

United States Supports Distributed Wind Technology Improvements



Small Wind Conference 2015

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Outline

- **Overview – Competitiveness Improvement Project (CIP)**
- **Project Criteria**
- **Project Awards**
- **Project Status**



Northern Power Systems 100-kw wind turbine,
Photo by Northern Power Systems, NREL 26787

Overview

- **Funding:** provided through a competitive solicitation process
- **Purpose:** to expand and revitalize U.S. leadership in domestic and international distributed wind technology markets
- **Approach:** to assist U.S. manufacturers in making technology improvements
- **Goal:** to lower the levelized cost of energy; increase number of turbines certified for distributed applications
- **Eligible projects:** have included component improvement and overall system optimization, manufacturing process improvement, prototype turbine testing, certification testing (turbines with rotor swept area $<200\text{-m}^2$), and type certification (turbines with rotor swept area between 200-m^2 and $1,000\text{-m}^2$)



Pika T701 turbine in Gorman, Maine
Photo from Pika Energy, NREL 31728

Criteria – Component Improvement and Overall System Optimization

- U.S. manufacturer
- Maximum 1,000-m² rotor swept area
- 18-month period of performance
- Merits
 - Evidence that improvements will result in turbine certification or recertification
 - Evidence that investment will contribute to LCOE reduction
 - Sound business plan for certification for U.S. market
 - Team/expertise
- Cost sharing
 - Minimum 20%
 - Maximum \$350,000 from NREL
- Other requirements
 - Figure of merit: LCOE before and after
 - Eligibility verification (U.S. manufacturer)

Criteria – Manufacturing Process Improvement

- U.S. manufacturer
- Maximum 1,000-m² rotor swept area
- 18-month period of performance
- Merits
 - Evidence that improvements will result in turbine certification
 - Evidence that investment will contribute to LCOE reduction
 - Sound business plan for certification for U.S. market
 - Team/expertise
- Cost sharing
 - Minimum 50%
 - Maximum \$350,000 from NREL
- Other requirements
 - Figure of merit: LCOE before and after
 - Eligibility verification (U.S. manufacturer)

Criteria – Prototype Testing

- U.S. manufacturer
- Maximum 1,000-m² rotor swept area
- 18-month period of performance
- Merits
 - Technical approach
 - Test plan
 - Expertise
- Cost sharing
 - Minimum 50%
 - Maximum \$150,000 from NREL
- Other requirements
 - Figure of merit: LCOE before and after
 - Eligibility verification (U.S. manufacturer)
 - Documentation requirements for testing facility

Criteria – Certification Testing

- U.S. manufacturer
- Less than 200-m² rotor swept area
- 18-month period of performance
- Merits
 - Evidence that turbine system is likely to comprise significant share of small wind market in United States
 - Capabilities to manufacture and supply turbine system in U.S. market AND to provide associated installation and maintenance support
 - Sound business plan leading to certification of turbine for U.S. market
 - Team/expertise
- Cost sharing
 - Minimum 20%
 - Maximum \$150,000 from NREL
- Other requirements
 - Figure of merit: LCOE before and after
 - Eligibility verification (U.S. manufacturer)
 - Documentation requirements for testing facility

Criteria – Type Certification

- U.S. manufacturer
- Between 200-m² and 1,000-m² rotor swept area
- 18-month period of performance
- Merits
 - Evidence that turbine system is likely to comprise significant share of the distributed wind market in United States
 - Capabilities to manufacture and supply turbine system in U.S. market AND to provide associated installation and maintenance support
 - Sound business plan leading to certification of turbine for U.S. market
 - Team/expertise
- Cost sharing
 - Minimum 20%
 - Maximum \$450,000 from NREL
- Other requirements
 - Figure of merit: LCOE before and after
 - Eligibility verification (U.S. manufacturer)
 - Documentation requirements for testing facility

Awardees – Round 1

- 2012 competitive solicitation
- Numerous proposals received
- Two proposals funded
 - Component Improvement
 - Bergey Windpower Company
 - Manufacturing Process improvement
 - Pika Energy



Bergey Excel 10, 10-kW turbine,
Klickitat County, Washington
Photo by Gwen Bassetti, NREL 26429

Pika Energy's injection molding tool for high performance wind turbine blades. *Photo by Pika Energy, NREL 33941*

Awardees – Round 2

- 2013 competitive solicitation
- Five proposals funded
 - Component Improvement
 - Northern Power Systems
 - Pika Energy
 - Manufacturing Process Improvement
 - Pika Energy
 - Certification Testing
 - Urban Green Energy
 - Prototype Testing
 - Endurance Wind Power



Endurance E3120 turbine; 50-kW turbine, Appleton, Wisconsin
Photo from Kettle View Renewable Energy, LLC, NREL 28428

Awardees – Round 3

- 2014 competitive solicitation
- Numerous proposals received
- Negotiations with potential awardees in progress
- Contracts executed as of June 17, 2015
 - Component Improvement
 - Intergrid
 - Pika Energy
 - Certification Testing
 - Ventera Wind



CAD drawing of Pika Energy's turbine concept for CIP Round 3.
Illustration from Pika Energy, NREL 33992

Project Status

- Round 1:
 - Pika Energy—completed project in June 2014
 - Bergey Windpower Company—period of performance extended until August 2015
- Round 2:
 - Work efforts are underway by all awardees
 - Period of performance through early 2016
- Round 3:
 - Negotiations with selected awardees underway
 - Work efforts to begin as soon as subcontracts are executed; 18-month period of performance expected
- Future Efforts:
 - Special Notice for Round 4 RFP posted to FedBizOps on June 16, 2015 and can be found at https://www.fbo.gov/spg/DOE/NREL/NR/NREL_6162015/listing.html

QUESTIONS?



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