

# **A Model for Long Term Generation Planning under Uncertainty**

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In this paper, a model for long term generation planning is described, and the main results of a case study are presented.

Although the model was designed as an instrument for generation planning, interregional transmission ties are represented in sufficient detail as to enable the model to produce expansion plans that include the selection of generation technologies, plant size and location (at regional level), as well as interregional transmission capacity requirements in a multi-year setup. The planning framework includes a set of futures that captures the planner's view of fuel price uncertainty.

The model is designed to create a set of expansion plans that include:

- An optimal expansion plan for each future, where optimality is defined in the context of the minimization of the present value sum of investment and production costs,
- A subset of plans on the efficient trade off frontier in the two dimensional space defined by investment cost and risk, where risk is measured as the maximum regret in the set of futures.