

TUTORIAL: Application of energy storage technologies in planning, and operations control of electric power systems.

The tutorial begins with a review of the background and history of energy storage technologies including a description of the main storage media currently in use. The potential of energy storage applications in the transmission, generation and control centers segments is presented in detail through a description of more than 15 energy storage projects already installed around the world. The tutorial also includes a review of the energy storage market for Latin America, as well as some specific applications that are being evaluated in Mexico, Brazil, Colombia and Chile. The tutorial presents the regulations that have been designed to stimulate energy storage in the United States of America as well as the current state of regulations in Latin America. The most beneficial applications for the electric power system are presented in detail, such as the use of energy storage to more effectively integrate renewable, solar and wind generation, investment deferral, and congestion relief. The tutorial ends with a review of the state-of-the-art software and hardware of battery-powered energy storage systems and the vision of the future.

LECTURER: David Elizondo

David Elizondo, Sr. Director International Business of Quanta Technology, has a broad range of experience in electric power transmission and distribution which includes more than 19 years of extensive experience in power system analysis, simulations, and application of new technologies for electric power systems. In 2008-2009, Dr. Elizondo participated in a seminal project for the California Utilities Commission in USA for applied research in large scale energy storage. Results of that report were used to apply for US DOE funds for the design and installation of 8 MW/32 MWhr Battery Energy Storage facility in California, installed in 2013, nearby a large wind generation plant. In 2016- 2017 Dr. Elizondo is directing a USTDA funded project that has developed the technical, economic and financial viability of applying large scale battery energy storage solutions in Colombia, Mexico and Brazil. This project has conducted research, analyzed more than 16 large energy storage applications around the world and has identified at least 9 potential projects in Colombia, Mexico and Brazil. As part of the project, Dr Elizondo has met with planning, operations, and regulations officials in Mexico, Colombia and Brazil to disseminate the best practices and promote the technology benefits. Areas of expertise: Long range transmission plans for large renewable generation integration an application studies for battery based energy storage in electric power systems, Application and visualization of synchrophasor technology for wide area monitoring in energy control centers and Power System planning and operations. Accomplishments and Industry Recognition: IEEE Member of Power Energy Society, Member of IEEE Transmission Planning Working Group, Member of IEEE Latin America Infrastructure Working Group, Member of NASPI Research and Operations Task Teams and Published over 20 papers in different forums in the US and Latin America.

