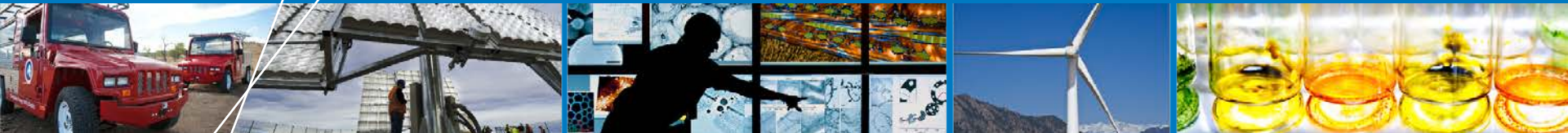


Social Acceptance of Wind Energy: Managing and Evaluating Its Market Impacts



WINDPOWER 2012

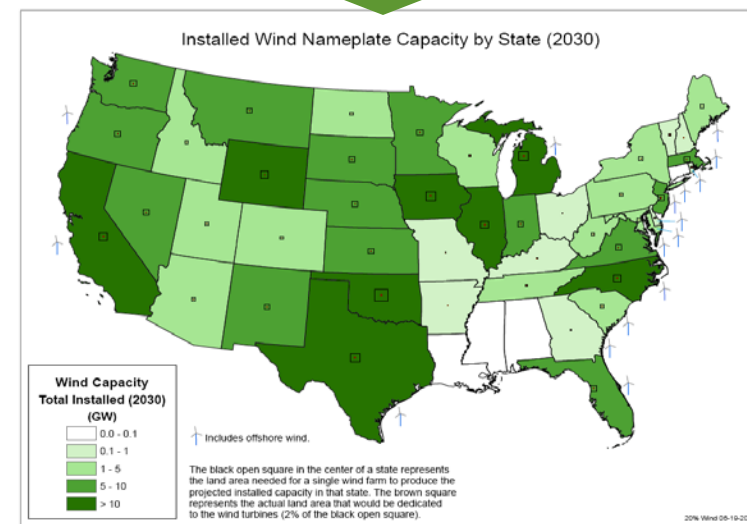
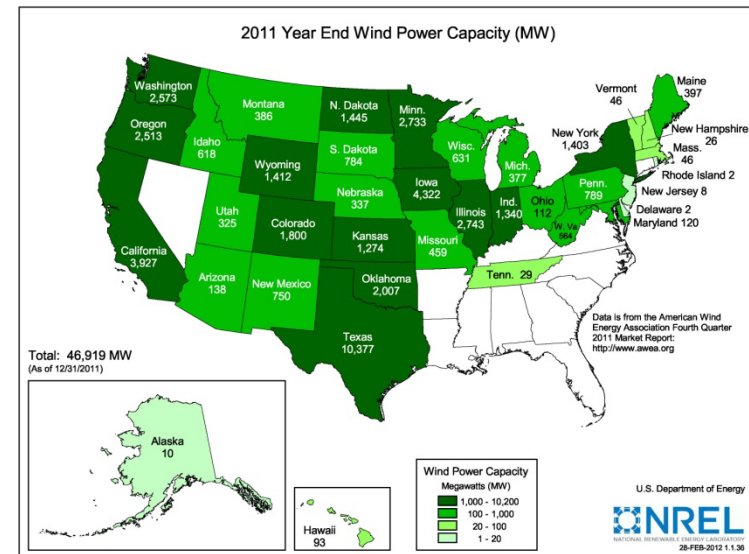
Ian Baring-Gould
Technology Deployment Manager,
Deployment & Market Transformation

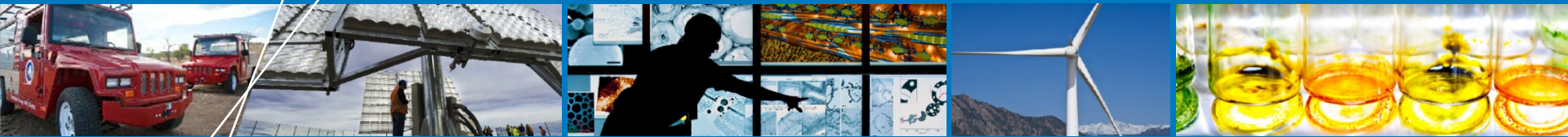
June 5, 2012

NREL/PR-7A20-55316

Background

- As with any industrial-scale technology, wind power has impacts.
- As wind technology deployment becomes more widespread, a defined opposition will form as a result of fear of change and competing energy technologies.
- Regardless of cost and performance, wind projects have been halted due to deployment barriers.
- As the easy-to-deploy sites are developed, the costs of developing at sites with deployment barriers will increase, therefore increasing the total cost of power.
- Responsible development requires a true understanding of the impacts wind development has on host communities and residents.
- Industry, governments, NGOs, and other stakeholders must make the effort to provide communities with the information needed to assess these impacts.
- Although the costs of addressing barriers to wind deployment are considered in the total cost, the true size and potential impact of these costs must be better quantified and understood.
- We do not know how these deployment barriers impact national development models, such as 20% wind by 2030.





Stakeholder Engagement Questions

Support from Eric Lantz of NREL, Bob Grace of Sustainable Energy Advantage LLC, and many other Wind Powering America partners

Wind Project Development

- **As wind energy is implemented in an area:**
 - Change can be perceived as threatening.
 - Public objectives can conflict with expanded development.
 - Stakeholders can feel threatened by new options.
- **Siting and public decision-makers need:**
 - An accurate and objective understanding of the issues
 - A consistent set of standards or knowledge on which to base decisions.
- **Siting and public decision-makers face:**
 - Conflicting info, competing claims, valid and baseless concerns
 - An absence of independent (scientific, peer-reviewed) information
 - A chaotic brew of fact, opinion, fear, hyperbole, disinformation, misinformation, or misunderstanding of complex systems.
- **Passing bylaws, ordinances, and moratoriums provide:**
 - Time to make well-considered choices OR
 - A means by which to preclude or delay proposed projects.

How should project developers and public leaders engage the undecided majority who typically exist in the early stages of a siting process and are often key in determining the success of the initiative?



Results of a questionnaire conducted by Sustainable Energy Advantage LLC as part of the New England Wind Forum wind stakeholder workshop, funded by the U.S. Department of Energy

Wind Development Stakeholders

- **Proponents**

- Their viewpoints often are perceived as having commercial interest.
- They may exaggerate the project benefits or downplay the impacts.

- **Undecided**

- They include open-minded abutters, community leaders, citizens' groups with a "what's in it for me?" or "how will this impact me?" attitude.
- Typically most of the people in the community fall into this category, at least initially.
- They will be swayed to one side and, once decided, fall into those camps.

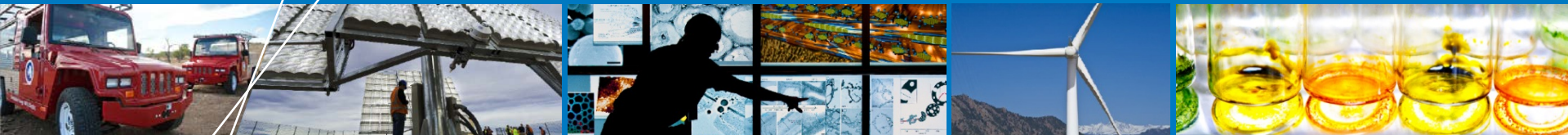
- **Opponents**

- They may be "skeptics" who support wind but want it developed responsibly and don't want to be taken advantage of by another extractive industry; may require a high burden of proof.
- They may have "character of place" concerns and be in favor of wind but not here.
- They may be ideologically opposed, viewing wind as not having any potentially positive benefits. They are increasingly sophisticated and networked, often from outside of the community. They use tactics ranging from legitimate questions to rhetorically brilliant disinformation.

Provide the proponents with accurate information (manage expectations).
Engage the undecided with accurate and credible information while they are
still willing to critically assess that information.

Key Takeaway Points

- Perception is reality; few people have experience with wind technology.
- Small minorities, nationally or in proximity to a project, may have undesirable impacts thrust upon them.
- The media may need to be managed.
- Avoid surprises. Manage expectations.
- A real need exists for an independent source of credible, objective info (although “objective” is in the eye of the beholder), as well as objective research to enable informed decisions.
- Combat uncertainty with facts. Understand that opponents often cultivate uncertainty (e.g., health impacts) to force consideration.
- An entrenched industry will not easily give up ground. Consider the climate debate as an example of what to expect.



DOE Activities that Provide Wind Energy Deployment Information

Support from Jonathan Bartlett,
U.S. Department of Energy

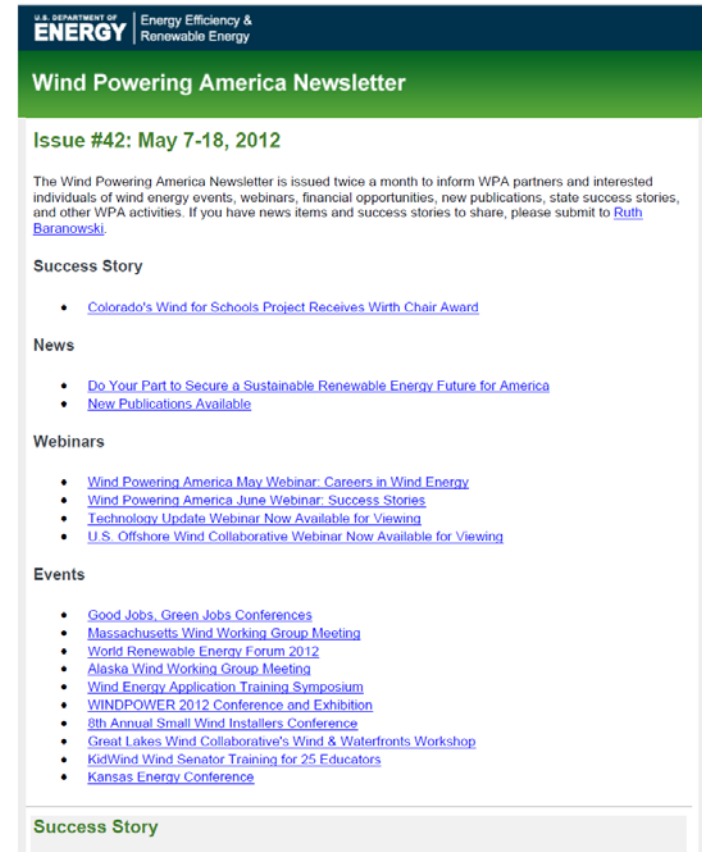
DOE Outreach Strategy

Educate, engage, and enable critical stakeholders to make informed decisions about how wind energy contributes to the U.S. electricity supply

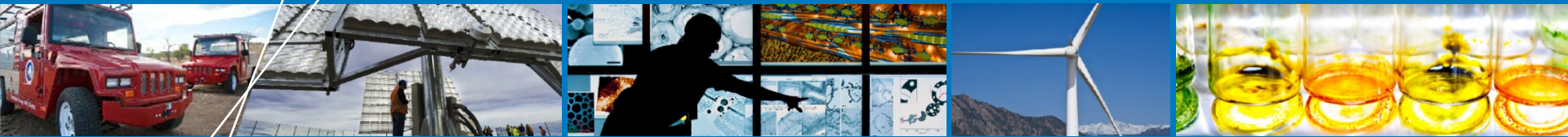
- Disseminate accurate and needed information
- Build and support a diverse partner network
- Continually evaluate effectiveness.

To the extent possible, expand Web-based education and outreach. Offer a wind information portal and maximize visibility of what we create.

- Publish WPA e-newsletter (~8,000 subscribers)
- Publish extensive webinar/podcast series, addressing many wind deployment issues; archive episodes for later reference
- Support regional stakeholder groups and networks
- Maintain consolidated Web pages
- Develop success stories, lessons learned, and fact sheets
- Host Annual All-States Summit for state and industry leaders
- Expand low-cost options for information dissemination
- Develop wind resource information for state users in different applications
- Expand the nation's educational infrastructure through workforce development and the Wind for Schools project
- Plan regional and technical workshops to bring people together
- Provide technical support to Wind Working Groups.



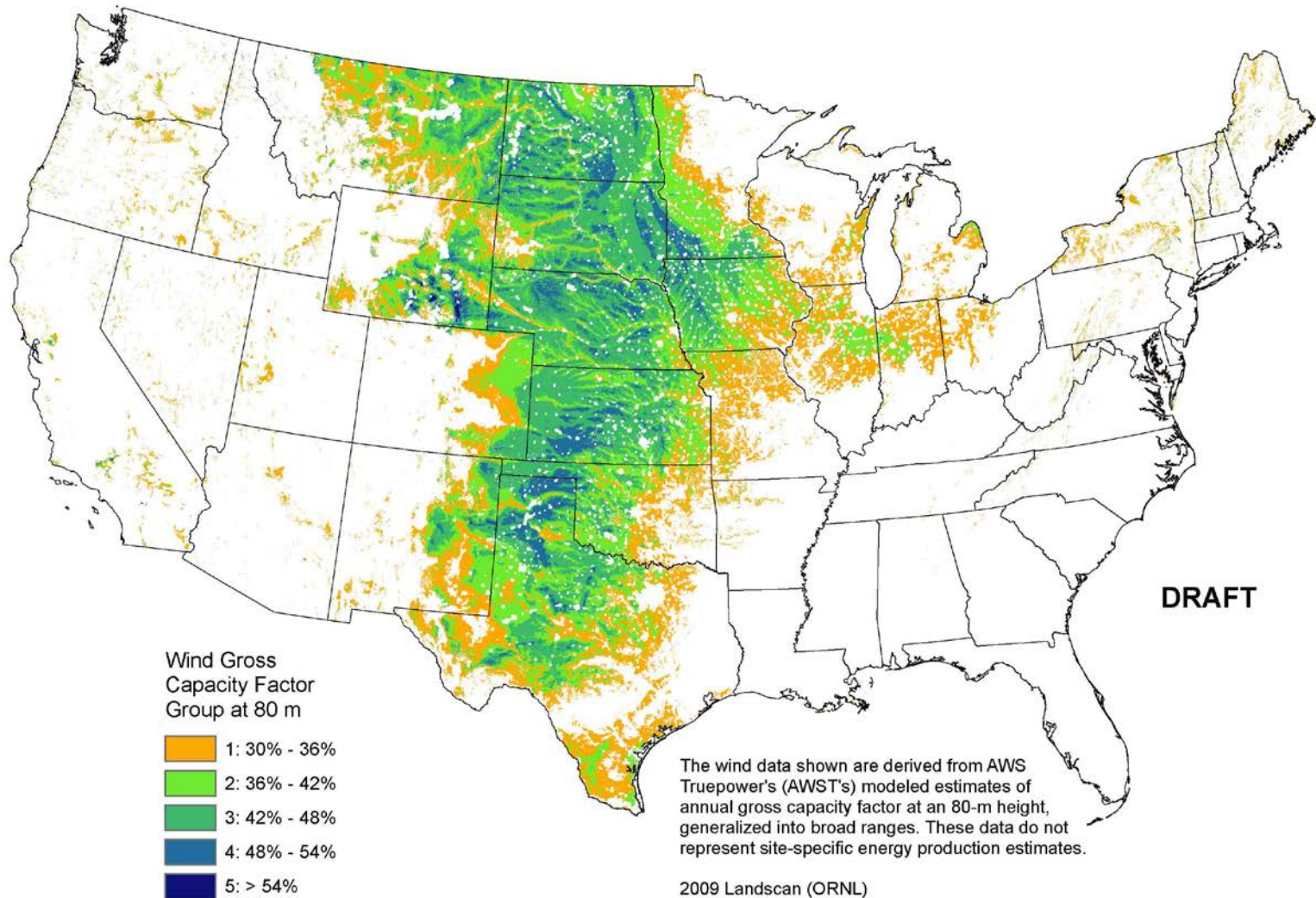
www.windpoweringamerica.gov



Quantification of Deployment Barriers and Costs in the Continental United States

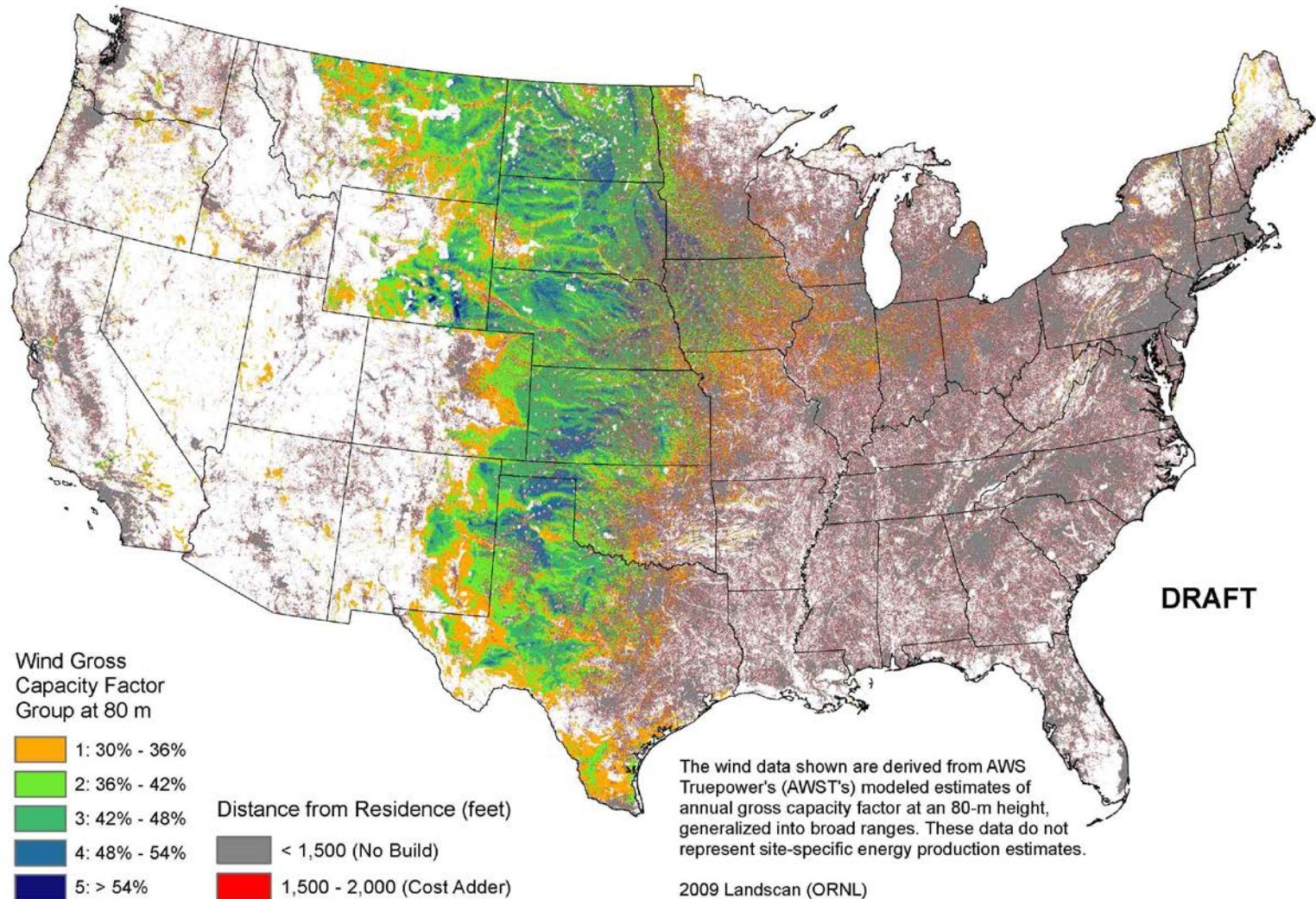
Support from Suzanne Tegen and others from the NREL
Center for Strategic Energy Analysis

Deployment Barriers – Base Capacity



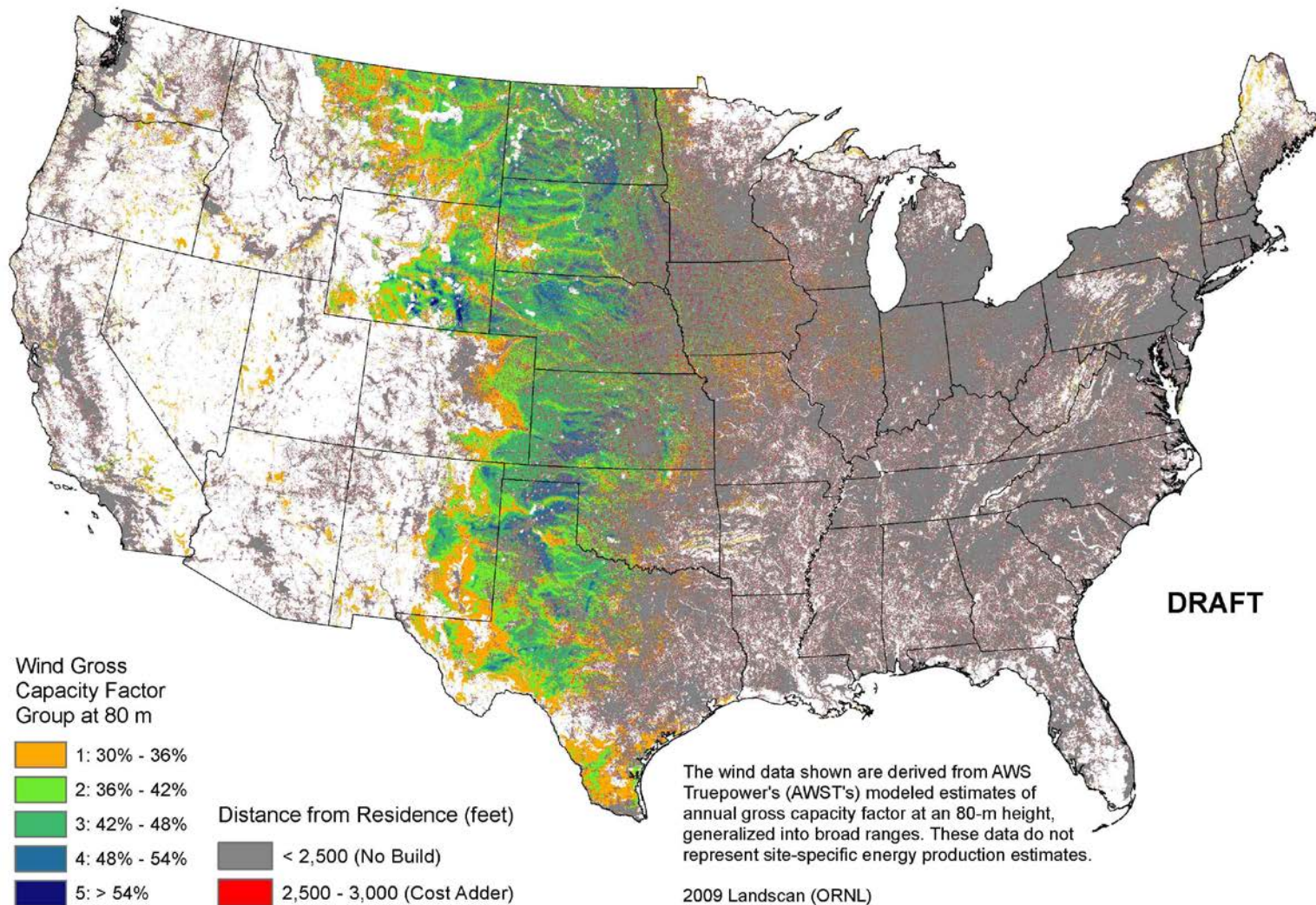
10,500 GW of total available capacity using standard set-asides and restrictions

Deployment Barriers – Medium Scenario



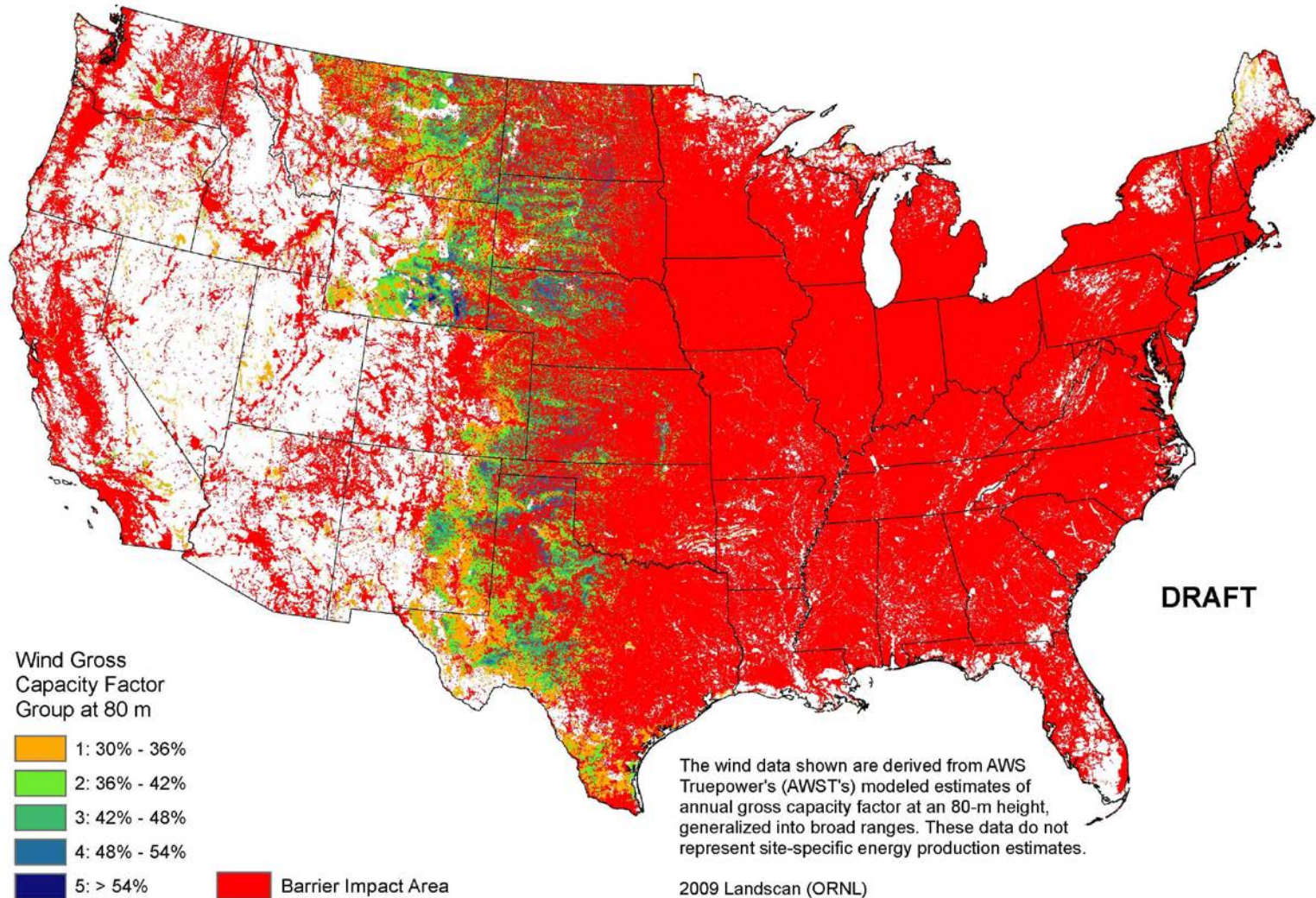
1500 ft buffer zone; ~30% reduction in potential capacity

Deployment Barriers – High Scenario



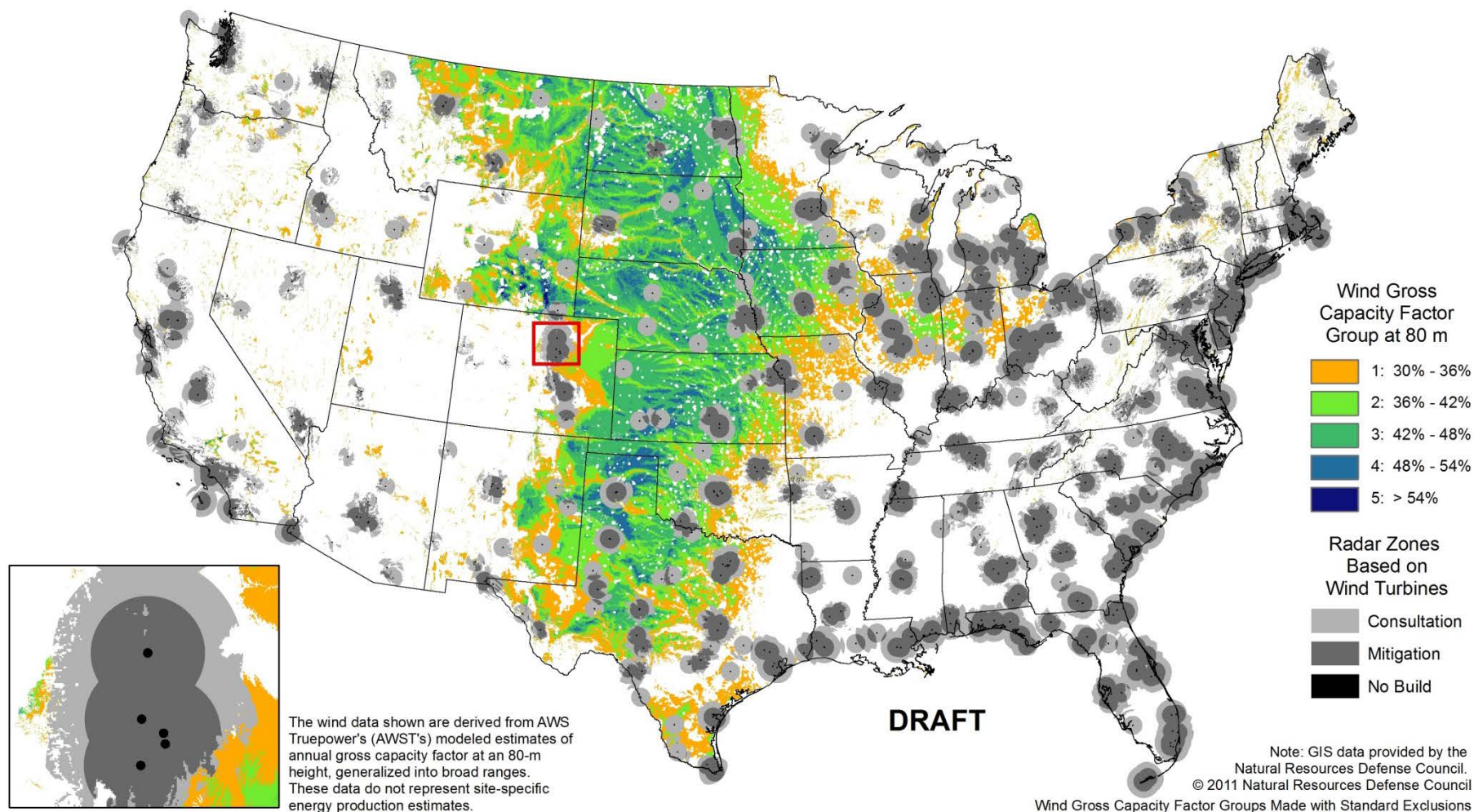
2500 ft buffer zone; ~45% reduction in potential capacity

Deployment Barriers – Extreme Scenario



1-mile buffer zones; ~65% reduction in potential capacity

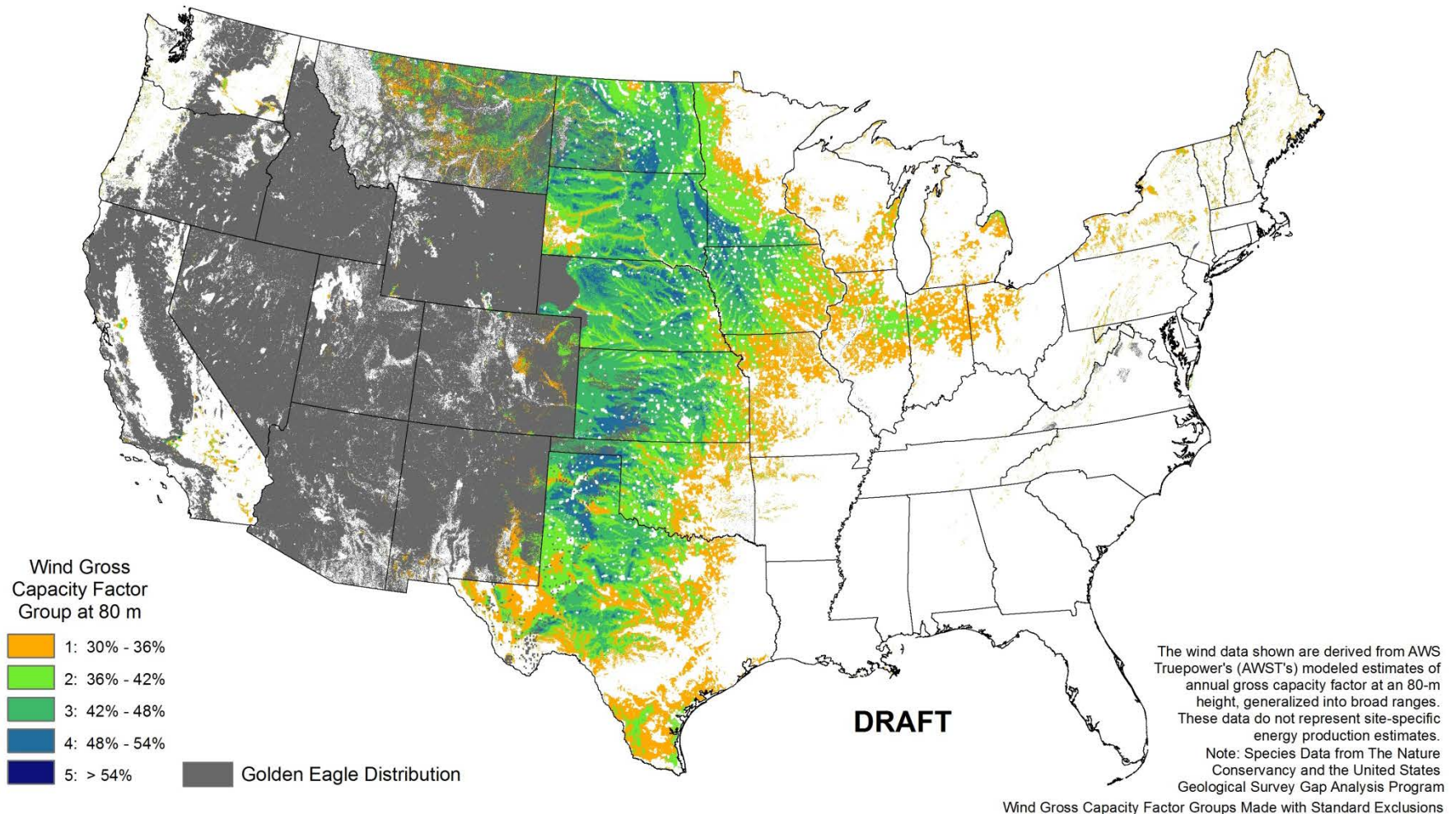
Deployment Barriers – Radar



No-build and mitigation areas for radar: ~6% reduction in potential capacity

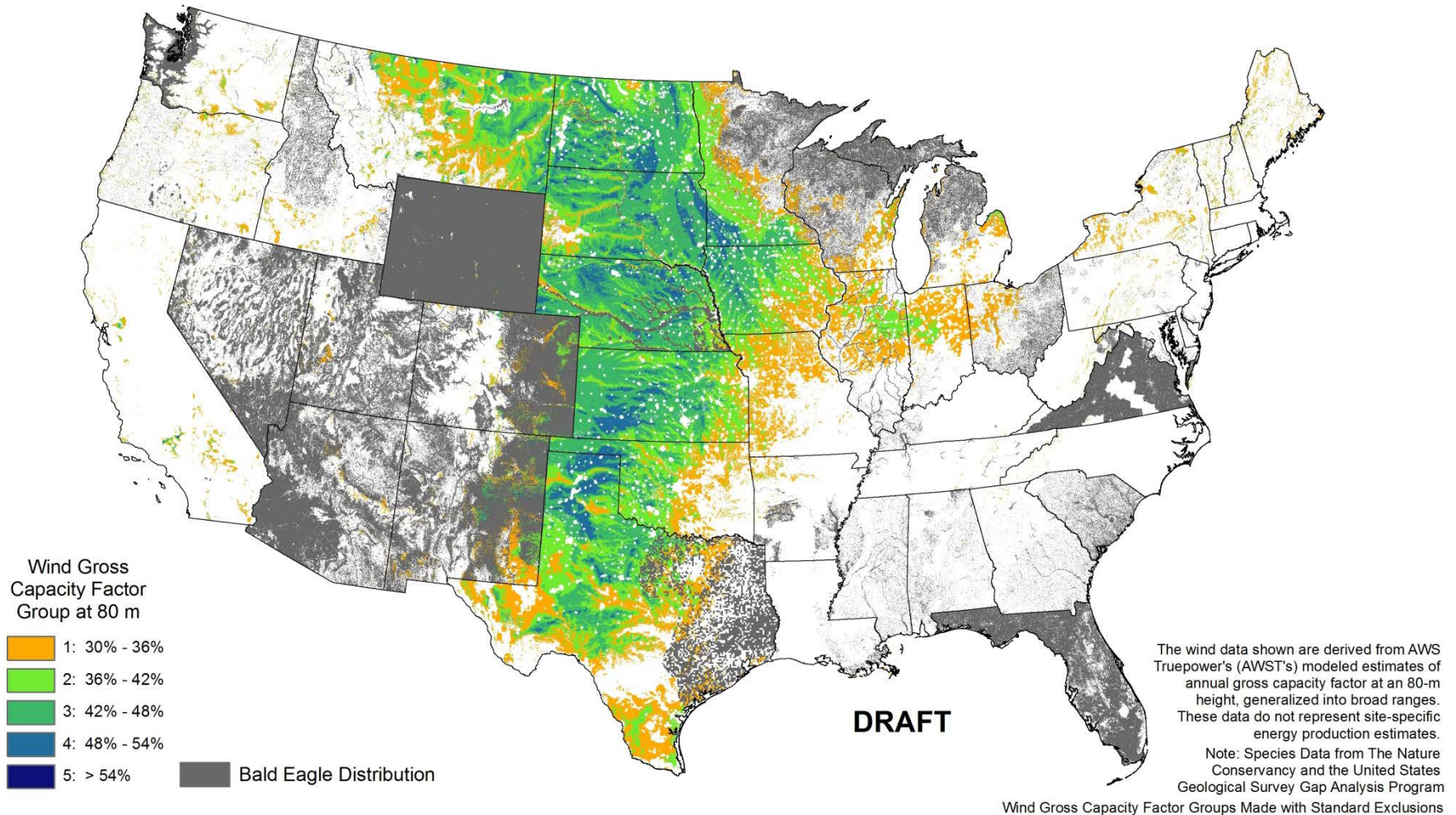
Includes weather, airport, and some military radar but does not include large military flight and training airspace exclusion areas

Deployment Barriers – Wildlife



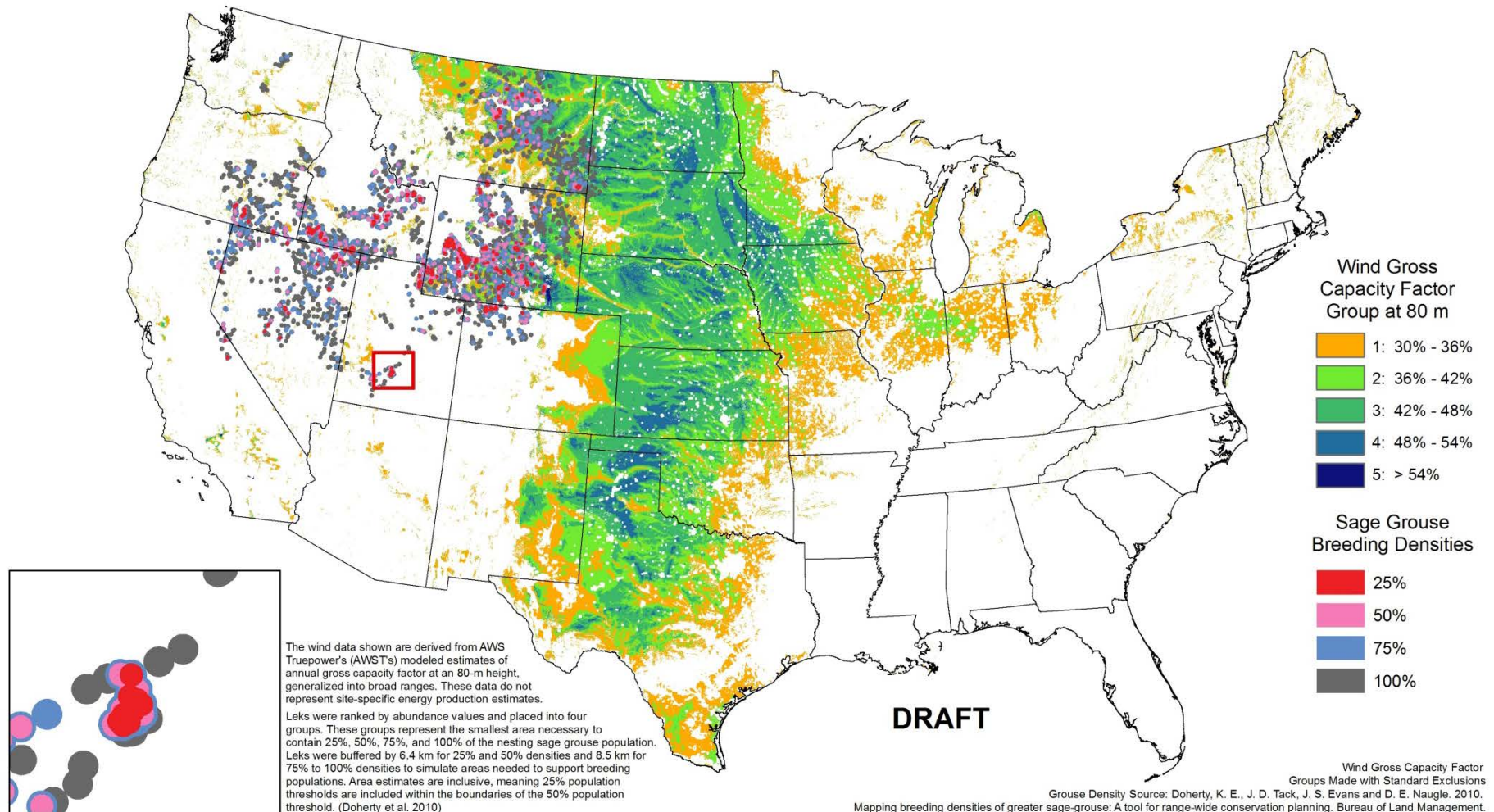
Golden eagle habitat distribution: potential no-build and mitigation areas

Deployment Barriers – Wildlife



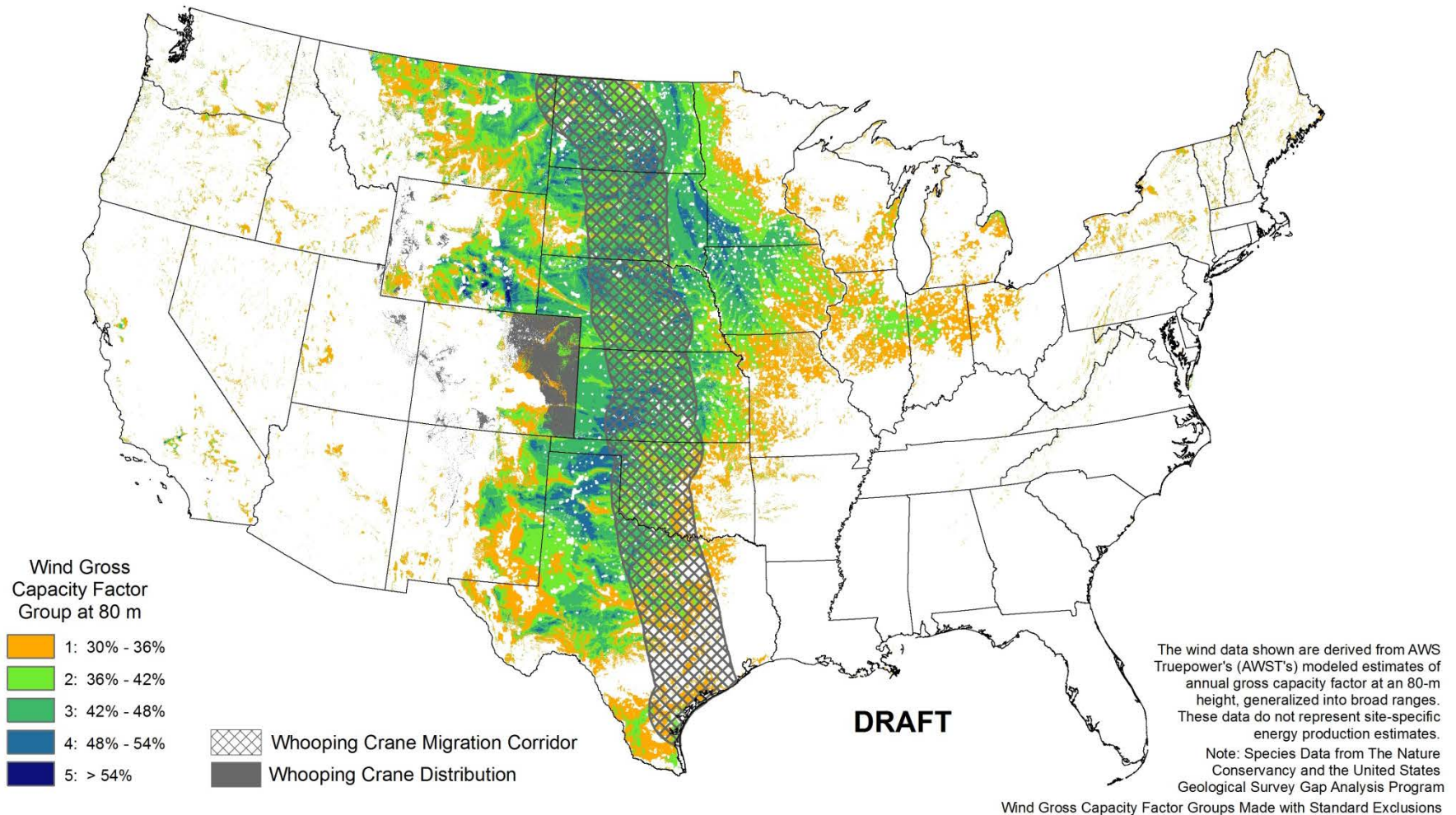
Bald eagle habitat distribution: potential no-build and mitigation areas

Deployment Barriers – Wildlife



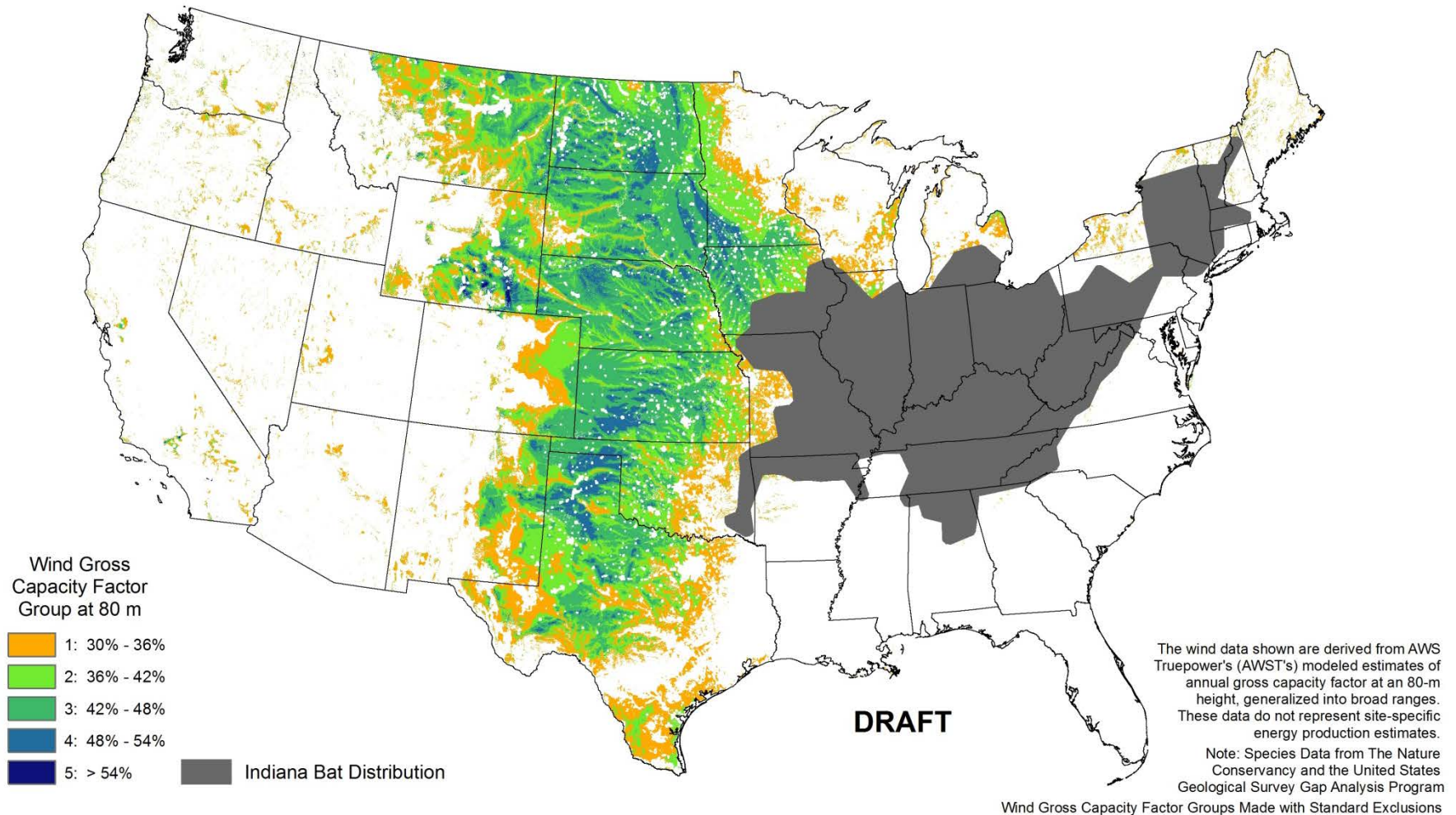
Sage grouse distribution and breeding sites: potential no-build and mitigation areas

Deployment Barriers – Wildlife



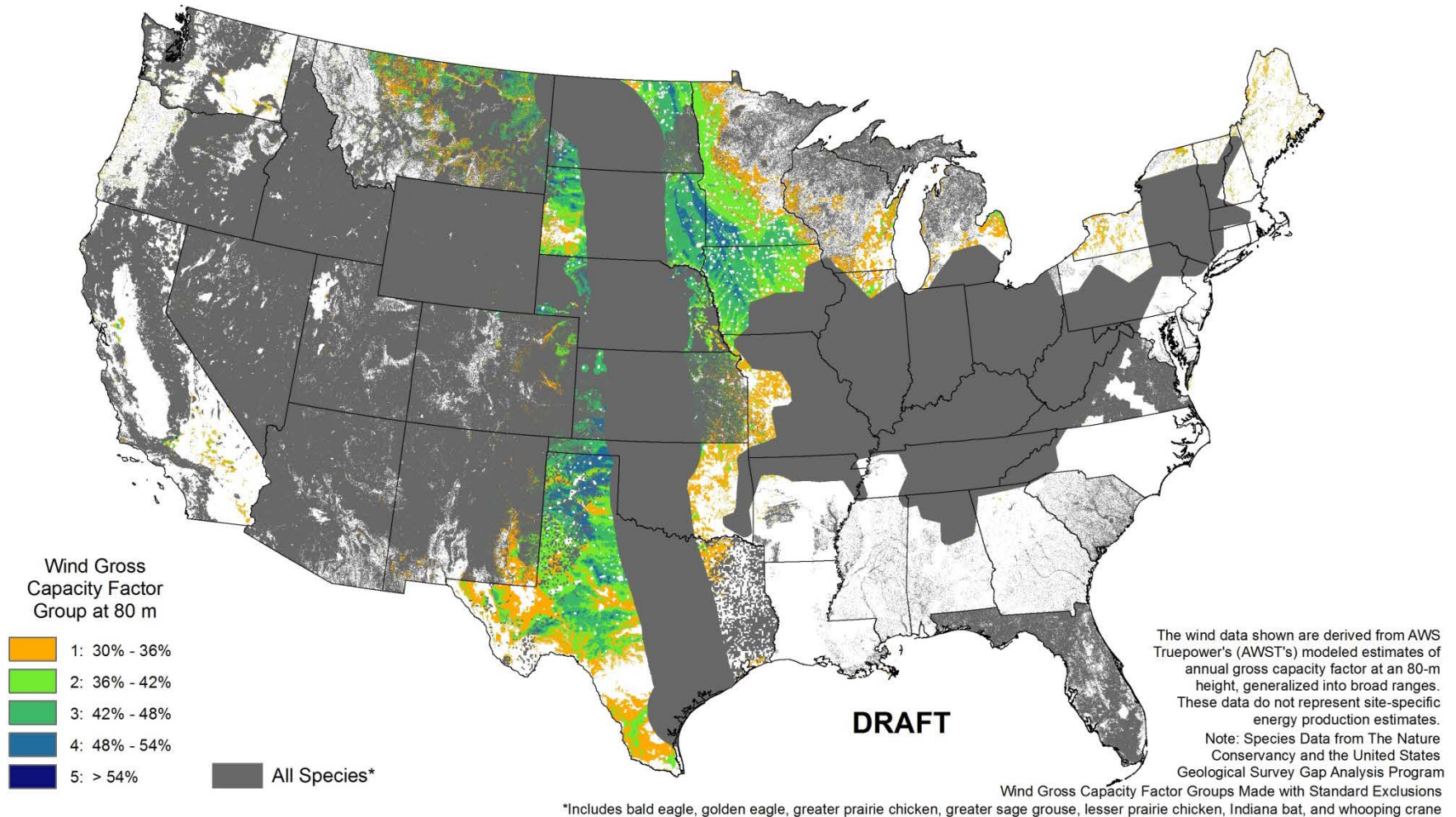
Whooping crane habitat distribution and migratory corridor: potential no-build and mitigation areas

Deployment Barriers – Wildlife



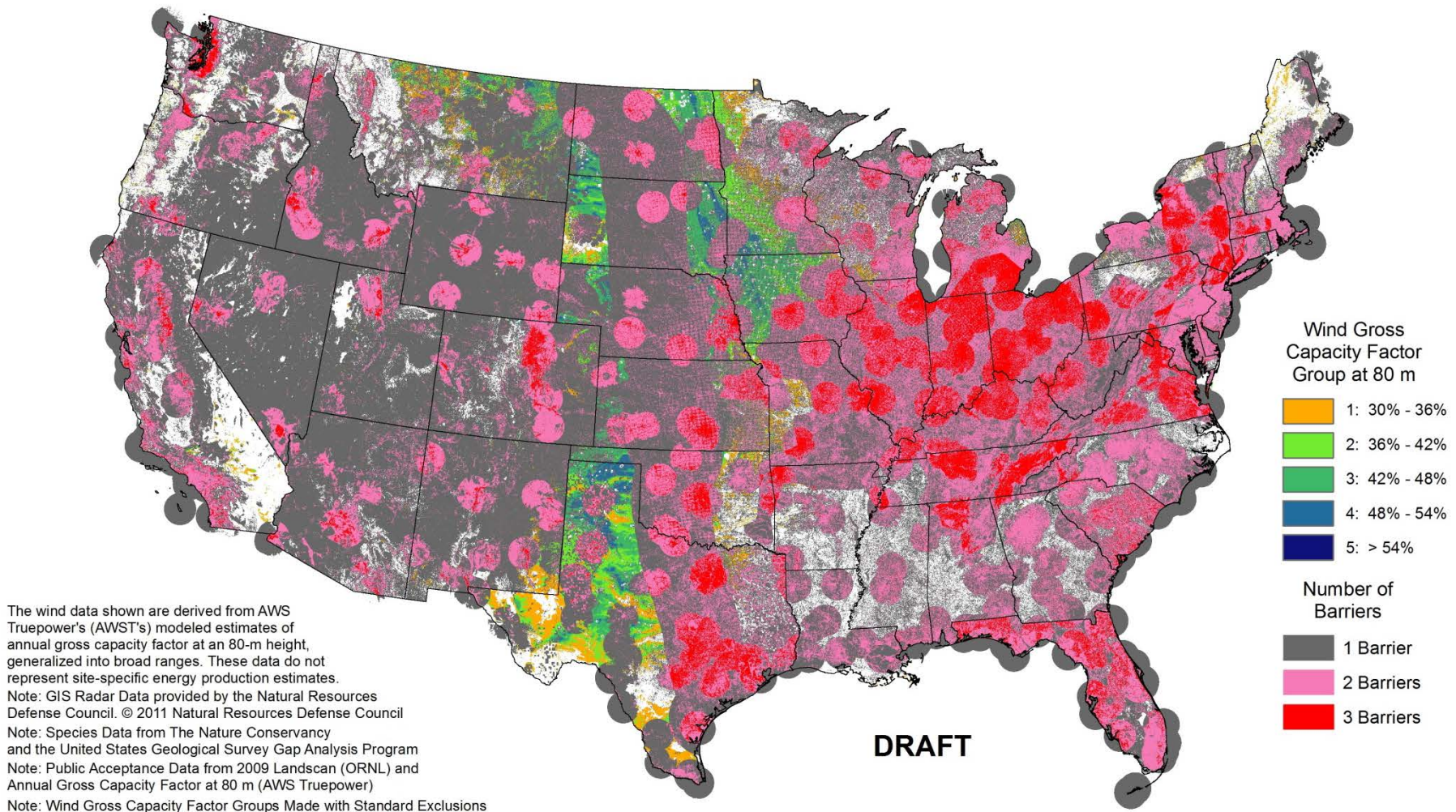
Indiana bat habitat distribution: potential no-build and mitigation areas

Deployment Barriers – Wildlife



Combined wildlife impacts: potential no-build and mitigation areas

Deployment Barriers – Total Impact Areas



Industry-wide increased cost of energy driven by higher costs to address barriers or moving turbines to locations with fewer barriers

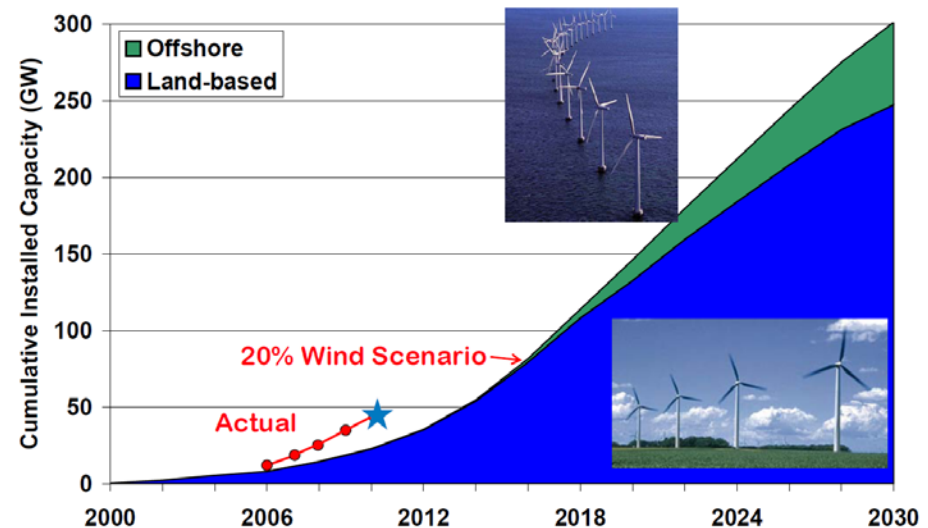
Caveats to the Previous Graphs

These slides reflect a work in progress, are being actively refined, and are based on current insights, including discussions with industry and other stakeholders. The results have not been peer reviewed but will be formally released.

Conclusions

It Will Get Harder Before It Gets Easier

- The industry is only beginning the development cycle to becoming a major energy market player.
- As wind deployment increases, the headwinds will increase as well.
- There is a role for all organizations in moving deployment forward; however, different organizations have different roles, and these roles must be understood.
- There are right ways and wrong ways to conduct stakeholder engagement; learn the right ways.
- These barriers have cost and deployment impacts; failing to address them will also have a (likely larger) industry-wide cost.
- The discussion has become sophisticated and in some regions heated; assuming people are NIMBYs is not sufficient.
- There are multiple levels in the social acceptance discussion that must be addressed, from national to local.



Carpe Ventem



Photo from Iberdrola Renewables, NREL PIX 16072

www.windpoweringamerica.gov