

# DOE Needs a Robust Distributed Wind Effort

## The Problem

The U.S. Department of Energy is spending over **300 times** as much on RD&D for solar energy as on distributed wind systems, despite the fact that a **much higher portion of small wind systems are domestically produced**. Both solar and small wind systems are commonly used for distributed generation. DOE has not been effective in helping stem the onslaught of foreign



competition – particularly from China. Distributed wind has tremendous job creation potential because it is largely a domestic industry, but the DOE has not supported the industry as needed:

- Over 90% of the small wind systems (up to 100 kW) installed in the U.S. in 2015 were manufactured in the U.S. Solar PV modules were **under 15%**.
- Leading U.S. small wind turbine manufacturers source most of their turbine components from U.S. supply chain vendors, maintaining domestic content levels over 90%.
- DOE will spend ~\$90M on wind RD&D this year, but less than 1% of this will be for distributed wind. DOE will spend ~\$250M on solar RD&D.

- DOE Wind has no permanent staff assigned to distributed wind.

## Recommended Remedy

DWEA believes DOE Wind should be allocating at least 10-15% of its annual budget to distributed wind RD&D. DOE Wind can become an effective partner for the U.S. industry through strong initiatives including:

- **Create a national vision and roadmap for distributed wind, as it has for solar and offshore wind.**
- More aggressively pursue cost-shared technology development and launch, partnering with the AMO, a significant small and medium wind advanced manufacturing initiative.
- Establish a virtual “Permitting Resource Center” at NREL to nurture streamlining of permitting processes and reduce soft costs.
- Improve wind maps, micro-siting tools and performance prediction tools, with an initial focus on active market areas.
- Provide technical assistance for military and foreign assistance applications as well as utility distribution grid integration (as has been done for solar).

## Expected Results

**A robust and effective DOE Distributed Wind program would contribute to rebuilding the manufacturing base in America and help create thousands of new jobs over the next decade.** It would also increase the competitiveness of American companies in the worldwide clean energy market.

*For further information, please contact Lloyd Ritter, DWEA Washington Representative, at (202) 215-5512 or [Lloyd@lritter.com](mailto:Lloyd@lritter.com)*

# Distributed Wind RD&D Agenda for U.S. DOE – 2016

1. Create national vision and an aspirational deployment goal (e.g., “Million Solar Roofs”) for distributed wind, and a multi-year program to support that goal. DWEA has established a 30 GW by 2030 goal, which DOE could adopt. The initiative should include community wind.
2. More aggressively pursue cost-shared technology development and launch an advanced manufacturing initiative for small and medium wind energy systems
  - Expand current component development programs
  - Initiate advanced manufacturing initiative (paralleling those already available for the solar industry) for small and medium wind systems (up to 1,000 kW), focusing on advanced composite materials, direct drive PM generators, power electronics, and towers
  - Initiate R&D on lower cost foundations (i.e., concrete-less anchoring)
3. Establish a “Bankability” program to reduce the risk profile of DW and increase access to financing
  - Investigate and address causes of performance prediction gaps – power curves, wind maps/models, inter-annual variability, local terrain, etc.
  - Study O&M costs and create predictive models
  - Study longevity and create predictive models
4. Address permitting soft costs by establishing a virtual “Permitting Resource Center” and supporting program at NREL
  - Assign or subcontract 1-2 people with small and medium wind permitting experience
  - Assemble or develop reference materials on hot-button NIMBY issues, model ordinance, case studies, etc.
  - Provide cities, counties, and states with technical support relating to ordinances and regulations
  - Promote services through National Association of Counties, National League of Cities, DWEA, etc.
5. Distribution grid integration to increase utility confidence in distributed wind
  - Increase grid support / smart grid capabilities including communications and control
  - Next-generation smart inverter development (wind and solar inverters are different)
  - Work with NRECA and rural cooperatives to promote rural deployment
6. Continue support for valuable existing programs:
  - Expand Competitiveness Improvements Program to optimize designs (see Item #2)
  - Certification
    - Renew SWCC support contract
    - Support DWEA/industry involvement in U.S. and international standards activities
7. Military and foreign assistance applications support
  - Establish liaisons with Services working on tactical power (Army and Marines)
  - Establish liaisons with US-AID and State Dept.
  - Focus on smaller systems, not bulk power (keep that effort separate)
8. Improve structural dynamics models for small wind turbines
  - Need ADAMS-like functionality with easier use and lower costs
  - Problems with FAST for small turbines (e.g., blade twist, yawed rotors, furling)
  - Convene industry meeting with NREL experts to design development path
9. Market Metrics and Industry Roadmap
  - Continue the annual market report
  - Provide support to DWEA for an update and expansion of 2002 AWEA Small Wind Roadmap
  - Complete development of dWind deployment model
10. Stakeholder Outreach
  - Include distributed wind target states in Regional Resource Center efforts
  - Resume support for schools hosting wind turbines
  - Support of state/regional/national KidWind and collegiate competitions

