Power Systems Engineering Research Center

Flexible Transmission Decision Support

Kory W. Hedman
School of Electrical, Computer, and Energy Engineering
Arizona State University
Kory.Hedman@asu.edu

PSERC Public Webinar
Tuesday, April 21, 2015
2:00-3:00 p.m. Eastern Time (11:00-12:00 p.m. Pacific)

Description: Flexible Transmission Decision Support is an open-source software solution for power flow control. With advanced operational optimization software, we are able to identify correction actions to redirect power around transmission bottlenecks to enhance reliability and lower operational costs by making better use of existing transmission hardware (e.g., circuit breakers). Funded by the US DOE Advanced Research Projects Agency – Energy (ARPA-E) Green Electricity Network Integration (GENI) program, we have developed a message passage interface (MPI) based, high performance computing real-time contingency analysis (RTCA) package that incorporates post-contingency corrective transmission switching. This RTCA tool is envisioned to work seamlessly alongside existing energy management systems (EMS) to identify corrective actions that are passed on to the operator. By incorporating corrective control within RTCA, we are able to substantially reduce post-contingency violations, thereby reducing the need to implement expensive preventive actions.

This tool has been tested on actual large-scale EMS data (systems up to 15,000 buses) provided by PJM, ERCOT, and TVA and we have worked with Dr. Eugene Litvinov to test the concept at ISONE. A summary of these results will be provided along with results related to one week of EMS data provided by PJM. Future extensions will include advanced modeling of various flexible AC transmission systems (FACTS) devices in order to determine corrective FACTS control opportunities in real-time. We have already designed a fast optimization algorithm for the Smart Wire Grid device, invented by Deepak Divan.

Biography: Kory Hedman joined Arizona State University in 2010 as an assistant professor. Before joining ASU, he worked for the California ISO and the Federal Energy Regulatory Commission. He specializes in optimization and modeling of power systems. Dr. Hedman is a former student of two different PSERC institutions; he holds Ph.D and MS degrees in Operations Research from the University of California, Berkeley, and MS degrees in Electrical Engineering and in Economics from Iowa State University. He received BS degrees in Electrical Engineering and in Economics from the University of Washington.

Registration for Webinar Participation: None required. There is no charge for participating!

Participation by Webinar: There are several options for participating.

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PSERC's Webinar Coordinator: Venkataramana Ajjarapu, Iowa State University, vajjarap@iastate.edu.

Professor Ajjarapu welcomes your feedback on PSERC webinars and suggestions for future ones.