

Assignment 1: The Secure Smart Grid

Instructor: Professor Deepa Kundur

Semester: Winter 2015

DEADLINE: Monday, October 5, 2015, 11:59 pm ET.

Objectives of this assignment

- To provide you with the opportunity to understand the motivations behind and directions for secure smart grid development.

Please note that this is an *individual* project and each person can talk to others, but must ultimately do their own research and write their own assignment report.

The Smart Grid

As discussed, the smart grid can be envisioned as the marriage of information technology with electricity infrastructure. There are many motivations for the movement towards a more consumer-centric power system and as discussed many visions for the smart grid exist. In this assignment you are asked to read:

M. Amin, "Energy Infrastructure Defense Systems," *Proceedings of the IEEE*, vol. 93, no. 5, pp. 861-875, May 2005.

URL: http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=1428003&tag=1

and find at least three other IEEE articles related to the topic. Based on these references, please write a report answering the following questions.

1. What are the main motivations for development of a smarter grid?
2. Explain three types of attacks possible on a power system?
3. Discuss "The Dilemma" highlighted in Section VI of the paper citing both the technology development necessary and the associated actions needed to formulate a security strategy.
4. How does human presence affect security?
5. What are the challenges for development of a secure smart grid?
6. Given your personal background, please share your opinions on the need and/or possible application of defense strategies for energy infrastructure. Note, that defense strategies do not have to be technical. They could be policy-based and even psychological.

Report Format and Grading

Your report should be approximately 4-7 pages and list the additional references you used for your answers. Please list your name and student number on the top of the report. Please provide answers to the above questions in complete sentences and in paragraph form. You will be marked on the correctness, preciseness and comprehensiveness of your answers and quality of your presentation.

Please submit your report via Blackboard at <http://portal.utoronto.ca>. Please logon in advance to Blackboard to understand how to submit your assignment. Waiting until the last minute may lead to unnecessary stress.