

Pricing Intermittent Renewable Generation Using Stochastic Flexi-Auctions

ABSTRACT - With ever increasing penetration of renewable generation and electricity intensive consumption (such as electric vehicles), the uncertainty faced by electricity markets is rapidly growing. Conventional deterministic auctions will produce dispatches where then expensive real-time adjustments need to be made to ensure demand is met as uncertainty takes on a realization. We propose a new stochastic-programming market-clearing mechanism to optimize pre-dispatch quantities given probability distributions for demand, intermittent renewables and other factors, as well as the costs of real-time deviation. We establish some revenue adequacy, welfare enhancement, and cost recovery properties for our auction mechanism. We also establish that this market-clearing mechanism is social-welfare optimizing. We will discuss risk in this context and present some new results. This presentation is based on a sequence of recent papers by the speaker and her co-authors.



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SPEAKER BIO – Dr. Golbon Zakeri holds a PhD in Mathematics and Computer Sciences from the University of Wisconsin-Madison. She was a postdoctoral research fellow at Argonne National Labs and has an interest in data science. She combines her data science interest with a strong interest in stochastic optimization as applied to electricity markets. She is a leading expert in the area of electricity markets where she has concentrated her research over the past 15 years. She is a past president of the Operations Research Society of New Zealand, Director of the Electric Power Optimization Centre, and deputy director of the Energy Centre at University of Auckland. She serves on the advisory board for GAMS.

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