

November 14-16, 2017, Montreal, Quebec, Canada

## Symposium on Information Processing and Optimization for Smart Grids

### CALL FOR PAPERS

#### General Co-Chairs:

Anna Scaglione, Arizona State University

Vassilis Kekatos, Virginia Tech

#### Technical Co-Chairs:

Meng Wang, Rensselaer Polytechnic Institute

Yue Zhao, Stony Brook University

The effort of enhancing current electricity grids through the introduction of advanced infrastructure and information technologies has been termed smart grid. The desiderata are increased situational awareness and controllability, customer participation, renewable integration, efficiency, and cyber-security. The rich algorithmic and analytical toolbox developed by the signal processing community with its classical results along with contemporary advancements could contribute innovative solutions to smart grid challenges if properly adapted to energy system problems. Conversely, smart grid designs can accelerate developments in other domains of signal processing interest. Smart grid challenges and opportunities become increasingly diverse, from efficiently solving the nonlinear power flow equations to optimally scheduling continent-sized cyber-physical systems. Optimal resource allocation problems involving thousands of continuous and possibly discrete variables coupled across space and time have to be tackled on a per-minute basis. Real-time and online schemes for robust or stochastic formulations are needed to cope with the time-varying uncertainty of renewable energy resources. Integrating conventional and upcoming sources of energy data (see phasor measurement units and smart meters) gives rise to exciting machine learning and network science tasks. Estimating system parameters and detecting system changes are key components of increased situational awareness. Algorithmic solutions at the intersection of electric energy systems with other critical infrastructures, such as transportation, water, and natural gas networks pave the way to realizing the vision of connected communities and smart cities. This symposium aims to bring together researchers in the field of information processing and optimization for smart grids. Topics of interest include but are not limited to:

- Optimal power flow and unit commitment
- Grid component placement
- Information processing for cyber-security
- Online energy management
- Demand-response and real-time pricing
- Robust and stochastic optimization methods for renewable energy management
- Optimization and learning for smart cities
- Inference for smart grids
- Power system state estimation
- Power system dynamics and transient analysis
- Phasor measurement units
- Smart meters and energy theft detection and mitigation
- Coupling electric grids with other critical infrastructures

**Paper Submission.** Prospective authors are invited to submit full-length papers (up to 4 pages for technical content including figures and possible references, and with one additional optional 5th page containing only references) or extended abstracts (up to 2 pages), for paper-less industry presentations and Ongoing Work presentations) via the GlobalSIP 2017 conference website. Manuscripts should be original (not submitted/published anywhere else) and written in accordance with the standard IEEE double-column paper template. Accepted full-length papers will be indexed on IEEE Xplore. Accepted abstracts will not be indexed in IEEE Xplore, however the abstracts and/or the presentations will be included in the IEEE SPS SigPort. Accepted papers and abstracts will be scheduled in lecture and poster sessions.

#### Important Dates

- Paper submission deadline (regular and invited): **May 15, 2017**
- Review results announced: **June 30, 2017**
- Camera-ready regular and invited papers due: **July 22, 2017**

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