Review of: "Mathematical Assessment of the Reliability in a Complex Deregulated Power System"

Elmer Rolando Llanos Villarreal[1]

1 Universidade Federal Rural do Semi-Árido - UFERSA

Potential competing interests: No potential competing interests to declare.

This article concentrates mainly on performance-based regulation within the bulk power system, employing sequential simulation to evaluate the reliability of the composite system. The emphasis is given to ensuring system adequacy and safety as the main restrictions on increasing the reliability of the energy system in the context of an unregulated energy system, particularly in the electricity markets that incorporate distributed generators (DGs). An innovative approach has been introduced to oversee power system networks using a combination of distribution generators and flexible alternating current transmission devices (FACTS). Thus, the proposed method focuses on optimizing the placement of DGs and FACTS devices, focusing on their classifications and locations. This optimization process was performed using genetic algorithms, presenting a coding structure designed to facilitate mutations in accurate places. An algorithm operates perfectly within a one -dimensional matrix structure. The study explores the impact of different flexible alternating current transmission devices (FACTS) on the IEEERS system and calculates the corresponding expected energy (EEns). Notably, the most minimal EEs were achieved by incorporating a unified power flow controller (UPFC) with adjusted control settings. These discoveries shed light on the ideal placement of fact devices and their influence on the IEEERS system. Therefore, the evaluation results have significant potential to promote using facts devices in renewable energy resources. They provide a valuable basis for researchers seeking to identify appropriate devices and determine their ideal installation sites. The article is well written and well formulated with new contributions. Therefore, the article is accepted for publication.