



CALL FOR PAPERS

Journal of Modern Power Systems and Clean Energy

Special Section on Managing Electricity Demand

The interest in managing electricity demand surfaced in earnest during the 1970s as economic, political, social, technological, and resource supply factors combined to change the electricity sectors' operating environment and its outlook for the future. Ever since then there have been staggering capital requirements for new plants, significant fluctuations in demand and energy growth rates, declining financial performance of electric utilities, power producers and energy service providers, and regulatory and consumer concern about rising prices. A successive series of concepts have evolved as an effective way of mitigating these risks including: Demand-Side Management (DSM), Demand Response (DR), and Transactive Energy (TE).

DSM

DSM entails influencing consumers' purchase of energy-consuming devices and appliances and their behaviors in the utilization of those devices.

DSM entails applying a framework which addresses these key questions: 1) Considering the current set of resources available or under consideration to meet future consumer electric needs – what changes in the purchase pattern of demand from consumers would be of benefit to them and their suppliers? 2) Which end-use technologies or changes in consumer behavior are likely to yield those the most cost- effective changes? 3) What market implementation methods would be needed to influence consumer preference and behavior to produce the desired results?

DR

The USA's Energy Independence and Security Act of 2007 popularized the term Demand Response and generally defined it as including programs and activities which reduce peak demand by the use of dynamic pricing, advanced metering and enabling technologies. DR includes Peak Clipping and Load Shifting DSM options. The U.S. Energy Information Administration estimates that over 9 million customers are enrolled in Demand Response Programs (2014) yielding an actual peak demand savings of 12,700 MW. The USA's Federal Energy Regulatory Commission (FERC) has estimated that the potential for DR is such so as to reduce peak demand in 2019 by as much as 150 GW.

TE

Ultimately the electricity marketplace will include programs and activities based on a range of end use technologies that could yield a flexible demand for electricity to power buildings, appliances and industrial processes and potentially employ distributed generation, storage and a variety of

cutting edge technologies. TE entails facilitating the ability of consumers to see transparent energy prices and join traditional providers in producing, buying and selling electricity - using automated control to drive a reliable and efficient electric power system.

The special section is aimed to discuss the current state and future evolution of DSM, DR, and TE.

The topics of interests include, but are not limited to:

DSM

- Existing impact and future potential for DSM
- Improving energy efficiency in smart buildings and use it as a demand-side resource for peak load shaving
- Smart homes, smart buildings and EV charging facilities with the integration of DSM
- Energy modelling and benchmarking of building performances
- Acceptance of smart energy products, behavior aspects of energy efficiency measures
- Non-intrusive load monitoring of demand-side resources

DR

- DR mechanism study based on human social behaviors
- Probabilistic modeling of industrial, commercial, and aggregated residential load behavior
- Inclusion of probabilistic DR models in distribution and transmission level power grid operation and planning
- Facilitating the integration of renewable energy with demand-side flexibility
- Integration of the demand side in energy markets and role of a flexible energy demand on spot and future markets
- Implementation of dynamic tariffs, results and verification, impact of real time energy consumption feedback
- Use of DR in managing peak demand

TE

- Evolution of TE and the issues which need to be addressed before it can be widely adopted
- Equipment, software, communications infrastructure, processes, business models, controls, etc. that support the operations of consumer-side systems
- Intelligent interactions, interoperability and cyber security between the end-user systems and the electric power system
- Technologies, policies, and financial drivers in an active prosumer market, where prosumers are buildings, EVs, microgrids, or other assets.

Submission Guidelines

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The article templates can be downloaded from <http://www.mpce.info>.

Important Dates

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