FINAL REPORT

Project Title: Certifying the Performance of Small Wind Turbines

Project Period: May 30, 2009 to May 30, 2015

Date of Report: August 28, 2015

Recipient: Small Wind Certification Council, DUNS 020767969

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Principal Investigator: Larry Sherwood

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Executive Summary

The Small Wind Certification Council (SWCC) created a successful accredited certification program for small and medium wind turbines using the funding from this grant. SWCC certifies small turbines (200 square meters of swept area or less) to the American Wind Energy Association (AWEA) Small Wind Turbine Performance and Safety Standard (AWEA Standard 9.1 – 2009). SWCC also certifies medium wind turbines to the International Electrical Commission (IEC) Power Performance Standard (IEC 61400-12-1) and Acoustic Performance Standard (IEC 61400-11).

Before this grant began, the small wind market faced significant barriers:

- Performance specifications for small wind turbines were not standardized, and manufacturers reported performance specifications that were optimistic and inconsistent. Poor equipment performance and unrealistic performance expectations discredited all wind technology and hindered market growth.
- Consumers lacked user-friendly tools to compare small wind turbines and estimate performance.
- Funding agencies and utilities wanted greater assurance of safety, functionality, and durability. This lack of performance assurance, in some cases, resulted in the lack of support for small wind financial incentives.

With certification, consumers now have assurance that the turbine will perform as advertised and can make informed decisions between different turbine models. Government agencies that provide financial incentives have a credible basis for determining incentive amounts. State governments use certification results to qualify turbines for certifications. Recently, the U.S. Treasury Department issued a rule to require certification for turbines that receive the federal investment tax credit.

The Small Wind Certification Council (SWCC) has earned a reputation as the preeminent small wind certification agency in the world today. The trust it enjoys comes in part because it operates as a non-profit organization to best serve the public interest and protect consumers. SWCC provides public certification reports and labels that are easily accessible. No other certification body in the world makes their certified technical product information as available as SWCC. This provides a tremendous service to the public and also to state agencies and others who provide financial incentives.

SWCC was created from a stakeholder group and maintains strong relationships with all stakeholders in the certification process including manufacturers, states, test laboratories, and standard development organizations (including AWEA and IEC). SWCC hosted several stakeholder meetings, distributed a quarterly newsletter to 1,500 stakeholders, and presented information on distributed wind certification at many professional conferences and meetings.

When SWCC began, the National Renewable Energy Laboratory was the only accredited wind test facility in the United States. Since NREL only accepts work through solicitations, it is not a laboratory where any manufacturer can test their equipment for certification. SWCC created a three-tiered testing scheme – accredited laboratory testing, non-accredited laboratory testing, and manufacturer testing. In order to accept non-accredited laboratory tests, SWCC must conduct an on-site test site evaluation for each turbine tested. This evaluation helps to assure the quality of the testing. SWCC accepted test results from three of the four regional test labs funded by NREL – all three of those labs are non-accredited. SWCC requirements are even stricter for manufacturer testing, but no manufacturer has ever used that option.

SWCC has a very experienced technical staff. SWCC's Technical Director has 10 years of small wind-specific experience covering R&D, installation, testing, service, and certification. SWCC's three Certification Commissioners bring over 90 years of hands-on experience with small wind turbines. In addition, SWCC has a strong Board of Directors with broad expertise on wind certification policy.

The SWCC Technical Director, Brent Summerville, is the chair of the AWEA Small Turbine Standard Subcommittee of the AWEA Wind Standards Committee. To maintain U.S. leadership on international small wind standards and certification issues and to promote international standards harmonization, SWCC participated in regular meetings of the IEC Maintenance Team for IEC 61400-2 edition 3 and IEA Task 27 in International Small Wind Turbine Labeling. SWCC was appointed to the IEC Certification Advisory Committee and Brent Summerville was appointed Convener of the IEC Renewable Energy (IECRE) Small Wind Turbine stakeholder group.

The organization's technical and stakeholder strength has led SWCC to certify turbine models with large market shares in the U.S., with most of the U.S. top-selling grid-connected small and medium models either SWCC-certified or pending, together comprising a majority of the market segment. SWCC has certified six of the nine small wind turbine models currently on the Interstate Turbine Advisory Council (ITAC) Unified list. SWCC certificate holders comprise an estimated 90 percent of the sales of certified small wind turbines in the United States.

Perhaps just as important are the turbines that did not achieve certification. Manufacturers to date have submitted fifty-five "Notices of Intent to Submit an Application" to SWCC. Only eight turbines achieved full certification and an additional three turbines are active in the certification process today. Fully 80 percent of the turbines that began the certification process failed to obtain certification. SWCC is committed to quality and has denied certification to turbines that do not meet the requirements of the standards and would therefore be likely to create problems in the U.S. marketplace.

Because it does not own and operate a testing facility, SWCC certification is truly an impartial third-party assessment, proceeding solely on the merits of data contained in the application in absence of potentially biased knowledge of testing anomalies or other considerations. SWCC developed a rigorous set of quality, impartiality and technical evaluation procedures. After on-site audits, the American Association of Laboratory Accreditation (A2LA) accredited SWCC as a product certification body.

The AWEA Standard only applies to turbines with a swept area of 200 square meters or less (approximately 50-60 kW). Many small and distributed turbine incentive programs fund turbines up to at least 100 kW and consumers actively purchase these "medium" wind turbines. However, these turbines were in a certification dead zone – too large to qualify for certification to AWEA 90.1 and not generating enough revenue per turbine to justify the certification schemes used by utility-scale turbines.

To meet this need, SWCC created a medium wind turbine certification program for IEC 61400-12-1 (Power Performance), and IEC 61400-11 (Acoustic Performance). SWCC created a certification policy, revised the Quality Manual, created technical procedures and obtained accreditation. At publication date, SWCC has certified two turbines to these performance standards. SWCC recently added design certification to IEC 61400-1 and intends to seek accreditation to this standard as well. With the addition of this medium wind turbine certification program, all distributed wind turbines can receive the benefits of certification, and consumers can obtain unbiased third-party verified performance information.

Results and Discussion

TASK AREA 1: TECHNICAL PROCEDURES

The SWCC Technical Procedures will provide the rules for the certification process and will provide due process for all applicants.

Task 1.1: Initial Technical Procedures
Objective: Develop the Technical Procedures that will allow SWCC to begin to certify turbines.
Task Description: The SWCC will develop the necessary Technical Procedures that will be required to review and certify small wind turbines. The SWCC legal counsel and other experts in small wind turbine standards and testing will review the draft Technical Procedures.

Develop SWCC policies

- SWCC used ISO/IEC Guide 65:1996 - *General Requirements for Bodies Operating Product Certification Systems* as guidance for policy development in anticipation of pursuing accreditation as a Product Certification Body.
- The draft Certification Policy was reviewed and revised with Attorney, Certification Commissioners, and Board of Director throughout 2009.
- Organized Stakeholder Meeting November 3, 2009 to receive input on the draft certification policy. 86 Stakeholders attended the meeting.
- *SWCC1: Small Wind Turbine Certification Policy* adopted by SWCC Board of Directors in January 2010.
- *SWCC2: Certification Appeal Policy* adopted by Board of Directors in January 2010.
- *SWCC3: SWCC Trademark and Certification Use Policy* adopted by Board of Directors in July 2010.

Develop procedures and obtain accreditation

- Attended workshop on ISO Standard 17025 (requirements for testing laboratories) in order to develop SWCC test site evaluation process and prepare for test site audits (2010).
- Developed draft checklist and procedure for test site evaluations.
- Board approved Quality Manual on October 11, 2011 and revisions on December 6, 2011.
- Conducted Internal Audit to verify meeting requirements of ISO Guide 65.
- Applied to American Association of Laboratory Accreditation A2LA for accreditation to ISO Guide 65.
- A2LA conducted accreditation audit to ISO Guide 65 on March 6-7, 2012.
- On March 29, 2012, A2LA granted accreditation to SWCC.
- A2LA conducted on-site assessment of SWCC activities on April 7-8, 2014. A2LA approved accreditation of SWCC certification activities to ISO 17065 through June 2015.

Task 1.2: Technical Procedures Revision

Objective: As SWCC gains experience with the certification process, the Initial Technical Procedures must be updated and revised on a regular basis.

Task Description: The SWCC will receive suggestions on changes to the Technical Procedures. Suggestions will come from the Certification Commissioners, the Technical Director, and Stakeholders through the communication methods outlined in Task Area 4. Based on review of early test reports submitted and the suggestions received, SWCC will draft proposed revisions to the technical procedures, circulate the revisions for review, and adopt the revisions.

- May 2010 - Board adopted revisions to the Small Wind Turbine Certification policy to clarify payment options, clarify test report confidentiality, and allow of public release of information on manufacturers who have submitted Notices of Intent.

- September 2010 - Board adopted revisions to the Small Wind Turbine Certification Policy reflecting numerous minor program modifications and clarifications. Most notably, the Policy establishes the final format of SWCC consumer label.
- October 2010 - Board adopted revisions to the Small Wind Turbine Certification Policy to include SWCC Annual Certification Report Form and SWCC Significant Modification Report Form.
- March 2011 - Board adopted revisions to the Small Wind Turbine Certification Policy to include new levels of Application Status to be published.
- April 2011 – Revised Form: Notice of Intent to Submit an Application for SWCC Certification.
- November 2011 - Board approved revisions to SWCC Small Wind Certification Policy and SWCC Trademark and Certification Use Policy to bring SWCC policies into compliance with requirements of ISO Guide 65.
- December 2011 - Board approved revisions to Conflict of Interest and Confidentiality Policies.
- March 2012 Board approved revisions to SWCC Conflict of Interest and Confidentiality Policy for Commissioners to respond to issues raised during A2LA Audit.
- September 2012 – Board approved SWCC Certification Policy revisions related to Certification Deficiency and Policy Violation Resolution Process. Prior to revision, sent proposed changes to applicants for public comment.
- February 2013 – After public comment, the Board approved revisions to the SWCC Certification Policy, Certification Appeal Policy, and SWCC Trademark and Certification Mark Use Policy to include the following provisions:
    - Added the Japanese Small Wind Turbine Association Standard to the list of small wind standards, which are part of the Conditional Temporary Certification eligibility requirements.
    - Added a requirement for test organization data analysis tools to be made available for SWCC audit.
    - Changed the Annual Report submittal date to be 45 days prior to the certification renewal date to allow processing time.
    - Clarified certification suspension, revocation, reinstatement and reapplication policies.
    - Clarified that Industry Sector Directors do not participate in the Appeals process.
    - Clarified mark use for suspended or revoked turbines.
- June 2013 - Board approved revisions to the SWCC Certification Policy and SWCC Trademark and Certification Mark Use Policy to include the following provisions:
    - Added the option of conducting test site evaluations for accredited test organizations.
    - Clarified requirements regarding Change in Ownership of a wind turbine.

  - Added section that notice of certification revocation will be published on the SWCC website.
  - Added new marks for Limited Power Performance certification, Power Performance certification, and Acoustic performance certification
  - Other changes to improve clarity.
- December 2013 – Board approved changes to SWCC1: *Small Wind Turbine Certification Policy*. The changes were primarily to bring the policy into compliance with the requirements of ISO/IEC 17065, which is the new standard for accreditation of certification bodies.
- May 2014 – Board approved revisions to SWCC1: *Small Wind Turbine Certification Policy*. The changes include new limits on how long an applicant can remain listed in the SWCC web site and other minor changes.
- March 2015 – Board approved revisions to SWCC1: *Small Wind Turbine Certification Policy* and SWCC3: *SWCC Trademark and Certification Use Policy.*

TASK AREA 2: TECHNICAL ANALYSIS OF TURBINE TEST REPORTS

Task 2.1: Technical Evaluation for Certification Commission
Objective: Provide the SWCC Certification Commission with a technical evaluation of each test report submitted. The technical evaluation will give the background the Commission needs in order to evaluate and vote on each certification application.
Task Description: The Technical Director or Technical Assistant will review each test report submitted in accordance with the Technical Procedure developed in Task 1 and prepare a Technical Evaluation for review by the Certification Commission.

From February 2010, when SWCC began to accept applications, until May 2015 when the grant, SWCC conducted the following actions for turbine certification to AWEA 9.1.

- Received 55 Notices of Intent to Submit an Application for SWCC Small Wind Turbine Certification (NOI). Application comes with a Configuration Description of the turbine. For each turbine the SWCC Technical Director:
  - Verified that the NOI meets all requirements in SWCC1
  - Verified that the NOI is complete, accurate and signed.
  - Verified that the Configuration Description describes the turbine with sufficient detail to prepare a Certification Agreement.
  - Verified that applicant holds ownership rights for turbine
  - Verified and confirmed Applicant's legal entity status
  - Verified test organization and classified test organization per SWCC1, Section I
  - For accredited labs, verified lab's accreditation status
  - If using another Certification Body, SWCC has an agreement with that Certification Body.
  - NOI payment received.

- Signed 39 Certification Agreements based on NOI submission. The remaining 16 turbines either did not meet requirements or chose not to sign the agreement.
- Technical Director conducted 11 test site evaluations. Test site evaluation was typically two-days and included evaluation to requirements of AWEA 9.1 and to requirements of ISO 17025 laboratory standard. The Certification Commissioners then reviewed the test site evaluation report and test lab or applicant corrected any deficiencies. Seventeen additional applications did not require a test site evaluation.
- Technical Director and Certification Commission reviewed 9 full certification reports for their conformance to AWEA 9.1 Standard requirements and identified deficiencies or questions applicant must answer before a certification decision can be made. Certification Commissioners then vote on whether or not to grant certification.
- Commissioners voted to grant 8 certifications.
- Applicants must file a renewal application each year, which includes information on turbine changes and any complaints filed against the turbine. The Technical Director and Commissioners review this report, sometimes request additional information and vote on whether or not to continue the certification. During the grant period, all submitted renewal applications were granted. One applicant chose not to renew their certification.

- In order to improve the Technical Director's ability to review the design portion of the certification application, he attended a FAST training session in August 6-8, 2014 in Salt Lake City.

Task 2.2: Publish Certification Test Data
Objective: Provide consumers with performance data on turbines so they can evaluate the products for their potential applications. Incentive agencies and utilities will use the performance data to determine the level of incentive to give for installations they fund.
Task Description: After the Certification Commission certifies a turbine, SWCC will format the test data for publication on the turbine label and on the SWCC web site. SWCC will publish the power curve, energy curve, and sound data for each certified turbine.

SWCC published data on the status of pending applications in the Applicant Turbine list on the SWCC web site beginning in April 2010 and continuing through the entire grant period. Since the certification process takes a long time, this information is valuable to consumers and other stakeholders to learn if a manufacturer is pursuing certification and how they progress through the process. Currently SWCC provides information on test status and if an applicant has submitted technical reports to SWCC. In 2014, SWCC changed the policy to remove manufacturers from the pending applicant list if they are not making progress toward certification.

After the grating of the first certification in November 2011, SWCC published data on each certified turbine including the Certificate, the Consumer Product Label and the Summary Technical Report. These reports are available through the Certified Turbine list on the SWCC web site. These reports give consumers performance and technical data on each certified turbine and allow comparison between difference turbine models.

SWCC provides much more technical information on certified turbines than other certification bodies.

TASK AREA 3: STANDARDS DEVELOPMENT AND INTERNATIONAL HARMONIZATION

SWCC will use standards developed by standard-writing bodies, such as the American Wind Energy Association (AWEA) and the International Electrotechnical Commission (IEC). In addition, SWCC will cooperate with international bodies, such as the International Energy Agency (IEA), to harmonize certification requirements around the world.

Task 3.1: AWEA *Small Wind Turbine Performance and Safety Standard.*
Objective: To facilitate early adoption of the draft AWEA Standard on which the SWCC Certification process is based. Lack of an adopted standard delays the start of the SWCC certification program.
Task Description: Provide technical assistance to the AWEA Standards Coordinating Committee as they review comments on the draft standard. As the AWEA Standard is revised, participate in meetings and provide comments on SWCC's experience of using the standard and suggest revisions.

- SWCC worked with AWEA to help with adoption of the AWEA Small Wind Turbine Performance and Safety Standard in December 2009.

For the revision of the AWEA Standard
- Collected input in 2010 on the AWEA Standard from small wind stakeholders. Collected 27 responses and sent to the AWEA Standards Coordinating Committee.
- Participated in AWEA Standards Development Board meetings.
- Worked with AWEA Standard Co-Leads on project to promulgate the AWEA Standard as an ANSI national standard.
- In June 2012, SWCC Technical Director, Brent Summerville was appointed co-lead to update of AWEA Standard and to promulgate the AWEA Standard as an ANSI national standard.
    - Participated in numerous meetings on the standard between 2012 – 2015

- Led discussion at AWEA SWT-1 public hearing in Stevens Point, WI, June 2014.
- Reviewed draft 6.1 and provided written comments as a Materially Affected Party (MAP)
- Reviewing MAP comments and voting on recommended actions
- Prepared a revised version of the Standard based on the subcommittee votes
- Voted on the revised standard

Task 3.2: International Standards and Certification Harmonization
Objective: To revise the international small wind turbine performance standard and to harmonize different national certification programs. Creating an updated international standard and harmonized certification program will make it easier for turbine manufacturers to participate in the certification program. The SWCC will develop and revise its certification program to harmonize, as much as possible, with other international certification requirements.
Task Description: Participate in international meetings of IEC and IEA to develop international standards and harmonize certification procedures. Provide comments and recommendations based on SWCC experience with small wind turbine certification.

SWCC participated in IEC Maintenance Team meetings for IEC 61400-2 edition 3

- April 2009 – London, UK
- June 2009 – Stevens Point, Wisconsin
- September 2009 – Toronto, Canada
- December 2009 – Tokyo, Japan
- March 2010 – Kaiser-Wilhem-Koog, Germany
- July 2010 – Glasgow, Scotland
- March 2011 – Madrid, Spain
- April 2011 – Newcastle, UK
- During these meetings the follow items were accomplished:
  - Subgroups include:
    - Masts (towers)
    - VAWTs
    - Multiple Models (how to handle a family of turbines)
    - Medium Wind (> 200 m^2)
  - IEC 61400-2 reorganized to separate testing and design requirements
  - Included proposed changes for -2 from the AWEA and BWEA standards
  - Discussed new -22 standard for SWT certification
  - Received updates on harmonization with other IEC maintenance teams
    - MT11 (acoustics)
    - MT12-1 (power performance)

- Discussed the inclusion of support structures (towers or masts)
- Reviewed and modified draft text of 'Multiple Models and Product Changes' annex from TD
- Discussed the details of including medium wind turbines (200~400 m^2) in the -2 standard
- Discussed the 'survival clause' added to the duration test in the A/BWEA standards
- Reviewed updates to Acoustic Standard (-11)
- Reviewed updates to the Power Performance Standard (-12-1)
- Reviewed a written proposal from the medium wind turbines subgroup (>200m^2)
- No response from an open letter to the VAWT community
- Discussed protection and shutdown systems
- Revised Duration Testing section including the Survival Clause
- Presentation on towers and structural analysis
- Revised Changes and Variants section
- SWCC Technical Director actively participated in editorial committee for IEC MT2, making final editorial revisions to committee draft of IEC 61400-2 ed. 3
- Research into turbine intensity
  - Issued a call for research into small wind turbine turbulence intensity
  - Received presentations on turbulence intensity
    - included a presentation from the SWCC Technical Director
- Round-Robin Testing
  - Assigned a round-robin exercise for analysis of a power performance data set
  - Reviewed round-robin results using power performance data set
  - Assigned duration test round-robin exercise
- Reviewed proposed text for Support Structures section

Participated in meetings of IEA Task 27 – International Small Wind Turbine Labeling (these meetings co-located with IEC standard meetings)

- April 2009 – London, UK
- June 2009 – Stevens Point, Wisconsin
- September 2009 – Toronto, Canada
- December 2009 – Tokyo, Japan
- March 2010 – Kaiser-Wilhem-Koog, Germany
- April 2015 –Vienna, Austria
  - Worked on proposal for the IEA on SWT quality labeling for the international market
  - Reviewed latest draft of label design

- Completed proposal for the IEA on SWT quality labeling for the international market
- Developed several ideas for information to be included on consumer labeling
- Discussed assigning a lead organization per country for the Small Wind Association of Testers (SWAT)
- Worked as a group on a final draft label design

Technical Director was nominated and approved to join the IEC Certification Advisory Committee.

- Attended the IEC Certification Advisory Committee (CAC) meeting in Juno Beach, FL. Also met with associates from Japanese Certification Body, ClassNK, to discuss reciprocity agreement.
- Participated in IEC Certification Advisory Committee meeting and Certification Body Committee, February 2012 – Beijing, China.
- Attended IEC Certification Advisory Committee Small Wind Turbine subcommittee meeting, Oct 7-11, 2013 in Jeju, Korea.
- Attended IEC CAC SWT meeting in Boulder, CO, May 2014.
- Attended the IEC CAC meeting in Greenville, SC, May 2014.
- Technical Director attended the IEC CAC SWT meeting in greater Beijing, China, Aug 28-Sept 3, 2014.

Participated in meetings to form IEC Renewable Energy (IECRE), an international certification scheme for renewable energy equipment including wind turbines.

- Attended the inaugural IECRE and Wind Energy Operational Management Committee (WE-OMC) meetings in Boulder, CO, Sept 16-18, 2014.
- Participated in an IECRE call with AWEA Wind Standards Committee, Oct 17, 2014.
- Participated in a call of the U.S. National Committee of IECRE on January 9, 2015.
- Convened the first meeting of IECRE small wind turbine stakeholder group in Vienna on 14 April 2015 and in Feldkirch, Austria 20 April 2015, developed terms or reference and was elected as SG554 (small wind) convener; http://www.iecre.org/sectors/windenergy/sg554/.
- Attended IECRE wind energy operational management committee (WE-OMC) meeting in Feldkirch, Austria 20-21 April 2015, provided report on SG554 (small wind).

Underwriters Laboratories appointed Technical Director to Standard Technical Panel covering wind turbines.

International Reciprocity

- Organized a teleconference regarding technical considerations of certifying turbines with 50/60Hz inverter output in the UK and North America, 2010.

- The Technical Director attended a BWEA Standard Subcommittee meeting to maintain US/UK harmonization in Glasgow, Scotland in July 2010.
- Participated in BWEA Standard meeting at International Small & Medium Wind Conference, April 17, 2012 in Glasgow, Scotland. Presented on AWEA/BWEA Standard(s) harmonization.
- Participated by teleconference in the Medium Wind Standards Group Meeting in the UK, November, 2012.
- Participated in UK Medium Wind Standards Group meeting on January 31, 2013 via teleconference.
- A Memorandum of Understanding/Contract was drafted by SWCC in order to use work from other certification bodies for granting SWCC certifications and for other certification bodies to use work from SWCC certification. Memorandum or Understanding or Contract signed by the following certification bodies:
    - BRE Global
    - British Board of Agrément (BBA)
    - TUV SUD Limited trading as NEL
    - ClassNK

These agreements allow manufacturers to certify products for many international markets at a much lower cost than if they were required to test separately for each international certification.

- Participated in US Technical Advisory Group (TAG) meeting at AWEA Windpower, June 2012 in Atlanta. Presented on status of IEC 61400-2 ed. 3.
- Participated in ITAC meeting on June 25, 2012 to discuss harmonization of certification requirements.
- Participated in a workshop on Distributed Wind Energy in Rio de Janeiro, Brazil in August 2012 hosted by the US Department of Energy as part of the Strategic Energy Dialogue with Brazil. The TD presented on SWCC, certification and testing in the US and sat on a panel discussing small/medium wind certification in Brazil.
- Participated in the US Wind Turbine Standards Summit at NREL in Golden, CO, November 2011.
- Provided comments on draft NECA 414 Standard.
- Participated in the IEC International Small Wind Association of Testers (SWAT) conference in Soria, Spain, April 22-24, 2013; followed by the IEA Task 27 meeting in Soria, Spain, April 25-26, 2013; followed by the IEC Certification Advisory Committee (CAC) Small Wind Turbine subcommittee meeting in Madrid, Spain, April 29-30, 2013.
- Participated in the NREL small wind testing meeting following the 2013 Small Wind Conference on June 20, 2013 in Stevens Point, WI.
- Attended the 2013 Small Wind Turbine Testing Workshop, August 6-8, 2013, at the NREL National Wind Technology Center, Broomfield, CO. TD presented on Day 1 on the topic of "AWEA Standard and SWCC Update."

- Participated in IRENA interview on national quality systems for small wind turbines, August 2013.
- Attended the 2nd US Wind Turbine Standards Summit, Jan 13-14, 2014, presented on the AWEA SWT -1 update and the status of IEC 61400-2.
- Attended the US TAG for TC88 meeting in Las Vegas, NV, May 2014.

TASK AREA 4: STAKEHOLDER COMMUNICATION

The SWCC shall communicate with and receive input from stakeholders including manufacturers, installers, state and utility incentive program managers, testing laboratories, and consumers. SWCC will present the certification test results in a manner that will allow consumers to learn about the performance of certified turbines.

Task 4.1: Coordinate with Small Wind Stakeholders

Objective: The SWCC shall coordinate input from small wind stakeholders and disperse information on the certification program.

Subtask 4.1.1 Stakeholder Meetings. SWCC will hold stakeholder meetings by web cast or conference call. The meetings will brief stakeholders on the certification programs and allow input and questions from stakeholders. SWCC will maintain a stakeholder contact list to ensure all incentive program managers and other key parties are kept informed.

- Organized Stakeholder Meeting November 3, 2009 in Detroit immediately before the AWEA Small and Community Wind Conference. Purpose of this meeting was to receive input on the draft certification policy. 86 Stakeholders attended the meeting.
- Organized Manufacturer Briefing Webinar on SWCC Certification on February 4, 2010. 172 stakeholders attended the meeting.
- Organized Small Wind Certification Policy Webinar for state and utility incentive program managers on March 10, 2010. 40 stakeholders attended the meeting.
- Conducted interviews with small wind turbine manufacturers (including those who indicated they planned to apply for SWCC certification and other top manufacturers) to determine if and when they intended to submit Notices of Intent to SWCC, to identify what issues and concerns they were facing in seeking certification, and to contribute to SWCC strategic planning.
- Monitored incentive eligibility requirements and followed up with phone calls and emails to about 40 small wind funding agencies and utilities to recommend appropriate references and encourage setting timelines for utilization of SWCC certification. This work resulted in certification requirements at the following agencies:
    - U.S. Internal Revenue Service
    - Illinois Solar and Wind Energy Rebate Program
    - Massachusetts Clean Energy Center

  - NV Energy WindGenerators Incentive Program
  - New York State Energy Research and Development Authority
  - Energy Trust of Oregon

  Additional programs in California, Maine, Vermont, and Wisconsin had certification requirements, but those programs no longer exist. Other programs are expected to adopt certification requirements in the future.
- Developed and maintained list of stakeholders throughout grant period. List started at less than 500 stakeholders and grew to about 1500 at the end of the grant.

Subtask 4.1.2 Newsletter and other Communication Materials. SWCC will distribute a quarterly electronic newsletter to stakeholders. The Newsletter will include the latest updates on the certification program. SWCC will generate press releases and other informational materials as appropriate.

- Distributed Quarterly Newsletter beginning September 2009 and continuing throughout period of grant. Each newsletter contained 3-8 articles.
- SWCC prepared postcards and other handouts for distribution at professional and trade shows.
- SWCC issued the following media releases and stakeholder notices:
  - AWEA Standard and SWCC Policies Adopted, January 13, 2010
  - SWCC Now Accepting Applications, February 5, 2010
  - SWCC Announces Pending Applications, June 16, 2010
  - Certification Poised to Drive Small Wind Growth, December 8, 2010
  - SWCC Certifies First Two Turbine Models, January 10, 2012
  - A2LA Accredits Small Wind Certification Council, April 17, 2012
  - Additional Small Wind Turbines Provisionally Certified, September 11, 2012
  - Two More Turbines Join Certified Ranks, February 20, 2013
  - A2LA Extends Accreditation of Small Wind Certification Council, January 14, 2014
  - A2LA Accredits Small Wind Certification Council, Again, June 5, 2014
  - IRS Releases New Guidance for Small Wind Turbines to Qualify for 30% Tax Credit, January 20, 2015

Subtask 4.1.3 Attend Professional Conferences. The SWCC will publicize its activities through presentations at professional conferences.

SWCC participated and gave presentations at many professional conferences detailed below. SWCC also developed a booth and table top exhibit to promote SWCC to potential applicants and other stakeholders. SWCC developed postcards and other materials to give stakeholders information on SWCC.

Professional conference presentations:

- Presentation on SWCC at American Wind Energy Association's Windpower 2009, Chicago, IL; May 2009.
- Presentation on SWCC at American Solar Energy Society's SOLAR 2009 Conference, Buffalo, NY; May 2009.
- Presentation on SWCC at Green Energy Conference's Community Wind Conference, web conference; May 2009.
- Presentation on SWCC at Wind and Renewable Energy Webinar sponsored by the National Rural Electric Cooperative Association and the American Public Power Association, May 2009.
- Presentation on SWCC at Small Wind Power Conference, Stevens Point, WI; June 2009.
- Presentation on SWCC at Canadian Wind Energy Association Annual Conference, September 2009.
- Presentation on SWCC at NREL Small Wind Testing Workshop, October 2009.
- Presentation on SWCC at AWEA Small and Community Wind Conference, November 2009.
- 1st World Summit on Small Wind Turbines in Husum, Germany in March 2010 where several countries reported on the status of international markets, standards, testing and certification.
- Presentation on SWCC at International Small Wind Conference in Glasgow, Scotland on April 27-28, 2010.
- Presentation on SWCC at AWEA Windpower 2010 Conference on May 24-26, 2010 in Dallas, TX.
- Small Wind Conference in Stevens Point, Wisconsin on June 15-16, 2010.
- Presentation on SWCC at Midwest Renewable Energy Fair on June 19, 2010.
- Presentation on SWCC at Webinar for the Small Wind Committee of the Illinois Wind Energy Association on July 7, 2010.
- Presentation on SWCC at Webinar for the Small Wind Division of the American Solar Energy Society on July 13, 2010.
- Presentation on certification at New York City Commissioner's Forum on Urban Wind Turbines on July 30, 2010.
- Presentation on certification at NREL Small Wind Turbine Testing Workshop on September 13-15, 2010.
- Presentation on SWCC at Iowa Solar and Small Wind Installers Summit on September 24, 2010.
- Presentation on SWCC at Interstate Renewable Energy Council Annual Meeting in Los Angeles, CA on October 11, 2010.
- Presentation on SWCC at Windustry Conference on Community and Small Wind in Denver, CO on October 27, 2010.
- Presentation on SWCC at Canadian Wind Energy Association Conference in Montreal on November 1, 2010.
- Presentation on SWCC at Windustry Conference on Community and Small Wind in Minneapolis, MN on November 16, 2010.

- Presentation on SWCC at AWEA Small Wind Conference in Portland, OR on December 8, 2010.
- Presentation on "Developments in Small Wind Testing and Certification" at International Small Wind Conference in Newcastle, United Kingdom on April 5-6, 2011.
- Presented a paper, *Growing the Small Wind Market through Testing and Certification* SOLAR 2011 Conference in Raleigh, North Carolina on May 20, 2011.
- Presentation on Growing the Small Wind Market Through Testing and Certification at Windpower Conference in Anaheim, California on May 24-25, 2011.
- Presentation on Small Wind Testing and Certification at Small Wind Conference in Stevens Point, Wisconsin, June 2011.
- Presentation on Testing and Certification to the AWEA Standard at NREL Small Wind Association of Testers workshop in Amarillo, Texas on July 25-28, 2011.
- Presentation on Trends in Small Wind Turbine Testing and Certification at AWEA Small and Distributed Wind Conference in Des Moines, IA on September 15-17, 2011.
- Presentation on SWCC at Canadian Wind Energy Association Conference on October 2, 2011 in Vancouver.
- Presentation on Certification of Small Wind Turbines at National Renewable Energy Laboratory's Wind for Schools Meeting on January 12, 2012 in Boulder, CO.
- Presentation on Lessons Learned in Small Wind Certification Distributed Wind 2012 Conference on March 28, 2012 in Washington, DC.
- Presentation on "Impact of Changes to Design on Certification at the Small Wind Association of Testers Conference" on April 24-25, 2012 in Ithaca, NY.
- Presentation on "Certification of Small Wind Turbines – How Far We Have Come" at Windpower 2012 on June 4, 2012 in Atlanta, GA.
- Presentation on "A Great Leap Forward in Small Wind Turbine Certification" at the Small Wind Installers Conference 2012 on June 12-13, 2012 in Stevens Point, WI.
- Clean Energy States Alliance meeting May 7-8, 2012 in Portland, OR.
- Presentation on "Certifying the Performance of Small Wind Turbines" at the World Renewable Energy Forum on May 16, 2012 in Denver, CO.
- Presentation on "North American Small Wind Turbine Certification" at University of Nebraska Lincoln Extension, Department of Biosystems Engineering, Bioenergy Webinar on September 28, 2012.
- Presentation on "AWEA Small Wind Performance and Safety Standard" on November 27, 2012 at US Wind Energy Standards Summit at NREL in Golden, CO.
- Presentation on *Certification Testing Results and Consumer Ratings: Growing the Small Wind Market* at American Solar Energy Society Solar 2013 Conference, April 18, 2013, Baltimore, Maryland.

- Presentation on *Winds of Change: Impact of Changes to Design on Certification* at Small Wind Association of Testers conference in Soria, Spain April 22-24, 2013.
- Presentation on *Independent Certification of Distributed Wind Turbines* at American Wind Energy Association WindPower 2013 Conference in Chicago, IL on May 7-8, 2013.
- Presentation on *Small Wind Certification Updates* at Small Wind Conference in in June 2013 in Stevens Point, WI.
- Presentation on *AWEA Standard and SWCC Update* at NREL Small Wind Testers Workshop, August 6-8, 2013, Golden, CO.
- Presentation on *SWCC and Small Wind Standards* at Wind Powering America Webinar: Small Wind Standards and Policy Update, September 18, 2013.
- Presented a SWCC and certification update at the grand opening of the UL/WTAMU advanced wind turbine test facility in Canyon, TX on Dec 4, 2014.
- Presentation on "Small Wind: IEC 61400-2 & AWEA SWT-1" at Second Wind Energy Standards Summit, January 13-14, 2014.
- Presented information on SWCC at the DOE Program Review on March 27, 2014.
- WindExchange Summit, Las Vegas, NV, May 2014.
- AWEA Windpower 2014, Las Vegas, NV, May 2014.
- Presentation on "Mining Certification Data for Gems" at 2014 Small Wind Conference, Stevens Point, WI, June 2014.
- Presentation at the International Small Wind Association of Testers (SWAT) conference in Zhangbei, China, Aug 25-27, 2014.
- DWEA All-States Summit and SMART Wind Launch meeting in Albany, NY, October 15-16, 2014.
- Presentation on "Certification of distributed wind turbines and the new IRS rules" and "Distributed Wind 101" at DWEA Distributed Wind 2015 in Washington, DC, March 24, 2015.
- Presentation on "Small Wind Turbine Certification and Labeling" the first annual Austrian Small Wind Conference in Vienna, Austria, 15 April 2015.

Task 4.2: Develop SWCC Web site

Objective: The SWCC communicates information on SWCC programs to manufacturers who want to certify turbines and to consumers who want turbine performance information.

Task Description: The SWCC will develop a web site to provide the public portion of the test results to consumers and state agencies; and to provide information on the certification process for manufacturers. The web site will include a secure area for submittal and review of certification applications.

SWCC developed and maintained a web site throughout the grant period. The web site includes the following elements:

- About SWCC
  - Purpose and What We Do
  - Accreditation

- History and Future
- Staff, Board of Directors, and Certification Commissioners

- For Consumers
  - Certified small turbine ratings
  - Consumer Resources
    - Definitions
    - Standards
    - Links to Distributed Wind Resources
  - Consumer Frequently Asked Questions
- For Applicants
  - Application Process
  - SWCC Policies and Forms
  - Standards
  - Applicant Frequently Asked Questions
- For Stakeholders
  - Applicant Turbine Status
  - Incentive Eligibility
  - Incentive Programs
  - Certification Pathways
  - Get Updates
- Contact Us
- News and Events
  - Recent Newsletters
  - Image Galleries
  - Recent Presentations

TASK AREA 5: MEDIUM WIND TURBINE CERTIFICATION

SWCC will develop a program to certify medium wind turbines to the power and acoustic performance requirements of IEC 61400-12-1 and IEC 61400-11. SWCC will work with Standard Development Organizations to develop more comprehensive standards for medium wind turbines and will certify turbines to these new standards once they are available.

Task 5.1: Initial Certification Policy and Quality Manual

Objective: Develop the Medium Wind Certification Policy and changes to the SWCC Quality Manual that will allow SWCC to certify medium wind turbines.
Task Description: The SWCC will develop and revise the necessary Certification Policy and Quality Manual that will be required to review and certify medium wind turbines. The SWCC legal counsel, an accreditation consultant, and other experts in wind turbine standards and testing will assist with the development of these documents. SWCC will receive accreditation from the American Association of Laboratory Accreditation for the medium wind certification program.

- March 2013 – Board of Directors adopted Wind Turbine Performance Certification Policy (SWCC4).
- March 2013 – Adopted revisions to Quality Manual to implement SWCC4.

Wind Turbine Performance Certification Policy revised:

- August 2013 – Board of Directors adopted revision to Wind Turbine Performance Certification Policy (SWCC4) to clarify that SWCC offers certification to either edition 2.1 or edition 3 of IEC 61400-11.
- December 2013 – Board of Directors approved revision to SWCC4: *Wind Turbine Performance Certification Policy* to bring the policy into compliance with the requirements of ISO/IEC 17065, which is the new standard for accreditation of certification bodies.
- May 2014 – Board of Directors approved revisions to SWCC4: *Wind Turbine Performance Certification Policy*. The changes add new published metrics for medium wind turbines and new limits on how long an applicant can remain listed in the SWCC web site and other minor changes.
- March 2015 – Board of Directors approved revisions to SWCC4: *Wind Turbine Performance Certification Policy*. These policy changes expanded Power and Acoustic Performance certification programs to include Design Certification to IEC 61400-1 for medium wind turbines.

Accreditation

- January 2014 – A2LA expanded SWCC's accreditation scope to include certification to IEC 61400-11 and IEC 61400-12. This means that the medium wind turbine certification program has accreditation.

Task 5.2: Technical Evaluation of Turbine Test Reports

Objective: Provide the SWCC Certification Commission with a technical evaluation of each medium wind turbine test report submitted. The technical evaluation will give the background the Commission needs in order to evaluate and vote on each certification application.

Task Description: The Technical Director or Technical Assistant will review each test report submitted in accordance with the Certification Policy and Quality Manual developed in Task 5.1 and prepare a Technical Evaluation for review by the Certification Commission.

From August 2013, when SWCC received the first medium wind turbine NOI, until May 2015 when the grant ended, SWCC conducted the following actions for turbine certification to IEC 61400-11 and IEC 61400-12-1.

- Received 5 Notices of Intent to Submit an Application for SWCC Wind Turbine Performance Certification (NOI). Application comes with a Configuration Description of the turbine. For each turbine the SWCC Technical Director:
    - Verified that the NOI meets all requirements in SWCC4.

  - Verified that the NOI is complete, accurate and signed.
  - Verified that the Configuration Description describes the turbine with sufficient detail to prepare a Certification Agreement.
  - Verified that applicant holds ownership rights for turbine.
  - Verified and confirmed Applicant's legal entity status.
  - Verified test organization and classified test organization per SWCC4, Section I.
  - For accredited labs, verified lab's accreditation status.
  - If using another Certification Body, SWCC has an agreement with that Certification Body.
  - NOI payment received.
- Signed 5 Certification Agreements based on NOI submission.
- Technical Director conducted 1 test site evaluation. Test site evaluation is typically two-days and includes evaluation to requirements of IEC Standards and to requirements of ISO 17025 laboratory standard. Certification Commissioners review test site evaluation report and test lab or applicant corrects any deficiencies. Two additional applications did not require a test site evaluation.
- Technical Director and Certification Commission reviewed 4 certification reports for their conformance to IEC 61400-11 and IEC 61400-12-1. Standard requirements and identified deficiencies or questions applicant must answer before a certification decision can be made. Certification Commissioners then vote on whether or not to grant certification.
- Commissioners voted to grant 4 certifications (2 each for 2 turbine models).
- Applicants must file a renewal application each year, which includes information on turbine changes and any complaints files against the turbine. The Technical Director and Commissioners review this report, sometimes request additional information and vote on whether or not to continue the certification. During the grant period, all submitted renewal applications were granted.

Task 5.3: Publish Certification Test Data
Objective: Provide consumers with performance data on turbines so they can evaluate the products for their potential applications. Incentive agencies and utilities will use the performance data to determine eligibility and the level of incentive to give for installations they fund.
Task Description: After the Certification Commission certifies a turbine, SWCC will format the test data and publish on the SWCC web site.

SWCC published data on the status of pending applications in the Applicant Turbine list on the SWCC web site beginning in August 2013 and continuing through the remaining grant period. Since the certification process takes a long time, this information is valuable to consumers and other stakeholders to learn if a manufacturer is pursuing certification and how they progress through the process.

Currently SWCC provides information on test status and if an applicant has submitted technical reports to SWCC.

After the grating of the first certification in November 2013, SWCC published data on each certified turbine including the Certificate and the Summary Technical Report. These reports are available through the Certified Turbine list on the SWCC web site. These reports give consumers performance and technical data on each certified turbine and allow comparison between difference turbine models.

SWCC provides much more technical information on certified turbines than other certification bodies.

Task 5.4: Standards Development and Certification Harmonization

For medium wind turbine certification, SWCC will initially use standards developed by the International Electrotechnical Commission (IEC). SWCC will work with organizations developing new standards for medium wind turbines, including the American Wind Energy Association (AWEA), IEC and the Renewable UK Medium Wind Standards Group.

Objective: To develop new standards for medium wind turbines and to revise existing international wind turbine standards. The SWCC will develop and revise its certification program to harmonize, as much as possible, with other international certification requirements.

Task Description: Participate in meetings of IEC, AWEA and the Renewable UK Medium Wind Standards Group to develop national and international standards and harmonize certification procedures. Provide comments and recommendations based on SWCC experience with wind turbine certification.

Timeline: This task will occur throughout the project period.

Impact: The intended impact of *International Standards and Certification Harmonization* is to allow manufacturers to certify their turbines for markets of the world in a manner that is simple and affordable.

- Commented on ITAC listing of medium wind turbines and provided edits for their website.
- Participated in meetings of Medium Wind Standards Group throughout grant period.
- Reviewed latest committee draft of the IEC 61400-1, procedures in IEC 61400-22 and Draft UK Medium Wind Interim Requirements when developing newly expanded SWCC Medium Wind Certification program.
- Worked with consultants in medium wind aeroelastic loads (Rick Santos) and structural analysis/FEA (Jim Richmond) to harmonize interpretation of requirements and criteria.

Task 5.5: Medium Wind Stakeholders Communication

The SWCC shall communicate with stakeholders including manufacturers, installers, state and utility incentive program managers, testing laboratories, and consumers. SWCC will present the certification test results in a manner that will allow consumers to learn about the performance of certified turbines.
Objective: The SWCC shall coordinate input from small and medium wind stakeholders and disperse information on the certification program.
Tasks: Tasks fall within two subtasks: Newsletter and Professional Conferences. SWCC will also distribute press releases and other communication items as needed.
Subtask 5.6.1 Newsletter and other Communication Materials. SWCC will include information on medium wind turbine certification. SWCC will generate press releases and other informational materials as appropriate.
Subtask 5.6.2 Attend Professional Conferences. The SWCC will publicize its medium wind turbine certification activities through presentations at professional conferences.

- Solicited input from medium wind turbine manufacturers on new Wind Turbine Performance Certification Policy.
- IRS webinar included medium wind impacts, 8 April 2015.
- Technical Director worked directly with applicant and potential applicants on certification process inquiries; responded to questions on IRS requirements.

Task 5.6: Develop SWCC Web site
Objective: The SWCC communicates information on SWCC programs to manufacturers who want to certify turbines and to consumers who want turbine performance information.
Task Description: The SWCC will develop a web site to provide the public portion of the test results to consumers and state agencies; and to provide information on the certification process for manufacturers.

SWCC developed and maintained the following new website elements for medium wind turbines:

- For Applicants
  - Application Process
  - SWCC Policies and Forms
  - Standards
  - Applicant Frequently Asked Questions
- For Stakeholders
  - Applicant Turbine Status
  - Incentive Eligibility
  - Incentive Programs
  - Certification Pathways
  - Get Updates

TASK AREA 6: PROJECT MANAGEMENT AND REPORTING

Significant Results and Key Outcomes:

- Prepared and submitted quarterly reports to DOE.
- Executive Director prepared project summary and gave presentation on Small Wind Certification Council for DOE Peer Review Meeting in Alexandria, VA on June 19, 2012.
- Technical Director presented an SWCC project update for DOE Peer Review Meeting in Alexandria, VA in 2014.

Accomplishments

Major milestones during the grant period:

January 2010	SWCC1: *Small Wind Turbine Certification Policy* adopted by SWCC Board of Directors
February 2010	Began to accept Notices of Intent to Submit Certification Applications
October 2010	Conducted first Test Site Evaluation
June 2011	First Memorandum of Understanding with non-U.S. certification body to allow exchange of certification data
November 2011	First certification issued to AWEA 9.1
March 2012	A2LA granted SWCC accreditation as product certification body
April 2013	Adopted SWCC4: Wind Turbine Performance Certification Policy
November 2013	First power performance certification granted

More detail on all the project activities included in Actual Accomplishments detailed above.

SWCC successfully developed certification programs for three standards AWEA 9.1, IEC 61400-11, and IEC 61400-12-1. SWCC obtained accreditation for certification to all three standards and has successfully certified turbines to all three standards. SWCC has creditability as an independent third-party certification body that provides quality certifications. SWCC successfully communicated the results of its certification program to manufacturers, consumers, states, the federal government and other stakeholders. Certification is now used as a requirement for many financial incentives.

The program certified fewer turbine models than originally planned. On one hand this is a reflection of the quality of the standards and the certification program. Many turbine designs cannot meet the requirements of the standards and therefore cannot receive certification. This is good for the marketplace that those turbines are not given credibility. However the high quality requirements do mean that the testing requirements take a long time and the whole process is very expensive. This

is a challenge for small manufacturers without large capital reserves, particularly since the federal certification has just recently been put in place. In addition, the last few years have been very difficult for U.S. sales of distributed wind turbines. This means there are few new turbine models coming to market and turbines developed for other international markets do not see the U.S. as a priority market for expansion. All of these factors have slowed the process and resulted in a small number of currently certified turbine models.

SWCC accomplished the objectives of the grant. The certification program will continue past the end of the grant period. SWCC is processing renewals for existing certified turbines and five additional turbines with applications pending or under test. We are expanding the medium wind certification to include certification to the design standard, 61400-1.

Products developed under the award and technology transfer activities

(Products attached to report)

Publications, conference papers or other public releases of results:

- *Growing the Small Wind Market through Testing and Certification,* Solar 2011 Conference Proceedings, American Solar Energy Society, May 2011.
- Published feature article "Certifying Small Wind Systems" in March 2012 *Solar Today* magazine.
- *Certification Testing Results and Consumer Ratings: Growing the Small Wind Market*, Solar 2013 Conference Proceedings, American Solar Energy Society, May 2013.

- Press releases and stakeholder notices:
    - AWEA Standard and SWCC Policies Adopted, January 13, 2010
    - SWCC Now Accepting Applications, February 5, 2010
    - SWCC Announces Pending Applications, June 16, 2010
    - Certification Poised to Drive Small Wind Growth, December 8, 2010
    - SWCC Certifies First Two Turbine Models, January 10, 2012
    - A2LA Accredits Small Wind Certification Council, April 17, 2012
    - Additional Small Wind Turbines Provisionally Certified, September 11, 2012
    - Two More Turbines Join Certified Ranks, February 20, 2013
    - A2LA Extends Accreditation of Small Wind Certification Council, January 14, 2014
    - A2LA Accredits Small Wind Certification Council, Again, June 5, 2014
    - IRS Releases New Guidance for Small Wind Turbines to Qualify for 30% Tax Credit, January 20, 2015

Web site
www.smallwindcertification.org

Technologies/Techniques:

SWCC Policies:
SWCC1: *Small Wind Turbine Certification Policy*
SWCC2: *Certification Appeal Policy*
SWCC3: *SWCC Trademark and Certification Use Policy*
SWCC4: *Medium Wind Turbine Certification Policy*

Forms:
Notice of Intent Form – Small Wind Turbine Certification
Notice of Intent Form – Medium Wind Turbine Certification
Configuration Description Form

GROWING THE SMALL WIND MARKET THROUGH TESTING AND CERTIFICATION

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ABSTRACT

Until recently, performance specifications for small wind turbines were not standardized, and consumers lacked user-friendly tools to compare small wind turbines and estimate performance. Funding agencies and utilities are asking for greater assurance of safety, functionality, and durability.

In February 2010, the Small Wind Certification Council (SWCC) began to accept applications for certification of small wind turbines. Manufacturers of more than 25 small wind turbines have taken the first step toward certification by submitting to SWCC a Notice of Intent to Submit an Application.

SWCC will certify performance and safety testing results and issue easy-to-understand labels including Rated Energy Output, Rated Sound Level, and Rated Power. SWCC will not conduct the tests, but will verify and certify the test results of others.

1. NEED FOR CERTIFICATION

Small wind turbines have great potential to serve increasing demands for distributed generation and can provide a cost-effective solution for many homes, farms, schools and other end-users. Small wind technology offers increased security of energy supply as well as community awareness of clean energy options.

However, several obstacles have hindered greater adoption, including:

- Performance specifications are not standardized, and applicant reports are optimistic and inconsistent;
- Consumers do not have user-friendly tools to compare turbines or accurately estimate energy performance;
- Consumers and agencies providing financial incentives need greater assurance of safety, functionality, and durability to justify investments;
- Less than half of the small wind turbine models on the market have been tested.

Small turbine ratings, on which most incentive programs are based, vary by as much as 40% between programs. The most effective approach to surmounting these hurdles is through a standardized certification process with easy-to-understand labels that allow consumers to make “apples-to-apples” comparisons of different small wind turbines. While international certification programs are in place, a more affordable and appropriate option has been needed for the North American small wind turbine market.

2. HISTORY

In 2006, a group of individuals and government entities, all with an interest in the development of a North American small wind market, recognized the need for a body that would independently verify the performance of small wind turbines. As a result, that group subsequently established the Small Wind Certification Committee Working Group, which consisted of more than 60 entities, including the major small wind turbine applicants, representatives from a

number of US states and Canada, as well as universities and key individuals.

The Interstate Renewable Energy Council facilitated the Working Group. The following organizations funded the Working Group activities: Canadian Wind Energy Association (with funding from Natural Resources Canada), Casper College (Wyoming), Energy Trust of Oregon, Iowa Energy Center, National Renewable Energy Laboratory, Nevada State Energy Office, and the Wisconsin Department of Administration.

Through 2006 and 2007, the Working Group compiled a comprehensive organization plan for the Small Wind Certification Council (SWCC). This contained the market research that demonstrated the need, the mission statement, description of services to be provided, Board structure, staff and their functions, funding and marketing plans, timelines and other information.

In early 2008, SWCC moved on to the next stage of its development when it incorporated as a new non-profit organization, elected its first Board and began to hire staff. Through 2009, SWCC developed the policies and procedures that govern the certification process.

SWCC began to accept certification applications in February 2010.

3. SMALL WIND CERTIFICATION COUNCIL

The SWCC, as an independent certification body, certifies that small wind turbines meet or exceed the performance and durability requirements of the American Wind Energy Association (AWEA) *Small Wind Turbine Performance and Safety Standard* (AWEA 9.1-2009). This certification provides a common North American standard for reporting turbine energy and sound performance, and helps small wind technology gain mainstream acceptance.

SWCC issues certified turbines easy-to-understand labels for Rated Annual Energy Output, Rated Power, and Rated Sound Level. The label also confirms that the turbine meets durability and safety requirements. As turbines are certified, SWCC's web directory will include Power Curves, Annual Energy Performance Curves and measured sound pressure levels, and other technical information for each model certified. As part of its certifying function, SWCC determines the test reporting requirements. Applicants applying for certification test their turbines to the AWEA 9.1 Standard. SWCC does not conduct tests, but verifies and certifies test results submitted by testing organizations.

SWCC's mission is to develop and implement quality product certification programs for small wind turbines, and to promote the benefits and applications of wind technologies to the public in conjunction with renewable energy organizations, the small wind industry, government agencies, and other stakeholders.

The goals of SWCC's activities include:

- Supporting the use of small wind turbines in North America and internationally;
- Fostering the exchange and dissemination of information concerning turbine energy and sound level performance; and
- Supporting and fostering appropriate government regulations and legislation related to wind technology issues.

3.1 SWCC Governance

SWCC is incorporated as a non-profit organization to provide certification services in the public interest. Directors on the Board are elected to 3-year terms and represent four stakeholder sectors:

- Government/Laboratory Sector: Current employees of government agencies or government-sponsors national laboratories related to renewable energy;
- Public/Organization Sector: People who have a demonstrated interest in renewable energy and who are not currently employees of or derive any financial income from the small wind turbine industry;
- Industry Sector: Current employees, owners, or other representatives of current manufacturers of small wind turbines or those who otherwise derive financial or other benefit from the small wind industry; and
- Installer Sector: Current, qualified installers of small wind turbines.

The President of SWCC cannot come from the Industry Sector, and other safeguards are built into the governance rules to prevent conflicts of interest for the Industry Sector Directors.

The 2011 SWCC Board of Directors include:

- President: Ed Kennell, Clean Energy Products, Bend, OR;
- Vice Presdient: Mick Sagrillo, Focus on Energy, Forestville, WI;

- Secretary: Megan Amsler, Cape & Islands Self Reliance, No. Falmouth, MA;
- Treasurer: Mike Bergey, Bergey Windpower, Norman, OK;
- Roy Butler, Four Winds Renewable Energy, Arkport, NY;
- Trudy Forsyth, National Renewable Energy Laboratory, Golden, CO;
- Robert Foster, New Mexico State University, Las Cruces, NM;
- Ken Jurman, Virginia Department of Mines, Minerals, and Energy, Richmond, VA;
- David Laino, Endurance Wind Power, Rosedale, MD;
- Michael Miller, Xzeres, Bend, OR;
- Ernie Pritchard, Sustainable Energy Developments, Ontario, NY;

3.2 Certification Commission

The Certification Commission administers SWCC product certification and recertification programs. The Commission reviews and approves all certification applications. The Commission is composed of at least three qualified Commissioners elected by the Board of Directors. The Commission was established to prevent any conflicts of interest with certification applicants and the Board of Directors (and especially the Industry Sector Directors).

The 2011 Certification Commission includes:

- Nolan Clark, Amarillo, TX;
- Michael Klemens, Harwood, ND; and
- Malcolm Lodge, Island Technologies, Charlottetown, PEI, Canada.

3.3 Staff

A professional staff manages the day-to-day operations of SWCC. The current staff includes:

- Larry Sherwood, Executive Director;
- Brent Summerville, Technical Director; and
- Sue Pratt, Administrator.

3.4 Financial Support

SWCC's Organization Plan calls for certification fees to support the organization in the long term. Grants and contracts from the US Department of Energy and the New York State Energy Research and Development Authority provide important financial support to launch SWCC's small wind turbine certification program.

4. AWEA STANDARD

SWCC certifies that small wind turbines meet the requirements of the AWEA *Small Wind Turbine Performance and Safety Standard* (AWEA Standard 9.1 - 2009). The AWEA Standard provides meaningful criteria upon which to assess the quality of the small wind turbine and to provide consumers with performance data that will help them make informed purchasing decisions.

The AWEA Standard is based upon three international standards issued by the International Electrotechnical Commission (IEC):

- IEC 61400-2 Ed. 2: *Design requirements for small wind turbines*;
- IEC 61400-11 Ed. 2: *Wind turbine generator systems – Acoustic noise measurement techniques*; and
- IEC 61400-12-1: *Wind turbines – Power performance measurements of electricity producing wind turbines.*

In addition, the AWEA Standard is similar to a standard issued by the British Wind Energy Association (BWEA) and used in the United Kingdom.

5. ELIGIBILITY

Eligible turbines are electricity-producing wind turbines with a swept area up to 200 m^2 (2,150 ft^2). This corresponds to a rotor diameter of about 16 meters (52 feet). Depending on the exact turbine design, this maximum size is a turbine producing about 50-65 kW. Both horizontal and vertical axis turbines are eligible to apply for certification.

SWCC certification applications may be submitted only by the holder of all ownership rights in and to the small wind turbine (Manufacturer), or the manufacturer's authorized designee. If the Applicant is an authorized designee, the designee must submit written proof of authorization to seek SWCC certification from the Manufacturer. SWCC will have the sole and exclusive right to determine whether such a designee is properly authorized to seek SWCC certification.

6. TESTING

SWCC does not test turbines, but accepts test reports from testing organizations. Testing a small wind turbine to the requirements of the AWEA standard can be expected to take at least 6 months, depending on the wind regime in which the test facility is located. Testing and reporting may take as much as 1 or 2 years to complete.

Some testing organizations are accredited to ISO/IEC Standard 17025 to perform power performance, duration and acoustic testing to recognized standards and some are not. Test reports from accredited organizations, such as the National Renewable Energy Laboratory (NREL), require the minimum level of scrutiny from SWCC. Test reports from non-accredited organizations require a higher level of scrutiny to independently verify the test setup complies with the standard, the competence of the organization, and the quality of the test reports. SWCC will audit all non-accredited test organizations. SWCC's Certification Policy details the testing requirements.

SWCC maintains a list of test organizations that intend to test small wind turbines for the North American market. The list may not be all-inclusive. The list is not an endorsement of any test organization, only an informative list intended to help manufacturers find a test organization.

The U.S. Department of Energy and the National Renewable Energy Laboratory selected four independent testing organizations as regional test centers to support with funding and technical assistance in order to expand the testing capacity in North America. These organizations are non-accredited and operate independently of NREL.

7. CERTIFICATION

The process of completing SWCC certification will depend on the quality of the test reports and level of issue resolution required. SWCC certification is expected to take approximately 2 to 4 months once test reports and an application is received. The structural analysis of the wind turbine can be performed in parallel with the field testing.

Once the Certification Commission approves certification, SWCC will issue a Certificate and post the following technical information about the turbine on SWCC's web site:

- Manufacturer/Model
- Power Form
- Overspeed Control
- Rotor Diameter and Swept Area
- Cut In/Out Wind Speed
- Maximum Power, Voltage and Current
- AWEA Rated Annual Energy @ 5 m/s
- AWEA Rated Sound Level
- AWEA Rated Power @ 11 m/s
- IEC class and design compliance for mean and reference wind speeds
- Duration compliance with IEC class for mean and reference wind speeds
- Mechanical and electrical connections
- Minimum blade/tower clearance
- Maximum tower top loads
- Maximum allowable tower top deflection

While turbine applications are pending, SWCC lists the Applicant's name and turbine model, the date the applicant is under contract, the date the turbine began testing, and the date reports are submitted. Applicants can choose to have their name and model remain confidential while certification is being pursued.

- Under Contract: Indicates that the Applicant has executed a Certification Agreement with SWCC;
- Under Test: Indicates that the SWT has been installed at the test site, commissioned, instrumented and is collecting data;
- Reports Submitted: Indicates that the Applicant has submitted a complete Test and Analysis Report to the SWCC with a Certification Application; and
- Conditional Temporary Certification: Indicates that SWCC has granted a time-limited certification for a small wind turbine tested and analyzed according to the IEC 61400 series of Standards or the BWEA Standard (certain requirements of the AWEA Standard have not yet been met).

8. LABEL

SWCC will issue each Certification Holder a SWCC Consumer Label. Figure 1 shows a sample of the label.

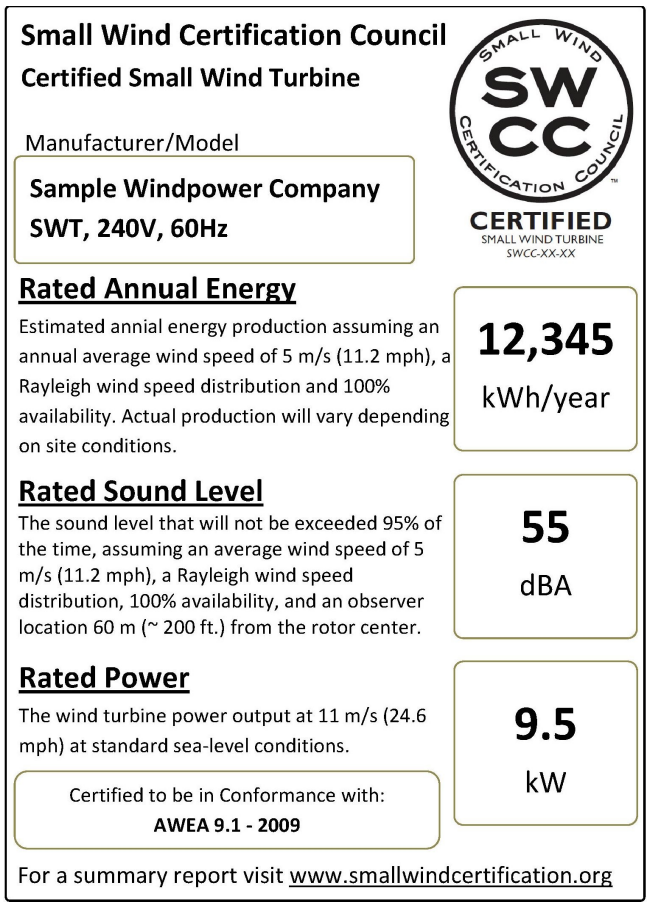

Fig. 1: SWCC Consumer Label

9. ELECTRICAL SAFETY CERTIFICATION

There is still a missing piece related to the permitting and inspection of small wind turbine installations — electrical testing and listing of small wind turbines for code compliance. The development of the AWEA Standard and SWCC was never meant to address this need.

SWCC certification is primarily a verification of durability, function, power performance, and acoustic characteristics of small wind turbines to provide consumers and state agencies with information that will help them make informed decisions.

Code enforcing officials may still require certification from a Nationally Recognized Test Laboratory (NRTL) that ensures the electrical safety of the wind turbine and satisfies the NEC requirement for NRTL listing. This electrical safety certification is outside the scope of SWCC. Underwriters Laboratories (UL) is developing three new wind turbine standards to address this issue:

- UL 6141 *Large Wind Turbine Generating Systems;*
- UL 6142 *Small Wind Turbine Generating Systems;* and
- UL 6171 *Wind Turbine Converters and Interconnection Systems Equipment.*

UL expects to adopt these standards by the end of 2011.

10. WHO REQUIRES SWCC CERTIFICATION

Many states and utilities provide financial incentives for the installation of small wind turbines. For a current listing of such incentives, go to the Database of State Incentives for Renewables and Efficiency (DSIRE).

More than a dozen states and utilities are sending a clear signal to small wind turbine applicants on future requirements for certification. New York State Energy Research and Development Authority (NYSERDA) now requires certification either by SWCC or other independent certifying agency, an EN45011 accredited international organization, or a Nationally Recognized Testing Laboratory for wind turbines that are not already on their approved list to qualify for rebates.

Wisconsin's Focus on Energy has joined with Energy Trust of Oregon in leading the way to require certification for small wind turbines to qualify for incentives beginning January 1, 2012. Energy Trust of Oregon recently revised its eligibility and will end its internal review process and require certification from an independent certification body such as SWCC for incentives as of January 1, 2012.

Wisconsin has also established a new provisional incentive for small wind turbines that are pending certification. Many states are following the lead of Wisconsin, Oregon, and New York in making plans to require certification for small wind turbines to qualify for incentives.

The Massachusetts Clean Energy Center (MassCEC) now requires either SWCC certification or NYSERDA qualification, and intends to rely primarily on SWCC's certified turbine list in the near future. Programs in California, Colorado, Iowa, Maine, Maryland, Minnesota, Nevada, New Jersey, and Vermont have indicated their intention to follow suit.

Currently, several states, including Colorado, rely on the NYSERDA list to qualify small wind turbines for incentive programs. As more turbines become certified, program managers for those incentives plan to simplify the

qualification procedures by adopting SWCC certification as a means for eligibility.

Many incentive managers are eager to incorporate SWCC certificate requirements into their programs, noting that improving the reliability of performance estimates is a significant step towards increasing customer adoption of wind technology.

In a SWCC poll, seven incentive program managers indicated that certification could help expand their programs for small wind turbines. More than half of the states, utilities, and funding agencies with existing requirements for small wind turbines who responded to SWCC's poll indicated that they expect to use certification to supplement or replace these procedures.

11. FEDERAL TAX CREDIT

Certification is not currently required for small wind turbine owners to receive the federal Investment Tax Credit. This could change in the future. DSIRE publishes the current eligibility requirements.

12. RECIPROCITY WITH OTHER CERTIFICATION SCHEMES

In addition to SWCC certification, manufacturers can pursue Certification to IEC Standards and/or Certification to the BWEA Standard for the Microgeneration Certification Scheme (MCS) in the United Kingdom.

There are a number of certification bodies that offer Type Certification to the IEC 61400 series of standards for wind turbines. Type Certification is currently performed in accordance with IEC WT 01: IEC System for Conformity Testing and Certification of Wind Turbines.

SWCC will grant Conditional Temporary Certification to turbines that have been tested and analyzed pursuant to the IEC 61400 series of Standards or the BWEA Standard (which are similar to the AWEA Standard); however, certain requirements of the AWEA Standard have not been met. If Conditional Certification is granted, SWCC may require that the Applicant satisfy identified conditions or additional requirements within the 18 month Conditional Certification period in order for the SWT to be eligible for full SWCC Certification.

SWCC has some similarities but also important differences from the UK's Microgeneration Certification Scheme (MCS). Both are independent, third-party entities whose certification assures the quality of small wind turbines as well as provides government agencies with reliable technical information so they can intelligently craft consumer renewable energy programs.

Under MCS, manufacturers must 1) comply with the BWEA Small Wind Turbine Performance and Safety Standard and 2) receive verification that the company's quality management system is in accordance with the Factory Production Control requirements. SWCC certifies to the AWEA *Small Wind Turbine Performance and Safety Standard* only.

While the core of the AWEA and BWEA Standards are harmonized, there are differences to consider. For example, because grid requirements differ in the UK and North America, the two configurations may exhibit operational differences that require additional evaluation or testing. In addition, MCS acoustic data must be reanalyzed before a turbine can be certified to the AWEA Standard.

Through active ongoing participation in technical committees for the AWEA Standard, the BWEA Standard and the IEC Standards, SWCC is playing a key role in helping to update and achieve international harmonization of standards, testing and certification. SWCC is working diligently with other small wind certification programs in Europe, Asia and North America to minimize the differences between country-specific requirements in order to address a well-recognized market barrier.

13. ACCREDITATION

SWCC is preparing to pursue A2LA Accreditation for Product Certification Bodies, using ISO/IEC Guide 65 as a guide for policies. Completion of SWCC accreditation as an independent certification body is a crucial step in enabling reciprocity between North American the rest of the world.

14. IMPORTANCE OF CERTIFICATION

The urgent need for small wind certification has never been greater. California just suspended its incentive program because the value of the incentives granted was, in some cases, more than the cost of the equipment. People allege that some manufacturers were over-claiming the power rating of the turbine and, therefore, receiving more incentive dollars than was justified. This suspension is causing a real hardship for legitimate manufacturers. With certified power ratings, this problem would not have happened. SWCC is working with the California Energy Commission to develop a certification requirement for their program.

SWCC is also working with USDA, New Jersey, Massachusetts, Wisconsin, Oregon, New York and other states to incorporate requirements for certified turbines for incentive funding.

SWCC benefits for suppliers include:

- Increased mainstream credibility;
- Conformity with performance and safety standards; and
- Published power curves and sound levels.

SWCC benefits for consumers include:

- Comparison shopping;
- Consistent ratings on easy-to-understand labels; and
- Established pathways to qualify for incentives.

With SWCC labels, consumers can compare products, and funding agencies and utilities will gain greater confidence that small turbines installed with public assistance have been tested for safety, function, performance and durability and meet requirements of consensus standards. Certification helps prevent unethical marketing and false claims, ensuring consumer protection and industry credibility.

15. REFERENCES

Small Wind Turbine Performance and Safety Standard (AWEA Standard 9.1 – 2009), American Wind Energy Association, 2009 http://smallwindcertification.org/pdfs/AWEA_2009%20Small_Turbine_Standard.pdf

BWEA *Small Wind Turbine Performance and Safety Standard*, British Wind Energy Association, 2008. http://www.bwea.com/pdf/small/BWEA_SWT_Standard_Feb2008.pdf

IEC 61400 Series Wind Turbine Standards. http://wind.nrel.gov/cert_stds/Certification/standards/iec_stds.html

Microgeneration Certification Scheme Product Listing http://www.microgenerationcertification.org/mcs-consumer/product-search.php

Small Wind Turbine Certification Policy. Small Wind Certification Council, 2011. http://www.smallwindcertification.org/pdfs/SWCC_Small_Wind_Turbine_Certification_Policy.pdf

CERTIFICATION TESTING RESULTS AND CONSUMER RATINGS: GROWING THE SMALL WIND MARKET

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ABSTRACT

The Small Wind Certification Council (SWCC) has fully certified four turbines to the American Wind Energy Association's *Small Wind Turbine Performance and Safety Standard* (AWEA 9.1-2009). Four other turbines have achieved milestones, including one Limited Power Performance (LPP) certification and three Conditional Temporary Certifications.

Until recently, performance specifications for distributed wind turbines were not standardized. In 2010, the SWCC began to accept applications for certification. The SWCC certifies performance and safety testing results and issues easy-to-understand labels for Rated Energy Output, Rated Power and Rated Sound Level. More than 40 wind turbine models have taken steps toward SWCC certification.

SWCC certification ratings and labels enable consumers to make more informed decisions about small and medium wind turbines, provide states and incentive programs with a means to qualify turbines that are eligible for incentives, and pave the way toward national requirements.

1. NEED FOR CERTIFICATION

Wind turbines have great potential to serve increasing demands for distributed generation and can provide a cost-effective solution for many homes, farms, schools and other end-users. Distributed wind technology offers increased security of energy supply as well as community awareness of clean energy options.

However, in the past several obstacles hindered greater adoption of small and medium wind turbines, including:

- Performance specifications were not standardized, and manufacturer claims are optimistic and inconsistent;
- Consumers lacked user-friendly tools to compare turbines or accurately estimate energy performance;
- Consumers and agencies providing financial incentives needed greater assurance of safety, functionality, and durability to justify investments; and
- Less than half of the small wind turbine models on the market have been tested.

In the absence of a standardized certification, many incentive programs established their own definitions for distributed wind turbine ratings, which varied by as much as 40% between programs. SWCC certification, which certifies small wind turbines to the AWEA Small Wind Turbine Performance and Safety Standard, is the most effective approach to surmounting these hurdles.

The standardized certification process supplies easy-to-understand labels that allow consumers to make "apples-to-apples" comparisons of different wind turbines, and allows for states and incentive programs to have a consistent approach to qualify turbines for incentives. The Interstate Turbine Advisory Council (ITAC), an alliance of clean energy programs and utility incentive providers, now requires full certification to be eligible for its national unified list of small and medium wind turbines that meet the performance, reliability, and warranty service expectations of incentive providers.

2. HISTORY

In 2006, a group of individuals and government entities, all with an interest in the development of a North American small wind market, recognized the need for a body that would independently verify the performance of small wind turbines. As a result, that group subsequently established the Small Wind Certification Committee Working Group, which consisted of more than 60 entities, including the major small wind turbine manufacturers, representatives from a number of US states and Canada, as well as universities and key individuals.

The Interstate Renewable Energy Council facilitated the Working Group. The following organizations funded the Working Group activities: Canadian Wind Energy Association (with funding from Natural Resources Canada), Casper College (Wyoming), Energy Trust of Oregon, Iowa Energy Center, National Renewable Energy Laboratory, Nevada State Energy Office, New York State Energy Research and Development Authority and the Wisconsin Department of Administration.

Through 2006 and 2007, the Working Group compiled a comprehensive organization plan for the Small Wind Certification Council (SWCC). This contained the market research that demonstrated the need, the mission statement, description of services to be provided, Board structure, staff and their functions, funding and marketing plans, timelines and other information.

In early 2008, SWCC moved on to the next stage of its development when it incorporated as a new non-profit organization, elected its first Board of Directors and began to hire staff. Through 2009, SWCC developed the policies and procedures that govern the certification process.

SWCC began to accept certification applications in February 2010, and issued its first full certification in November 2011. Since then, three other turbines have achieved full certification. In June 2012, the SWCC obtained ISO Guide 65 accreditation from the American Association for Laboratory Accreditation (A2LA) to certify small wind turbines to AWEA Standard 9.1-2009. Accreditation to ISO Guide 65 ensures the universal recognition of SWCC turbine certifications worldwide, while ensuring that certification activities are conducted impartially, systematically and in a uniform manner.

In December 2012, SWCC began offering certification for medium wind turbines with swept areas larger than 200 square meters to the service of certifying Power Performance test results per IEC 61400-12-1 and Acoustic test results per IEC 61400-11. Work is underway to develop a globally accepted approach to certifying medium wind turbines. There is industry consensus that certification of these two performance tests will remain a requirement in any proposed new medium wind certification scheme. This interim step will provide consumers with some assurance of the performance of these turbines, while a global scheme for full certification is developed.

3. SMALL WIND CERTIFICATION COUNCIL

The SWCC, as an independent certification body, certifies that wind turbines meet the performance and durability requirements of the American Wind Energy Association *Small Wind Turbine Performance and Safety Standard* (AWEA 9.1-2009). This certification provides a common North American standard for reporting turbine energy and sound performance, and helps distributed wind technology gain mainstream acceptance.

SWCC issues certified turbines easy-to-understand labels for Rated Annual Energy Output, Rated Power, and Rated Sound Level. The label also confirms that the turbine design meets durability and safety requirements. SWCC's web directory includes Power Curves, Annual Energy Performance Curves and measured sound pressure levels, and other technical information for each model certified. Applicants applying for certification design and test their turbines to AWEA Standard 9.1-2009. SWCC does not conduct tests, but verifies and certifies test results submitted by testing organizations.

SWCC's mission is to develop and implement quality product certification programs for distributed wind turbines, and to promote the benefits and applications of wind technologies to the public in conjunction with renewable energy organizations, the wind industry, government agencies, and other stakeholders.

The goals of SWCC's activities include:

- Supporting the use of distributed wind turbines in North America and internationally;
- Fostering the exchange and dissemination of information concerning turbine energy and sound level performance; and
- Supporting and fostering appropriate government regulations and legislation related to wind technology issues.

3.1 SWCC Governance

SWCC is an independent non-profit organization that verifies and certifies test results and design calculations, operating with strict procedures to ensure credible,

independent evaluation of wind turbines. A three-member Certification Commission makes all certification decisions. The Commissioners are qualified and independent industry experts who have filed disclosure statements to ensure that they do not have any conflicts of interest. Three of the eleven Board directors are from the industry to give input into SWCC policies and operations. SWCC Bylaws and operating procedures are designed so the Board has no involvement in individual certification decisions. The President of SWCC cannot come from the Industry Sector, and other safeguards are built into the governance rules to prevent conflicts of interest for the Industry Sector Directors.

4. AWEA STANDARD

SWCC certifies wind turbines that meet the requirements of the AWEA *Small Wind Turbine Performance and Safety Standard*. The AWEA Standard provides meaningful criteria upon which to assess the quality of the small wind turbine and to provide consumers with performance data that will help them make informed purchasing decisions.

The AWEA Standard incorporates three international standards issued by the International Electrotechnical Commission (IEC):

- IEC 61400-2 Ed. 2: *Design requirements for small wind turbines*;
- IEC 61400-11 Ed. 2: *Wind turbine generator systems – Acoustic noise measurement techniques*; and
- IEC 61400-12-1: *Wind turbines – Power performance measurements of electricity producing wind turbines.*

In addition, the AWEA Standard is similar to a standard issued by the British Wind Energy Association (BWEA) and used in the United Kingdom.

5. ELIGIBILITY FOR CERTIFICATION

Eligible turbines for certification to AWEA Standard 9.1 - 2009 are electricity-producing wind turbines with a swept area up to 200 m^2 (2,150 ft^2). This corresponds to a rotor diameter of about 16 meters (52 feet). Depending on the exact turbine design, this maximum size is a turbine producing about 50-65 kW. Both horizontal and vertical axis turbines are eligible to apply for certification.

Medium wind turbine certification eligibility applies to turbines with a swept area greater than 200 square meters. As a globally accepted medium wind turbine certification scheme is being developed, SWCC is offering Power Performance and Acoustic Performance certification for medium wind turbines to international standards.

SWCC certification applications may be submitted only by the holder of all ownership rights in and to the wind turbine (Manufacturer), or the manufacturer's authorized designee. If the Applicant is an authorized designee, the designee must submit written proof of authorization to seek SWCC certification from the Manufacturer. SWCC will have the sole and exclusive right to determine whether such a designee is properly authorized to seek SWCC certification.

6. TESTING

Testing a wind turbine to the requirements of the AWEA standard can be expected to take at least 6-9 months, depending on the wind regime in which the test facility is located. If the turbine design evolves as part of the field testing, testing and reporting may take as much as 12 to 18 months to complete.

Some testing organizations are accredited to ISO/IEC Standard 17025 to perform power performance, duration and acoustic testing to recognized standards and some are not. Test reports from accredited organizations, such as the National Renewable Energy Laboratory (NREL), require the minimum level of scrutiny from SWCC. Test reports from non-accredited organizations require a higher level of scrutiny to independently verify the test setup complies with the standard, the competence of the organization, and the quality of the test reports. SWCC will audit all non-accredited test organizations. SWCC's Certification Policy details the testing requirements.

In order to help streamline the certification process, SWCC has focused increased attention on field testing. Field testing performed by an accredited testing organization continues to represent a streamlined and cost effective pathway toward certification, however many of the active test sites are operated by non-accredited organizations that require an on-site evaluation by SWCC staff. SWCC has designated three testing organizations as "preferred testing organizations" that SWCC has experience working with: the AEI Regional Wind Test Center in Canyon, Texas; Windward Engineering in Spanish Fork, Utah; and the Wind Energy Institute of Canada on Prince Edward Island, Canada. On-site SWCC evaluations here are typically are simpler and cheaper than for other non-accredited testing organizations.

The U.S. Department of Energy and the National Renewable Energy Laboratory (NREL) selected four

independent testing organizations as Regional Test Centers to support with funding and technical assistance in order to expand the testing capacity in North America. Three of the Regional Test Centers are non-accredited and all operate independently of NREL.

7. CERTIFICATION

The process of completing SWCC certification depends on the quality of the test reports and level of issue resolution required. SWCC certification takes approximately 2 to 4 months once test reports and an application is received. The structural analysis of the wind turbine can be performed in parallel with the field testing however, turbine designers are encouraged to perform these calculations prior to initiating field testing for certification.

Once the Certification Commission approves certification, SWCC issues a Certificate and posts the following technical information about the turbine on SWCC's web site:

- Manufacturer/Model
- Power Form
- Rotor Diameter and Swept Area
- Cut In/Out Wind Speed
- Maximum Power, Voltage and Current
- AWEA Rated Annual Energy @ 5 m/s
- AWEA Rated Sound Level
- AWEA Rated Power @ 11 m/s
- IEC turbine class and design compliance for mean and reference wind speeds
- Duration Test compliance with IEC turbine class for mean and reference wind speeds
- Mechanical and electrical connections
- Minimum blade/tower clearance
- Maximum tower top loads
- Maximum allowable tower top deflection

While turbine applications are pending, SWCC lists the Applicant's name and turbine model, the date the applicant is under contract, the date the turbine began testing, and the date reports are submitted. Applicants can choose to have their name and model remain confidential while certification is being pursued. The website lists the following applicant milestones:

- Under Contract: Indicates that the Applicant has executed a Certification Agreement with SWCC;
- Under Test: Indicates that the wind turbine has been installed at the test site, commissioned, instrumented and is collecting data;
- Reports Submitted: Indicates that the Applicant has submitted a complete Test and Analysis Report to the SWCC with a Certification Application;
- Limited Power Performance Certification: Indicates that SWCC has granted a time-limited certification for a wind turbine that has met the power performance requirements of SWCC certification.
- Conditional Temporary Certification: Indicates that SWCC has granted a time-limited certification for a wind turbine tested and analyzed according to the IEC 61400 series of Standards or the BWEA Standard (certain requirements of the AWEA Standard have not yet been met).

8. RESULTS

SWCC has issued four full certifications and labels for turbines certified to the AWEA *Small Wind Turbine Performance and Safety Standard*. Four other turbines have achieved milestones, including the first Limited Power Performance (LPP) certification and three Conditional Temporary Certifications.

Table 1 shows the four fully-certified turbines, as well as the turbine with LPP certification. Figures 1-5 show the certified power curves for each turbine.

TABLE 1: FULLY-CERTIFIED AND LIMITED POWER PERFORMANCE CERTIFIED TURBINES

Applicant	Bergey Windpower Co.	Endurance Wind Power Inc.	Evance Wind Turbines Ltd.	Southwest Windpower	Eveready Diversified Products (Pty) Ltd.
Turbine	Excel 10	Endurance S-343	Evance R9000	Skystream 3.7	Kestrel e400nb 250
Rated Annual Energy @ 5 m/s Estimated annual energy production assuming an annual average wind speed of 5 m/s (11.2 mph), a Rayleigh wind speed distribution, sea-level air density and 100% availability. Actual production will vary depending on site conditions.	13,800 kWh	8,910 kWh	9,160 kWh	3,420 kWh	3,930 kWh
Rated Sound Level The sound level that will not be exceeded 95% of the time, assuming an annual average wind speed of 5 m/s (11.2 mph), a Rayleigh wind speed distribution, sea-level air density, 100% availability and an observer location 60 m (~ 200 ft) from the rotor center.	42.9 dB(A)	Pending full certification	45.6 dB(A)	41.2 dB(A)	55.6 dB(A)
Rated Power @ 11 m/s The wind turbine power output at 11 m/s (24.6 mph) at standard sea-level conditions.	8.9 kW	5.4 kW	4.7 kW	2.1 kW	2.5 kW
Certification Granted	11/16/2011, renewed 11/16/2012	Limited Power Performance Certification, 9/6/2012	12/18/2012	12/19/2011, renewed 12/19/2012	2/14/2013
Certification Number	SWCC-10-12	LPP-10-09	SWCC-10-27	SWCC-10-20	SWCC-10-16

9. ELECTRICAL SAFETY CERTIFICATION

Electrical testing and listing of small wind turbines for code compliance is a related piece for the permitting and inspection of small wind turbine installations. The development of the AWEA Standard and SWCC was never intended to address this need. SWCC certification is primarily a verification of durability, function, power performance, and acoustic characteristics of distributed wind turbines to provide consumers and state agencies with information that will help them make informed decisions. Code enforcing officials may still require certification from a Nationally Recognized Test Laboratory (NRTL) that ensures the electrical safety of the wind turbine and satisfies the NEC requirement for NRTL listing. This electrical safety certification is outside the scope of SWCC.

In September 2011, in cooperation with AWEA, Authorities Having Jurisdiction (AHJs), small wind turbine manufacturers and other industry stakeholders, Underwriters Laboratories (UL) formed a Standards Technical Panel (STP) to develop a new electrical safety standard for small wind turbines. The process is now complete and ANSI/UL 6142 Ed. 1 - *Standard for Safety for Small Wind Turbine Systems* was published as an American National Standard on November 30, 2012. The 2014 National Electrical Code (NEC) will reference this new standard for small wind turbines and small wind turbine manufactures are encouraged to start working on UL6142 certification now that the standard has been adopted.

Certification to AWEA Standard 9.1-2009 is a prerequisite for UL6142 certification as stated in section 1.2: “It is intended that the electrical subassemblies that address power transfer control and protection functions evaluated per this document are to be coordinated with the mechanical and structural limitations specified in AWEA 9.1, Small Wind Turbine Performance and Safety Standard...”

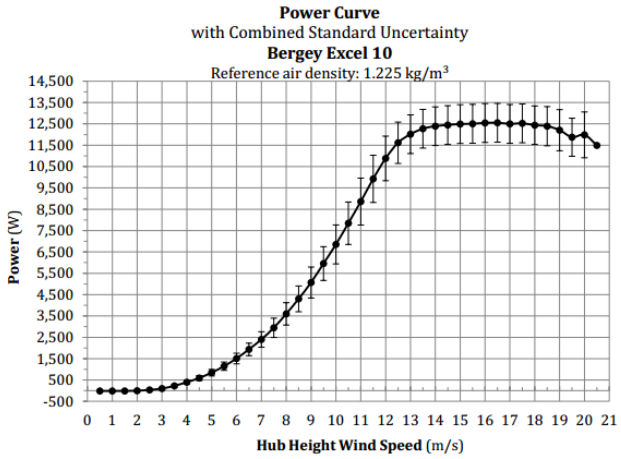


Fig. 1: Bergey Excel 10 Certified Power Curve

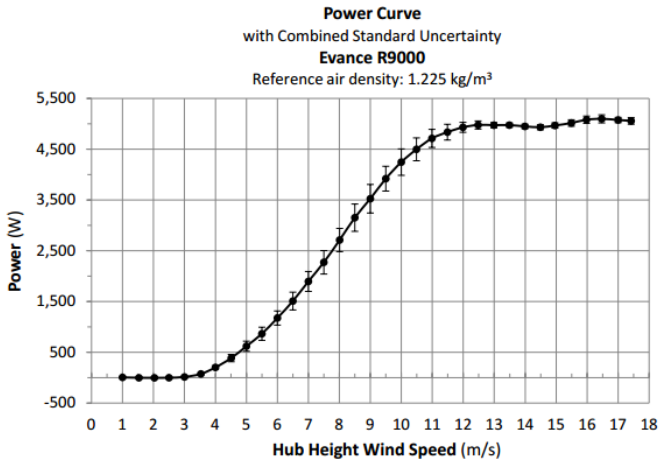


Fig. 2: Evance R9000 Certified Power Curve

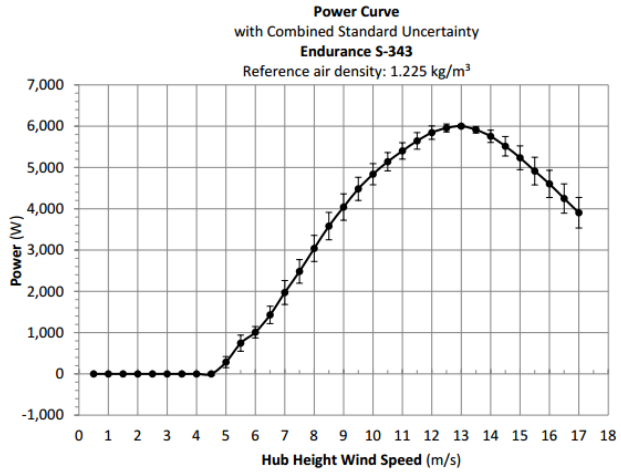


Fig. 3: Endurance S-343 Certified Power Curve

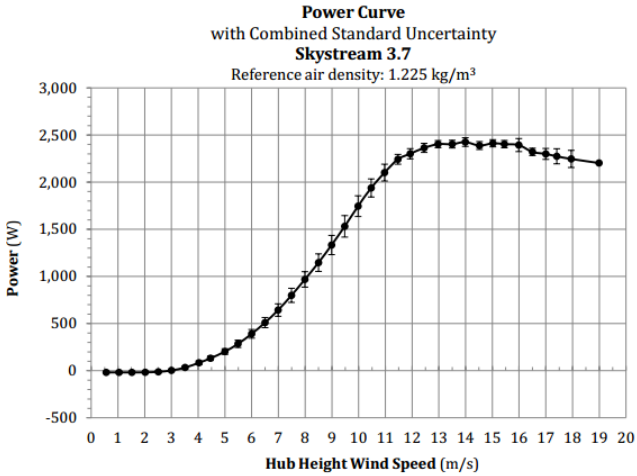


Fig. 4: Skystream 3.7 Certified Power Curve

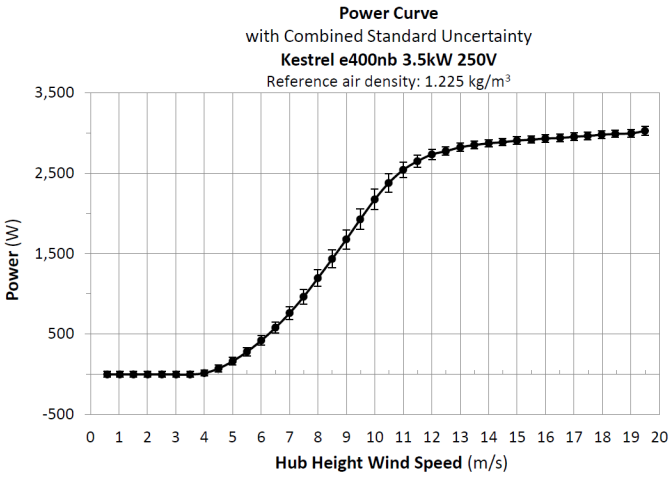


Fig. 5: Kestrel e400nb 250 Certified Power Curve

10. WHO REQUIRES SWCC CERTIFICATION

Many states and utilities provide financial incentives for the installation of distributed wind turbines. A current listing of such incentives can be found in the Database of State Incentives for Renewables and Efficiency (DSIRE) (www.dsireusa.org). Many incentive managers have been eager to incorporate SWCC certification requirements into their programs, noting that improving the reliability of performance estimates is a significant step towards increasing customer adoption of wind technology.

The Interstate Turbine Advisory Council (ITAC), an alliance of clean energy programs and utility incentive providers, now requires require full certification to be eligible for its national unified list of small and medium wind turbines that meet the performance, reliability, acoustic and warranty service expectations of incentive providers. Currently, seven ITAC-member programs participate in ITAC: California Energy Commission (CEC); California Public Utilities Commission; Energy Trust of Oregon; Massachusetts Clean Energy Center (MassCEC); New Jersey's Clean Energy Programs; New York State Energy Research & Development Authority (NYSERDA); NV Energy. Two other programs contribute to ITAC: Minnesota Department of Commerce Division of Energy Resources and Wisconsin's Focus on Energy.

More states and utilities are sending a clear signal to small wind turbine applicants on requirements for certification. In addition to the ITAC participating agencies, the Vermont Clean Energy Development Fund and the Maryland Energy Administration Windswept Grant Program also require either SWCC certification or previous program qualification for incentive eligibility. Several other agencies, such as the Colorado Energy Office, Efficiency Maine, the Iowa Energy Center, the Illinois Department of Commerce and Economic Opportunity, the Minnesota Department of Commerce, and the U.S. Department of Agriculture are expected to implement wind turbine certification requirements in the near future. An SWCC survey of state and utility incentive program managers revealed that certification could help expand their programs for small wind turbines. More than half of the states, utilities, and funding agencies with existing requirements for small wind turbines who responded to the SWCC survey indicated that they expect to use certification to supplement or replace their existing procedures.

For wind turbines with a swept area greater than 200 square meters, ITAC, the Energy Trust and other agencies require certification to applicable sections of IEC 61400-1 from an accredited, independent certification body or a full technical require including documentation of performance, safety and durability, including reported production demonstrating reliable operation (12 months of wind speed data coupled with monthly energy production information maintaining operational availability of at least 90%) of that model of equipment at retail installation in North America with annual average wind speeds of at least 12 mph at hub height and an owner/operator who is available for interview.

11. FEDERAL TAX CREDIT

Certification is not currently required for small wind turbine owners to receive the federal Investment Tax Credit. This could change in the future. The current eligibility requirements are linked at http://en.openei.org/wiki/Residential_Renewable_Energy_Tax_Credit_(Federal).

The Mid-Size and Federal Policy Committees of the Distributed Wind Energy Association (DWEA) have developed detailed recommendations for the Internal Revenue Service and have contacted members of the US Congress encouraging the adoption of mandatory certification requirements to be eligible for the 30 percent federal Investment Tax Credit.

12. RECIPROCITY WITH OTHER CERTIFICATION SCHEMES

In addition to SWCC certification, manufacturers can pursue Certification to IEC Standards and/or Certification to the BWEA Standard for the Microgeneration Certification Scheme (MCS) in the United Kingdom.

There are a number of certification bodies that offer Type Certification to the IEC 61400 series of standards for wind turbines. Type Certification is currently performed in accordance with IEC 61400-22.

SWCC grants Conditional Temporary Certification to turbines that have been tested and analyzed pursuant to the IEC 61400 series of Standards or the BWEA Standard (which are similar to the AWEA Standard); however, certain requirements of the AWEA Standard have not been met. If Conditional Certification is granted, SWCC requires that the Applicant satisfy identified conditions or additional requirements within the 12 month Conditional Certification period in order for the wind turbine to be eligible for full SWCC Certification.

The SWCC certification scheme has some similarities but also important differences from the UK's Microgeneration Certification Scheme (MCS). Both involve independent, third-party certification which assures the quality of wind turbines as well as provides government agencies with

reliable technical information so they can intelligently craft consumer renewable energy programs.

Under MCS, manufacturers must 1) conform to the BWEA *Small Wind Turbine Performance and Safety Standard* and 2) receive verification that the company's quality management system is in accordance with the Factory Production Control requirements. SWCC certifies to the Standard, but does not verify the company's quality management system.

While the core of the AWEA and BWEA Standards are harmonized, there are differences to consider. For example, because grid requirements differ in the UK and North America, the two configurations may exhibit operational differences that require additional evaluation or testing. In addition, since the acoustic requirements differ between the Standards, MCS acoustic data must be reanalyzed before a turbine can be certified to the AWEA Standard.

Through active ongoing participation in technical committees for the AWEA Standard, the BWEA Standard and the IEC Standards, SWCC is playing a key role in helping to update and achieve international harmonization of standards, testing and certification. SWCC is working diligently with other small wind certification programs in Europe, Asia and the Americas to minimize the differences between country-specific requirements in order to address a well-recognized market barrier.

In June 2012, the SWCC obtained ISO Guide 65 accreditation from the American Association for Laboratory Accreditation (A2LA) to certify wind turbines to AWEA Standard 9.1-2009. Accreditation to ISO Guide 65 ensures the universal recognition of SWCC turbine certifications worldwide, while ensuring that certification activities are conducted impartially, systematically and in a uniform manner. SWCC accreditation as an independent certification body is a crucial step in enabling reciprocity between North American the rest of the world.

13. IMPORTANCE OF CERTIFICATION

The urgent need for distributed wind certification has never been greater. Funding agencies and utilities are asking for greater assurance of safety, functionality, and durability. This lack of performance assurance has in some cases resulted in the lack of support for consumer wind financial incentives. In the past several years, several programs, including in California and New Jersey, suspended their incentive programs due to performance issues of awarded projects. These suspensions have caused hardships for legitimate manufacturers. Certified performance ratings can alleviate the problem by providing the assurance that funding agencies need.

SWCC benefits for suppliers include:

- Increased mainstream credibility;
- Conformity with performance and safety standards; and
- Published power curves and sound levels.

SWCC benefits for consumers include:

- Comparison shopping;
- Consistent ratings on easy-to-understand labels; and
- Established pathways to qualify for incentives.

With SWCC labels, consumers can compare products, and funding agencies and utilities will gain greater confidence that distributed turbines installed with public assistance have been tested for safety, function, performance and durability and meet requirements of consensus standards. Certification helps prevent unethical marketing and false claims, ensuring consumer protection and industry credibility.

14. REFERENCES

(1) *Small Wind Turbine Performance and Safety Standard* (AWEA Standard 9.1 – 2009), American Wind Energy Association, 2009. http://www.smallwindcertification.org/for-applicants/awea-standard/

(2) BWEA *Small Wind Turbine Performance and Safety Standard*, British Wind Energy Association, 2008. http://www.renewableuk.com/en/utilities/document-summary.cfm?docid=97D39F8A-0760-45C5-8D9D6B8E7F2302FD

(3) IEC 61400 Series Wind Turbine Standards. http://webstore.iec.ch/webstore/webstore.nsf/mysearchajax?Openform&key=61400&sorting=&start=1&onglet=1

(4) Microgeneration Certification Scheme Product Listing. http://www.microgenerationcertification.org/mcs-consumer/product-search.php

(5) *Small Wind Turbine Certification Policy*. Small Wind Certification Council, 2013. http://www.smallwindcertification.org/wp-content/new-uploads/2013/02/SWCC1Small-Wind-Turbine-Certification-Policy-01Feb2013.pdf

Small Wind Certification Council

January 13, 2010

Dear Larry,

Two significant events have happened for small wind certification - adoption by AWEA of the *Small Wind Turbine Safety and Performance Standard* and adoption by SWCC of the *Small Wind Turbine Certification Policy*. In February, we expect to announce when SWCC will begin to accept "Notices of Intent to Submit an Application" and requests for Application Packets. We will host a webinar for manufacturers on February 4 to explain the process and answer questions. Details on each of these actions is included below.

Sincerely,

Larry Sherwood
SWCC Executive Director

AWEA Adopts Small Wind Standard

In late December, the American Wind Energy Association (AWEA) adopted the Small Wind Turbine Performance and Safety Standard. The Small Wind Certification Council will use the Standard as the basis for its certification program.

The voluntary standard establishes uniform procedures to test and evaluate small wind turbines with swept areas of 200 square meters or less (up to approximately 65 kilowatts of power capacity), which comprise a large portion of the home, farm, and business small wind market segments.

The standard was finalized in December 2009 by the AWEA Standards Coordinating Committee (SCC), a voluntary consensus standards developer in accordance with guidelines from the American National Standards Institute (ANSI). The final standard can now be downloaded from AWEA's website.

SWCC Adopts Certification Policy

The SWCC Board of Directors has adopted and released two SWCC Policies. The SWCC *Small Wind Turbine Certification Policy* defines the appropriate rules and procedures for the voluntary certification of eligible Small Wind Turbines. The SWCC *Certification Appeal*

Policy defines the process of appealing an adverse action issued by SWCC, including deficiency and violation decisions, and objections to the application of SWCC policies.

Click here to download copies of the SWCC policies.

SWCC is not yet accepting Notices of Intent to Submit an Application nor Certification Applications. An announcement will be made (likely in February) when Applicants may begin to request Application Packets and submit Notices of Intent.

SWCC will independently evaluate the wind turbines' compliance with the standard's testing specifications, with the first certifications expected by late 2010.

SWCC Schedules Manufacturer Webinar

SWCC will host a Web Briefing geared for small wind manufacturers interested in pursuing certification for their turbines on Thursday, Feb. 4, 2010 from 2-4 pm EST. The Manufacturers Briefing will open with a 30-minute presentation describing the process for manufacturers to comply with the AWEA's Small Wind Standard and become eligible for certification, followed by 90 minutes for questions and answers.

Additional web briefings will be held in early March geared toward installers and managers of state and utility incentive programs.

Click here to register for the February 4 Webinar. Participants are encouraged to visit the Frequently Asked Questions page on the SWCC website prior to the Briefing for answers to many questions about the certification process.

Small Wind Certification Council | 2280 Vineyard Place | Boulder | CO | 80304

Small Wind Certification Council

February 5, 2010

Dear Larry,

The Small Wind Certification Council (SWCC) is pleased to announce that we are now "open for business" and have assembled all the program elements needed to initiate the North American small wind turbine certification application process.

Below, I include information on the *Notice of Intent to Submit an Application*, which is the first step in the certification process. I also summarize of the benefits of certification and help you find more information.

Yesterday we held a web briefing for small wind manufacturers interested in pursuing certification for their turbines. Over 150 stakeholders learned about the process for complying with the AWEA Small Wind Standard and becoming eligible for certification. Additional web briefings will be held for specific stakeholder groups.

Feel free to contact us with any questions or comments.

Sincerely,

Larry Sherwood
SWCC Executive Director

Open for Business

As of February 4, 2010, the Small Wind Certification Council (SWCC) will accept *Notices of Intent to Submit an Application*, the first step in the approved SWCC Certification Process as summarized in the SWCC Certification Policy.

SWCC will independently evaluate the wind turbines' compliance with testing specifications in the American Wind Energy Association (AWEA) *Small Wind Turbine Performance and Safety Standard*.

Notice of Intent

SWCC invites any eligible small wind turbine manufacturer, designer or designee to submit a *Notice of Intent (NOI) to Submit an Application*. An SWCC Configuration Description Form must be included with the NOI for each turbine seeking certification. In the NOI, Applicants provide basic information about the turbine(s), a description of

testing and evaluation plans, as well as cut sheets, design drawings, operation manuals, photos, and other details. Applicants should submit their NOI before testing begins to be sure that your test plan conforms to SWCC requirements.

Payment of a non-refundable Preliminary Review Fee of $2,500 per turbine (plus $1,250 for each additional configuration of the same type included) is required with submission of the NOI. This fee covers SWCC's initial review of the turbine design and test plans as well as development of tailored Certification Agreement(s) including requirements of the structural analysis and certification fee estimates. Additional Applicant-specific fees will be required for test site evaluation (for non-accredited test sites), the full certification application, conversion from conditional to full certification (if required), annual certification maintenance, and certification renewals.

Application Details

Full Certification Applications will be filed together with final testing and structural design analysis reports after the Agreements are executed and testing and reporting is complete. SWCC will evaluate all of the information provided, and the SWCC Certification Commission, composed of three individuals, will vote on the final certification. Once turbines are certified, SWCC will publish performance information on the SWCC website.

Because SWCC uses the AWEA Standard as the basis for its certification program, eligibility is limited to wind turbines with swept areas of 200 square meters or less (up to approximately 65 kilowatts of power capacity), which comprise a large portion of the home, farm, and business small wind market segments.

Benefits of Certification

SWCC certification will provide a common North American standard for reporting turbine energy and sound performance, and help small wind technology gain mainstream acceptance.

SWCC will issue certified turbines easy-to-understand labels for Rated Annual Energy Output, Rated Power, and Rated Sound Level. The label will also confirm the turbine meets durability and safety requirements. SWCC's web directory will include Power Curves, Annual Energy Performance Curves and measured sound pressure levels for each model certified.

With certification labels, consumers can compare products and funding agencies and utilities will gain greater confidence that small turbines installed with public assistance are safe and perform as expected. Certification can help prevent unethical marketing and false claims, thereby ensuring consumer protection and industry credibility.

Frequently Asked Questions

For additional information, including responses to key issues raised by manufacturers and other stakeholders, see the Frequently Asked Questions page on the SWCC website.

Small Wind Certification Council | 2280 Vineyard Place | Boulder | CO | 80304

Small Wind Certification Council

FOR IMMEDIATE RELEASE **CONTACT: Heather Rhoads-Weaver,**
206-755-2064
June 16, 2010 **media@smallwindcertification.org**

Small Wind, Big Breakthrough

Small Wind Certification Council Announces the First 13 Turbines to Begin Certification Process

The small wind industry took a big step as the Small Wind Certification Council (SWCC) announced the first 13 turbine models that have begun the process of SWCC certification to the American Wind Energy Association *Small Wind Turbine Performance and Safety Standard*. SWCC began accepting applications in February to verify the durability, function, power performance, and acoustic characteristics of small wind turbines in accordance with the AWEA Standard. SWCC anticipates it will certify the first turbine by fall 2010. Most of the turbines with pending certification applications will receive certification decisions in 2011.

"It's great to be at the point where we have pending applications," said Brent Summerville, PE, Technical Director of the SWCC. "I'm looking forward to reviewing them and issuing the first certification."

The SWCC has Pending Certification Applications from American Zephyr, Bergey Windpower, Cascade Engineering, Endurance Wind Power, Eveready Diversified Products, Renewegy, Seaforth Energy, Southwest Windpower, Ventera Energy, UrWind and Xzeres Wind. For a complete list, including turbine models, see the media guide below. The most up-to-date list is available on the SWCC website.

"It's exciting to see so many turbine manufacturers submitting applications to the Small Wind Certification Council in its inaugural months," said Larry Sherwood, Executive Director of the SWCC. "The standardized certification will be a big breakthrough that will help drive the growth of small wind."

Certification will enable consumers to make more informed decisions about small wind turbines. But, more importantly, states and utilities can use SWCC certification as a means to qualify turbines that are eligible for incentives. The New York State Energy Research and Development Authority (NYSERDA) accepts SWCC certification for qualification for rebates, and the Massachusetts Clean Energy Center (MassCEC) requires either SWCC certification or NYSERDA qualification. As of January 1, 2012, small wind turbines without certification will no longer be eligible for incentives from the Energy Trust of Oregon. Wisconsin's Focus on Energy has established a new provisional incentive for small wind turbines pending certification.

Several other states and utilities have identified SWCC certification as a pathway to

eligibility for incentives or expect to require certification as a requirement for eligibility for funding or interconnection, including programs in: California, Colorado, Iowa, Maine, Maryland, Minnesota, Nevada, and Vermont.

SWCC certification is an independent confirmation that a small wind turbine has been tested and designed according to the requirements of the AWEA Standard. More information on the certification process is below, or visit www.smallwindcertification.org. SWCC will update the list of pending applications on its website as new pending applications are accepted.

MEDIA BACKGROUND INFORMATION

SWCC has pending applications from the following turbines:

Manufacturer	Turbine
American Zephyr Corporation	Airdolphin GTO
Bergey Windpower Co.	Bergey 5kW
Bergey Windpower Co.	Bergey XL-S
Cascade Engineering	Swift Wind Turbine
Eveready Diversified Products	Kestrel e400i 3kW 250V
Eveready Diversified Products	Kestrel e400i 3kW 48Vdc
Endurance Wind Power Inc.	Endurance S-343
Renewegy, LLC	Renewegy VP-20
Seaforth Energy	AOC 15/50
Southwest Windpower	Skystream 3.7

UrWind Inc.	UrWind O_2
Ventera Energy Corporation	Ventera VT10
Xzeres Wind Corporation	ARE442

The list of pending applications will be updated on the SWCC website as new applications are received.

What is SWCC Certification?

The SWCC certification is an independent, third-party verification that a small wind turbine meets the requirements of the AWEA Standard, *AWEA 9.1 - 2009 Small Wind Turbine Performance and Safety Standard*. The AWEA Standard incorporates, with modifications, existing International Electrotechnical Commission (IEC) standards for small wind turbines. The certification is available for turbines with a swept area up to 200 square meters (approximately 2,150 square feet or 65 kW).

The certification process includes both field testing and structural analysis of the wind turbine. Tests must be conducted according to the AWEA Standard and SWCC policies. Turbines must be tested at actual sites in "free air" - wind tunnel testing is not permitted under AWEA or IEC small wind turbine standards. Testing a small wind turbine to the requirements of the AWEA standard can be expected to take at least 6 months, depending on the wind regime in which the test facility is located. Testing and reporting may take as much as 1 or 2 years to complete. The structural analysis of the wind turbine can be performed in parallel with the field-testing.

Some testing organizations, such as the National Renewable Energy Laboratory (NREL), are accredited to perform power performance, duration and acoustic testing to recognized standards. Test reports from accredited organizations will require the minimum level of scrutiny from the SWCC. Testing performed by non-accredited organizations will require on-site audits and a higher level of scrutiny to independently verify the test setup complies with the standard, the competence of the organization, and the quality of the test reports.

A number of different testing organizations will test the turbines with pending SWCC applications. SWCC has posted a list of potential test organizations (not an endorsement; may not be all-inclusive) that wish to test small wind turbines for the North American market.

The U.S. Department of Energy, the New York State Energy Research and Development Authority, and other sponsors have provided financial assistance to SWCC to aid start-up of the small wind turbine certification program. A list of all funders is on the SWCC website.

Who Uses Certification?

In a 2006 SWCC survey, numerous state and utility incentive program managers indicated that certification could help expand their programs for small wind turbines. More than half of the states, utilities, and funding agencies with existing requirements for small wind

turbines who responded to the SWCC survey indicated that they expect to use certification to supplement or replace these procedures.

The growth of small wind is often tied to state and utility incentives and rebates. Currently, many states rely on the New York State Energy Research and Development Authority (NYSERDA) and the California Energy Commission (CEC) lists to qualify small wind turbines for incentive programs. NYSERDA itself now accepts SWCC certification as a means to be included on its list of certified wind turbines. As turbines become certified, program managers for those incentives plan on simplifying the qualification procedures by adopting SWCC certification as a means of eligibility.

The Massachusetts Clean Energy Center (MassCEC) currently requires certification by SWCC or NYSERDA qualification, and intends to rely primarily on the SWCC certified turbine list in the future. The Energy Trust of Oregon will end its internal review process and rely on certification by SWCC for turbines to qualify for incentives in Oregon as of January 1, 2012. In Wisconsin, Focus on Energy has aligned its requirements to SWCC and is offering new incentives for turbines seeking certification. Focus on Energy will soon announce its date that it will require certification for all turbines to stay or become eligible for incentives.

"Vermont looks forward to incorporating the SWCC's certification process into the state Incentive Program," notes Gabrielle Stebbins, Program Administrator for the Vermont Renewable Energy Incentive Program. "Improving the reliability of performance estimates is a significant step towards increasing customer adoption of wind technology."

The Database for State Incentives for Renewables and Efficiency (DSIRE) Database has current information on dozens of state and utility policies for small wind incentive programs, and SWCC's website provides direct links to several expecting to require certification.

What is the SWCC Application Process?

The 13 applicants listed above have initiated certification approval through the SWCC by submitting of a Notice of Intent to Submit an Application, which includes the details of the wind turbine and proposed test plans. These include the submission of a Configuration Description form and a Preliminary Review Fee. Based on the information provided, SWCC develops a customized Certification Agreement between the applicant and SWCC confirming requirements for testing, analysis, and other details of the certification process.

To complete the certification application, turbines must provide complete results of testing. Certification applicants may choose to use an accredited or non-accredited laboratory or to conduct the testing themselves. Non-accredited testing organizations are required to sign a testing agreement with the SWCC, agreeing to perform appropriate tests on the turbine to be certified and agreeing to the test plans and SWCC test site evaluation.

The process of completing SWCC certification will depend on the quality of the test reports and level of issue resolution required. SWCC certification is expected to take approximately 2 to 4 months once test reports and an application is received. Once a product has been certified, SWCC will issue a summary report, which will contain the rated annual energy, rated power, rated sound level,and other technical information. The report will also note that the turbine model meets the durability and safety requirements of the

AWEA Standard.

Links and References

SWCC list of pending applications (updated weekly)
www.smallwindcertification.org/certified_turbines.html

Small Wind Turbine Performance and Safety Standard
www.awea.org/smallwind/documents
/AWEA_Small_Turbine_Standard_Adopted_Dec09.pdf

New York State Energy Research and Development Authority (NYSERDA)
www.nyserda.org/Funding/1098pon.asp

Massachusetts Clean Energy Center (MassCEC)
www.masscec.com/microwind
Discussion of Mass CEC SWCC requirement: www.masscec.com/masscec
/file/Summary%20of%20Micro%20Wind%20Program%20Modifications-
May%2026,%202010.pdf

Energy Trust of Oregon
http://energytrust.org/shared-resources/info/small-wind-turbines.aspx?src=residential

Focus on Energy (Wisconsin)
www.focusonenergy.com/files/document_management_system/renewables
/windincentive_policy.pdf

The Database for State Incentives for Renewables and Efficiency (DSIRE) Database
www.dsireusa.org/

National Renewable Energy Laboratory (NREL) Small Wind Independent Testing
www.nrel.gov/wind/smallwind/independent_testing.html

Potential test organizations
www.smallwindcertification.org/pdfs/small_wind_test_orgs_SWCC.pdf

PDF of this press release www.smallwindcertification.org/news.html

Small Wind Certification Council | 2280 Vineyard Place | Boulder | CO | 80304

Small Wind Certification Council

FOR IMMEDIATE RELEASE
December 8, 2010

CONTACT: Larry Sherwood 720-284-4657
larry@smallwindcertification.org

December 8, 2010

Certification Poised to Drive Small Wind Growth

22 Turbines Now In Queue; Incentive Programs Requiring Certification

Portland, OR - As the Small Wind Certification Council (SWCC) consumer labeling process for moves forward, the need for certification is becoming more pressing to qualify for incentives. With several recent new additions, 22 turbine models currently have pending applications for SWCC certification. Energy Trust of Oregon is leading the way in requiring certification for turbines to qualify for incentives beginning January 1, 2012.

"I'm excited that so many manufacturers are jumping on board," said SWCC's Technical Director Brent Summerville. "Eighteen companies have now publicly recognized they need to certify their turbines, which will benefit the whole industry and drive growth."

Independent certification by SWCC has been identified as a pathway to eligibility for numerous incentives. Wisconsin's Focus on Energy has established a new provisional incentive for small wind turbines that are pending certification, and New York State Energy Research and Development Authority (NYSERDA) accepts SWCC certification for qualification for rebates. Many states are following the lead of Oregon, New York, and Wisconsin in making plans to require certification for small wind turbines to qualify for incentives. The Massachusetts Clean Energy Center (MassCEC) now requires either SWCC certification or NYSERDA qualification. Programs in California, Colorado, Iowa, Maine, Maryland, Minnesota, Nevada, and Vermont have indicated their intention to follow suit.

SWCC expects to issue its first easy-to-understand consumer label within the next six months. "Our certification labels allow easier comparison shopping and will help small wind turbines gain mainstream acceptance," said Larry Sherwood, SWCC's Executive Director. "We're eager to transition our robust list of pending

applicants to certified turbine labels."

SWCC began accepting applications in February 2010 to verify the durability, function, power performance, and acoustic characteristics of small wind turbines in accordance with the American Wind Energy Association (AWEA) Small Wind Turbine Performance and Safety Standard, and has started reviewing initial applications and auditing test sites.

SWCC has pending applications from Bergey Windpower, Eveready Diversified Products, Polaris America, Urban Green Energy (2 models each); and American Zephyr, Cascade Engineering, Endurance Wind Power, Enertech, Evance Wind Turbines, Potencia Industrial, Renewegy, Seaforth Energy, Southwest Windpower, Taisei Techno, UrWind, Ventera Energy, Windspire Energy, and Xzeres Wind.

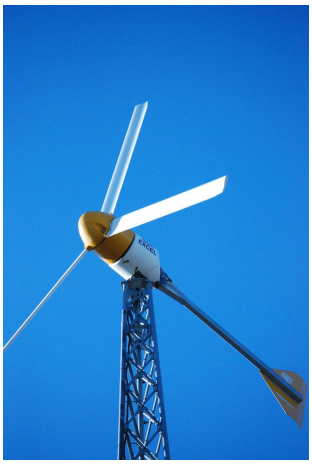
A complete list of pending application turbine models is included in an accompanying media guide and is available at www.smallwindcertification.org.

Small Wind Certification Council | 2280 Vineyard Place | Boulder | CO | 80304

Webpage version: Click here

Small Wind Certification Council
Independent Certification of Small Wind Turbines

January 10, 2012



SWCC Issues First Two Full Certifications

Bergey Excel and Skystream Issued First Small Wind Consumer Labels

The Small Wind Certification Council (SWCC) has issued its first two full certifications and consumer labels to the Bergey Windpower Excel 10 and the Southwest Windpower Skystream 3.7.

"The full certification of two turbine models is a major leap forward in establishing consistent consumer ratings and aiding incentive programs with determining eligibility," noted SWCC Executive Director Larry Sherwood. "Our labels allow easier comparison shopping and will help small wind turbines gain mainstream acceptance."

SWCC expects to issue more full certifications in the coming months, as more incentive programs initiate certification requirements. Sixteen of the remaining 27 turbine models under contract to pursue SWCC certification have either started or completed testing. Three turbine models have been granted Conditional Temporary Certification based on certification from the UK's Microgeneration Certification Scheme (MCS). To be granted full SWCC certification, Conditional Temporary Certified turbines must meet the full requirements of the American Wind Energy Association (AWEA) Small Wind Turbine Performance and Safety Standard and complete the SWCC review process.

"Small wind turbines have great potential to serve increasing demands for distributed generation and can provide a cost-effective solution for many homes, farms, schools and other end-users," noted Sherwood. "Certification helps prevent unethical marketing and false claims, so consumers can have confidence in ratings and funding agencies can ensure that the public's money is spent wisely."

SWCC has received 41 initial Notices of Intent to Apply for Certification and has agreements in place confirming plans for testing and analysis for 29 turbine models with less than 200 m^2 swept area, three-fourths of which are sized for the residential market (under 20 kW).

Many state programs are either moving toward or are requiring certification to be eligible for incentives. The California Energy Commission (CEC) recently reinstituted its Emerging Renewables Program including immediate certification requirements. New York State Energy Research and Development Authority (NYSERDA) requires certification either by SWCC or other independent certifying agency, an EN45011 accredited international organization, or a Nationally Recognized Testing Laboratory for turbines not already on their approved list to qualify for rebates, and has announced it will require full certification to the AWEA 9.1 standard for small wind turbine models to remain eligible for funding as of September 30, 2012. Both NYSERDA and the CEC have seen record numbers of rebate applicants in the past year. Massachusetts Clean Energy Center and numerous other state and utility programs rely on the NYSERDA list and the SWCC to qualify small wind turbines for incentives. Programs in Oregon and Wisconsin have established certification requirements for incentives eligibility, and programs in Colorado, Iowa, Maine, Maryland, Minnesota, New Jersey, Nevada, and Vermont have indicated their intention to follow suit.

SWCC's Incentives webpage provides further background about eligibility criteria and direct links to several programs requiring or expecting to require certification. SWCC has developed options for agencies and utilities to consider for incorporating certification requirements and structuring incentives, including suggestions for wind turbines with a swept area of more than 200 m^2 and therefore outside the scope of the AWEA Standard.

About SWCC

The SWCC is an independent certification body that certifies small wind turbines meet or exceed the requirements of the AWEA Standard. SWCC certification is an independent confirmation that a small wind turbine has been tested and designed according to the requirements of the AWEA Standard. This certification provides a common North American standard for reporting turbine energy and sound performance, and helps small

wind technology gain mainstream acceptance. Consumer labels, ratings and summary reports for SWCC certified turbine models, including tabulated power curves, acoustic data, and tower design requirements, along with a complete list of SWCC pending applicant turbine models, are available at www.smallwindcertification.org/for-consumer. SWCC updates its certified turbines table and application status table on its website as milestones are reached.

Visit www.smallwindcertification.org or call 518-213-9440 for more information on the certification process.

PDF version of press release: Click here

Small Wind Certification Council | 56 Clifton Country Road, Suite 202 | Clifton Park | NY | 12065

Webpage version: Click here

Small Wind Certification Council
Independent Certification of Small Wind Turbines

April 17, 2012

A2LA Accredits Small Wind Certification Council

Allows International Recognition of SWCC Ratings

Clifton Park NY - The Small Wind Certification Council (SWCC) has obtained ISO Guide 65 accreditation from the American Association for Laboratory Accreditation (A2LA) to certify small wind turbines to AWEA Standard 9.1-2009.

SWCC certifies small wind turbines against standards published by the American Wind Energy Association. Certification of wind turbines ensures that turbine designs are tested and evaluated according to industry standards for performance and safety.

Accreditation to ISO Guide 65 ensures the universal recognition of SWCC turbine certifications worldwide, while ensuring that certification activities are conducted impartially, systematically and in a uniform manner. Guide 65 ensures that the resulting product certifications are consistent with international standards and based on objective testing.

A2LA's accreditation of SWCC in accordance with the recognized International Standard ISO/IEC Guide 65:1996, General requirements for bodies operating product certification systems, "demonstrates technical competence for a defined scope and the operation of a quality management system," according to A2LA President & CEO Peter Unger. SWCC's accreditation certificate number 3299.01, valid through June 30, 2014, and accreditation scope are available at http://www.a2la.org/scopepdf/3299-01.pdf.

About SWCC

The SWCC is an independent certification body that certifies small wind turbines meet or exceed the requirements of the AWEA Standard. SWCC certification is an

independent confirmation that a small wind turbine has been tested and designed according to the requirements of the AWEA Standard. This certification provides a common North American standard for reporting turbine energy and sound performance, and helps small wind technology gain mainstream acceptance.

Consumer labels, ratings and summary reports for SWCC certified turbine models, including tabulated power curves, acoustic data, and tower design requirements, along with a complete list of SWCC pending applicant turbine models, are available at www.smallwindcertification.org/for-consumer. SWCC updates its certified turbines table and application status tables on its website as milestones are reached.

Visit www.smallwindcertification.org or call 518-213-9440 for more information on the certification process.

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Small Wind Certification Council
Independent Certification of Small Wind Turbines

FOR IMMEDIATE RELEASE
September 11, 2012

CONTACT: Brent Summerville,
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Additional Small Wind Turbines Provisionally Certified

Endurance S-343 and Eveready Kestrel e400 join 7 other models in reaching SWCC milestones

The Clifton Park, NY - The Small Wind Certification Council (SWCC) has issued its first Limited Power Performance certification to the Endurance Wind Power S-343, and its sixth Conditional Temporary Certification to the Eveready Kestrel e400nb 250, bringing the tally to nine turbine models now partially or fully SWCC-certified.

"We are pleased to see a varied selection of products progressing through the SWCC certification process enabling greater customer choice and consistent consumer ratings," noted SWCC Executive Director Larry Sherwood. "Our growing list of certifications is aiding incentive programs with establishing eligibility and allowing easier comparison shopping, helping small wind turbines gain mainstream acceptance."

The Endurance S-343 power performance certification confirms its Rated Power and Rated Annual Energy as defined in the American Wind Energy Association (AWEA) Small Wind Turbine Performance and Safety Standard 9.1-2009. The Kestrel e400 achieved the milestone of conditional

SWCC certification based on its certification from the UK's Microgeneration Certification Scheme (MCS).

SWCC issued its first two full certifications and consumer labels in late 2011 to the Bergey Windpower Excel 10 and the Southwest Windpower Skystream 3.7. The consumer labels show the Rated Annual Energy, the Rated Sound Level and Rated Power, and SWCC Summary Reports provide each turbine's respective tabulated power curve and acoustic data, tower design requirements, and confirm that each meets all the AWEA Standard's requirements on durability, mechanical strength, safety and function.

SWCC has also awarded conditional certification to the Evance R9000, the Evoco 10 kW, the Kingspan KW6, the Gaia Wind GW 133 - 11kW, and the Xzeres-442SR. Before SWCC releases consumer labels for limited and conditionally certified turbine models, these applicants must meet a few additional requirements of the AWEA Standard and submit a full application package, including acoustics data analysis, to SWCC for evaluation.

SWCC expects to issue further certifications in the coming months, as more state and federal incentive programs ramp up certification requirements. Eight additional turbine models under contract to pursue SWCC certification have either started or completed testing.

"The expanding base of certified turbine models is a reflection of a maturing small wind industry with great potential to serve increasing demand for distributed generation," noted Sherwood. "Certification is helping to avert unethical marketing and false claims, so consumers can have confidence in small turbine ratings and funding agencies can ensure that the public's money is spent wisely."

SWCC has received 43 initial Notices of Intent to Apply for Certification and has agreements in place confirming testing and analysis for 31 turbine models with less than 200 m2 swept area, three-fourths of which are sized for the residential market (under 20 kW). To ensure transparency and public disclosure of key milestones in the process, SWCC reports when its pending applicants are "Under Test" and have submitted test and analysis reports for review.

Recognizing that small wind incentives are often based on power performance ratings and estimates, SWCC recently began offering the new optional service of Limited Power Performance Certification for small wind turbine models that have completed power performance testing in accordance with SWCC and AWEA Standard requirements. While power performance field testing can be completed relatively quickly, the time required for duration testing can result in a lengthy process. If full SWCC certification is not granted within an 18-month period, the limited certification of the turbine's power curve and annual estimated production terminates.

Certification Requirements Expanding

Numerous small wind incentive programs are increasing certification requirements for program eligibility including the New York State Energy Research and Development Authority (NYSERDA), Energy Trust of Oregon, Massachusetts Clean Energy Center, and other states. The recently formed Interstate Turbine Advisory Council (ITAC) requires progress toward certification for its Unified List of Wind Turbines. Certification to AWEA Standard 9.1-2009 will serve as a prerequisite for the upcoming electrical safety standard for small wind turbines, UL6142.

SWCC's Incentives webpage provides further background about eligibility criteria and direct links to several programs requiring or expecting to require certification. SWCC has developed options for agencies and utilities to consider for incorporating certification requirements and structuring incentives, including suggestions for wind turbines with a swept area of more than 200 m2 and therefore outside the scope of the AWEA Standard.

Recent Accreditation Allows International Recognition of SWCC Ratings

SWCC was granted ISO Guide 65 accreditation in March 2012 by the American Association for Laboratory Accreditation (A2LA) to certify small wind turbines to AWEA Standard 9.1-2009. This accreditation ensures the universal recognition of SWCC turbine certifications worldwide, while ensuring that certification activities are conducted impartially, systematically and in a uniform manner.

SWCC certification is an independent confirmation that a small wind turbine has been tested and designed according to the requirements of the AWEA Standard. SWCC updates the application status table on its website as milestones are reached.
Consumer labels, ratings and summary reports for SWCC certified turbine models, including tabulated power curves, acoustic data, and tower design requirements, along with a complete list of SWCC pending applicant turbine models, are available at www.smallwindcertification.org/for-consumer.

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Small Wind Certification Council
Independent Certification of Small Wind Turbines

FOR IMMEDIATE RELEASE
February 20, 2013

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Two More Turbines Join Certified Ranks

Like us on Facebook

Evance R9000, Eveready Kestrel e400nb join Skystream 3.7 and Bergey Excel 10 in reaching full SWCC certification, four others provisionally certified

Clifton Park, NY - The Small Wind Certification Council (SWCC) has issued two new full certifications and consumer labels to the Evance R9000 and the Kestrel e400nb. Along with recent certification renewals of the Southwest Windpower Skystream 3.7 and the Bergey Excel 10, four turbine models are now fully certified through SWCC to the American Wind Energy Association's (AWEA) Small Wind Turbine Performance and Safety Standard.

"With more agencies requiring certification for eligibility for state and federal incentives, it's a big boost for the small wind industry to see two more turbine models reach full certification," SWCC Executive Director Larry Sherwood said. "In the upcoming year, we expect to confirm certification milestones and grant certification for even more small and medium turbine models."

Four other small wind turbine models have achieved major milestones along the certification path. SWCC has approved a Limited Power Performance (LPP) certification for the Endurance S-343, and has

granted Conditional Temporary Certification for the Gaia GW 133 - 11kW, the Kingspan Renewables KW6, and the Xzeres 442SR based on review of their certifications from the UK's Microgeneration Certification Scheme (MCS).

The optional SWCC Limited Power Performance certification is an intermediary step for small wind turbine models that have completed power performance testing in accordance with SWCC and AWEA Standard requirements. LPP certified models have 18 months after receiving LPP certification to complete full SWCC certification. Conditionally certified and LPP certified turbines must meet additional requirements of the AWEA Standard and submit a full application package to SWCC for evaluation as described in the SWCC Certification Policy before receiving full SWCC certification.

The Bergey Windpower Excel 10 and the Southwest Windpower Skystream 3.7 were the first two turbines certified and received consumer labels through SWCC in 2011, and both have renewed their SWCC certifications for another year. The consumer labels for each certified turbine show the Rated Annual Energy, the Rated Sound Level and Rated Power. SWCC Summary Reports provide each turbine's respective tabulated power curve and acoustic data, tower design requirements, and confirm that each meets all the AWEA Standard's requirements on durability, mechanical strength, safety and function.

Six additional turbines are currently collecting data at their respective testing sites, with several others in the process of taking steps towards certification. SWCC has received 43 notices of intent to pursue certification since its inception. "As more turbine models are certified, consumers are gaining more confidence in the small wind industry," Sherwood said. "Certification is helping to expand the small wind market, and ensuring its growth for the future."

SWCC certification is an independent confirmation that a small wind turbine has been tested and designed according to the requirements of the AWEA Standard. SWCC updates the application status table on its website as milestones are reached. Consumer labels, ratings and summary reports for SWCC certified turbine models, including tabulated power curves, acoustic data, and tower design requirements, along with a complete list of SWCC pending applicant turbine models, are available at www.smallwindcertification.org/for-consumer.

Small Wind Certification Council | 56 Clifton Country Road, Suite 202 | Clifton Park | NY | 12065

Webpage Version Click here

FOR IMMEDIATE RELEASE
January 16, 2014

Like us on Facebook

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A2LA Extends Accreditation of Small Wind Certification Council

International Recognition of SWCC Ratings for Medium Wind Turbines

Clifton Park NY - Reflecting its increased organizational scope, the Small Wind Certification Council (SWCC) has obtained accreditation by American Association for Laboratory Accreditation (A2LA) to certify medium-sized wind turbine models, defined as newly manufactured, electricity-producing wind turbines with a swept area greater than 200 square meters (about 50 kW).

A2LA's extension grants accreditation for SWCC's recently expanded Wind Turbine Performance Certification program that provides certified power and acoustic performance for medium wind turbines in accordance with IEC 61400-12-1 (Power) and IEC 61400-11 (Acoustics). In 2012, the Small Wind Certification Council (SWCC) obtained ISO Guide 65:1996 accreditation from the American Association for Laboratory Accreditation (A2LA) to certify small wind turbines to AWEA Standard 9.1-2009.

Accreditation to ISO Guide 65 ensures the universal recognition of SWCC turbine certifications worldwide, while ensuring that certification activities are conducted impartially, systematically and in a uniform manner. Guide 65 ensures that the resulting product certifications are consistent with international standards and based on objective testing.

"We are pleased that A2LA has confirmed SWCC's technical competence for our expanded scope and quality management system's operation as an accredited certification body covering this growing segment of the distributed wind market," noted SWCC Executive Director Larry Sherwood.

SWCC's updated A2LA accreditation certificate number 3299.01 and accreditation scope are available at www.a2la.org/scopepdf/3299-01.pdf.

In Related News: SWCC recently granted its first Wind Turbine Power Performance Certification for a medium wind turbine under IEC 61400-12-1 to the Endurance Wind Power E-3120, announced in the December SWCC Newsletter.

About SWCC: SWCC certifies wind turbine models that meet or exceed the requirements of specified Standards as an independent confirmation that wind turbine designs are tested and evaluated according to industry standards for performance and safety. Designed to promote consumer confidence and mainstream acceptance of small and medium wind technology, SWCC certification standardizes North American reporting turbine energy and sound performance.

Certificates, ratings, and summary reports for SWCC certified turbine models, including tabulated power curves, acoustic data, and tower design requirements, along with a complete list of SWCC pending applicant turbine models, are available at www.smallwindcertification.org/for-consumer. SWCC updates its certified turbines table and application status table on its website as milestones are reached. Visit www.smallwindcertification.org or call 518-213-9440 for more information on SWCC certification.

# # #

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Small Wind Certification Council
Independent Certification of Wind Turbines

FOR IMMEDIATE RELEASE
June 5, 2014

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A2LA Accredits Small Wind Certification Council, Again

ISO/IEC 17065 Allows Federal and International Recognition

Clifton Park NY - Signifying its successful completion of a thorough organizational assessment, the Small Wind Certification Council (SWCC) has obtained a 2-year renewal of its accreditation by American Association for Laboratory Accreditation (A2LA) to certify small and medium-sized wind turbine models, now according to the new ISO/IEC 17065 international standard for product certification bodies.

ACCREDITED
Certificate number 3299.01

The renewal and update follows SWCC's recent expansion of scope providing certification of power and acoustic performance for medium wind turbines - defined as newly manufactured, electricity-producing wind turbines with a swept area greater than 200 square meters (about 50 kW) - in accordance with IEC 61400-12-1 (Power) and IEC 61400-11 (Acoustics).

SWCC first obtained ISO/IEC Guide 65:1996 accreditation from A2LA in 2012 to certify small wind turbines to AWEA Standard 9.1-2009. Guide 65 has since been updated to ISO/IEC 17065, and the SWCC certification system has been updated to reflect changes to this standard.

Accreditation to ISO/IEC 17065 allows the universal recognition of SWCC turbine certifications worldwide, while ensuring that certification activities are conducted impartially, systematically and in a uniform manner. The accreditation confirms that resulting product certifications are consistent with international product certification standards and based on objective testing and evaluation.

"We are pleased that A2LA has recognized our quality system and re-confirmed SWCC's technical competence for our full scope and updated quality management system's operation as an accredited certification body serving the distributed wind market," noted SWCC Executive Director Larry Sherwood.

SWCC's renewed A2LA accreditation certificate, valid through June 30, 2016, and updated accreditation scope are available at www.a2la.org/scopepdf/3299-01.pdf.

In Related News: The U.S. Department of Energy has issued a 4-page guidance memorandum on "Quality Assurance through Wind Turbine Certification Requirements to 17 federal agencies recommending that public funds be provided only for certified wind turbines and that local planning officials, utilities, banks, state energy offices and federal agencies adopt certification requirements as a means of protection against untested technologies, unverified claims about turbine performance, and equipment failures. As a follow-up, the Distributed Wind Energy Association has updated its recommended certification criteria specifying that certification reports should be publicly released by organizations accredited to ISO/IEC 17065.

About SWCC: *SWCC certifies wind turbine models that meet or exceed the requirements of specified Standards as an independent confirmation that wind turbine designs are tested and evaluated according to industry standards for performance and safety. Designed to promote consumer confidence and mainstream acceptance of small and medium wind technology, SWCC certification standardizes North American reporting turbine energy and sound performance. Certificates, ratings, and summary reports for SWCC certified turbine models, including tabulated power curves, acoustic data, and tower design requirements, along with a complete list of SWCC pending applicant turbine models, are available at www.smallwindcertification.org/for-consumer. SWCC updates its certified turbines tables and application status table on its website as milestones are reached. Visit www.smallwindcertification.org or call 518-213-9440 for more information on SWCC certification.*

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Small Wind Certification Council | 56 Clifton Country Road, Suite 202 | Clifton Park | NY | 12065

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Small Wind Certification Council
Independent Certification of Wind Turbines

FOR IMMEDIATE RELEASE
January 20, 2015

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IRS Issues New Guidance for Small Wind Turbines to Qualify for 30% Tax Credit

The U.S. Internal Revenue Service (IRS) has issued Notice 2015-4 providing new performance and quality standards that require certification of small wind turbines - defined as having a nameplate capacity of up to 100 kW - in order to qualify for the 30% federal Investment Tax Credit (ITC).

"Certification helps consumers distinguish between the good, the bad, and the untested wind turbines on the market and helps consumers accurately compare the wide variety of products available," explained SWCC Executive Director Larry Sherwood. Certification requirements are helping government agencies ensure that public funds spent on distributed wind installations are spent on safe, quality systems, a means of consumer protection against untested technologies, unverified claims about turbine performance, and equipment failures.

Effective for small wind turbines acquired or placed in service after January 26, 2015, the guidance requires that qualifying small wind manufacturers provide certification to either: (1) American Wind Energy Association Small Wind Turbine Performance and Safety Standard 9.1-2009 (AWEA); or (2) International Electrotechnical Commission 61400-1, 61400-12, and 61400-11 (IEC). The certification must be issued by an eligible certifier, defined as a third party that is accredited by the American Association for Laboratory Accreditation or other similar accreditation body. Documentation establishing that the turbine meets the new requirements must be provided to taxpayers in order to claim the credit. SWCC certifications help manufacturers meet these new requirements.

The addition of performance and quality assurance requirements at the Federal level indicates that certification is now a trusted and useful tool in protecting consumers and helping to ensure the successful implementation of distributed wind projects in the U.S. This step is a positive move that fits into the overall strategy the distributed wind industry as a whole has been pursuing for many years to strengthen the sector's credibility and reliability.

An April 2014 memorandum from José Zayas, Director of the U.S. Department of Energy's Wind and Water Power Technologies Office, also encourages that the use of public funds be provided only for wind turbines that have been tested and certified for safety, function, performance, and durability.

Many suppliers of distributed wind turbines have been actively pursuing certification since 2010. More than a dozen models have completed the process and several others are actively under way. These companies are well positioned to comply with the new IRS requirements. The Interstate Renewable Energy Council (IREC) maintains a list of ratings of fully certified turbines for the U.S. market.

Notice 2015-4 is posted at: http://www.irs.gov/pub/irs-drop/n-15-04.pdf The notice reminds manufacturers that an erroneous certification may result in penalties: (a) Under section 7206 for fraud and making false statements; and (b) Under section 6701 for aiding and abetting an understatement of tax liability ($1,000 per return on which a credit is claimed in reliance on the certification).

About SWCC: *SWCC certifies wind turbine models that meet or exceed the requirements of specified Standards as an independent confirmation that wind turbine designs are tested and evaluated according to industry standards for performance and safety. Designed to promote consumer confidence and mainstream acceptance of small and medium wind technology, SWCC certification standardizes North American reporting turbine energy and sound performance. Certificates, ratings, and summary reports for SWCC certified turbine models, including tabulated power curves, acoustic data, and tower design requirements, along with a complete list of SWCC pending applicant turbine models, are available at www.smallwindcertification.org/for-consumer. SWCC updates its certified turbines tables and application status table*

on its website as milestones are reached.

Photos: *Photos of certified wind turbines are available at the SWCC Image Gallery.*

Small Wind Certification Council | 56 Clifton Country Road, Suite 202 | Clifton Park | NY | 12065

SMALL WIND CERTIFICATION COUNCIL

Small Wind Turbine Certification Policy

SWCC1
03 March 2015

Small Wind Certification Council (SWCC)
56 Clifton Country Road, Suite 202
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Contents

A. Introduction

The Small Wind Certification Council (SWCC) is an independent, third-party certification body that certifies wind turbines. For turbines with a swept area that is less than or equal to 200 m^2, SWCC offers certification to the requirements of the AWEA *Small Wind Turbine Performance and Safety Standard* (AWEA Standard).

SWCC Certification is based on the evaluation of both a wind turbine structural analysis and field testing. Field testing includes a power performance test, acoustic sound test, safety and function test, and duration test. The results of such field testing and structural analysis are documented in a final report, which is submitted to SWCC for review. SWCC Certification is granted on the basis of an assessment of the completeness and correctness of the final report, and whether the SWT conforms to all requirements of the AWEA Standard.

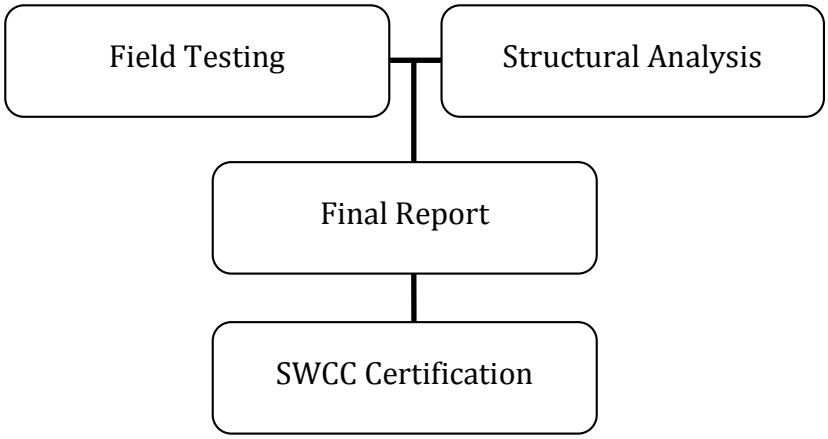


Figure A – Modules of SWCC Certification

B. Purpose and Scope

1. Purpose. This Certification Policy (Policy) has been adopted by the SWCC Board of Directors to define appropriate rules and procedures for the voluntary certification of eligible SWTs while ensuring the impartiality and objectivity of SWCC's certification decisions. The Policy is the sole and exclusive means by which an Applicant may apply for SWCC Certification.

   The Policy serves to define the process and requirements for:

   a. Structural analysis of a SWT for the purpose of certification;

   b. Testing of a SWT for the purpose of certification;

c. Reporting requirements related to such testing and analysis;

d. SWCC Certification of a SWT;

e. Maintenance and renewal of SWCC Certification;

f. Consumer labeling of a certified SWT; and,

g. Reviewing and resolving certification deficiencies and violation matters.

2. Scope. SWCC certification requirements, evaluations, and decisions are based on appropriate standards and information specifically related to the purposes and scope of the certification. The scope of this Policy is to establish an objective and otherwise appropriate process to assess and certify that a SWT meets the requirements of the AWEA *Small Wind Turbine Performance and Safety Standard.*

C. Definitions

The following definitions have been adopted by SWCC for the identified terms used in this Policy.

1. Annual energy production. An estimate of the total energy production of a wind turbine during a one (1) year period as calculated by applying the measured power curve to a Rayleigh frequency distribution at a specified hub height annual average wind speed, assuming 100 % availability.

2. AWEA Standard. AWEA *Small Wind Turbine Performance and Safety Standard* (AWEA Standard 9.1 – 2009), hereinafter referred to as the AWEA Standard. The AWEA Standard incorporates, in part, the IEC 61400 series of Standards relevant to SWTs with regard to Power Performance (IEC Standard 61400-12-1), Acoustic Noise (IEC Standard 61400-11), and Design Requirements (IEC Standard 61400-2).

3. BWEA Standard. BWEA *Small Wind Turbine Performance and Safety Standard,* hereinafter referred to as the BWEA Standard. The BWEA Standard incorporates, in part, the IEC 61400 series of Standards relevant to SWTs with regard to Power Performance (IEC Standard 61400-12-1), Acoustic Noise (IEC Standard 61400-11), and Design Requirements (IEC Standard 61400-2). *Note*: Now replaced by the Renewable UK *Small Wind Turbine Standard (RUK Standard).*

4. JSWTA Standard. JSWTA *Small Wind Turbine Performance and Safety Standard* (JSWTA 0001), hereinafter referred to as the JSWTA Standard. The JSWTA Standard incorporates, in part, the IEC 61400 series of Standards relevant to SWTs with regard to Power Performance (IEC Standard 61400-12-1), Acoustic Noise (IEC Standard 61400-11), and Design Requirements (IEC Standard 61400-2).

5. Peak Power. Highest bin-averaged power output of all filled wind speed bins per the power curve from IEC 61400-12-1, as modified by the AWEA Standard. Also termed "nameplate capacity".

6. Qualified Testing Organization. A testing organization that is qualified under this Policy and applicable SWCC requirements to perform SWT testing for the purpose of certification. In order to receive SWCC Qualified Testing Organization status, the organization must demonstrate compliance with all relevant requirements of the AWEA Standard and ISO/IEC Standard 17025.

7. RUK Standard. Renewable UK *Small Wind Turbine Standard,* hereinafter referred to as the RUK Standard. The RUK Standard incorporates, in part, the IEC 61400 series of Standards relevant to SWTs with regard to Power Performance (IEC Standard 61400-12-1), Acoustic Noise (IEC Standard 61400-11), and Design Requirements (IEC Standard 61400-2). *Note*: While the RUK Standard has replaced the BWEA Standard, both are incorporated into this Policy to align with the transition plan defined by MCS.

D. Policy Abbreviations

1. AC: alternating current

2. AEP: annual energy production

3. AWEA: American Wind Energy Association

4. BWEA: British Wind Energy Association

5. Cp: power coefficient

6. ed: edition

7. HAWT: horizontal axis wind turbine

8. IEC: International Electrotechnical Commission

9. ISO: International Organization for Standardization

10. JSWTA: Japanese Small Wind Turbine Association

11. MCS: Microgeneration Certification Scheme

12. OTF: operational time fraction

13. RUK: Renewable UK

14. SWT: small wind turbine

15. VAWT: vertical axis wind turbine

E. Certification Commission

The Certification Commission (Commission) has been established by the SWCC Board of Directors to supervise the evaluation of turbines for SWCC Certification. The structure and composition of the Commission has been developed to ensure impartiality in all matters pertaining to its role.

The Commission is composed of three (3), qualified and independent industry experts appointed by the Board of Directors. The Commission has been delegated the authority to review and approve SWT certification applications in consultation with the Technical Director. Among other responsibilities, and consistent with this Policy, the Commission will: review each certification application and relevant supporting information under the applicable SWCC Certification standards, in consultation with the Technical Director; determine by majority vote whether each certification application is granted, conditionally granted, or rejected; determine whether each certification renewal application is granted, conditionally granted, or rejected; determine whether a Certification Holder must submit a new certification application when a product has been modified; initiate, review, and resolve all deficiency and violation matters under this Policy related to Certification Holders and Applicants, and determine whether to issue certification sanctions or other appropriate actions; require the submission of additional application renewal information when appropriate; and, review and determine the appropriateness of design changes related to certified SWTs.

F. Certification Eligibility Requirements

1. General Policy Requirements. SWCC eligibility polices are administered in an objective and non-discriminatory manner, and SWCC provides certification services to any Applicant that satisfies the conditions in this Policy. SWCC will not impede or inhibit Applicant access to SWCC services in any unlawful or improper preferential manner.

   SWCC makes its services accessible to all Applicants whose activities fall within its declared field of operation. All Application and Certification Fees will be applied uniformly to all Applicants. Access to SWCC certification is not conditioned on the Applicant's size, membership in any association or group, nor the number of certifications previously issued by SWCC.

2. Applicant Eligibility. SWCC Certification Applications may be submitted only by the holder of all ownership rights in and to the SWT (SWT Manufacturer), or the authorized designee of such SWT Manufacturer. If the Applicant is such an authorized designee, the Applicant must submit written proof of authorization from the SWT

Manufacturer to seek SWCC certification. SWCC will have the sole and exclusive right to determine whether such a designee is properly authorized to seek SWCC certification.

If the Applicant is an authorized designee, the non-Applicant SWT Manufacturer will be required to accept and agree to comply with all terms of SWCC policies, including the SWCC Small Wind Turbine Certification Policy and the SWCC Trademark and Certification Mark Use Policy, prior to SWCC issuing SWT Certification.

3. Equipment Eligibility. Turbines eligible for SWCC Certification must meet the requirements defined in the AWEA Standard. This AWEA document is available to Applicants and the public on the SWCC website at: www.smallwindcertification.org.

   Eligible SWTs are defined as newly-manufactured, electricity-producing wind turbines with a swept area that is less than or equal to 200 m^2. Previous versions of a SWT design that are no longer available to the market are not eligible for SWCC certification. Except as required by the AWEA Standard, towers and foundations are not part of the scope of SWCC Certification.

   Applicants may submit one (1) Application for multiple SWT configurations of the same turbine type, provided that the SWTs are similar in design and other significant characteristics. In this regard, SWCC will make every reasonable effort to consolidate the testing requirements applicable under this Policy, based on SWCC's review of the information contained in an Applicant's Notice of Intent to Submit an Application. However, each SWT configuration will be issued a separate certification, provided all certification eligibility requirements are met.

4. Certification Eligibility. A turbine is eligible for certification if all of the following requirements are satisfied in full:

   a. The SWT is compliant with the AWEA Standard in all applicable respects;

   b. The SWT has been tested properly by a Qualified Testing Organization consistent with this Policy and the AWEA Standard, and such tests demonstrate that the SWT is compliant with the AWEA Standard;

   c. A structural design analysis of the SWT has been performed consistent with this Policy and the AWEA Standard, and such analysis demonstrates that the turbine is compliant with the AWEA Standard;

   d. All other SWCC Certification requirements and conditions have been satisfied;

   e. The Applicant has submitted a complete Notice of Intent to Submit an Application to SWCC;

f. The Applicant has signed a Certification Agreement with SWCC, which details the responsibilities of the Applicant and SWCC with respect to the certification application review process;

g. The Applicant has submitted a complete SWT Certification Application to SWCC;

h. The Applicant has submitted all additional information and materials required by the Certification Commission or the Technical Director;

i. The Applicant has submitted all required fees in full; and,

j. The Certification Commission has determined that the turbine is eligible for certification, and grants certification to the SWT.

5. Conditional Temporary Certification.

a. Under certain limited circumstances, SWCC may grant Conditional Temporary Certification (Conditional Certification) to a SWT. Such Conditional Certification is time-limited and will be effective for a period of not more than twelve (12) months.

b. SWCC recognizes that certain IEC Standards, the BWEA/RUK Standard, and the JSWTA Standard generally are consistent with the AWEA Standard. Based on this recognition of the IEC, BWEA/RUK, and JSWTA Standards, and in order to be eligible for Conditional Certification, the following requirements must be satisfied:

1. The testing and analysis of the SWT must have been performed by a Qualified Testing Organization consistent with the following Standards:

a) IEC 61400 series of Standards: IEC Standard 61400-2 (Design Requirements); IEC Standard 61400-11 (Acoustic Noise); and, IEC Standard 61400-12-1 (Performance);

b) BWEA Standard or RUK Standard; or,

c) JSWTA Standard;

2. The SWT must be certified by a certification body that is accredited to provide product conformity certification of small wind turbines under ISO/IEC 17065:2012. In order for SWCC to accept a SWT product certification under this Policy term, SWCC must have an agreement with the other certification body whereby SWCC and the organization

mutually accept the other's product certification information. SWCC reserves the right to refuse, or decline to accept, the certification body's certification determinations, and evaluate all Applicant SWT test reports and analysis data to ensure conformity with the SWT Certification Policy requirements.

3. The Applicant has signed a Certification Agreement with SWCC, which details the responsibilities of the Applicant and SWCC with respect to the certification application review process.

4. For turbines certified to the BWEA/RUK Standard, the Applicant must submit to SWCC the BWEA/RUK Standard (MCS) Summary Report, which SWCC will publish on the SWCC web site.

c. Conditional Certification may be granted by SWCC where a SWT has been tested and analyzed pursuant to the IEC 61400 series of Standards, the BWEA/RUK Standard, or the JSWTA Standard (which are similar to the AWEA Standard); however, certain requirements of the AWEA Standard have not been met.

If Conditional Certification is granted, SWCC may require that the Applicant satisfy identified conditions or additional requirements within the twelve (12) month Conditional Certification period in order for the SWT to be eligible to apply for full SWCC Certification.

d. At the end of the temporary certification period, the Conditional Certification will expire. Conditional Certifications may not be re-issued.

e. An Applicant may apply for full SWCC Certification at any time during the Conditional Certification period by demonstrating that all conditions and certification eligibility requirements established by SWCC policies have been satisfied.

f. Upon request, SWCC will publish an Applicant's Conditional Certification status on the SWCC website. The SWCC Certificate, Consumer Label and SWCC Summary Report will not be published when Conditional Certification is granted. These documents and materials will be published only when full certification is granted by SWCC.

6. <u>Optional Limited Power Performance Certification.</u>

a. Upon request, and conditioned upon application for full SWCC certification, SWCC may grant Limited Power Performance (LPP) Certification to a SWT prior to granting full SWCC Certification. LPP Certification is time-limited and will be effective for a period of not more than eighteen (18) months. If full certification is not granted to the SWT by or before the end of this 18-month

period, or the Applicant withdraws its SWCC certification application, the LPP Certification will terminate.

b. In order for SWCC to evaluate the power performance of a SWT, the Applicant must submit a power performance test report to SWCC. A technical review of the power performance test report will be conducted by the Certification Commission to verify conformance with the AWEA Standard.

c. LPP Certification may be granted by SWCC where a SWT has completed a power performance test by a Qualified Testing Organization in accordance with AWEA Standard requirements. If testing is performed by a non-accredited Testing Organization, a Test Site Evaluation must be completed prior to granting LPP Certification.

d. Once LPP Certification is granted, SWCC will publish a list of all SWTs that have been certified for power performance with test results and date that LPP Certification will start and terminate. Published test results include the power curve and table, AEP curve and table, AWEA Rated Annual Energy, and AWEA Rated Power and Peak Power.

e. With respect to advertising and business materials, an Applicant whose SWT has been granted LPP Certification may represent that: the SWT's power performance rating is certified by SWCC; and/or, the SWT has been granted Limited Power Performance (LPP) Certification by SWCC. Applicants whose SWT have been granted this limited certification are not authorized to represent, give the impression, or otherwise suggest, that the SWT is fully certified by SWCC, i.e., that the SWT has received full SWCC certification.

f. LPP Certification is an optional service offered to Applicants for an additional fee.

G. Certification Fees

All SWCC Certification fees are established by the SWCC Board of Directors, or its authorized designee. The SWCC Certification Fee Schedule is provided in Policy Annex E. All current fees are subject to change. Fees may be paid by check or by wire transfer. Checks must be in U.S. funds drawn on a U.S. bank and payable to Small Wind Certification Council.

1. Preliminary Review Fee. A non-refundable fee paid by the Applicant with the Notice of Intent to Submit an Application. This fee satisfies all costs related to: an initial review of the SWT design and test plans concerning the SWT seeking certification; and, the development of the Certification Agreement(s).

2. Test Site Evaluation Fee. A non-refundable fee paid by the Applicant related to the on-site evaluation of a non-accredited testing organization; or the on-site evaluation

and inspection of an accredited testing organization, if such an evaluation is deemed necessary by SWCC to fulfill the requirements of this Policy (see Section I.2 and I.3). This fee will be invoiced to the Applicant and must be paid prior to scheduling the evaluation.

Any additional site evaluation expenses to be charged will be determined by SWCC based upon the actual costs incurred to complete the evaluation. Additional expenses related to site evaluation will be payable upon completion of the Test Site Evaluation. If the evaluation identifies deficiencies requiring corrective actions, additional fees will apply for any necessary SWCC reevaluation of the Applicant's completion of the corrective actions.

3. Test Site Travel Expenses. Non-refundable expenses paid by the Applicant related to the travel of SWCC representatives with respect to the Test Site Evaluation. Such expenses will be estimated in accordance with the SWCC Travel Policy and will be charged to the Applicant before the Test Site Evaluation has been scheduled. These expenses must be paid prior to scheduling the evaluation. Eligible travel expenses include:

    a. Airfare;

    b. Railroad fare;

    c. Car rental and fuel;

    d. Taxi and bus fare;

    e. Parking;

    f. Tolls;

    g. Meals and incidental expenses per federal rates;

    h. Person mileage at the federal rate; and,

    i. Lodging.

4. Certification Application Fee. A non-refundable fee paid by the Applicant with the Certification Application. This fee satisfies the costs related to: the technical review of test and structural analysis reports; the resolution of application issues; Certification Commission application review; labeling; and, the publishing of SWT data.

5. Conditional to Full Certification Fee. A non-refundable fee paid by an Applicant seeking to convert Conditional Certification to full Certification. This fee is determined by SWCC based on the specific items that were not determined to be in

compliance with the AWEA Standard, and that require evaluation in order to meet the eligibility requirements for SWCC Certification.

6. Annual Certification Renewal Fee. A non-refundable fee paid by the Certification Holder with the required Annual Certification Report.

7. Limited Power Performance Certification Fee. A non-refundable fee paid by an Applicant seeking Limited Power Performance Certification for a SWT.

8. Reinstatement Fee. A non-refundable fee paid by an Applicant or Certification Holder seeking reinstatement pursuant to section O of this Policy.

9. Certification Reapplication Fee. A non-refundable fee paid by an Applicant submitting a Petition to Reapply for Certification pursuant to section O8 of this Policy.

H. Application Requirements and Actions

In order to complete the SWCC Certification application process, each Applicant must submit the following completed application materials.

1. Notice of Intent to Submit an Application. An Applicant intending to seek SWCC Certification will first submit a Notice of Intent to Submit an Application (Notice of Intent). After receiving this Notice of Intent, SWCC will review the details of the SWT to be certified and the plans for testing. SWCC will use this information to determine the Certification Fee and develop a Certification Agreement. Guidelines for preparing the Notice of Intent are provided in Policy Annex B.

   An SWCC Configuration Description Form will be included in the Application materials. This Form must be completed for each turbine seeking SWCC Certification and must be submitted with the Notice of Intent.

2. Certification Agreement with Applicant. After acceptance of the Notice of Intent by SWCC, the Applicant will sign an Agreement with SWCC, which provides detailed information concerning: the turbine to be certified; the test plans; and, the roles and responsibilities of each party. As part of this Agreement, the Applicant must agree to provide all design documents and raw data, or subsets of processed data (e.g., results for a particular date range), in a suitable format, if requested by SWCC. This Certification Agreement will be presented to the Applicant following the review of the Notice of Intent.

3. Testing Agreement with Testing Organization. Testing organizations that intend to perform testing for certification must sign a Testing Agreement with SWCC, which provides detailed information concerning: the turbine to be certified; the test plans; and, the roles and responsibilities of each party. The Testing Agreement will be

presented to the Testing Organization after the Applicant has signed the Certification Agreement.

4. Certification Application. Once all eligibility conditions have been satisfied and all required testing and reporting have been completed, the Applicant will submit a complete Certification Application, including the final test report, to SWCC.

5. Publication of Application Status. In the Notice of Intent, an Applicant may request to have the status of the Application published on the SWCC website. Following acceptance of the Certification Agreement, SWCC will publish on the SWCC website the Applicant's name, SWT model, and Application Status with the following status information:

   "Under Contract" which indicates that the Applicant has executed a Certification Agreement with the SWCC;

   "Under Test" which indicates that the SWT has been installed at the test site, commissioned, instrumented and is collecting data;

   "Reports Submitted" which indicates that the Applicant has submitted a complete Test and Analysis Report to the SWCC with a Certification Application; or

   "Conditional Temporary Certification" which indicates that SWCC has granted this certification as defined in Section F.5 of this Policy.

   Note: the date on which the Applicant has achieved each Application Status will be published on the SWCC website.

6. Inactive Status. A certification application will be placed on inactive status and removed from the SWCC website under the any one of the following conditions:

   a. The SWT has not yet achieved "Under Test" status after eighteen (18) months from the "Under Contract" date,

   b. The SWT has not yet achieved "Reports Submitted" status after two (2) years from the "Under Test" date, or

   c. After one (1) year from the "Reports Submitted" date SWCC has not yet granted, conditionally granted, or rejected certification.

   Any extensions to the time limits described above will be considered if adequate progress toward certification is demonstrated or good cause is shown, as described in writing to the Technical Director.

7. Certification Decision. SWCC will notify the Applicant of the Certification decision. If certification is not granted, SWCC will identify the reasons for the decision.

I. Qualified Testing Organizations

Qualified Testing Organizations must satisfy, and comply with, all relevant requirements of ISO/IEC Standard 17025: *General Requirements for the Competence of Calibration and Testing Laboratories*. In order to be eligible as a Qualified Testing Organization, the testing organization must be either: accredited under ISO/IEC Standard 17025 by an authorized third-party accreditation body with a scope that covers the required testing; or, evaluated and approved by SWCC under the ISO/IEC Standard, and other relevant standards identified in this Section. The three (3) types of Qualified Testing Organizations, and the related requirements, are as follows:

2. Accredited Testing Organization. Test reports will be accepted for turbines tested by an organization accredited to ISO/IEC Standard 17025 by an authorized national or international accreditation body. The scope of the accreditation must include testing to at least one of the following:

    a. The AWEA Standard;

    b. The BWEA Standard or RUK Standard; and/or,

    c. The IEC Standard 61400-2 (Design), 61400-11 (Acoustics), and 61400-12-1 (Performance).

    SWCC may conduct an on-site evaluation and inspection of the test facility and laboratory documentation to assure compliance with this policy and conformity with all standards referenced above.

3. Non-Accredited Testing Organization. For SWTs tested by a non-accredited testing organization, SWCC will perform an on-site audit of the test facility to determine suitability and competence, using ISO/IEC Standard 17025 as a guide. The audit will document conformance with the AWEA Standard, and will include:

    a. An evaluation of the testing organization's quality assurance system using ISO/IEC Standard 17025 as a guide. This quality audit will involve SWCC review and verification of the organization's: staff; procedures; instruments; calibrations; signal quality to data acquisition system; data quality procedures; and/or, validated data analysis procedures; and,

    b. An evaluation of the testing organization's test environment using the AWEA Standard as a guide. For power performance testing, this audit will include a review of the site assessment for obstacles and terrain per IEC Standard 61400-12-1.

If the testing organization fails to satisfy ISO/IEC Standard 17025 requirements, all testing performed on the SWT by that test facility, and all related test analysis reports, will be rejected by SWCC.

4. Manufacturer Testing. For turbines tested at a facility operated by the SWT Manufacturer, SWCC will conduct an on-site audit and evaluation for non-accredited testing organizations, consistent with the requirements of Policy Section I.2. In addition to the audit, the manufacturer must also agree to the following terms:

   a. Unannounced facility site inspections by SWCC;

   b. Periodic surveillance of data by SWCC; and,

   c. Development, maintenance, and enforcement of facility policies and procedures ensuring that all key personnel involved in the SWT testing, and the collection and reporting of data related to the SWT tests, are impartial and free from any undue commercial, financial, and other pressures that might influence their technical and independent judgment. In order to satisfy this requirement, the SWCC Manufacturer/Applicant must either: adopt the procedures identified in Annex I of this Policy; or, submit its policies and procedures concerning this requirement to SWCC for review and approval. SWCC retains the sole authority to accept, reject, or require modification of such SWT Manufacturer policies.

   If the test facility fails to satisfy relevant requirements of ISO/IEC Standard 17025 requirements, all testing performed on the SWT by that facility, and all related test analysis reports, will be rejected by SWCC.

J. Test and Analysis Report Requirements

1. Test and Analysis Reports submitted to SWCC must clearly and specifically state how each requirement of the AWEA Standard has been met with respect to the SWT tested. The following information and elements must be included in the final Test and Analysis Report in the format required by SWCC.

   a. Introduction. A brief summary of the turbine that was tested, including: serial number and control software revision; the date and location of testing; and, the standards and technical specifications that were followed.

   b. Reference Documents. All documents used in the production of the Test and Analysis Report.

   c. Summary Report. A summary report, which will be publicly available once a SWCC Certification has been granted, must include:

1. Tabulated AEP (kWh) vs. hub height annual average wind speeds (m/s) at sea level air density;

2. AEP curve (kWh) vs. hub height annual average wind speeds (m/s) at sea level air density;

3. Tabulated wind speed (m/s) and power data (kW) at sea level air density;

4. Graph of Power (kW) vs. wind speed (m/s) at sea level air density;

5. Measured sound pressure levels (per Section 9.4 of IEC 61400-11 ed.2);

6. AWEA Rated Annual Energy @ 5 m/s;

7. AWEA Rated Sound Level;

8. AWEA Rated Power @ 11 m/s;

9. Peak Power; and,

10. Summary of the manufacturer's tower design requirements.

d. Power Performance Test Report. The power performance test report must include:

1. Reporting requirements of Section 9 (Reporting Format) of IEC 61400-12-1, incorporating modifications in Section 2 of the AWEA Standard and Annex H of IEC 61400-12-1; and,

2. A summary of the data analysis tool(s) utilized in this test. These tools shall be made available for an SWCC audit.

e. Acoustic Test Report. The acoustic test report must include:

1. Reporting requirements of Section 9 (Information to be reported) of IEC 61400-11, incorporating modifications made in Section 3 of the AWEA Standard; and,

2. Description of any obvious changes in sound at high wind speeds where overspeed protection becomes active;

3. Characterization of any prominent tones observed during the test; and,

4. A summary of the data analysis tool(s) utilized in this test. These tools shall be made available for an SWCC audit.

f. Duration Test Report. The duration test report must include:

1. Test Start Date & Time;

2. Test End Date & Time;

3. Operational time fraction (OTF) (%);

4. Monthly summary of the OTF (%);

5. Explanation of any OTF classifications not clearly attributable to the conditions listed in Section 9.4.2.2 of IEC 61400-2 ed.2;

6. Verification of reliable operation during the test period;

7. Characterization of any tower vibrations observed during the test period;

8. Verification that the tower used in the duration test complies with the tower design requirements provided by the manufacturer;

9. SWT Class from Table 1 in IEC 61400-2;

10. Total months of operation (at least 6 months);

11. Total hours of power production in winds of any velocity (at least 2500 h);

12. Total hours of power production in winds of $1.2V_{ave}$ and above (at least 250 h);

13. Total hours of power production in winds of $1.8V_{ave}$ and above (at least 25 h);

14. Total hours in winds of 15 m/s and above (at least 25 h);

15. Average turbulence intensity at 15 m/s;

16. Maximum instantaneous wind speed during the test (m/s); and.

17. Power production degradation test results;

18. Results of the post-test detailed inspection of the SWT, including pictures of findings; and,

19. A summary of the data analysis tool(s) utilized in this test. These tools shall be made available for an SWCC audit.

g. Safety and Function Test Report. The safety and function test report must include:

1. Summary of the safety and function test per Section 9.6 of IEC 61400-2. Power control must be demonstrated by measured power and wind speed. Rotor speed control must be demonstrated by measured rotor speed and wind speed;

2. Summary of additional safety evaluation per Section 4.3 of the AWEA Standard; and,

3. All SWT manuals.

h. Structural Analysis Report. The information required by this Report section concerns a structural analysis of the SWT outside of any turbine testing by a Qualified Testing Organization. The identified information must be submitted by the Applicant in the manner specified below.

1. A licensed Professional Engineer or Chartered Engineer shall be commissioned by the Applicant to perform an evaluation of the structural analysis of the SWT. The structural analysis report shall be provided in a format that enables SWCC to properly review the structural evaluation methods used. The engineer shall represent and confirm, by a stamped letter, that:

a. All required load cases were modeled using acceptable methods as described in the AWEA Standard; and,

b. The major components of the SWT were adequately designed, based on the results of the above-reference load modeling and per the requirements described in the AWEA Standard. Major components include the:

1. blade root or blade connection point;

2. main shaft;

3. yaw axis (for HAWTs);

4. connection to the tower or support structure; and,

5. other components as required by SWCC following a review of the SWT design.

2. Dynamic Analysis. For single/dual speed SWT or any SWT that has exhibited tower dynamics problems during the duration test, the Applicant must provide an evaluation of potential dynamic interactions between turbine and tower, and must demonstrate that potentially harmful dynamic interactions will be avoided (e.g. a Campbell diagram for the major components of the SWT system and/or a dynamic behavior assessment per IEC 61400-2).

i. Log Book. A dedicated log book must be maintained during the testing. This log book must be submitted to SWCC when applying for Certification.

K. Labeling and Certificate

SWCC will prepare, and provide to Certification Holders, consumer product labels and certificates that are consistent with the AWEA Standard. Turbine ratings will be included on each SWCC Certificate and SWCC Consumer Product Label, consistent with the SWCC Certificate Format provided in Policy Annex A and the SWCC Consumer Product Label Format provided in Annex F.

L. Complaints and Disputes Related to SWT – Reporting and Records Requirement

As a condition of SWCC certification and certification renewal, each Certification Holder is required to report to SWCC all complaints and disputes (complaint matters), including any legal, government, or other third party communications received by the Certification Holder, questioning or objecting to the performance, operations, quality, durability, components, safety, power, compliance with SWCC certification standards, or any other aspect of the SWT. Such complaint matters must be reported to SWCC within thirty (30) days of Certification Holder's knowledge of such matter.

With respect to this reporting requirement, the Certification Holder must submit to SWCC a Complaint Matter Reporting form, as provided in Policy Annex J, which includes the following information:

- Identification of the complaining party, if known;
- A description of the nature of the complaint matter; and,
- An explanation of the Certification Holder's response to the complaint matter, including any corrective actions taken, and the resolution of the matter.

In addition to these information requirements, the Certification Holder must submit to SWCC copies of: all written complaint matter communications; the Certification Holder's response to such complaint matter(s); any additional communications between the complaining party, any involved government agency(ies), and the Certification Holder relating to the matter; and, the final resolution of the matter, if available.

SWCC will review all complaint matters related to the certified SWT in order to determine whether a Notice of Deficiency and Violation will be issued to the Certification Holder under Section O of this Policy.

M. Certification Renewal and Conditions

1. Period of Certification Validity. SWCC Certification is valid during the certification period so long as all Certification Policy conditions are met. Among others, the Certification Holder must satisfy the following conditions:

    a. The turbine has not been changed in any respect that significantly alters the original design approved in the SWCC Certification;

    b. Changes to the turbine design have been reported to SWCC by the Certification Holder as required by this Policy and the Certification Commission. All complaint matters, field failures and malfunctions of the SWT have been reported to SWCC consistent with this Policy;

    c. The Certification Holder is in compliance with all applicable SWCC policies, including the SWCC Trademark and Certification Mark Use Policy. All SWCC marks and labels have been used properly, and in a manner consistent with SWCC policies and AWEA Standard Section 7 (Labeling), which specifies the required use of the Rated Annual Energy, Power and Estimated Sound Level;

    d. The Certification Holder has complied with the Complaint and Dispute requirements of Section L; and,

    e. The Annual Certification Renewal Fee has been paid in full.

2. Certification Renewal Requirements.

    a. Annual Certification Report. In order to maintain SWCC Certification, the Certification Holder is required to prepare and submit an Annual Certification Report to SWCC each year, at least 45 days before the anniversary of the date that the SWCC certification was issued. In order to be accepted, the Annual Certification Report must include a complete and accurate explanation of the following information:

1. All abnormal operating experiences, equipment failures or malfunctions, and other problems related to the certified turbine;

2. All modifications to the certified SWT, including all hardware and software changes; and,

3. A summary list of all complaint matters identified in Section L of this Policy within the past twelve (12) months.

A sample Annual Certification Report Form is provided in Policy Annex G. The template provided in the Annex is for informational purposes only. A custom report form will be sent to the Applicant when Certification is granted.

The Technical Director will assess the Annual Certification Report information, and determine whether the Report satisfies the requirements of this Policy Section. If accepted, the Certification Holder will be notified of continued certification, and will receive an updated Certificate.

If the Technical Director identifies any concerns or anomalies related to the information in the Annual Certification Report, the matter will be referred to the Certification Commission, which will decide whether to accept the report and maintain certification for another year, or whether to require additional testing or other requirements in order to confirm the SWT's ongoing compliance and eligibility. If any SWT changes are deemed significant, then the Requirements of Section M.2.b below will apply. These results will be communicated to the Certification Holder in writing.

b. Significant SWT Modifications. In the event that a certified turbine is, or will be, modified in any significant respect, the Certification Holder must report such modification to SWCC in a timely and accurate manner, no more than thirty (30) days after such SWT design changes have occurred.

The Certification Holder is required to consult with the Technical Director to determine whether a product change is minor or significant. Thereafter, the Technical Director will consult with the Certification Commission to determine whether there is a material deviation from the initial certified turbine design that may significantly affect durability, function, or performance. Once SWCC determines whether a significant modification to the certified SWT has been proposed, SWCC may: require more information regarding the change; require a design analysis or partial design analysis; require re-testing or partial re-testing; require re-certification of the turbine; or, determine that the change is minor and no action is required. The Certification Holder must provide all required information and documentation to SWCC.

A sample Significant Modification Report Form is provided in Policy Annex H. The template provided in the Annex is for informational purposes only. A custom form will be sent to the Applicant when SWCC Certification is granted.

c. Annual Certification Renewal Fee. Payment of the Annual Certification Renewal Fee is required to maintain certification. In the event the information reported in the Annual Certification Report or the Significant Modification Report requires additional SWCC work or review, the Certification Holder will be charged separately for such SWCC costs and expenses, consistent with the applicable SWCC fee schedule.

3. Change in Ownership of WT. If ownership rights in and to the SWT changes, or the Certification Holder identified in the SWCC SWT Performance Certificate no longer has any rights in or to the certified SWT, a new SWCC Certification Agreement must be accepted by the new owner of the SWT to maintain the SWCC Certification, or the certification will terminate. A fee will be charged to complete transfer of SWCC certification.

N. Confidentiality of Applications/Conflict of Interest

1. Application Confidentiality. Certification Applications, and the information contained therein, will be treated as confidential material by SWCC. The review of Applications by SWCC staff, consultants, and Certification Commissioners will be confidential and conducted in private meetings. Prior to a certification determination and upon request by the Applicant, SWCC will publish the Applicant's name, SWT model, and Application Status, pursuant to Policy Section H.5. All other Application information will remain confidential until a certification determination has been issued by SWCC.

Once certification is granted, the following materials will be made available to the public: a Summary Report, as described in Policy Section J.1.c; the SWCC Certificate, consistent with Policy Annex A; and, the SWCC Consumer Product Label, consistent with Policy Annex F. All other turbine information will remain confidential.

2. Conflict of Interest. All SWCC representatives are required to disclose to the Certification Commission any potential conflict of interest related to a pending SWT Certification Application to the SWCC Executive Director, consistent with SWCC conflict of interest policies and agreements.

O. Certification Deficiency and Policy Violation Resolution Process

SWCC will review and resolve all matters involving: a potential failure of the Certification Holder to satisfy a requirement of this Policy; a complaint or similar communication received by the Certification Holder or SWCC concerning the SWT; and, any other dispute related to SWCC policies.

1. Notice of Potential Certification Deficiency or Policy Violation.

   The Certification Commission will issue a Notice of Deficiency and/or Notice of Policy Violation (Notice) to a Certification Holder where the Commission has determined that:

   a. the Certification Holder may have violated any requirement of this Policy; or,
   b. a deficiency may exist with respect to the Certification Holder's SWCC certification.

2. Required Response to Deficiency Notice. Within thirty (30) days of receipt of such Notice, the Certification Holder must: respond to each identified deficiency and/or Policy violation; provide all relevant information and materials; and, otherwise satisfy all requirements set forth in the Notice. Following the timely submission of a complete and accurate response to the Notice, all deficiency and violation matters will be resolved by the Certification Commission pursuant to this Policy Section.

3. Failure to Respond. In the event that the Certification Holder does not provide a timely, complete, and accurate response to a Notice, the Certification Commission may issue any sanction(s) or corrective action(s) authorized by this Policy, or any other applicable SWCC Policy. The Certification Holder must comply fully with all sanctions and/or corrective actions issued by the Commission.

4. Grounds for Sanction and Corrective Actions. The circumstances under which the Certification Commission may issue certification sanctions and/or corrective actions include, but are not limited to, the following:

   a. The Certification Holder has failed to satisfy an SWCC Policy requirement with respect to the Certification Holder's SWCC certification;

   b. The Certificate holder makes a material misrepresentation to SWCC;

   c. The Certification Holder makes a public misrepresentation concerning its activities, operations, or a tested product;

   d. The Certification Holder fails to comply with a condition of the certification;

   e. The Certification Holder violates, or acts contrary to, an SWCC Policy;

   f. The Certification Holder fails to remit required certification fees and charges to SWCC;

   g. Other good and reasonable cause exists and supports the issuance of sanctions or corrective actions under this Policy.

5. Certification Deficiency and Policy Violation Decisions. Based on an objective and complete review of the information received, the Certification Commission, in its sole discretion, will determine whether a certification deficiency or Policy violation exists, or whether to dismiss the Notice. Upon the finding of any such deficiency or violation, the Certification Commission will determine the severity of such deficiency(ies) or violation(s), and issue a Deficiency and/or Violation Decision. In its sole discretion, the Commission may issue one or more of the following actions:

   a. Private or Public Reprimand.

   b. Conditions of Continued Certification.

   c. Certification Probation. The term of certification probation will be for a period of up to six (6) months. Certification probation status will not be published on the SWCC website. During the period of SWCC certification probation, the SWCC certification remains in effect.

   d. Certification Suspension. The term of a certification suspension will be for a period of at least six (6) months, and a maximum of thirty-six (36) months. Notice of certification suspension will be published on the SWCC website. During the period of SWCC certification suspension, the Certification Holder is not permitted to use any SWCC Certification Mark or make any representation concerning certification by, or affiliation with, SWCC with respect to the relevant SWT that is the subject of the deficiency or Policy violation. In addition, the Certification Commission may require that the Certification Holder perform certain, appropriate corrective actions related to the suspension.

   e. Certification Revocation. Upon certification revocation, all rights of the Certification Holder to SWCC Certification will terminate in all respects, and the SWT will be removed from the listing of SWCC certified turbines on the SWCC website. Notice of certification revocation will be published on the SWCC website. The Certification Holder is not permitted to use any SWCC Certification Mark, or make any representation concerning certification by, or affiliation with, SWCC with respect to the SWT that is the subject of the deficiency or Policy violation.

6. Probation Order/Reinstatement. Following the expiration of a final Certification Probation Decision and Order issued under Policy Section O.5.c, the Certification Commission will do the following: if the Certification Holder has satisfied the terms of probation in full, verify that the probation has been completed and reinstate the Certification Holder to full certification status; or, if the Certification Holder has not satisfied the terms of probation in full, determine whether the probation order will continue, and/or issue additional, appropriate sanctions or actions. A reinstatement fee may apply for any necessary SWCC evaluation of the Applicant's completion of the

corrective actions and processing of reinstatement, consistent with the Certification Fee Schedule.

7. Suspension Order/Reinstatement Request. After the expiration of a final Certification Suspension Decision and Order issued under Policy Section O.5.d, the Certification Holder may submit a Request for Reinstatement (Reinstatement Request) to the SWCC Executive Director for review by the Certification Commission.

   a. Contents of Reinstatement Request. The Reinstatement Request must include the following information: a statement of the reasons that the Certification Holder believes support or justify the acceptance of the Reinstatement Request; and, copies of any relevant materials which support the Request. The Certification Commission may require any additional information or documents related to its review of the Reinstatement Request. A reinstatement fee may apply for any necessary SWCC evaluation of the Applicant's completion of the corrective actions and processing of reinstatement, consistent with the Certification Fee Schedule.

   b. Certification Reinstatement Decision. Within thirty (30) days of the conclusion of its review of a Reinstatement Request, or as soon as practical, the Certification Commission will prepare and issue a written Reinstatement Decision and Order explaining its decision with respect to the Request. The final Decision and Order will indicate: whether the Reinstatement Request is granted, denied, or continued to a later date; whether all certification deficiencies and Policy violations identified in the Deficiency and/or Violation Decision have been appropriately remedied and resolved; or, whether additional deficiencies or Policy violations exist justifying the continuation of the Suspension Order, and/or issuance of additional certification actions. If appropriate, the Decision and Order will indicate any conditions of SWCC certification.

8. Revocation Order/Reapplication Petition. Two (2) years after the date of a final Certification Revocation Decision and Order issued under Policy Section O.5.e, the SWT Manufacturer, or its authorized designee, may submit a Petition to Reapply for Certification (Reapplication Petition) to the SWCC Executive Director for review by the Certification Commission.

   a. Contents of Reapplication Petition. The Reapplication Petition must include the following information: a statement of the reasons that support or justify the acceptance of the Reapplication Petition, copies of any relevant materials which support the Petition, and the Certification Reapplication Fee. The Certification Commission may require any additional information or documents related to its review of the Reapplication Petition.

   b. Certification Reapplication Decision. Within thirty (30) days of the conclusion of its review of a Reapplication Petition, or as soon as practical, the

Certification Commission will prepare and issue a written Reapplication Decision and Order explaining whether the Petition is accepted, denied, or continued to a later date. If the Reapplication Petition is accepted, then the SWT Manufacturer, or its authorized designee, may submit a new Notice of Intent to Submit an Application for SWCC Certification.

P. Deficiency and Violation Decision Appeals

A Certification Holder may appeal an adverse Certification Deficiency or Policy Violation Decision, or any part thereof, to the SWCC Appeals Committee, pursuant to the terms of the SWCC Certification Appeal Policy.

Q. Voluntary Termination

A Certification Holder may elect to voluntarily terminate its SWCC Certification by submitting a written request for certification termination to SWCC. Should a Certification Holder attempt to voluntarily terminate SWCC certification during the course of any complaint, dispute, or deficiency review, SWCC reserves the exclusive right to continue the matter to a final resolution, consistent with this Policy. In its sole discretion, SWCC may require that a Certification Holder agree to certain terms and conditions related to the voluntary termination of SWCC certification.

Upon SWCC's acceptance of a voluntary termination request, the Certification Agreement with SWCC will be terminated, the SWT will be removed from the listing of SWCC certified turbines on the SWCC website, and notice of the voluntary certification termination will be published on the SWCC website. The Certification Holder is no longer authorized to use the SWCC Certification Mark(s) and consumer product labels, and may not make any representations concerning certification by, or affiliation with, SWCC with respect to the SWT that is the subject of the certification termination.

Annex A: SWCC Certificate Format

To be made publicly available once a SWCC Certification has been granted

This Certificate is issued to:

XXXX
Street
City
Country

For the wind turbine:

XXXX

This Certificate represents that the above-identified Small Wind Turbine (SWT) is in conformance with the AWEA *Small Wind Turbine Performance and Safety Standard* (AWEA Standard 9.1 – 2009).

Changes to the Small Wind Turbine system design are to be approved by SWCC. If changes are made to the SWT without approval, this Certificate is not valid and is not in effect.

The wind turbine specifications relevant to this Certificate are provided on the following page.

This Certificate is valid from [Date] to [Date]. Certification must be renewed annually.

Signature

_____ _____

SWCC Executive Director for the Certification Commission Date

SWCC Certificate, Page 2

Wind Turbine Specifications:

Turbine parameters

Manufacturer .....
Model .....
Power Form .....
Rotor Diameter .....[m]
Rotor Swept Area .....[m^2]
Cut-In Wind Speed.....[m/s]
Cut-Out Wind Speed .....[m/s]
Maximum Power .....[kW]
Maximum Voltage .....[V]
Maximum Current(s) .....[A]

Turbine Ratings

AWEA Rated Annual Energy.....[kWh]
AWEA Rated Sound Level .....[dB(A)]
AWEA Rated Power .....[kW @ 11 m/s]
Peak Power (Nameplate Capacity).....[kW @ m/s]

Design and Duration

Turbine design and duration test comply with IEC SWT class XX for average wind speeds (V_{ave}) of X.X m/s and reference wind speeds (V_{ref}) of X.X m/s.

Small Wind Certification Council (SWCC)
56 Clifton Country Road, Suite 202
Clifton Park, NY 12065
www.smallwindcertification.org

Notice of Intent to Submit an Application for SWCC Certification

Please submit this form and all attachments electronically to the e-mail address below. If necessary, send a hard copy of this form with payment of the Preliminary Review Fee to the mailing address below:

To: Small Wind Certification Council
56 Clifton Country Road, Suite 202
Clifton Park, NY 12065
info@smallwindcertification.org

Please use the legal corporate or other business name for the Company and the official corporate address.

Date (mm/dd/yyyy) _____

Applicant Name _____

Company _____

Description of Legal Status _____

(e.g. LLC organized in the State of xxxxx)

Website _____

Address 1 _____

Address 2 _____

City, State, Zip, Country _____

Email _____

Phone 1 _____

Phone 2 _____

Re: **Notice of Intent to Submit an Application for SWCC Certification**

The Applicant identified above represents the following:

1. The Applicant is the designer and/or manufacturer of the SWT, or the authorized designee of the designer/manufacturer. **Please indicate the Applicant type below:**

   ☐ Holder of all ownership rights in and to the SWT (SWT Manufacturer)

   ☐ Authorized Designee of the SWT Manufacturer (include written proof of authorization with this application)

2. The rotor swept area is **200 m² or less.**

3. The Applicant has:

   ✓ Received and accepted the SWCC Small Wind Turbine Certification Policy;
   ✓ Received and accepted the AWEA *Small Wind Turbine Performance and Safety Standard;*
   ✓ Received and accepted the necessary IEC 61400 Standards referenced within the AWEA Standard, including IEC 61400-2; and,
   ✓ Included the SWCC **Preliminary Review Fee.**

   By signing below, the authorized representative of the applicant confirms and agrees that all of the information contained in this Notice of Intent is true and accurate.

_____

Applicant Signature - Applicant agrees to the above representations

Preliminary review fee

- Notice of Intent to Submit an Application for one (1) SWT **US$ 2500**
- 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. **US$ 1250**
- Fees may be paid by check or by wire transfer. Checks must be in U.S. funds drawn on a U.S. bank and payable to Small Wind Certification Council. Contact SWCC for wire instructions.

Turbine information. Please provide the following information for each turbine to be certified:

Model: _____

Rotor: _____

Rotor diameter (m): _____

Swept area (m^2): _____

Power form _____ (e.g. 240VAC, 60Hz, 1-phase)

*(Please complete the **SWCC Configuration Description Form** for each turbine)*

Testing and evaluation plans. Please describe the Qualified Testing Organization that will be testing the turbine(s) to be certified:

Testing organization: _____

Address: _____

Contact: _____

Phone: _____

Website: _____

Email: _____

Certified Turbines. If the SWT has been granted certification by another body to either the AWEA Standard, the IEC 61400 Standards or per the MCS requirements, please provide the following information:

To Standard: _____ (AWEA, IEC, BWEA/RUK/MCS, or JSWTA)

Certification Body: _____

Address: _____

Contact: _____

Phone: _____

Website: _____

Email: _____

Publication of Application Status.

The Applicant may request that SWCC publicly list the status of the SWCC Certification Application on the SWCC website, pursuant to Section H.3 of the SWCC Certification Policy. **Please check one box below:**

☐ Yes, I authorize SWCC to publicly list the Applicant's name, SWT model and Application Status on the SWCC website.

☐ No, I would like the Applicant's name, SWT model and Application Status to remain confidential as we pursue certification.

While SWCC makes a significant effort to maintain current and accurate applicant directory information on the SWCC website, SWCC does not warrant or guarantee the accuracy, timeliness, or fitness of the information contained therein for any purpose.

Annex C: Certification Process Summary

The following is an informative summary of the SWCC Certification process.

1. Applicant will acquire from the SWCC website:

    a. The **SWCC Small Wind Turbine Certification Policy**;

    b. The **AWEA Standard**;

    c. The **Notice of Intent to Submit an Application form**; and,

    d. The **SWCC Configuration Description form**.

2. SWCC will receive a Notice of Intent to Submit an Application (Notice of Intent) along with the SWCC Configuration Description Form and Preliminary Review Fee

3. SWCC will evaluate Applicant's Notice of Intent to determine detailed plans for testing and analysis, and will communicate with the Applicant and Testing Organization as required.

4. Applicant will sign a Certification Agreement with SWCC, which details the turbine to be certified, the test plans, the requirements of the structural analysis, and the Certification Fees.

5. If the Applicant chooses to authorize SWCC to publicly list the Applicant's name, SWT model and Application Status, such information will be published on the SWCC website.

6. Testing organization will sign an Agreement with SWCC, agreeing to perform appropriate tests on the turbine to be certified, and agreeing to the test plans and SWCC test site evaluation.

7. After testing, analysis, and reporting are complete, Applicant must submit to SWCC:

    a. A complete Certification Application (an Application form will be provided by the SWCC);

    b. Final testing and structural design analysis report(s); and,

    c. The Certification Fee (determined after a review of the Notice of Intent; this fee varies depending on the particular details of the turbine and test plans).

8. SWCC Technical Director and other experts as needed, will evaluate Application materials, test reports, and the structural design analysis report, and communicate with the Applicant and testing organization to resolve issues.

9. Technical Director will send a technical evaluation report to the Certification Commission, documenting the technical evaluation results for the Certification Commission.

10. Certification Commission will review the Technical Director report, and determine whether the Certification Application is granted, conditionally granted, or rejected.

11. SWCC will grant certification to the SWT, or issue a rejection of the Certification Application describing the reasons for such determination.

12. If certification is granted, SWCC will prepare a Certificate signed by the SWCC Executive Director, a Summary Report and a Consumer Label for publication on the SWCC Internet site and distribution by the Certification Holder.

Annex D: References

The following documents were used in the creation of, or are referenced within, this Policy.

1. AWEA *Small Wind Turbine Performance and Safety Standard* (AWEA Standard 9.1 – 2009)

2. BWEA (2008) *Small Wind Turbine Performance and Safety Standard*

3. IEC 61400-2 (2006): *Wind Turbines – Part 2: Design requirements of small wind turbine*s

4. IEC 61400-2 (2013): *Wind Turbines – Part 2: Small wind turbine*s

5. IEC 61400-12-1 (2005): *Wind Turbines – Part 12-1: Power performance measurements of electricity producing wind turbines*

6. IEC 61400-11 (2006): *Wind turbine generator systems - Part 11: Acoustic noise measurement techniques.*

7. IEC 61400-11 (2012)**:** *Wind turbines - Part 11: Acoustic noise measurement techniques.*

8. IEC 61400-22 (2010): *Wind turbines - Part 22: Conformity testing and certification*

9. ISO/IEC 17025 (2005): *General requirements for the competence of calibration and testing laboratories*

10. ISO/IEC 17065 (2012): *Conformity assessment -- Requirements for bodies certifying products, processes and services*

11. JSWTA0001 (2011) *Small Wind Turbine Performance and Safety Standard*

12. JSWTA0001 (2013) *Small Wind Turbine Performance and Safety Standard*

13. Renewable UK (2014) *Small Wind Turbine Standard*

Annex E: Certification Fee Schedule

All fees are non-refundable. Section G of this Policy defines each Certification fee in detail.

Payments may be made by check or by wire transfer. Payments made by check must be in U.S. funds drawn on a U.S. bank and payable to Small Wind Certification Council. If you wish to wire funds, please contact SWCC for wire instructions.

Preliminary review fee	
▪ Notice of Intent to Submit an Application for one (1) SWT	US$ 2500
▪ 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.	US$ 1250
Test site evaluation fee	Varies
Certification application fee	Varies
Conversion from Conditional to full Certification (if applicable)	Varies
Annual certification renewal fee	US$ 2000
Annual Review Services related to Annual Certification Report	Varies
Limited Power Performance Certification Fee	Varies
Reinstatement Fee	Varies
Certification Reapplication Fee	Varies

Annex F: SWCC Consumer Product Label Format

Small Wind Certification Council

Certified Small Wind Turbine

Manufacturer/Model

Sample Windpower Company

SWT (240 VAC, 1-phase, 60 Hz)

SMALL WIND CERTIFICATION COUNCIL

CERTIFIED

SMALL WIND TURBINE

Conforms to AWEA 9.1 - 2009

SWCC-XX-XX

Rated Annual Energy

Estimated annual energy production assuming an annual average wind speed of 5 m/s (11.2 mph), a Rayleigh wind speed distribution, sea-level air density and 100% availability. Actual production will vary depending on site conditions.

12,300

kWh/year

Rated Sound Level

The sound level that will not be exceeded 95% of the time, assuming an annual average wind speed of 5 m/s (11.2 mph), a Rayleigh wind speed distribution, sea-level air density, 100% availability and an observer location 60 m (~ 200 ft) from the rotor center.

45.0

dB(A)

Rated Power

The wind turbine power output at 11 m/s (24.6 mph) at standard sea-level conditions.

12

kW

Certified to be in Conformance with:
AWEA Standard 9.1 – 2009

For a summary report and SWCC Certificate visit:
www.smallwindcertification.org

Annex G: Annual Certification Report Form

This template is for informational purposes only. A custom form will be sent to the Applicant when Certification is granted.

SWCC Annual Certification Report Form

According to Section M.2.a of the SWCC Small Wind Turbine Certification Policy, the Certification Holder shall prepare and submit this Annual Certification Report to SWCC on or before the anniversary of each SWCC certification each year. To allow time for processing the renewal, please submit this report forty-five (45) days prior to the certification anniversary date.

Section M.2.c of the SWCC Small Wind Turbine Certification Policy states that in the event the information reported in the Annual Certification Report requires additional SWCC work or review, the Certification Holder will be charged separately for such SWCC costs and expenses, consistent with the applicable SWCC fee schedule.

Date (mm/dd/yyyy): _____

Certification Holder: _____

Turbine Model: _____

SWCC Certification Number (SWCC-XX-XX): _____

Issue date of SWCC Certification (mm/dd/yyyy): _____

Renewal date (mm/dd/yyyy): _____

Report all abnormal operating experiences, equipment failures, and other problems related to the certified SWT:
Report all complaints made known to supplier relating to the turbines compliance with the AWEA Standard.
All modifications to the certified SWT, including all hardware and software changes:

Annex H: Significant Modification Report Form

This template is for informational purposes only. A custom form will be sent to the Applicant when Certification is granted.

SWCC Significant Modification Report Form

According to Section M.2.b of the SWCC Small Wind Turbine Certification Policy, in the event that a certified turbine is, or will be, modified in any significant respect, the Certification Holder must report such modification to SWCC in a timely and accurate manner, no more than thirty (30) days after such SWT design changes have occurred. Please refer to Section M.2.b of the Policy for guidance on defining a Significant Modification.

Date (mm/dd/yyyy): _____

Certification Holder: _____

Turbine Model: _____

SWCC Certification Number (SWCC-XX-XX): _____

Issue date of SWCC Certification (mm/dd/yyyy): _____

Please report all planned Significant Modifications to the design of the certified wind turbine. Also include a rationale explaining how the changes may or may not affect the validity of the Certification.

Annex I: Policy and Procedures Concerning Independence and Impartiality of Testing Personnel

A. Introduction and Purpose

Testing laboratories and facilities (test facilities) operated by SWT Manufacturers seeking SWCC certification of its product(s) must ensure that key personnel involved in the testing of SWTs (testing personnel), and the reporting of SWT test data, are impartial and free from any undue commercial, financial, and other pressures that might influence their technical and independent judgment. To that end, all test facilities must establish policies and procedures which: identify possible or actual influences which may create a conflict or undue influence on testing personnel; and, identify rules to prevent or limit such influences on those involved in the testing of SWTs and related activities.

The purpose of such policies and procedures is to ensure confidence in the test facility's competence, impartiality, judgment, and operational integrity.

B. Internal and External Influence

A test facility must ensure that all owners, managers, and employees, contractors, and other third parties do not influence, or otherwise affect the validity or impartiality of, the activities and judgment of testing personnel. In order to accomplish this, the test facility must implement and satisfy the following procedures and requirements:

1. Test facility personnel involved in the design, development, and manufacture of the turbine are clearly identified in the related project report and documentation;

   AND

2. When conducting tests and collecting data concerning a turbine, the test facility will only assign and use testing personnel who were not, and will not be, involved in the design, development, or manufacture of that turbine, and who are otherwise competent and qualified to perform such testing and data collection activities (approved testing personnel);

   OR

   In the SWT Manufacturer is unable to identify appropriate testing personnel under this Policy, and intends to use other personnel or contractors who do not qualify for approved testing personnel status, the test facility must:

   a. Ensure that appropriate training concerning potential conflicts and undue influence is provided to such test facility personnel or contractors; and,

b. Engage a qualified, independent third party evaluator to review and approve all test results and underlying data, and to confirm, modify, or reject such results and data.

C. Training of Testing Personnel/Activity Prohibitions

The test facility is responsible for ensuring that its testing personnel understand the importance of maintaining the competence, integrity, judgment, and operations integrity of the facility and related testing activities. In this regard, the test facility must take appropriate steps to ensure that its testing personnel not act in any manner, or engage in any activities, that may influence his/her independent judgment, or otherwise cast doubt upon its testing activities or the validity of test results or reports, including personnel training and the required disclosure of any involvement in any activities, organizations, or businesses that may relate to the interests or activities of the test facility.

Annex J: Complaint Matter Reporting Form

This template is for informational purposes only. A custom form will be sent to the Applicant when Certification is granted.

Complaint Matter Reporting Form

According to Section L of the SWCC Small Wind Turbine Certification Policy, each Certification Holder is required to report to SWCC all complaints and disputes (complaint matters). Please refer to Section L of the Policy for more information on Complaint Matters Reporting.

Date (mm/dd/yyyy): _____

Certification Holder: _____

Turbine Model: _____

SWCC Certification Number (SWCC-XX-XX): _____

Issue date of SWCC Certification (mm/dd/yyyy): _____

Please use this form to report all Complain Matters to SWCC:

Complaining Party	Nature of Complaint	Response to Complaint

SMALL WIND CERTIFICATION COUNCIL

Certification Appeal Policy

SWCC2
01 February 2013

Small Wind Certification Council (SWCC)
56 Clifton Country Road, Suite 202
Clifton Park, NY 12065
www.smallwindcertification.org
info@smallwindcertification.org
+1-518-213-9440

Contents

A. General Provisions

1. Scope/Purpose of Policy. The following process is the sole and exclusive means by which an applicant for, or holder of, an SWCC product certification may appeal an adverse action issued by SWCC, including deficiency and violation decisions, and objections to the application of SWCC policies. This Policy controls the manner in which all such appeals will be reviewed and resolved. All organizations holding SWCC certifications, accept this Policy as the appropriate and binding organizational system for the fair, equitable, orderly, and efficient consideration and settlement of such appeals, without resort to governmental, court, or other outside procedures.

2. Confidentiality of Process/Participation of Non-Parties. All non-final resolutions, proceedings, and materials related to this Policy are confidential and private, and will be maintained securely by SWCC and the parties. Other than the parties involved, no observers or other persons are permitted to participate in the processes established by this Policy without the permission of the designated SWCC authority, and the denial of such permission is not subject to further review or appeal.

3. Parties. The individual, group, or organization initiating an appeal under this Policy will be identified as the Respondent(s). An individual, group, or organization initiating a complaint concerning a Respondent, other than SWCC, will be identified as the complainant.

4. Information and Proof Accepted. The designated SWCC authority will receive and consider all information appearing to be relevant to the appeal, including any information that may be helpful to a complete understanding of the issues involved. Objections relating to the relevance of information and similar issues will be decided by the designated SWCC authority, and such decisions are not subject to further review or appeal.

5. Failure to Cooperate/Submission of Misleading or False Information. All parties must behave in a courteous and professional manner when communicating with SWCC representatives and other parties. Any party, including a complainant who is not associated with SWCC, must cooperate with the designated SWCC authority with respect to the appeal resolution process. Failure to cooperate may result in the imposition of corrective actions or sanctions by SWCC, including the denial or acceptance of an appeal, or other appropriate corrective actions. Similarly, any party who submits false or misleading information to SWCC with respect to an appeal may be subject to appropriate corrective actions or sanctions.

6. Fiduciary Responsibility and Retention of Legal Rights. Notwithstanding any provision of any corporate policy, consistent with legal fiduciary responsibilities and SWCC governing documents, SWCC retains all rights and privileges to: seek any available legal remedies and relief on behalf of itself and authorized representatives; and, defend itself and authorized representatives to the fullest extent permitted by law.

B. Circumstances for the Appeal of an Adverse Action

An applicant for, or holder of, an SWCC certification (Respondent) may submit an appeal concerning an adverse action related to such certification under the following circumstances.

1. The Respondent was found to be ineligible for SWCC certification;

2. The Respondent was found to have failed to satisfy an SWCC certification requirement or condition; or,

3. The Respondent otherwise was the subject of an adverse SWCC certification action or decision.

C. SWCC Appeals Committee/ First Appeal

1. SWCC Appeals Committee. At least three (3), qualified, disinterested representatives of SWCC will be appointed to serve as the SWCC Appeals Committee to resolve appeals. Upon receipt, and in the first instance, appeals will be received and considered by the Appeals Committee. In the event of a possible conflict of interest, or other appropriate basis for referral, the Appeals Committee may refer the matter to the Chair of the SWCC Board of Directors, or an appropriate manager, to reassign the appeal for initial review and resolution.

2. Appeal Committee Review and Actions. The SWCC Appeals Committee will conduct a preliminary review of the appeal, including the collection and consideration of all relevant information and materials submitted by the parties or others in possession of relevant information. Following such review, the Committee may take any of the following actions:

    a. Request or direct that one or more of the parties, or others, provide relevant documents or information necessary to consider and resolve the appeal;

    b. Issue an informal resolution of the matter;

    c. Issue a formal resolution of the appeal, which will include a written, first

Appeal Decision, and may include any appropriate corrective or remedial action(s) and/or disciplinary sanction(s). Among other formal resolution actions, the Appeals Committee may: affirm an adverse action in whole or in part; or, deny and dismiss an adverse action in whole or in part.

d. Refer the matter to the Chair of the SWCC Board of Directors, or other designated Resolution Officer, for review, further referral, and/or resolution.

3. Referral to Other Resolution Officer. In the event that the Appeals Committee refers a matter to a Resolution Officer, the Committee will provide all relevant record materials, including the documents and materials submitted by the parties and others in possession of relevant information. The designated Resolution Officer is authorized to exercise the same authorities granted to the Appeals Committee with regard to the review and resolution of the appeal.

D. SWCC Board of Directors/ Final Appeal

1. Board of Directors Appeals/Time Requirements. In the event that a party is dissatisfied with an Appeals Committee Decision (Committee Decision), the party may request a Board of Directors final review of the appeal by a written communication to the Chair of the SWCC Board of Directors, consistent with the requirements of this Policy. Industry Sector Directors will not participate in the review of any appeals under this Policy. An appeal of a Committee Decision must be received by SWCC within thirty (30) days of the date of the Appeals Committee Decision. If no such appeal is submitted to SWCC, the resolution and Committee Decision will be final and binding upon all parties.

2. Contents of Appeal Communications to the Board of Directors. In order to be considered, an appeal communication to the Board of Directors must provide the following information in an appropriate, clear, and detailed manner:

a. A statement of the grounds and basis of the appeal, which specifically explains the reasons for the appeal;

b. A statement that describes the portion or portions of the Appeals Committee Decision disputed by the party, including a specific description of any findings, conclusions, or remedial actions which the party challenges or believes to be in error;

c. A statement that describes the findings, conclusions, or remedial actions that the party seeks from the Board of Directors;

d. References to all SWCC policies and rules that the party believes may

apply to the resolution of the appeal; and,

e. Accurate copies of all written documents or other materials that the party believes are relevant to, and support, the appeal.

3. Board of Directors Review and Decisions. The SWCC Board of Directors will review an appropriate appeal in closed session, usually within sixty (60) days of receipt. Thereafter, the Board will resolve and decide the appeal based on the record. The Board will consider the relevant information and include a summary of its findings in the Final Appeal Decision. The Board may affirm, modify, or reverse a Committee Decision based on its findings. The Board will issue its Final Appeal Decision to the parties.

4. Finality of Board Decisions and Resolutions. All Board Final Appeal Decisions will be final and binding on all parties. No additional or further appeals are permitted.

E. Resolution and Appeal Hearings

1. Hearing Requests. A party may request that an Appeals Committee or Board of Directors appeal, include an informal telephone, or when appropriate, in-person hearing. Such request must be made in a timely manner as directed by SWCC, and must include a statement of the reasons that the party believes support the scheduling of a hearing. The decision to grant or deny a hearing request is within the sole discretion of the Appeals Committee or the Board of Directors (designated SWCC authority), and is not subject to appeal.

2. Hearing Process. Any hearing authorized or convened under this Policy will be informal, and designed to collect and weigh the available, relevant information and proof. The designated SWCC authority conducting the hearing will have full authority and responsibility to convene, preside over, limit, control, continue, and conclude the hearing in a fair, objective, and efficient manner.

3. Hearing Schedule and Location. Each hearing convened under this policy will be scheduled by the designated SWCC authority in consultation with the parties. Each hearing will be held by telephone conference, or at a site determined by the designated SWCC authority.

4. Hearing Notice and Participation. The designated SWCC authority will schedule the hearing and notify the parties in writing at least thirty (30) days prior to the scheduled hearing date. Any hearing may proceed to a conclusion whether or not the parties are present. Each party will be given the

opportunity to participate in the hearing and will be required to provide the following information at least twenty-one (21) days before the scheduled hearing:

a. Whether the party intends to participate in the hearing, and if such participation is via telephone, the telephone number where the party is to be reached during the hearing;

b. Whether the party intends to participate in the hearing with an attorney or other representative, and if so, the name, address, email address, and telephone number of such attorney or representative;

c. Whether the party intends to present witnesses at the hearing, and if so, the name, address and telephone number of each witness and a brief summary of the content of proposed witness testimony; and,

d. Whether the party intends to present and refer to any written information or other materials during the course of the hearing, and if so, the party should provide a copy of all such materials and a brief description of the relevance of the material at least ten (10) calendar days prior to the hearing.

5. Responsibilities and Rights of the Parties. In addition to other responsibilities and rights, the parties may do, or be required to do, the following:

a. Participate in the hearing and be present during the testimony of all witnesses;

b. Present witnesses, written information, and arguments on their behalf;

c. Review or inspect all oral or written information presented in the case; and,

d. Comply with all lawful requirements or directives issued by the designated SWCC authority, consistent with the terms of this policy.

6. Witnesses. All witnesses will be excluded from the hearing except during their presentation of information. However, a party may request that a witness remain present during all or part of the hearing. In its sole discretion, the designated SWCC authority may grant, modify, or deny such a request, and the ruling will not be subject to appeal.

7. Hearing Expenses. Parties will be responsible for their own expenses associated with the hearing, including costs associated with transportation,

witnesses, legal counsel, and the like. SWCC will bear all general hearing expenses and other appeal costs, including costs associated with the participation of SWCC representatives.

8. Closing of the Hearing Record. The record of each hearing will be closed following the conclusion of the hearing, unless otherwise directed by the designated SWCC authority. Any party may request that the record remain open for thirty (30) days for the purpose of receiving additional documentary information or similar materials. The designated SWCC authority will rule on any request, and the ruling will not be subject to appeal.

SMALL WIND CERTIFICATION COUNCIL

SWCC Trademark And Certification Mark Use Policy

SWCC3
03 March 2015

Small Wind Certification Council (SWCC)
56 Clifton Country Road, Suite 202
Clifton Park, NY, 12065
www.smallwindcertification.org
info@smallwindcertification.org
+1-518-213-9440

I. POLICY PURPOSE

This Policy establishes the rules and requirements for use of all Small Wind Certification Council™ (SWCC™) trademarks, including trademarks, service marks, and certification marks.

II. SWCC CORPORATE TRADEMARKS

A. Mark Ownership.

The following organizational trademarks (SWCC Trademarks) are owned and controlled by SWCC:

-
- Small Wind Certification Council™
- SWCC™

SWCC retains the sole and exclusive rights to use the SWCC Trademarks. SWCC may create and use additional marks, as it deems appropriate.

B. Prohibited Use of SWCC Trademarks.

Individuals, businesses, and other organizations are not permitted to use the SWCC Trademarks. Permission by the Board of Directors to use SWCC Certification Marks, identified below, does not include authorization to use the SWCC Trademarks.

C. Policy Violations and Related Matters.

SWCC reserves, and may use, the full range of legal remedies and certification-related sanctions available under applicable laws and corporate policies to protect the SWCC Trademarks. Infringement of any SWCC Trademark will be challenged.

Following the receipt of information that an unauthorized use of a SWCC Trademark may have occurred, SWCC, in consultation with legal counsel, will determine if responsive action(s) will be taken in accordance with this Policy and applicable Federal and State laws.

III. SWCC CERTIFICATION MARKS

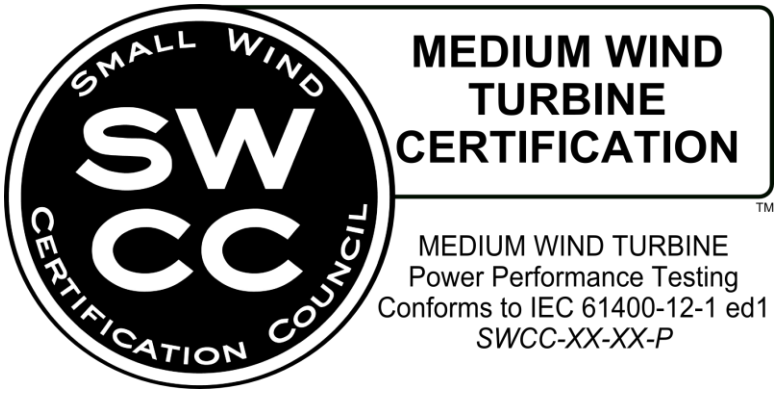
A. Mark Ownership

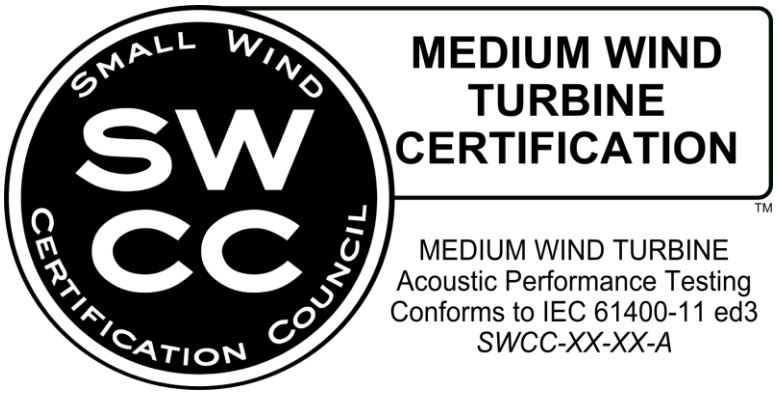
The following certification marks and credentials (SWCC Certification Marks) are owned and controlled by SWCC:

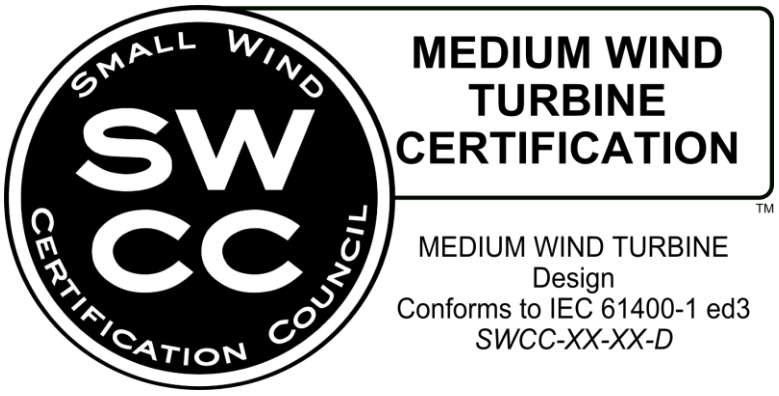
1. 

2. SWCC Certified Small Wind Turbine™

3. 

4. 

5. 

6. 

SWCC retains all trademark and other ownership rights concerning the SWCC Certification Marks. SWCC may create and use additional certification marks, as it deems appropriate.

B. Authorized Use of SWCC Certification Marks

The SWCC Board of Directors grants limited permission to qualified Certification Holders to use specific SWCC Certification Marks. A qualified Certification Holder must satisfy all applicable SWCC certification requirements prior to the use of an SWCC Certification Mark. Consistent with applicable law and corporate policies, SWCC will ensure that the Certification Marks are displayed and otherwise used properly, as such use represents SWCC certification to the public.

C. Persons and Entities Authorized to Use the Certification Marks/ Certification Holder Responsibilities

Use of the Certification Marks is limited strictly to those persons and entities that are valid SWCC Certification Holders in good standing. Each Certification Holder is authorized to use only the Certification Mark that represents the appropriate wind turbine product certification granted by SWCC.

1. SWCC Certified Small Wind Turbine Certification Marks. A Certification Holder whose small wind turbine (SWT) has been granted full SWCC Certification pursuant to Section F.4 of the Small Wind Turbine Certification Policy (Certification Policy SWCC1), and whose SWT has been issued an SWCC Certificate consistent with Certification Policy SWCC1 Annex A, is authorized to use the SWCC Certified Small Wind Turbine Certification Marks identified in Sections III.A.1 and III.A.2 of this Policy with respect to the certified SWT.

2. SWCC Limited Power Performance Certification Mark. A Certification Holder whose SWT has been granted SWCC Limited Power Performance Certification pursuant to Section F.4 of Certification Policy SWCC1, is authorized to use the SWCC Limited Power Performance Certification Mark identified in Section III.A.3 of this Policy with respect to the SWT.

3. SWCC MWT Power Performance Certification Mark. A Certification Holder whose medium wind turbine (MWT) has been granted SWCC MWT Power Performance Certification pursuant to Section F.4 of the Medium Wind Turbine Certification Policy (Certification Policy SWCC4), and whose MWT has been issued an SWCC Certificate consistent with Certification Policy SWCC4 Annex A, is authorized to use the SWCC MWT Power Performance Certification Mark identified in Section III.A.4 of this Policy with respect to the MWT.

4. SWCC MWT Acoustic Performance Certification Mark. A Certification Holder whose MWT has been granted SWCC MWT Acoustic Performance Certification pursuant to Section F.4 of Certification Policy SWCC4, and whose MWT has been issued an SWCC Certificate consistent with Certification Policy SWCC4 Annex A, is authorized to use the SWCC MWT Acoustic Performance Certification Mark identified in Section III.A.5 of this Policy with respect to the MWT.

5. SWCC MWT Design Certification Mark. A Certification Holder whose MWT has been granted SWCC MWT Design Certification pursuant to Section F.4 of Certification Policy SWCC4, and whose MWT has been issued an SWCC Certificate consistent with Certification Policy SWCC4 Annex A, is authorized to use the SWCC MWT Design Certification Mark identified in Section III.A.6 of this Policy with respect to the MWT.

Each Certification Holder accepts and assumes sole responsibility for understanding and satisfying all applicable organizational and legal requirements related to the use and/or display of the Certification Marks. Among other requirements, the Certification Holder is responsible for ensuring that the use of any Certification Mark on the wind turbine (WT) or in business related materials (e.g., product informational materials, advertisements, or Internet websites) is consistent with this Policy, and is not in conflict with applicable laws. SWCC assumes no responsibility concerning the interpretation or application of such legal requirements.

A Certification Holder may not use an SWCC Certification Mark in any manner not authorized by this Policy, and may not make any public statements or representations related to SWCC Certification that bring SWCC into disrepute. In the event that SWCC suspends or revokes the certification of a WT, the Certification Holder or former Certification Holder is prohibited from using any SWCC Certification Marks, or making any representations concerning certification by, or affiliation with, SWCC, with respect to that WT.

SWCC shall not be liable or otherwise responsible for any claims, complaints, suits or damages whatsoever, relating to the use of the Certification Marks, or in connection with the use of such marks.

D. Non-Assignability and Non-Transferability of the Certification Mark

Permission to use an SWCC Certification Mark is limited specifically to the Certification Holder and the WT certified by SWCC, and may not be transferred to, assigned to, or otherwise used by, any other person, organization, business, or entity.

E. Appearance and Proper Use of the Certification Mark

Each Certification Holder may use the appropriate SWCC Certification Mark on the certified WT or in business related materials, including, but not limited to, product informational materials, advertisements, or Internet websites, consistent with the following rules:

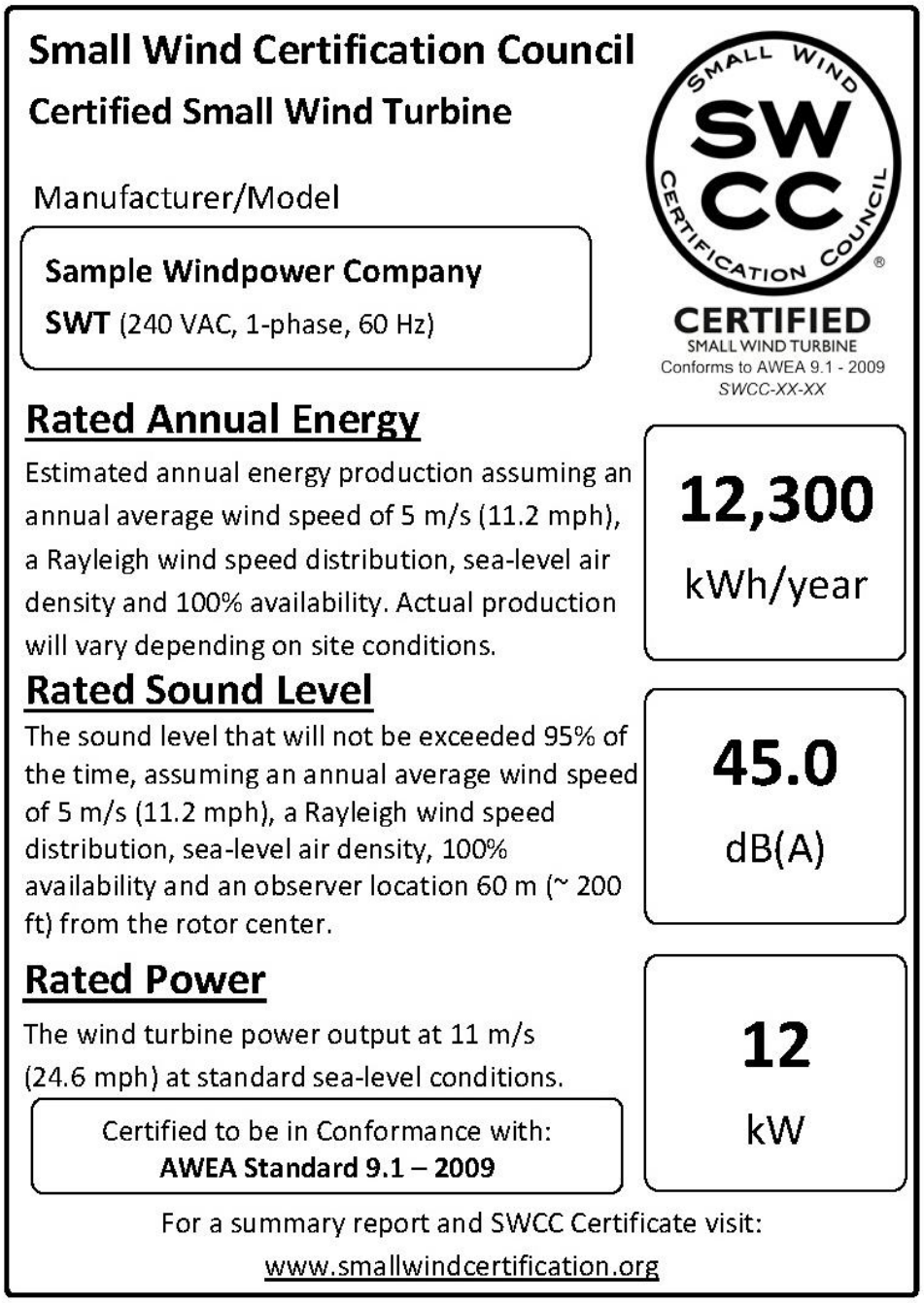
1. Proper Use. Each Certification Holder must use the appropriate Certification Mark only in conjunction with the WT certified by SWCC. The Certification Mark may not appear in conjunction with the name of the persons or entities that design and/or manufacturer the WT, or Certification Holder, or in any manner that may lead the public to believe that a person, entity, or Certification Holder is certified or otherwise endorsed by SWCC. Additionally, a Certification Mark should always be used in its entirety, and must always appear with the appropriate subscript/superscript "®" or "™" trademark symbol.

   With respect to other affiliation marks and/or logos, the Certification Mark may be located near these other marks or logos, but must remain separate and distinct so as to avoid confusion concerning the source of the certification, and to avoid the appearance that other marks, certifications, credentials, designations, or organizations are associated with, or endorsed by, SWCC.

   Any questions concerning the proper use of Certification Marks should be submitted to the SWCC Executive Director in writing.

2. Examples of Proper Uses and Appearances of the Certification Marks. Proper uses and appearances of the Certification Marks include, but are not limited to, the following examples.

- Proper Use Example No. 1: SWCC Consumer Label for a Small Wind



- Proper Use Example No. 2: Small Wind Turbine Mark used with turbine description

- Proper Use Example No. 3: Mark used with medium wind turbine description

Information concerning the proper use of the Certification Marks can be requested from the SWCC Executive Director at the following email address or telephone number: Larry@smallwindcertification.org or (518) 213-9441.

F. Non-Interference with Use of the Marks by Other Certification Holders

A Certification Holder may not prohibit, restrict, or otherwise limit the authorized and appropriate use of the Certification Mark(s) on a certified WT by another Certification Holder.

G. Violation Reporting Responsibilities

A Certification Holder has the responsibility to report the unauthorized use, misuse, or other violation of this Policy to SWCC in a timely manner, including any circumstances where: the use of a Certification Mark is related to an individual or organization that is not a Certification Holder, including an Applicant for SWCC Certification; a Certification Mark is used improperly by a Certification Holder; or, a Certification Mark is improperly used with respect to an uncertified product.

H. Policy Violations and Related Matters

SWCC reserves, and may use, the full range of legal remedies and certification-related sanctions available under applicable laws and corporate policies to protect the Certification Marks. Infringement of any Certification Mark, or improper use of a Certification Mark on an uncertified product, will be challenged. Certification Holders and Applicants for SWCC Certification are required to cooperate fully in the review and resolution of such matters.

Following receipt of information that an inappropriate or unauthorized use of a Certification Mark may have occurred, SWCC, in consultation with legal counsel, will determine if responsive action(s) will be taken in accordance with this Policy and applicable Federal and State laws.

I. Certification Actions and Decisions Related to Mark Misuse By a Certification Holder or Applicant for SWCC Certification

The SWCC Executive Director, or his/her designee (Executive Director), will review and resolve all complaints and other matters concerning potential violations of this Policy by Certification Holders and Applicants for SWCC certification. Following a determination that a Certification Holder or Applicant may have acted contrary to this Policy or applicable law, the Executive Director will notify the Certification Holder or Applicant in writing by issuing a Notice of Potential Policy Violation (Notice), which will require a complete, written response to each complaint matter within thirty (30) days.

Based upon the information received and reviewed, including the Certification Holder/Applicant response to the Notice, the Executive Director will determine whether the Certification Holder/Applicant has violated the terms of this Policy, and will issue a decision, including any certification-related sanctions and/or corrective actions. Such sanctions and actions may include:

1. Denial and rejection of the Applicant's Certification Application;

2. Private reprimand and censure;

3. Public reprimand and censure;

4. Conditions of continued certification;

5. Certification probation;

6. Certification suspension;

7. Revocation or termination of certification; and/or;

8. Other measures that SWCC deems appropriate.

All decisions issued by Executive Director under this Policy may be appealed under the SWCC Certification Appeal Policy.

In addition, the SWCC Board of Directors may refer cases of certification mark misuse, infringement, or other similar matters to appropriate agencies and other organizations.

SMALL WIND CERTIFICATION COUNCIL

Medium Wind Turbine Certification Policy

SWCC4
03 March 2015

Small Wind Certification Council (SWCC)
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Contents

A. Introduction

The Small Wind Certification Council (SWCC) is an independent, third-party certification body that certifies distributed wind turbines. For medium wind turbines (MWTs), with a rotor swept area that is greater than 200 m^2 and less than 1000 m^2, SWCC offers certification services related to wind turbine power performance, acoustic performance, and design certification (Medium Wind Certification). SWCC Medium Wind Turbine Certification represents conformity assessment to IEC 61400-12-1 (Power Performance), IEC 61400-11 (Acoustic Performance) and IEC 61400-1 (Design Requirements), hereinafter referred to as the IEC Standards. Applicants may choose to pursue one, two or all of the following Medium Wind Certification elements:

- ☐ SWCC MWT Power Performance Certification;
- ☐ SWCC MWT Acoustic Performance Certification; and
- ☐ SWCC MWT Design Certification.

For all Medium Wind Certification services, SWCC Certification is granted on the basis of an assessment of the completeness and correctness of the final reports, and whether the performance testing and/or design of the MWT conforms to all requirements of the IEC Standards.

B. Purpose and Scope

1. Purpose. This Medium Wind Turbine Certification Policy (Policy) has been adopted by the SWCC Board of Directors to define appropriate rules and procedures for the voluntary certification of eligible MWTs and to ensure the impartiality and objectivity of SWCC's certification decisions. The Policy is the sole and exclusive means by which an Applicant may apply for SWCC Medium Wind Turbine Certification.

   The Policy serves to define the process and requirements for:

   a. Testing of a MWT for the purpose of power and acoustic performance certification;

   b. Design requirements of a MWT for the purpose of design certification;

   c. Reporting requirements;

   d. SWCC Certification of a MWT;

   e. Maintenance and renewal of SWCC Certification; and,

   f. Reviewing and resolving certification deficiencies and violation matters.

2. Scope. SWCC certification requirements, evaluations, and decisions are based on appropriate standards and information specifically related to the purposes and scope of the certification. The scope of this Policy is to establish an objective and otherwise appropriate process to assess and certify that a MWT meets the requirements of the IEC Standards for power performance and/or acoustic performance and/or design requirements.

C. Definitions

The following definitions have been adopted by SWCC for the identified terms used in this Policy.

1. Annual energy production. An estimate of the total energy production of a wind turbine during a one (1) year period as calculated by applying the measured power curve to a Rayleigh frequency distribution at a specified hub height annual average wind speed, assuming 100 % availability.

2. IEC Standards. International Standards developed by the International Electrotechnical Commission. For the purpose of SWCC Medium Wind Turbine Certification; IEC 61400-11: *Wind turbines - Part 11: Acoustic noise measurement techniques*, IEC 61400-12-1: *Wind turbines - Part 12-1: Power performance measurements of electricity producing wind turbines*, and *IEC 61400-1: Wind turbines – Design Requirements* and any other relevant IEC standards referenced in this Policy. These IEC Standards were prepared by IEC technical committee 88: Wind turbines.

3. Medium Wind Turbine. For the purpose of SWCC Medium Wind Turbine Certification; electricity-producing wind turbine with a swept area greater than 200 m^2 and less than 1000 m^2.

4. Peak Power. Highest bin-averaged power output of all filled wind speed bins per the power curve from IEC 61400-12-1. Also termed “nameplate capacity”.

5. Qualified Testing Organization. A testing organization that is qualified under this Policy and applicable SWCC requirements to perform MWT testing for the purpose of certification. In order to receive SWCC Qualified Testing Organization status, the organization must demonstrate compliance with all relevant requirements of ISO/IEC Standard 17025.

6. Reference Power. Highest bin-averaged power output of all filled wind speed bins up to 11 m/s per the power curve from IEC 61400-12-1.

7. Reference Annual Energy. Calculated total energy that would be produced during a one-year period at an average wind speed of 5.0 m/s at hub height, assuming a Rayleigh wind speed distribution, 100 % availability, and the power curve derived

from IEC 61400-12-1. For this definition, reference annual energy is AEP-measured and sea-level normalized.

8. Reference Sound Pressure Level. Sound pressure level that will not be exceeded 95% of the time, assuming an average wind speed of 5 m/s (11.2 mph), a Rayleigh wind speed distribution, 100% availability, and an observer location 60 m (~ 200 ft.) from the rotor center. Calculated from the Apparent Sound Power Level at 9.8 m/s.

9. Remanufactured. A turbine which has been previously used, and subsequently disassembled, repaired, and reassembled to be used again.

10. Small Wind Turbine. Electricity-producing wind turbine having a swept area that is less than or equal to 200 m^2.

D. Policy Abbreviations

1. AC: alternating current

2. AEP: annual energy production

3. Cp: power coefficient

4. ed: edition

5. HAWT: horizontal axis wind turbine

6. IEC: International Electrotechnical Commission

7. ISO: International Organization for Standardization

8. MWT: medium wind turbine

9. VAWT: vertical axis wind turbine

E. Certification Commission

The Certification Commission (Commission) has been established by the SWCC Board of Directors to supervise the evaluation of turbines for SWCC Certification. The structure and composition of the Commission has been developed to ensure impartiality in all matters pertaining to its role.

The Commission is composed of three (3), qualified and independent industry experts appointed by the Board of Directors. The Commission has been delegated the authority to review and approve MWT certification applications in consultation with the Technical Director. Among other responsibilities, and consistent with this Policy, the Commission will: review each certification application and relevant supporting information under the

applicable SWCC Certification standards, in consultation with the Technical Director; determine by majority vote whether each certification application is granted, conditionally granted, or rejected; determine whether each certification renewal application is granted, conditionally granted, or rejected; determine whether a Certification Holder must submit a new certification application when a product has been modified; initiate, review, and resolve all deficiency and violation matters under this Policy related to Certification Holders and Applicants, and determine whether to issue certification sanctions or other appropriate actions; require the submission of additional application renewal information when appropriate; and, review and determine the appropriateness of design changes related to certified MWTs.

F. Certification Eligibility Requirements

1. General Policy Requirements. SWCC eligibility policies are administered in an objective and non-discriminatory manner and SWCC provides certification services to any Applicant that satisfies the conditions in this Policy. SWCC will not impede or inhibit Applicant access to SWCC services in any unlawful or improper preferential manner.

   SWCC makes its services accessible to all Applicants whose activities fall within its declared field of operation. All Application and Certification Fees will be applied uniformly to all Applicants. Access to SWCC certification is not conditioned on the Applicant's size, membership in any association or group, nor the number of certifications previously issued by SWCC.

2. Applicant Eligibility. SWCC Certification Applications may be submitted only by the holder of all ownership rights in and to the MWT (MWT Manufacturer), or the authorized designee of such MWT Manufacturer. If the Applicant is such an authorized designee, the Applicant must submit written proof of authorization from the MWT Manufacturer to seek SWCC certification. SWCC will have the sole and exclusive right to determine whether such a designee is properly authorized to seek SWCC certification.

   If the Applicant is an authorized designee, the non-Applicant MWT Manufacturer will be required to accept and agree to comply with all terms of SWCC policies, including the SWCC Medium Wind Turbine Certification Policy and the SWCC Trademark and Certification Mark Use Policy, prior to SWCC issuing MWT Certification.

3. Equipment Eligibility.

   Eligible MWTs are defined as newly-manufactured, electricity-producing wind turbines with a swept area greater than 200 m^2 and less than 1000 m^2. Previous versions of a MWT design that are no longer available to the market are not eligible for SWCC certification. Remanufactured MWTs are not eligible for SWCC MWT Certification (see definition in Policy Section C).

Applicants may submit one (1) Application for multiple MWT configurations of the same turbine type, provided that the MWTs are similar in design and other significant characteristics. In this regard, SWCC will make every reasonable effort to consolidate the requirements applicable under this Policy, based on SWCC's review of the information contained in an Applicant's Notice of Intent to Submit an Application. However, each MWT configuration will be issued a separate certification, provided all certification eligibility requirements are met.

4. Certification Eligibility. A turbine is eligible for certification if all of the following requirements are satisfied in full:

   a. The MWT is compliant with the relevant IEC Standard(s) in all applicable respects;

   b. The MWT has been tested properly by a Qualified Testing Organization consistent with this Policy and the relevant IEC Standard(s), and such tests demonstrate compliance with the IEC Standards;

   c. All other SWCC Certification requirements and conditions have been satisfied;

   d. The Applicant has submitted a complete Notice of Intent to Submit an Application to SWCC;

   e. The Applicant has signed a Certification Agreement with SWCC, which details the responsibilities of the Applicant and SWCC with respect to the certification application review process;

   f. The Applicant has submitted a complete MWT Certification Application to SWCC;

   g. The Applicant has submitted all additional information and materials required by the Certification Commission or the Technical Director;

   h. The Applicant has submitted all required fees in full; and,

   i. The Certification Commission has determined that the turbine is eligible for certification, and grants certification to the MWT.

G. Certification Fees

All SWCC Certification fees are approved by the SWCC Board of Directors. The SWCC Certification Fee Schedule is provided in Policy Annex E. All current fees are subject to change. Fees may be paid by check or by wire transfer. Checks must be in U.S. funds drawn on a U.S. bank and payable to Small Wind Certification Council.

1. Preliminary Review Fee. A non-refundable fee paid by the Applicant with the Notice of Intent to Submit an Application. This fee satisfies all costs related to: an initial review of the MWT design and test plans concerning the MWT seeking certification; and, the development of the Certification Agreement(s).

2. Test Site Evaluation Fee. A non-refundable fee paid by the Applicant related to the on-site evaluation of a non-accredited testing organization (see Section I.2 and I.3), if such an evaluation is deemed necessary by SWCC to fulfill the requirements of this Policy. This fee will be invoiced to the Applicant and must be paid prior to scheduling the evaluation.

   Any additional site evaluation expenses to be charged will be determined by SWCC based upon the actual costs incurred to complete the evaluation. Additional expenses related to site evaluation will be payable upon completion of the Test Site Evaluation. If the evaluation identifies deficiencies requiring corrective actions, additional fees will apply for any necessary SWCC reevaluation of the Applicant's completion of the corrective actions.

3. Test Site Travel Expenses. Non-refundable expenses paid by the Applicant related to the travel of SWCC representatives with respect to the Test Site Evaluation. Such expenses will be estimated in accordance with the SWCC Travel Policy and will be charged to the Applicant before the Test Site Evaluation has been scheduled. These expenses must be paid prior to scheduling the evaluation. Eligible travel expenses include:

   a. Airfare;

   b. Railroad fare;

   c. Car rental and fuel;

   d. Taxi and bus fare;

   e. Toll fares;

   f. Parking;

   g. Meals and incidental expenses per federal rates;

   h. Person mileage at the federal rate; and,

   i. Lodging.

4. Certification Application Fee. A non-refundable fee paid by the Applicant with the Certification Application. This fee satisfies the costs related to: the technical review

of test and/or design reports; the resolution of application issues; Certification Commission application review; and, the publishing of MWT data.

5. Annual Certification Renewal Fee. A non-refundable fee paid by the Certification older with the required Annual Certification Report.

6. Reinstatement Fee. A non-refundable fee paid by an Applicant or Certification Holder seeking reinstatement pursuant to section O of this Policy.

7. Certification Reapplication Fee. A non-refundable fee paid by an Applicant submitting a Petition to Reapply for Certification pursuant to section O of this Policy.

H. Application Requirements and Actions

In order to complete the SWCC MWT Certification application process, each Applicant must submit the following completed application materials.

1. Notice of Intent to Submit an Application. An Applicant intending to seek SWCC MWT Certification will first submit a Notice of Intent to Submit an Application (Notice of Intent). After receiving this Notice of Intent, SWCC will review the details of the MWT to be certified and the plans for testing. SWCC will use this information to determine the Certification Fee and develop a Certification Agreement. Guidelines for preparing the Notice of Intent are provided in Policy Annex B.

   An SWCC Configuration Description Form will be included in the Application materials. This Form must be completed for each turbine seeking SWCC Certification and must be submitted with the Notice of Intent.

2. Certification Agreement with Applicant. After acceptance of the Notice of Intent by SWCC, the Applicant will sign an Agreement with SWCC, which provides detailed information concerning: the turbine to be certified; the test plans; and, the roles and responsibilities of each party. As part of this Agreement, the Applicant must agree to provide all design documents and raw data, or subsets of processed data (e.g., results for a particular date range), in a suitable format, if requested by SWCC. This Certification Agreement will be presented to the Applicant following the review of the Notice of Intent.

3. Testing Agreement with Testing Organization. Testing organizations that intend to perform testing for certification must sign a Testing Agreement with SWCC, which provides detailed information concerning: the turbine to be certified; the test plans; and, the roles and responsibilities of each party. The Testing Agreement will be presented to the Testing Organization after the Applicant has signed the Certification Agreement.

4. Certification Application. Once all eligibility conditions have been satisfied and all required testing and reporting have been completed, Applicant will submit a complete Certification Application, including the final test reports, to SWCC.

5. Publication of Application Status. In the Notice of Intent, an Applicant may request to have the status of the Application published on the SWCC website. Following acceptance of the Certification Agreement, SWCC will publish on the SWCC website the Applicant's name, MWT model, and Application Status with the following status information:

   "Under Contract" which indicates that the Applicant has executed a Certification Agreement with the SWCC;

   "Under Test" which indicates that the MWT has been installed at the test site, commissioned, instrumented and is collecting data; or,

   "Reports Submitted" which indicates that the Applicant has submitted complete test reports to the SWCC with a Certification Application.

   Note: the date on which the Applicant has achieved each Application Status will be published on the SWCC website.

6. Inactive Status. A certification application will be placed on inactive status and removed from the SWCC website under any of the following conditions:

   a. The MWT has not yet achieved "Under Test" status after eighteen (18) months from the "Under Contract" date,

   b. The MWT has not yet achieved "Reports Submitted" status after two (2) years from the "Under Test" date, or

   c. After one (1) year from the "Reports Submitted" date SWCC has not yet granted, conditionally granted, or rejected certification.

   Any extensions to the time limits described above will be considered if adequate progress toward certification is demonstrated, as described in writing to the Technical Director.

7. Certification Decision. SWCC will notify the Applicant of the Certification decision. If certification is not granted, SWCC will identify the reasons for the decision.

I. Qualified Testing Organizations

Qualified Testing Organizations must satisfy, and comply with, all relevant requirements of ISO/IEC Standard 17025: *General Requirements for the Competence of Calibration and Testing*

Laboratories. In order to be designated as a Qualified Testing Organization, the testing organization must be either: accredited under ISO/IEC Standard 17025 by an authorized third-party accreditation body with a scope that covers the required testing; or, evaluated and approved by SWCC under the ISO/IEC Standard. The three (3) types of Qualified Testing Organizations, and the related requirements, are as follows:

1. Accredited Testing Organization. Test reports will be accepted for turbines tested by an organization accredited to ISO/IEC Standard 17025 by an authorized national or international accreditation body. The scope of the accreditation must include testing to the MWT Certifications sought by the Applicant, IEC 61400-11 (Acoustics) and/or IEC 61400-12-1 (Power Performance), depending on the MWT Certification being sought by the Applicant.

   SWCC may conduct an on-site evaluation and inspection of the test facility and laboratory documentation to assure compliance with this policy and conformity with all standards referenced above.

2. Non-Accredited Testing Organization. For MWTs tested by a non-accredited testing organization, SWCC will perform an on-site audit of the test facility to determine suitability and competence, using ISO/IEC Standard 17025 as a guide. The audit will document conformance with the IEC Standards, and will include:

   a. An evaluation of the testing organization's quality assurance system using ISO/IEC Standard 17025 as a guide. This quality audit will involve SWCC review and verification of the organization's: staff; procedures; instruments; calibrations; signal quality to data acquisition system; data quality procedures; and/or, validated data analysis procedures; and,

   b. An evaluation of the testing organization's test environment using the IEC Standards as a guide.

   If the testing organization fails to satisfy relevant requirements of ISO/IEC Standard 17025, all testing performed on the MWT by that test facility, and all related test analysis reports, will be rejected by SWCC.

3. Manufacturer Testing. For turbines tested at a facility operated by the MWT Manufacturer, SWCC will conduct an on-site audit and evaluation for non-accredited testing organizations, consistent with the requirements of Policy Section I.2. In addition to the audit, the manufacturer must also agree to the following terms:

   a. Unannounced facility site inspections by SWCC;

   b. Periodic surveillance of data by SWCC; and,

   c. Development, maintenance, and enforcement of facility policies and procedures ensuring that all key personnel involved in the MWT testing, and

the collection and reporting of data related to the MWT tests, are impartial and free from any undue commercial, financial, and other pressures that might influence their technical and independent judgment. In order to satisfy this requirement, the SWCC Manufacturer/Applicant must either: adopt the procedures identified in Annex I of this Policy; or, submit its policies and procedures concerning this requirement to SWCC for review and approval. SWCC retains the sole authority to accept, reject, or require modification of such MWT Manufacturer policies.

If the test facility fails to satisfy relevant requirements of ISO/IEC Standard 17025 , all testing performed on the MWT by that facility, and all related test analysis reports, will be rejected by SWCC.

J. Test and Analysis Report Requirements

1. Test and Analysis Reports submitted to SWCC must clearly and specifically state how each requirement of the relevant IEC Standards has been met with respect to the MWT tested. Applicable to the MWT Certification element(s) being pursued, the following information and elements must be included in the final report(s) in the format required by SWCC.

   a. Power Performance Test Report. The power performance test report must include:

      1. Reporting requirements of Section 9 (Reporting Format) of IEC 61400-12-1;

      2. A summary of the data analysis tool(s) utilized in this test. These tools shall be made available for an SWCC audit; and,

      3. Log Book. A dedicated log book must be maintained during the testing as required by the IEC Standard. This log book must be submitted to SWCC if requested.

   b. Acoustic Test Report. The acoustic test report must include:

      1. Reporting requirements of Section 9 (Information to be reported) of IEC 61400-11; and,

      2. A summary of the data analysis tool(s) utilized in this test. These tools shall be made available for an SWCC audit.

   c. Design Report. The design report must include:

1. Loads and load cases. Summary and results of aeroelastic modeling and load calculations for each design load case, load assumptions, model validation in conformance with IEC 61400-1;

2. Structural Components. Summary and results of structural analysis, dynamic analysis, and ultimate limit state analysis of the load-carrying turbine components, from rotor to foundation - including support structure(s) and excluding the foundation - in conformance with IEC 61400-1;

3. Blade Testing. Results of a Static Load Test in conformance with IEC 61400-23, testing may be performed by the manufacturer and is exempt from an SWCC Test Site Evaluation ;

4. Control and Protection. Summary of control and protection system design in conformance with IEC 61400-1, results of Safety and Function Testing as described in informative Annex D of IEC 61400-22;

5. Mechanical and Electrical Components. Mechanical and electrical system design drawings and documentation in conformance with IEC 61400-1;

6. Manuals. Manuals for assembly, installation, erection, commissioning, operation and maintenance in conformance with IEC 61400-1; and,

7. Quality System. Summary of manufacturing quality assurance system in place at the manufacturing facility, such as ISO 9001.

K. Certificate and Summary Report

For each MWT Certification granted to a certified MWT, SWCC will prepare and provide to the Certification Holder a Certificate and Summary Report consistent with the formats provided in Policy Annex A (SWCC MWT Certificate Formats) and Policy Annex F (SWCC MWT Certification Summary Report Formats).

L. Complaints and Disputes Related to MWT Reporting and Records Requirement

As a condition of SWCC certification and certification renewal, each Certification Holder is required to report to SWCC all complaints and disputes (complaint matters) , including any legal, government, or other third party communications received by the Certification Holder, questioning or objecting to the operation or performance of the MWT, depending on the MWT Certification(s) granted by SWCC. Such complaint matters must be reported to SWCC within thirty (30) days of Certification Holder's knowledge of such matter.

With respect to this reporting requirement, the Certification Holder must submit to SWCC a Complaint Matter Reporting form, as provided in Policy Annex J, which includes the following information:

- ☐ Identification of the complaining party, if known;
- ☐ A description of the nature of the complaint matter; and,
- ☐ An explanation of the Certification Holder's response to the complaint matter, including any corrective actions taken, and the resolution of the matter.

In addition to these information requirements, the Certification Holder must submit to SWCC copies of: all written complaint matter communications; the Certification Holder's response to such complaint matter(s); any additional communications between the complaining party, any involved government agency(ies), and the Certification Holder relating to the matter; and, the final resolution of the matter, if available.

SWCC will review all complaint matters related to the certified MWT in order to determine whether a Notice of Deficiency and Violation will be issued to the Certification Holder under Section O of this Policy.

M. Certification Renewal and Conditions

1. Period of Certification Validity. SWCC MWT Certification is valid during the certification period so long as all Certification Policy conditions are met. Among others, the Certification Holder must satisfy the following conditions:

    a. The turbine has not been changed in any respect that significantly alters the original design approved in the SWCC Certification;

    b. Changes to the turbine design have been reported to SWCC by the Certification Holder as required by this Policy and the Certification Commission; All complaint matters, field failures and malfunctions of the MWT have been reported to SWCC consistent with this Policy;

    c. The Certification Holder is in compliance with all applicable SWCC policies, including the SWCC Trademark and Certification Mark Use Policy. All SWCC marks have been used properly, and in a manner consistent with SWCC policies;

    d. The Certification Holder has complied with the Complaint and Dispute requirements of Section L; and,

    e. The Annual Certification Renewal Fee has been paid in full.

2. Certification Renewal Requirements.

a. Annual Certification Report. In order to maintain SWCC Certification, the Certification Holder is required to prepare and submit an Annual Certification Report to SWCC each year, at least 45 days before the anniversary of the date that the SWCC certification was issued. In order to be accepted, the Annual Certification Report must include a complete and accurate explanation of the following information:

1. All abnormal operating experiences, equipment failures or malfunctions, and other problems of the certified MWT, relevant to the MWT certification(s) granted;

2. All modifications to the certified MWT, including all hardware and software changes, relevant to the MWT certification(s) granted; and,

3. A summary list of all complaint matters regarding the certified turbine within the past twelve (12) months, consistent with the requirements of Section L of this Policy, relevant to the MWT certification(s) granted.

A sample Annual Certification Report Form is provided in Policy Annex G. The template provided in the Annex is for informational purposes only. A custom report form will be sent to the Applicant when Certification is granted.

The Technical Director will assess the Annual Certification Report information, and determine whether the Report satisfies the requirements of this Policy Section. If accepted, the Certification Holder will be notified of continued certification, and will receive an updated Certificate.

If the Technical Director identifies any concerns or anomalies related to the information in the Annual Certification Report, the matter will be referred to the Certification Commission, which will decide whether to accept the report and maintain certification for another year, or whether to require additional testing or other requirements in order to confirm the MWT's ongoing compliance and eligibility. If any MWT changes are deemed significant, then the Requirements of Section M.2.b below will apply. These results will be communicated to the Certification Holder in writing.

b. Significant MWT Modifications. In the event that a certified turbine is, or will be, modified in any significant respect, the Certification Holder must report such modification to SWCC in a timely and accurate manner, no more than thirty (30) days after such MWT design changes have occurred.

The Certification Holder is required to consult with the Technical Director to determine whether a product change is minor or significant. Thereafter, the

Technical Director will consult with the Certification Commission to determine whether there is a material deviation from the initial certified turbine design. Once SWCC determines whether a significant modification to the certified MWT has been proposed, SWCC may: require more information regarding the change; require re-testing or partial re-testing; require re-certification of the turbine; or, determine that the change is minor and no action is required. The Certification Holder must provide all required information and documentation to SWCC.

A sample Significant Modification Report Form is provided in Policy Annex H. The template provided in the Annex is for informational purposes only. A custom form will be sent to the Applicant when SWCC Certification is granted.

c. Annual Certification Renewal Fee. Payment of the Annual Certification Renewal Fee is required to maintain certification. In the event the information reported in the Annual Certification Report or the Significant Modification Report requires additional SWCC review, the Certification Holder will be charged separately for such SWCC costs and expenses, consistent with the applicable SWCC fee schedule.

3. Change in Ownership of MWT. If ownership rights in and to the MWT changes, or the Certification Holder identified in the SWCC MWT Certificate no longer has any rights in or to the certified MWT, a new SWCC Certification Agreement must be accepted by the new owner of the MWT to maintain the SWCC Performance Certification, or the certification will terminate. A fee will be charged to complete transfer of SWCC certification.

N. Applicant Information Confidentiality / Conflict of Interest

1. Application Confidentiality. Certification Applications, and the information contained therein, will be treated as confidential material by SWCC. The review of Applications by SWCC staff, consultants, and Certification Commissioners will be confidential and conducted in private meetings. Prior to a certification determination and upon request by the Applicant, SWCC will publish the Applicant's name, MWT model, and Application Status, pursuant to Policy Section H.6. All other Application information will remain confidential until a certification determination has been issued by SWCC.

Once certification is granted, the following materials will be made available to the public: a Summary Report, as described in Policy Annex F and the SWCC Certificate, consistent with Policy Annex A. All other turbine information will remain confidential.

2. Conflict of Interest. All SWCC representatives are required to disclose any potential conflict of interest related to a pending MWT Certification Application to the SWCC Executive Director, consistent with SWCC conflict of interest policies and agreements.

O. Certification Deficiency and Policy Violation Resolution Process

SWCC will review and resolve all matters involving: a potential failure of the Certification Holder to satisfy a requirement of this Policy; a complaint or similar communication received by the Certification Holder or SWCC concerning the MWT; and, any other dispute related to SWCC policies.

1. Notice of Potential Certification Deficiency or Policy Violation.

   The Certification Commission will issue a Notice of Deficiency and/or Notice of Policy Violation (Notice) to a Certification Holder where the Commission has determined that:

   a. the Certification Holder may have violated any requirement of this Policy; or,
   b. a deficiency may exist with respect to the Certification Holder's SWCC certification.

2. Required Response to Deficiency Notice. Within thirty (30) days of receipt of such Notice, the Certification Holder must: respond to each identified deficiency and/or Policy violation; provide all relevant information and materials; and, otherwise satisfy all requirements set forth in the Notice. Following the timely submission of a complete and accurate response to the Notice, all deficiency and violation matters will be resolved by the Certification Commission pursuant to this Policy Section.

3. Failure to Respond. In the event that the Certification Holder does not provide a timely, complete, and accurate response to a Notice, the Certification Commission may issue any sanction(s) or corrective action(s) authorized by this Policy, or any other applicable SWCC Policy. The Certification Holder must comply fully with all sanctions and/or corrective actions issued by the Commission.

4. Grounds for Sanction and Corrective Actions. The circumstances under which the Certification Commission may issue certification sanctions and/or corrective actions include, but are not limited to, the following:

   a. The Certification Holder has failed to satisfy an SWCC Policy requirement with respect to a Certification Holder's SWCC certification;

   b. The Certification Holder makes a material misrepresentation to SWCC;

   c. The Certification Holder makes a public misrepresentation concerning its activities, operations, or a tested product;

   d. The Certification Holder fails to comply with a condition of the certification;

   e. The Certification Holder violates, or acts contrary to, an SWCC Policy;

f. The Certification Holder fails to remit required certification fees and charges to SWCC;

g. Other good and reasonable cause exists and supports the issuance of sanctions or corrective actions under this Policy.

5. Certification Deficiency and Policy Violation Decisions. Based on an objective and complete review of the information received, the Certification Commission, in its sole discretion, will determine whether a certification deficiency or Policy violation exists, or whether to dismiss the Notice. Upon the finding of any such deficiency or violation, the Certification Commission will determine the severity of such deficiency(ies) or violation(s), and issue a Deficiency and/or Violation Decision. In its sole discretion, the Commission may issue one or more of the following actions:

a. Private or Public Reprimand.

b. Conditions of Continued Certification.

c. Certification Probation. The term of certification probation will be for a period of up to six (6) months. Certification probation status will not be published on the SWCC website. During the period of SWCC certification probation, the SWCC certification remains in effect.

d. Certification Suspension. The term of a certification suspension will be for a period of at least six (6) months, and a maximum of thirty-six (36) months. Notice of certification suspension will be published on the SWCC website. During the period of SWCC certification suspension, the Certification Holder is not permitted to use any SWCC Certification Mark or make any representation concerning certification by, or affiliation with, SWCC with respect to the relevant MWT that is the subject of the deficiency or Policy violation. In addition, the Certification Commission may require that the Certification Holder perform certain, appropriate corrective actions related to the suspension.

e. Certification Revocation. Upon certification revocation, all rights of the Certification Holder to SWCC Certification will terminate in all respects, and the MWT will be removed from the listing of SWCC certified turbines on the SWCC website. Notice of certification revocation will be published on the SWCC website. The Certification Holder is not permitted to use any SWCC Certification Mark, or make any representation concerning certification by, or affiliation with, SWCC with respect to the MWT that is the subject of the deficiency or Policy violation.

6. Probation Order/Reinstatement. Following the expiration of a final Certification Probation Decision and Order issued under Policy Section O.5.c, the Certification

Commission will do the following: if the Certification Holder has satisfied the terms of probation in full, verify that the probation has been completed and reinstate the Certification Holder to full certification status; or, if the Certification Holder has not satisfied the terms of probation in full, determine whether the probation order will continue, and/or issue additional, appropriate sanctions or actions. A reinstatement fee may apply for any necessary SWCC evaluation of the Applicant's completion of the corrective actions and processing of reinstatement, consistent with the Certification Fee Schedule.

7. Suspension Order/Reinstatement Request. After the expiration of a final Certification Suspension Decision and Order issued under Policy Section O.5.d, the Certification Holder may submit a Request for Reinstatement (Reinstatement Request) to the SWCC Executive Director for review by the Certification Commission.

   a. Contents of Reinstatement Request. The Reinstatement Request must include the following information: a statement of the reasons that the Certification Holder believes support or justify the acceptance of the Reinstatement Request; and, copies of any relevant materials which support the Request. The Certification Commission may require any additional information or documents related to its review of the Reinstatement Request. A reinstatement fee may apply for any necessary SWCC evaluation of the Applicant's completion of the corrective actions and processing of reinstatement, consistent with the Certification Fee Schedule.

   b. Certification Reinstatement Decision. Within thirty (30) days of the conclusion of its review of a Reinstatement Request, or as soon as practical, the Certification Commission will prepare and issue a written Reinstatement Decision and Order explaining its decision with respect to the Request. The final Decision and Order will indicate: whether the Reinstatement Request is granted, denied, or continued to a later date; whether all certification deficiencies and Policy violations identified in the Deficiency and/or Violation Decision have been appropriately remedied and resolved; or, whether additional deficiencies or Policy violations exist justifying the continuation of the Suspension Order, and/or issuance of additional certification actions. If appropriate, the Decision and Order will indicate any conditions of SWCC certification.

8. Revocation Order/Reapplication Petition. Two (2) years after the date of a final Certification Revocation Decision and Order issued under Policy Section O.5.e, the MWT Manufacturer, or its authorized designee, may submit a Petition to Reapply for Certification (Reapplication Petition) to the SWCC Executive Director for review by the Certification Commission.

   a. Contents of Reapplication Petition. The Reapplication Petition must include the following information: a statement of the reasons that support or justify the acceptance of the Reapplication Petition, copies of any relevant materials

which support the Petition, and the Certification Reapplication Fee. The Certification Commission may require any additional information or documents related to its review of the Reapplication Petition.

b. Certification Reapplication Decision. Within thirty (30) days of the conclusion of its review of a Reapplication Petition, or as soon as practical, the Certification Commission will prepare and issue a written Reapplication Decision and Order explaining whether the Petition is accepted, denied, or continued to a later date. If the Reapplication Petition is accepted, then the MWT Manufacturer, or its authorized designee, may submit a new Notice of Intent to Submit an Application for SWCC Certification.

P. Deficiency and Violation Decision Appeals

A Certification Holder may appeal an adverse Certification Deficiency or Policy Violation Decision, or any part thereof, to the SWCC Appeals Committee, pursuant to the terms of the SWCC Certification Appeal Policy.

Q. Voluntary Termination

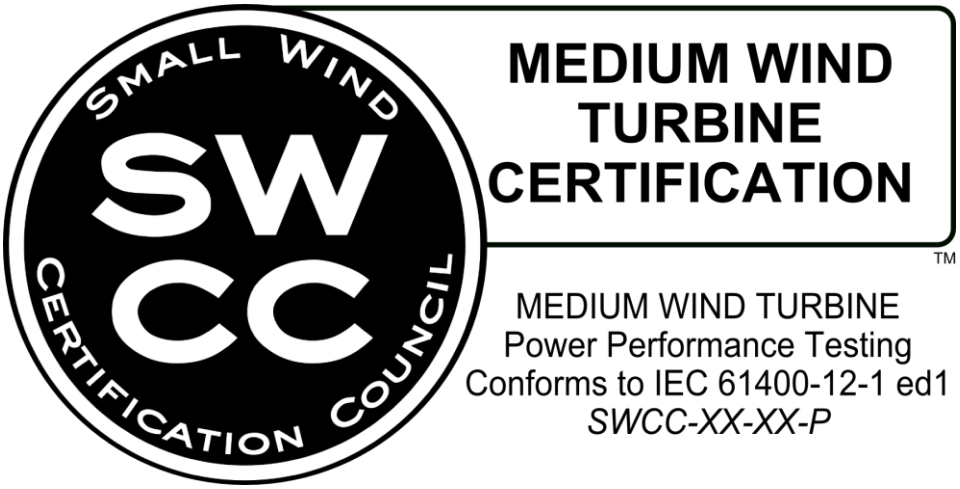
A Certification Holder may elect to voluntarily terminate its SWCC Certification by submitting a written request for certification termination to SWCC. Should a Certification Holder attempt to voluntarily terminate SWCC certification during the course of any complaint, dispute, or deficiency review, SWCC reserves the exclusive right to continue the matter to a final resolution, consistent with this Policy. In its sole discretion, SWCC may require that a Certification Holder agree to certain terms and conditions related to the voluntary termination of SWCC certification.

Upon SWCC's acceptance of a voluntary termination request, the Certification Agreement with SWCC will be terminated, the MWT will be removed from the listing of SWCC certified turbines on the SWCC website, and notice of the voluntary certification termination will be published on the SWCC website. The Certification Holder is no longer authorized to use the SWCC Certification Mark(s) and consumer product labels, and may not make any representations concerning certification by, or affiliation with, SWCC with respect to the MWT that is the subject of the certification termination.

Annex A: SWCC MWT Certificate Formats

SWCC MWT Power Performance Certificate Format

To be made publicly available once a SWCC Certification has been granted



This Certificate is issued to:

XXXX
Street
City
Country

For the wind turbine:

XXXX

This Certificate represents that the above-identified Medium Wind Turbine (MWT) has been evaluated by SWCC concerning Power Performance testing. The testing and reporting have been found to be in conformance with IEC 61400-12-1. SWCC MWT Certification only applies to the specific MWT model identified above.

Changes to the MWT system design that may affect power performance are to be approved by SWCC. If changes are made to the MWT without approval, this Certificate is not valid and is not in effect.

The wind turbine specifications relevant to this Certificate are provided on the following page.

This Certificate is valid from [Date] to [Date]. Certification must be renewed annually.

Signature

_____ _____

SWCC Executive Director for the Certification Commission Date

SWCC MWT Power Performance Certificate, Page 2

Wind Turbine Specifications:

Manufacturer .....

Model .....

Rotor Description .....

IEC WT Class..... Rotor

Diameter.....[m]

Rotor Swept Area.....[m^2]

Power Form.....

Peak Power (Nameplate Capacity).....[kW @ m/s]

Reference Power.....[kW @ m/s]

Reference Annual Energy .....[kWh]

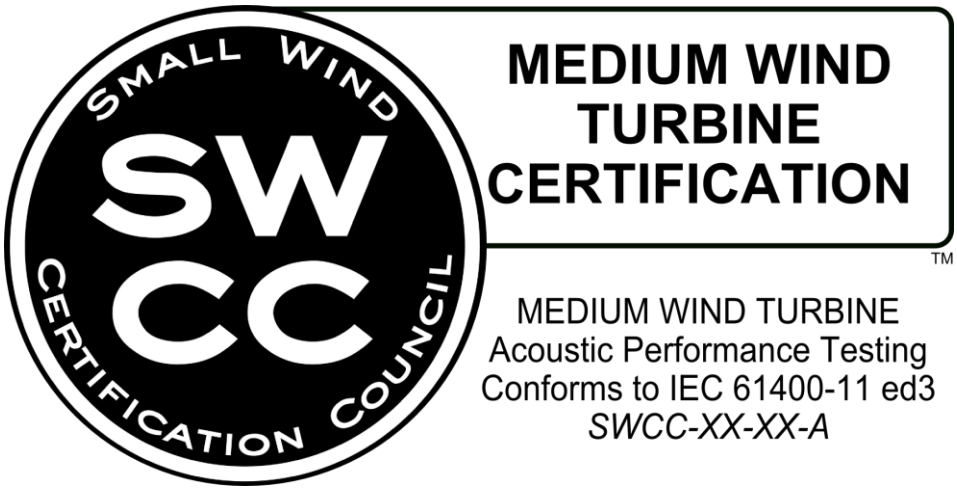
Cut-In Wind Speed.....[m/s]

Cut-Out Wind Speed .....[m/s]

Small Wind Certification Council (SWCC)
56 Clifton Country Road, Suite 202
Clifton Park, NY 12065
www.smallwindcertification.org

SWCC MWT Acoustic Performance Certificate Format

To be made publicly available once a SWCC Certification has been granted



This Certificate is issued to:

XXXX
Street
City
Country

For the wind turbine:

XXXX

This Certificate represents that the above-identified Medium Wind Turbine (MWT) has been evaluated by SWCC concerning Acoustic testing. The testing and reporting have been found to be in conformance with IEC 61400-11. SWCC MWT Certification only applies to the specific MWT model identified above.

Changes to the MWT system design that may affect acoustic performance are to be approved by SWCC. If changes are made to the MWT without approval, this Certificate is not valid and is not in effect.

The wind turbine specifications relevant to this Certificate are provided on the following page.

This Certificate is valid from [Date] to [Date]. Certification must be renewed annually.

Signature

_____ _____

SWCC Executive Director for the Certification Commission Date

SWCC MWT Acoustic Performance Certificate, Page 2

Wind Turbine Specifications:

Manufacturer .....

Model .....

Rotor Description .....

IEC CWT Class..... Rotor

Diameter.....[m]

Rotor Swept Area.....[m^2]

Power Form.....

Peak Power (Nameplate Capacity).....[kW @ m/s]

Reference Power.....[kW @ m/s]

Reference Sound Pressure Level.....[dB(A)]

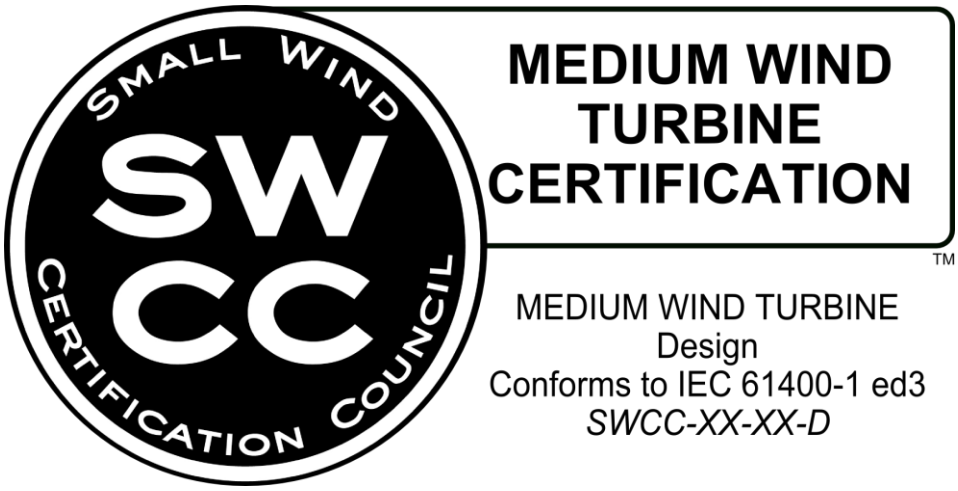
Cut-In Wind Speed.....[m/s]

Cut-Out Wind Speed .....[m/s]

Small Wind Certification Council (SWCC)
56 Clifton Country Road, Suite 202
Clifton Park, NY 12065
www.smallwindcertification.org

SWCC MWT Design Certificate Format

To be made publicly available once a SWCC Certification has been granted



This Certificate is issued to:

XXXX
Street
City
Country

For the wind turbine:

XXXX

This Certificate represents that the above-identified Medium Wind Turbine (MWT) has been evaluated by SWCC concerning the turbine design. The design been found to be in conformance with IEC 61400-1. SWCC MWT Certification only applies to the specific MWT model identified above.

Changes to the MWT system design are to be approved by SWCC. If changes are made to the MWT without approval, this Certificate is not valid and is not in effect.

The wind turbine specifications relevant to this Certificate are provided on the following page.

This Certificate is valid from [Date] to [Date]. Certification must be renewed annually.

Signature

SWCC Executive Director for the Certification Commission Date

SWCC MWT Design Certificate, Page 2

Wind Turbine Specifications:

Manufacturer .....

Model .....

Rotor Description .....

IEC WT Class.....

Rotor Diameter .....[m]

Rotor Swept Area.....[m^2]

Power Form.....

Peak Power (Nameplate Capacity).....[kW @ m/s]

Reference Power.....[kW @ m/s]

Reference Annual Energy .....[kWh]

Cut-In Wind Speed.....[m/s]

Cut-Out Wind Speed .....[m/s]

Small Wind Certification Council (SWCC)
56 Clifton Country Road, Suite 202
Clifton Park, NY 12065
www.smallwindcertification.org

Notice of Intent to Submit an Application for SWCC Medium Wind Turbine Certification

Please submit this form and all attachments electronically to the e-mail address below. If necessary, send a hard copy of this form with payment of the Preliminary Review Fee to the mailing address below:

To: Small Wind Certification Council
56 Clifton Country Road, Suite 202
Clifton Park, NY 12065
info@smallwindcertification.org

Please use the legal corporate or other business name for the Company and the official corporate address.

Date (mm/dd/yyyy) _____

Applicant Name _____

Company _____

Description of Legal Status _____

(e.g. LLC organized in the State of xxxxx)

Website _____

Address 1 _____

Address 2 _____

City, State, Zip, Country _____

Email _____

Phone 1 _____

Phone 2 _____

The Applicant identified above represents the following:

1. The Applicant is the designer and/or manufacturer of the MWT, or the authorized designee of the designer/manufacturer. **Please indicate the Applicant type below:**

   ☐ Holder of all ownership rights in and to the MWT (MWT Manufacturer)

   ☐ Authorized Designee of the MWT Manufacturer (include written proof of authorization with this application)

2. The Applicant chooses to pursue one or both or the following SWCC Medium Wind Turbine Certification elements. **Please indicate your intent to pursue one (1), two (2) or all:**

☐ Certification of Power Performance testing according to IEC 61400-12-1

☐ Certification of Acoustic testing according to IEC 61400-11

☐ Certification of Design according to IEC 61400-1

3. The rotor swept area is **greater than 200 m^2 and less than 1000 m^2.**

4. The Applicant has:

✓ Received and accepted IEC 61400-12-1 (Power Performance testing) and/or IEC 61400-11 (Acoustic testing) and/or IEC 61400-1 (Design Requirements)

✓ Included the SWCC **Preliminary Review Fee.**

By signing below, the authorized representative of the applicant confirms and agrees that all of the information contained in this Notice of Intent is true and accurate.

Applicant Signature - Applicant agrees to the above representations

Preliminary review fee

• Notice of Intent to Submit an Application for one (1) MWT	**US$ 2500**
• For each additional MWT submitted when multiple MWT configurations of the same turbine type are included in the Notice of Intent, provided that SWCC confirms that the MWTs are similar in design and other significant characteristics.	**US$ 1250**

- Fees may be paid by check or by wire transfer. Checks must be in U.S. funds drawn on a U.S. bank and payable to Small Wind Certification Council. Contact SWCC for wire instructions.

Turbine information. Please provide the following information for each turbine to be certified:

Model: _____

Rotor: _____

Rotor diameter (m): _____

Swept area (m^2): _____

Power form _____ (e.g. 240VAC, 60Hz, 1-phase)

*(Please complete the **SWCC Configuration Description Form** for each turbine)*

Testing plans. Please describe the Testing Organization that will be testing the turbine(s) to be certified:

Testing organization: _____

Address: _____

Contact: _____

Phone: _____

Website: _____

Email: _____

Publication of Application Status

The Applicant may request that SWCC publicly list the status of the SWCC Certification Application on the SWCC website, pursuant to Section H.6 of the SWCC MWT Certification Policy.

Please check one box below:

☐ Yes, I authorize SWCC to publicly list the Applicant's name, MWT model and Application Status on the SWCC website.

☐ No, I would like the Applicant's name, MWT model and Application Status to remain confidential as we pursue certification.

While SWCC makes a significant effort to maintain current and accurate applicant directory information on the SWCC website, SWCC does not warrant or guarantee the accuracy, timeliness, or fitness of the information contained therein for any purpose.

Annex C: Certification Process Summary

The following is an informative summary of the SWCC MWT Certification process.

1. Applicant will acquire from the SWCC website:

    a. The **SWCC4: SWCC Medium Wind Turbine Certification Policy**;

    b. The **Notice of Intent to Submit an Application for MWT Certification form**; and,

    c. The **SWCC Configuration Description form**.

2. SWCC will receive a Notice of Intent to Submit an Application (Notice of Intent) along with the SWCC Configuration Description Form and Preliminary Review Fee

3. SWCC will evaluate Applicant's Notice of Intent to determine detailed plans for testing, the choice of Certification element(s), and will communicate with the Applicant and Testing Organization as required.

4. Applicant will sign a Certification Agreement with SWCC, which details the turbine to be certified, the test and evaluation plans, and the Certification Fees.

5. If the Applicant chooses to authorize SWCC to publicly list the Applicant's name, MWT model and Application Status, such information will be published on the SWCC website.

6. Testing organization will sign an Agreement with SWCC, agreeing to perform appropriate tests on the turbine to be certified, and agreeing to the test plans and SWCC test site evaluation, if applicable.

7. After testing and reporting are complete, Applicant must submit to SWCC:

    a. A complete Certification Application (an Application form will be provided by the SWCC);

    b. Final report(s); and,

    c. The Certification Fee (as listed in the Certification Agreement).

8. SWCC Technical Director and other experts as needed, will evaluate Application materials, reports, and communicate with the Applicant and testing organization to resolve issues.

9. Technical Director will send a technical evaluation report to the Certification Commission documenting the technical evaluation results for the Certification Commission.

10. Certification Commission will review the Technical Director report, and determine whether the Certification Application is granted or rejected.

11. SWCC will grant certification to the MWT, or issue a rejection of the Certification Application describing the reasons for such determination.

12. If certification is granted, SWCC will prepare Certificate(s) signed by the SWCC Executive Director and Summary Report(s) for publication on the SWCC Internet site and distribution by the Certification Holder.

Annex D: References

The following documents were used in the creation of, or are referenced within, this Policy.

1. IEC 61400-1 (2005): *Wind Turbines - Part 1: Design requirements.*IEC 61400-11 (2006): *Wind turbine generator systems - Part 11: Acoustic noise measurement techniques.*

2. IEC 61400-11 (2012)**:** *Wind turbines - Part 11: Acoustic noise measurement techniques.*

3. IEC 61400-12-1 (2005): *Wind Turbines – Part 12-1: Power performance measurements of electricity producing wind turbines.*

4. IEC 61400-22 (2010): *Wind turbines - Part 22: Conformity testing and certification.*

5. IEC 61400-23 (2014): *Wind turbines - Part 23: Full-scale structural testing of rotor blades*

6. ISO/IEC 17025 (2005): *General requirements for the competence of calibration and testing laboratories.*

7. ISO/IEC 17065 (2012): *Conformity assessment - Requirements for bodies certifying products, processes and services.*

8. ISO 9001 (2008): *Quality management systems – Requirements.*

Annex E: MWT Certification Fee Schedule

All fees are non-refundable. Section G of this Policy defines each Certification fee in detail.

Payments may be made by check or by wire transfer. Payments made by check must be in U.S. funds drawn on a U.S. bank and payable to Small Wind Certification Council. If you wish to wire funds, please contact SWCC for wire instructions.

Preliminary review fee	
▪ Notice of Intent to Submit an Application for one (1) MWT	US$ 2500
▪ For each additional MWT submitted when multiple MWT configurations of the same turbine type are included in the Notice of Intent, provided that SWCC confirms that the MWTs are similar in design and other significant characteristics.	US$ 1250
Test site evaluation fee	Varies
Certification application fee	Varies
Annual certification renewal fee	US$ 2000
Annual Review Services related to Annual Certification Report	Varies
Reinstatement Fee	Varies
Certification Reapplication Fee	Varies

Annex F: SWCC MWT Certification Summary Report Formats

MWT Power Performance Certification

The MWT Power Performance Summary Report will include a summary of the test results including, but not limited to, the following elements:

1. An introduction that includes a description of the field testing, the testing organization and the configuration of the tested MWT;
2. A table of Peak Power, Reference Power and Reference Annual Energy;
3. tabulated annual energy production for air density at sea level;
4. graph of annual energy production for air density at sea level;
5. graph of the measured power curve for air density at sea level;
6. tabulated measured power curve for air density at sea level;
7. graph of C_p as a function of wind speed for air density at sea level; and,
8. a scatter plot of mean, standard deviation, maximum, and minimum power output as a function of wind speed.

MWT Acoustic Performance Certification

The MWT Acoustic Performance Summary Report will include a summary of the test results including, but not limited to, the following elements:

1. An introduction that includes a description of the field testing, the testing organization and the configuration of the tested MWT;
2. table of reference sound pressure level;
3. table of apparent sound power level $L_{WA,10m,k}$ at integer wind speeds at 10 m height;
4. plot of measured sound pressure levels (total noise and background noise);
5. table and plot of sound power spectrum in 1/3-octaves;
6. results of tonality analysis;

Annex G: Annual MWT Certification Report Form

This template is for informational purposes only. A custom form will be sent to the Applicant when Certification is granted.

SWCC Annual Certification Report Form

According to Section M.2.a of the SWCC Medium Wind Turbine Certification Policy, the Certification Holder shall prepare and submit this Annual Certification Report to SWCC 45 days before the anniversary of SWCC certification each year. To allow time for processing the renewal, please submit this report forty-five (45) days prior to the certification anniversary date**.**

Section M.2.c of the SWCC Medium Wind Turbine Certification Policy states that in the event the information reported in the Annual Certification Report requires additional SWCC work or review, the Certification Holder will be charged separately for such SWCC costs and expenses, consistent with the applicable SWCC fee schedule.

Date (mm/dd/yyyy): _____

Certification Holder: _____

Turbine Model: _____

SWCC Certification Number (SWCC-XX-XX-X): _____

Issue date(s) of Certification (mm/dd/yyyy): _____

Renewal date (mm/dd/yyyy): _____

Report all abnormal operating experiences, equipment failures, and other problems related to the certified MWT:
Summarize all complaints made known to supplier relating to the turbine's performance and compliance with the IEC Standard(s).
Identify all modifications to the certified MWT, including all hardware and software changes:

Annex H: MWT Significant Modification Report Form

This template is for informational purposes only. A custom form will be sent to the Applicant when Certification is granted.

SWCC Significant Modification Report Form

According to Section M.2.b of the SWCC Medium Wind Turbine Certification Policy, in the event that a certified turbine is, or will be, modified in any significant respect, the Certification Holder must report such modification to SWCC in a timely and accurate manner, no more than thirty (30) days after such MWT design changes have occurred. Please refer to Section M.2.b of the Policy for guidance on defining a Significant Modification.

Date (mm/dd/yyyy): _____

Certification Holder: _____

Turbine Model: _____

SWCC Certification Number (SWCC-XX-XX-X) _____

Issue date of SWCC Certification (mm/dd/yyyy): _____

Please report all planned Significant Modifications to the design of the certified wind turbine. Also include a rationale explaining how the changes may or may not affect the validity of the Certification.

Annex I: Policy and Procedures Concerning Independence and Impartiality of Testing Personnel

A. Introduction and Purpose

Testing laboratories and facilities (test facilities) operated by MWT Manufacturers seeking SWCC certification of its product(s) must ensure that key personnel involved in the testing of MWTs (testing personnel), and the reporting of MWT test data, are impartial and free from any undue commercial, financial, and other pressures that might influence their technical and independent judgment. To that end, all test facilities must establish policies and procedures which: identify possible or actual influences which may create a conflict or undue influence on testing personnel; and, identify rules to prevent or limit such influences on those involved in the testing of MWTs and related activities.

The purpose of such policies and procedures is to ensure confidence in the test facility's competence, impartiality, judgment, and operational integrity.

B. Internal and External Influence

A test facility must ensure that all owners, managers, and employees, contractors, and other third parties do not influence, or otherwise affect the validity or impartiality of, the activities and judgment of testing personnel. In order to accomplish this, the test facility must implement and satisfy the following procedures and requirements:

1. Test facility personnel involved in the design, development, and manufacture of the turbine are clearly identified in the related project report and documentation;

   AND

2. When conducting tests and collecting data concerning a turbine, the test facility will only assign and use testing personnel who were not, and will not be, involved in the design, development, or manufacture of that turbine, and who are otherwise competent and qualified to perform such testing and data collection activities (approved testing personnel);

   OR

   In the MWT Manufacturer is unable to identify appropriate testing personnel under this Policy, and intends to use other personnel or contractors who do not qualify for approved testing personnel status, the test facility must:

   a. Ensure that appropriate training concerning potential conflicts and undue influence is provided to such test facility personnel or contractors; and,

b. Engage a qualified, independent third party evaluator to review and approve all test results and underlying data, and to confirm, modify, or reject such results and data.

C. Training of Testing Personnel/Activity Prohibitions

The test facility is responsible for ensuring that its testing personnel understand the importance of maintaining the competence, integrity, judgment, and operations integrity of the facility and related testing activities. In this regard, the test facility must take appropriate steps to ensure that its testing personnel not act in any manner, or engage in any activities, that may influence his/her independent judgment, or otherwise cast doubt upon its testing activities or the validity of test results or reports, including personnel training and the required disclosure of any involvement in any activities, organizations, or businesses that may relate to the interests or activities of the test facility.

Annex J: MWT Complaint Matter Reporting Form

This template is for informational purposes only. A custom form will be sent to the Applicant when Certification is granted.

Complaint Matter Reporting Form

According to Section L of the SWCC Medium Wind Turbine Certification Policy, each Certification Holder is required to report to SWCC all complaints and disputes (complaint matters) pertaining to the certified MWT. Please refer to Section L of the Policy for more information on Complaint Matters Reporting.

Date (mm/dd/yyyy): _____

Certification Holder: _____

Turbine Model: _____

SWCC Certification Number (SWCC-XX-XX-X): _____

Issue date of SWCC Certification (mm/dd/yyyy): _____

Please use this form to report all Complain Matters to SWCC:

Complaining Party	Nature of Complaint	Response to Complaint

Notice of Intent to Submit an Application for SWCC Small Wind Turbine Certification

Please submit this form and all attachments electronically to the e-mail address below. If necessary, send a hard copy of this form with payment of the Preliminary Review Fee to the mailing address below:

To: Small Wind Certification Council
56 Clifton Country Road, Suite 202
Clifton Park, NY 12065
info@smallwindcertification.org

Please use the legal corporate or other business name for the Company and the official corporate address.

Date (mm/dd/yyyy) _____

Applicant Name _____

Company _____

Description ofLegal Status _____

(e.g. LLC organized in the State of xxxxx)

Website _____

Address 1 _____

Address 2 _____

City, State, Zip, Country _____

Email _____

Phone 1 _____

Phone 2 _____

Re: **Notice of Intent to Submit an Application for SWCC Certification**

The Applicant identified above represents the following:

1. The Applicant is the designer and/or manufacturer of the SWT, or the authorized designee of the designer/manufacturer. **Please indicate the Applicant type below:**

   ☐ Holder of all ownership rights in and to the SWT (SWT Manufacturer)

   ☐ Authorized Designee of the SWT Manufacturer (include written proof of authorization with this application)

2. The rotor swept area is **200 m² or less.**

3. The Applicant has:

   ✓ Received and accepted the SWCC Small Wind Turbine Certification Policy;
   ✓ Received and accepted the AWEA *Small Wind Turbine Performance and Safety Standard;*
   ✓ Received and accepted the necessary IEC 61400 Standards referenced within the AWEA Standard, including IEC 61400-2; and,
   ✓ Included the SWCC **Preliminary Review Fee.**

   By signing below, the authorized representative of the applicant confirms and agrees that all of the information contained in this Notice of Intent is true and accurate.

_____

Applicant Signature - Applicant agrees to the above representations

Preliminary review fee

- Notice of Intent to Submit an Application for one (1) SWT **US$ 2500**
- 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. **US$ 1250**
- Fees may be paid by check or by wire transfer. Checks must be in U.S. funds drawn on a U.S. bank and payable to Small Wind Certification Council. Contact SWCC for wire instructions.

Turbine information. Please provide the following information for each turbine to be certified:

Model: _____

Rotor: _____

Rotor diameter (m): _____

Swept area (m^2): _____

Power form _____ (e.g. 240VAC, 60Hz, 1-phase)

*(Please complete the **SWCC Configuration Description Form** for each turbine)*

Testing and evaluation plans. Please describe the Qualified Testing Organization that will be testing the turbine(s) to be certified:

Testing organization: _____

Address: _____

Contact: _____

Phone: _____

Website: _____

Email: _____

Certified Turbines. If the SWT has been granted certification by another body to either the AWEA Standard, the IEC 61400 Standards or per the MCS requirements, please provide the following information:

To Standard: _____ (AWEA, IEC, BWEA/MCS, or JSWTA)

Certification Body: _____

Address: _____

Contact: _____

Phone: _____

Website: _____

Email: _____

Publication of Application Status.
The Applicant may request that SWCC publicly list the status of the SWCC Certification Application on the SWCC website, pursuant to Section H.3 of the SWCC Certification Policy. **Please check one box below:**

☐ Yes, I authorize SWCC to publicly list the Applicant's name, SWT model and Application Status on the SWCC website.

☐ No, I would like the Applicant's name, SWT model and Application Status to remain confidential as we pursue certification.

While SWCC makes a significant effort to maintain current and accurate applicant directory information on the SWCC website, SWCC does not warrant or guarantee the accuracy, timeliness, or fitness of the information contained therein for any purpose.

Notice of Intent to Submit an Application for SWCC Medium Wind Turbine Certification

Please submit this form and all attachments electronically to the e-mail address below. If necessary, send a hard copy of this form with payment of the Preliminary Review Fee to the mailing address below:

To: Small Wind Certification Council
56 Clifton Country Road, Suite 202
Clifton Park, NY 12065
info@smallwindcertification.org

Please use the legal corporate or other business name for the Company and the official corporate address.

Date (mm/dd/yyyy) _____

Applicant Name _____

Company _____

Description of Legal Status _____

(e.g. LLC organized in the State of xxxxx)

Website _____

Address 1 _____

Address 2 _____

City, State, Zip, Country _____

Email _____

Phone 1 _____

Phone 2 _____

The Applicant identified above represents the following:

1. The Applicant is the designer and/or manufacturer of the MWT, or the authorized designee of the designer/manufacturer. **Please indicate the Applicant type below:**

   ☐ Holder of all ownership rights in and to the MWT (MWT Manufacturer)

   ☐ Authorized Designee of the MWT Manufacturer (include written proof of authorization with this application)

2. The Applicant chooses to pursue one or both or the following SWCC Medium Wind Turbine Certification elements. **Please indicate your intent to pursue one (1), two (2) or all:**

   ☐ Certification of Power Performance testing according to IEC 61400-12-1

   ☐ Certification of Acoustic testing according to IEC 61400-11

   ☐ Certification of Design according to IEC 61400-1

3. The rotor swept area is **greater than 200 m^2 and less than 1000 m^2.**

4. The Applicant has:

   ✓ Received and accepted IEC 61400-12-1 (Power Performance testing) and/or IEC 61400-11 (Acoustic testing) and/or IEC 61400-1 (Design Requirements)

   ✓ Included the SWCC **Preliminary Review Fee.**

By signing below, the authorized representative of the applicant confirms and agrees that all of the information contained in this Notice of Intent is true and accurate.

Applicant Signature - Applicant agrees to the above representations

Preliminary review fee

• Notice of Intent to Submit an Application for one (1) MWT	**US$ 2500**
• For each additional MWT submitted when multiple MWT configurations of the same turbine type are included in the Notice of Intent, provided that SWCC confirms that the MWTs are similar in design and other significant characteristics.	**US$ 1250**

- Fees may be paid by check or by wire transfer. Checks must be in U.S. funds drawn on a U.S. bank and payable to Small Wind Certification Council. Contact SWCC for wire instructions.

Turbine information. Please provide the following information for each turbine to be certified:

Model: _____

Rotor: _____

Rotor diameter (m): _____

Swept area (m^2): _____

Power form _____ (e.g. 240VAC, 60Hz, 1-phase)

*(Please complete the **SWCC Configuration Description Form** for each turbine)*

Testing plans. Please describe the Testing Organization that will be testing the turbine(s) to be certified:

Testing organization: _____

Address: _____

Contact: _____

Phone: _____

Website: _____

Email: _____

Publication of Application Status

The Applicant may request that SWCC publicly list the status of the SWCC Certification Application on the SWCC website, pursuant to Section H.6 of the SWCC MWT Certification Policy.

Please check one box below:

☐ Yes, I authorize SWCC to publicly list the Applicant's name, MWT model and Application Status on the SWCC website.

☐ No, I would like the Applicant's name, MWT model and Application Status to remain confidential as we pursue certification.

While SWCC makes a significant effort to maintain current and accurate applicant directory information on the SWCC website, SWCC does not warrant or guarantee the accuracy, timeliness, or fitness of the information contained therein for any purpose.

SWCC Configuration Description Form

Instructions: This form is to accompany the *Notice of Intent to Submit an Application*. One (1) form is required per turbine configuration seeking SWCC Certification.

Date	
Manufacturer	
Wind Turbine Model	
General Configuration	
Rotation Axis (Horizontal/Vertical)	
Nominal Rated Power (W or kW)	
IEC SWT Class (I, II, III, IV or S)	
Rotor	
Estimated Max Rotational Speed (rpm)	
Describe Power Regulation system (e.g. stall, blade pitching)	
Describe Overspeed Control system (e.g. furling)	
For HAWTs:	
Orientation (upwind/downwind)	
Number of Blades	
Rotor Hub Type (flexible, rigid, teetered)	
Rotor Diameter (m)	
Swept area (m^2)	
For VAWTs:	
Rotor type (e.g. H-Darrieus)	
Number of Blades	
Rotor Diameter (m)	
Rotor Height (m)	
Swept area (m^2)	
Blades	
Source/manufacturer	
Material	
Length (m)	

Drive Train	
Gearbox Source/Manufacturer	
Gearbox Type	
Gearbox Ratio	
Generator Source/Manufacturer	
Generator Type	
Generator Speed	
Nominal Power, Voltage and Frequency of Generator Output	_____kW_____V_____AC/DC_____Hz
Braking System	
Describe braking system for normal shutdown, parking and service braking	
Describe braking system for emergency shutdown	
Yaw System	
Yaw Control Method (passive, active, damped)	
Wind Direction Sensor	
Yaw Bearing Type	
Tower to be used in testing	
Source/manufacturer	
Tower Type (guyed or self-supporting; lattice or monopole)	
Height (m)	
Control/Electrical System	
Make/Model of Controller	
Make/Model of Inverter/Converter	
Power Form of Electrical Output (usable power delivered to load)	
Nominal Voltage (AC/DC)	
Frequency (Hz)	
Number of Phases	
Weight	
Total Tower Top Weight (kg)	

Please add turbine photo(s)

Please include a Single Line Wiring/Connection Diagram From Generator to Load