

Mathuria, P. and Bhakar, R., IGDT based Genco's trading decision making in multi-market environment, Power and Energy Society General Meeting, 2014, vol.2014-October, ©IEEE. doi: 10.1109/PESGM.2014.6939304.

**Abstract** Fossil fuel gencos are subject to influence of multiple uncertain but interactive energy and emission markets. It procures production resources from fuel and emission market and sells its generation through multiple contracts in electricity market. With increasing volatility and unpredictability in energy markets, a genco needs to make prudent decision to manage its trading in all involved markets, to guarantee minimum profit. Considering the existing market uncertainties and associated information gap, this paper proposes a robust decision making approach for gencos trading portfolio selection in all three involved markets, based on Information Gap Decision Theory (IGDT). Results from a realistic case study provides a range of decisions for a risk averse genco, appropriate to its nature, and based on the trade-off existing between robustness and targeted profit.

**Keywords** Electricity price uncertainty, emission price uncertainty, fuel price uncertainty, information gap decision theory, portfolio optimization.