

Coordinated generation and transmission expansion planning for a power system under physical deliberate attacks

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Abstract-

This paper proposes a static model for coordinated generation and transmission expansion planning (CGTEP). While reducing the cost of investment, operation and energy not served within the system, the model aims to mitigate the vulnerability of power system against physical deliberate attacks in the horizon of planning. Moreover, the peak load of twelve days in a year is taken as a sample of the months to well consider the impacts of load variations over a year. The physical deliberate attacks and their subsequent impacts are also assessed through scenario building procedure. To this end, each scenario in any given month is built as an attack plan targeting transmission system and accordingly they are assigned weights proportional to the consequent damage inflicted on the power system. According to the generated scenarios for physical deliberate attacks, CGTEP is modeled as a mixed integer linearization methods, the planning problem is transformed to a

Index Terms- Coordinated generation and transmission expansion planning (CGTEP); Physical deliberate attacks; Mixed integer linear programming (MILP); Vulnerability

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