

## CALL FOR PAPERS

### IEEE JOURNAL OF SELECTED TOPICS IN SIGNAL PROCESSING *Special Issue on Signal Processing in Smart Electric Power Grid*

The signal processing research community is poised to make important contributions to evolving the existing electric power grid into a smarter and greener grid. The nature of signal processing research deals with signals and is particularly adept at extracting information from noisy-contaminated signals emitting from dynamic and uncertain systems. The smart grid is a dynamic, time-varying system with many uncertainties, especially if integration of distributed renewable energy sources is included. The operation of smart grid will feature bi-directional digital communication, bi-directional power flow, and consumer empowerment with enhanced situation awareness. As such, adaptive signal processing, distributed detection and estimation, statistical signal processing, signal representation and data compression, machine learning, optimization methods, efficient computational algorithms, etc., will all prove to be important tools to make possible some of the important features envisioned for the smart grid – demand response, distribution automation, self-healing, improved security, etc.

This special issue will focus on novel theory and applications of signal processing research for smart grid. Papers that present novel research ideas, theory and applications are solicited on, but not limited to, the following topics:

- Power grid state estimation – novel methods and applications;
- Adaptive filters and statistical signal processing for smart grid;
- Distributed methods for smart grid – detection, estimation, forecasting;
- Sensor fusion, data analytics, data mining, and machine learning for smart grid;
- Demand response, load management and pricing;
- Security and privacy issues in smart grid;
- Forecasting models and methods for renewable generation and for loads;
- Impacts of large scale renewable energy integration;
- PHEV charging infrastructure and scheduling algorithms, V2G algorithms;
- Cyber-physical systems models for smart grid;
- Data compression, storage and transmission;
- Signal processing for smart appliances, smart meters, and sensors.

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