

# **An Adaptive Model with Joint Chance Constraints for a Hybrid Wind-Conventional Generator System**

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## **Abstract:**

We study the problem of scheduling a hybrid wind-conventional generator system to make it dispatchable, with the aim of profit maximization. Our models ensure that with high probability we satisfy the day-ahead energy promised by the model, using the combined output of the conventional and wind generators. We consider two scenarios, which differ in whether the conventional generator must commit to a generation schedule prior to observing the wind-power realizations or has the flexibility to adapt in near real-time to these observations. The adaptive model is a two-stage stochastic integer program with joint-chance constraints. We develop an iterative regularization scheme in which we solve a sequence of sample average approximations under a growing sample size, to dramatically reduce computational effort.