

North American Certification for Small Wind Turbines

Establishing a Consumer-Friendly Rating System

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US Small Wind Investment Tax Credit

- 30% up to lesser of US\$4,000 or US\$1,000 per kW
 - 10 kW turbine costing \$55,000 to install would receive \$4,000, effective tax credit of 7.3%
 - 2 kW turbine costing \$15,000 would receive \$2,000, effective tax credit of 13.3%
 - For maximum benefit, would need a 4 kW turbine costing \$13,333 to install – roughly half market price
- First US tax credit for small wind in 23 years
 - Effective for systems in service 1/1/2008 through 12/31/2016
 - Can be divided across multiple occupants
 - Home serviced does not have to be taxpayer's principal residence
 - Solar received same 8-year extension, solar residential cap lifted



Problem: Need for Certification

- Policy makers, agencies providing financial assistance, and utilities are asking for performance assurance to increase support for incentives
- Small turbine performance specifications are not standardized; potential for black eyes to thwart market growth
- Consumers need tools for comparison and greater assurance of safety, functionality, and durability
 - Certification can help prevent unethical marketing and false claims



Current Standards & Certifications

- International Electrotechnical Commission (IEC) Standards
 - *Not used in U.S. and Canada for small wind turbines*
- Underwriters Laboratories Standards
 - *UL 1741 for inverters only*
- New U.S. small wind investment tax credit
 - *Legislation does not mention certification*
 - *AWEA hoping for certification requirement in IRS regulations*
 - *Credit is retroactive to 1/1/08*



North American Hardware Certification

- Turbine Hardware Performance Standard (AWEA Standard)
- Turbine Field Tests
- Independent Certification Body (Small Wind Certification Council)

All three parts are necessary for certification, allowing "apples-to-apples" comparisons of different small wind turbine models

With certified products, manufacturers will gain credibility in the marketplace



Aug 2006 Certification Survey

- 89% of manufacturers said that certification is important to their business; 33% see as critical, essential or even 'required' to reach the mainstream
- 27 suppliers are expected to submit applications to certify 30-70 turbines in the first few years
- Of state and utility incentive program respondents:
 - 11 plan to require certification for small wind turbines to be eligible for funding
 - 4 others are considering such requirements
 - 7 indicated that certification could help expand their programs to include small wind turbines



AWEA Small Wind Standard (draft)

- Small Wind Turbine Performance and Safety Standard*
- Describes required tests
- Based on IEC Standards
 - Power Curve
 - Annual Energy Performance Curve
 - Sound Pressure Levels
 - Strength and Safety Test (Pass/Fail)
 - Duration Test (Pass/Fail)



AWEA Small Wind Standard (draft)

- Section 4.3.5 has been added to the draft Standard to address cold weather issues

Other safety aspects of the turbine system will be evaluated including:

- procedures to be used to operate the turbine;
- provisions to prevent dangerous operation in high wind;
- methods available to slow or stop the turbine in an emergency or for maintenance;
- adequacy of maintenance and component replacement provisions; and
- susceptibility to harmful reduction of control function at the lowest claimed operating ambient temperature.



AWEA Standard Adoption Process

- AWEA Standards Coordinating Committee considering draft Standard in October 2008
 - Following ANSI guidelines
 - 45-day public comment period likely to begin in November
- Approval is expected in early 2009



Testing Procedures

- Certification applicants may choose to use an accredited or non-accredited laboratory or to conduct field testing themselves
- All testing used in a manufacturer's certification application must comply with the AWEA Standard and SWCC Policies
- Testing organizations must sign an agreement with SWCC detailing their responsibilities

(from Organization Plan)



Role of Small Wind Certification Council

- To certify that small wind turbines meet requirements of AWEA Standard
- To verify and certify test results
- SWCC initial scope:
 - Newly manufactured turbines that fall under the IEC 61400-2 limit of 200 m² (2150 ft²) swept area, ~65 kW
 - Grid-tied and off-grid turbines are eligible, but Standard does not cover electric water pumping wind turbines
 - SWCC Board of Directors may consider expanding certification to larger turbines at a later date



Consumer-Friendly Certification Labels

- SWCC Rated Annual Energy
 - @ one-year average wind speed of 11.2 mph (5 m/s)
- SWCC Rated Sound Level
 - level not exceeded 95% of time with average wind speed of 11.2 mph (5 m/s)
- SWCC Rated Power
 - @24.6 mph (11 m/s)
- Meets Safety and Durability Requirements



SWCC Process

- ✓ Phase 1: Develop Organization Plan
- ✓ Phase 2: Incorporate
- Phase 3: Hire Staff and Develop Policies & Procedures (underway)
 - Will hire management firm for administrative functions once funds are in place and AWEA Standard has been approved
- Phase 4: Begin Operations
 - First set of certifications expected in mid 2009, *pending sufficient funding and adoption of AWEA Standard*



Initial SWCC Working Group (2006-07)

□ States

Alan Cowan, Energy Trust of Oregon
Megan Graham, Casper College (WY)
Jennifer Harvey, NYSERDA
Peter Konesky, NV State Office of Energy
Cheryl Rezabek, WI Division of Energy

□ Manufacturers

Mike Bergey, Bergey Windpower
Andy Kruse, Southwest Windpower
David Laino, Windward Engineering
Charles Newcomb, Entegri Wind Systems
Robert Preus, Abundant Renewable Energy

□ Other interested parties

Svend deBruyn, Detronics & CanWEA
John Dunlop, AWEA
Trudy Forsyth, NREL
Mick Sagrillo, Sagrillo Power & Light
Jane Weissman, IREC

- Alternates and Observers
26 additional stakeholders

□ Facilitators

Larry Sherwood, IREC
Heather Rhoads-Weaver
& Meg Gluckman,
eFormative



Current SWCC Board of Directors

Megan Amsler, Cape and Islands Self-Reliance

Mike Bergey, Bergey Windpower

David Blittersdorf, Earth Turbines

Roy Butler, Four Winds Renewable Energy

Trudy Forsyth, NREL

James Glennie, University of Houston

Ken Jurman, Virginia Dept. of Mines, Minerals, & Energy

Ed Kennell, Clean Energy Products

Charles Newcomb, Nexgen Energy Partners

Mick Sagrillo, Focus on Energy

- One vacancy, likely to be filled with Canadian



SWCC Funders to Date

- Nevada State Office of Energy
- NYSERDA
- Energy Trust of Oregon
- Wisconsin Division of Energy
- CanWEA (funds from NRCan)
- Casper College (Wyoming)
- Iowa Energy Center
- National Renewable Energy Laboratory

Fees are expected to cover 1/3 of Year 1 expenses, increasing to 100% in Year 5



For more information

www.irecusa.org

Small Wind Energy > Small Wind Certification Corporation
Free Email Newsletter Subscription

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