

Plenary Presentation

Overview Of The Analytical Methodology Issues Involved In Wind Integration Studies

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Abstract

In the last decade, regulators worldwide have set targets for their domestic utilities to increase, over a given period of time, the share of renewable energy in their energy mix. Wind generation appears at present as the most likely technology to help achieve the strict objectives specified in these so-called renewable portfolio standards, given its relative maturity and its strong development potential in the short term. However, wind generation is characterized by a high variability and limited predictability resulting in a new problem to manage on the power grid. The analysis of the impact of wind generation on large power grids has been the subject of many studies based on various, and sometimes, subjective hypotheses about the market structures, regulation policies, rate of penetration scenarios, metrics of incremental impacts, wind generation data sources and time resolution, etc. The objective of the presentation is to discuss the analytical methodology issues faced by a system operator when initiating or conducting a large-scale wind integration study. After providing some necessary indicators to understand the problem of demand and generation equilibrium in the operation of a power system (over the day ahead to the minute-to-minute time frame), we will examine the necessary framework for a typical impact study in terms of the assumed technical objectives and the given regulatory and electricity market boundaries.

Biography

Innocent Kamwa (S'83, M'88, SM'98, F'05) received a PhD in electrical engineering from Laval University, Québec, Canada, 1988, after graduating in 1984 at the same university. Since then, he has been with the Hydro-Québec Research Institute, where he is at present a Principal Researcher in bulk system dynamic performance. He has held an associate professor position in Electrical Engineering at Laval University since 1990. A Fellow of the IEEE, he has been active for the last 15 years on the IEEE Electric Machinery committee where as the standard coordinator and working group chair and secretary, he contributed to the latest standards 115 and 1110. A member of CIGRÉ and a registered professional engineer, Dr. Kamwa is a recipient of the 1998 and 2003 IEEE PES Prize Paper Awards. He is currently an editor of the IEEE Trans. on Power system serving on the Adcom of the IEEE System Dynamic Performance Committee.