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Call for Papers for the Special Session on

System-Level Planning and Economic Optimization of V2G/V2H-Enabled Smart Buildings and Power Systems

Organized and co-chaired by

Liangcai Xu, National University of Singapore — xuliangcai33@nus.edu.sg
Renyou Xie, University of New South Wales — renyou.xie@unsw.edu.au
Maomao Hu, National University of Singapore — maomaohu@nus.edu.sg
Ziyou Song, University of Michigan, Ann Arbor — ziyou@umich.edu

Technical Outline of the Session and Topics

The increasing integration of electric vehicles (EVs), smart buildings, and distributed energy resources presents significant challenges for planning distribution power systems. Vehicle-to-Grid (V2G) and Vehicle-to-Home (V2H) operations enable EVs to provide flexibility; however, the achievable benefits critically depend on coordinated planning of charging infrastructure, building energy systems, and network expansion. Existing studies predominantly focus on short-term operational strategies and individual entities, providing limited insight into long-term planning decisions and system-level impacts. Specifically, interactions among distribution power systems, EVs, and buildings are rarely captured within unified planning-oriented optimization frameworks, leaving the system-level implications of large-scale V2G and V2H deployment insufficiently understood. This session mainly focuses on multi-timescale planning and coordinated optimization methods for integrated vehicle–building–grid systems, considering techno-economic performance, system-level coordination effects, and long-term infrastructure planning outcomes. The session aims to advance systematic and reproducible planning approaches that enable informed long-term decision-making for large-scale V2G and V2H integration in future energy systems.

Topics of the session include, but are not limited to:

- Multi-timescale and stochastic planning of V2G/V2H-enabled buildings
- Techno-economic planning of EV–building–grid systems under practical constraints
- Coordinated planning of EV charging infrastructure and smart buildings
- Scalable planning frameworks and digital twin tools for V2G/V2H integration
- Data-driven modelling, case studies, and policy aspects of vehicle–building–grid planning

Timeline for Authors

All the instructions for paper submission are available on the conference website. Please visit www.iecon2026.org or scan the QR code for the timeline.