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On Site Wind for Rural Load Centers: RADWIND community presentation

March 2023

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Changing the World's Energy Future

Idaho National Laboratory

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On Site Wind for Rural Load Centers

WETO Distributed Wind Project

Megan Culler
Idaho National Laboratory

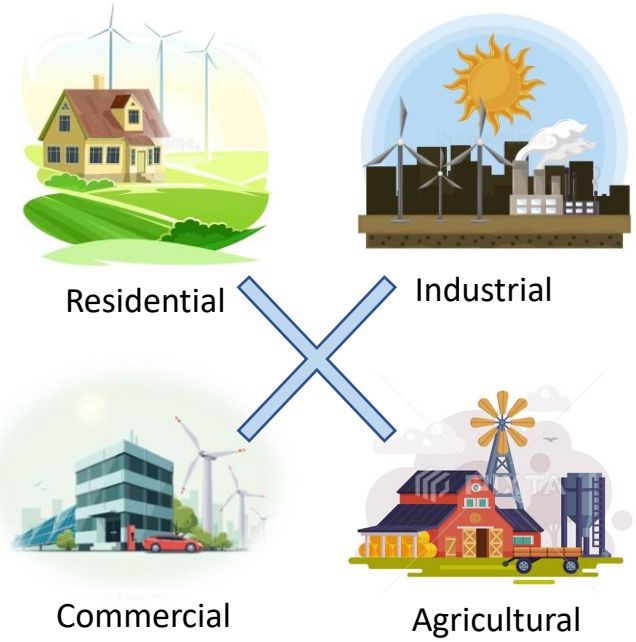
NRECA
America's Electric Cooperatives

TECHADVANTAGE® 2023
EXPERIENCE

Project Overview

- Rural areas have strong, but unrealized, distributed wind potential.
- How can distributed wind be used to meet energy and resilience needs of different loads?
- How can distributed wind by combined with other resources to maximize impact?
- Goal is to produce a suite of tools and resources to answer these questions and build scalability.

Rural load types studied



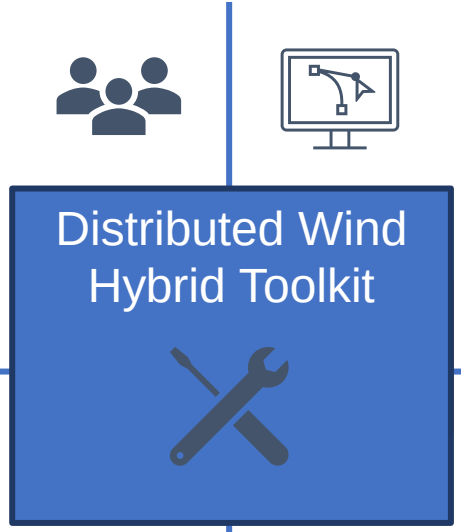
Approach

Engage with Stakeholders:

- Provide technical assistance to promote inclusion of distributed wind in proposals for federal funding
- Identify case studies to implement technical design with real system considerations
- Distribute outputs to relevant audience

Technical Design:

- Match load needs to generation for maximum resilience according to customer type
- Enhance resilience web application for more accessible analysis
- Create hybrid design templates



Justifying the Cost

- Develop user interface for valuation service to promote full understanding of relevant value streams
- Energy equity impacts
- Risk mitigation

Streamline Processes for Adoption

- Lessons learned from technical assistance engagements
- Tools made available online
- Templates available for use

Tools

Hybrid Optimization & Performance Platform

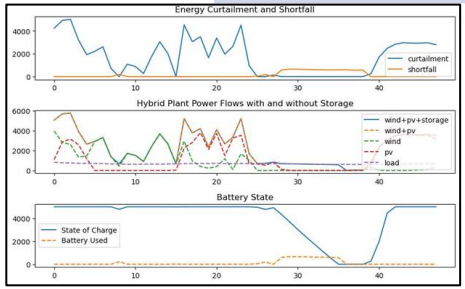
- Techno-economic analysis
- System and plant level design & control

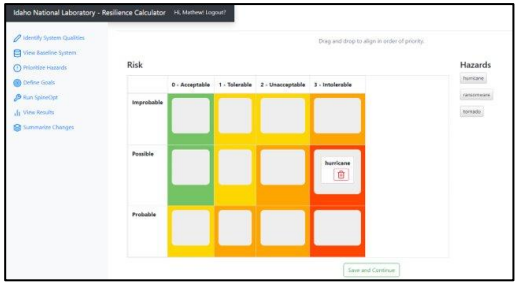
Resilience Application

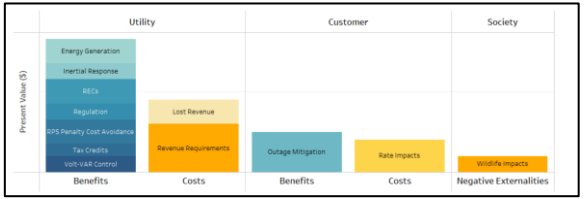
- Framework for resilience planning
- Detailed hazard analysis

Valuation Tool

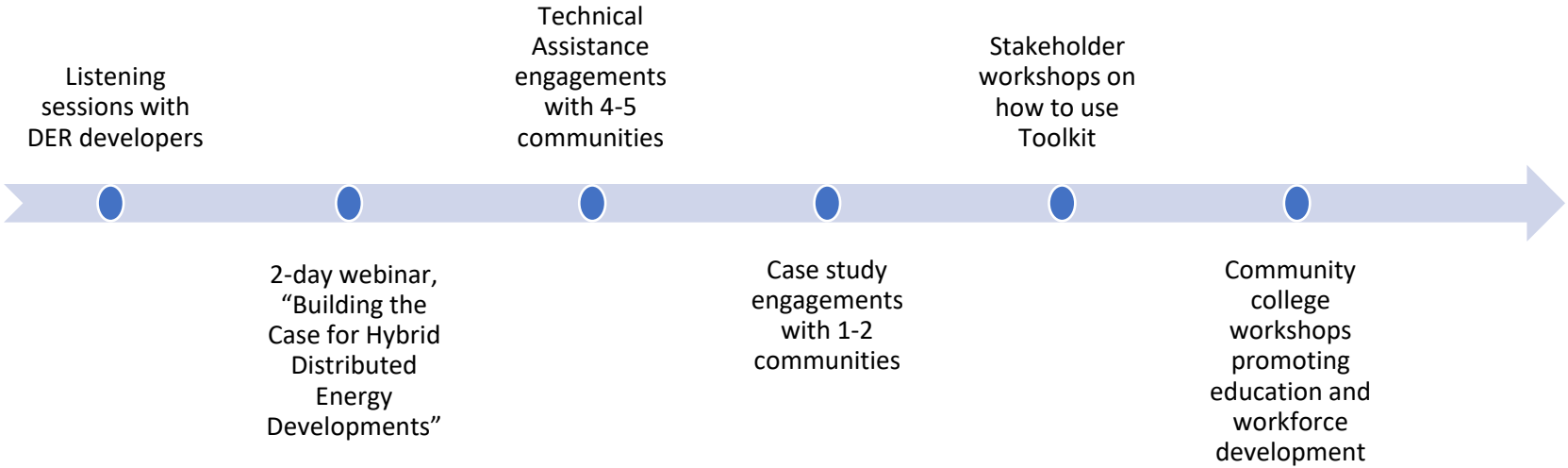
- Framework for investment decisions
- **Calculate** and co-optimize value streams







Timeline


Listening sessions with DER developers
2-day webinar, “Building the Case for Hybrid Distributed Energy Developments”
Technical Assistance engagements with 4-5 communities
Case study engagements with 1-2 communities
Stakeholder workshops on how to use Toolkit
Community college workshops promoting education and workforce development

Team

NREL
NATIONAL RENEWABLE ENERGY LABORATORY

- Hybrid system design
- Add features for HOPP

INL
Idaho National Laboratory

- Resilience needs of different load types
- Resilience boosters for distributed wind
- Lead TA and case study engagements

Pacific Northwest
NATIONAL LABORATORY

- Valuation of distributed wind
- Valuation service as a user tool
- Energy equity

IOWA STATE UNIVERSITY

- Connect labs to community interests
- Resilience analysis
- Rural applications for distributed wind

NRECA
America's Electric Cooperatives

- Leverage previous distributed wind work with co-ops

Mana Group LLC

- Stakeholder engagement
- Coordination with other projects
- Outreach

Upcoming webinar to learn more

Building the Case for Hybrid Distributed Energy Developments

April 5 & 6
10am-12pm MT each day
Free registration

Contact: Megan Culler
megan.culler@inl.gov
https://inl.gov/national-security/hybrid-energy-webinar/

Discussion topics

- Benefits of hybrid systems
  - Resilience benefits
  - Regional and community benefits
- Tool and resources: How can I design a system that works for me and my stakeholders?
  - Valuation framework
  - Resilience framework
  - Hybrid design
  - Wind resource analysis tools
- Opportunities
  - Technical assistance opportunities
  - Funding opportunities