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## Message from the chair

IEEE Vancouver Section is planning to introduce two new technical chapters this fall. We'll need your support, as outlined below. Please let me know if you can help.

The proposed IEEE Joint Applied Physics Chapter will represent the IEEE Nuclear and Plasma Sciences Society, the IEEE Instrumentation and Measurement Society, the IEEE Magnetics Society and the IEEE Ultrasonics, Ferroelectrics and Frequency Control Society in Vancouver. Companies and organizations who have expressed interest in supporting the proposed chapter include TRIUMF, Honeywell and D-Wave Systems. If you're interested in taking on a leadership role in this proposed chapter, please contact me!

The proposed IEEE Joint Transportation Chapter will represent the IEEE Vehicular Technology Society, the IEEE Intelligent Transportation Systems Society and the IEEE Ocean Engineering Society. Companies and organizations who have expressed interest in supporting the proposed chapter include Metro Vancouver, TransLink, the University of British Columbia and International Submarine

Engineering. If you're interested in taking on a leadership role in this proposed chapter, please contact me!

In order to form these chapters, we will need to submit a petition to IEEE headquarters with at least twelve signatures from members of these Societies who are also members of the Section. At least three members from each Society must sign. E-mail expressions of support can be accepted in lieu of physical signature. If you're a member of one of these Societies, we'll be contacting you shortly to ask for your support. If you aren't yet a member of one of these Societies, but have an interest in these areas, please consider joining when you renew your IEEE membership. The additional cost is very small but the benefits are significant! Any memberships that you include in your 2011 renewal become effective immediately, so please don't delay!



Dave Michelson

## Call for Papers and Proposals

The 24th Annual Canadian Conference on Electrical and Computer Engineering  
(IEEE CCECE 2011)

<http://www.ccece2011.org>

Niagara Falls, Ontario, Canada

May 8-11, 2011

## “Electrifying a Green Future”

The 2011 IEEE Canadian Conference on Electrical and Computer Engineering (CCECE 2011) will be held in Niagara Falls, Ontario, Canada from May 8-11, 2011. CCECE 2011 provides a forum for the presentation of electrical and computer engineering research and development from Canada and around the world. Papers are invited, in French or English, for the following symposia.

- Circuits, Devices and Systems • Communications and Networking • Computers, Software and Applications • Control and Robotics
- Power Electronics and Energy Systems • Signal and Multimedia Processing

Authors wishing to submit papers that do not fit within any of the above topics are encouraged to do so to the 'general interest' symposium. Please submit original full length paper(s) to the Technical Program Committee using the on-line submission process on our web site at <http://www.ccece2011.org> before January 7, 2011. Click on "Call For Papers" and follow the instructions provided.

Tutorial and Workshop Proposals Submission Proposals for half-day tutorials and workshops should be submitted before December 3, 2010 to the Tutorials Chair at [tutorials@ccece2011.org](mailto:tutorials@ccece2011.org).



Dr. Saifur Rahman  
Virginia Tech

**Distinguished Lecturer**

Thursday 26 August

4:30 to 6:00pm

BC Hydro Edmonds  
Auditorium

**Information**

Power and Energy Chair  
Glen Tang  
Glen.Tang@powerex.com

## Role of the Smart Grid in alleviating electrical power system stress conditions through demand response

Over the last several decades electric utilities around the world have deployed direct load control and demand side management (DSM) programs of various types to reduce their peak loads during stressed conditions when the available generation reaches its limit. This situation arises during special events, due to lack of available generation, or when the system peak is very high due to weather conditions. Now this situation is exacerbated with the introduction of intermittent sources of generation like solar and wind.

Under the widely practiced demand side management (DSM) programs, the electric utility turns off or cycles the residential customers' high voltage (240V) load (eg, electric water heater, air conditioner) during times of generation shortage. There are two problems with this approach. One, the electric utility can never be sure whether their control signals are actually turning loads off because there is no confirmation signal from the appliance as to whether it is being cycled. Second, once the customer signs up for the water heater and/or air conditioner control program, they have no choice to temporarily opt out when such utility generated control causes hardship for them.

Now with the gradual introduction of the smart grid and its associated hardware, software and control protocols, many more options are becoming available for developing creative "demand response" programs where the customer has the ability to choose if and when loads are to be controlled. Moreover, this approach can be customized even for a small segment of the network like a feeder that may have difficulty meeting its connected load due to some temporary resource constraints.

Under this "Smart Grid Demand Response Scenario", a substation can dynamically compute the load reduction necessary when the system is stressed. The amounts of load reduction necessary can be functions of cost of generation, carbon footprint of the amount of electricity being requested, adverse environmental impact (eg, ground level ozone concentration), or just simply not enough generation being available to meet the load. Under this demand

response scenario, the electric utility sends a signal to individual homeowners through their smart meter for them to reduce their load, say by a certain amount (X kW) for a certain amount of time. The homeowner's intelligent power management system analyzes the existing and projected load in the house to first decide if it can comply with the utility's request given their needs and priorities.

If YES, the system will compute which loads (typically 240V) to be controlled and for how long to match the X kW demand reduction being requested. If NO, the utility will not get any demand reduction from this customer. This demand response approach, now possible due to availability of intelligent devices and communication protocols, makes the load control a collaborative affair between the customer and the electric utility. This is very different from the traditional command and control approach, like demand side management, that has been and is being practiced.

**Speaker:** Professor Saifur Rahman is the founding director of the Advanced Research Institute at Virginia Tech where he is the Joseph R. Loring professor of electrical and computer engineering. He is a Fellow of the IEEE. He is the editor-in-chief of the IEEE Transactions on Sustainable Energy and a member of the Editorial Board of the Proceedings of the IEEE. He is currently serving as the vice president for New Initiatives and Outreach for the IEEE Power and Energy Society (PES). He is a member-at-large of the IEEE-USA Energy Policy Committee. He is a Distinguished Lecturer for the IEEE PES, and has lectured on smart grid, energy efficient lighting solutions, renewable energy, demand side management, distributed generation and critical infrastructure protection in over 30 countries on all six continents.

He received his Ph.D. in electrical engineering from Virginia Tech in 1978. His industry and government experience includes work with the Tokyo Electric Power Company in Japan, the Brookhaven National Laboratory in New York, the Carolina Power and Light Company, and consultancy for the World Bank, the United Nations and the Asian Development Bank.



# IEEE Milestone Ceremony Dominion Radio Astrophysical Observatory

The Dominion Radio Astrophysical Observatory (DRAO), located near Penticton, BC, is Canada's leading facility for radio and solar astronomy. Operated by the National Research Council of Canada's Herzberg Institute of Astrophysics, the facility is celebrating its fiftieth anniversary this year.

The IEEE Board of Directors has approved the IEEE History Committee's recommendation that the DRAO's pioneering work in Very Long Baseline Interferometry be recognized as an IEEE Milestone in Electrical Engineering and Computing with the following citation: *First Radio Astronomical Observations Using VLBI, 1967*

On the morning of 17 April 1967, radio astronomers used this radiotelescope at DRAO and a second one at the Algonquin Radio Observatory located 3074 km away to make the first successful radio astronomical observations using Very Long Baseline Interferometry.

Today, VLBI networks span the globe, extend into space and continue to make significant contributions to both radio astronomy and geodesy.

At a dedication ceremony to be held during the DRAO Open House on Saturday, 25 September 2010, Prof. Om Malik, the President of IEEE Canada, and Prof. Dave Michelson, Chair of IEEE Vancouver Section, will unveil a pair of bronze plaques that give the Milestone citation in both official languages.

Members of IEEE Vancouver Section are cordially invited to attend both the Open House (which runs from 10:00 until 17:00 that day) and the ceremony, which is currently scheduled to take place at 12:30 at the base of the 26-m telescope. Please check the IEEE Vancouver Section website, <http://vancouver.ieee.ca/> for updates concerning the event as the date approaches.

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## DRAO Open House 2010 Celebrating 50 Years of Radio Astronomy in the White Lake Basin

**25 September 2010  
10:00 to 17:00**

**NRC Dominion Radio Astrophysical Observatory  
717 White Lake Road, Kaleden, BC**

We are 50 years old this year, and we are inviting everyone to come and join the celebration! NRC-DRAO was officially opened in 1960, after a nationwide search for the best radio astronomy site in Canada. From very-low-frequency all-sky surveys made in the 1960s at 10 and 22 MHz — unsurpassed to this day — to the majestic Canadian Galactic Plane Survey, completed in 2009, NRC-DRAO astronomers have exploited the White Lake Basin's superb radio-quiet environment to push back the frontiers of science.

NRC-DRAO has also long been at the forefront of technology development in radio astronomy. From pioneering 1967 experiments in Very-Long Baseline Interferometry (VLBI) — a technique now in widespread use worldwide — to the design and construction of cutting-edge digital signal-processing hardware now being delivered to telescopes in the USA and the UK, NRC-DRAO's engineers have made major contributions to projects in Canada and around the globe.

Today astronomers and engineers at NRC-DRAO collaborate with international colleagues in developing techniques and instruments for the next generation of radio telescopes that will address key questions about the nature of the Universe, from the physics of gravity to understanding the origins of life. Around the NRC-DRAO site you will see progress on innovative projects such as low-cost, high-performance antenna fabrication, wide-field "radio cameras", low-noise electronics, and high-speed digital signal processing hardware.

**Gates open to the public at 10:00 am and close at 5:00 pm.  
Everyone is welcome! Admission is free!**

**Map:** <http://www.nrc-cnrc.gc.ca/eng/locations/directions/penticton.html>

**Poster:** [http://www.nrc-cnrc.gc.ca/obj/hia-ih/ia/doc/Penticton2010\\_eng.pdf](http://www.nrc-cnrc.gc.ca/obj/hia-ih/ia/doc/Penticton2010_eng.pdf)

