CALL FOR PAPERS – IEEE TRANSACTIONS ON POWER SYSTEMS

Special Section on

Real-World Challenges of TSO-DSO Coordination

Policy directives and technological innovations have fostered the emergence of a hierarchical market structure, which consists of wholesale, retail and markets behind-the-meter. It is envisioned that resources will be free to participate in all three market structures at the same time to extract the maximum value to the grid and monetize their services. Under this market architecture, grid operators can procure energy services from assets connected both at transmission and at distribution level in a coordinated way. This structure will enable an efficient network management and optimization, for the benefit of Distributed Energy Resources (DERs) in the transition to a decarbonized economy. The same pool of resources may be used by Transmission System Operators (TSOs) and Distribution System Operators (DSOs), so actions by both can mutually affect each other.

Hence, TSOs and DSOs need to coordinate their activities in order to make the hierarchical market structure a reality. The volume of energy services procured by TSOs through distribution-connected DERs has been increasing in recent years, posing real challenges in dealing with registration, bidding, interconnection power flows, conflicting objectives and settlements issues. To keep transmission systems operation secure and stable, distribution systems need to be more flexible when exchanging power at the interface with the overlaying grid. At the same time, DSOs should be given the responsibility to curtail TSO instructions if they are deemed to cause security problems for the distribution system. Moreover, multi-control-area cooperation among different TSOs and coordination between TSOs and energy producers who are providing cross-border services are essential to promote future market designs.

This special section welcomes papers that range from innovative research advances tackling real-world challenges of TSO-DSO coordination to real-world demonstrations of the operation of integrated, system-based and coordinated markets and platforms, which TSOs and DSOs jointly set up with suppliers and aggregators, for a set of grid services. The papers are ideally expected to emphasize joint academic and industry collaborations to address the real-world challenges of TSO-DSO coordination. Hence, submissions from industry describing already operating cases with real results are highly encouraged, as well as papers describing interdisciplinary and real-world-problem-driven novel work.

Topics of interest include but are not limited to:

- TSO-DSO Coordination Models and Solution Techniques.
- Exploiting Flexibility Provision at TSO-DSO Interface.
- Cross-Border Trading for Nearly Real-Time Balancing.
- Cross-Border Congestion Management Methods.
- Decision-Making Strategies in Multi-TSO Power Systems.
- TSO-DSO Interconnection Power Flows and Reactive Power Support.
- Integrated TSO-DSO Market Design and Architectures.
- Secure Data Exchange Across Networks Along the Full Value Chain.
- Grid Services through Demand Response, Energy Storage and DER.

This special section solicits original work that is not under consideration for publication in other venues. One or two-page extended abstracts are required for the first round of reviews. Authors of selected extended abstracts will be invited to submit full papers in the second round. Please submit a PDF version of the extended abstract via e-mail to catalao@fe.up.pt before the deadline. Full papers should be submitted at https://mc.manuscriptcentral.com/tpwrs-pes, selecting in the Manuscript Type drop-down menu box this Special Section. The full papers format is available at https://www.ieee-pes.org/templates-and-sample-of-pes-technical-papers

Important Dates

- July 1, 2021: Submission deadline of extended abstracts (one or two pages) via e-mail.
- August 1, 2021: Decision notification for inviting full paper submissions.
- November 1, 2021: Submission deadline of full papers (max 10 pages) and beginning of 1st review cycle.
- January 1, 2022: End of 1st review cycle and notification to authors.
- March 1, 2022: Revised paper submission and beginning of 2nd review cycle.
- May 1, 2022: End of 2nd review cycle and final notification to authors.
- May 15, 2022: Publication materials due.
- June 2022: Publication of Special Section (early access on IEEE Explore).

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