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Model for Electricity Price in Hydroelectric Generating Stations under Deregulation

P. Reji, S. Ashok, K.M. Moideenkutty

Abstract

This paper presents a mathematical model to determine the optimum electricity price in hydroelectric generating stations under deregulated electricity market. Under deregulation, a free market approach to buying and selling the electricity is established. In a deregulated power market, electricity producers generally follow a marginal cost based price fixing strategy. Accordingly, each utility firm follows their own pricing strategy in the market. Absence of a general model to determine the optimal electricity price at the generator end leads to non-standard pricing practices by different generators. The proposed model was formulated based on performance incentive and penalty considering peak/off-peak loads, plant load factor and availability of the plant. The developed model was applied to a typical hydroelectric utility in India to determine the electricity price. Results show that the percentage error in estimated value falls within the limits.

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