

The Impact of System Cascading Collapse and Transmission Line Outages to the Transfer Capability Assessment

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Abstract : Uncertainty of system operating conditions is one of the causative reasons which may render to the instability of a transmission system. This will encumber the performance of transmission system to efficiently transmit the electrical power between areas. For that reason, accurate assessment of Transmission Reliability Margin (TRM) is essential in order to ensure effective power transfer between areas during the occurrence of system uncertainties. The power transfer is also called as the Available Transfer Capability (ATC) in which it is the information required by the utilities and marketers to instigate selling and buying the electric energy. This paper proposes a computationally effective approach to estimate TRM and ATC by considering the uncertainties of system cascading collapse and transmission line outages which is identified as the main reasons in power system instability. In accordance to the results that have been obtained, the proposed method is essential for the transmission providers which could help the power marketers and planning sectors in the operation and reserving transmission services based on the ATC calculated.

Keywords : system cascading collapse, transmission line outages, transmission reliability margin, available transfer capability

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