

# Certifying Small Wind Turbines

## an SWCC Update

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Small Wind Certification Council (SWCC)

**2009 Small Wind Turbine Testing Workshop**  
National Wind Technology Center (NWTC)  
Boulder, Colorado  
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# Problem(s)

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- ❑ Small turbine performance specifications are not standardized
- ❑ Agencies providing financial assistance are asking for performance assurance to increase support for incentives
- ❑ Consumers need greater certainty regarding safety, performance and durability
- ❑ Less than half of turbines have been tested  
(From SWCC survey of manufacturers)



# Turbine Certification

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1. Uniform Small Wind Turbine Standard  
(*AWEA Small Wind Turbine Performance and Safety Standard*)
2. Turbine Testing
3. 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*



# SWCC Scope

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- Newly manufactured turbines that fall under the IEC 61400-2 limit of 200 m<sup>2</sup> swept area (~16 meter rotor diameter or ~65 kW)
- Horizontal and vertical axis turbines
- Grid-tied and off-grid turbines are eligible - only turbines which generate electricity



# Certification Process

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- ❑ Submit Notice of Intent to Apply
- ❑ Agreements
  - ❑ Applicant/SWCC: Turbine(s), Responsibilities & Test plans
  - ❑ Test Org/SWCC: Responsibilities & Test plans
- ❑ Turbine tested to AWEA standard
- ❑ Apply with test reports, design analysis & fee
- ❑ Review of reports by Technical Director
- ❑ Decision by Certification Commission
- ❑ Certification, Labeling and Publishing



# Testing

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- Certification applicants may choose to use an accredited or non-accredited laboratory or to conduct the testing themselves
  - On-site audits for non-accredited testing organizations and manufacturer testing
  - Further scrutiny for manufacturer testing (ie. unannounced visits and proficiency tests)
- All testing used in a manufacturer's certification application must comply with the AWEA Standard and SWCC Policies
- SWCC will not be providing the coordination/education of testing services
- Fees for testing services are up to each testing entity



# Testing

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- Power Performance
  - Rated Power
  - Power Curve
  - Energy Curve
- Acoustics
  - Sound pressure levels at integer wind speeds
  - Rated Sound Level
- Safety and Function
  - Pass/Fail
- Duration
  - Pass/Fail



# Design Analysis

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- Structural Analysis of major components
- Tower dynamics analysis for single/dual speed SWT
- Evaluation of turbine safety aspects



# Labeling

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## □ AWEA Rated Power

- kW @ 11 m/s (24.6 mph)

## □ AWEA Rated Annual Energy

- kWh @ annual average wind speed of 5 m/s (11.2 mph), Rayleigh distribution, 100% availability

## □ AWEA Rated Sound Level

- level not exceeded 95% of time with average wind speed of 5 m/s (11.2 mph), Rayleigh distribution, and an observer location 60 m (~ 200 ft) from the rotor center

## □ Meets Safety and Durability Requirements



# Role of the SWCC

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- ❑ To certify that small wind turbines meet the requirements of the AWEA Standard
- ❑ Independently verify and certify test results
- ❑ Independently evaluate the design analysis



# SWCC Development

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- ✓ Phase 1: Develop Organization Plan
- ✓ Phase 2: Incorporate
- **Phase 3:** Hire Staff and Develop Policies & Procedures (well underway)
- Phase 4: Begin Operations
  - SWCC start-up funding is now in place (US Dept of Energy and NYSERDA)
  - Approval of AWEA standard is imminent
  - SWCC will begin to accept applications in early 2010



# SWCC Funders to Date

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

*Fees are expected to cover one-third of Year 1 expenses increasing to 100% in Year 5*



# Receive Information on SWCC Process

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[www.smallwindcertification.org](http://www.smallwindcertification.org)

Click "Get E-mail Updates"

**November 3, 2009**

Stakeholder meeting in Detroit to obtain  
input on draft Certification Policy



# For more information

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