

Liuchen Chang

Biography

Liuchen Chang joined the faculty of University of New Brunswick in 1992 after receiving his Ph.D. degree in 1991. He is the Principal Investigator of NSERC Wind Energy Strategic Network (WESNet). He held the position of NSERC Chair in Environmental Design Engineering for the Atlantic Canada Region during 2001-2007, and was a recipient of CanWEA R.J. Templin Award in 2010 for his contribution in the development of wind energy technologies. He is a fellow of Canadian Academy of Engineering (FCAE), and registered member of Association of Professional Engineers and Geoscientists of the Province of New Brunswick (APEGNB). He has published over 190 refereed technical papers in journals and conference proceedings. As a leading researcher, Dr. Chang has focused on research, development, demonstration and deployment of renewable energy and distributed generation systems, including wind, hydraulic, solar and microturbine systems. He has established the Sustainable Power Research Group at the University of New Brunswick, where large-scale, multi-institutional and multi-disciplinary R&D projects have been conducted in close collaboration with industry and government.

Presentation Abstract: PowerShift Atlantic – Aggregated Load Control Based on Smart Grid

As investment in smart grid infrastructures has been growing rapidly, smart grid technologies have penetrated into power systems from generation, transmission, to distribution and consumption. Smart grid technology applications in customer loads have brought significant benefits to utilities, consumers and renewable energy industry. Dr. Liuchen Chang will present a technology development and demonstration project in Atlantic Canada, namely “PowerShift Atlantic”. The objective of the project is to develop aggregated load control technologies for the provision of ancillary services in order to integrate intermittent wind energy into the power systems, under the constraint that customers’ normal usage is not negatively impacted. The vision of this large-scale multi-partner team is to create a new class of system resources for power systems built on the basis of the smart grid infrastructures, with the benefits of enhanced power system reliability and wind energy penetration. The loads include residential loads and commercial loads. Dr. Chang will provide an overview of the project, and will introduce the new technologies developed through the project. In particular, Dr. Chang will present the wind power forecast technologies, modelling of domestic electric water heaters (DEWH) based on the real-time and historical data of smart meters, multi-agent control system for DEWHs, and ancillary services through aggregated load control for power systems.