



NREL Agrivoltaics Technical Assistance in the United States: Lessons Learned

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The InSPIRE Project-

Innovative Solar Practices Integrated with Rural Economies and Ecosystems

InSPIRE has 24 field research projects across the United States.

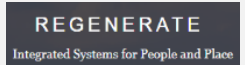
Field-based research:

- Novel agrivoltaic and traditional utility-scale PV designs integrated with multiple activities
- Assessing agricultural yields and irrigation requirements in arid environments
- Grazing standards and best practices
- Pollinator habitat and ecological services

Analytical research:

- Cost-benefit tradeoffs of different agrivoltaic configurations
- Tracking agrivoltaic projects across the U.S.
- Assessing research gaps and priorities

<https://openei.org/wiki/InSPIRE>



Clean Energy to Communities (C2C) Program



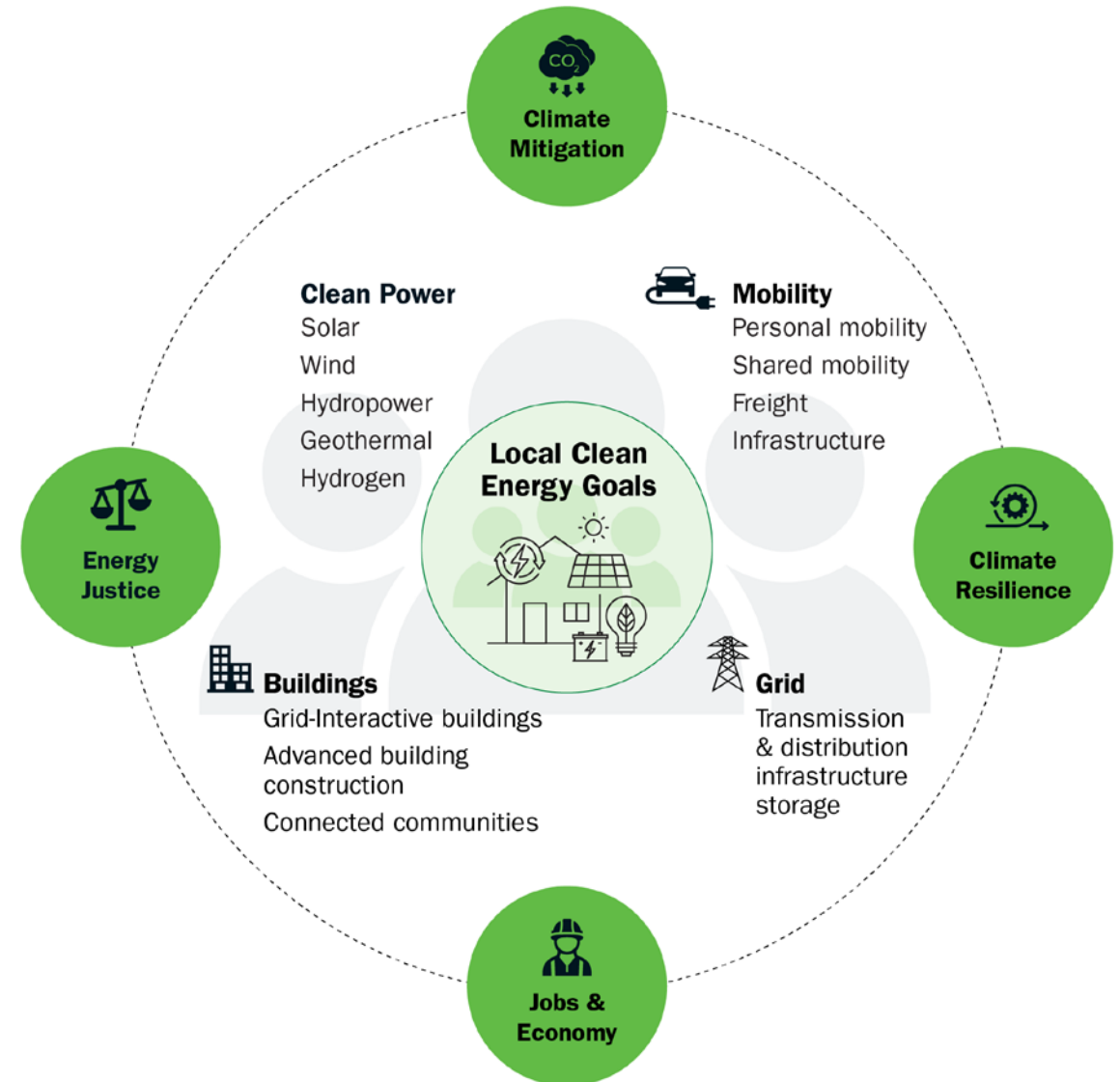
C2C: Clean Energy to Communities

U.S. DEPARTMENT OF ENERGY

C2C provides communities with expertise and tools to achieve their **clean energy goals** through in-depth partnerships, peer-learning cohorts, and expert match.

C2C Expert Match Participants:

- Local governments
- Tribes
- Community-based/nonprofit organizations
- Universities, colleges, and community colleges



C2C Agrivoltaics Technical Assistance at NREL

Knowledge Transfer



Provides resources for capacity building and project development:

- Agrivoltaics 101 Resources
- Data Access
- Online Tools

Educational and Stakeholder Outreach



Transfers knowledge to audience for action:

- Training
- Webinars
- Expert Support
- Guest Lectures

Modeling and Analysis



Applies knowledge, interprets data to support community action:

- Analysis & Modeling
- System Design
- Site Visits

Demonstration Facilities and Research



Assist with on-site research development and partnerships:

- Research Methodologies and Questions
- Partnership Development
- Curriculum Development Support

C2C Expert Match Agrivoltaics Team



Brittany Staie

Agrivoltaic Designs/
Crop and Farmer
Compatibility



Dana-Marie Thomas

Agrivoltaics
Community Lead



James McCall

Technoeconomic
Analysis



Jordan Macknick

Interdisciplinary



Thomas Hickey

Agrivoltaics
Implementation



Brian Mirletz

Technoeconomic
Analysis/Irradiance
Modeling



Chong Seok Choi

Sunlight Analysis/
Soil/Monitoring
Capabilities



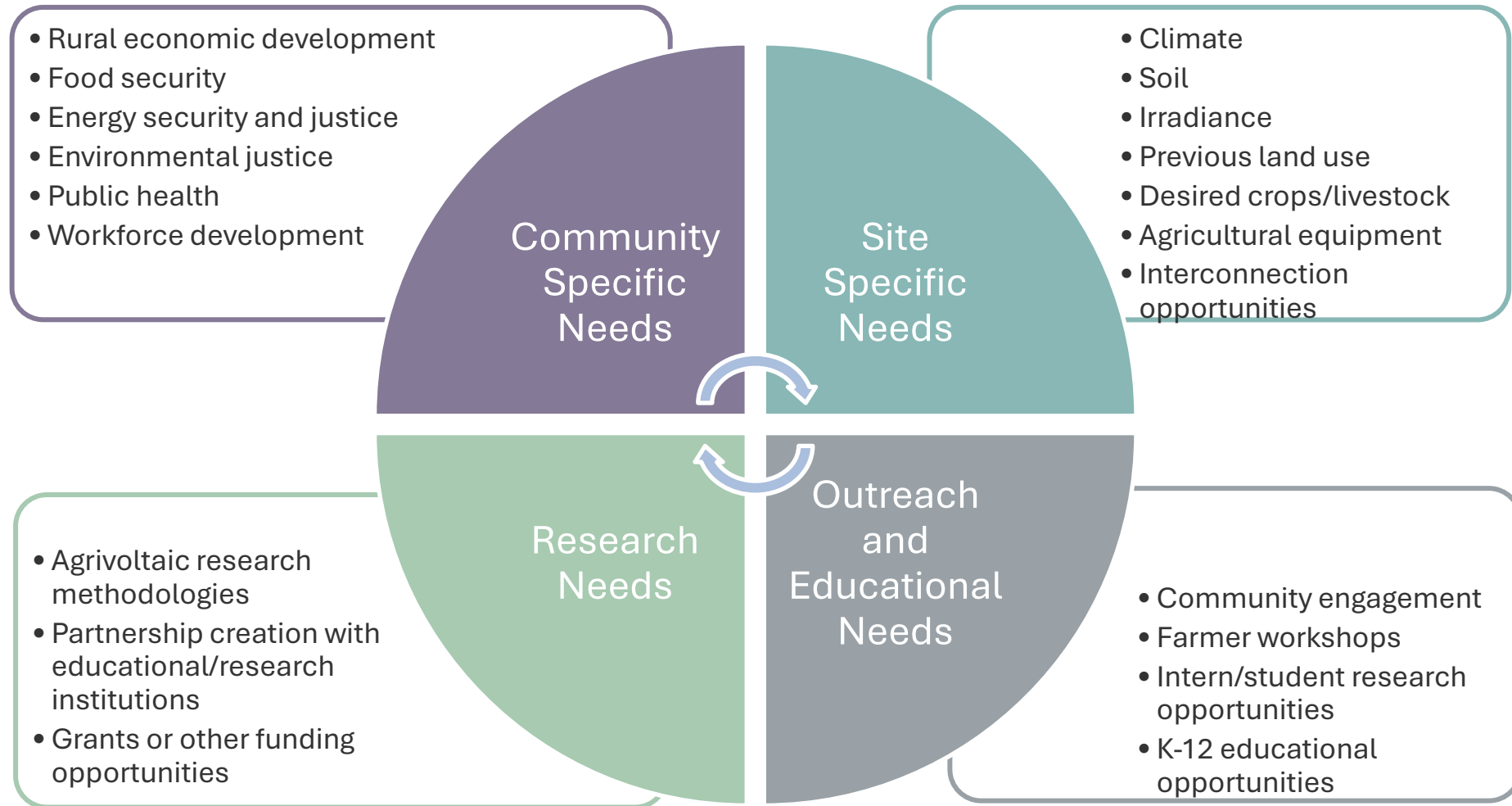
Silvana Oviatt

Irradiance Modeling

C2C Agrivoltaics Technical Assistance Communities



NREL Agrivoltaics Technical Assistance Framework



C2C Case Study: Seed Time Harvest Farms



Community:

- Organization: Seed Time Harvest Farms
- Owner/Farmer: Cetta Barnhart
- Location: Monticello, Florida

Community Goals:

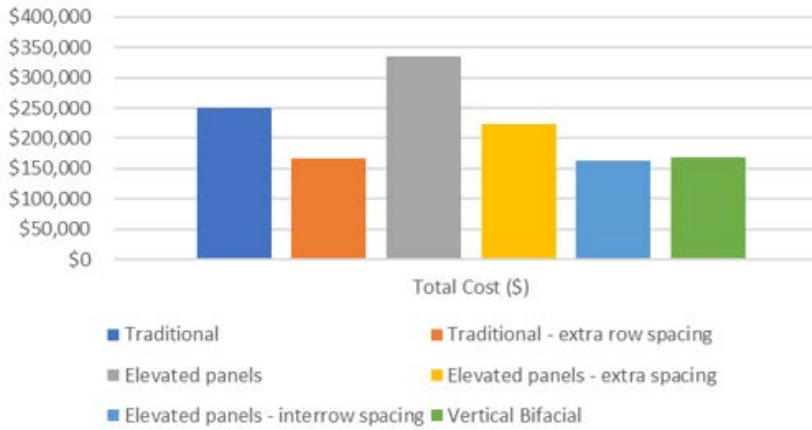
- Agrivoltaics site to produce clean energy and healthy produce for local community
- Educational opportunities for local farmers with an emphasis on empowering BIPOC farmers
- Rural economic development; providing additional streams of income based on opportunities for best land use
- Replicable agrivoltaics project for the region

C2C Technical Assistance Deliverables:

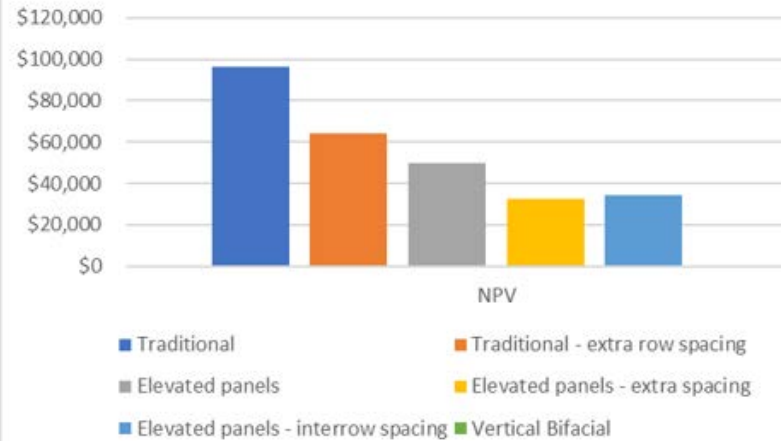
- Agrivoltaics tour at Jack's Solar Garden in Longmont, Colorado
- Technoeconomic analysis of various agrivoltaic designs
- Analysis of farmable area and sunlight quality
- Requirements document to bring to local solar developers

C2C Case Study: Seed Time Harvest Farms

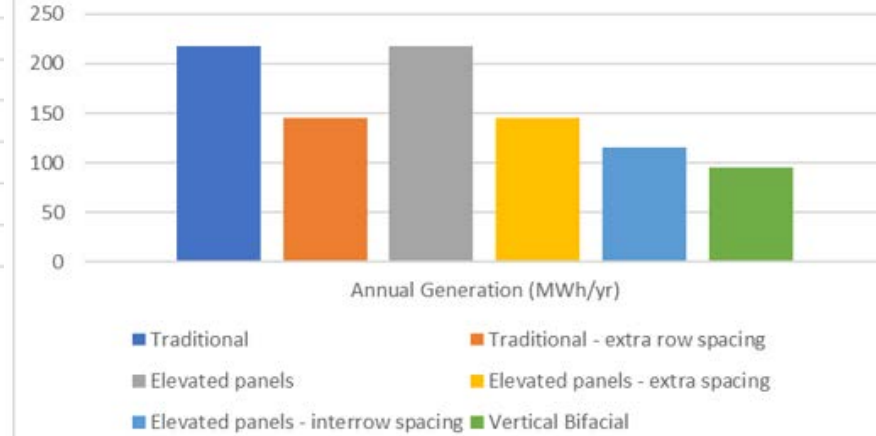
Total Installation Costs (\$)



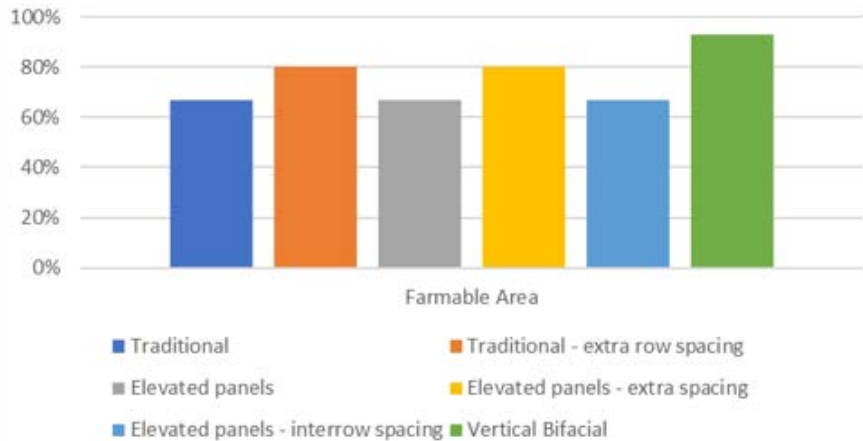
Net Present Value (NPV)



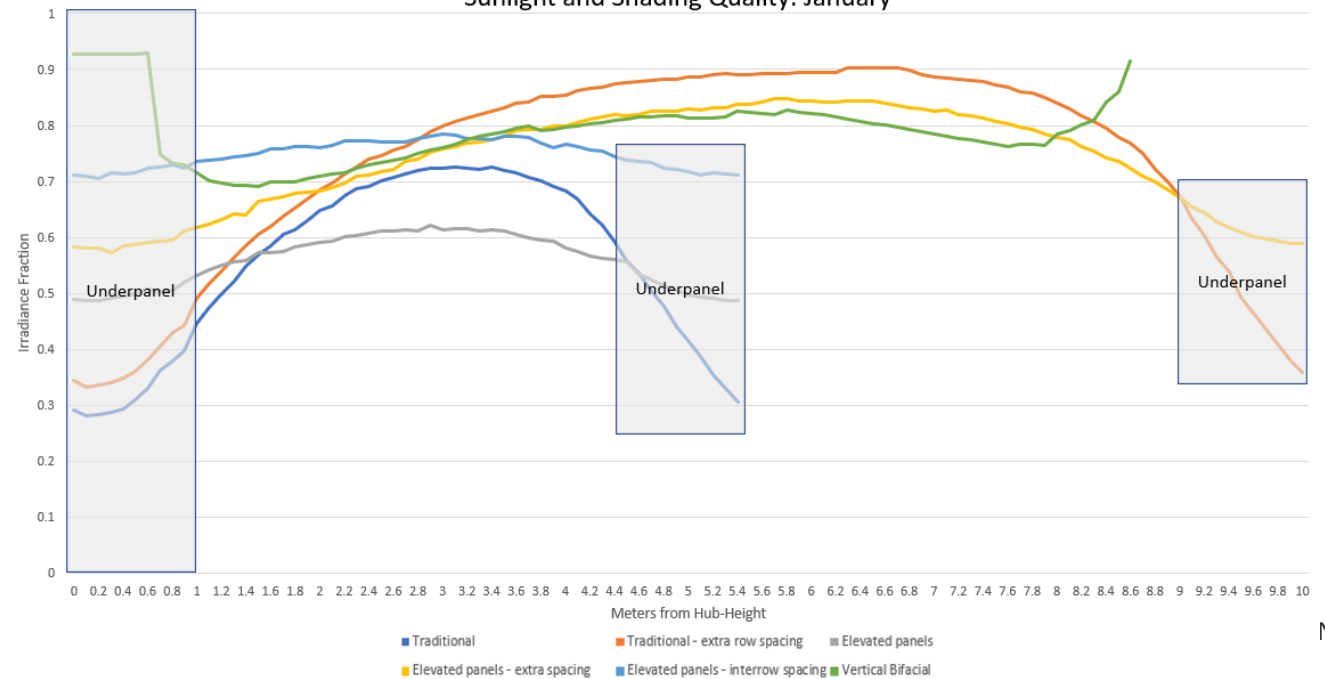
Annual Generation (MWh/yr)



Farmable Area (% not under panels)



Sunlight and Shading Quality: January



Key Takeaways

Agrivoltaic sites are not one size fits all

- Important to focus on community goals, site-specific conditions, and historical/cultural context
- Local policy can inform the deployment and designs of agrivoltaics

Communities across the United States are very interested in agrivoltaics but need more support for implementation

- Communities often need access to resources and support to assist in their project development
- Connections with other local stakeholders (e.g., developers, utilities, academic institutions, farmers, graziers) can help to meet project goals

Important to connect communities to each other to facilitate peer-to-peer agrivoltaic learning

- As commercial agrivoltaic production increases in the United States, communities have communicated interest in learning from successful case studies and creating networks

Future Steps



NREL Agrivoltaic Resources

Development of agrivoltaic 101 and technical resources for communities



C2C Agrivoltaics Cohort

Facilitate peer-to-peer learning and information sharing



BIPOC Farmer Workshop

Upcoming workshop to showcase success stories and provide resources and strategies for community engagement



NREL InSPIRE Project

Continued research to help inform agrivoltaic stakeholders



Continued Technical Assistance

NREL to support technical assistance through multiple programs

Questions?

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C2C Website:

<https://www.energy.gov/eere/clean-energy-communities-program>

InSPIRE Website:

<https://openei.org/wiki/InSPIRE>



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