

# **OPPORTUNITIES AND CHALLENGES OF WIRELESS COMMUNICATION TECHNOLOGIES FOR SMART GRID APPLICATION**

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## **ABSTRACT**

The next-generation electric power systems (smart grid) are studied intensively as a promising solution for energy crisis. One important feature of the smart grid is the integration of high-speed, reliable and secure data communication networks to manage the complex power systems effectively and intelligently. We provide in this paper a comprehensive survey on the communication architectures in the power systems, including the communication network compositions, technologies, functions, requirements, and research challenges. As these communication networks are responsible for delivering power system related messages, we discuss specifically the network implementation considerations and challenges in the power system settings. A growing recognition of the need to modernize the grid to meet tomorrow's challenges has found articulation in the vision of a Smart Grid. This paper discusses some of the challenges and opportunities of communications research in the area of smart grids and smart metering.

**KEYWORDS:** Smart Grid, Wireless Communication, Energy, Challenges, Security, Power