IEEE Transactions on Power Systems. Volume:33. Number: 1. Pages: 1077-1079. January 2018

Stochastic transient stability analysis of transmission systems with inclusion of energy storage devices

A. Ortega, F. Milano

Abstract-

The letter provides a thorough stochastic analysis of the impact of energy storage systems on the transient stability of transmission grids. This impact is evaluated considering the combined effect of different energy storage technologies, fault clearing times, and network topologies. The latter concerns the relative positions of faults, storage devices, and synchronous machines. The case study consists of stochastic time-domain simulations carried out for the all-island, 1479-bus model of the Irish transmission system that includes a real-world hybrid storage device. Results lead to some nonintuitive conclusions.

Index Terms- Energy storage system, static synchronous compensator, stochastic time-domain simulation, Transient stability.

Citation:
Ortega, A.; Milano, F.; "Stochastic transient stability analysis of transmission systems with inclusion of energy storage devices", IEEE Transactions on Power Systems, vol.33, no.1, pp.1077-1079. January, 2018.