

Maziar Karimi, Morteza Kheradmandi, and Abolfazl Pirayesh, 2019, Risk-constrained transmission investing of generation companies, *IEEE Transactions on Power Systems*, Vol. 34 , Issue: 2, pp.1043–1053, March 2019.

Abstract Transmission expansion projects might be subject to considerable delays due to financial obstacles. These delays can cause transmission congestion, which limits access for generation companies to load areas. This paper makes use of a model to involve the generation companies in transmission investment through a joint venture agreement. In this model, by conducting a cost-benefit analysis, the generation company identifies an appropriate sub-plan from a plan specified by a transmission system operator. The inflation and growth rate uncertainties are modeled by using the information gap decision theory. The problem is expressed for a risk-averse investor and a risk-seeking investor. The proposed formulations are solved by a multi-objective optimization algorithm to obtain the Pareto fronts. The model is applied to the IEEE 24-bus and IEEE 118-bus test systems.

Keywords Generation company, information gap decision theory, joint venture, planning, transmission investment.