

11<sup>th</sup> International Workshop on Electric Power Control Centers – EPCC  
May 22-25, 2011 Altea, Spain

## Impact of Smart Grid Initiatives on Energy Management Systems

Anup Jana, Hans Pile & John Holt  
KEMA

### Abstract

A modern Energy Management Systems (EMS) is required to ensure the reliable and efficient operation of the power grid and to take into account the latest technological developments while designing its hardware and software systems. In this context, this paper outlines the adaptation requirements of SCADA/EMS systems to support the ongoing smart grid initiatives. In addition to other smart grid aspects, this paper focuses on application's functions design aspect for renewable energy grid integration, synchro phasor (PMU) measurements consideration for state estimator and impacts of substation automation standardizations on data acquisition system modeling.

### Key words

Smart grid, SCADA/EMS, Renewable resources, Phasor Measurement Units (PMU), Sub-station automation.