

**Special Session 18**  
**Emerging Technologies in Regional Energy Internet**

**Session Chair:**

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**Scope of the Session:**

With the rapid growth of the decentralized generation and flexible load in distribution side, more and more power users are transforming from single consumers to mixed prosumers. Besides, owing to the high penetration of distributed energy resources (DERs) in the power grid and electricity market, regional energy internet is becoming a trend for aggregating DERs such as distributed renewable generations, batteries, plug-in electric vehicles, demand-side resources, adjustable load, etc.

The regional energy internet can be viewed as a three-dimensions structure of cyber, physical and financial system (CPFS). It can promote efficient optimization in resources, facilitate interactive power flow of multiple energy resources, and enhance the overall system economics and reliability, based on the internet of things (IoT) platform converging the advanced operation technology (OT) and information communication technology (ICT). Many emerging technologies occurred in the field of the regional energy internet, such as artificial intelligence (AI), IoT, blockchain and so on.

As an important practice of the regional energy internet, VPP is a group of distributed generations, energy storage systems, and controllable loads, which are aggregated, optimized, coordinated and controlled so that it can function as one dispatchable unit in power system operations as well as one tradable unit in electricity wholesale markets.

The special session is devoted to share the emerging technologies in regional energy internet, explore the challenges and share ideas on technologies, policies, markets, and business models. The scope of this special session ranges from modeling, operation, control, communication and business models. The particular topics of interest include, but are not limited to, the following:

- Planning, operation and control technology of regional energy internet in multiple timescale
- OT and ICT architecture and strategies of regional energy internet
- Business models and policies of regional energy internet
- Report and analysis on the latest projects of the regional energy internet