



Reactive power analysis

Appropriate availability of reactive power is necessary to keep a transmission system operating robustly. Much of the reactive power on our system is provided by generators that are interconnected with ATC. Our computer load flow models list a minimum and maximum reactive power output for each machine connected to the system. The maximum and minimum reactive capability values are determined by the generation owners. Midwest Reliability Organization (MRO) and Reliability First Corporation (RFC), in order to comply with NERC reliability standard MOD-025-1 (Verification of Reactive Power Capability) require their generation owners to verify reactive capability of all generators for a period of five years. Factors which may affect the maximum reactive capabilities of the generators, such as actual hydrogen pressure used or number of units on-line in multi-unit stations or time passed since the last test, add to the uncertainty of the maximum reactive capabilities of the generators.

ATC's Planning Criteria considers uncertainties such as those mentioned by promoting a reasonable dynamic reactive power margin on the generating units connected to the ATC system. To support the adequacy of reactive power planning, ATC's Planning Criteria specifies that intact system bus voltage requirements be met while limiting net generator reactive power output to 90 percent of the reported reactive power capability. Likewise, under contingency conditions, all system buses must meet voltage criteria requirements with the net generator reactive power limited to 95 percent of the applicable reactive power capability. These planning criteria were applied to all power flow analysis performed in this 2011 10-Year Assessment. All projects developed in this Assessment assure that the ATC system meets these planning criteria for the appropriate system conditions analyzed.