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Utility Scale Wind Energy Development

Siting Issues, Concerns, & Conflict Resolution

December 18, 2013

Todays Presenters

Eric Romich

Field Specialist, Energy Development at Ohio State University Extension

Business Development

Wayne Beyea

Extension Specialist, School of Planning, Design & Construction at Michigan State University

Siting

Peggy Hall

Director, Agricultural & Resource Law Program at The Ohio State University

Conflict Resolution

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Program Agenda

- NCRCRD Project Overview
- Business Development
- Project Siting
- Community Outreach & Conflict Resolution
- How to Access to Curriculum Materials

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The Situation

"Renewable energy, however, is widely accepted as having broad environmental benefits by reducing harmful emissions. Yet, opponents often cite local environmental impacts, such as harm to wildlife or impacts to the visual landscape, as reasons for challenging the construction of renewable energy facilities. As such, these conflicts have been characterized as "green on green" conflicts (Warren et al., 2005), pitting global environmental interests against local preservationists."

Bidwell, D., *The role of values in public beliefs and attitudes towards commercial wind energy*. Energy Policy (2013), http://dx.doi.org/10.1016/j.enpol.2013.03.010i

NCRCRD Project Overview

- Our team will make use of case studies, best practices, and field survey research to identify the issues and opportunities related to renewable energy projects.

- Integrate findings into the development of a 3 module curriculum including topics on:
  1. Business/Project Development
  2. Utility Siting Issues and Concerns
  3. Methods for Resolving Conflict Involving Renewable Energy Projects.

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Case Study Review

Gratiot Wind Farm

- Gratiot County, Michigan
- Generates 218 Megawatts (MW) using 133 turbines; enough to power about 54,000 homes.

LakeWinds Energy Park

- Mason County, Michigan
- Generates 100.8 Megawatts (MW) using 56 turbines; enough to power about 54,000 homes.

Timber Road II

- **Paulding County, Ohio**
- Generates 99Megawatts (MW) using 55 turbines; enough to power about 27,000 homes.

Blue Creek Wind Farm

- Van Wert, Ohio
- Generates 304 Megawatts (MW) using 152 turbines; enough to power about 76,000 homes.

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Module 1 – Business Development

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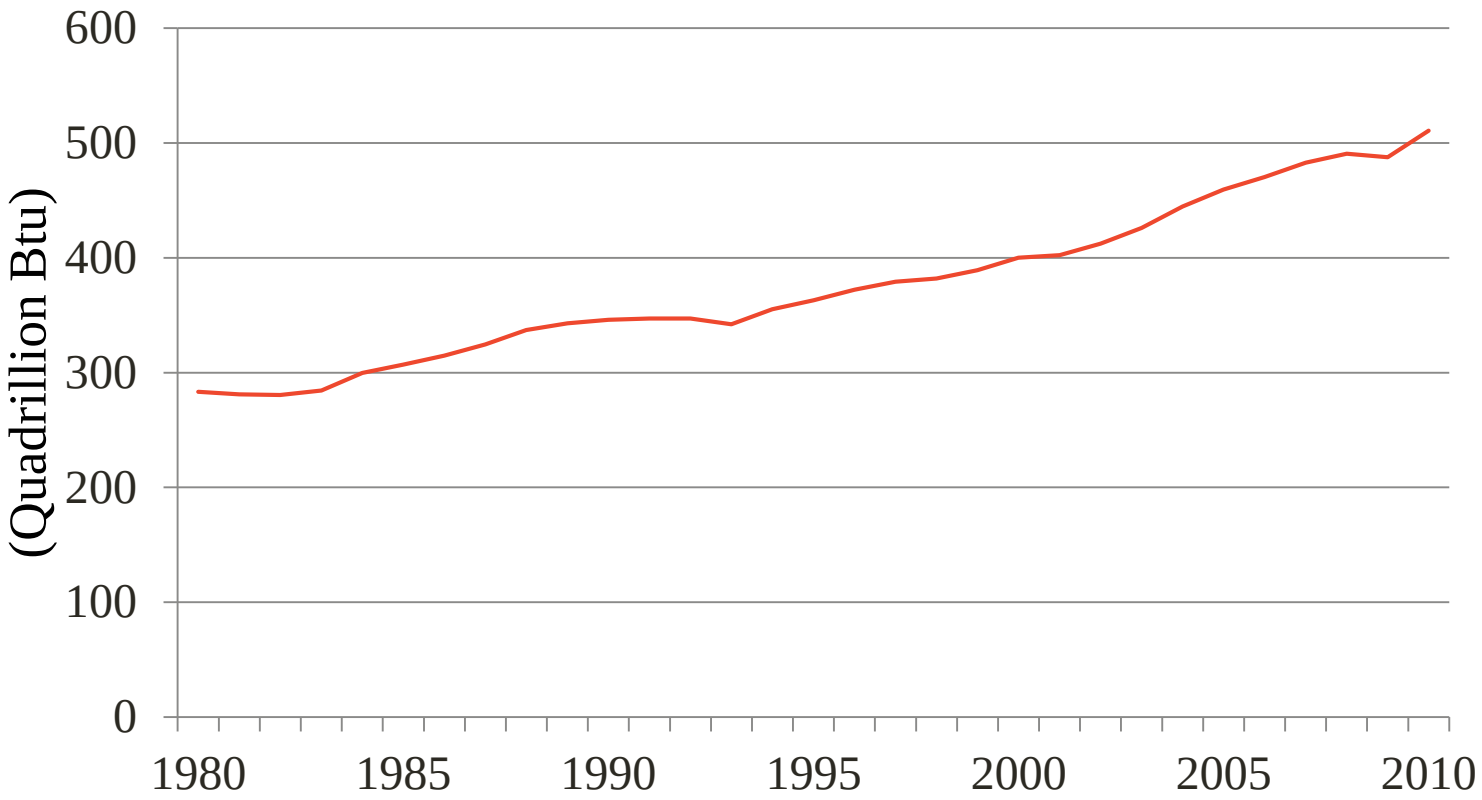
Total Global Energy Consumption



Source: U.S. Energy Information Administration, *Independent Statistics* & Analysis. www.eia.gov

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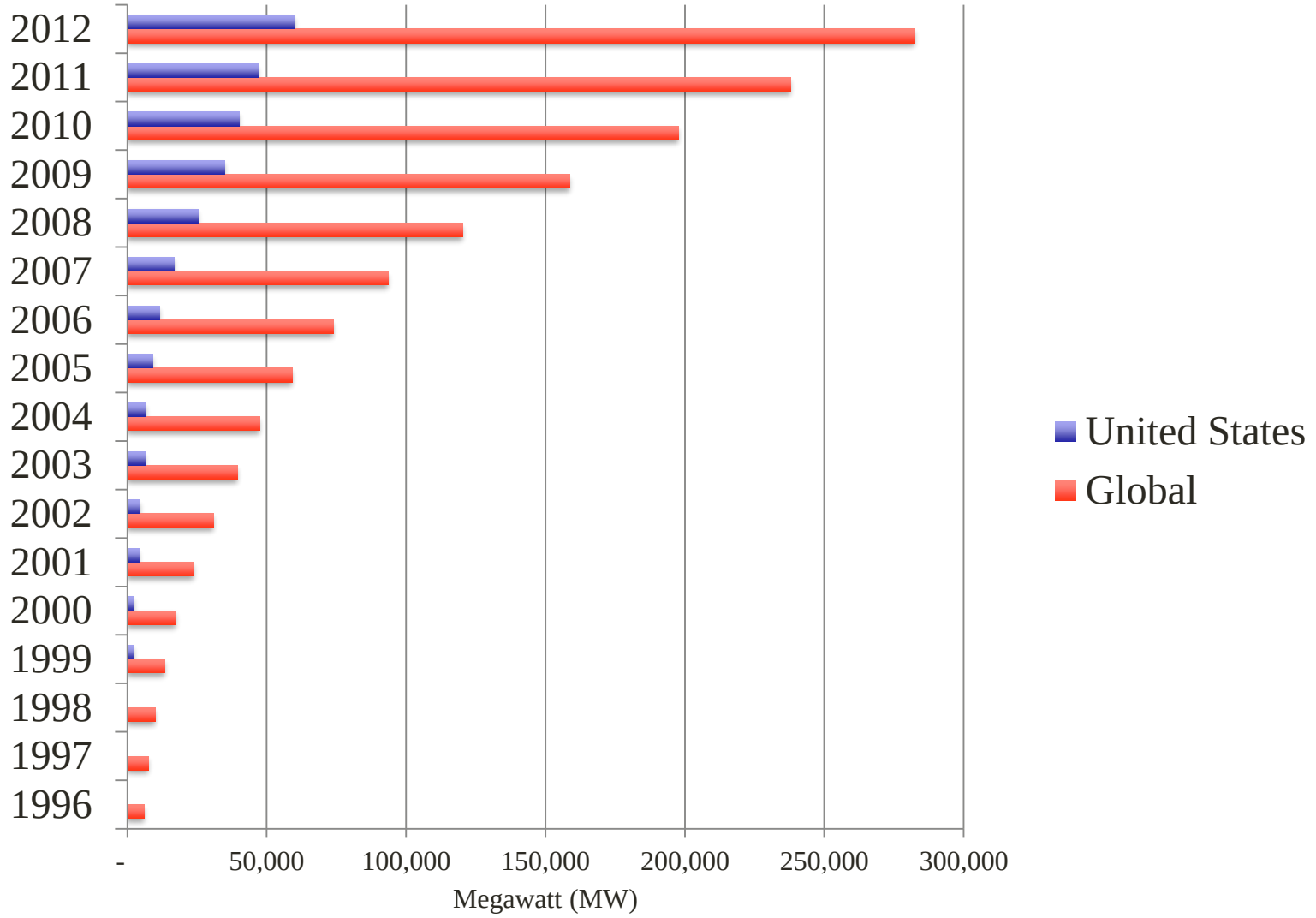
Cumulative Installed Wind Capacity



Data Source: Global Wind Energy Council www.gwec.net

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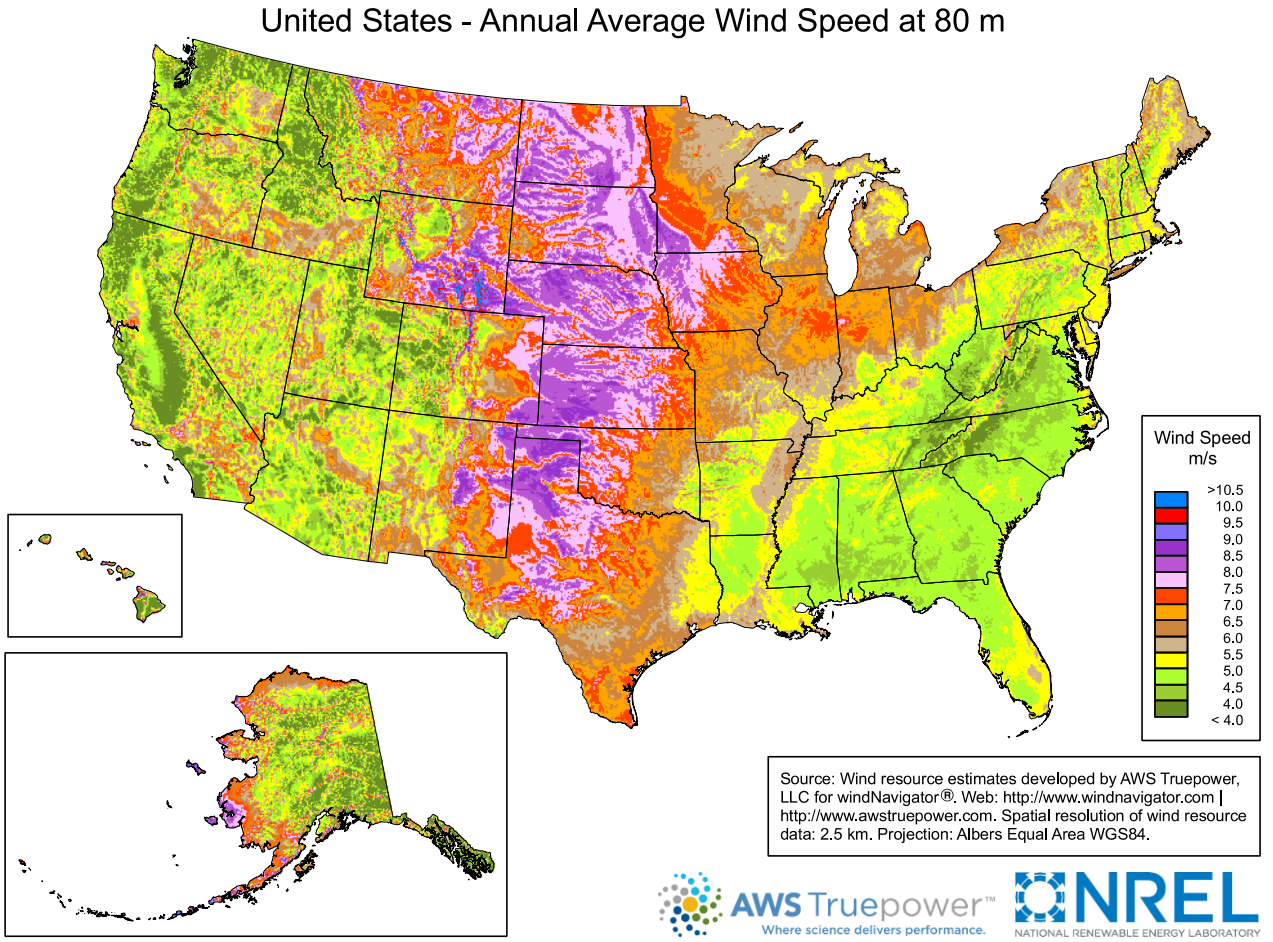
U.S. Wind Resource



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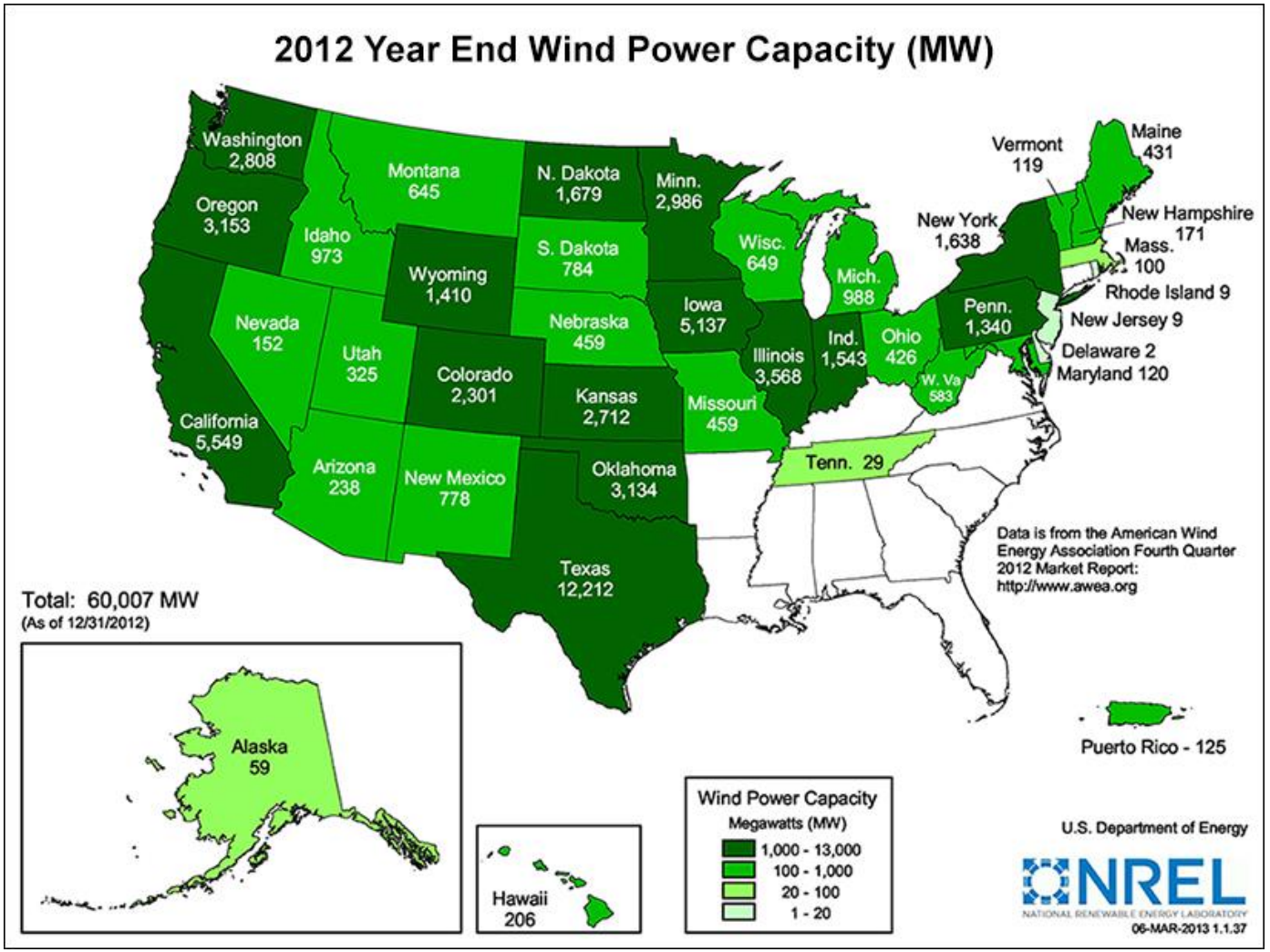
U.S. Installed Wind Capacity



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States with Renewable Portfolio Standards

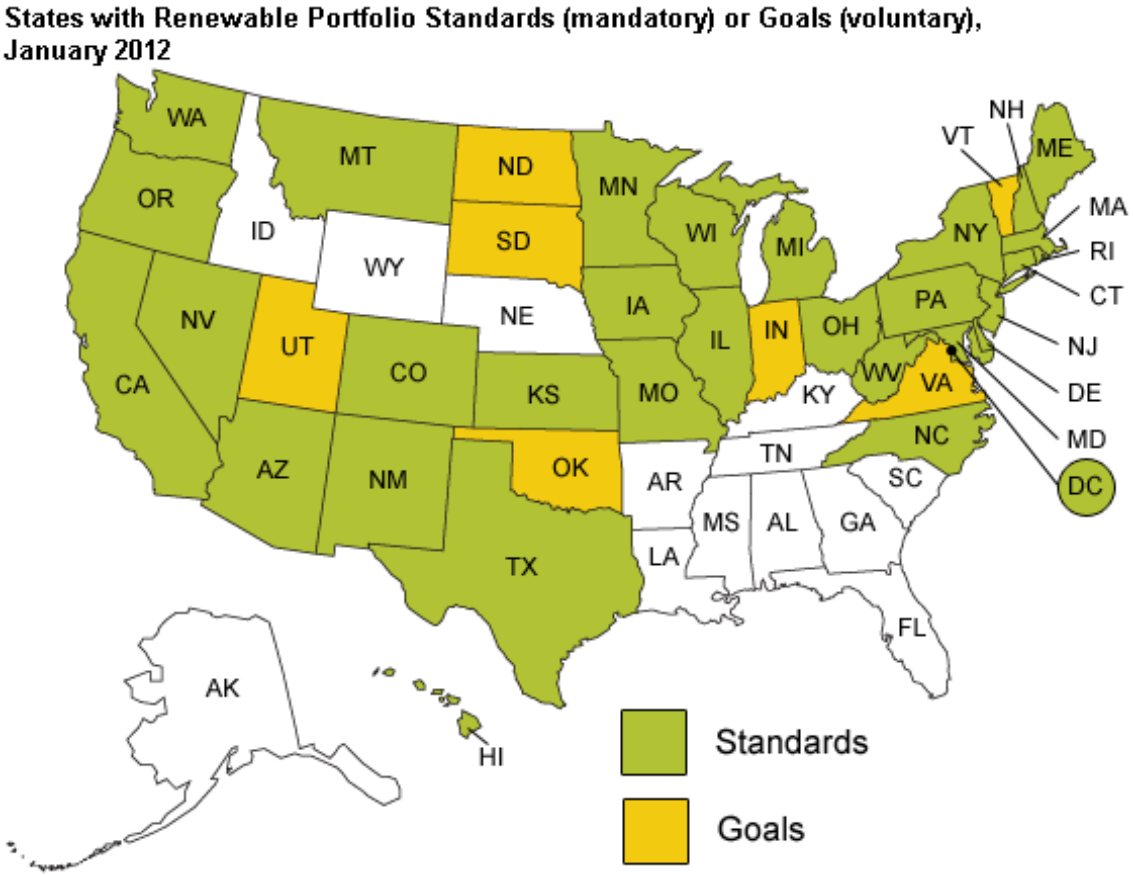

Image Source: U.S. Energy Information Administration

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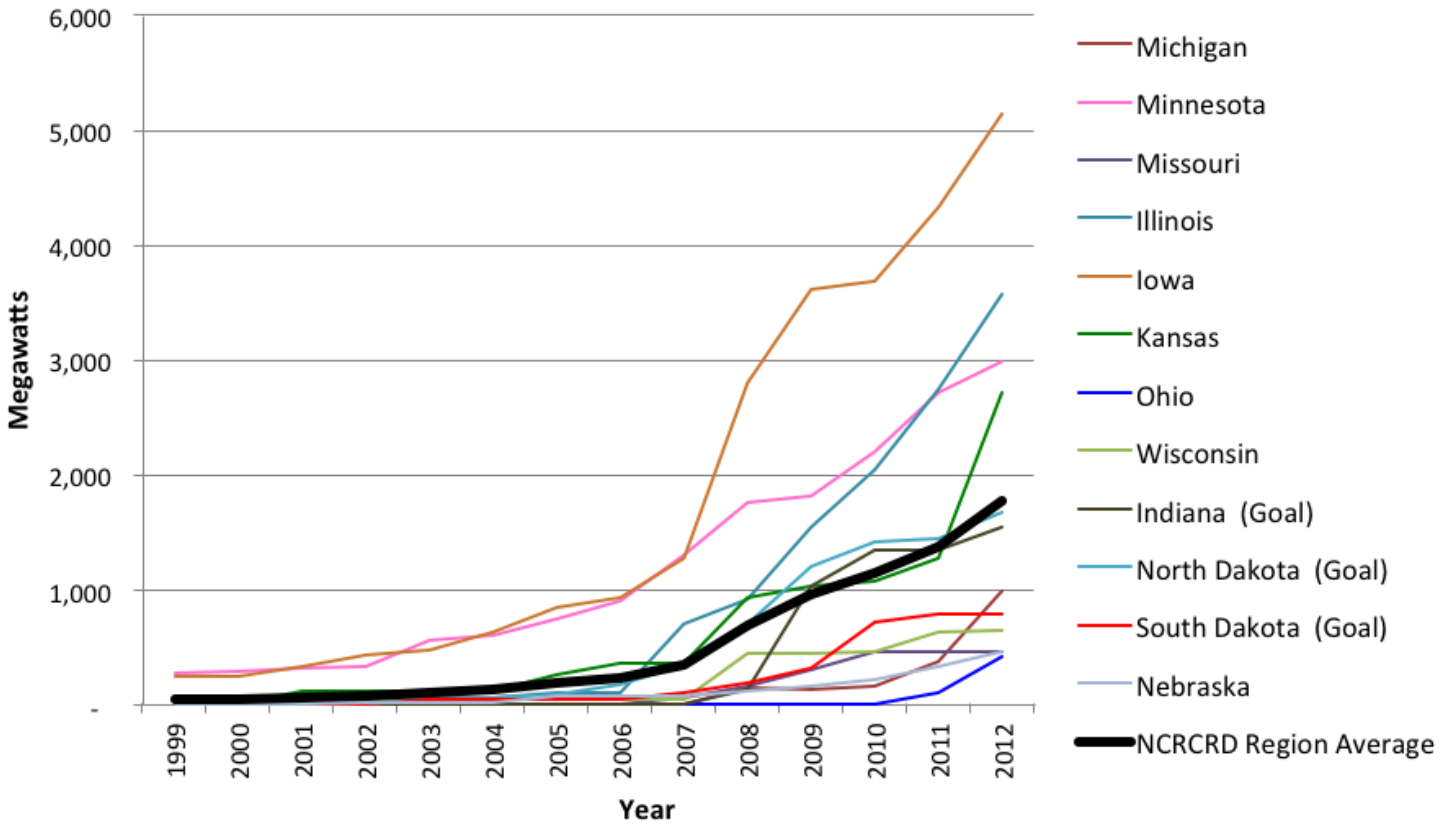
NCRCRD Region - Installed Wind Energy Capacity by State



Source: National Renewable Energy Laboratory of the U.S. Department of Energy

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Wind Development Process

Ten Steps for Wind Farm Development

1. Understand the Wind Resource
2. Determine Proximity to transmission
3. Secure Access to Land
4. Establish Access to Capital
5. Identify a Power Purchaser
6. Design Site in Context of Local Landscape
7. Procure Equipment that is Best Suited to the Regional Economic Realities
8. Obtain Planning and Zoning Approval
9. Establish Contracts with Engineering Firms, Developers, and Turbine Manufacturers
10. Secure Operations and Maintenance

Source: Adapted from American Wind Energy Association Factsheet

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Module 2 – Utility Scale Wind Energy Development

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What Will This Module Provide?

- Understand the utility scale siting process.
- Assess public attitudes and critical issues related to Utility Scale Wind Energy Development.
- Examine community responses to siting of wind energy towers.
- Identify best practices for policy development and regulation to address local concerns.
- Review case studies of local siting of utility scale wind farms.

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Why Wind?

- Wind as an energy resource
- Economic, social, environmental impacts

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Attitudes and Context

- What are the public attitudes towards wind?

Source: www.independentaustralia.net

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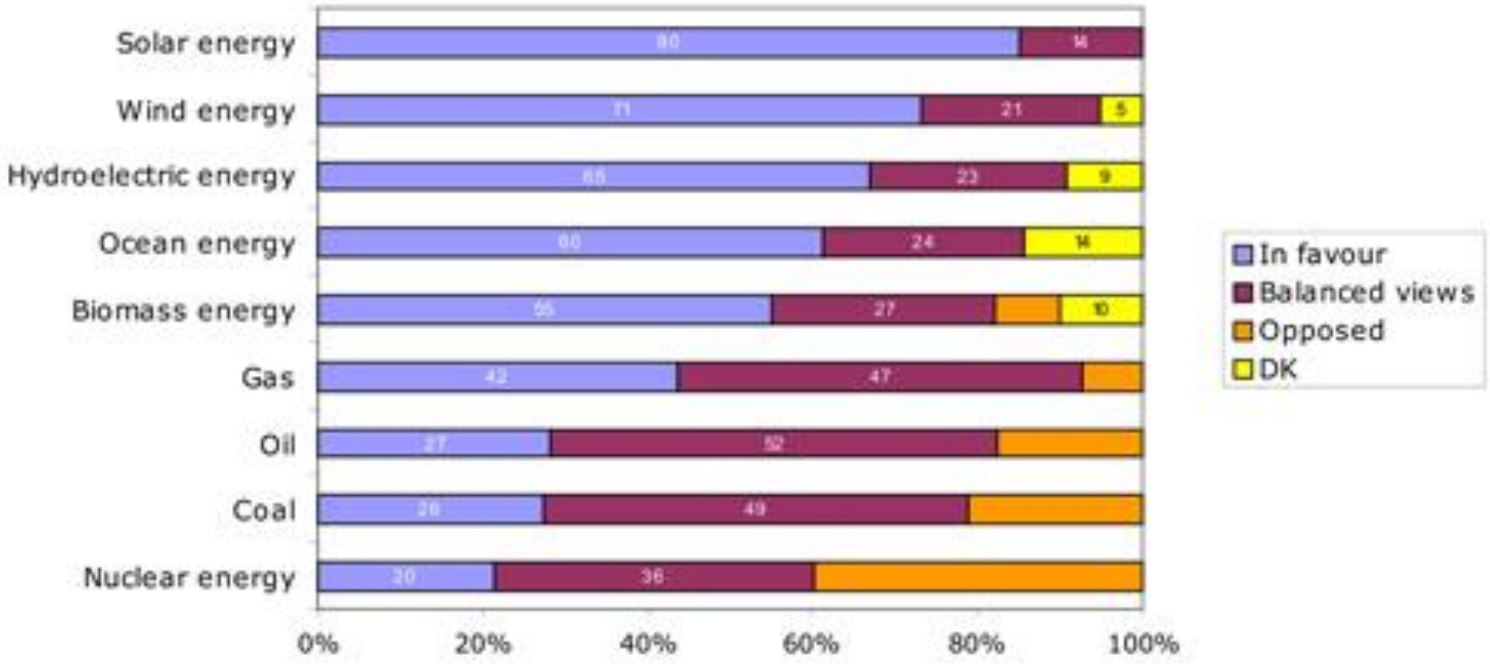
Public Attitude: Europe



Source: European Commission (2007c)

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US Public Attitudes

U.S. Should Place "More Emphasis" on Each Source of Domestic Energy Production, by Region

	All Americans %	East %	Midwest %	South %	West %
Solar power	76	79	75	74	78
Wind	71	74	75	65	72
Natural gas	65	62	58	68	68
Oil	46	38	43	53	46
Nuclear power	37	38	28	42	38
Coal	31	25	27	40	28

March 7-10, 2013

GALLUP

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Top Issues & Concerns

Pros & Cons of Wind Energy

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Pros and Cons

Proponents:

- wind power can supplement other sources
- wind power is never going to rise in cost
- wind power does not pollute the air or water
- wind turbines are visually appealing
- wind turbines are not too noisy
- wind power increases national security

Opponents:

- wind power is intermittent
- wind turbines spoil the scenery
- wind turbines are noisy
- wind turbines are dangerous
- wind turbines kill too many birds
- wind power is too expensive

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Siting Issues

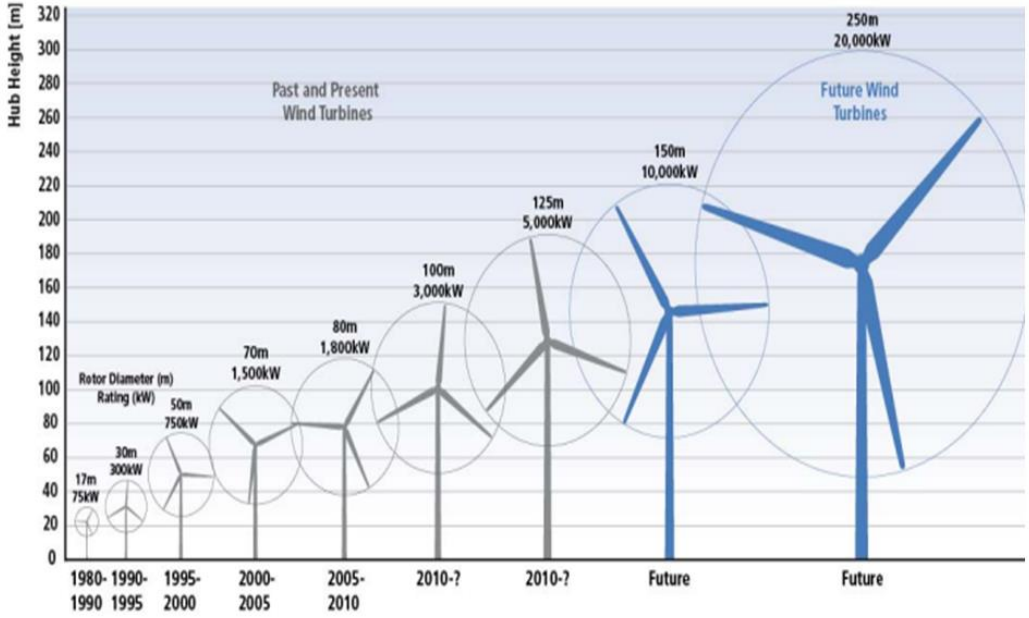
- Safety
- Tower Height
- Tower Setbacks
- Tower Construction Materials
- Spacing & Distribution
- Noise Pollution
- Shadow Flicker
- Property Values
- Aesthetics
- Overhead / Underground Wires
- Decommissioning
- Wildlife Impact
- State Law

Source: toryaardvark.com

Turbine Size

- Larger turbines capture more wind so communities with less than superb wind resources may end up with the largest turbines

Technical Advancements: For instance growth in size of typical commercial wind turbines.



(from the IPCC April 2012 report on mitigating climate change)

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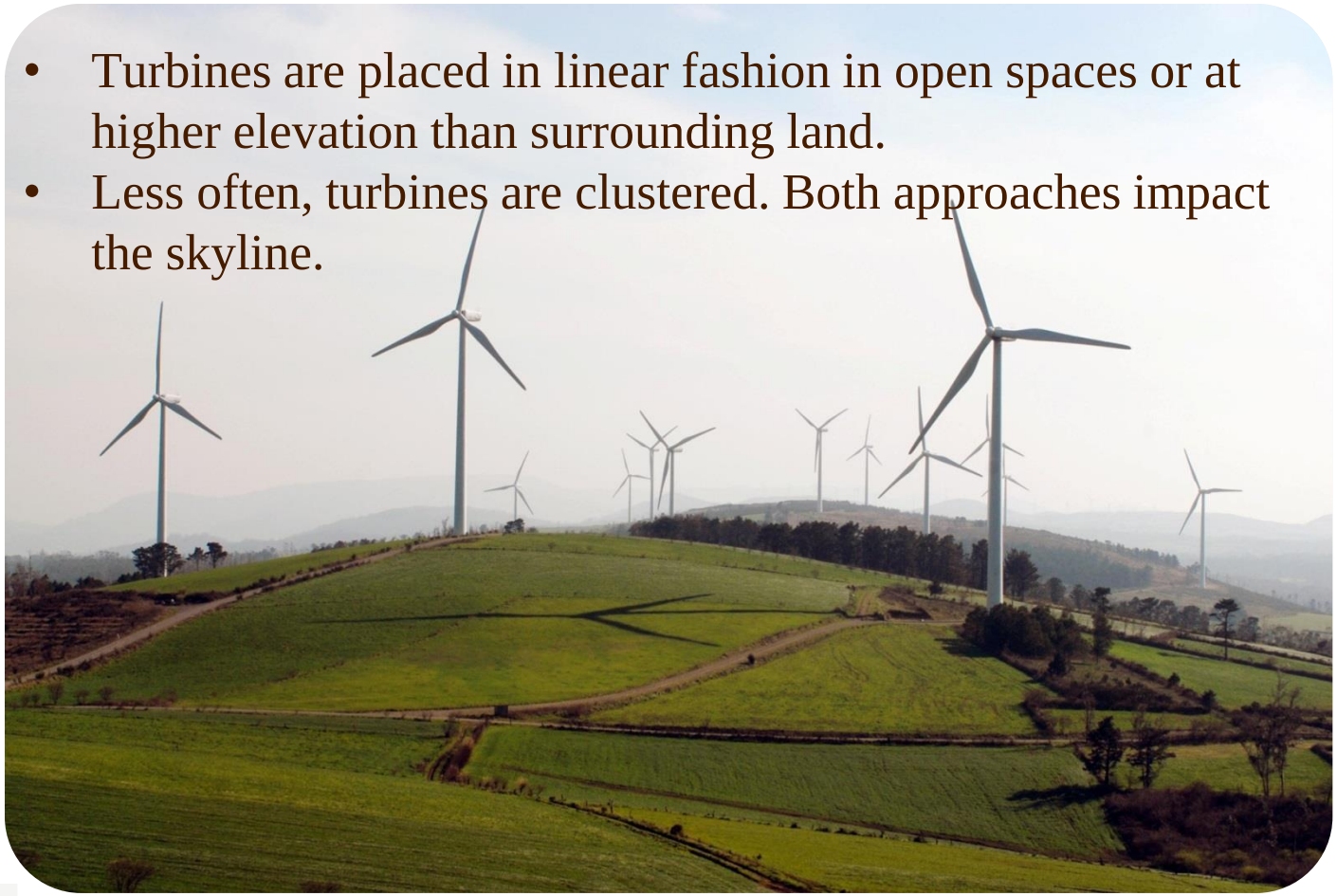
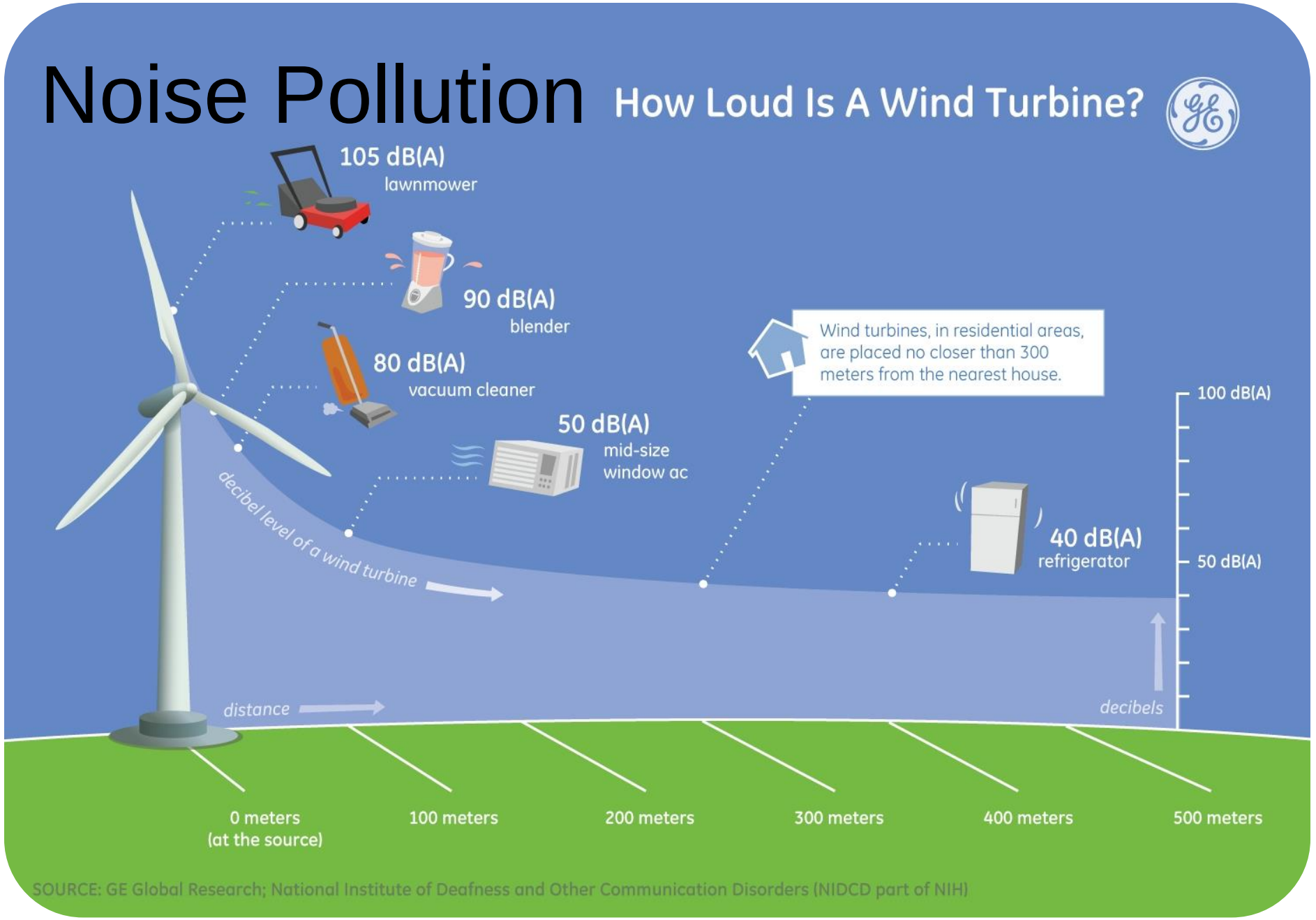
Spacing and Distribution

- Turbines are placed in linear fashion in open spaces or at higher elevation than surrounding land.
- Less often, turbines are clustered. Both approaches impact the skyline.



Source: www. sites.psu.edu

Noise Pollution



SOURCE: GE Global Research; National Institute of Deafness and Other Communication Disorders (NIDCD part of NIH)

Case Study Conclusions

- A total of 4 wind farms (2 Ohio & 2 Michigan) were analyzed
- A summary of relevant findings include:

Developer	The level of engagement by the developer and/or applicant throughout the process impacts the level of acceptance.
Regulatory Review	The perceived level of control to permit wind farms may impact the level of engagement by citizens
Public Participation	Early awareness, knowledge, and conflict resolution about wind farms before applications are submitted and during the process is key

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Module 3

Conflict Resolution

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Conflict and Wind Energy: The "Social Gap"

- The "social gap:" (Bell et al, 2005)
  - High general support for renewable energy is incongruent with a slow rate of deployment for renewable energy technologies.
- Wind energy and the social gap:
  - Public opinion polls indicate high levels of individual support for renewable energy, including wind energy.
  - But opposition to specific wind projects is common.
  - And organized opposition at the federal/state policy levels is becoming more common.

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What's Causing the Social Gap?

- Several research-based theories:
  - NIMBY effect?
  - Socioeconomic and geographic factors?
  - Hartman et al (2011) - Common opposition motivations:
    - Misinformation
    - Self-interest
    - Prudence
    - Distrust

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What's Causing the Social Gap?

- Several research-based theories:
  - Bidwell (2013) – Wind energy acceptance factors:
    - Anticipated effects
    - Fairness of development
    - Values and beliefs

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Opposition Factors: Key Points for Conflict Resolution

- Anticipated effects/siting concerns.
- Distrust.
- Broad concerns for community.
- Landscape impacts.
  - Threats to personal identities that are tied to personally valued landscapes.
- General environmental beliefs that are tied to conservatism and traditionalism.
- Beliefs about likely economic outcomes.

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How to Address Wind Energy Opposition?

- Consideration of opposition factors.
- Education
  - Levels of acceptance increase with increased knowledge.
- Engagement
  - With intent to find solutions rather than to "convert" the opposition.
  - Collaborative problem solving.
    - Individually and collaboratively.

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Education Strategies

- Early education about wind energy generally.
- Meetings on specific project, before the public approval process.
- Education led by coalition of project "champions" from community.
- Open houses with experts in attendance.
- Distribution of academic research and studies.
- Wind farm tours for community members.

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Engagement Strategies

- Use of a community advisory panel.
  - Involve in project design and siting?
- Engagement with project developer.
  - “Kitchen table” meetings with residents.
  - Store front “open door” offices for project.
- Conduct additional studies to address concerns.
- Indicate willingness to make project revisions.
  - Generally and individually
  - Make monetary payments?

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Is the Conflict "too Intense"?

May need Environmental Conflict Resolution

- *Third-party assisted* collaborative problem solving and resolution of environmental and natural resource conflicts.

Principles of ECR – a highly formal process:

- Informed commitment
- Balanced, voluntary representation
- Group autonomy
- Informed process
- Accountability
- Openness
- Timeliness

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Upcoming Extended Webinar

- Detailed explanations of engagement and problem solving strategies.
- Analysis of techniques and solutions to address specific types of opposition.
- Analysis of our case studies.
- Recommendations for Extension's role in community engagement and conflict resolution.

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eXtension Curriculum

- The Utility Scale Wind Energy Development course can be found at: http://www.extension.org/community_planning_and_zoning

Learning Lessons

- Living Sustainably: It's Your Choice
- Sustainable Communities: A Local Systems Approach to Planning
- Utility-Scale Wind Energy Development

- The course consists of the following:
  - Introduction to Utility Scale Wind Energy Development (75 minute webinar)
  - Three (3) core modules:
    - Module 1: Business Development (80 minute webinar)
    - Module 2: Wind Project Siting (75 minute webinar)
    - Module 3: Conflict Resolution (60 minute webinar)
  - Tools for Teachers
    - Case Study Analysis, logic model, white paper, teaching outlines, energy specialist contact list, and program evaluation
  - Certificate of Completion
- To learn more about eXtension: http://www.extension.org

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Questions?

Eric Romich
Field Specialist, Energy Development
Ohio State University Extension
romich.2@osu.edu

Wayne Beyea
School of Planning, Design & Construction
Michigan State University
beyea@msu.edu

Peggy Hall
Agricultural & Resource Law Program
Ohio State University Extension
aglaw@osu.edu

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