Department of Energy
Washington, DC 20585

Prepared by the Wind & Water Power Technologies Office at the U.S. Department of Energy

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MEMORANDUM

To: **Ryan Mulholland, Senior Renewable Energy Trade Specialist, Office of the Secretary, Department of Commerce | David Asiello, Executive Agent, Office of the Deputy Under Secretary of Defense for Installations and Environment, Department of Defense | John Pazik, Director for Innovation, Office of Operational Energy, Department of Defense | Lizana Pierce, Project Manager, Tribal Energy Program, Department of Energy | Pilar Thomas, Deputy Director, Office of Indian Energy Policy and Programs, Department of Energy | Kristopher Venema, Project Monitor, Tribal Energy Program, Department of Energy | Matt Clouse, Director, Renewable Energy Policy and Programs, Environmental Protection Agency | Timothy Unruh, Director, Federal Energy Management Program, Department of Energy | Dana Arnold, Director, Program Analysis Division, Office of Acquisition Management, General Services Administration | David Kang, Director for Shore Energy, Office of the Deputy Assistant Secretary for Energy, Department of the Navy | Andrew Dowdy, Director, Office of Alternative and Renewable Energy, Department of State | Tim Williamson, Deputy Director, Office of Alternative and Renewable Energy, Department of State | Chris Kelley, Attorney, Office of Tax Policy, Department of the Treasury | Allen Eisendrath, Energy Division Chief, Office of Energy and Infrastructure, Agency for International Development | Anthony Crooks, Renewable Energy Policy Specialist, Office of Rural Development, Department of Agriculture | Rachel London, Fish and Wildlife Biologist, Division of Habitat and Resource Conservation, Fish and Wildlife Service | Stella Fiotes, Executive Director, Office of Construction and Facilities Management, Department of Veterans Affairs**

From: **Jose Zayas, Director, Wind and Water Power Technologies Office**
Re: **Quality Assurance through Wind Turbine Certification Requirements**
Date: **April 11, 2014**

I. Introduction

The Department of Energy (DOE) Wind and Water Power Technology Office (WWPTO) leads the nation's efforts to accelerate the deployment of wind power technologies through improved performance, lower costs, and reduced market barriers. WWPTO works with national laboratories, industry, universities, and other federal agencies to conduct research and development activities through competitively selected, directly funded, and cost-shared projects. Our efforts target offshore wind, land based utility-scale and distributed applications of wind power technology.

The purpose of this memorandum is to 1) inform fellow agencies about certification, or product qualifications, for small and medium wind turbine technologies used in distributed generation applications; 2) outline the investments the WWPTO has made in establishing a framework for wind turbine certification; and 3) explain how certification may be relevant to federal programs as a means of consumer and stakeholder protection.

II. Distributed Wind Systems and Wind Turbine Certification

Distributed wind energy systems are commonly, but not always, installed on residential, agricultural, commercial, industrial, and community sites and can range in size from a few-hundred-watt turbine at a remote cabin; to a 5-kW turbine at a home; to a multi-MW turbine at a manufacturing facility.

The WWPTO defines distributed wind in terms of technology application based on a wind project's location relative to the load it services and power-distribution infrastructure, rather than on technology capacity or project size. Thus, the distributed wind market includes turbines and projects of many sizes – small, medium, and large. However, WWPTO's certification efforts focus on small and medium wind turbines – the turbine sizes most commonly used in distributed applications. At present, the turbine size demarcations used by certifying bodies are:

- Small wind turbines have a rotor swept area up to 200 m^2 (approximately 50 kW-capacity turbines);
- Medium wind turbines have a rotor swept area between 201 m^2 and 1000 m^2 (approximately 500 kW-capacity turbines).

The last 10 years have seen unprecedented global demand for distributed wind systems, drastically increasing the number of new products in the U.S. market from both domestic and foreign manufacturers, particularly small wind turbines. As the U.S. market expanded, small wind turbine manufacturers had no process for communicating third-party verified power performance, acoustic signature, and safety information about their products. As a result, consumers and stakeholders struggled to evaluate the hundreds of turbine configurations available and purchase quality products. Specifically, the following gaps were identified by the WWPTO with support from U.S. industry:

- A process for assessing product performance;
- User-friendly tools to compare products and accurately estimate energy output; and
- Established quality assurance criteria for consumers and stakeholders.

III. Establishing a Path for Turbine Certification

Since 2007, DOE's WWPTO has made significant investments to establish a process for small and medium-sized wind turbine certification, including:

- Research and development of technical standards to voluntarily test wind turbine designs against performance and safety criteria;
- Creation of the Small Wind Certification Council (SWCC), an accredited independent product certification body;
- Competitively awarded grants for testing of wind turbine designs to national and international standards at the National Renewable Energy Laboratory's test site, the National Wind Technology Center; and
- Competitively awarded grants and technical support for the creation of Regional Test Centers for wind turbines.

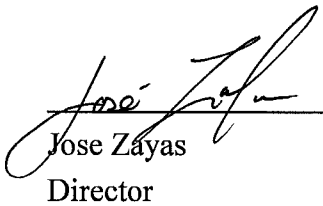
Prioritizing our commitment to certification, in 2010 the WWPTO established a programmatic goal of increasing the number of certified small and medium wind turbines in the United States from a 2010 baseline of zero to forty turbine designs by 2020. In addition, U.S. certification programs are working with counterparts in Europe, Asia, and North America to minimize variations in country-specific requirements and provide access to international markets for wind turbines manufactured in the United States.

IV. USING CERTIFICATION

WWPTO encourages the use of public funds be provided only for wind turbines that have been tested and certified for safety, function, performance, and durability. Certification requirements ensure taxpayer monies are only made available to products with dependable performance estimates and demonstrated compliance with nationally recognized standards. Certification, or quality assurance, requirements can be adopted by local planning officials, utilities, banks, state energy offices, and federal agencies as a means of protection against untested technologies, unverified claims about turbine performance, and high-profile equipment failures.

Please take a moment to consider how wind turbine certification requirements may be relevant to your office or programs. Should you have any questions or wish to learn more about wind turbine certification, please contact Mark Higgins in the WWPTO – mark.higgins@ee.doe.gov. Thank you for your time and consideration.

Best Regards,



Jose Zayas
Director
Wind and Water Power Technologies Office
Unites States Department of Energy

4/11/14
Date