

In recent years, the penetration of renewable resources in electrical power systems has increased. These renewable resources add more complexities to power system operations, due to their intermittent nature. As a result, operators must acquire additional reserves in order to maintain reliability. However, one persistent challenge is to determine the optimal location of reserves and this challenge is exacerbated by the inability to predict key transmission bottlenecks due to this added uncertainty. This paper presents robust corrective topology control as a congestion management tool to manage power flows and the associated renewable uncertainty. The proposed day-ahead method determines the maximum uncertainty in renewable resources in terms of do-not-exceed limits combined with corrective topology control. The day-ahead topology control formulation is based on the direct current optimal power flow; therefore, topology control solutions obtained from these algorithms are tested for AC feasibility and system stability. The numerical results provided are based on the IEEE-118 bus test case and the Tennessee Valley Authority (TVA) test system.