

Electric Power and Power Electronics Institute

WEEKLY SEMINAR SERIES – FALL 2017

Monday, October 9th, 2017, 3:00 – 4:00 p.m., ETB 1003

REDUCING UPLIFT PAYMENTS IN ELECTRICITY MARKETS

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Abstract

In electricity markets, the independent system operator (ISO) sends target quantity instructions and prices to each market participant. Ideally, energy prices provide incentives for profit maximizing market participants to comply with efficient commitment and dispatch instructions. In this talk, we describe two issues that prevent this ideal: 1) in a day-ahead market, the non-convexity of the underlying unit commitment problem causes the failure of locational marginal prices to support the ISO's decision; 2) in a multi-interval real-time market, the model-predictive-control implementation of the look-ahead economic dispatch problem leads to incentive incompatibility. We propose methods to mitigate the incentives of market participants to deviate from the ISO's decision in each of the two markets. We discuss the current practice of dealing with the incentive issues at ISOs in the US.

Biography

Bowen Hua received the B.S. and M.S. degrees in Electrical Engineering from Xi'an Jiaotong University, China. He is currently pursuing the Ph.D. degree in Electrical and Computer Engineering at the University of Texas at Austin. He has been a research intern at Argonne National Laboratory, Midcontinent ISO, and ISO New England.