



PSERC WEBINAR

Risk-Sensitive Market Design for Electric Power Systems

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Power system operation is fraught with uncertainties from component failures to renewable generation. Electricity markets must evolve to effectively handle such uncertainties. In this talk, I will advocate a risk-sensitive market design paradigm, where power delivery risks are modeled via the conditional value at risk (CVaR) measure. Such a risk-sensitive paradigm strikes a balance between the two extremes in accommodating uncertainty – a conservative worst-case approach and an unreliable average-case approach. In this talk, I will explore electricity market clearing formulations that will allow a system operator to effectively explore the trade-off between operational costs and reliability in power delivery. The CVaR measure has a range of properties that prove particularly useful in market design. First, I will leverage these properties to present algorithmic architectures to solve the risk-aware market clearing problems. Second, I will use these properties to derive and analyze pricing mechanisms to accompany such a dispatch.

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[LINK TO WEBINAR](#)

2:00-3:00 P.M. EST

(11:00-12:00 P.M. PST)

Subhonmesh Bose is an Assistant Professor in the Department of Electrical and Computer Engineering at UIUC. His research focuses on facilitating the integration of renewable and distributed energy resources, leveraging tools from optimization, control and game theory. Before joining UIUC, he was a postdoctoral fellow at the Atkinson Center for Sustainability at Cornell University. Prior to that, he received his MS and Ph.D. degrees from Caltech in 2012 and 2014, respectively. He received the NSF CAREER Award in 2021. His research projects have been supported by grants from the NSF, PSERC, Siebel Energy Institute and C3.ai, among others. He was a co-recipient of best paper awards in system operations and market economics at the IEEE Power and Energy Society General Meeting in 2013 and 2019.

