

Addressing Wind Deployment Challenges: Paths to Success by DOE's Regional Wind Resource Centers

Ian Baring-Gould, Corrie Christol
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National Challenges for Wind Energy

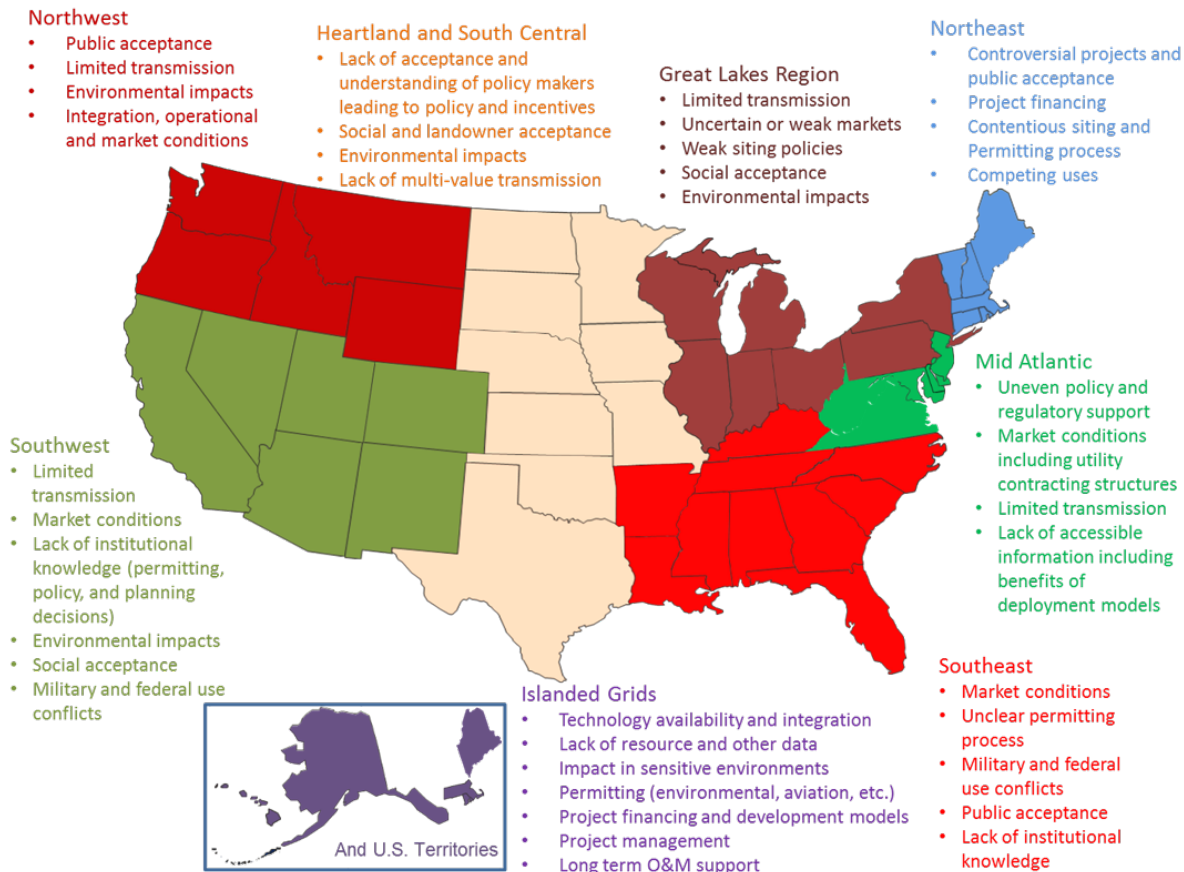
In 2012 and 2013, a regional breakout of key industry challenges to wind energy deployment was developed through engagement with stakeholders from across the nation.

Challenges exist in the following categories:

- Transmission and Integration
- Markets and Policy
- Federal and Military
- Siting and Permitting
- Wind Energy Education.

National Challenges: Regional Variability

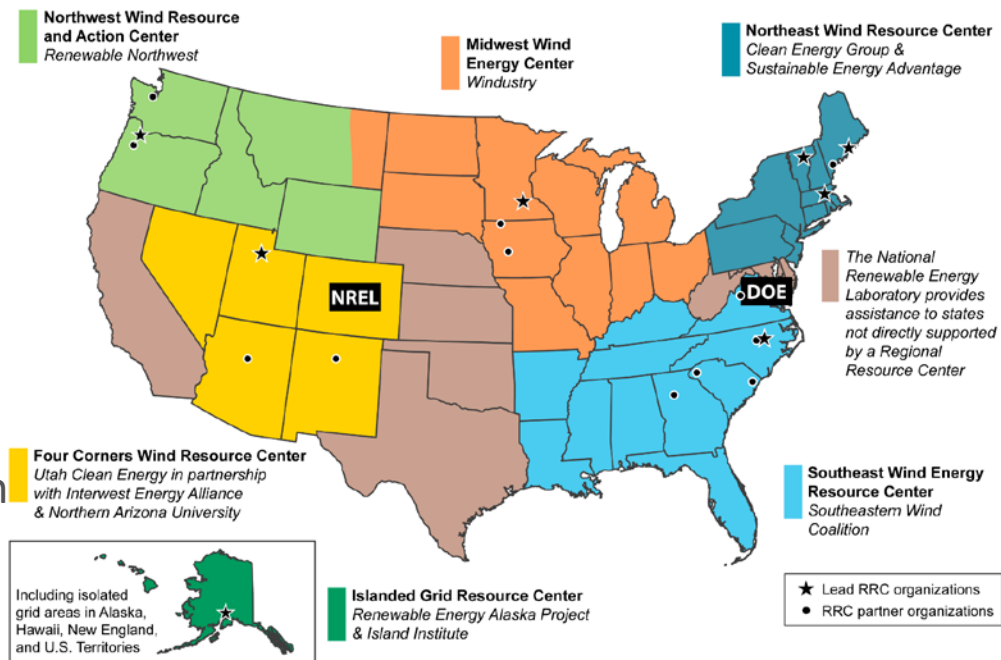
Each region prioritizes national challenges differently.



Regional Resource Centers

To address these challenges, six Regional Resource Centers (RRCs) were established through a competitive solicitation in 2013 and were tasked with identifying and working to mitigate national challenges in each region.

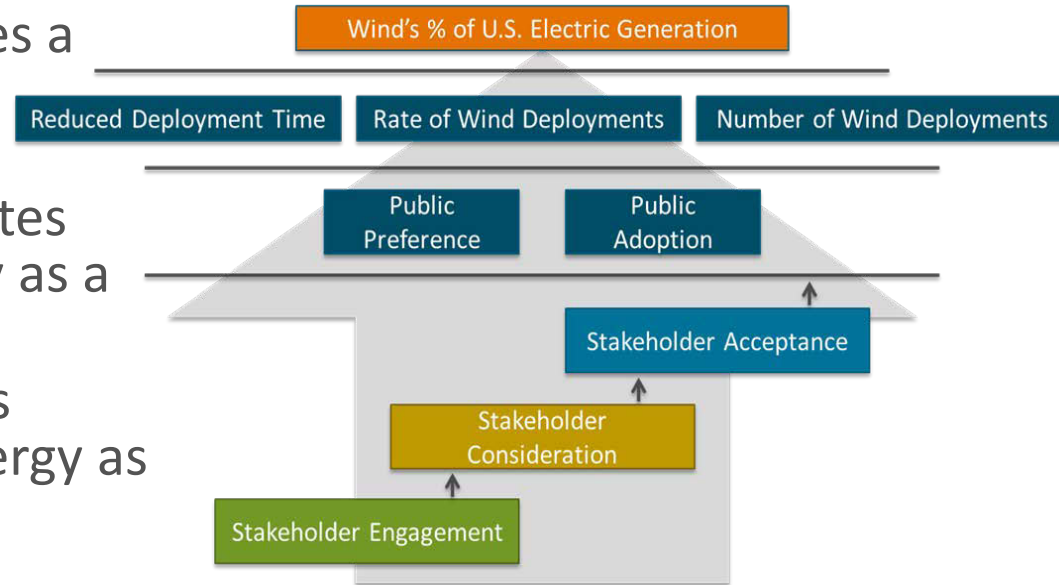
- The RRCs covered a majority of the nation, with each center defined by region or by topic.
- The RRCs identified regional priority challenges and developed stakeholder engagement strategies to address challenges.
- The RRCs collaborated across regions on items such as the Distributed Wind Toolkit.



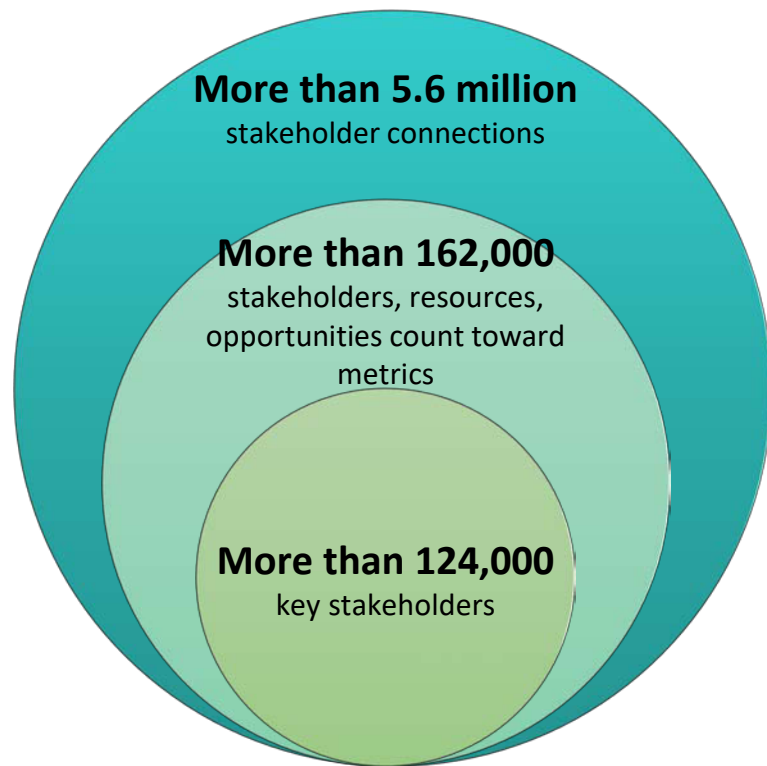
Regional Resource Centers: Impact Framework

To facilitate NREL's goal of quantifying the impact of stakeholder engagement activities, three impact area metrics were identified that would be measured:

- Engagement: Behavior indicates a stakeholder's participation or interaction
- Consideration: Behavior indicates stakeholders view wind energy as a viable option/choice
- Acceptance: Behavior indicates stakeholders "adopt" wind energy as a viable option/choice.



Regional Resource Centers: Overall Results



Stakeholder connections include any instance in which information was transferred to a stakeholder. This can include conference attendance, newsletter delivery, interviews, expert testimony, etc.

Count toward metrics totals the number of stakeholders (both individuals or entities), resources, or opportunities that were achieved toward the Engagement, Consideration, or Acceptance metrics.

Key stakeholders are the subset of stakeholder touches that were directed at Community, Education, Government, Industry, Media, and Utility stakeholder groups.

Regional Resource Centers: Results



- Engaged **more than 159,000 stakeholders or stakeholder groups** through the delivery of accurate wind information
- Gained commitment from **more than 1,080 stakeholders** to write, present, testify, or otherwise utilize RRC information resources about appropriate wind deployment
- Created **more than 380 information-sharing opportunities** (events and collaborative development of resources).

- **More than 650** government and/or utility information resources or stakeholders now or newly consider wind energy as an option.
- **More than 300** non-governmental information resources or stakeholders consider wind energy as an option due to RRC interactions.

- RRC content has been included in **more than 100** plans or policies.
- RRCs gained commitment from **more than 300 influential stakeholders** to write, present, or speak about the benefits and impacts of wind energy.

Regional Resource Centers: Interactions

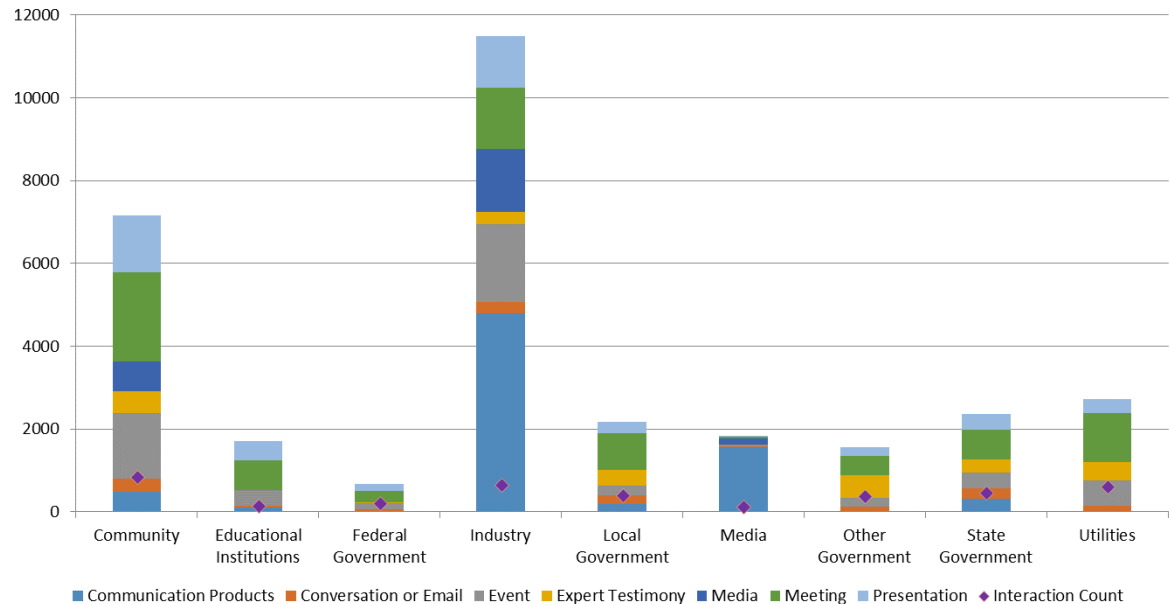
Across stakeholder types, direct interactions through meetings (including tours and working groups) have played a consistent role in achieving metric targets.

RRCs interacted most with community, industry, utility, and state government stakeholders, using targeted communications products to reach a large audience.

Frequency of interaction types
(Years 1–3)



Stakeholder quantity achieved by interaction and number of interactions (Years 1–3)



Regional Resource Centers: Interactions

Over the years, interaction shifted from passive to more active across the metric continuum.

- Acceptance levels were achieved through more meetings and events.
- Consideration had a large focus on meetings.
- Engagement utilized media and communication products more often.

Understanding key stakeholders and the methods to best engage with them allows more impactful interactions.

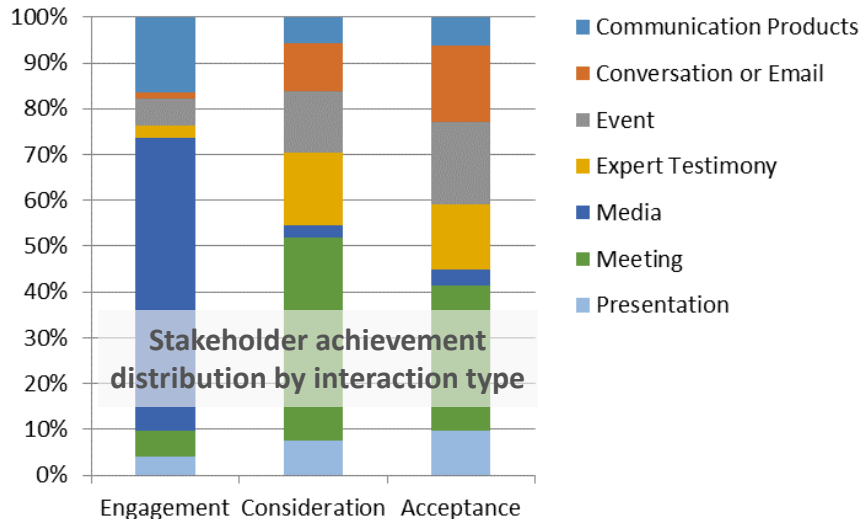
Total # of actions and interactions by year

	Actions	Stakeholder Interactions
Y1	950	1,226
Y2	1,021	1,684
Y3	853	1,422

However, year after year, greater effort is required to achieve consideration and acceptance.

Rate of achievement per interaction (Years 2 and 3)

Engagement	Consideration	Acceptance
1 : 166	1 : 2.2	1 : 1.4
1 : 112	1 : .5	1 : .27



RRC Activities: Southeast Wind Farm Tours

National challenge: Wind Energy Education

RRC challenge: Lack of understanding of wind energy due to limited regional deployments

RRC strategy: Engage with decision makers through wind farm tours

The problem: Limited deployments in the Southeast result in a lack of exposure to wind energy and limited understanding of the industry's operation, development, and potential impacts.

RRC Actions to Advance E-C-A

RRC identified and reached out to stakeholders and decision makers to arrange a wind farm tour

RRC facilitated a tour of the Beech Ridge Wind Farm in West Virginia for 15 stakeholders, providing information on wind development and community impacts

Stakeholders and decision makers returned to their communities, later passing a wind energy ordinance in Botetourt County, Virginia

A wind project was proposed and approved unanimously by the locality. The developer is seeking a power purchaser

Challenge resolved: *The RRC's education of stakeholders and local decision makers leads to changes in local policy and the pursuit of the first wind farm in Virginia.*

(http://www.roanoke.com/townnews/law/rocky-forge-wind-farm-moves-into-new-phase/article_f70e210e-b70d-11e6-bfa1-f3843001645b.html)

RRC Activities: Block Island Exchange Trip

National challenge: Wind Energy Education

RRC challenge: Assisting remote New England communities to learn more about offshore wind energy

RRC strategy: Forge connections and promote collaboration

The problem: With limited offshore wind projects, there is little experience negotiating community benefit agreements

RRC Actions to Advance E-C-A

RRC provided information to community members from Block Island and Monhegan, Maine, as they considered a potential offshore wind project

RRC identified an opportunity for Monhegan and other island communities to learn more information from those involved in the Block Island Wind Farm

RRC organized an exchange trip that would allow community members to learn about and share the challenges and successes of the project

Representatives from Monhegan and Nantucket and Martha's Vineyard, Massachusetts, traveled to Block Island in March 2017

Challenge resolved: The Monhegan Community Task Force released the Monhegan Community Benefits Advisory Committee Report and Recommendations Report in October 2017. The committee recommended that Monhegan adopt the Fund Option, which was later accepted unanimously through a community vote.

<http://www.monheganenergy.info/cbac-releases-report-and-recommendations-100317/>

RRC Activities: PUC Not Valuing Wind's Contributions

National challenge: Markets and Policies

RRC challenge: Need for long-term planning for new renewable energy in utility Integrated Resource Plans (IRPs)

RRC strategy: Resource Planning Best Practices

The problem: The Oregon PUC used outdated information to evaluate capacity contribution of wind (reliability, flexibility, etc.) in their IRP rules. This caused utilities to limit wind capacity and made it less likely that the PUC would accept wind energy.

RRC Actions to Advance E-C-A

RRC spoke out at IRP meeting about PGE using up-to-date wind cost data

RRC engaged DNV-GL as an independent source of wind cost data

At the RRC's request, DNV-GL provided data to PGE for IRP process

RRC convinced PGE to engage independent experts to revise methods for evaluating capacity contribution of renewables, system reliability, and flexibility needs. PGE did and presented in their Public Meeting #3 to PUC

Challenge resolved: The Oregon PUC accepted the RRC approach from PGE (DNV data) for this process, so wind energy contributions are highly valued where they were not valued previously. This led PGE to add an additional high-wind-intake scenario to its IRP (1,500 MW in addition to the 500 MW).

Northwest

- Lack of information about the changing wind technology and its impact on costs
- Transmission constraints and outdated market operations that impact integration
- Uncertain permitting processes when wildlife species are present
- Lack of zoning and permitting best practices for distributed and community wind projects
- Restricted access to capital and financial incentives for distributed and community wind development
- Lack of a strong technical information baseline for offshore wind

Midwest

- Limited transmission
- Lack of acceptance and understanding of policymakers and planners
- Lack of experience with and policy for wind project development

Northeast

- Public acceptance
- High cost of offshore wind partially driven by a lack of infrastructure
- Limited detailed wind resource data for the Outer Continental Shelf
- Integration of large amounts of offshore wind energy
- Market constraints and uncertainty
- Siting and permitting
- Transmission constraints

Southwest

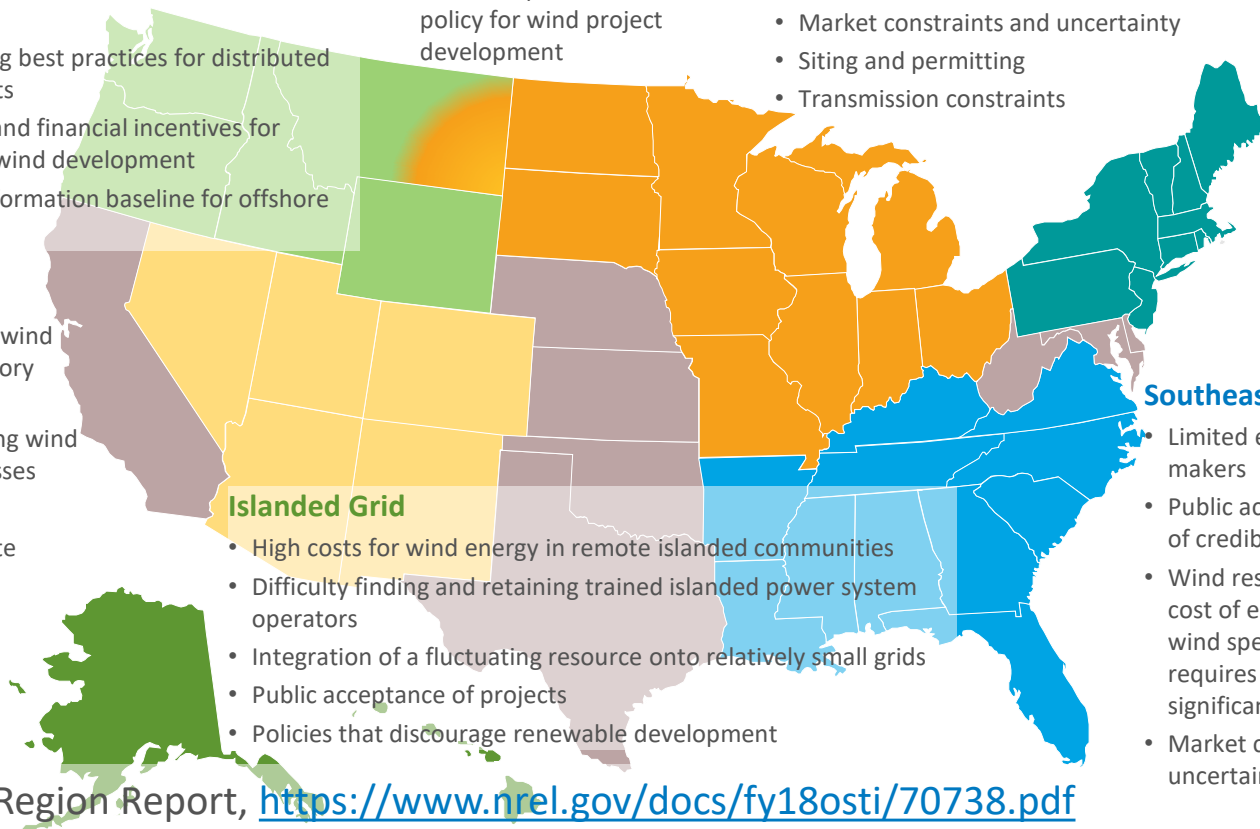
- Inaccurate and/or outdated wind information in utility regulatory decision making
- Lack of knowledge concerning wind policy and permitting processes
- Public acceptance
- Market conditions that create market uncertainty for wind

Islanded Grid

- High costs for wind energy in remote island communities
- Difficulty finding and retaining trained island power system operators
- Integration of a fluctuating resource onto relatively small grids
- Public acceptance of projects
- Policies that discourage renewable development

Southeast

- Limited experience of decision makers
- Public acceptance due to a lack of credible information
- Wind resource and subsequent cost of energy: access to higher wind speeds/good wind resource requires taller towers, which are significantly more expensive
- Market constraints and uncertainty



Regional Resource Centers: Resources

2017 State of the Regions Report:

<https://www.nrel.gov/docs/fy18osti/70738.pdf>

2013 Regional Stakeholder Meetings Summary Report:

<https://www.nrel.gov/docs/fy13osti/56289.pdf>

WINDEXchange website: <https://windexchange.energy.gov/>

Regional Resource Centers Contacts

For more information, contact:

Ian Baring-Gould

ian.baring-gould@nrel.gov

303-384-7021

Corrie Christol

corrie.christol@nrel.gov

303-384-7110

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National Challenges Identified

National Challenge Category	High-Level Challenges Identified by RRCs
Transmission and Integration	<ul style="list-style-type: none">• Need for new transmission• Grid interconnection and integration challenges and costs
Markets and Policies	<ul style="list-style-type: none">• Power market conditions that limit wind development• Lack of clear federal policy covering tax, climate, and social costs• Inaccurate information being utilized in utility integrated resource and state-based energy planning• Restricted access to capital, financing, and technical assistance for specific market segments• Lack of a regional approach to offshore wind development
Federal and Military	<ul style="list-style-type: none">• Challenges with development on federal and Native lands• Lack of consistency among land management and regulatory offices• Military airspace and radar conflicts
Siting and Permitting	<ul style="list-style-type: none">• Lack of local wind siting or zoning ordinances• Minimal past public education and engagement on wind siting issues• Dearth of science-based resource planning in siting guidelines• Environmental impacts
Wind Energy Education	<ul style="list-style-type: none">• Lack of understanding about wind energy's economic impacts• Negative public perception of wind (sound, visual, radar, wildlife) due to poor siting, maintenance, turbine failures• Lack of exposure to wind energy• Lack of information on benefits and impacts of offshore wind

Regional Resource Centers Stakeholders

The RRC initiative provides the Wind Program with a broader stakeholder reach.

Stakeholders Reached through RRC Initiative

Community

- Experts
- Groups
 - Advisory
 - Advocacy
 - Affiliates
 - Boards
 - Committees
 - Consumers
 - Councils
 - Interveners
 - NGOs
 - Non-government
 - Partner network
 - Working group
- **Leaders**

Educational Institutions

- Universities
- Community colleges
- Primary education
- Secondary education

Industry

- Developers
- Manufacturers
- Supply chain
- Trade groups
- Merchant energy suppliers

Media

- Reporters
- Bloggers

Public

- Engaged citizens
- Interested citizens
- General

Federal Government

- Federal agencies
- Decision makers
- Elected officials
- Policymakers

State Government

- State agencies
- Decision makers
- Elected officials
- Governor staff
- Policymakers

Local Government

- County commissioners
- Municipalities
- Decision makers
- Elected officials

Other Government

- Non-elected government officials
- Public utility commissioners
- Decision makers
- Staff
- Tribal

Utilities

- Isolated power systems operators
- Power authorities
- Municipal utilities
- Cooperative utilities
- Decision makers
- Staff

Other

- Stakeholders unable to be defined in listed categories

Key Stakeholder

Not included as a Key Stakeholder

Regional Resource Centers Interaction Types

Interaction Types Used by RRCs

Conversation or Email

Event

- Conference
- Workshop
- Public events

Communication Products

- Handouts
- Meeting materials
- Interviews
- Letters to the editor
- Newsletter
- Technical studies
- Reports

Expert Testimony

- Formal comments
- Hearings
- Legislative committee meetings
- Regulatory proceedings
- Town hall meetings
- Utility commission docket
- Expertise at request

Media

- Newspaper
- TV
- Social media
- Website activity

Meeting

- Conference call
- Meeting
- Tour
- Working group

Presentation

- Panelist
- Presenter
- Speech
- Webinar

Regional Resource Centers Metric Framework

For each of the impact areas, performance statements were established that provided targets for the RRCs to work toward:

Engagement

- E-1. Formally deliver accurate wind information at X# of forums with at least X# of participants.
- E-2. Gain commitment of X# of stakeholders to write, present, testify, or otherwise utilize RRC information resources about appropriate wind deployment.
- E-3. Create X# of information-sharing opportunities that enable stakeholders to fulfill their commitments made in E-1.

Consideration

- C-1. Attain explicit and accurate consideration of wind as an energy option in X# of government and or utility-based information resources.
- C-2. Attain explicit and accurate consideration of wind as an energy option in X# of non-governmental information resources or policy statements.

Acceptance

- A-1. Ensure X# of policies or plans contain content provided by the RRC.
- A-2. Gain commitment of X# of representatives of at least three influential stakeholder groups to accurately write, present, and/or formally speak about the benefits and costs of wind energy.

RRC Activities: Distributed Wind PURPA Eligibility

National challenge: Markets and Policies

RRC challenge: Need for long-term planning for new renewable energy in utility IRPs

RRC strategy: Inform and advise resource planning best practices

The problem: Distributed wind eligibility was threatened in PacifiCorp region due to efforts to import Idaho Power PURPA-limiting policy

RRC Actions to Advance E-C-A

RRC actively engaged with local media (interviews, articles) and social media

Secured participation and active speaking role at stakeholder meeting with PacifiCorp

Provided official comments to the Oregon PUC on the Idaho Power brief that would make distributed wind an ineligible resource under PURPA

Submitted comments to the PacifiCorp pre-hearing brief and received a response to which they submitted a reply brief (UM1734)

Challenge resolved: PURPA ruling on March 29 stated that PacifiCorp would keep distributed wind as an eligible resource.

<http://www.sanger-law.com/oregon-commission-maintains-20-year-purpa-contracts/>