C2C: Clean Energy *to* Communities

U.S. DEPARTMENT OF ENERGY

C2C Overview

www.nrel.gov/C2C

February 10, 2023

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Inspired by LA100, C2C enhanced capabilities—ARIES validation—will scale technical innovation

One utility
over 3 years

LA100
The Los Angeles 100% Renewable Energy Study

Pathway analysis

\+ Validation

ARIES

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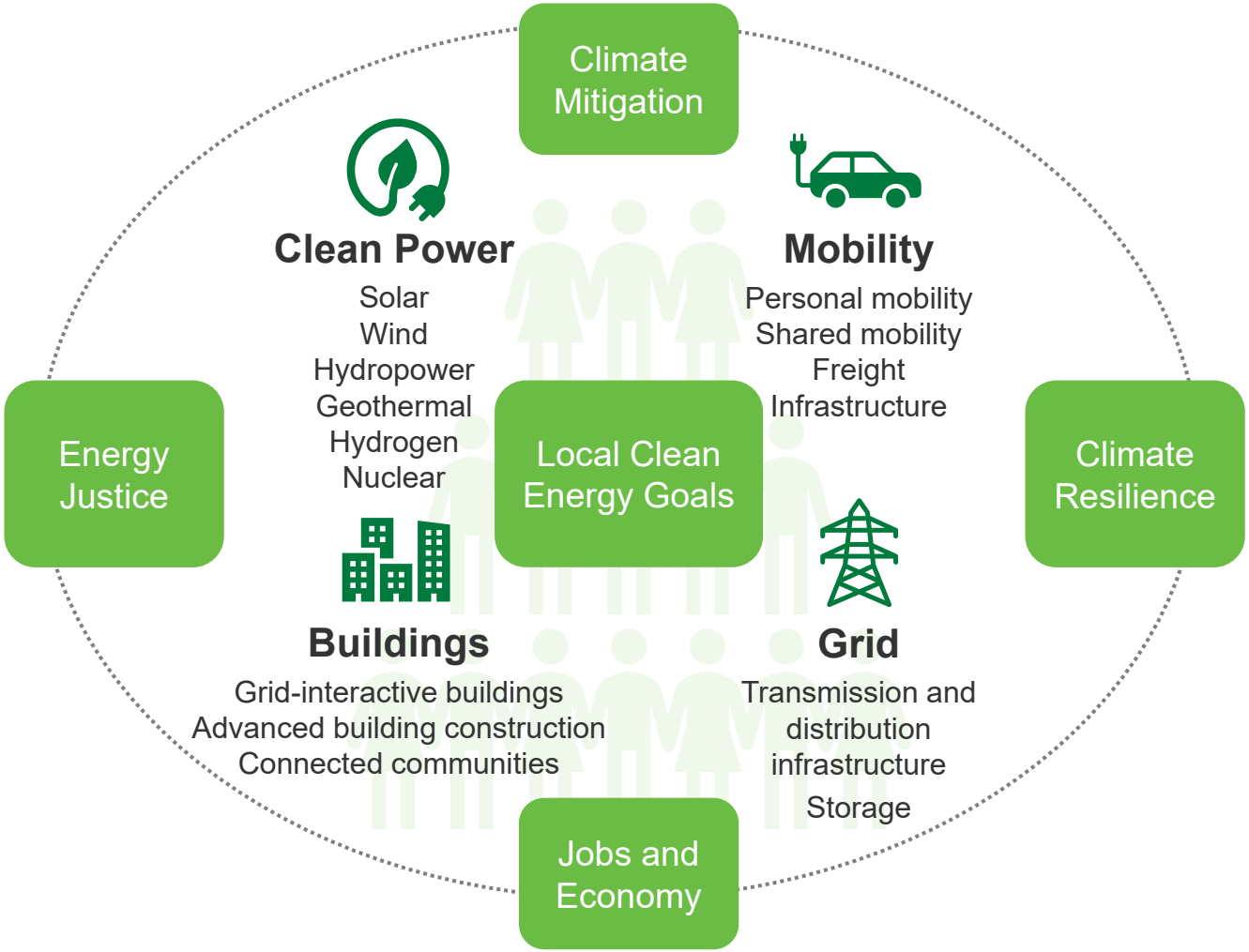
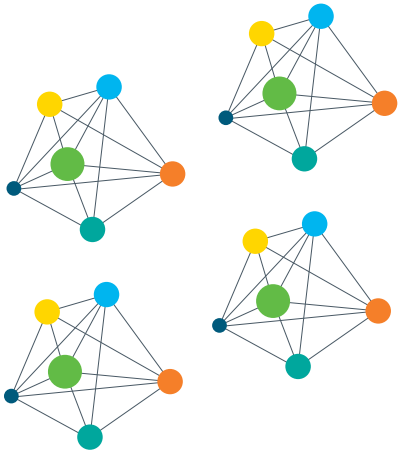
Multiple teams of utilities, local governments, and community- based organizations in the **first 3 years**

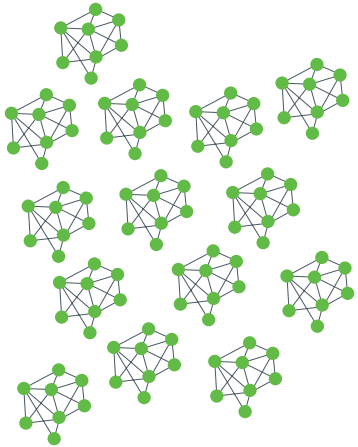
C2C will provide **innovative, cross-cutting technical solutions** using an **integrated** approach



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 and Budgets

In-depth partnership

RFPs released February 15th

Applicants have 90 days to submit applications

Cohorts

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

New rounds will launch every ~6 months.

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.

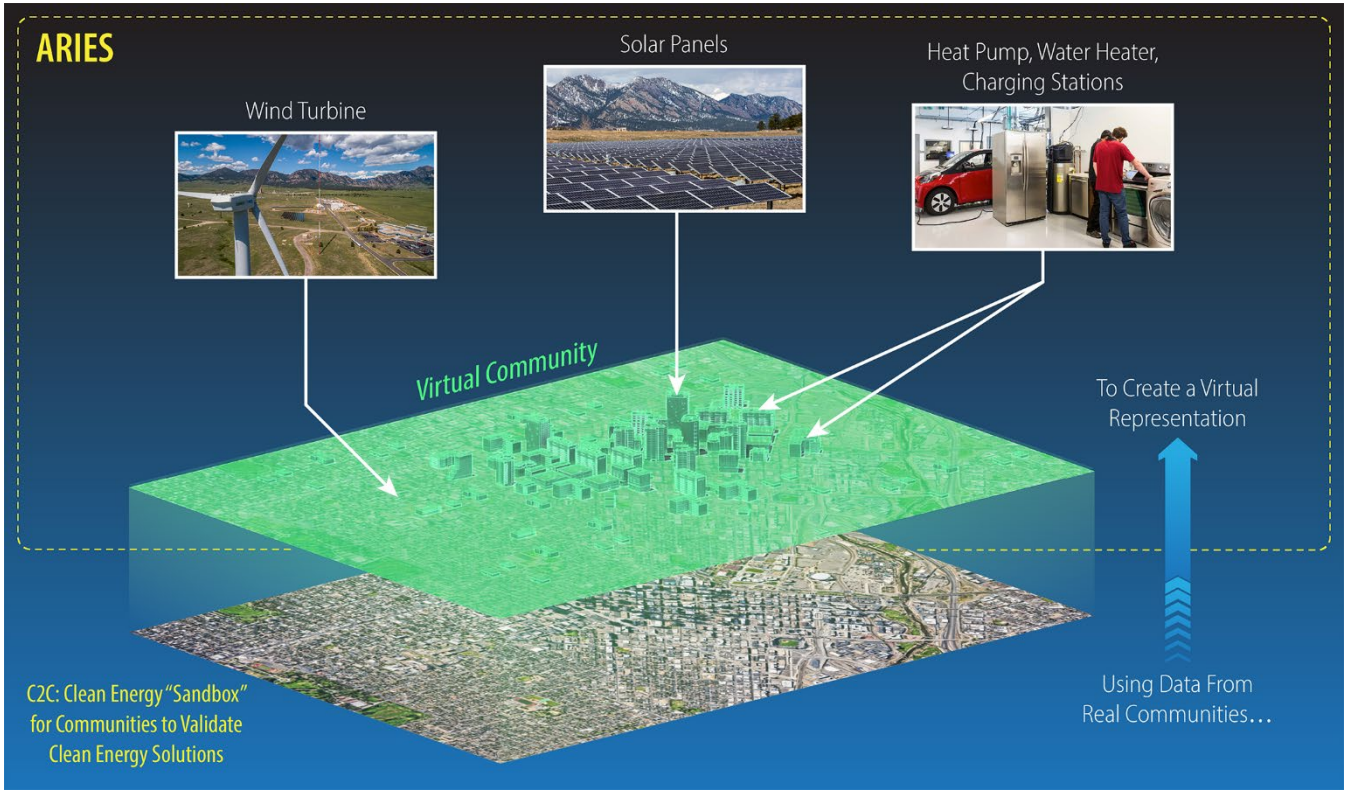
In-Depth Partnerships Overview

- **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

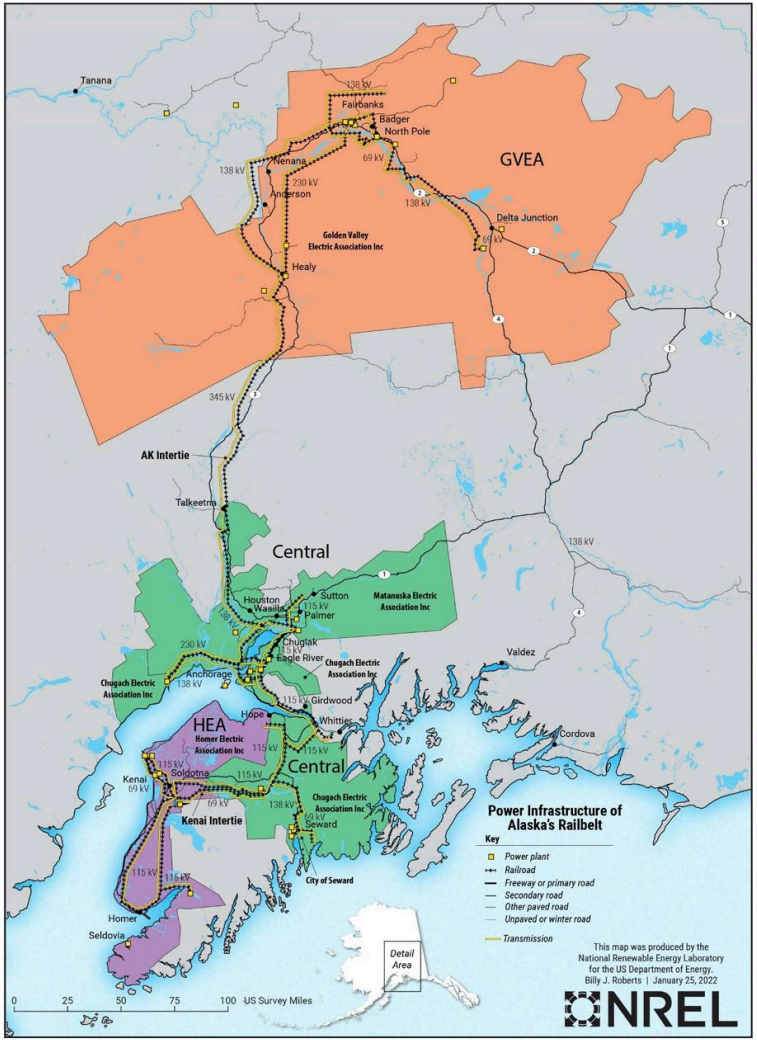
	C2C In-Depth Partnerships	Energyshed – Rural	Energyshed – Metro
Number of Awards	2–3 awards	1 award	1 award
Funding Amount ("Subcontracting Funding")	$500,000 in subcontracting funding	$3 million in subcontracting funding	$3 million in subcontracting funding
Anticipated Technical Assistance Award	Up 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		

Using the Collective Power of EERE and Lab Capabilities

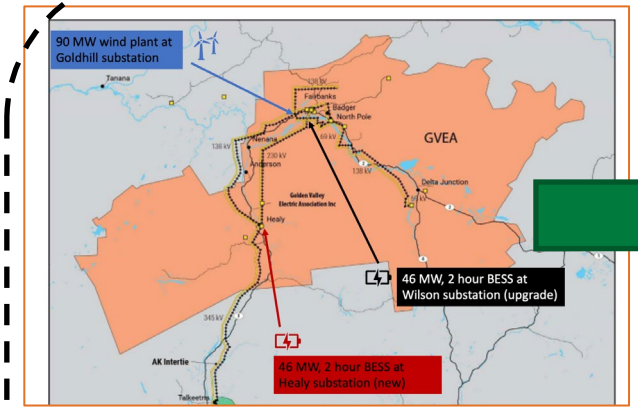


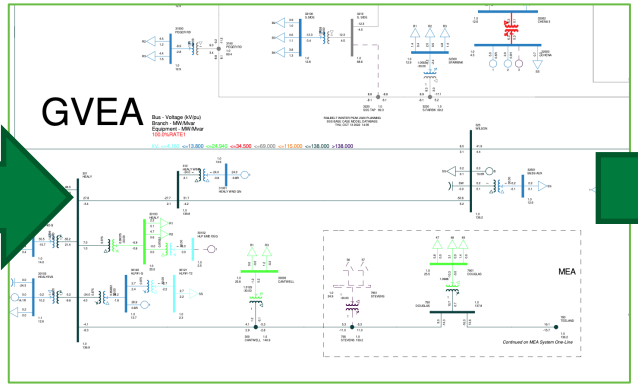
Overview of Fairbanks

- Retiring coal plant – 50MW
- Replacing with wind/storage
  - Wind size: 90 MW
  - Storage: 46MW 2hr battery
- Concerns
  - Summer load: 100MW
  - Winter load: 200MW
  - Moving toward IBR-based grid
  - Reliance on the AK intertie
- Technical Project leads:
  - Marty Schwarz and Leonardo Rese
  - Mayank Panwar to close loop in ARIES hardware



In-Depth Partnership: Fairbanks, AK Pilot: Transition from Coal Plant to Wind + Storage





Production Cost Modeling

What size of battery and wind and how will it affect our system and the rest of the Railbelt?

Grid stability analysis

Where do we put the battery and how will grid stability change with this new configuration in the summer vs. winter and in our unplanned outages?

Controller Validation at ARIES

Does this controller, designed to operate new wind and storage assets, work with our existing system controller and existing assets?

*Using physical assets at ARIES, do things really work in hardware like we think it will?

Due to specific needs of the community and time/budget constraints, we focused on these