

THE DEPARTMENT OF ELECTRICAL & COMPUTER ENGINEERING SPEAKER SERIES

PRESENTS

The Wholesale Electricity Market and Its Operation



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LECTURE ABSTRACT

With the deregulation of the electricity sector, organized electricity markets have been established in many parts of the U.S. These electricity markets are currently operated by the independent system operator (ISO), whose responsibility includes reliable system operation, market administration and system planning. Different from many exchanged-traded commodities such as oil, gas, corn, and wheat etc., electricity cannot be stored in a large quantity. Maintaining the balance between supply and demand on a second to second basis becomes an important part of the electricity market operation. To satisfy such reliability needs, in addition to the energy product, ancillary service products such as regulation, reserves and capacity, have been created and traded in the electricity markets in the last two decades, making the operation of electricity market much more complicated. This talks will start with the major responsibilities of the ISO and provide an overview of the current state of wholesale electricity markets. Each type of the markets and the corresponding operational process will be discussed. Finally, challenges for the future grid operation will be presented.

SPEAKER BIOSKETCH

Dr. Tongxin Zheng is currently a Technical Director at the Independent System Operator of New England Inc. He manages both research and development projects for the regional wholesale electricity market, and collaboration with the research community. He also provides technical consultation to senior management on the market design and system operations, and oversees the development of various market clearing engines and the market simulation software. Prior to ISO-NE, he was a senior software engineer at Interface Technology, Inc., and an application engineer at ABB information system. He received his Ph.D. degree from Clemson University in electrical engineering in 1999. He has published over 70 journal and conference papers in the area of power system operation, optimization and power quality, and delivered many presentations at various conferences and workshops. He has served as an industry advisor for various DOE, NSF and PSERC projects, the market stem vice chair of PSERC, and the secretary of IEEE PES power systems economic subcommittee. He was an editor of IEEE Transactions on Power Systems, and the co-chair of the IEEE working group on Gas-Electric Coordination.

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