

On the assignment of voltage control ancillary service of generators in Spain

E. Lobato Miguélez; F.M. Echavarren Cerezo; L. Rouco Rodríguez

Abstract-

The aim of the Spanish voltage control ancillary service is the minimization of the transmission losses while keeping the system away from voltage instability. The latter target can be achieved maintaining an adequate voltage profile in normal operating condition and assuring that generators exhibit enough reactive margins that guarantee that the system voltages will remain under acceptable values in case of contingencies. The service has been designed in Spain to be partially mandatory and partially subject to payment based on market-driven rules and performance evaluation. In the annual time scope, the optional reactive offers submitted by the service suppliers are selected analyzing a number of forecasted scenarios. This paper explains the implementation of the Spanish voltage control ancillary service (VCAS) that is provided by generators in the annual time scope. For this purpose, a mixed-integer linear programming optimal power flow (OPF) is used. Reactive bids of generators are modeled within each scenario by modifying the reactive limits of the generators. The use of the proposed OPF in the assignment of the voltage control ancillary service is explained and illustrated using actual scenarios of the Spanish power system.

Index Terms- Ancillary services (AS), linear programming (LP), optimal power flow (OPF), power loss reduction, reactive power dispatch, VAR/voltage control

Due to copyright restriction we cannot distribute this content on the web. However, clicking on the next link, authors will be able to distribute to you the full version of the paper:

[Request full paper to the authors](#)

If your institution has an electronic subscription to IEEE Transactions on Power Systems, you can download the paper from the journal website:

[Access to the Journal website](#)

Citation:

Lobato, E.; Echavarren, F.M.; Rouco, L. "On the assignment of voltage control ancillary service of generators in Spain", IEEE Transactions on Power Systems, vol.22, no.1, pp.367-375, February, 2007.