

# SWCC Manufacturer Webinar

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Larry Sherwood  
Executive Director  
Small Wind Certification Council

Brent Summerville PE  
Technical Director  
Small Wind Certification Council

**Thursday, Feb 4, 2010 from 2-4 pm EST**



# Agenda

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- Presentation (30 min)
  - Introduction to SWCC
  - Eligibility Requirements
  - Test Organization Requirements
  - Overview of Certification Process
  
- Questions and Answers (90 min)



# SWCC Development

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- ✓ Phase 1: Develop Organization Plan
- ✓ Phase 2: Incorporate
- ✓ Phase 3: Hire Staff and Develop Policies & Procedures
- ✓ Phase 4: Begin Operations
  - **SWCC will begin to accept *Notices of Intent to Submit and Application* today, February 4, 2010**
  - Forms available at [www.smallwindcertification.org/certification.html](http://www.smallwindcertification.org/certification.html)



# SWCC Funders to Date

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- ❑ U.S. Department of Energy
- ❑ NYSERDA
  
- ❑ Nevada State Office of Energy
- ❑ Energy Trust of Oregon
- ❑ Wisconsin Division of Energy
- ❑ CanWEA (funds from NRCan)
- ❑ Casper College (Wyoming)
- ❑ Iowa Energy Center
- ❑ National Renewable Energy Laboratory (NREL)
- ❑ Interstate Renewable Energy Council (IREC) facilitated Phase 1 and 2 and has assisted with Phase 3



# SWCC Intro

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- ❑ Independent, third-party certification body
- ❑ Certify that small wind turbines (SWTs) meet the requirements of the AWEA *Small Wind Turbine Performance and Safety Standard*
- ❑ Rules that **level the playing field** for all turbines



# What is the AWEA Standard?

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- AWEA *Small Wind Turbine Performance and Safety Standard* (AWEA Standard 9.1 – 2009)
- Incorporates, **with modifications**, existing International Electrotechnical Commission (IEC) standards for small wind turbines
- Written to **ensure the quality** of the wind turbine can be assessed while imposing only **reasonable costs and difficulty** on the manufacturer who chooses to voluntarily certify their product



# SWCC Intro

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- SWCC Certification based on an evaluation of:
  - Wind turbine **structural analysis**
  - **Field testing**
    - Power performance test
    - Acoustic sound test
    - Safety & Function test
    - Duration test





**SWT  
Manufacturer**



**Test  
Organization  
(field testing)**



**Certifies  
Compliance**

# Applicant Eligibility

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- ❑ Persons or entities that design and/or manufacture the SWT or their authorized designee (w/ written proof)
- ❑ The applicant must own the rights to manufacture and/or distribute the SWT



# Equipment Eligibility

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- Per the AWEA standard
  - Newly manufactured, electricity-producing wind turbines with a swept area up to 200 m<sup>2</sup>
  
- 200m<sup>2</sup> ~ 16m diameter rotor ~ 65 kW



# Equipment Eligibility

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- Horizontal and vertical axis turbines are eligible



# Equipment Eligibility

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- ❑ Except as required by the AWEA standard, **towers and foundations** are not part of the scope of SWCC certification



# Testing

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- ❑ All testing must comply with the AWEA Standard and SWCC Policies
- ❑ Fees for testing are up to each testing entity
- ❑ A running list of potential test organizations on SWCC website



# Testing

## Power Performance

- Power Curve
- Energy Curve
- Rated Annual Energy
- Rated Power

## Acoustics

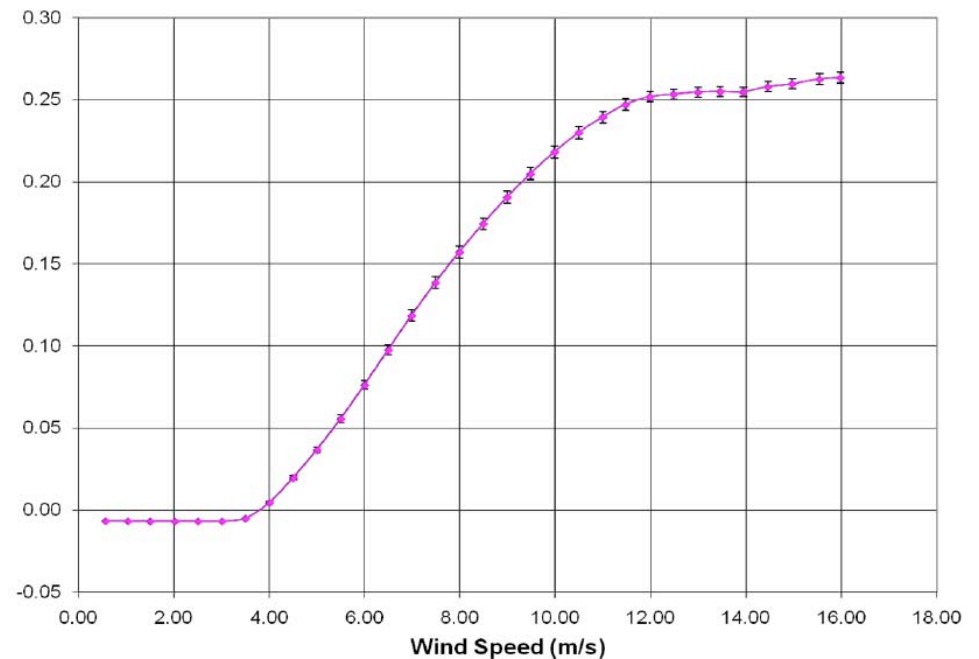
- Sound pressure levels
- Rated Sound Level

## Safety and Function

- Pass/Fail

## Duration

- Pass/Fail



# Qualified Testing Organizations

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## 1. Accredited Test Organization

- with proper scope (AWEA and/or BWEA and/or IEC 61400-xx)
- 3<sup>rd</sup> party accreditation ensures a quality assurance system, good data, validated data analysis tools and **quality test reports**

## 2. Non-Accredited Test Organization

- **On-site audits** to verify compliance with the AWEA standard and quality systems per ISO/IEC 17025: *General Requirements for the Competence of Calibration and Testing Laboratories*.

## 3. Manufacturer Testing

- On-site audits plus **further scrutiny**
- ie. unannounced visits, surveillance of data and proficiency tests related to SWT testing



# Structural Analysis

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- Professional Engineer or Chartered Engineer commissioned to perform an evaluation of the structural analysis of the SWT
  - All required **load cases** were **modeled** using acceptable methods as described in the AWEA Standard
  - Major components were **adequately designed**, based on load modeling and per the AWEA Standard.



# Certification Eligibility

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- ❑ **testing** has been performed by a Qualified Testing Organization; report submitted
- ❑ a **structural analysis** of the SWT has been performed; report submitted
- ❑ all SWCC requirements in the **Certification Policy** have been met
- ❑ The Applicant has submitted all **additional information and materials** required by the Certification Commission or the Technical Director
- ❑ all **fees** are paid
- ❑ **Certification Commission** has determined that the SWT is eligible for certification, and grants certification to the SWT.



# Fees

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## □ Preliminary review fee

- **\$2500** for one (1) SWT submitted in the Notice of Intent
- **\$1250** for each additional SWT submitted when **multiple SWT configurations of the same turbine type** are included in the Notice of Intent, provided that SWCC confirms that the SWTs are similar in design and other significant characteristics.



# Multiple configurations

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- Multiple configurations of the same turbine type
  - ie. Grid-tie and Battery Charging versions
  - SWCC to help develop the most **efficient** path to Certification
  - Each SWT configuration issued a **separate Certification**



# Fees

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- Test Site Evaluation fee **Varies**
- Certification Application fee **Varies**
- Conversion from Conditional to full Certification **Varies**



# Fees

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- Annual Certification Maintenance fee
  - **TBD**
  - *Proposed:* \$2000 + \$2/kW annual sales of the certified turbine
  
- Certification renewal fee
  - **TBD**
  - *Proposed:* Similar to Preliminary Review Fee



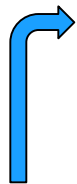
# Certification Process Summary

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

2. Click “For Manufacturers” for:

- SWCC Policies
- AWEA Standard
- Forms:
  - ***Notice of Intent to Submit an Application***
  - ***Configuration Description Form***



*Submit Notice of Intent **early** in the process to 'start off on the right foot'*



# Certification Process Summary

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## 3. SWCC receives:

- Notice of Intent to Submit an Application **and**
- Preliminary Review Fee

## 4. Preliminary review of the Notice of Intent

- Turbine design and test plans
- Produce a quote for Certification Fee which includes site evaluation fee(s), if required



# Certification Process Summary

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## 5. Certification Agreement

- SWCC and Applicant
- Turbine and Test Plans
- Certification Fee quote

## 6. SWCC and Test Org Agreement

- For non-accredited orgs; agree to site evaluation
- Turbine and test plans



# Certification Process Summary

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7. After testing, analysis and reporting are complete
  - Applicant submits:
    - Certification Application
    - Final testing and structural analysis report
    - Certification Fee
8. Review by Technical Staff
9. Technical Report to **Certification Commission**



# Certification Process Summary

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10. Commission Decision: granted, conditionally granted, or rejected with reasons
11. Prepare technical data and labeling for publication
12. Applicant signs certificate
13. Technical data to SWCC website



# SWCC Certification Label

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- Rated Annual Energy (kWh)
  - @ annual average wind speed of 11.2 mph - 5 m/s
  
- Rated Sound Level (dBA)
  - Sound pressure level not exceeded 95% of time with average wind speed of 11.2 mph - 5 m/s at 60 meters from rotor
  
- Rated Power (kW)
  - @24.6 mph - 11 m/s
  
- Duration and Safety & Function Tests = Pass





# SWCC Accreditation

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- How did we dream up all of these rules and procedures ?
- SWCC pursuing **ANSI Accreditation for Product Certification Bodies**
- Used **ISO/IEC Guide 65** as a guide for policies



# Multiple Certifications

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- What if we intend to pursue:
  - Type certification to IEC 61400 Standards;
  - Certification to BWEA Standard for MCS in UK; **and**
  - SWCC certification for North America ?
  
- **Coordinate** with Cert. Bodies and Test Organization to understand requirements when developing test plans
  
- **Conditional Temporary Certification** may be an SWCC option if turbine is tested to IEC or BWEA standards



# SWCC Certification to AWEA vs. Type Certification to IEC

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## Type Certification to IEC

### Required

- Full Design Evaluation including
  - Structural Analysis
  - Static Blade Test
  - Design Basis Evaluation
  - Test for Design Data
  - and plenty more...
- Manufacturing Evaluation
- Power Performance
- Safety and Function
- Duration

### Optional

- Acoustic Noise
- Power Quality
- Foundation Design Evaluation

## SWCC Certification to AWEA

### Required

- Limited Design Evaluation
  - Structural Analysis
  - Tower dynamics analysis (single/dual speed turbines)
  - Tower design requirements
- Power Performance
- Safety and Function
- Duration
- Acoustic Noise



# SWCC Certification to AWEA vs. MCS Certification

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- ❑ AWEA/BWEA standards have **similar requirements** for testing and structural analysis
- ❑ MCS also adds an assessment of the manufacturing processes, called **factory production control (FPC)**
- ❑ [www.microgenerationcertification.org](http://www.microgenerationcertification.org)



**SWCC** certifies **Mechanical** Strength, Durability, Function & **Performance** of turbine system to new AWEA standard

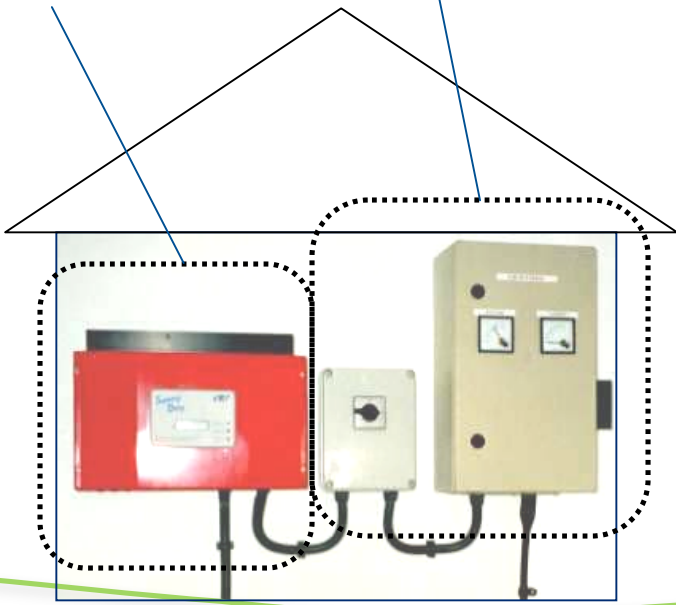
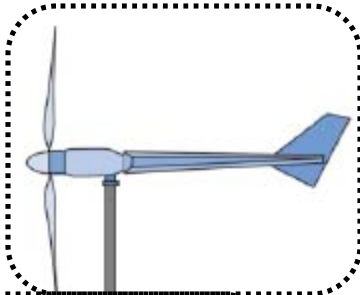
NRTLs certify **Electrical Safety of Turbine & Controller** (*new UL Standards in development*)

PE certifies **Tower & Foundation**

NRTLs certify **Inverter** to IEEE 1547/UL 1741

NABCEP will certify the **Installer** (*in development*)

Grid-tie Small Wind Turbine in the US



- Wired per National Electrical Code (**NEC**) -

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# Thanks

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Brent Summerville

Technical Director

Small Wind Certification Council

[Brent@smallwindcertification.org](mailto:Brent@smallwindcertification.org)

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



# Next Webinar

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- Wednesday, March 10, 2010
- Focused on **State Agencies, Utilities**



# Questions



Sign up for mailing list  
[www.smallwindcertification.org](http://www.smallwindcertification.org)  
Click "Get E-mail Updates"