



QED Wind Power's small wind turbine can power a mid-sized farm or up to eight houses. Photo from QED Wind Power

U.S. Department of Energy Competitiveness Improvement Project (CIP)

2020 Awardee of Two Small Wind Turbine Certification and Listing Awards: QED

Certification Testing Project Dates: November 2019–August 2022

Listing Project Dates: October 2020–July 2022

Project Overview

With their certified small wind turbine, QED Wind Power LLC can increase sales to homes, farms, and schools

QED Wind Power's 20-kilowatt, small wind turbine model—named Phoenix 20—can power up to eight homes or a mid-sized farm. Because QED Wind Power's long-lasting, reliable, and efficient design can easily plug into existing infrastructure and operate off grid in rural communities, the technology could lower the cost of distributed wind energy for small communities, homes, farms, and schools.

To expand their ability to manufacture and distribute their turbine to larger national markets, QED Wind Power aims to conduct and complete testing of their small wind turbine and achieve safety and performance certification and listing with support from the National Renewable Energy Laboratory (NREL). Their two interconnected Competitiveness Improvement Awards—for small turbine certification and listing—will help them achieve these goals.

“Designed with safety, reliability and simple functionality in mind, the QED Phoenix 20-kW system is ideal for farms, residences, small commercial locations and schools. Support from NREL and the U.S. Department of Energy's Competitiveness Improvement Project will help QED Wind Power achieve both certification and listing of our small wind turbine, enabling it to earn a significant share of the distributed wind turbine market.”

Scott Fouts, CEO of QED Wind Power

Project Outcomes and Deliverables

QED Wind Power will conduct and complete two separate tests of the Phoenix 20 small wind turbine: one in Pampa, Texas, and the second in Cortland, New York. These tests will determine if the design adheres to Underwriters Laboratories' electrical safety standards and meets national performance requirements for small wind turbine systems.



Working with a testing facility and NREL, QED Wind Power will confirm that its turbine design is ready for certification and then validate its safety, performance, durability, and acoustics. QED Wind Power will also collect data on the turbine's power, and confirm design loads and structural soundness.

QED Wind Power anticipates that listing the small wind turbine will significantly increase sales of the wind turbine assembly and reduce the levelized cost of energy of distributed wind turbines.

Project Approach

With its Competitiveness Improvement Project Small Turbine Certification and Listing Awards, QED Wind Power will conduct preliminary design reviews of their wind turbine system in coordination with NREL and private consultants. To achieve the goals of this award, QED Wind Power will:

- Conduct final engineering on their wind turbine blade flange and nacelle
- Confirm that the design loads and structural soundness of their turbine meet standard requirements
- Validate their model for safety, function, durability, and acoustics
- Gather data on the wind turbine's power and performance
- Analyze the strength of the turbine's blades
- Evaluate, confirm, and prepare the system design for certification and listing.

Project Collaborators

- *RenewTest, LLC*—Wind turbine validation
- *ICC Evaluation Service's Small Wind Certification Council*—Wind turbine certification

Project Financial Information

Award Amount: \$347,727

Awardee Share: \$354,744

Total: \$702,471

"Earning safety and compliance certification for the Phoenix 20 small wind turbine will help QED Wind Power's long-lasting, reliable, and efficient design capture a significant share of the distributed wind turbine market."

Dave Snowberg, NREL technical monitor

Small Turbine Certification and/or Listing Awards

One of eight types of Competitiveness Improvement Project awards, Small Turbine Certification and/or Listing Awards are designed to:

- Evaluate wind turbines with a rotor-swept area less than or equal to 200 square meters
- Apply the International Electrotechnical Commission 61400-2:2013 standard and/or American Wind Energy Association SWT-1 standard to turbine designs
- Assess wind turbines and components for listing to electrical safety standards.

About the Competitiveness Improvement Project

The U.S. Department of Energy's (DOE's) Competitiveness Improvement Project supports U.S. leadership in distributed wind technologies. Managed by NREL on behalf of DOE's Wind Energy Technologies Office, the Competitiveness Improvement Project supports innovation to advance wind energy as a low-cost distributed generation technology option.

More Information

Visit NREL's website at www.nrel.gov/wind/competitiveness-improvement-project.html

Download the [DOE fact sheet](#)