

Thursday, September 3

Scaife Hall Auditorium
Room 125

4:30 p.m.
Refreshments at 4:00 p.m.



Claudio Cañizares
Professor

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Claudio Cañizares received the Electrical Engineer degree from the Escuela Politécnica Nacional (EPN), Quito-Ecuador, in 1984 where he held different teaching and administrative positions from 1983 to 1993. His MSc (1988) and PhD (1991) degrees in Electrical Engineering are from the University of Wisconsin-Madison. He has been with the E&CE Department, University of Waterloo since 1993, where he has held various academic and administrative positions and is currently a Full Professor, the Hydro One Endowed Chair and an Associate Director of the Waterloo Institute for Sustainable Energy (WISE). His research activities concentrate in the study of stability, modeling, simulation, control, optimization and computational issues in power and energy systems within the context of competitive energy markets. He is a Fellow of the IEEE and has been the recipient of various IEEE-PES Working Group awards, and has held and holds several leadership positions in various IEEE-PES technical committees, working groups and task forces.

"Storing Electricity as Hydrogen: Does it make sense?"

Abstract:

With the advent of "intermittent" and clean electricity energy sources, particular wind and solar, the need for adequate storage so that this energy can be used when required for electrical and/or transportation applications has become of paramount importance. Hydrogen-based storage is seen as an attractive solution to this problem. Hence, this talk will present and discuss the technologies and issues associated with the storage of electricity using hydrogen, highlighting advantages and disadvantages as well as present and future challenges of this storage option, from both technical as well as economical points of view. Two feasibility studies will be discussed in some detail. The first study discusses the feasibility of generating hydrogen electrolytically from a combination of nuclear and wind power, in the context of Ontario-Canada's current power grid and nuclear and wind generation plants. The second study discusses the feasibility of optimally generating hydrogen electrolytically for transportation purposes mainly using the "surplus" energy and grid available at night; in this case, the 2008-2025 Ontario-Canada's power system is used as an illustrative example for determining the maximum penetration of hydrogen-based vehicles that can be powered for "free".

ECE Seminar Hosts

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