

Large Scale Wind Integration with Security Constraints

Michael Chen, Assistant Professor
Department of Mathematics and Statistics
York University, Toronto, Canada

Abstract

Large scale wind integration in a day-ahead market requests an efficient, secure and cost effective unit commitment solution. We model this problem in a two-stage stochastic integer framework and develop an efficient cutting plane method in Benders' decomposition. The stochastic programming model simulates the next day intermittent wind profiles and considers critical security factors, including transmission line, bus voltage and generator ramp under different wind profiles.