

IEEE Power and Energy Society Entity Annual Report

2015

Entity: Wind and Solar Power Coordinating Committee

Chair: Richard Piwko

Vice-Chair: Bob Zavadil

Secretary: Durgesh Manjure

Technical Committee Program Chair: Andrew Leon

The role of the WSPCC is two-fold: 1) to coordinate the wind and solar power activities of technical committees within PES to ensure that issues critical to the industry are being addressed while minimizing overlap in their activities, and 2) to ensure work done in IEEE PES on wind and solar power is also coordinated with other relevant industry groups such as AWEA, UVIG, NREL to mention a few. The WSPCC fulfills its responsibilities by providing a forum for the leaders of the many wind and solar groups within PES as well as from other industry groups to share progress of ongoing activities and to collaborate on plans to initiate new activities. Since its creation in 2005, WSPCC has ensured that knowledge and information are shared by the various PES technical committees pursuing activities involving wind and solar power and that liaisons are maintained with important wind and solar groups outside of the PES.

As part of a reorganization plan for PES technical committees, it was proposed that WSPCC be moved to a subcommittee under Energy Development and Power Generation committee. The consensus of WSPCC leaders and members is that the WSPCC has been very successfully accomplishing its mission within the present PES structure as a coordinating committee. There is a serious concern that moving WSPCC's coordination responsibilities into EDPG committee would reduce the level of cooperation that WSPCC presently enjoys with other technical committees, as WSPCC and EDPG would be viewed as competitors for wind and solar scope. The WSPCC committee voted to remain a coordinating committee under PES and not move to EDPG.

1. Significant Accomplishments:

In 2005, PES had only one working group focused on wind power and no working groups on solar power. Given the rapid growth of wind and solar power, WSPCC has been working to grow wind and solar activities within PES, and to instigate/facilitate sharing of technical knowledge related to the interconnection and integration of wind and solar power into bulk power grids. As of 2015, there are 20 individual subcommittees, working groups and taskforces that address various aspects of wind and solar power within 10 PES technical committees. See Table 1.

There were 17 wind and solar sessions (tutorials, paper sessions, panel sessions) at the 2015 PES General Meeting in Denver (see Table 2). In addition, there were 18 wind and solar related committee meetings at 2015 PES General Meeting (see Table 3).

Table 1. Summary of Existing Wind and Solar Subcommittees, Working Groups and Task Forces within PES Technical Committees in Year 2015.

PES Committee	SC, WG or TF Name	SC, WG or TF Leader & Email
Electric Machinery	1) Renewable Energy Machines and Systems Subcommittee (EM)	Mohamed El-Sharkawi (elsharkawi@ee.washington.edu)
Energy Development & Power Generation - O. P. Malik (maliko@ieee.org)	1) Renewable Technologies Subcommittee (ED&PG)	Rama Ramakumar (rama.ramakumar@okstate.edu)
	2) Working Group on Photovoltaics (ED&PG)	Badrul Chowdhury (bchowdh@uncc.edu)
Power System Analysis, Computing and Economics	1) Capacity Value of Wind Generators (PSACE and PSO)	Mark O'Malley (mark.omalley@ucd.ie), Michael Milligan (michael_milligan@nrel.gov)
Power System Relaying - Roger Hedding	1) Working Group on Fault Current Contribution from Wind Farms (PSRC C17)	Chair: Dean Miller (millerdh@comcast.net), Vice Chair: Gene Henneberg (Need Email)
	2) Working Group on Modifications to Fault Study Programs for Wind Turbine Generators (PSRC CTF24)	Chair: Sukumar Brahma (sbrahma@nmsu.edu), Vice-chair: George Bartok (georgeb@rlc-eng.com)
	3) Working Group on Guide for Protection of Wind Plants (PSRC CTF25)	Dean Miller (millerdh@comcast.net)
	4) Joint Working Group on Fault Current Contribution from Wind Farms (Sponsored by PSRC, T&D, EMC)	Dean Miller - PSRC (millerdh@comcast.net), Reigh Walling - T&D (rwalling@wesconsult.com), Ron Harley - EM (ronald.harley@ece.gatech.edu)
Surge Protective Devices - Ronald Hotchkiss (ronhotchkiss@msn.com)	1) Working Group on Wind Power Facilities Electrical Protection Guide (SPD)	Kenneth Brown (kbrown@leviton.com)
	2) Working Group on Photovoltaic Facilities Electrical Protection Guide WG (SPD)	Dr. A. J. (Tony) Surtees (surtees@ieee.org)
Transformers - Donald W. Platts (donplatts@ieee.org)	1) Working Group on Standard Requirements for Wind Turbine Generator Transformers (Transformers)	David Buckmaster (david.buckmaster@shawgrp.com)
Transmission & Distribution - W. A. Chisholm (W.A.Chisholm@ieee.org)	1) Integration of Renewable Energy into T&D Grids Subcommittee (T&D)	Ernst Camm (ecamm@sandc.com)
	1) Working Group on Wind and Solar Plant Collector System Design (T&D and EDPG)	Wayne Dilling (Wayne.Dilling@mortenson.com), Mitch Bradt (bradt@wisc.edu)
	3) Working Group on Wind and Solar Power Plant System Impacts and Interconnection Requirements (T&D)	Tom McDermott (tom@meltran.com)
	4) Task Force on EMT Modeling of Wind Turbine Generators and Parks (T&D, General Systems)	Juan Martinez-Velasco (martinez@ee.upc.edu)
	5) Task force on Wind and Solar Plant Grounding for Personal Safety (T&D)	Gopal Padmanabhan (gopal.padmanabhan@res-americas.com)
Power System Dynamic Performance - Thierry Van Cutsem (t.vancutsem@ulg.ac.be)	1) Working Group on Dynamic performance of Wind Power Generation (PSDP)	Pouyan Pourbiek (ppourbeik@epri.com)
Power System Operations	1) Task Force on Integration of Wind and Solar Generation into Power System Operations (PSO)	Jianhui Wang (jianhui.wang@anl.gov)
	2) Task Force on Bulk power System Operations with Variable Generation (PSO)	Aidan Tuohy (atuohy@epri.com)
Power System Planning and Implementation - M. L. Chan (manloongchan@gmail.com)	1) Conventional & Renewable Energy Supply Planning (PSPI)	Joseph Yan (Joseph.Yan@sce.com)

Table 2. Wind and Solar Related Sessions at 2015 PES General Meeting

Day/Time	Session Type	Title
Sunday 1-5	Tutorial	Fault Current Contributions from Wind Plants
<input type="checkbox"/> Monday 1-5	Panel Session	Insights and outcomes from significant system flexibility studies
<input type="checkbox"/> Monday 1-5	Paper Session	Best Conference Papers on Integration of Renewable & Intermittent Resources
<input type="checkbox"/> Tuesday 8-10	Panel Session	Technical Committee Reorganization Town Hall - General Information Session
<input type="checkbox"/> Tuesday 8-12	Panel Session	Interconnection Requirements for Renewable Generation
<input type="checkbox"/> Tuesday 8-12	Panel Session	Impact of Green Generation on Power Systems – Experiences, Investigation Methods and Future Evolutions towards successful Integration
<input type="checkbox"/> Tuesday 8-12	Panel Session	Challenges of Voltage and Reactive Power Control from Renewable Resources
<input type="checkbox"/> Tuesday 8-5	Tutorial	Renewable Energy Systems Modeling and Dynamic Performance
<input type="checkbox"/> Tuesday 10-12	Transactions Paper Session	Renewable Generation Development, Integration and Management - T23
<input type="checkbox"/> Tuesday 1-5	Panel Session	Transmission planning with the perspective of renewable resource integration: education and research initiatives
<input type="checkbox"/> Tuesday 1-5	Panel Session	Impacts of Variability, Uncertainty and Forecasting Errors on Power System Operational Planning
<input type="checkbox"/> Wednesday 8-12	Panel Session	WTG Performance on Weak Grids; Part 1: Technical concepts under weak system conditions
<input type="checkbox"/> Wednesday 8-12	Panel Session	Analysis of Subsynchronous Interactions in Systems with Renewable Generation Resources
<input type="checkbox"/> Wednesday 9 - 1:30	Panel Session	Impact of Renewable Energy Integration on Voltage Control Design
<input type="checkbox"/> Wednesday 1-5	Panel Session	Challenges of Renewable Integrations: Flexible Products and Long/Short-Term Market Design
<input type="checkbox"/> Wednesday 1-5	Panel Session	Wind Turbine-Generator Performance on Weak Grids Part 2: Analytical Methods and Solutions for Weak Grid Interactions
<input type="checkbox"/> Wednesday 1-5	Paper Forum	Wind Power and Applications

Table 3. Wind and Solar Related Committee Meetings at 2015 PES General Meeting

Meeting Title	Sponsoring Committee	Day	Time	Room
EMC Renewable Energy Machines & Systems Subcommittee Meeting	EMC	Tuesday	5:00-7:00 PM	Denver
EDPGC Renewable Technologies Subcommittee	EDPG	Monday	3:00-4:00 PM	Silver
EDPGC - Photovoltaics WG	EDPG	Monday	4:00-5:00 PM	Denver
EDPGC Distributed Generation and Energy Storage Subcommittee	EDPG	Tuesday	5:00-6:00 PM	Biltmore
CIGRE JWG C4.C6.35/CIRED Modeling and dynamic performance of inverter based generation in power system transmission and distribution studies	CIGRE	Sunday	12:00-5:00 PM	Tower Court B
PSDP Task Force on Contribution to Bulk System Control and Stability by Distributed Energy Resources connected at Distribution Networks	PSDP	Wednesday	1:00-2:00 PM	Governor's Square 10
PSO - Task Force Meeting on Advanced Future Bulk Power Systems with Massive Distributed Resources	PSO	Wednesday	8:00-9:00 AM	Beverly
PSO - Task Force Meeting on Bulk Power System Operations with Variable Generation	PSO	Thursday	12:00-1:00 PM	Denver
PSPI - Conventional and Renewable Energy Supply Planning WG	PSPI	Monday	1:00-3:00 PM	Governor's Square 12
T&D - Distributed Resource Integration WG	T&D	Tuesday	8:00-10:00 AM	Director's Row E
T&D - Gen Sys TF on EMT-type Modeling of Wind Turbine Generators and Parks	T&D	Tuesday	10:00-11:00 AM	TBD
C17 - Joint Working Group on Wind Plant Short-Circuit Contributions	T&D	Tuesday	1:00-3:00 PM	Governor's Square 10
T&D - Wind and Solar Plant Collector Design Working Group	T&D	Wednesday	8:00-10:00 AM	Biltmore
T&D - Wind Farm Collector System Grounding for Personal Safety Task Force	T&D	Wednesday	10:15-12:00 PM	Biltmore
T&D - Wind and Solar Power Plants System Impacts and Interconnection Requirements Working Group	T&D	Wednesday	1:00-3:00 PM	Biltmore
T&D - Integration of Renewable Energy Into the Transmission & Distribution Grids Subcommittee	T&D	Thursday	1:00-2:00 PM	Director's Row E
IEEE Wind & Solar Power Coordinating Committee	WSPCC	Monday	1:00-4:00 PM	Tower Court B
Task Force on Capacity Value of Solar Power		Tuesday	1:00-4:00 PM	Tower Court B

18 Meetings Total

Committee Sponsors: 1 by EMC, 3 by EDPG, 1 by PSDP, 2 by PSO, 1 by PSPI, 7 by T&D, 1 by WSPCC, 2 by others.

2. Benefits to Industry and PES Members from the Committee Work:

It its role as a coordinating committee, WSPCC provides the following benefits to the industry and PES members.

WSPCC assists PES technical committees to instigate new activities that are of increasing importance or concern to the electric power industry. Recommendations for such activities may come from WSPCC leaders, WSPCC members, or from PES members at large who raise new issues for discussion at the annual WSPCC meeting.

WSPCC keeps PES members and technical committees informed of all ongoing wind and solar related activities within PES. PES members can easily find what technical committees are conducting work in specific subject areas. This information also helps the PES technical committees to identify potential areas of collaboration and to avoid unnecessary overlap.

3. Benefits to Volunteer Participants from the Committee Work:

As a coordinating committee, WSPCC does not conduct technical work. Instead, it coordinates wind and solar activities among numerous PES technical committees.

WSPCC serves as a resource for members who want to get involved with wind and solar activities within PES. WSPCC tracks and coordinates wind and solar activities in numerous technical committees, so WSPCC is well positioned to assist PES members who are seeking deeper involvement in specific technical areas to find appropriate working groups or subcommittees within the PES technical committees that are conducting work in those specific technical areas.

4. Recognition of Outstanding Performance:

WSPCC recognizes the contributions of David Jacobson who served as WSPCC's technical committee program chair from 2007 to 2015. During that period he handled more than a thousand papers on wind and solar energy. David developed a process to quickly identify the core subject area of each paper and then to direct papers to the appropriate technical committees for detailed review. We thank David for his excellent work.

5. Coordination with Other Entities (PES Committees, CIGRE, standards, etc.):

WSPCC maintains liaisons with several other organizations that work on wind and solar power. Reports from liaison representatives are provided annually at the WSPCC meeting during the PES GM. Reports from the 2015 meeting in Denver included:

- a) UVIG: Charlie Smith
- b) AWEA: Michael Goggin or John Dunlop
- c) CIGRE Wind and Solar Activities: David Jacobsen
- d) CANWEA: Tom Levy
- e) IEA Wind Integration Activities: Michael Milligan or Mark O'Malley
- f) NREL: Michael Milligan



- g) International Wind Activities: Antje Orths
- h) IEC SC 8A: Charlie Smith

Detailed reports are in the WSPCC meeting minutes and can be found on the WSPCC web site.
<http://sites.ieee.org/pes-wspcc/>

6. New Technical Subject Areas of Interest to the Committee:

The following subject areas were discussed at the 2015 WSPCC meeting as potential candidates for development of new PES activities:

- Low SCR issues for regions with high penetration of wind/solar resources
- Design Considerations for an inertia-less power system
- D-curve applicability for wind/solar generator modeling in power flow programs

Submitted by: Richard Piwko

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