

A Review of the *Proceedings of the IEEE* Special Issue on the Smart Grid
by

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“Smart Grid: The Electric Energy System of the Future”

Proceedings of the IEEE is a monthly journal that is published by the IEEE. Many of its issues are special issues that focus on a designated technology and describe the technology itself, the challenges facing its implementation, and the current associated major research thrusts. Each special issue is virtually a textbook on its technology. By reading at least selected papers within an issue, one can extract information about the characteristics and the components of the technology. Although most papers do not address reliability specifically, one can develop some ideas about the reliability characteristics of the technology in the course of reading the papers.

The Smart Grid currently has become a popular topic in both technological and political circles. Thus the referenced special issue is particularly timely. The following are a few particularly informative papers in the issue that reliability engineers who seek an acquaintance with the Smart Grid might want to read:

- “Scanning the Issue.” (H. Gharavi et al, p. 917) This not only gives an overview of the subsequent papers, but also provides one of the clearest, yet concise descriptions of the Smart Grid and its implementation challenges that this reader has seen.
- “Challenges and Opportunities in Smart Grid: A Position Article” (G.W. Arnold, p. 922). This introductory article gives an overview of the concepts and purpose of the Smart grid and the important role of communications technology in its development.
- “For the Grid and Through the Grid: The Role of Power Line Communications in the Smart Grid.” (S. Galli et al., p. 998). The role of power line communications is addressed in this paper, which presents a review of what these communications can offer.
- “High-Assurance Smart Grid: A Three-Part Model for Smart Grid Control Systems.” (T.M. Overman et al., p. 1046). Cyber security and control for future Smart grid systems is the topic of this paper, which recommends distributed control for grid management and hierarchical control for planning and dispatch

There are other papers that discuss specific enabling technologies such as wind energy, vehicle electrification, photovoltaic generators, and energy storage.