U.S. DEPARTMENT OF ENERGY

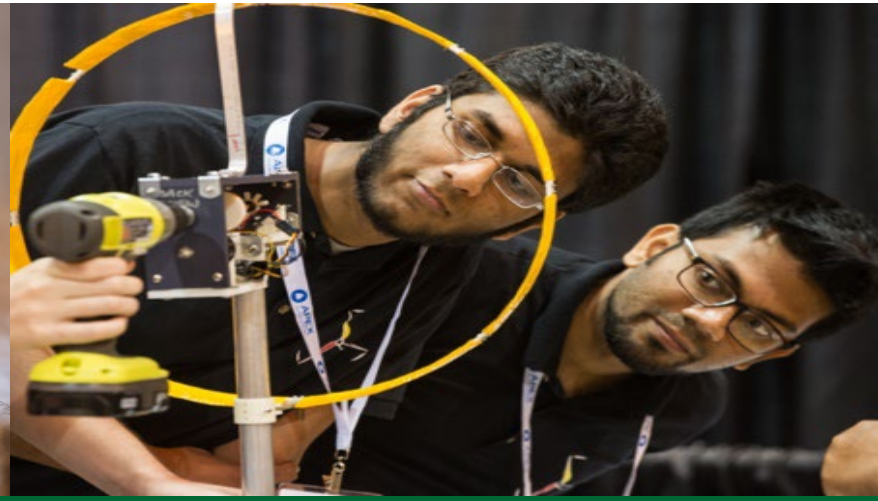
Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

# WETO Community Impacts Research & Outreach – Social Science Strategy

Presented by: Maggie Yancey

08/04/21 – 9:20-9:40 a.m. EST

Peer Review 2021



# DOE Social Science Team Introductions: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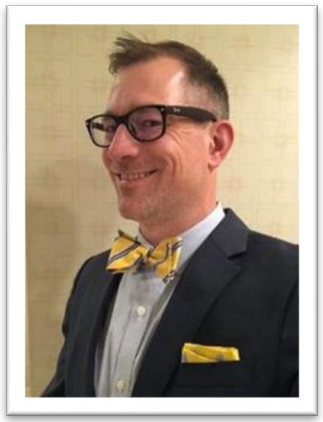

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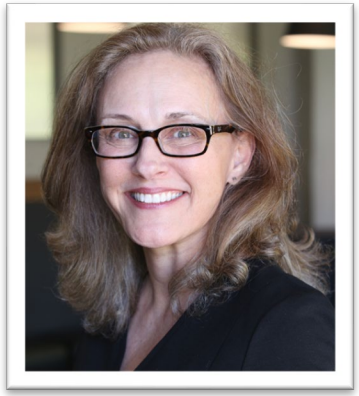

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# WETO R&D Program Overview

## Research Areas

- Offshore Wind
- Land-Based Wind
- Distributed Wind
- Systems Integration
- Data, Modeling & Analysis

## Top-Line R&D Priorities

- Aggressive cost reduction
- Scaling and light-weighting
- Environmental & siting challenges
- Grid services, cybersecurity, and hybrid systems
- Workforce Development

**Mission: Advance scientific knowledge and technological innovation to enable clean, low-cost wind energy options nationwide**

Land-Based, Offshore, and Distributed Wind Energy

# Community Impacts Research and Outreach Summary

## Social Science

**Research to characterize impacts on communities and the local economies to develop informed mitigation measure**

- *Sound, Shadow Flicker, and Visibility*
- *Socio-economic analysis*
- *Property Values Assessments*
- *International Energy Agency Task 28*
- *Operations & Maintenance Economic Impacts & Research*

## Technical Assistance

**Enable key partners to assess appropriate *and* risk managed siting options.**

- *Workshops focused on key stakeholders*
- *Presence and engagement at conferences*
- *Building off DOE historical engagement projects*

## Communications

**Develop and provide information resources and appropriate knowledge.**

- *WINDExchange online portal*
- *Access to tools and resources*
- *Fact based information*
- *Curated knowledge for specific audiences*

# Feedback to inform strategy development:


- Critical to earnestly understand the DOE key research gaps and priorities.
- Listening sessions have been conducted across land-based and offshore with a range of stakeholders providing independent feedback to improve understanding and to inform framework.
- **Our goal: To understand key challenges and opportunities for research and inquiry.**

# Administration Highlights

# Administration Goals

## Executive Order 14008:
## Tackling the Climate Crisis at Home and Abroad

- Set a goal of a **carbon-free electricity sector** no later than **2035**
- Revitalize "**energy communities,**" for example communities that include brownfields

Citation: FACT SHEET: President Biden Takes Executive Actions to Tackle the Climate Crisis at Home and Abroad, Create Jobs, and Restore Scientific Integrity Across Federal Government | The White House

## Executive Order 13985:
## Advancing Racial Equity and Support for Underserved Communities Through the Federal Government

- Advancing equity, civil rights, racial justice, and equal opportunity is the **responsibility of the entire government**
- Creating opportunities for the improvement of communities that have been historically underserved

Citation: Fact Sheet: U.S. Efforts to Combat Systemic Racism | The White House

Images: Canva

# Justice40 Initiative

## What

- The goal of delivering 40 percent of the overall benefits of relevant **federal investments** to historically disadvantaged communities and **tracks performance** toward that goal through the establishment of **an Environmental Justice Scorecard.**

Image: Canva
Citation: FACT SHEET: President Biden Takes Executive Actions to Tackle the Climate Crisis at Home and Abroad, Create Jobs, and Restore Scientific Integrity Across Federal Government | The White House

## How

- The order initiates the development of a Climate and Environmental Justice Screening Tool, building off EPA's EJSCREEN

**Visit the DOE BETA Tool: www.energy.gov/diversity/energy-justice-dashboard-beta**

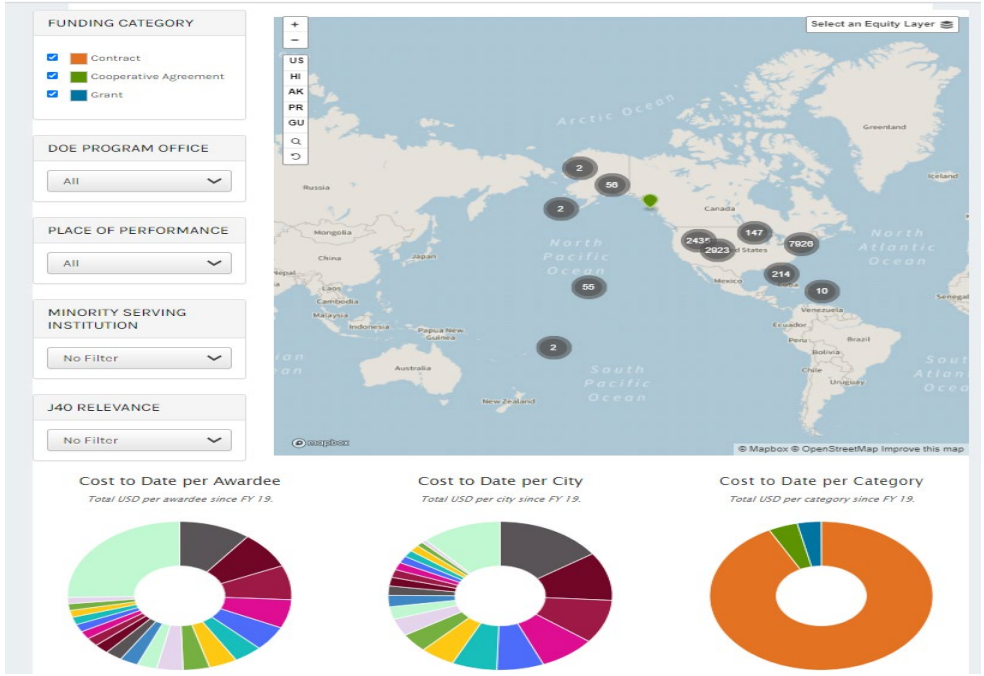



Image: EJ Mapper

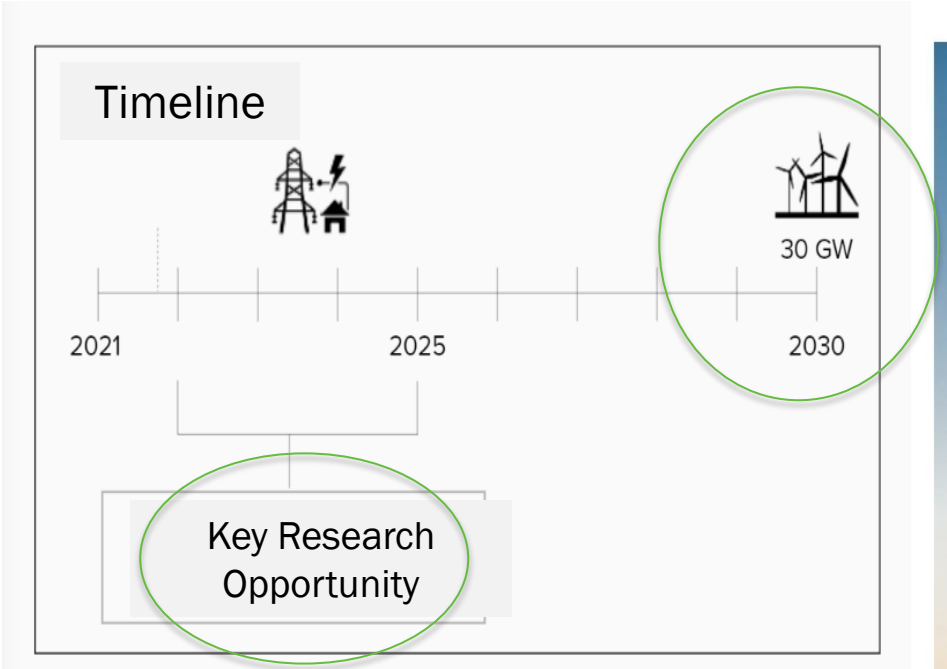
# Administration Offshore Wind Energy Goals

## 30 GW by 2030

The Biden Administration announced a series of coordinated steps to support rapid offshore wind energy deployment (**30 gigawatts by 2030**) **and job creation** including:

- Advance ambitious wind energy projects to create well-paying, unionized jobs.
- **Invest in American infrastructure** to strengthen the domestic supply chain and deploy offshore wind energy.
- Support **critical research and development, and data-sharing.**

Source: The White House Offshore Wind Announcement




***Research starting now is critical to reach goals for both floating & fixed-bottom.***

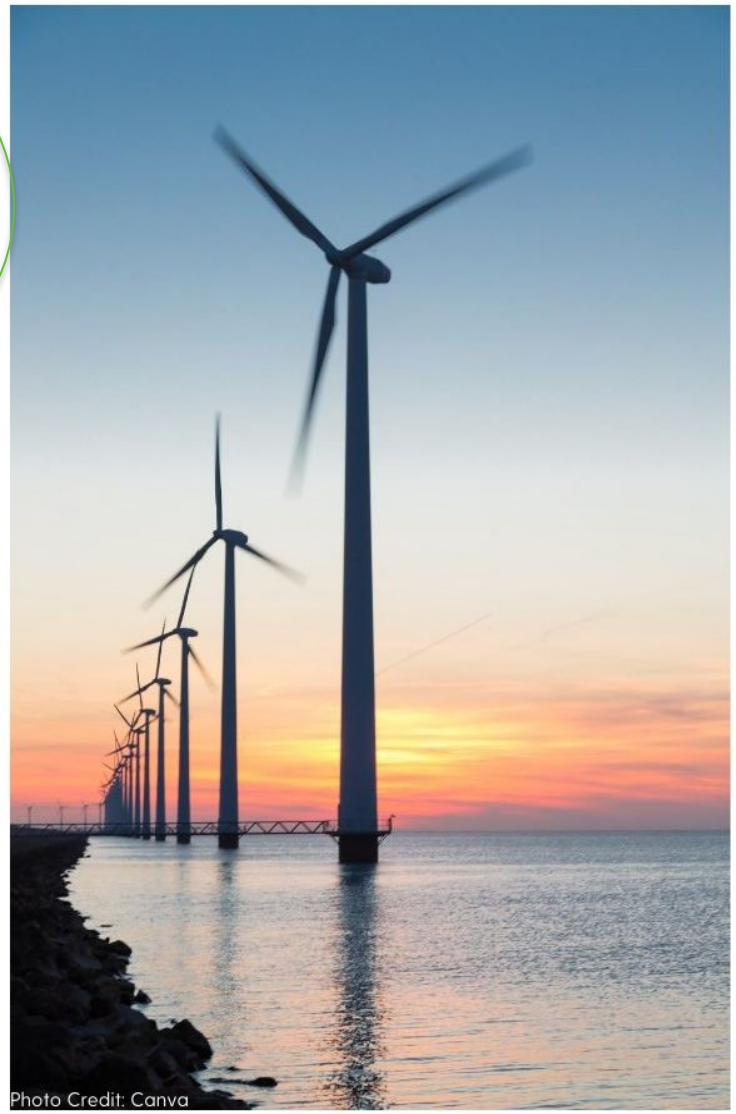
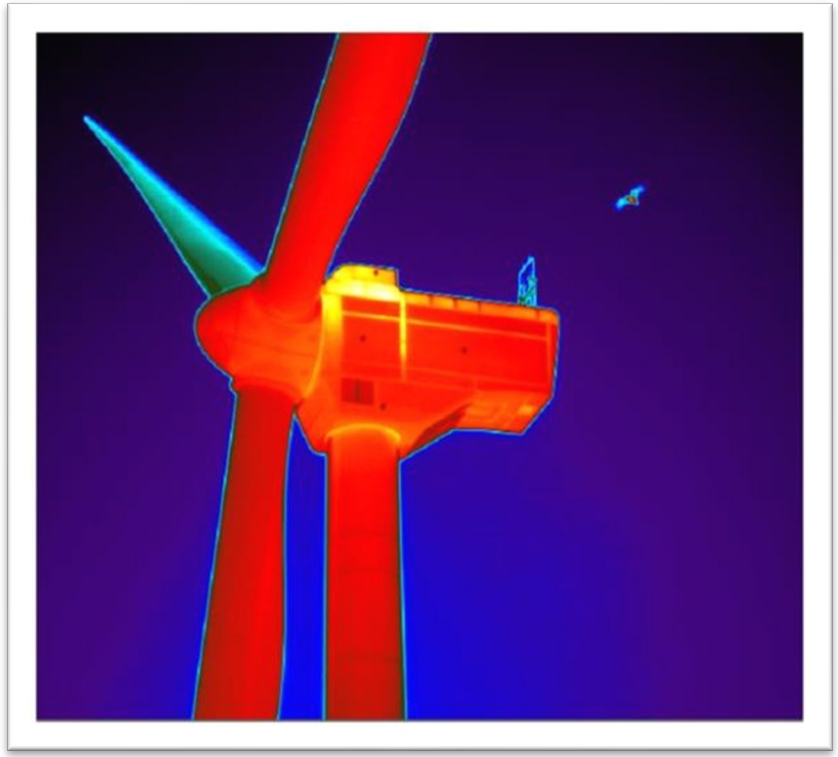


Photo Credit: Canva

# Transitioning *from* Administration Goals…



# Challenge of Renewable Energy Siting

- **The Biden Administration's goal to decarbonize the electricity sector by 2035 will require rapid deployment of new renewable energy generating capacity.**
  - Princeton NZA Study: 90-400K $mi^2$ required for wind development in 2050 net-zero economy scenarios – the size of WY, CA, and TX combined
- **Siting all this renewable energy means contending with environmental impacts, other land uses, and the potential for local opposition.**
- **Increased siting restrictions impact potential deployment and the ability to achieve deep decarbonization.**
  - Under a scenario with stringent siting restrictions, wind deployment is reduced by nearly 40% and marginal $CO_2$ abatement costs increased by 30% by 2050.

Citations: Land use and turbine technology influences on wind potential in the United States. Lopez et al 2021
December 2020 Princeton Study, Mai et al 2021

# Social Science: In Relation to Deployment

## Administration's Goals

- Set a goal of a **carbon-free electricity sector** no later than **2035**
  - Revitalize "**energy communities,**" for example communities that include brownfields
- 30 GW by 2030
  - Advance ambitious wind energy projects to create **well-paying, unionized jobs**
  - Invest in American infrastructure to strengthen the **domestic supply chain** and deploy offshore wind energy
  - Support **critical research and development**, and data-sharing.
- Advance Racial Equity and Support for Underserved Communities
  - The **responsibility** of the entire government
  - Creating opportunities for the **improvement of communities**

## DOE's Role

- Seeks **solutions** to environmental, **siting and use-conflicts** across multiple wind technology types
- **Extend the environmental quality, health, and economic and other benefits of clean energy** throughout low-income and underserved communities.
- **Address knowledge gaps** and address **community and economic concerns** through original research.

# WETO: Understanding Deployment & Communities

What are some best-case opportunities **short-term** and **long-term** for communities and a clean energy transition? E.g. What are the community values and opportunities?

What challenges are we solving?

E.g.) What's the baseline?

What are the equitable and durable solutions to decarbonization?

E.g.) How do we get there? What tools are necessary?

# Social Science Strategy Vision

## Vision:

*Empower communities and inform industry to support and deploy socially responsible wind energy projects.*

# Social Science Strategy Continued: Mission and Values

## Mission:

***Enable collaborative social science research to understand wind energy impacts and support community clean energy transitions.***

## Values:

- **Inclusive:** Respect for diverse values and perspectives through collaborative research
- **Trusted:** Credible, timely, dependable, community involved/informed/engaged social science
- **Accessible:** Widely available and transparent as well as information products
- **Relevant:** Adaptive research informed by evolving technology, previous insights and stakeholder needs

# Social Science Research Goals


## Research Goals:

- Reconciling technological performance with siting concerns to minimize impacts of wind turbines and development.
- Understand socioeconomic impacts of wind energy development to prioritize equity.

# Cross-Cutting Research Strategies Across Technologies & Goals

## Understanding cumulative impacts.

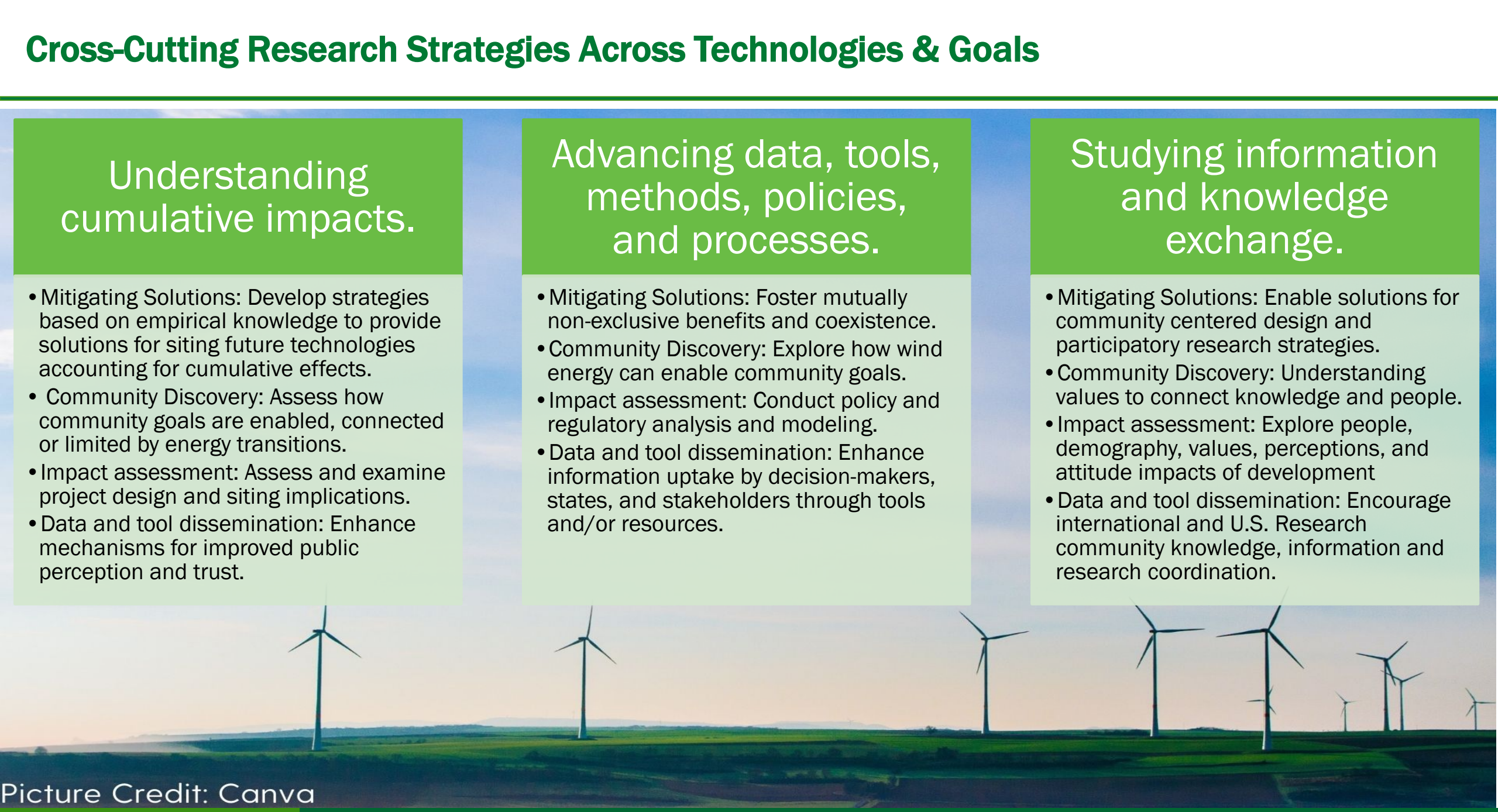
- Mitigating Solutions: Develop strategies based on empirical knowledge to provide solutions for siting future technologies accounting for cumulative effects.
- Community Discovery: Assess how community goals are enabled, connected or limited by energy transitions.
- Impact assessment: Assess and examine project design and siting implications.
- Data and tool dissemination: Enhance mechanisms for improved public perception and trust.

## Advancing data, tools, methods, policies, and processes.

- Mitigating Solutions: Foster mutually non-exclusive benefits and coexistence.
- Community Discovery: Explore how wind energy can enable community goals.
- Impact assessment: Conduct policy and regulatory analysis and modeling.
- Data and tool dissemination: Enhance information uptake by decision-makers, states, and stakeholders through tools and/or resources.

## Studying information and knowledge exchange.

- Mitigating Solutions: Enable solutions for community centered design and participatory research strategies.
- Community Discovery: Understanding values to connect knowledge and people.
- Impact assessment: Explore people, demography, values, perceptions, and attitude impacts of development
- Data and tool dissemination: Encourage international and U.S. Research community knowledge, information and research coordination.



Picture Credit: Canva

# Social Science Strategy Continued: Research Areas

Across Land-Based Utility Scale and Offshore Wind Energy

## Reconciling technological performance with siting concerns to minimize impacts of wind turbines and development

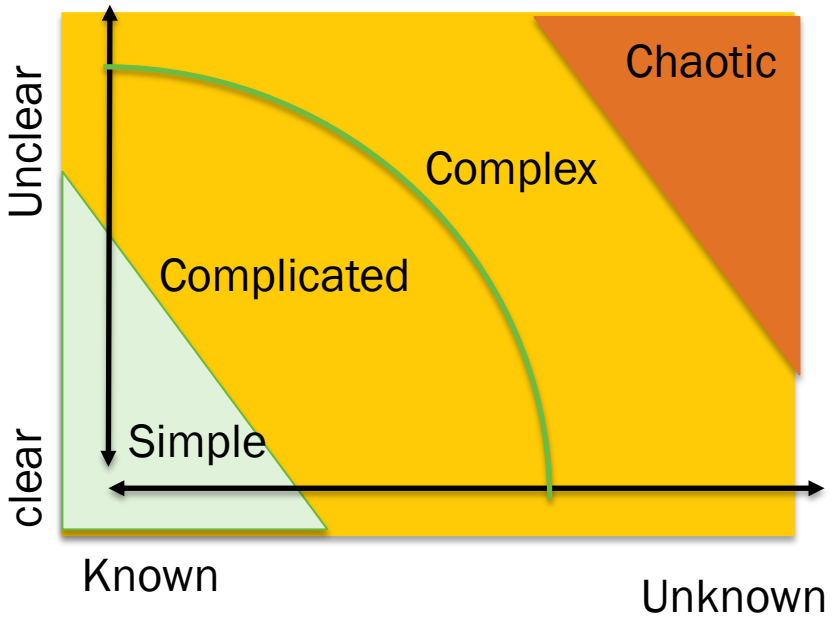
- Understanding effects of future technologies i.e. larger turbines for land-based and floating offshore wind energy impacts on sensory perceptions and nexus between shared community and energy deployment goals.
- Supporting a clean energy transition to maximize practical usage benefits (such as production) for coexistence, co-use, and communities.
- Inform and mitigate challenges to technology development from siting.

## Understand socioeconomic impacts of wind energy development to prioritize equity.

- Examine opportunities to mitigate economic challenges with wind energy through the identification of opportunities for stakeholder co-benefits and maximize benefits for coexistence, co-use, and communities.
- Maximizing community compensatory benefits, especially for low-income subscribers and/or BIPOC communities, to catalyze better transparency and understanding i.e farmer/rancher, tribal nation, and frontline communities.
- Studying participatory and process mechanisms to consider innovations around complementary practices to regulatory participation.

# Key Questions:

- What does ***an equitable*** and ***expedient*** clean energy transition look like for communities?
- How are ***communities included to advance*** deployment of clean energy in accordance with Administration's goals and future technology development?
- How can DOE help reimagine socio-economic opportunities to ***unify urban and rural communities***?
- How does DOE ***center community values***, knowledge and lived-experiences to better integrate renewable energy into everyday life?




The social science key research questions are in the complex area of this graphic.

# Exploring the conversation today:

What individual feedback do you have?

**Tune in for MORE on WETO's social science:**
E19 - National Wind Turbine
Database and Location Impacts R&D
~Weds – Aug 4 at 1:30-1:55 EST~

**Please email any comments or feedback to**
**Maggie.Yancey@ee.doe.gov**


Photo Credit: Canva

# Thank you for your time today!