

Information Technologies in Smart Grids

The Theme: Power grids are a massive interconnected network used to deliver electricity from suppliers to consumers, which are a vital energy supply for the functioning of economy and society. To minimize the impact of Climate Change while at the same time maintaining social prosperity, the so-called “Smart Grid (SG)” technology has attracted increasing attention in recent years. The term Smart Grid refers to electricity networks that can intelligently integrate the behavior and actions of all users connected to it, for example generators, customers and those that do both – in order to efficiently deliver sustainable, economic and secure electricity supplies. There are several technical challenges facing SG: intermittency of renewable energy generation that affects electricity quality; large scale networks of small distributed generation mechanisms, for example photovoltaic panels, batteries, wind and solar, plug-in hybrid electric vehicles, that result in high complexity. Information and Communication Technologies have been seen as key enabling technologies to make the Smart Grids smarter. This Special Section on “Information Technologies in Smart Grids” is focused on the development, adoption and application of Information and Communication Technologies for Smart Grids. Topics include, but are not limited to, the following research topics and technologies:

- Intelligent control systems for SGs
- SG network optimization
- Wired and wireless communications and optical technologies for SGs
- SG network vulnerability and security
- SG systems integration issues
- IT infrastructure
- Multi-agent systems for SGs
- Smart Controls for grid-friendly loads
- Soft computing methods for SGs
- Management of distributed power generation and Virtual Power Plants
- Innovative metering and measuring systems for demand side management and energy saving
- Sensor/actuator networks for fault detection and isolation in SG
- Design, planning and management of microgrids
- Data mining for decision-making in SGs
- Diagnosis and Prognostics in SGs
- Modeling and forecasting in SGs

Manuscript Preparation and Submission

Follow the guidelines in “Information for Authors” in the IEEE Transaction on Industrial Informatics <http://tii.ieee-ies.org/> Please submit your manuscript in electronic form through Manuscript Central web site: <http://mc.manuscriptcentral.com/tii>. On the submitting page #1 in popup menu of manuscript type, select: **SS on ITs in Smart Grids** Submissions to this Special Section must represent original material that has been neither submitted to, nor published in, any other journal. Extended versions of papers previously published in conference proceedings may be eligible for consideration if conditions listed in <http://tii.ieee-ies.org/o/PC.pdf> are fulfilled. Before submitting manuscript check the review criteria (<http://tii.ieee-ies.org/o/RC.pdf>) and other information (<http://tii.ieee-ies.org/o/DI.pdf>)

Timetable:

Deadline for manuscript submissions

Extended to March 15, 2012

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