PhD Topic

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The integration of significant levels of variable generation into the electricity grid has increased the complexity of power system operations. The strong uncertainty and variability of variable generation poses an important operating complexity and demands an adequate dimensioning and deployment of system reserves.

This work establishes sufficient conditions for the dimensioning and deployment of adequate reserves in an electricity market context. These conditions involve the determination of reserve requirements and the design of a frequency control system consistent with such requirements. The analysis is divided into the adequacy of primary and secondary reserves, and simulations of ERCOT validated by empirical data are considered. Adequacy criteria from current practices are used to evaluate the performance of the formulation.