MULTI-STAGE STOCHASTIC OPTIMIZATION: SOLUTION AND SCENARIO GENERATION METHODS

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Resumen

In this talk we will review the formulation of multi-stage stochastic optimization problems and a solution method known as progressive hedging. As a practical matter, in order to solve these problems, one needs probabilistic forecasts in the form of scenarios and software for the optimization algorithms.

On the software side, we will review Pyomo that is a modeling language that supports a full range of linear and non-linear modeling constructs in a Python environment so scripting is natural and powerful. An extension for stochastic programming called PySP provides automated formation of deterministic equivalents and also provides an extensible implementation of PH.

Scenario generation is an also an area of active research. We will describe some methods in the literature as well as work by a research team looking the unit commitment problem for electricity generation.