Smart Grid Forensic Science: Applications, Challenges and Open Issues

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Smart grid forensics is emerging as a powerful security component of the power system, with applications in cyber-security, natural disaster recovery and damage prevention, and law enforcement. Challenges range from privacy to handling of the enormous amount of data thrown off by the monitoring systems. This article provides an interesting introduction to the emerging area of smart-grid forensics, with a discussion of the challenges and open issues. Smart grid forensics will be useful in identification of persons involved in electricity theft or cyber attacks. In addition, it will be instrumental in obtaining insights to disaster-related failures by studying the impacts of strong hurricanes, earthquakes and other natural disasters on the power systems. Natural disasters have caused major disruptions in the operation of the grid in the past. On the other hand, data obtained from the power systems can be used in verification of digital audio and video recordings for crime investigation. This article outlines how smart grid forensics will become useful in improving cyber and physical security of the power grid. Meanwhile the potential challenges are discussed in detail among which performing forensic analysis without violating users privacy; archiving, storing and processing the huge amount of data that is made available by the forensic tools and the difficulty of collecting reliable data from monitoring systems stand out. This article provides a grounding to prepare the readers for future articles on smart grid foresics. This paper is published in the special issue of ?Ultimate Technologies and Advances for Future Smart Grid?, IEEE Communications Magazine, January 2013.

Smart grid related references:

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