

2017

**Entity: Power System Operation, Planning and Economics Committee (PSOPE)**

**Chair: Hong Chen**

**Vice-Chairs: Luiz Barroso and Fran Li**

**Secretary: Jianhui Wang**

**TCPC: François Bouffard**

**1. Significant Accomplishments:**

2017 was the first year PSOPE in full-swing operation after it was established in 2016. 2017 PES General Meeting was fully organized under the new committee structure. PSOPE had a very successful technical program at 2017 GM. There were 225 conference papers accepted. Among them, 22 papers were selected to the four best paper sessions. Two of them won the best of best paper prizes. 67 conference papers were selected to paper forum sessions. The rest 136 conference papers were in the poster paper session. There were 64 transaction papers presented at 2017 GM.

**Tutorials and Panels Summary:**

PSOPE sponsors five subcommittees:

- Bulk Power System Operation
- Bulk Power System Planning
- Distribution System Operation and Planning
- Power System Economics
- Technologies and Innovation.

Each of these subcommittees organizes panel sessions at the General Meeting on relevant topics. In addition, PSOPE sponsors a tutorial session on “Energy Storage: An introduction to Technologies, Applications and Best Practices”.

PSOPE conducted 27 panel sessions in total. Most of these panels were selected through voting process.

Bulk Power System Operation subcommittee had the following 7 panel sessions:

- Network Restoration Operation Procedure with Renewable Energy Sources
- Grid Modernization Opportunities and Challenges
- Advanced Data Analytics for EMS

- Flexible Transmission System Operation with Natural Gas Constraints
- Grid 3.0 Market Transformation
- Practical solutions for mitigating uncertainties in the future grid
- Tuning the measurement weights in power system state estimation

Bulk Power System Planning subcommittee had the following 5 panel sessions:

- Flexibility: How can systems ensure the right type and quantity?
- Transmission Planning for Non-Synchronous Variable Resources
- Integrated Resource Planning with Renewable Penetration and Distributed Energy Resources
- Accommodating Intermittent Renewable Energy by Multiple Energy Systems Integration: Forecasting, Operations and Planning
- International Practices in Power System Planning: Processes, Methods and Techniques

Distribution System Operation and Planning subcommittee had the following 3 panel sessions focusing on topics addressing contemporary issues facing the electrical distribution system:

- Asset Management – asset health assessment, ranking and intervention prioritization
- Industry Experiences with Advanced Distribution Managements Systems
- Distribution Planning Under Uncertainties

Power System Economics subcommittee had the following 7 panel sessions:

- Decision support tools for economic valuation of energy storage
- Best Practices on Integration and Operation of Grid-scale Energy Storage Systems
- Facilitating Energy Storage Integration into Electricity Markets
- Energy Storage and Conventional Resources: Complementarity, Rivalry and Substitutability
- Challenges, Opportunities, and Approaches for Integrating Demand Response in Markets and Distribution Systems
- Incorporating Distributed Energy Resources in the ISO Wholesale Electricity Market
- Distributed Energy Resources and Market Design Considerations for Local Energy Markets (DSOs)

Technologies and Innovation subcommittee had the following 5 panel sessions:

- Challenges and Technologies in Bulk Power System Outage Management
- Global Best Practices on Natural Disaster Mitigation: Operation Technologies, Communication, and New Trends
- Decentralized architectures for power system protection, estimation and control
- Recent Developments in High-Fidelity Large-Scale Power System Datasets

- Grid Architecture to Integrate Massive Distributed Resources into Bulk Power Systems

All these panel sessions were very well attended, and received very positive feedback and compliment from attendees.

### **Other Committee and Subcommittee Activities:**

At the GM 2017, PSOPE conducted a meeting of the Administrative Subcommittee and a meeting of the Main Committee. Each of the subcommittees, Working Groups and Task Forces met during GM 2017 to conduct its business and plan future work. There were total 31 committee meetings during 2017 GM, as following

- PSOPE Committee AdCom
- PSOPE Main Committee Meeting
  
- Bulk Power System Operations Subcommittee
- Bulk Power System Planning Subcommittee
- Distribution System Operation & Planning Subcommittee
- Power System Economics Subcommittee
- Technologies & Innovation Subcommittee
  
- Working Group on State Estimation Algorithms
- Working Group on Conventional & Renewable Energy Supply
- Working Group on Modern & Future Distribution System Planning
- Working Group on Test Systems for Economic Analysis
- Working Group on Power System Restoration
- Working Group on the Economics of Energy Storage
- Working Group on Transmission System Planning
- Working Group on Network Charging
- Working Group on the Assessment of Power System Flexibility
- Working Group on Asset Management
- Working Group on Sustainable Energy Systems for Developing Communities
- Working Group on Demand Response
- Working Group on Energy Forecasting
  
- Task Force on Benchmarks for Validation of Emerging Power System Algorithms
- Task Force on Advanced Future Bulk Power Systems with Massive Distributed Resources
- Task Force on Bulk Power System Operations with Variable Generation
- Task Force on Natural Disaster Preparation and Recovery
- Task Force on Decision Support Tools for Energy Storage Investment and Operations
- Task Force on Next-Generation EMS for Advanced future bulk power systems: Challenge, Architecture and Concept
- Task Force on Distribution Management Systems
- Task Force on Real-Time Contingency Analysis

- Task Force on Voltage Control for Smart Grids
- Task Force on Electricity and Natural Gas Market Coordination
- Task Force on Future TSO-DSO Interaction: Challenges, Business Cases and Solutions

These committee meetings were very well attended, and significantly increased international and industry participation.

Six interesting new TF/WGs were established after 2017 GM to capture industry's hot topics:

- TF on Dynamic Parameter and State Estimation
- TF on Synchro phasor Applications in Power System Operation and Control
- WG on Energy Internet
- TF on Advanced Methods for Computational Intensive Power System Planning Applications
- Task Force on Future TSO-DSO Interaction: Challenges, Business Cases and Solutions
- TF on Enabling Paradigms for High-performance Computing in Wide Area Monitoring Protective and Control systems

In 2017, PSOPE expanded Award representative to Award Subcommittee, to put more effort on recognizing our volunteers and selecting best/prize papers. By September 2017, the new Award Subcommittee was in full function, just in time to prepare for 2018 PES awards.

To bring values to the industry, and also advertise committee activities, PSOPE has been encouraging members on developing webinars in 2017. The following 5 webinar proposals were submitted :

- Risk-managed Active Distribution Network Planning: delivered in Oct. 2017
- Block chain Without The Hype: reviewed, during scheduling process: approved, under scheduling process
- Energy Integration Assessment of Renewable-Dominated Regions based on Stochastic co-optimization of G,T and Probabilistic Reserves: under review
- Energy Use Repository for off-grid electricity access scenarios in developing countries: under review
- Contemporary Economic-based Transmission Planning and Long-term Electricity Market Simulation: approved, scheduled in March 2018

After 2017 GM, PSOPE has been actively preparing for 2018 T& D and 2018 GM:

- Five tutorials were selected to 2018 T&D and 2018 GM.
- 57 papers submitted to 2018 T&D were reviewed, with 44 accepted.
- 8 panel sessions were selected for 2018 T&D.
- Over 400 conference papers submitted to 2018 GM are under reviewing process.
- 32 panel sessions were selected through voting process and are being organized for 2018 GM.



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PSOPE will try to promote shorter panel presentations, and longer panel discussions to increase the participation and involvement from the audience.

In 2017, PSOPE has also supported Technical Council initiatives on technical policy by providing comments to policy papers.

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

By presenting and discussing the operational, planning and economics aspects of power system technologies and operations, PSOPE activities serve as a bridge between academic research and practical applications, help guide research and development activities. In addition, PSOPE shares information about industry experiences and key challenges to provide feedback to the industry regarding the effectiveness of new techniques and methodologies.

The panel sessions, TF/WG/SC/Committee meetings also serve as live forums for academic researchers and industrial practitioners to listen to each other, provide networking opportunities among international participants to establish communication and collaboration.

## **3. Benefits to Volunteer Participants from the Committee Work:**

With more committee activities, such as organizing and chairing panel sessions, paper forum, transaction paper sessions, as well as creating and organizing Task Forces, Working Groups, PSOPE has attracted more volunteers. Through their contacts with other participants, volunteer participants in PSOPE work gain knowledge and experiences they can apply in their jobs, which can benefit of their careers and organizations

## **4. Recognition of Outstanding Performance:**

IEEE PES Technical Committee Certificates of Appreciation were presented to the following committee members during 2017 GM.

- Prof. Mohamad Shahidehpour  
For leadership as Awards Chair, Fellow Coordinator, and on committee structure reorganization
- Bill Cassel  
For leadership on committee structure reorganization and PES General Meeting organization
- Chris Mensah-Bonsu  
For outstanding service as Chair of the Prize paper Awards Nomination WG of the System Economics Subcommittee
- Mike Henderson  
For outstanding service as Chair of Transmission System Planning WG
- Luis Ochoa

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

PSOPE coordinates with several other PES committees, notably AMPS, PDSP and T&D, SBLC, and WSPCC. Coordination sometimes includes joint sponsorship of GM sessions. PSOPE has supported the work of several task forces by providing operational perspectives via a liaison.

**6. New Technologies of Interest to the Committee:**

The major new technologies of interest to PSOPE include the impact on power system operation, Planning and Economics of significant penetration of stochastic generation resources, the operational issues and opportunities related to smart-grid technologies, DER Enabled ADMS and Distributed Energy Resource Management Systems (DERMS), as well as market design challenges to support reliable and efficient system operation.

**7. Significant Plans for the Next Period:**

PSOPE will sponsor and organize technical activities related to 2018 GM, and other IEEE PES conferences, such as T&D, further attract more international and industry participation, as well as participation from young engineers and women engineers. The focus will be to strengthen PES awareness, including developing webinars to introduce and promote committee, and presenting related technical subjects.

**8. Global Involvement**

PES is looking to increase involvement with members from Regions 8, 9 and 10 (Africa, Europe, Middle East, Latin America, Asia and Pacific). Please provide the following information

Total Number of committee members	Officers from regions 8,9 and 10	Subcommittee officers from regions 8, 9 and 10	Subcommittee members from regions 8,9, and 10
780	1	3	230

**Submitted by: Hong Chen**

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