

Wom Uawanichkul 2011: Evaluation of Maximum IPP Penetration in De-Regulated Power System. Master of Engineering (Electrical Engineering), Major Field: Electrical Engineering, Department of Electrical Engineering. Thesis Advisor: Assistant Professor Parnjit Damrongkulkamjorn, Ph.D. 134 pages.

This thesis presents the method to evaluate the maximum penetration of the independent power producer (IPP) into the transmission system while the system still operates securely without violating any system constraints. The proposed method uses the optimal power flow technique in MATPOWER to calculate the maximum generation output of the IPP connected at any bus by assuming zero generation cost for the IPP. In this study, the system load is varied to 3 different levels which represent the changes in daily loads. The optimal result for IPP penetration at any bus is considered from the maximum generation output that satisfies power flow calculation at all 3 load levels without constraint violations. The proposed method is tested on the IEEE 30 bus system where the system is divided into 3 areas. The results from case studies show that the method can evaluate the maximum generation output of an independent power producer connected at any given bus for 3 different load levels.

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