Load Modeling Effect On Voltage Stability Of Large Scale Power Systems Using Energy Function Technique

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Abstract

Steady state voltage stability analysis is effectively used to determine a stability margin that shows how close the current operating point of a power system to the voltage collapse point. The energy function technique represents a powerful method to assess voltage stability of multi-machine power systems. The sparse network formulation of this method retains the original structure of the system network and avoids network reduction. This permits the system loads to be modeled as they exist in practical life. Neglecting these models may lead to misleading results; e.g. the system appears to be stable while it is actually unstable. This paper investigates this serious problem and shows the significant effect of load modeling on power system voltage stability. A closed form expression of the energy function is obtained. The proposed technique is applied to Ontario-Hydro real power system (Canada).

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