CALL FOR PAPERS
IEEE TRANSACTIONS ON SMART GRID
Special Section on
Integrated Operation, Planning and Business Paradigm for Coupled Energy,
Transportation and Information Networks

SCOPE:
Governments around the world are promoting Transportation Electrification (TE) as part of deep decarbonization initiatives, introducing new charging and communication infrastructure requirements. This will result in high volume of data from energy and transportation systems for system-level reshaping of energy and traffic demand, unlocking Electric Vehicle (EV) flexibility for renewable energy integration and more cost-effective mechanism for demand and supply balancing, which would ultimately lead to new operation, planning, and business models for coupled energy, transportation, and information networks. Significant progress has been made in advancing the operating and planning paradigms of these networks separately, simplifying and/or neglecting interdependencies among them, without fully considering their holistic integration and complex interactions.

The joint optimization of energy, transportation, and information systems will facilitate a more cost-efficient global energy transition. This is a highly multidisciplinary area that is receiving significant research attention and requires an ever-increasing integration of electrical engineering, transportation, control, information, and economics disciplines. Thus, the planned Special Section (SS) will include a broad spectrum of contributors including academics, researchers, engineers, consultants, market regulators, system operators, and key policymakers, who will define and discuss the interdisciplinary technical approaches required for the integrated study of these networks, considering that there are many technical challenges associated with making this vision a reality, with policy, economic, and workforce issues also playing a significant role. The SS will focus on discussing various relevant topics associated with fundamental theories and technologies that facilitate integration of the aforementioned networks to promote economic efficiency, facilitate renewable energy generation, and enhance decarbonization and efficient balancing of supply and demand, as well as improve the capability, adaptability, scalability, resiliency, safety, security, and usability of the integrated networks. Thus, the SS solicits original research papers that target, but are not restricted to, the following relevant topics:

- Fundamental theories and technologies to facilitate integration of coupled networks
- Development strategies, public policy and regulatory system for the emerging technologies for the coupled networks
- Hierarchical information and energy exchange architecture
- Multi-source big data fusion framework
- Data evaluation and trading mechanism in the coupled networks
- Multi-time-scale coordinated spatial-temporal operation models
- Collaborative planning of energy and transportation networks
• Incentive and pricing mechanisms, market models, business models for charging and swapping service providers
• Information and data exchange architecture design
• High-compatible, high-efficiency multi-type EV energy supplementation methods
• Cyber-physical security of EV charging infrastructure

The invited authors will consist of a diverse group of experts from academia, industry, and national laboratories. Papers addressing real-world problems resulting from interdisciplinary academia and industry collaborations are of particular interest, very much welcoming submissions from industry authors.

TENTATIVE SCHEDULE:

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