

2018

Entity: Wind and Solar Power Coordinating Committee

Chair: Debra Lew

Vice-Chair: Robert Zavadil/Durgesh Manjure

Secretary: Andrew Leon

Technical Committee Program Chair: Miaolei Shao

Web Master: Aidan Tuohy

The role of WSPCC is to 1) coordinate wind and solar activities within PES and ensure that critical issues are addressed while minimizing overlap, and 2) to coordinate PES work with relevant industry groups such as AWEA, ESIG, NREL, NERC, and CIGRE.

1. Significant Accomplishments:

Wind and solar power continues to grow at a rapid pace in the utility industry and commensurate with that growth, activities in this area have also grown quickly. In 2018, WSPCC coordinated across 22 different committees, subcommittees, working groups or task forces on various aspects of wind and solar, as shown in Table 1.

In 2017, it was proposed that IEEE PES and ESIG should sign a memorandum to facilitate enhanced collaboration and cooperation to support mutual efforts, similar to the one signed between IEEE and NERC in 2017. Charlie Smith drafted this new PES/ESIG MOU which was submitted and signed by both parties in 2018. An industry coordination task force exists within IEEE and it was proposed that part of our scope in the WSPCC should be coordinating with other organizations such as ESIG, NERC, FERC, CIGRE, etc.

The need for an enhanced focus on issues related to achieving 100% renewable generation was also discussed. In 2018, WSPCC sponsored two panel sessions and co-sponsored two additional panel sessions.

- *100% Renewables*
- *Implementation of the Revised IEEE 1547 Standard*
- *Recent Violent System Upsets Lessons Learned Part I*
- *Recent Violent System Upsets Lessons Learned Part II*

Table 1 – Summary of Existing Wind and Solar Subcommittees, Working Groups, and Task Forces in PES Technical Committees in 2018.

PES Committee	SC, WG or TF Name	SC, WG or TF Leader & Email
Analytic Methods for Power Systems (Kevin Schneider kevin.schneider@pnl.gov)	Capacity Value of Solar TF under Reliability, Risk and Probability Applications SC	Chris Dent is Vice-chair of SC and lead of TF (chris.dent@durham.ac.uk)
	EMT Modeling of Wind Turbine Generators and Parks TF under former General Systems SC of T&D	Jean Mahseredjian (jean.mahseredjian@polymtl.ca)
Electric Machinery (Kay Chen ke.chen@siemens.com)	Renewable Energy Machines and Systems SC	Ed Muljadi (mze0018@auburn.edu)
Energy Development & Power Generation - (John Yale john.yale@chelanpud.org)	Distributed Energy Resources SC	K. Strunz (kai.strunz@tu-berlin.de)
	Integration of Renewable Energy SC	Tom Key (tkey@epri.com)
	Wind and Solar Plant Collector Design WG	Loren Powers (loren.powers@dnvgl.com)
	Wind Farm Collector System Grounding for Personal Safety TF	Gopal Padmanabhan (Gopal.Padmanabhan@res-americas.com)
	Wind and Solar Power Plants System Impacts and Interconnection Requirements WG	Chris Brooks (cbrooks@thinkesc.com)
	Renewable Technologies SC	Rama Ramakumar (rama.ramakumar@okstate.edu)
	Technologies for GHG Mitigation & Adaptation SC	Pengwei Du (pengwei.du@ercot.com)
Energy Storage and Stationary Battery (Curtis Ashton curtis.ashton@centurylink.com)		
Power System Dynamic Performance (Costas Voumas voumas@power.ece.ntua.gr)	Dynamic Performance of Renewable Energy Systems WG	Juan Sanchez-Gasca (juan1.sanchez@ge.com)
Power System Operation, Planning & Economics (Luiz Barroso)	Integration of Wind and Solar Generation into Power System Operations TF	Jianhui Wang (jianhui.wang@anl.gov)

(Luiz Augusto Barroso luizbarroso.web@gmail.com)	Bulk Power System Operations with Variable Generation TF	Aidan Tuohy (atuohy@epri.com)
	Conventional & Renewable Energy Supply Planning TF	Joseph Yan (joseph.yan@sce.com)
Power System Relaying & Control (Russ Patterson chair@pes-psrc.org)	Modifications to Fault Study Programs for Wind Turbine Generators WG (PSRC CTF24)	Sukumar Brahma (sbrahma@clermson.edu) or Evangelos Farantatos (efarantatos@epri.com)
	Guide for Protection of Wind Plants WG (PSRC CTF25)	Martin Best (mbest@ucseng.com)
	Protection Challenges and Practices for Interconnecting Inverter Based Resources to Utility Transmission Systems WG (C32)	Mukesh Nagpal (mukesh.nagpal@bhydro.com)
Surge Protective Devices (Steven Hensley steven.p.hensley@sargentlundy.com)	Wind Power Facilities Electrical Protection Guide WG	Kenneth Brown (kbrown@leviton.com)
	Photovoltaic Facilities Electrical Protection Guide WG	A.J. (Tony) Surtees (surtees@ieee.org)
Transformers Sue McNelly (simcnelly@ieee.org)	Standard Requirements for Wind Turbine Generator Transformers WG P60076-16	David Buckmaster (dbuckmaster@tflc.us)
	Guide for Application in Distributed Photovoltaic Transformers in Power Generation Systems WG PC57.159	Hemchandra Shertukde (shertukde@hartford.edu)
Transmission & Distribution Gary Chang (garywkchang@gmail.com)	Distributed Resources Integration Working Group	Babak Enayati (babak.enayati@nationalgrid.com)

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

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

At the 2018 WSPCC meeting, members were briefed on the benefits of the IEEE PES Resource Center and advised to distribute this information within their subcommittees and working groups.

In 2018, IEEE 1547 updates were discussed, and support was gathered to invite members to participate in the new P2800 Standard for Interconnection and Interoperability of Inverter-Based Resources Interconnecting with Associated Transmission Electric Power Systems.

The NERC inverter based resource (IBR) performance task force created a new alert and recommendation following the Blue Cut outage. This recommendation requires the same voltage/frequency ride through as IEEE 1547 and should also be reviewed in conjunction with the development of P2800. These key issues were discussed and this critical information was disseminated to key members of the industry in attendance.

During the 2018 WSPCC meeting significant time was spent discussing the shift towards 100% renewables in the energy industry. Perspectives were shared from many members including opinions from SPP, NERC, Hawaiian Electric, and EPRI amongst others. These initiatives are being translated into relevant panel sessions for the 2019 PES General Meeting.

Each panel session sponsored and co-sponsored by the WSPCC in 2018 received extremely strong attendance.

3. Benefits to Volunteer Participants from the Committee Work:

As a coordinating committee, WSPCC does not write standards or conduct technical work. Rather, it coordinates wind and solar activities among PES Technical Committees. WSPCC is a resource for members who want to get more involved with wind and solar. WSPCC can help direct members who are seeking deeper involvement in specific technical areas.

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

WSPCC maintains liaisons with other organizations that work on wind and solar power. These reports are included in WSPCC's annual meeting minutes. Reports from the 2018 Portland meeting included:

- ESIG – Charlie Smith
- Intelligent Grid and Emerging Technology Coordinating Committee – Bob Zavadil
- IEEE SCC21 and 1547 – Debbie Lew
- NERC: Bob Cummings/Ryan Quint
- CIGRE: John McDonald/Charlie Smith
- IEA and international activities: Antje Orths
- AWEA: Betsy Beck
- SEIA/SEPA
- IEC: Jason MacDowell/Charlie Smith
- NREL: Mark O'Malley/YC Zhang
- NRCAN/CANWEA: Tom Levy

5. New Technologies of Interest to the Committee:

WSPCC and the Energy Systems Integration Group continued the discussion of a 100% Renewables initiative. The goal is to define end-states for the various aspects of power system planning and operations. It may not be possible to reach these end-states with a step by step approach, and in some areas a paradigm shift may be needed to reach these end-states. These areas would include:

- Resource planning
- Transmission planning
- Energy systems integration
- Markets
- Zero inertia
- Weak grids
- Load participation
- Protection
- Operational reliability

6. Significant Plans for the Next Period:

We expect that 100% renewables coordination and P2800 will be a big part of 2019 activities.

Energy systems integration is becoming more important as 1) we integrate higher levels of wind and solar and need more flexibility from the system, 2) more jurisdictions start looking towards deep decarbonization and want to utilize electrification of other energy sectors as a way to accomplish this, and 3) technology advancement (electric vehicles, smart grid, for example) enables integration of various energy sectors. WSPCC will work with other relevant organizations to consider how to approach energy systems integration.

Submitted by: Debra Lew, Chair, WSPCC

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