ECE 529: Utility Applications of Power Electronics  
Class Project

The ECE529 class project will consist of a 5-7 page paper (with an appendix if needed) describing an aspect of utility applications of power electronics. The paper can be either single or double column (IEEE format) with single spacing, 12 point font (if you’re not sure of the IEEE format, you can go to http://www.ieee-pes.org/publications/information-for-authors and look at the Sample Template for a PES Technical Paper under either transactions or conference papers). I can help provide references to help you get the background information for your paper. If you do a simulation project, describe your simulation model, and also hand in the input data files.

You can work individually or in groups of two or three. The project must be larger and accomplish if it is a group project.

Possible topics include:
1. Overview of control and operation of multiterminal HVDC systems or HVDC grids (with or without simulations)
2. In depth study of a VSC HVDC application
3. Modeling and analysis of an energy storage systems
4. Develop and demonstrate more complete models of FACTS, VSC HVDC converter, wind turbines, photovoltaics, etc for ATP. Document model and show results.
5. Develop and demonstrate more complete power flow or stability models of FACTS, VSC HVDC converter, wind turbines, photovoltaics, etc. Document your model and show results.
6. Impact of FACTS devices, VSC HVDC, Wind Turbines, or Photovoltaics on system protection
7. Modeling and analysis of power electronic interface for microturbines, fuel cells, photovoltaics, etc.
8. Modeling and analysis of power electronic interface and an energy storage systems (battery, SMES, flywheel, ultracapacitor).
9. Many additional topics are also possible, but need to be cleared with me first.

DUE DATES

Part 1: Choose topic and write a brief abstract and outline. Due Session 30 (March 29). Worth 6% of the project grade.

Part 2: Final paper is due May 3 at 3:00pm Pacific time. Copies of the papers will be sent to your classmates.

Part 3: Perform a review at least 2 papers submitted by others in the class and provide to instructor. Due by 11:59 pm Pacific time on Friday May 10.