cigré canada
comité national canadien
canadian national committee

CIGRÉ Canada

PROGRAM

2014 CIGRÉ Canada Conference

The International Centre
6900 Airport Road
Toronto, Ontario
Canada

September 22-24, 2014

"Innovation and The Evolving Grid"

www.cigre.ca

Hosted by hydro one

SPONSORS

DIAMOND SPONSORS

ABB

PSC Specialist Consultants to the Electricity Industry

SEVES

SEDIVER

GOLD SPONSORS

ALSTOM

RTDS Technologies

MEDIA PARTNERS

Electric Energy T&D MAGAZINE

North American Policies and Technologies
ELECTRICITY Today
Transmission & Distribution
Est 1986

greentechmedia:

Table Of Contents

General Information

Table Of Contents 3
Welcome Message From General Chair 4
Welcome Message From Technical Committee Chairs 5
Committee 6
Conference Venue 7
Exhibitors 8
Social Events 9
Award Presentation 9
Instructions for Presenters 10

Program Overview

Keynote Speaker 11
CIGRÉ Panel #1 Description 12
CIGRÉ Panel #2 Description 13
CIGRÉ Panel #3 Description 14
CIGRÉ Workshops – Descriptions 15
Conference Schedule 17
Program – Monday, September 22, 2014 17
Program – Tuesday, September 23, 2014 17
Program – Wednesday, September 24, 2014 18
Conference Schedule (Details) 19
CIGRÉ Workshop – Monday, September 22, 2014 21
CIGRÉ Program – Tuesday, September 23, 2014 19
CIGRÉ Program – Wednesday, September 24, 2014 20
CIGRÉ Student Poster Session – Tuesday, September 23, 2014 22

Welcome Message From General Chair

I would like to invite you, on behalf of the CIGRÉ Canadian National Committee and Hydro One to the ninth annual CIGRÉ Canada Technical Conference in Toronto, Ontario, which will be held from September 22, 2014 through September 24, 2014. We are delighted to be hosting the largest annual event in Canada promoting CIGRÉ. This conference promises to provide all attendees with new insights into the advancement of power systems and solutions for the challenging issues on modern electrical systems. Building on the success of past events I look forward to you being able to learn and share knowledge and gain new understanding. Also, we intend for this event to provide you with opportunity to network with your industry colleagues.

The theme of the 2014 conference is « Innovation and the Evolving Grid ». The electrical grid is evolving and this change is driven by the demands of both society and the changing physical environment. Societal expectations are changing. These expectations include the reduction of our carbon footprint, the reduction of any new build that is visible, improved customer service, improved competition in transmission and distribution (T&D) grid development and the expectation that there will be no change in the level of service despite climate change or extreme weather.

The expectation to reduce our society's carbon footprint led to increased connections of renewable generation and reduce fossil-fuel generators on T&D grids. The connection of renewable generators, in turn, has created technical issues on the electrical grid such as harmonics, voltage fluctuations, and reverse flow. Not In My Back Yard (NIMBY) is not new but it has gained national and international attention in many cases and has increased the difficulty in obtaining approvals for expanding and/or upgrading the power system. This coupled with ageing of existing power system equipment increases the risk of significant deterioration in the level of service to customer in the form of additional outages and longer outages. As the need for equipment repair and refurbishment and new development piles up, so will the costs.

In order to meet these expectations, more capacity must be found on the transmission system, better customer service has to be developed, equipment must last longer, new forms of connection such as HVDC must be investigated, the inertia and stability of the grid must remain in place, and rates must still be kept low. A key solution is the constant need for innovation. The electricity industry is challenged to seek out innovative solutions in the planning, operating and maintaining of the existing electricity infrastructure, and to make use of advanced technologies. This will enable the industry to meet the expectations of cautious regulators, globally connected communities, and digitally savvy customers. Again, I look forward to welcoming you to Toronto for the 9th Annual CIGRÉ Conference, and I anticipate that you will find this to be a very rewarding conference exploring all of these issues.

David Curtis
Director, Engineering Knowledge Management
Hydro One Networks Inc.

WELCOME MESSAGE FROM TECHNICAL COMMITTEE CHAIRS

On behalf of the Technical and Organizing Committees, we are pleased to welcome you to the 2014 CIGRÉ Canada Conference on Power Systems, which is the 9th edition of this prestigious event.

The interest in technical participation in the 2014 CIGRÉ conference at Toronto, Canada is surprising and exciting. About 200 abstracts were submitted and reviewed, of which over 90 were accepted for papers in the final conference program. Abstracts were received from many countries, including Brazil, Canada, China, France, Germany, Ghana, Iran, Ireland, Japan, Netherlands, Poland, Russia, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, United Kingdom, and United States of America. As a result, 21 countries are represented in the conference's technical program. Among the over 90 papers selected for the conference, 63 papers are assigned to the 21 technical sessions as oral presentations, and 30 student papers are dedicated to a special *Student Poster Session*. A *Best Student Paper Award* will be granted during the conference banquet to the authors of a selected student contribution based on the quality of its abstract, paper, and poster presentation. In addition, the conference program will be supplemented by workshops, plenary sessions and panel sessions. For the authors, their papers presented at the conference will be published in the online CIGRÉ library www.e-cigre.org.

We would like to express our sincere appreciation to the 50 or so technical committee members and many other colleagues for the international exposure given to the Call for Papers through the industry, research centers and universities. We are grateful for their time, efforts and expertise provided during the contribution evaluation process. Also, special thanks to the session chairs for their commitment to the success of the conference program, and to the authors for their significant contributions that make the technical program highly relevant to participants.

Birendra N. Singh, P.Eng.
Technical Committee Co-Chair
Hydro One Network Inc.
Toronto, Ontario, Canada

Ayesha Sabouba, P.Eng.
Technical Committee Co-Chair
Hydro One Network Inc.
Toronto, Ontario, Canada

COMMITTEE

Organizing Committee

David Curtis, General Chair
Ayesha Sabouba, Technical Committee Co-Chair
B. N. Singh, Technical Committee Co-Chair
Janet Eby, Program Co-Chair
Esia Giaouris, Program Co-Chair
Larry Lee, Technical Coordinator
Tammy Carter, Local Arrangements Chair
Suzanne Lafrenière, CIGRE Canada Coordinator
Steven Desrochers, Event Manager

Local Technical Committee

Mike Falvo, Independent Electricity System Operator (Retired)
Richard Ford, Toronto Hydro
Kevan Jefferies, Ontario Power Generation
Tarlochan Sidhu, University of Ontario Institute of Technology
Vijay Sood, University of Ontario Institute of Technology
Josh Taylor, University of Toronto
Gary Thompson, Toronto Hydro
Joe Toneguzzo, Ontario Power Authority
Bala Venkatesh, Ryerson University
Louis Voisine, Hydro Ottawa

International Technical Committee

Basile L. Agba, Hydro-Québec (IREQ), Canada
Jean-François Allan, Hydro-Québec (IREQ), Canada
Marc Brunet-Watson, PSC Consulting, Canada
Gordon Dobson-Mack, Powerex, Canada
David Elizondo, Quanta Technology, USA
Masoud Farzaneh, Univ. du Québec à Chicoutimi, Canada
Manuel Ferre, Universidad Politécnica de Madrid, Spain
Michael Fourman, Georgia Transmission Corp., USA
Anand Goel, Hydro One (Retired), Canada
Mark Halpin, Auburn University, USA
Mike Hannon, National Grid, UK
David Jacobson, Manitoba Hydro, Canada
Bogdan Kasztenny, SEL, Inc., Canada
Zbigniew Kieloch, Manitoba Hydro, Canada
Ben Li, Ben Li Associates, Canada
Eric Zhengrong Li, Ergon Energy ROAMES , Australia
Danielle McNabb, Hydro-Québec (Retired), Canada
John McNichol, Manitoba Hydro, Canada
Serge Montambault, Hydro-Québec (IREQ), Canada
Hadi Moradi, University of Tehran, Iran
Mukesh Nagpal, BC Hydro, Canada
Alberto Oscar, Tesmec S.p.A., Italy
Steven Pai, BC Hydro, Canada
Joon-Young Park, Korea Electric Power Corporation, Korea
Patrick Picher, Hydro-Québec (IREQ), Canada
Ken Pratt, PSC Consulting, USA
Debashish D. Ray, Bhabha Atomic Research Centre, India
Ronaldo Antonio Roncolatto, CPFL, Brazil
Glen Sale, Siemens Canada Limited, Canada
Nariman Sepehri, University of Manitoba, Canada
Joao Silva Sequeira, Instituto Superior Técnico, Portugal
Tom Sgouros, Brown University, USA
Rick Spyker, AltaLink Management Ltd, Canada
Mark Stemmle, Nexans Deutschland GmbH, Germany
Janos Toth, Enginomix Consulting Inc., Canada
Daniel Wong, AltaLink Management Ltd, Canada
Wilson Xu, University of Alberta, Canada
Francisc Zavoda, Hydro-Québec (IREQ), Canada

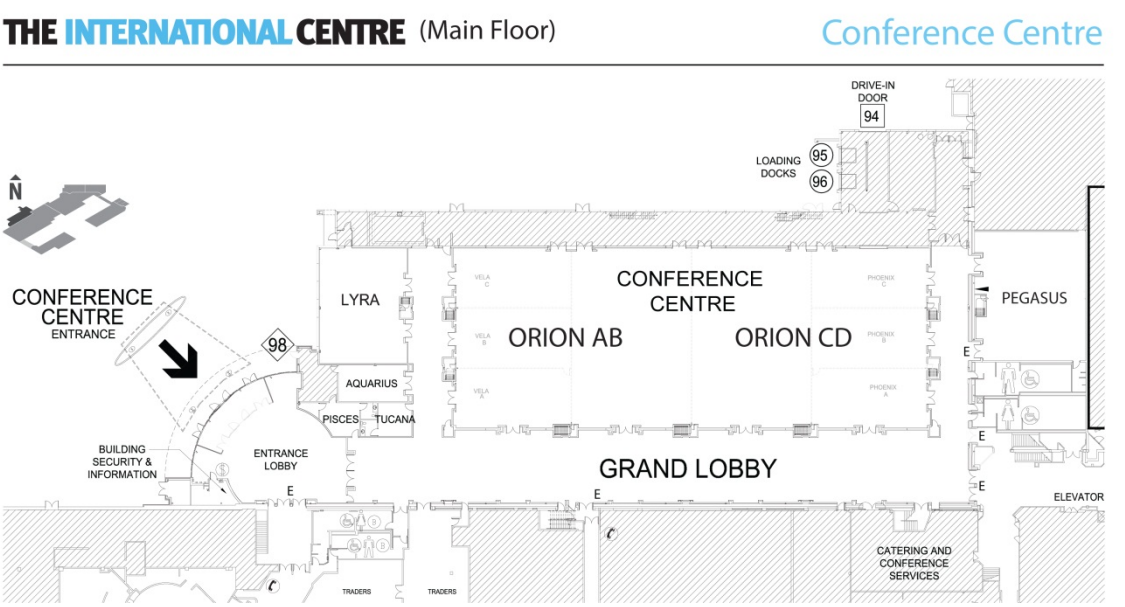
CONFERENCE VENUE

Contact Information

The International Centre
6900 Airport Road
Mississauga, Ontario, Canada
L4V 1E8

Toll Free: 1-800-567-1199
Facsimile: 1-905-677-3089

Floor Plan



(Note: Showroom 2 is on Second Floor)

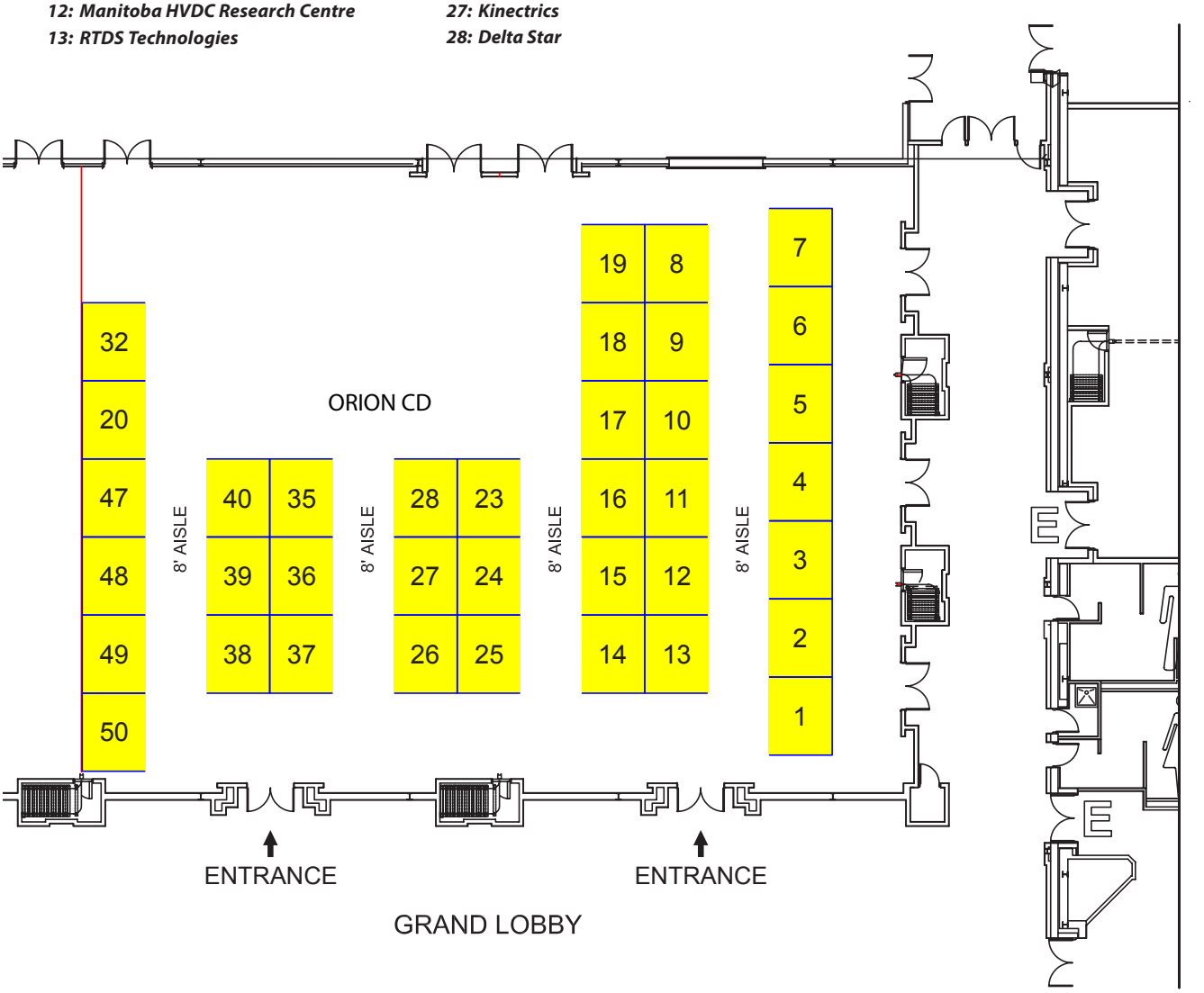
EXHIBITORS

CIGRE 2014

THE INTERNATIONAL CENTRE ONTARIO CANADA - ORION C & D
SEPTEMBER 22-24, 2014
BOOTHS ARE 8' x 10'
AISLE WIDTHS ARE NOTED
REVISED 12-17-13
REV 1

Coast to Coast
TRADE SHOW SERVICES INC.
4195 Oneida Street, Unit I Denver, CO 80216
Ph. 303-991-2791 or 800-436-3523

1: ABB
2: Trinity Meyer Utility Structures, LLC
3: W.I.R.E. Services
4: SEVES Canada
5: Fabrimet
6: K-Line Insulators
7: Advanced Control Systems
8: Slacan Industries
9: Vizimax
10: Opal-RT
11: Hydro-Quebec (IREQ)
12: Manitoba HVDC Research Centre
13: RTDS Technologies
14: Cooper Power Systems by Eaton
15: Valmont
16: Trench
17: PSC Consulting
18: GE Digital Energy
19: GE Digital Energy
20: Preformed Line Products
23: 3M Canada
24: Tetra Tech
25: Locweld
26: Kinectrics
27: Kinectrics
28: Delta Star
32: Powertech Labs
35: IPS-Energy USA
36: Prometek
37: SPIDA Software
38: Candura Instruments
39: Angus Geosolutions
40: Alstom Grid
47: Siemens Canada
48: Siemens Canada
49: Virelec
50: SAE Towers



Social Events

Welcome Reception

Monday, September 22, 2014 | 18:00 – 20:00

The International Centre | Showroom 2 (2ND Floor)

Casual dress

Get the conference off to a great start by networking with your colleagues over a glass of wine and collecting your registration materials.

Cocktail Reception

Tuesday, September 23, 2014 | 17:00 – 19:00

The International Centre | Orion CD

Casual dress

This evening provides the ideal opportunity to network with your colleagues, exhibitors, and exchange views with students during the *Student Poster Session*.

Banquet

Tuesday, September 23, 2014 | 19:00 – 22:00

The International Centre | Orion AB

Casual dress

The conference banquet is an evening of fine dining, entertainment, and stimulating conversation. It's a good chance to salute the work accomplished during the conference and network with participants. The *Best Student Paper Award* will be presented during the banquet.

AWARD PRESENTATION

In recognition of the outstanding contributions by students for the 2014 CIGRÉ Canada Conference, a *Best Student Paper Award* will be presented during the conference banquet to the author(s) of a student paper, based on the quality of its abstract submitted at the first stage of the selection process, the full paper, and the Student Poster Session.

2014 CIGRÉ Canada Conference Best Student Paper Award

This award consists of a personalized certificate, a cash award in the amount of $1,000, and consideration of the paper for publication in the Electra journal (CIGRÉ's bimonthly journal for power system professionals).

Sponsored By

INSTRUCTIONS FOR PRESENTERS

Plenary, Panel and Parallel Technical Sessions

All presenters must check into the **Speaker Ready Room (Tucana)** at least 12 hours prior to their scheduled presentation. A technician will be available to assist you with any compatibility or formatting issues. You must advise the attendant if you plan to use your own laptop or, if not, provide a USB key to upload your PowerPoint presentation file. All presentations should be in PowerPoint Windows format.

Opening Hours – Tucana:

Monday, September 22	15:00 – 19:00
Tuesday, September 23	07:00 – 19:00
Wednesday, September 24	07:00 – 16:00

Presenters are asked to arrive at their session room at least 30 minutes before the session starts. Take time to familiarize yourself with the setup. There will be technicians available on site that can assist you as needed. Please follow the instructions given by the Session Chair.

Student Poster Session

The Student Poster Session will be held on Tuesday, September 23, from 17:00 to 19:00, during the cocktail reception in **Orion CD**. Posters will be set up that day between 16:00 and 17:00. Your assigned poster board will show your paper number *CIGRÉ-XXX*. Push pins will be available on-site. The principal author of the paper must be present beside his or her poster throughout the session. When the session is over, authors must remove their posters. Remaining posters *will be recycled*. Staff will be available to help you locate your poster board and provide assistance, if needed. Please follow the instructions provided by the Poster Session Chair. Poster presentations will be evaluated by a committee. The *Best Student Paper Award* will take into consideration the full paper, posters, and presentations.

KEYNOTE SPEAKER

TUESDAY, SEPTEMBER 23, 2014
OPENING PLENARY (08:00 – 09:00)

INNOVATION

Carmine Marcello
President & CEO, Hydro One

Biography

Carm was appointed CEO as of January 1, 2013. He joined Ontario Hydro in 1987 and held many senior management positions at Ontario Hydro and then Hydro One Inc. In 2007, he was appointed Vice-President, Corporate Projects and in 2009 he was appointed Senior Vice-President, Asset Management and was responsible for the life cycle management of Hydro One's transmission and distribution assets including Hydro One's Smart Grid initiative.

In 2010, he was appointed Executive Vice–President, Strategy, where he oversaw capital and OM&A programs valued at approximately $2.5B annually in the areas of Transmission and Distribution Asset Management, T&D Development, Business and Power Systems, IT, Telecom, along with the operations of Hydro One subsidiaries – Hydro One Brampton Inc., and Hydro One Telecom Inc..

Presentation Summary

Innovation within the context of applications in Hydro One, as an electricity transmission & distribution company will be outlined.

The discussions will illustrate how:

- Innovation in the historical past, originated and shaped the electricity industry in Ontario, Canada, since the early 1900s;
- Innovation in the present, and the approaches to accomplish work/ projects more efficiently and effectively within Hydro One to serve electricity customers; and
- Innovation that is needed to address future challenges in the Ontario electricity system, and the broader electricity industry.

CIGRÉ PANEL #1 DESCRIPTION

TUESDAY, SEPTEMBER 23, 2014

16:00 – 17:00 **CIGRÉ PANEL – BEYOND SMART GRID** Orion AB

Panel Chair

Peter Gregg
President & CEO
Enersource Corporation
Mississauga, Ontario, Canada

Panel Members

Paul Murphy
Former President & CEO
Independent Electricity System Operator
Toronto, Ontario, Canada

Joe Toneguzzo
Director, Transmission Integration
Ontario Power Authority
Toronto, Ontario, Canada

Mark McGranaghan
Vice President, Power Delivery & Utilization
Electric Power Research Institute
Knoxville, Tennessee, USA

Description

Substantial changes to the electricity distribution system are expected with the drive for automation, and implementation of smart grid technologies. Aside from the emerging technological challenge of information technology and telecommunication, addressing approaches to store, retrieve, and rapidly transfer / transport data, the larger challenge is the "analytics" part and its practical application.

Beyond mass-deployment of smart grid technologies, how can one cleverly analyze the vast amounts of data, for effective use by utilities for real time power system operations, customer service, mid-to-long-term-system planning, asset management, predictive analyses, business decision making and business operations.

An example of peering into the innovation horizon beyond smart grid deployment could be what Kevin Aston (formerly of MIT) referred to as "the Internet of Things (IoT)", to describe a system where the Internet is connected to the physical world via sensors. A practical example of IoT would be wireless remote control of a clothes washer / dryer.

The panel members plan to share their views and insights on business analytics, grid operation, customer service, and value realization, beyond the hardware and software implementation of smart grid.

A question and answer session will follow the presentations of the panel members.

CIGRÉ PANEL #2 DESCRIPTION

WEDNESDAY, SEPTEMBER 24, 2014

08:00 – 09:00 **INNOVATION AND THE EVOLVING GRID - CHALLENGES AND SOLUTIONS FOR THE TRANSMISSION AND DISTRIBUTION INDUSTRY** Orion AB

Panel Chair

Mike Bartel
Chairman of CIGRÉ Canada;
Vice President, Asset Management
AltaLink
Calgary, Alberta, Canada

Panel Members

Pat Hayes
Business Development Manager, Energy Storage
ABB Inc.
Milwaukee, Wisconsin, USA

Alex Boyd
President and CEO
PSC North America
Kirkland, Washington, USA

Ezio Del Bello
General Manager
SEVES Canada Inc.
St-Laurent, Quebec, Canada

Description

The 2014 CIGRE Canada conference title is "Innovation and the Evolving Grid". At the Diamond Sponsor Plenary, each speaker will reflect the conference theme, giving their views on the current and future challenges and changes being experienced and expected in the transmission and distribution (T&D) industry, and solutions which are needed now and in the future by utilities and electricity customers.

Specific topics for discussion could include, but are not limited to:

- What are the current broad challenges faced by T&D utilities and customers? What are the recent innovative solutions provided by your company to address a few of these challenges?
- What are the future broad challenges faced by T&D utilities and customers? What are the areas of innovative research and development being pursued by your company to address a few of these challenges?

A question and answer session will follow the presentations of the panel members.

CIGRÉ PANEL #3 DESCRIPTION

WEDNESDAY, SEPTEMBER 24, 2014

15:00 – 16:00 **CIGRÉ PANEL – EXTREME WEATHER & THE RESILIENT GRID** Orion AB

Panel Chair

Wayne Smith
Senior Vice President, Operations
Hydro One
Toronto, Ontario, Canada

Panel Members

Mike Bartel
Vice President, Asset Management
AltaLink
Calgary, Alberta, Canada

Mark Henderson
Executive Vice-President & COO
PowerStream Inc
Markham, Ontario, Canada

Tom Irvine
Director, Network Operating
Hydro One
Barrie, Ontario, Canada

Description

Extreme weather covers severe weather phenomena that are unseasonal (abnormal) and at the extremes of historical events. Recent studies have shown an increase in the occurrence of extreme weather events in the last decade, some of which have resulted in wide-spread customer power interruptions, stressed power system operations, and caused devastating damage to the power grid.

Extreme weather events have elevated concerns on long-term reliability of the power system, and the adequacy of the existing way of designing, planning, and operating the power system to accommodate extreme weather conditions. There are emerging needs for advanced weather prediction, and risk management techniques to address extreme weather events.

The panel members of the electricity industry will discuss and provide their views on recent extreme weather events and speak about utilities' response to these events. The discussion will also cover topics on how to develop a more resilient grid, through various measures including: advanced planning and coordination of restoration crews and mobile equipment; enhanced communication systems to effectively identify outages; implementation of effective outage management system; and developing forecasts of changing extremes.

A question and answer session will follow the presentations of the panel members.

CIGRÉ WORKSHOPS – DESCRIPTIONS

MONDAY, SEPTEMBER 22, 2014

Each workshop will include a question period.

07:45 – 08:00 **WORKSHOP DAY PRESENTATION AND WELCOME ADDRESS** Pegasus

08:00 – 09:30 **WORKSHOP #1: C1 – SYSTEM DEVELOPMENT AND ECONOMICS** Pegasus

Title: Electricity Utility Asset Analytics and Asset Management Applications

Chair: David Curtis, Hydro One, Canadian Member for CIGRÉ SC C1

Description

This workshop focuses on the applications of asset analytics in managing aging electricity transmission & distribution system infrastructure. As a large number of assets age and deteriorate, their operational risk increases and could impact electricity customers. The building and application of asset analytics tools to support better decisions in planning and prioritizing asset investment has been practically implemented by a few utilities. Asset Analytics considers factors including asset condition, reliability performance, utilization, economics, criticality to the system, and geospatial information. Asset analytics covers both historical and predictive capabilities to better manage work and planning the management of assets. This workshop will leverage the implementation experience in Canada.

Presenters of this workshop includes:

- Bruno Jesus of Hydro One
- Dan Botari of Hydro One
- Yury Tsimberg of Kinectrics

09:30 – 10:00 **BREAK** Pegasus

10:00 – 11:30 **WORKSHOP #2: C6 – DISTRIBUTION SYSTEMS AND DISPERSED GENERATION** Pegasus

Title: Advanced Distribution System (Smart Grid) With Advanced DMS, & WiMax Communication

Chair: Michael Ross, Hydro Québec (IREQ), Canadian Member for CIGRÉ SC C6

Description

The workshop focuses on practical aspects of applying smart grid technologies towards further automating electricity distribution systems. Three utilities highlight the benefits and challenges of integrating smart grid technologies into the existing systems.

- Hydro One plans to outline the implementation of their Advanced Distribution System (ADS) or "smart grid" technical pilot project, to enhance the operating and effectiveness of a portion of the electricity distribution system. Topics include Hydro One's ADS "Living Lab", advanced distribution management system (DMS) algorithms, and WiMax for protection and control applications.
- Hydro Québec plans to outline the work on distribution automation, and the more advanced innovative technologies into their distribution system.
- Burlington Hydro plans to outline how "Disruptive Energy Technologies" could significantly change electricity utilities business and operations. A brief overview of the GridSmartCity Project will also be discussed as time permits.

Presenters of this workshop includes:

- Joe Zerdin of Hydro One
- Dunstan Chan of Hydro One
- Jean Lessard of Hydro Québec
- Dan Guatto of Burlington Hydro

11:30 – 13:00 **LUNCH BREAK**

13:00 – 14:30 **WORKSHOP #3: D2 – INFORMATION SYSTEMS AND TELECOMMUNICATIONS** Pegasus

Title: Evolving Grid And Effectively Managing Big Data, IT & Telecommunications

Chair: Bill Smith, Siemens Canada Limited, Canadian Member for CIGRÉ SC D2

Description
This workshop focuses on the opportunities and challenges presented by the increasingly vast amounts of technical data resulting from automation of the electricity distribution system to becoming a "smart grid". The drive to make use of data to create information, to more effectively manage operational power system risk and more economically and effectively manage the grid in the short as well as long term, in ways which are practical. The requirements for transmitting, archiving, retrieving, and re-transmitting data/ information for a wide range of applications from the extremes of real-time event processing and monitoring, to longer term planning. These extremes presents challenges to power system telecommunications system in terms of bandwidth to transport the data/ information in a rapid and economical way, as well as require information technology (IT) hardware and software to rapidly and economically allow utilities and customers to effectively use power system information, within the framework of cyber security needs, the realities of ensuring data integrity, retaining privacy, and still making sense of information when system data is missing. Learn from leading industry experts regarding the current status of this evolving area of data driven decision making, which will potentially be disruptive in the approach to managing, operating, and maintaining the more automated distribution systems.

Presenters of this workshop includes:
- Tim Fairchild of SAS
- Gerald Gray of Electric Power Research Institute
- Chris Holmes of Electric Power Research Institute
- Robert Wong of Toronto Hydro

14:30 – 15:00 **BREAK** Pegasus

15:00 – 16:30 **WORKSHOP #4: C4 – SYSTEM TECHNICAL PERFORMANCE** Pegasus

Title: Power System Harmonics: New Challenges And Potential Solutions

Chair: Danielle McNabb, Hydro-Québec, Canadian Member for CIGRÉ SC C4

Description
This workshop focuses on the impacts on the electricity system of increasing amounts of emerging technologies, such as renewable generation, changing load characteristics, and power electronics devices as it relates to power system harmonics. The different approaches and information are needed to address power system harmonics in the evolving grid, including industry standards, the identification of concerns, monitoring, the analyses tools, test methods, and system mitigation measures. This workshop will outline these issues and challenges, and leverage the experiences and challenges from industry in Canada and academia.

Presenters of this workshop includes:
- Wilsun Xu of University of Alberta
- Bahram Khodabakchian of Hydro-Québec
- Francisc Zavoda of Hydro-Québec

CONFERENCE SCHEDULE

PROGRAM – MONDAY, SEPTEMBER 22, 2014

06:30	**REGISTRATION OPENS**	Entrance Lobby
07:45 – 16:30	**CIGRÉ WORKSHOPS** (Details In Pages 15 & 16 & 21)	Pegasus
15:00 – 19:00	**SPEAKER READY ROOM**	Tucana
18:00 – 20:00	**WELCOME RECEPTION**	Showroom 2 (2nd Floor)

PROGRAM – TUESDAY, SEPTEMBER 23, 2014

06:30	**REGISTRATION OPENS**	Entrance Lobby
06:30 – 08:00	**BREAKFAST**	Grand Lobby
07:00 – 16:00	**SPEAKER READY ROOM**	Tucana
08:00 – 09:00	**OPENING PLENARY** **Opening Remarks:** David Curtis, General Chair, 2014 CIGRÉ Canada Conference **Remarks:** Mohamed Rashwan, Past Chairman of CIGRÉ Canada Mike Bartel, Chairman of CIGRÉ Canada **Keynote Speaker:** Carmine Marcello, President and CEO, Hydro One	Orion AB
09:00 – 09:30	**NETWORKING BREAK**	Orion CD
09:00 – 19:00	**EXHIBITORS**	Orion CD
09:30 – 10:30	**PARALLEL TECHNICAL SESSIONS** (Details In Page 19)	Multiple Rooms
10:30 – 11:00	**NETWORKING BREAK**	Orion CD
11:00 – 12:00	**PARALLEL TECHNICAL SESSIONS** (Details In Page 19)	Multiple Rooms
12:00 – 13:30	**LUNCH**	Grand Lobby
13:30 – 14:30	**PARALLEL TECHNICAL SESSIONS** (Details In Page 19)	Multiple Rooms
14:30 – 15:00	**NETWORKING BREAK**	Orion CD
15:00 – 16:00	**PARALLEL TECHNICAL SESSIONS** (Details In Page 19)	Multiple Rooms
16:00 – 17:00	**CIGRÉ PANEL #1 – BEYOND SMART GRID** (Details In Page 12) **Panel Chair:** Peter Gregg, Enersource **Panel Members:** Paul Murphy, IESO (retd.); Mark McGranaghan, EPRI; Joe Toneguzzo, OPA	Orion AB
17:00 – 19:00	**STUDENT POSTER SESSION** (Details In Page 22)	Orion CD
17:00 – 19:00	**COCKTAIL RECEPTION**	Orion CD
19:00 – 22:00	**CONFERENCE BANQUET**	Orion AB

PROGRAM – WEDNESDAY, SEPTEMBER 24, 2014

06:30	**REGISTRATION OPENS**	Entrance Lobby
06:30 – 08:00	**BREAKFAST**	Grand Lobby
07:00 – 16:00	**SPEAKER READY ROOM**	Tucana
08:00 – 09:00	**CIGRÉ PANEL #2 – DIAMOND SPONSORS PLENARY** (Details In Page 13)	Orion AB
	Innovation and the Evolving Grid - Challenges and Solutions for the Transmission and Distribution Industry **Panel Chair:** Mike Bartel, Chairman of CIGRÉ Canada; AltaLink; **Panel Members:** Pat Hayes, ABB; Alex Boyd, PSC Consulting; Ezio Del Bello, SEVES Canada Inc.	
09:00 – 09:30	**NETWORKING BREAK**	Orion CD
09:00 – 16:00	**EXHIBITORS**	Orion CD
09:30 – 10:30	**PARALLEL TECHNICAL SESSIONS** (Details In Page 20)	Multiple Rooms
10:30 – 11:00	**NETWORKING BREAK**	Orion CD
11:00 – 12:00	**PARALLEL TECHNICAL SESSIONS** (Details In Page 20)	Multiple Rooms
12:00 – 13:30	**LUNCH**	Grand Lobby
13:30 – 14:30	**PARALLEL TECHNICAL SESSIONS** (Details In Page 20)	Multiple Rooms
14:30 – 15:00	**NETWORKING BREAK**	Orion CD
15:00 – 16:00	**CIGRÉ PANEL #3 – EXTREME WEATHER & THE RESILIENT GRID** (Details In Page 14) **Panel Chair:** Wayne Smith, Hydro One; **Panel Members:** Mike Bartel, AltaLink; Mark Henderson, PowerStream; Tom Irvine, Hydro One	Orion AB
16:00 – 16:30	**CLOSING WORDS**	Orion AB

CONFERENCE SCHEDULE (DETAILS)

Parallel Technical Sessions
Tuesday, September 23, 2014

Time		Tuesday, September 23, 2014						Room
06:30	08:00	**Registration & Breakfast**						**Entrance Lobby & Grand Lobby**
07:00	16:00	**Speaker Ready Room**						**Tucana**
08:00	09:00	**Opening Plenary (Details In Page 17, & Page 11)**						**Orion AB**
09:00	09:30	**Networking Break**						**Orion CD**
		Parallel Technical Sessions - Track 1 (Orion AB Room)		**Parallel Technical Sessions - Track 2 (Pegasus Room)**		**Parallel Technical Sessions Track - 3 (Lyra Room)**		
		T1.01-T1.03 Topic: Distribution Systems and Dispersed Generation (C6) Chair: Wilson Xu	**Presenter**	**T2.01-T2.03 Topic: HVDC and Power Electronics (B4) Chair: Reza Iravani**	**Presenter**	**T3.01-T3.03 Topic: Sustainability of Assets Chair: Bruno Jesus**	**Presenter**	
09:30	09:50	456 - Distributed PV Generation Modeling For Predictive Distribution Management	C. CARTER, J. FLETCHER, V. KOSTYLEV, C. MAHONEY, M. PALMER, T. DAYE, A. PAVLOVSKI | Green Power Labs Inc. (CAN) D. CORMIER | San Diego Gas and Electric Co (USA)	500 - Real Time Modular Multi-level Converter Models For HVDC Grid Studies	S. ELIMBAN, Y. ZHANG | RTDS Technologies Inc. (CAN) J. C. GARCIA ALONSO | Manitoba Hydro International (CAN)	490 - Transformer Reliability – A Statistical Look	R. RASOR, D. ROBERTS, A. SHKOLNIK | SD Myers Inc. (USA)	**Track 1: Orion AB Track 2: Pegasus Track 3: Lyra**
09:50	10:10	548 - Analysis Of Fault Current Contributions From PV-BESS Systems	S. A. RAHMAN, R. K. VARMA | University of Western Ontario (CAN)	361 - Nelson River HVdc Gapped Arresters Replacement Study	S. ZOROOFI, M. DARYABAK, D. KELL, M. MOHADDES | TransGrid Solutions Inc. (CAN) K. KENT, P. CALIC | Manitoba Hydro (CAN)	534 - Improved Digital Image Analysis Of Corroded Steel Transmission Towers	I. HATHOUT | Hydro One (CAN) K. JURASCHKA | Queen's University (CAN)	
10:10	10:30	396 - Realistic Assessment Of Quantum And Quality Of Transmission System Reactive Power Contribution From A Lightly Embedded Distribution Connected Cluster Of Windfarms	T. HEARNE, Electricity Supply Board (IRL)	414 - Refurbishment And Upgrade Of Highgate Back-to-Back Converter Station	J. BURROUGHS | Vermont Electric Power Company (USA) J. HU | RBJ Engineering Corp. (CAN)	377 - Risk Based Approach To Spare Parts Problems With Ageing Infrastructure	E. S. BEUKERS, D. VAN HOUWELINGEN, P.ZONNEVELD | Stedin BV (NLD)	
10:30	11:00	**Networking Break**						**Orion CD**
		T1.04-T1.06 Topic: Distribution Systems and Dispersed Generation (C6) Chair: Bala Venkatesh	**Presenter**	**T2.04-T2.06 Topic: HVDC and Power Electronics (B4) Chair: Vijay Sood**	**Presenter**	**T3.04-T3.06 Topic: Protection and Automation (B5) Chair: Bogdan Kasztenny**	**Presenter**	
11:00	11:20	436 - Mitigation for Connecting Distributed Generators beyond Power DistanceLimitation	L. TANG, A. YAN, A. NARANG, M. ALI, L. MARTI | Hydro One Networks Inc. (CAN)	360 - Voltage Sourced Converters For HVDC Overhead Line Applications	D. DOERING, J. DORN, G. EBNER, M. SCHMIDT, C. SIEGL | Siemens AG (DEU)	541 - Taking Interoperability To The Next Level	B. JOROWSKI, B. PETTERSON | Manitoba Hydro (CAN) C. RIMADA, I. HERNANDEZ, A. NAVA | Schneider Electric (CAN)	**Track 1: Orion AB Track 2: Pegasus Track 3: Lyra**
11:20	11:40	373 - Islanding Protection of Synchronous Distributed Generation Using Intelligent Relays	S. LI, A. J. RODOLAKIS, G. JOOS | McGill University (CAN)	425 - Mackinac HVDC Converter Automatic Runback Utilizing Locally Measured Quantities	M. MARZ, K. COPP, A. MANTY | ATC (USA) D. DICKMANDER, J. DANIELSSON, M. BAHRMAN | ABB Inc (USA) F. JOHANSSON, P. HOLMBERG, P-E BJÖRKLUND, H. DUCHEN, P. LUNDBERG | ABB AB (SWE) G. IRWIN | Electranix (CAN) S. SANKAR | B&V (USA)	380 - Estimation Of Fault Resistance From Fault Recording Data	W. XU, Y. WANG, B. XIA | University of Alberta (CAN) M. TONG, D. WONG | Altalink (CAN)	
11:40	12:00	535 - Preparing for Distributed Generation Growth: How Utilities can Benefit from a Distributed Energy Resource Management System	A. PATELSKI, J. SMITH | West Monroe Partners, LLC (USA)	404 - EMT Simulation Of The CIGRE B4 DC Grid Test System	S. DENNETIERE, H. SAAD | RTE (FRA)	495 - Designing Non-Deterministic PAC Systems To Meet Deterministic Requirements	S. NOHE, F. BECKER | Siemens Industry Inc. (USA) C. HARISPURU | Siemens AG (DEU) S. FLEMMING | Siemens Canada Limited (CAN)	
12:00	13:30	**Lunch**						**Grand Lobby**
		T1.07-T1.09 Topic: System Operation and Control (C2) Chair: Josh Taylor	**Presenter**	**T2.07-T2.09 Topic: HVDC and Power Electronics (B4) Chair: Peter Lehn**	**Presenter**	**T3.07-T3.09 Topic: Protection and Automation (B5) Chair: Peter Baroutis**	**Presenter**	
13:30	13:50	529 - R&D And Innovation Project: Using A Controlled Switching Device For A Power Transformer Application In Red Eléctrica de España	R. CANO-GONZÁLEZ, A. BACHILLER-SOLER, J. A. ROSENDO-MACÍAS | Seville University (ESP) P. TAILLEFER, A. IJDIR | VIZIMAX (CAN) G. ALVAREZ-CORDERO, C. GÓMEZ-SIMÓN | REE (ESP)	394 - Fault Clearing On Overhead HVDC Transmission Lines	C. D. BAKER, A. G. ADAMCZYK, R. GUPTA, G. FINTZOS, R. S. WHITEHOUSE, D. R. TRAINER | ALSTOM Grid (GBR) N. M. KIRBY | ALSTOM Grid USA (USA)	383 - LED Based Fiber-Optic Voltage Sensors	M. LEVESQUE, M. LAMONDE, B. DEBAQUE, F. DUCHESNE, M. GIRARD, P. PARADIS| INO (CAN)	**Track 1: Orion AB Track 2: Pegasus Track 3: Lyra**
13:50	14:10	368 - Mitigation Of GIC Impacts In Power Transformers And SVC Installations	P. HAMBERGER, J. LOTTES, D. RETZMANN, G. PILZ, K. HABASHI, P. ERNST | Siemens AG (DEU / CAN)	385 - A Step-wise Controlled SVC For A Demanding Application: Design And Operational Experiences	M. DAHLBLOM, M. TORSENG, M. M. DE OLIVEIRA | ABB (SWE) T. KALICKI, C. LI, B. BIGLAR | Hydro One (CAN)	544 - Intelligent Relay Testing Philosophy Adopted By Hydro One	R. PERERA, A. AKHTAR | Hydro One (CAN)	
14:10	14:30	470 - Increasing Power Line's Transmission Capacity By Quasi-Dynamic Rating	M. L. LU | BC Hydro (CAN)	440 - Economic Assessment Of An Offshore HVDC Grid In North America	A. K. KONDABATHINI, R. NUQUI, J. PAN, J. LIU | ABB Corporate Research (USA) M. CALLAVIK | ABB Power System (SWE)	371 - Fast Message Exchange Using IEC 61850 And Direct Fiber Optic Communications Within A Generation Plant	Y. Yin, S. PICARD, H. DAI, W. JESCHKE | GE Digital Energy (CAN)	
14:30	15:00	**Networking Break**						**Orion CD**
		T1.10-T1.12 Topic: System Operation and Control (C2) Chair: George Watt	**Presenter**	**T2.10-T2.12 Topic: High Voltage Equipment (A3) Chair: Joe Toneguzzo**	**Presenter**	**T3.10-T3.12 Topic: Information Systems and Telecommunications (D2) Chair: Dunstan Chan**	**Presenter**	
15:00	15:20	427 - A PMU-based Secondary Voltage Control Method	Y. T. Chou | National Ilan University (TWN) C. W. LIU | National Taiwan University (TWN) C. C. Wu | Taiwan Power Company (TWN)	444 - Development Of 320 kV DC Compact Switchgear	D. IMAMOVIC, B. LUTZ, K. JUHRE, K. UECKER | Siemens AG (DEU) A. LANGENS | HSP GmbH (DEU)	429 - Robotic Inspection And Intervention In Electrical Substations, System Proposal And Field Results	J. BEAUDRY, J. ALLAN | Hydro-Québec Research Institute (CAN)	
15:20	15:40	486 - Stochastic Program With Recourse For Electricity Markets With High Penetration Of Renewables	A. J. LAMADRID | Lehigh University (USA) C. MURILLO-SANCHEZ | Universidad Nacional de Colombia Manizales (COL) T. D. MOUNT, R. J. THOMAS, R. ZIMMERMAN | Cornell University (USA)	421 - Gas Insulated Transformer Application For A Safe Underground Substation	Y. KOGURE, T. KOBAYASHI, T. KYOTO, | TOSHIBA Corporation (JPN)	460 - Application Of IEC 61850 Communication In Wide-Area Special Protection Scheme	M. EFREMOV, S. NEJAT | Hydro One (CAN)	**Track 1: Orion AB Track 2: Pegasus Track 3: Lyra**
15:40	16:00	441 - Update, Upgrade Or Replace Your RTU? Decision Support Tool Proves The Best Value	KA. STAGG, R. LI | AltaLink (CAN)	370 - SVC PLUS: An MMC STATCOM For Network And Grid Access Applications	M. PEREIRA, D. RETZMANN, G. PILZ, K. HABASHI, P. ERNST | Siemens AG (DEU / CAN)	351 - Intertie Protection of Synchronous Distributed Generation Using Intelligent Relays	H. CHEEMA | Siemens (CAN) A. J. RODOLAKIS, G. JOOS | McGill University (CAN)	
16:00	17:00	**CIGRÉ PANEL #1 – BEYOND SMART GRID (Details In Page 12) Chair: Peter Gregg, President & CEO, Enersource Corporation Panel: Paul Murphy, Former President & CEO, IESO Mark McGranaghan, Vice President of Power Delivery & Utilization, EPRI Joe Toneguzzo, Director of Transmission Integration, OPA**						**Orion AB**
17:00	19:00	**Student Poster Session & Cocktail Reception**						**Orion CD**
19:00	22:00	**Conference Banquet**						**Orion AB**
During Breaks, Lunch, and Student Poster Session - Exhibitors Trade Show Open (Exhibitors Are at Orion CD)								

CONFERENCE SCHEDULE (DETAILS)

Parallel Technical Sessions
Wednesday, September 24, 2014

Time		Wednesday, September 24, 2014						Room
06:30	08:00	**Registration & Breakfast**						**Entrance Lobby & Grand Lobby**
07:00	16:00	**Speaker Ready Room**						**Tucana**
08:00	09:00	**CIGRÉ PANEL #2 – DIAMOND SPONSORS PLENARY (Details In Page 13)** **INNOVATION AND THE EVOLVING GRID - CHALLENGES AND SOLUTIONS FOR THE TRANSMISSION AND DISTRIBUTION INDUSTRY** Panel Chair: Mike Bartel, Chairman of CIGRÉ Canada; Vice President, Asset Management |AltaLink, Calgary, Alberta, Canada Pat Hayes; Business Development Manager, Energy Storage | ABB Inc., Milwaukee, Wisconsin, USA Alex Boyd; President and CEO | PSC North America, Kirkland, Washington, USA Ezio Del Bello; General Manager | SEVES Canada Inc., St-Laurent, Quebec, Canada						**Orion AB**
09:00	09:30	**Networking Break**						**Orion CD**
		Parallel Technical Sessions Track - 1 (Orion AB Room)		**Parallel Technical Sessions Track - 2 (Pegasus Room)**		**Parallel Technical Sessions Track - 3 (Lyra Room)**		
		W1.01-W1.03 Topic: Distribution Systems and Dispersed Generation (C6) **Chair: Richard Ford**	**Presenter**	**W2.01-W2.03 Topic: Transmission and Distribution Power System Modeling, Simulation and Design** **Chair: Bing Young**	**Presenter**	**W3.01-W3.03 Topic: Smart Building and Smart Asset Management** **Chair: Jim Hall**	**Presenter**	
09:30	09:50	543 - Distributed Generation Integration Challenges	J. KALICH, M. MATEVSKI | Hydro One Networks Inc. (CAN)	389 - Harmonic Analysis Of A Transmission Connected Wind Farm Utilising A Long HV-AC Underground Cable Connection	B. KELLY, M. VAL ESCUDERO, J. GING, A. MARTIN | EirGrid (IRL)	362 - Energy Savings By Conservation Voltage Reduction (CVR) Technique In Commercial Buildings	K. H. LEE, P. K. SEN | Colorado School of Mines (USA)	**Track 1: Orion AB** **Track 2: Pegasus** **Track 3: Lyra**
09:50	10:10	374 - Analysis And Validation Of Interconnection Requirements Of A Large Renewable Energy Installation With The Utility Grid	M. SHARIAT-ZADEH, A. PALIZBAN, H. FARHANGI | British Columbia Institute of Technology (CAN) C. SUDRU | BC Hydro	530 - Design, Fabrication and Erecting of the Long Span Transmission Tower for Crossing the Amazon River of 500kV TLTUCURUÍ–XINGU–JURUPARI–ORIXIMINÁ Part I: Structure Analyses, Selection And Design	Z. LIN, D. ZHANG, W. ZHAO | Nanjing DAIKAI Engineering Technology Co., Ltd (CHN) G. DAI | Zhejiang Shengda Steel Tower Co., LTD (CHN) B. LI | Hohai University (CHN) C. WANG | Zhejiang Electric Transmission & Transformation Engineering Corperation (CHN)	503 - Smart Operation Of Centralized Temperature Control System In Multi-Unit Residential Buildings	R. KUNDU, C. CANIZARES, K. BHATTACHARYA | University of Waterloo (CAN)	
10:10	10:30	409 - Voltage Flicker Assessment And Planning For Large Distribution-Connected Wind Farms	D. MASCARELA, M. AMMAR, G. JOOS | McGill University (CAN) D. GUÉRETTE | Hydro Québec (CAN)	438 - Fine Tuning Of ULTC Settings Based On Simulation Tool And Measured Data	D. ZHOU, A. YAN | Hydro One Networks (CAN)	454 - Advanced asset analytics and investment planning environment at Medicine Hat Electric	J. MUGLIA | Medicine Hat Electric (CAN)	
10:30	11:00	**Networking Break**						**Orion CD**
		W1.04-W1.06 Topic: Distribution Systems and Dispersed Generation (C6) **Chair: Tarlochan Sidhu**	**Presenter**	**W2.04-W2.06 Topic: Transmission and Distribution Power System Modeling, Simulation and Design** **Chair: Zeb Tate**	**Presenter**	**W3.04-W3.06 Stakeholdering Transmission Routes / Stations** **Chair: Kevan Jefferies**	**Presenter**	
11:00	11:20	487 - Integrated Control Of Photovoltaic Inverters To Improve Distribution System Performance	M. RYLANDER, S. ABATE, J. SMITH, H. LI | Electric Power Research Institute (USA)	403 - Calculation Of Electric Field Around Overhead Line Towers During Live-Line Work	M. GHASSEMI, M. FARZANEH | Université du Québec à Chicoutimi (CAN)	450 - Our NIMBY Experience And Response - Hydro One Environmental Assessment Process	B. J. MCCORMICK, F. EL AYOUBI, P. STAITE, P. DALMAZZI | Hydro One Networks Inc. (CAN)	
11:20	11:40	402 - Field Trial Of Power Electronics LV Power Regulators In A Utility Distribution System	B. MCMILLAN, M. VAN DE RYDT, A. ATHANASOPOULOS, K. TAYLOR | Greater Sudbury Hydro (CAN) V. MARTINELLI, A. GONZAGA, J. SIMONELLI | Gridco Systems (USA)	430 - Feasibility Assessment Of New Generation And Load Connections	G. A. HAMOUD | Hydro One Inc. (CAN)	423 - Dealing With Stakeholders' Expectations: A Need For Innovative Approaches	M. BASTARD, V. MOLINENGO, D. LANDIER | RTE (FRA)	**Track 1: Orion AB** **Track 2: Pegasus** **Track 3: Lyra**
11:40	12:00	354 - Stationery Energy Storage System Using Second Life EV Batteries	R. WACHAL, F. MOSALLAT, D. WILLIAMS, A. CHEVREFILS, W. ERICKSON, A. DARBANDI | Manitoba HVDC Research Centre (CAN) R. YONZA | Manitoba Hydro (CAN)	527 - New Software Allows Engineers And Planners To Compare And Select The Most Efficient Overhead Conductor For Their Specific Application	D. BRYANT, C. BARWICK | CTC Global Corporation (USA)	478 - An Innovative Solution To Electric Transmission Line Siting: The EPRI-GTC Siting Methodology	P. BABER | Quantum Spatial (USA)	
12:00	13:30	**Lunch**						**Grand Lobby**
		W1.07-W1.09 Topic: System Operation and Control (C2) **Chair: Rick Spyker**	**Presenter**	**W2.07-W2.09 Topic: Transmission and Distribution Power System Modeling, Simulation and Design** **Chair: Gary Thompson**	**Presenter**	**W3.07-W3.09 Topic: Extreme Weather Issues** **Chair: Kevan Jefferies**	**Presenter**	
13:30	13:50	447 - Remediation Of Transient Instabilities Using PMU Data For Special Protection Systems–A Case Study	M. A. ZAMANI, M. JALALI, S. L. CRESS | Kinectrics Inc. (CAN) R. BERESH | Hydro One Networks Inc. (CAN)	401 -Amazon River Crossing and Rainforest Issues in Brazil The Tucuruí - Jurupari - Macapá OHTL System - Design Optimization, Sustainability and Overall Challenges	R. L. S. NOGUEIRA, E. CAVALCANTI, J. ROCHA | ISOLUX INFRASTRUCTURE (BRA) J. N. M. MOTTA, S. M. M. FELIX, R. M. SOUZA | SNC LAVALIN (BRA) A. A. MENEZES | BATÁVIA ENG (BRA)	482 - Alberta 2013 Flood Response: A Transmission Story	P. HOFBAUER, I. PAULSON, J. BLACK | AltaLink (CAN)	
13:50	14:10	536 - Visualization Of The System State In Order To Enhance Situation Awareness In Wide Area Transmission Systems For Electricity: Implementation Into The Control Centre	C. SCHNEIDERS, J. VANZETTA | Amprion GmbH (DEU) J. VERSTEGE | University of Wuppertal (DEU)	474 - PMU Data Integrity Evaluation Through Analytics On A Virtual Test-Bed	M. M. OLAMA, M. SHANKAR | Oak Ridge National Laboratory (USA)	542 - Extreme Weather Impacts On Transmission And Distribution Systems	K. CALLERY-BROOMFIELD, R. DAVIS, I. HATHOUT, M. O'REILLY | Hydro One Networks Inc. (CAN)	**Track 1: Orion AB** **Track 2: Pegasus** **Track 3: Lyra**
14:10	14:30	492 - Station Integration For Reduced Costs And Improved Operational	R. MCMAHON, B. WINTERS | Con Edison (USA) C. GUERRIERO, F. BECKER | Siemens Industry Inc. (USA) S. FLEMMING | Siemens Canada Limited (CAN)	435 - Potential Risk of Circuit-breaker Failure upon Energization or Reclosing of Faulty EHV lines with High Degrees of Reactive Shunt Compensation	S. MONTPLAISIR-G., B. KHODABAKHCHIAN, P. RUD'HOMME, S. LAURIN, P. RAYMOND, Y. FILION, D. MCNABB | Hydro-Québec TransÉnergie (CAN)	397 - Experimental Studies And Modeling Of Arc Propagation On An Ice Surface	B. PORKAR, M. FARZANEH | Université du Québec à Chicoutimi (CAN)	
14:30	15:00	**Networking Break**						**Orion CD**
15:00	16:00	**CIGRÉ PANEL #3 – EXTREME WEATHER & THE RESILIENT GRID (Details In Page 14)** **Chair: Wayne Smith, Senior Vice President, Operations, Hydro One** **Panel Members: Mike Bartel, Vice President, Asset Management, AltaLink** **Mark Henderson, Executive Vice President & COO of PowerStream Inc.** **Tom Irvine, Director, Network Operating of Hydro One**						**Orion AB**
16:00	16:30	**CLOSING WORDS**						**Orion AB**
During Breaks and Lunch - Exhibitors Trade Show Open (Exhibitions Are At Orion CD)								

CONFERENCE SCHEDULE (DETAILS)

Workshops

Time		Monday, September 22, 2014				Room
06:30	07:45	Registration				Entrance Lobby
		Workshop	Title	Chair	Presenter	
08:00	09:30	WORKSHOP #1: C1 – SYSTEM DEVELOPMENT AND ECONOMICS	Electricity Utility Asset Analytics and Asset Management Applications	David Curtis, Hydro One, Canadian Member for CIGRÉ SC C1	• Bruno Jesus| Hydro One • Dan Botari | Hydro One • Yury Tsimberg | Kinectrics	Pegasus
09:30	10:00	Break				Pegasus
10:00	11:30	WORKSHOP #2: C6 – DISTRIBUTION SYSTEMS AND DISPERSED GENERATION	Advanced Distribution System (Smart Grid) With Advanced DMS, & WiMax Communication	Michael Ross, Hydro Québec (IREQ), Canadian Member for CIGRÉ SC C6	• Joe Zerdin | Hydro One • Dunstan Chan | Hydro One • Jean Lessard | Hydro Québec • Dan Guatto | Burlington Hydro	Pegasus
11:30	13:00	Lunch (not provided)				
13:00	14:30	WORKSHOP #3: D2 – INFORMATION SYSTEMS AND TELECOMMUNICATIONS	Evolving Grid And Effectively Managing Big Data, IT & Telecommunications	Bill Smith, Siemens Canada Limited, Canadian Member for CIGRÉ SC D2	• Tim Fairchild | SAS • Gerald Gray | Electric Power Research Institute • Chris Holmes | Electric Power Research Institute • Robert Wong | Toronto Hydro	Pegasus
14:30	15:00	Break				Pegasus
15:00	16:30	WORKSHOP #4: C4 – SYSTEM TECHNICAL PERFORMANCE	Power System Harmonics: New Challenges And Potential Solutions	Danielle McNabb, Hydro-Québec, Canadian Member for CIGRÉ SC C4	• Wilsun Xu | University of Alberta • Bahram Khodabakchian | Hydro-Québec • Francisc Zavoda | Hydro-Québec	Pegasus
16:30	18:00	Break				
18:00	20:00	Welcome Reception				Showroom 2 (2nd Floor)

CONFERENCE SCHEDULE (DETAILS)

CIGRÉ STUDENT POSTER SESSION – TUESDAY, SEPTEMBER 23, 2014

Time		Tuesday, September 23, 2014		Room
17:00	19:00	**Student Poster Session & Cocktail Reception**		Orion CD
		Topic:	**Presenter**	
		348 - Substation GPR Transfer to Feeder Neutral Points	B. XIA, W. XU | University of Alberta (CAN) M. DONG | ATCO Electric (CAN)	
		355 - DC-Side Fault Response Of The MMC-based HVDC Link	F. BADRKHANI AJAEI, R. IRAVANI | University of Toronto (CAN)	
		363 - Transmission Line Parameter Estimation From Fault Recorder Data	Y. WANG, W. XU | University of Alberta (CAN)	
		365 - Prediction Of Transient Stability Status Using Speed Deviation And Multilayer Perceptron Neural Network	E. A. FRIMPONG, P. Y. OKYERE | Kwame Nkrumah University of Science and Technology (GHA) J. ASUMADU | Western Michigan University (USA)	
		366 - Neural Network And Speed Deviation Based Generator Out-of-Step Prediction Scheme	E. A. FRIMPONG, P. Y. OKYERE | Kwame Nkrumah University of Science and Technology (GHA) J. ASUMADU | Western Michigan University (USA)	
		372 - A PSS/E-Based Power System Frequency Scan Tool	Y. TIAN, B. XIA, W. XU | University of Alberta (CAN)	
		381 - Application Of Experimentally Measured Frequency Coupling Matrices For Improved Harmonic Estimation	F. YAHYAIE, P. A. GRAY, P. W. LEHN | University of Toronto (CAN)	
		382 - A Novel Predictive Volt-VAR Optimization Engine For Smart Distribution Systems	M. MANBACHI, S. ARZANPOUR | Simon Fraser University (CAN) H. FARHANGI, A. PALIZBAN | British Columbia Institute of Technology (CAN)	
		407 - System Identification Methods For Optimal Tuning Of Power System Damping Controllers	D. RIMOROV, G. JOÓS | McGill University (CAN) I. KAMWA | Hydro-Québec, IREQ (CAN)	
		408 - Optimal Voltage Regulation For Distribution Networks Incorporating High Penetration of PEVs	M. A. AZZOUZ, M. F. SHAABAN, E. F. EL-SAADANY | University of Waterloo (CAN)	
		411 - An Analysis Of The Impact Of Transmission Level Voltage Variation On Distribution Feeder Power Quality	D. KLEINSCHMIDT | Bonneville Power Administration (USA) R, RAMANATHAN | Maxisys Inc (USA)	
		412 - Consensus Based Approach For Precise Equal Power Sharing In DC Microgrids	A. I. HAMAD, M. A, AZZOUZ, E. F. EL-SAADANY | University of Waterloo (CAN)	
		443 - Wide-Area HVDC Damping Controller Design in Alberta Power Grid	X. ZHANG, C. LU | Tsinghua University (CHN) S. LIU, X. WANG | Carleton University (CAN) W. KWASNICKI, Y. CUI | AltaLink (CAN)	
		448 - Comparison Of Waveform Relaxation With Traditional Real Time Digital Simulation For Closed Loop Performance Testing Of Protective Relays	M. GOULKHAH, A. M. GOLE | University of Manitoba (CAN) J. FUITH | Grants International Inc. (CAN) A. M. KULKARNI | Indian Institute of Technology Bombay (IND)	
		449 - Effect Of Random Delays On The Performance Of Synchrophasor Based Power System Stabilizers	A. I. KONARA, U. D. ANNAKKAGE | University of Manitoba (CAN)	Orion CD
		451 - Computer-Aided Design Of Booster Shed Parameters For Protecting Post Insulators Against The Effects Of Icing	S. M. ALE-EMRAN, M. FARZANEH | Université du Québec à Chicoutimi (CAN)	
		452 - Visualizaing Multiple Contingencies In Power System Operations	A. LODDER, J. E. TATE | University of Toronto (CAN)	
		475 - Large-Scale Energy Storage Deployment In Ontario Utilizing Time-of-Use And Wholesale Electricity Prices: An Economic Analysis	H. KHANI, M. DADASH ZADEH | Western University (CAN) R. SEETHAPATHY	
		481 - Optimal Voltage Control In Distribution Network	J. R. CASTRO | Universidad Técnica Particular de Loja (ECU) M. SAAD | L'École de technologie supérieur (CAN) S. LEFEBVRE, D. ASBER, L. LENOIR | Hydro-Québec (CAN)	
		491 - A Novel Isochronous Control Strategy For Coordination Of Distributed Energy Resources In An Islanded Microgrid	M. ROSS, G. JOÓS | McGill University (CAN) C. ABBEY, Y. BRISSETTE | Hydro-Québec (CAN)	
		497 - Estimation Of Transient Energy Terms Using Machine Learning	J. GEEGANAGE, U. D. ANNAKKAGE | University of Manitoba (CAN)	
		498 - Coordinated Nonlinear Control Of STATCOM-BESS And Excitation For Transient Stabilization And Voltage Regulation	S. BAROS, M. ILIC | Carnegie Mellon University (USA)	
		499 - Harmonic Analysis Software Tool For Steady-State Analysis Of Distorted Grids With Multiple Distributed Generators	P. A. GRAY, P. W. LEHN, G. J. KISH | University of Toronto (CAN)	
		504 - Development Of A Hybrid Genetic-Simplex Optimization Algorithm For Simulation-Based Optimal Design Of Power Electronic Systems	C. DYNOWSKI, S. FILIZADEH | University of Manitoba (CAN)	
		511 - Multi-Level Demand Response Using Grid-able Electric Vehicles	E. AKHAVAN-REZAI, E. F. EL-SAADANY, F. KARRAY | University of Waterloo (CAN)	
		514 - Photovoltaic Model With Enhanced Computational Speed	Y. MAHMOUD, E. F. EL-SAADANY | University of Waterloo (CAN)	
		522 - Utility Assessment Based On A Unified Reliability Index Using Fuzzy Inference	H. SINDI, E. F. EL-SAADANY | University of Waterloo (CAN)	
		532 - Power System Small-Signal Stability: Analysis And Use Of Wide-Area Monitoring Systems	D. LIN, B. JEYASURYA | Memorial University (CAN) R. HADIDI | Clemson University Restoration Institute (USA)	
		545 - Fuzzy Multi-agent Based Voltage And Reactive (Volt/Var) Power Control In Coordination With Distributed Generators In Smart Distribution System	F. B. ZIA, E. F. EL-SAADANY | University of Waterloo (CAN) H. E. FARAG | York University (CAN)	
		549 - Novel Composite Control Of STATCOM For Voltage Balancing And Unbalanced Load Compensation	S. GUPTA, R. K. VARMA | University of Western Ontario G. N. PILLAI | Indian Institute of Technology Roorkee (IND)	
19:00	22:00	**BANQUET & Best Student Paper Award**		Orion AB