

Generation Scheduling under Renewable-Based Uncertainty via Two-Stage Adaptive Robust Optimization

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Abstract: Within the context of current day-ahead electricity markets, the presentation examines the use of two-stage adaptive robust optimization as a relevant tool to handle renewable-based uncertainty in generation scheduling. Unlike alternative approaches to deal with uncertainty, neither accurate probabilistic information nor a discrete set of uncertainty realizations are required. Rather, uncertainty is modeled by decision variables within a deterministic uncertainty set. Hence, the size of the robust models does not depend on the dimension of the space of uncertainty realizations belonging to the uncertainty set, thereby providing a computationally efficient framework. In addition, an easy control of the degree of conservativeness can be implemented. The resulting robust counterparts are instances of mixed-integer trilevel programming. Practical modeling aspects allow using effective decomposition-based techniques that guarantee finite convergence to optimality. Results from several case studies illustrate the effectiveness of the two-stage robust setting.

Bio: José M. Arroyo received the Ingeniero Industrial degree from the Universidad de Málaga, Málaga, Spain, in 1995, and the Ph.D. degree in power systems operations planning from the Universidad de Castilla-La Mancha, Ciudad Real, Spain, in 2000. From June 2003 through July 2004 he held a Richard H. Tomlinson Postdoctoral Fellowship at the Department of Electrical and Computer Engineering of McGill University, Montreal, QC, Canada. Presently, he is a Full Professor with the Department of Electrical Engineering at the Universidad de Castilla-La Mancha and a visiting professor at the Department of Electrical and Computer Engineering of McGill University. His research interests include operations, planning, and economics of power systems, as well as optimization.

Thursday 19 April 2018, Pavillon André-Aisenstadt, Université de Montréal, room 4488.

10h30-10h45 Come meet the speaker and other researchers over drinks and snacks

10h45-12h00 Presentation

All are welcome



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