assistant Secretary for Renewable Power, DOE
- **Kevin Lynn**, Director of Grid Modernization within the Energy Efficiency and Renewable Energy office, DOE
- **Jenny Sumner**, Modeling & Analysis Group Manager, NREL
- **Bethany Frew**, Capacity Expansion & Electricity Markets Group Manager, NREL
- **Kimberley Lopez**, Senior Subcontract Administrator, NREL

Goals and Mission

EERE MISSION

Our mission is to drive the research, development, demonstration and deployment of innovative technologies, systems, and practices that will put America on an irreversible path to:

- Achieve a carbon-free electricity sector by 2035; and
- Equitably transition America to net-zero greenhouse gas emissions economy-wide by no later than 2050

KEYS TO ENSURE THE GREATEST IMPACT

Environmental and Energy Justice

Workforce Development

Diversity in STEM

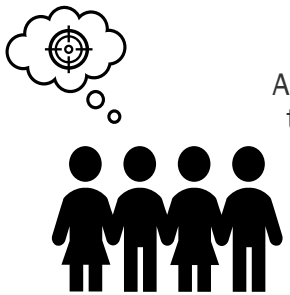
State and Local Partnerships

PRIORITIES

- 100% decarbonized electric grid by 2035
- Decarbonize energy intensive industries
- Decarbonize transportation across all modes
- Reduce the carbon footprint of buildings
- Enable a net-zero agricultural sector

C2C: Clean Energy to Communities

Tailored support to transform community clean energy ambitions into tangible results



Community-led goal setting

Active community engagement to understand needs, collect diverse perspectives, find common ground

COMMUNITY FEEDBACK

Technical advisory services

In-depth, customized analysis of potential solutions; Validation to de-risk large-scale deployment

COMMUNITY FEEDBACK

Implementation

Develop actionable plans; Create network of cities to share replicable strategies and lessons for long-term impact

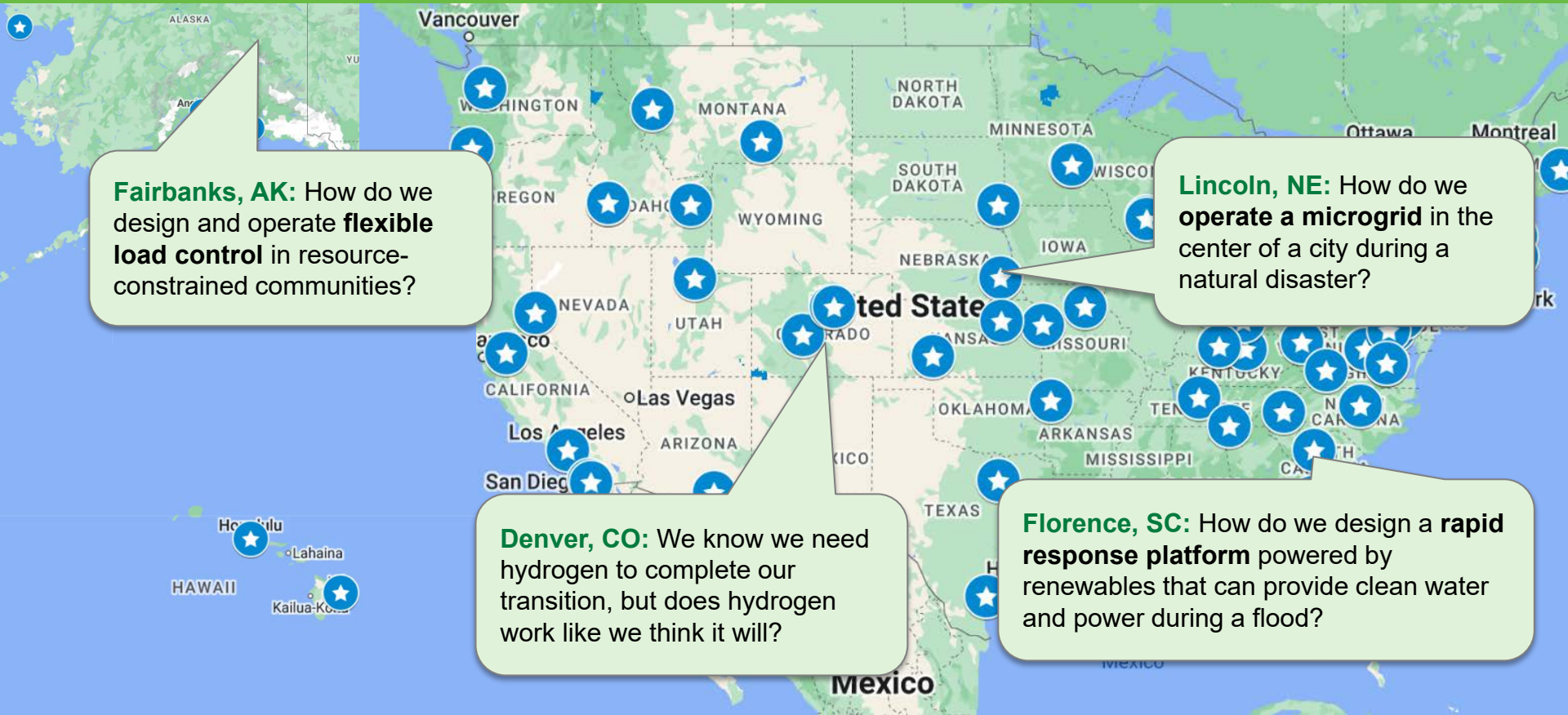
Energy justice

Climate resilience

Workforce and economic development

Local and regional decarbonization

EERE interviewed **164 stakeholders from 95 communities**, representing 40 states and 6 Tribes to inform C2C



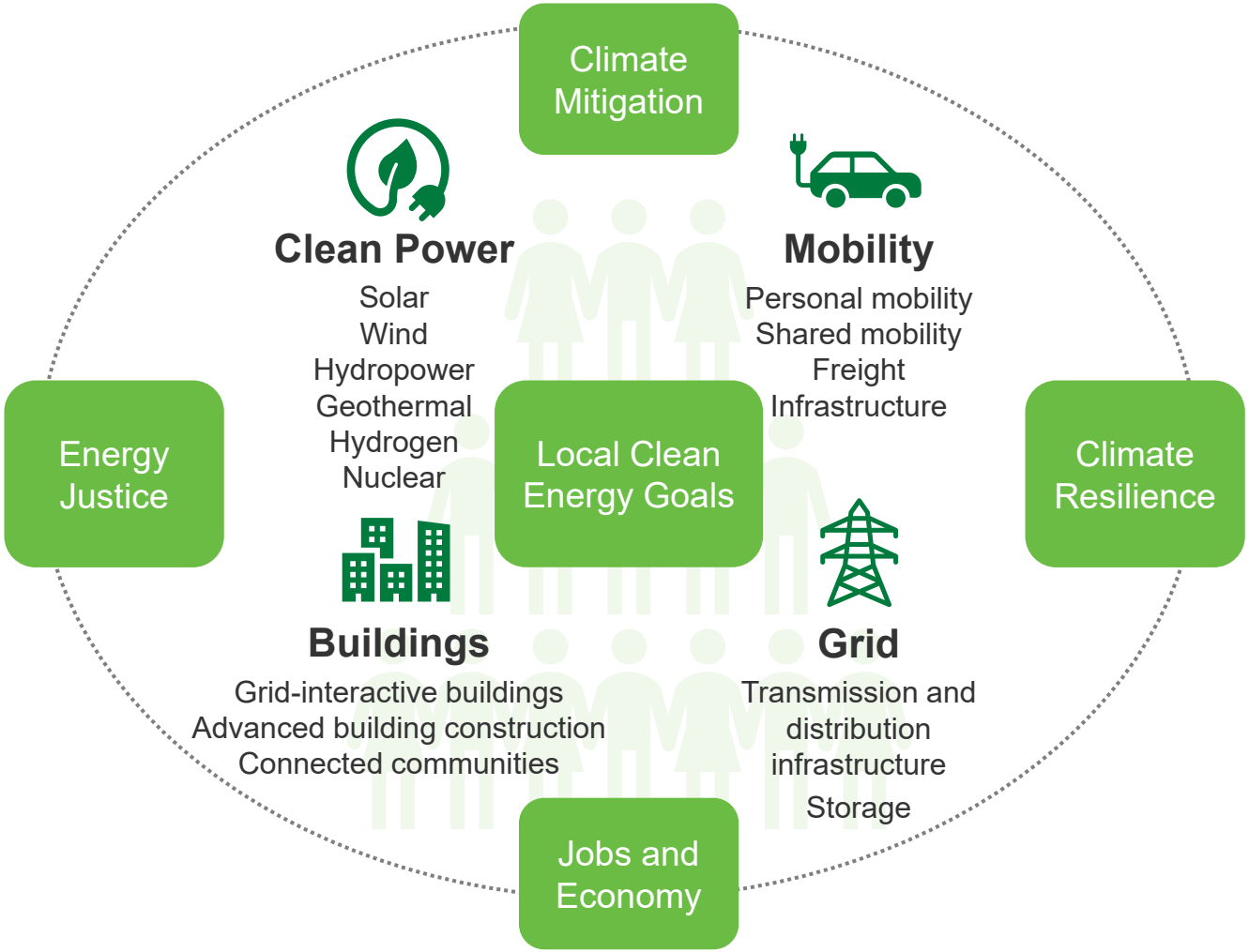
Fairbanks, AK: How do we design and operate **flexible load control** in resource-constrained communities?

Lincoln, NE: How do we **operate a microgrid** in the center of a city during a natural disaster?

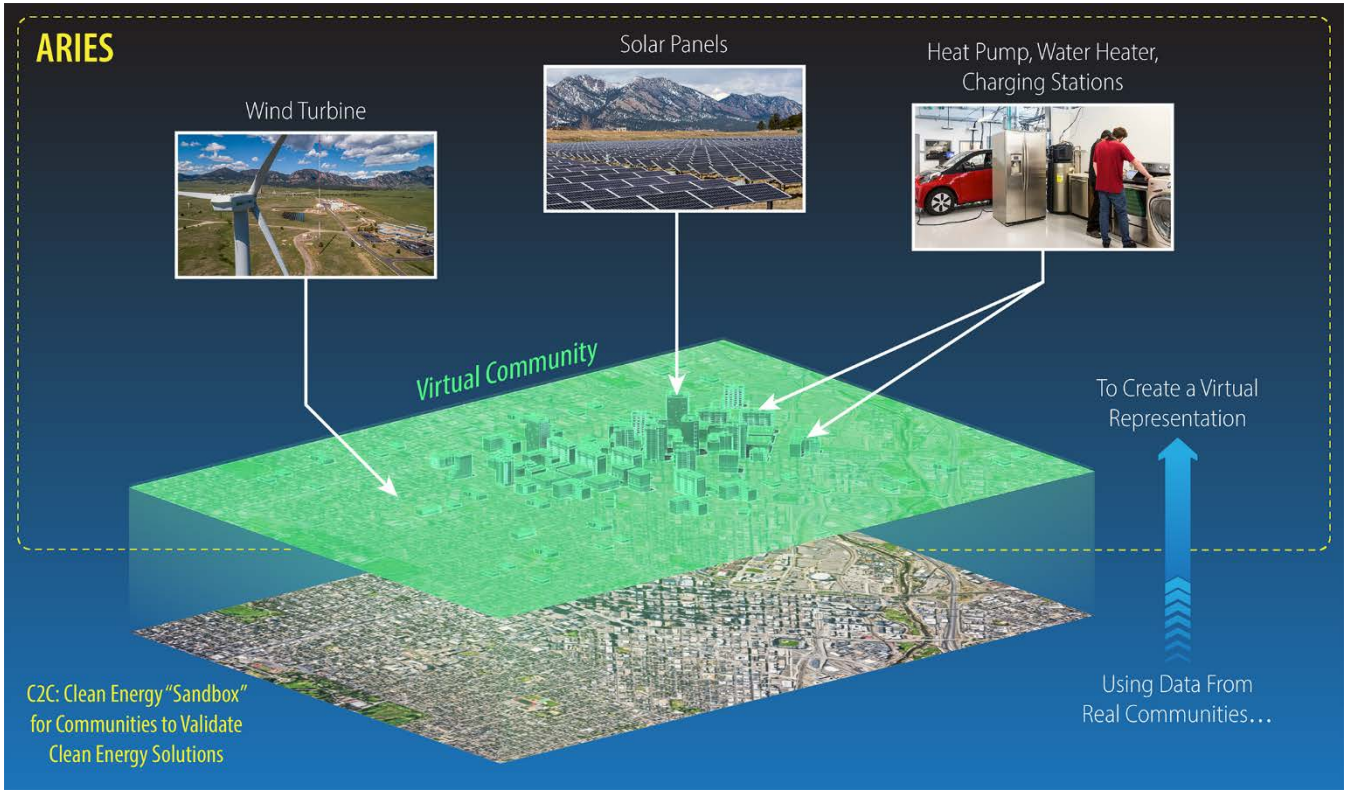
Denver, CO: We know we need hydrogen to complete our transition, but does hydrogen work like we think it will?

Florence, SC: How do we design a **rapid response platform** powered by renewables that can provide clean water and power during a flood?

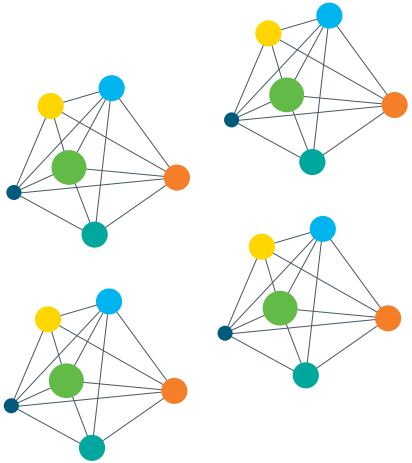
C2C will provide **innovative, cross-cutting technical solutions** using an **integrated** approach



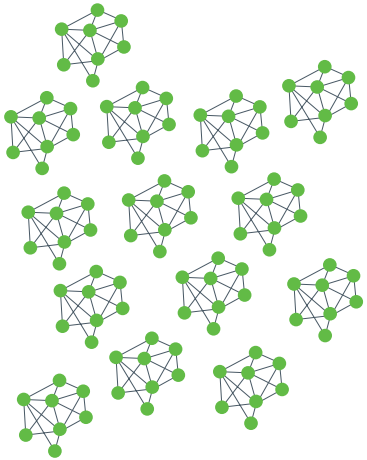
Using the Collective Power of EERE and Lab Capabilities



C2C Program Offers Differ by Length of Engagement and Supported Engagements



In-depth partnership



Cohort

Expert match

~3 years	~6 months	~2 months
	Length of engagement	
nrel.gov/c2c/indepth	**nrel.gov/c2c/cohorts**	**nrel.gov/c2c/expertmatch**

Program Offering Availability

In-depth partnership

Will be reviewed in today's webinar

Cohorts

Topics for the upcoming round of cohorts will be released with the application in March 2023.

Sign up for the C2C email updates to be notified when the application period opens.

Expert match

Submit an **Expert Match application**. Applications are accepted on a rolling basis.

Your application will be reviewed against established requirements and criteria, including the special need for expert assistance, availability of experts, and equity priorities.

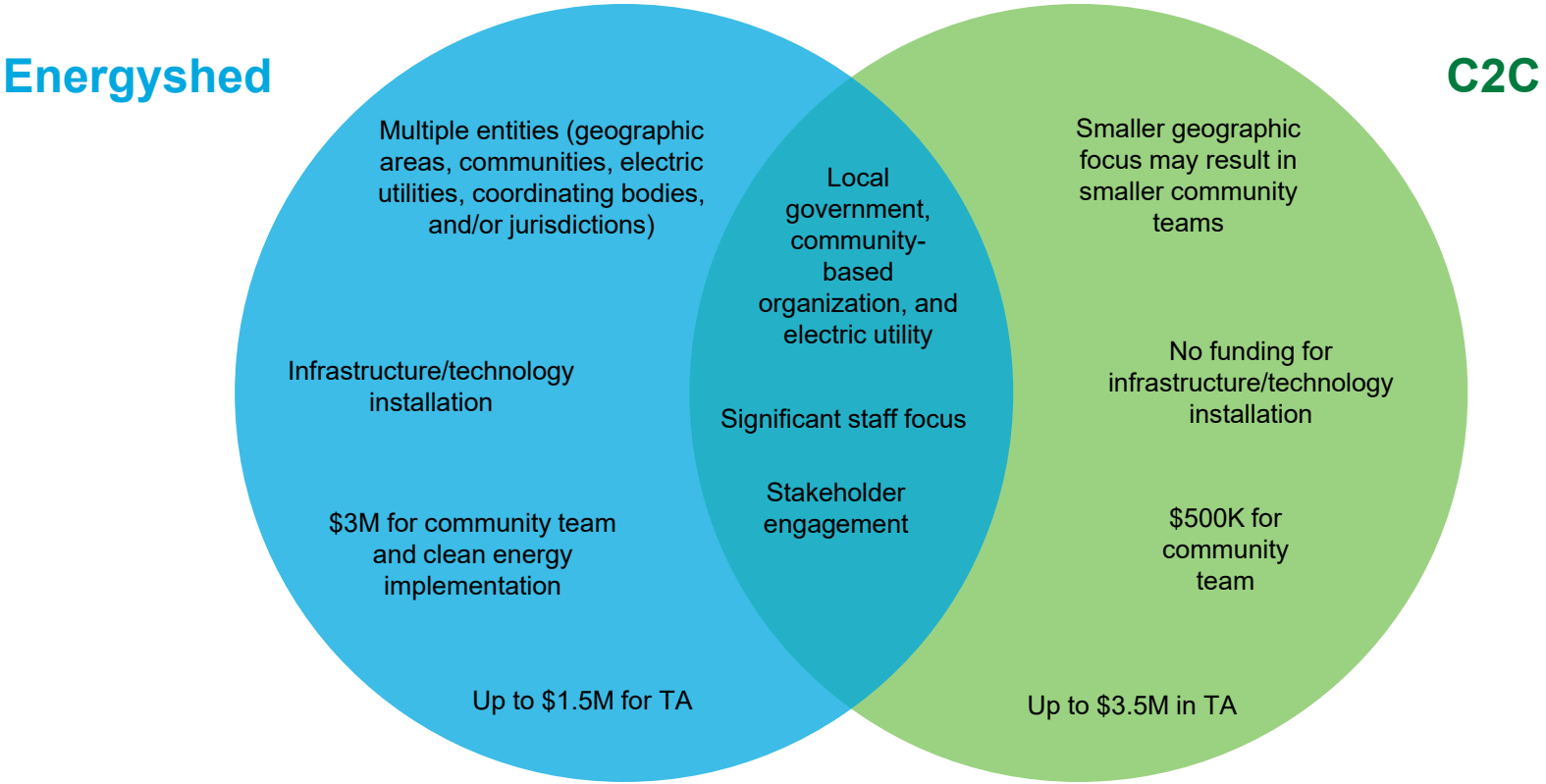
In-Depth Partnerships Overview

- **Three RFPs will offer the opportunity to engage in In-Depth Partnerships to support teams through a combination of:**
  - Direct funding
  - Targeted technical assistance

- **Targeted technical assistance will be provided by the DOE's National Laboratories.**
  - National Laboratories will provide no-cost assistance in support of the community team's goals

Three Upcoming In-Depth Partnership Opportunities

	C2C In-Depth Partnerships	Energyshed – Rural	Energyshed – Metro
Number of Awards	2–3 awards	1 award	1 award
Funding Amount ("Subcontracting Funding")	$500,000 in subcontracting funding	$3 million in subcontracting funding	$3 million in subcontracting funding
Anticipated Technical Assistance Award	Up to $3.5 million in no-cost technical assistance	Up to $1.5 million in no-cost technical assistance	
Eligible Activities for Subcontracting Funding	Support staff time and participation, hire additional staff, and support community engagement activities	Support staff time and participation, hire additional staff, support community engagement activities, and purchase clean energy infrastructure/technology to support findings from the technical assistance research	
Eligible Communities	All community types	Rural communities	Metropolitan communities
Eligible Applicants	Community teams consisting of representatives from local government, community-based organizations, and electric utilities		
Technical Assistance Offered	Expert advice, technical guidance, best practices, world-leading analytical tools, and access to the Advanced Research on Integrated Energy Systems (ARIES) research platform, hardware-in-the-loop demonstration platform, and virtual emulation environment		


Energyshed
Multiple entities (geographic areas, communities, electric utilities, coordinating bodies, and/or jurisdictions)
Infrastructure/technology installation
$3M for community team and clean energy implementation
Up to $1.5M for TA
Local government, community-based organization, and electric utility
Significant staff focus
Stakeholder engagement
C2C
Smaller geographic focus may result in smaller community teams
No funding for infrastructure/technology installation
$500K for community team
Up to $3.5M in TA

Energyshed: Why, Where, and What

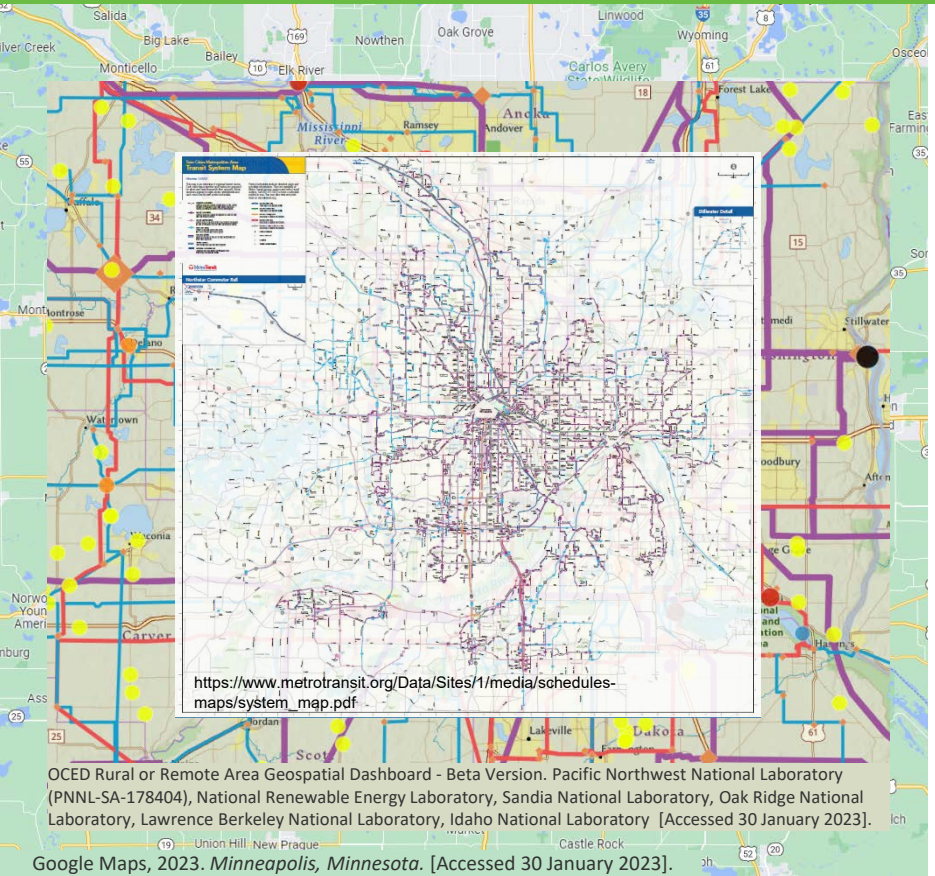
Why: The Energyshed concept provides a valuable framework for considering how to achieve **resilience**, **affordability**, **equity**, and **locally driven clean energy goals** while ensuring consideration of needs and challenges across all applicable entities

Where: Includes multiple, closely coupled, adjacent geographic areas, communities, electric utilities, coordinating bodies, and/or jurisdictions

What: Considers sources of generation, energy loads (demand), and transmission and distribution networks

Example Metro Area Energyshed

Twin Cities Metro Area – Where



OCED Rural or Remote Area Geospatial Dashboard - Beta Version. Pacific Northwest National Laboratory (PNNL-SA-178404), National Renewable Energy Laboratory, Sandia National Laboratory, Oak Ridge National Laboratory, Lawrence Berkeley National Laboratory, Idaho National Laboratory [Accessed 30 January 2023].

Google Maps, 2023. *Minneapolis, Minnesota.* [Accessed 30 January 2023].

Multiple, closely coupled, adjacent jurisdictions

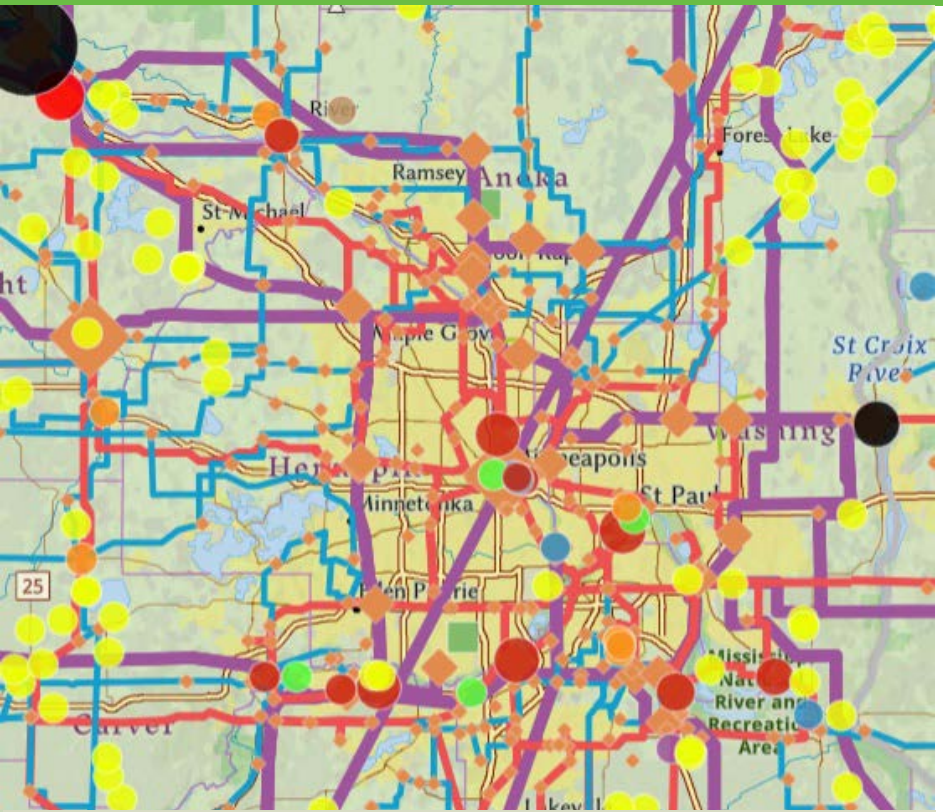
- Combination of electric utility and municipal utilities
- Primarily solar, natural gas, nuclear, biomass, and coal sources
- Extensive transmission and distribution network

Transportation interfaces with power grid

EXAMPLE FOR ILLUSTRATIVE PURPOSES ONLY
This entity is not currently involved in this project and will not receive preferential treatment should they apply.

Example Metro Area Energyshed

Twin Cities Metro Area – What



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Consider energy loads (demand), sources of generation, and transmission and distribution networks

- Solar generation
- Coal generation
- Natural gas generation
- Nuclear
- Biomass
- Transmission lines (color varies by MW)
- Transfer station

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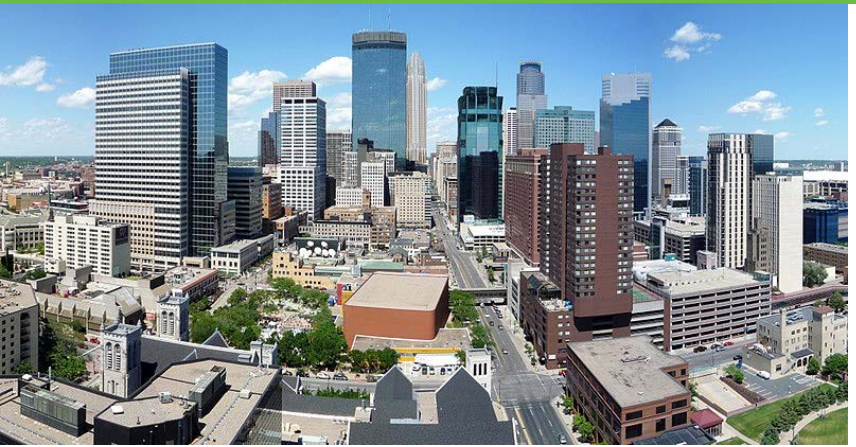
Example Metro Area Energyshed

Twin Cities Metro Area – Why



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Example topics:

- What communication and control strategies best support distribution grids with increased demand response, electrification, and distributed energy resources?
- How can clean energy reliably replace coal or natural gas generation in key areas?
- What rate designs best support an equitable distribution of clean energy benefits across jurisdictional boundaries?

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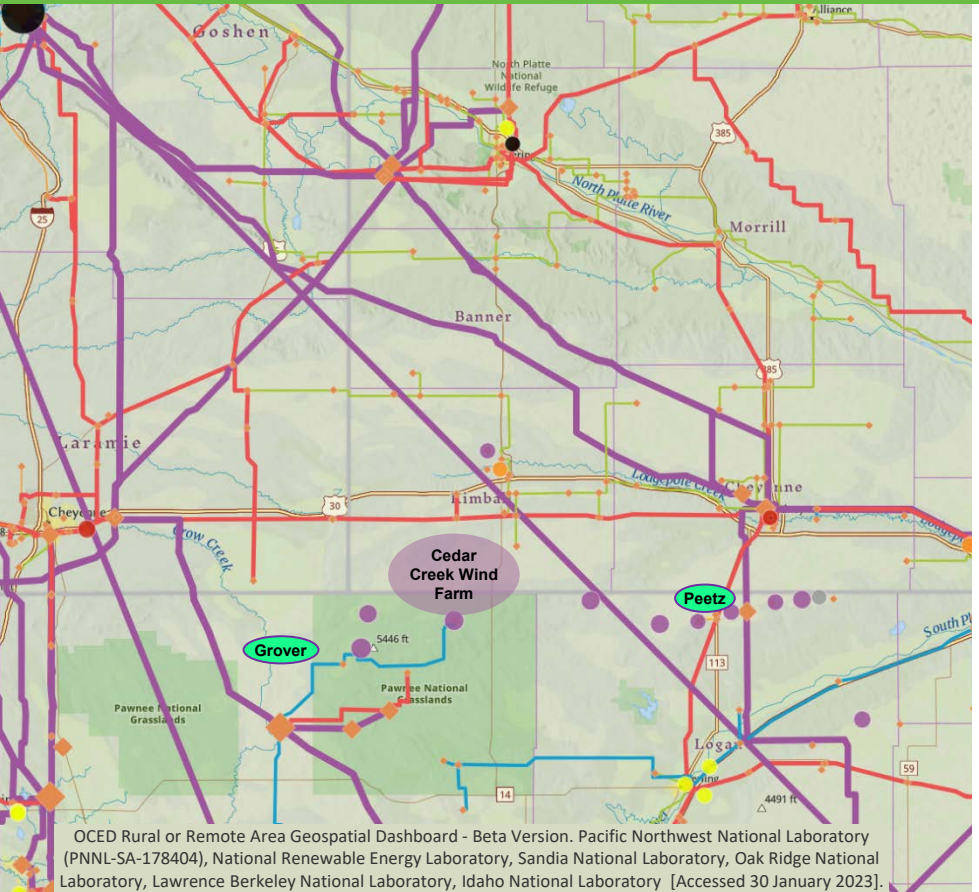
Example Rural Energyshed
Northeast Colorado – Where



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Multiple rural communities and rural co-ops, with a G&T provider

- Energy supply primarily from coal and natural gas in Wyoming
- Host wind energy and associated transmission infrastructure to serve Denver

- Wind generation
- Coal generation
- Natural gas generation
- Transmission lines (color varies by MW)
- Transfer station

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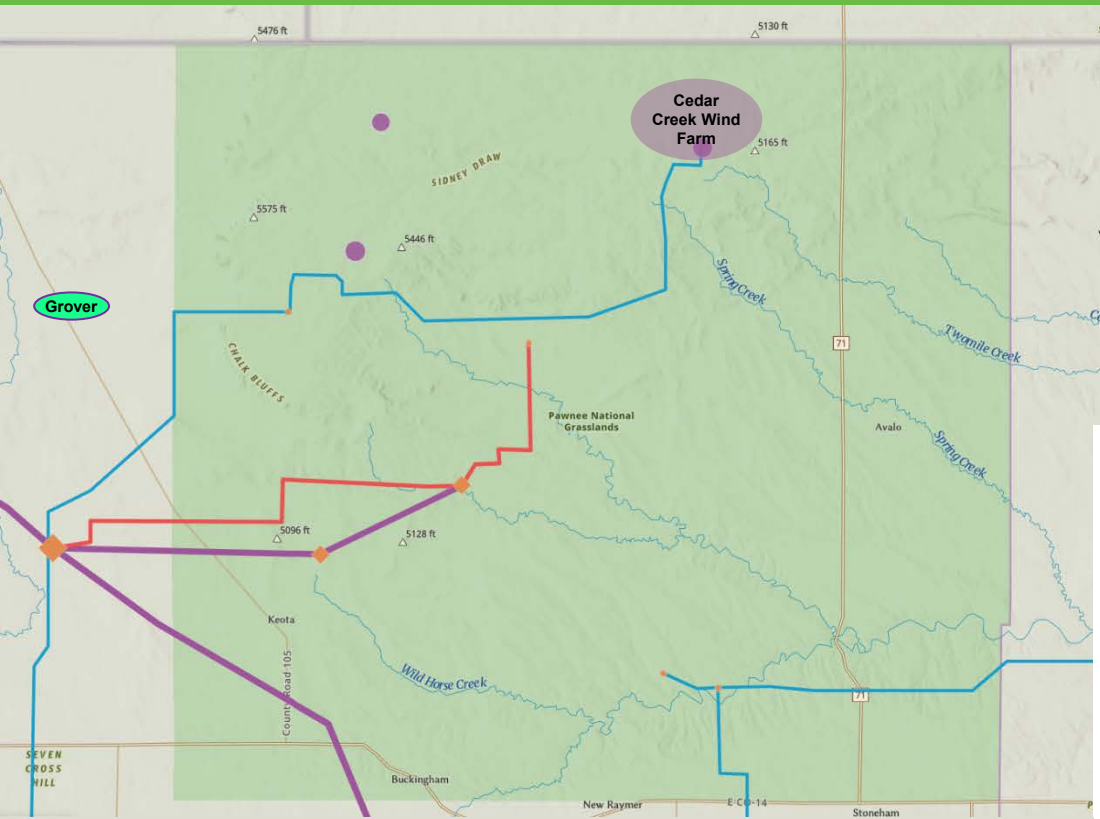
Example Rural Energyshed
Northeast Colorado – What



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Electricity generators, demand, transmission and distribution networks

- Wind generation
- Transmission lines
- Transfer station

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Example Rural Energyshed
Northeast Colorado – Why

Photo By Jeffrey Beall – Own work, CC BY 3.0, https://commons.wikimedia.org/w/index.php?curid=47907835

Example topics:

- How can more clean energy be sited in rural areas while ensuring that communities most impacted by new clean generation benefit equitably?
- How can clean energy goals and resilience be best achieved across multiple sectors (grid, mobility, and buildings) using an integrated planning approach?

Solicitation Process

Other Solicitation Information

- Requests for Proposal (RFPs) are scheduled to post to SAM.gov on 2/15
- Subcontract ceiling amounts are $500k for C2C and $3.0M for Energyshed
- Technical assistance amounts are handled separate from subcontract awards and are anticipated to be up to $3.5M for C2C and $1.5M for Energyshed
- Dates for receiving technical questions is stated in the RFP
- Other programmatic factors (geographical diversity, sectors, etc., from pre-solicitation)

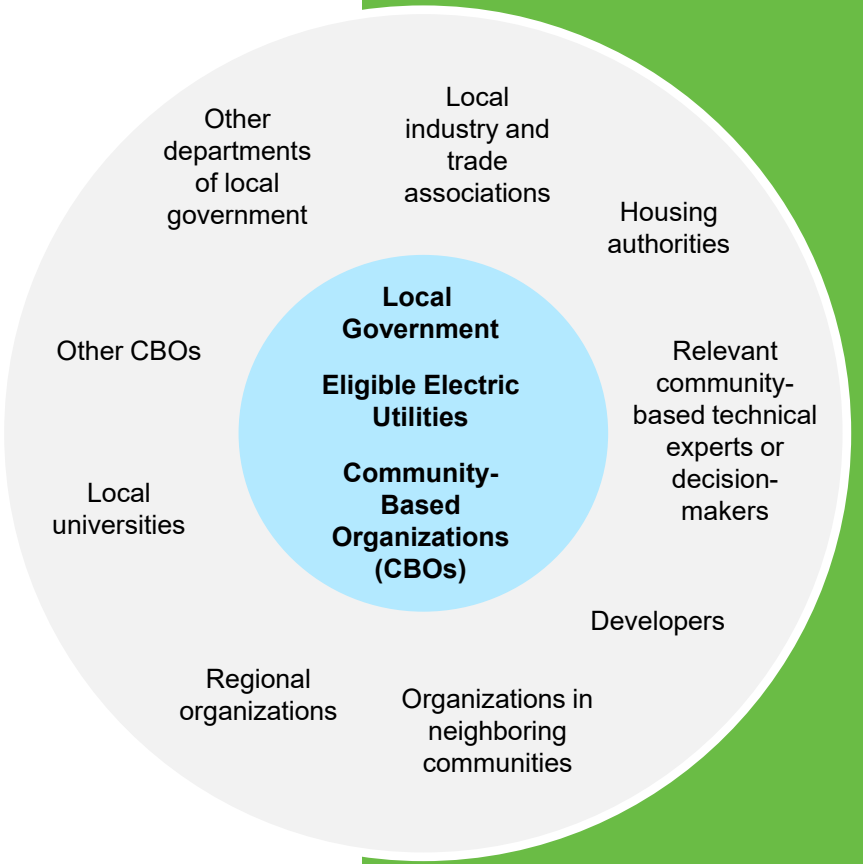
Community Team Structure

Applying Community Team:

- The core team submitting the application.
- If selected, they will guide the project, interface with national laboratory technical staff and team (including in-person and virtual meetings), and act as a primary conduit for communicating with and collecting input from the broader community.

Additional relevant stakeholders:

- Community organizations who help address the community challenges and priorities.
- Cannot receive project funding.



Questions?

C2C: Clean Energy *to* Communities

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Thank you!

NREL/PR-7A40-85207

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