

# CONFERENCE PROGRAM



INTERNATIONAL CONFERENCE FOR ENHANCED  
BUILDING OPERATIONS

# ICEBO 2013



**ENERGY SYSTEMS LABORATORY**

TEXAS A&M ENGINEERING EXPERIMENT STATION



Natural Resources  
Canada

Ressources naturelles  
Canada

Canada

Montréal, Québec  
October 8-11, 2013

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# WELCOME TO ICEBO 2013



Montréal, Québec • October 8-11, 2013

Bonjour and Welcome!

On behalf of the hosts and sponsors of the 13th Annual International Conference on Enhanced Building Operations, welcome to Montreal!

The Natural Resources Canada/CANMET Energy and Texas A&M University System's Energy Systems Laboratory, along with our sponsors are committed to providing all attendees with a wealth of information that will help you improve the performance of your companies and building operations. You will see timely and relevant presentations--something to take home and use immediately!

This year's workshops also provide a great opportunity for you to expand your expertise in efficient building operations and controls.

We are confident that you will profit from the experience and technical expertise of our presenters and panelists, and best of all, the interaction with so many energy professionals in one place.

Warm regards,

A handwritten signature in black ink, appearing to read "G. Jean". The signature is fluid and cursive.

Dr. Gilles Jean  
Co-Chair

A handwritten signature in black ink, appearing to read "Malcolm Verdict". The signature is bold and somewhat stylized.

Malcolm Verdict, C.E.M.  
Co-Chair

# Conference Highlights

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## **Pre-Conference Workshops**

Two workshops meet on Tuesday, October 8 all day:

- 1) Primer on Smart Buildings, Smart Cities, Open Systems, and Best Practices for Enhanced Operation, Energy Efficiency, and System Integration.
- 2) The CONTINUOUS COMMISSIONING® Process.

## **Technical Presentation Sessions**

The technical sessions are 25-minute presentations followed by a 5-minute question and answer period. A 5-minute break between papers allows for movement of conferees between sessions.

**Wednesday Opening Keynote** features an address by **David Bartlett**, Vice President, IBM in the Outremont Ballroom.

**Wednesday Awards Luncheon sponsored by Distech Controls** features an address by **Steven Carpenter**, President, Enermodal Engineering and ICEBO Awards presentations in the Outremont Ballroom.

## **Welcome Reception sponsored by C.E.S. Group Ltd.**

The ICEBO Welcome Reception begins at 5:00 PM on Wednesday, October 9 in Salon Bonaventure (hotel lobby level) – hors d'oeuvres and networking.

## **Thursday Luncheon sponsored by CopperTree**

**Analytics** features an address by **Ron Zimmer**, President & CEO of CABA in the Outremont Ballroom.

## **Post-Conference Workshop and Tours**

A post-conference workshop is on Friday, October 11 for the RETScreen Energy Performance Analysis.

Tours of 3 unique Montreal facilities, 8:30 – 11:30 AM. Metro transportation or walking groups provided, paid guests welcome.

# Keynote Speaker

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Wednesday Morning Speaker

Mr. David Bartlett

Vice President

IBM's Smarter Buildings  
Initiative



David Bartlett leads IBM's Smarter Buildings initiative, helping clients create more green, cost-efficient cities, campuses, corporate offices, commercial sites, casinos, hospitals and neighborhoods worldwide. As IBM's "Building Whisperer," he is a vocal advocate at industry events and in media for using data analysis to better control buildings' function and tame wasteful energy practices.

Dave brings a unique set of capabilities, stemming from his professional experience and academic training. In his nearly three decades at the IBM company, he has led teams in autonomic computing, software development and international roles. Recent recognition includes: the top 15 people to watch in 2013 for Intelligent Buildings, the 2012 winner of the VERGE 25 Award for Next Gen Buildings, the 2012 winner of the IBCon Digie Award for most innovative campus, and an AIANY Honorarium Award. Dave is also on the Better Buildings Editorial Advisory Board and is a regular contributor to GreenBiz.

His academic work melds ecology, biology, computer science and policy studies—integral to the interdisciplinary Smarter Buildings area. His academic background includes the Graduate School for Computer Science at the University of Minnesota, the Graduate School for Business at the University of North Carolina, the Graduate School for Project Management at George Washington University, and the Undergraduate School for Life Sciences at the State University of New York.

# Keynote Speaker

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Wednesday Awards Luncheon Speaker

## Mr. Stephen Carpenter

P.Eng, LEED AP BD+C  
President

Enermodal Engineering,  
member of MMM Group



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Stephen Carpenter is president of Enermodal Engineering and one of Canada's premier sustainability experts. An early adopter of the LEED rating system, Mr. Carpenter was the Canada Green Building Council's first and current Chair of the Technical Advisory Group and co-authored the original LEED Canada Reference Guide and delivered the revision, the LEED 2009 Reference Guide.

Stephen has been awarded Solar Person of the Year by the Solar Energy Society of Canada, the President's Award from the Ontario Building Envelope Council, and the Lifetime Achievement Award from Sustainable Buildings Canada.

A highly sought-after green building expert, Mr. Carpenter writes a regular column in Building magazine, has spoken at many major industry events including Green Build, Ontario Association of Architects, and ASHRAE conferences, and has been featured in publications such as the Globe and Mail and High Performance Buildings magazine.

# Keynote Speaker

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Thursday Luncheon Speaker

**Mr. Ron Zimmer**

President & CEO

Continental Automated  
Buildings Association (CABA)



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Ron Zimmer is committed to achieving CABA's mission: "To encourage the development, promotion, pursuit and understanding of integrated systems and automation in homes and buildings."

Mr. Zimmer began his career with CABA in 1997 working with groups of industry leaders who promote integrated systems and home/building automation throughout the world. CABA's members include manufacturers, dealers, installers, telecommunication companies, energy utilities, builders, consultants, research organizations, publishers, educational institutions, governments, associations and service providers.

Ron is actively involved with a number of industry Committees/Councils including the CABA Standards Committee, CABA Marketing & eBusiness Committee, CABA Intelligent & Integrated Buildings Council, CABA Information Council, National Housing Research Committee, Net-at-Home Advisory Committee, Intelligent Community Forum's Building of the Year Committee and the Consortium for Electronic Systems Technician Training.

Ron is a Certified Association Executive with over 20 years of Association Management experience.



# Wednesday Awards Luncheon

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## Suncor Energy

### ICEBO 2013 Energy Award Winner

Suncor Energy is recognized for their visionary commitment to the development and deployment of a new, comprehensive suite of interoperable standards for enhanced controls and operations that have the potential to influence the entire oil and gas industry very rapidly.

Suncor's corporate standards cover the integration of more than 2,500 buildings using an open protocol communication and control system, the building management system (BMS), building automation system (BAS) and their enterprise IT system. As systems became increasingly sophisticated and complex, they frequently found that these incompatibilities were very serious roadblocks to improving overall facility performance. It was difficult or impossible to operate the independent automation and control systems into a single, integrated system.

This project was initiated 2 years ago to investigate the value of an interoperable controls strategy for their facilities and has now been expanded to include higher level integration, using a Facility Master System Integration and multi-tier, competitive bid procurement model. Suncor, using LonMark's open standard functional profiles, incorporated HVAC, Lighting, Fire, Life Safety, Gas Detection, Energy Metering, Water Metering and other facility subsystems into a comprehensive set of project guide specifications. Vendors also have developed a compliance plan, yielding new products that meet these requirements. The results -- "functional profiles" that allow for modular implementation with the assurance of being able to connect data points in a logical, meaningful way, regardless of the manufacturer.

By developing and deploying this standardization system, Suncor Energy projects savings of up to \$40 + million over the next 10 years, while substantially reducing their greenhouse gas emissions and providing leadership in the oil and gas industry. With a projected \$4 million initial investment, they forecast a 1 to 2 year simple payback.

Suncor's forward thinking directors have shown that effective program planning and implementation of comprehensive, uniform standards can change the management and direction of a very large organization in a relatively short time period. Suncor's actions will have long-lasting benefits both internally and for the smart buildings industry at large.

# Wednesday Awards Luncheon

## Paul Hollins, GWL Realty Advisors Inc.

### ICEBO 2013 Energy Award Winner

Mr. Paul Hollins, Senior Director at GWL Realty Advisors, Inc. is recognized for his outstanding personal commitment, team leadership and technical expertise in implementing complex energy management plans and optimizing existing buildings operations.

Paul supervised the implementation of a comprehensive Energy Master Plan in 2007 at the very large Commerce Court complex in downtown Toronto, Canada. Paul and his team assembled the tools and necessary knowledge to aggressively pursue tenant comfort improvements, better building performance and utility energy conservation. Tools included a utility tracking system, real-time monitoring for each major utility meter and a calibrated building energy simulation model.

In 2011, Paul Hollins approved the implementation of one of the largest Existing Building Commissioning projects in Canada. With 3 million square feet at Commerce Court Toronto, this EBCx project is one of the largest in Canada. The team included engineers specializing in commissioning, representatives from the management and operations, relevant contractors and utility representatives to pursue 64 measures, including multiple control sequence changes, sensor calibration and/or replacements, pumping systems optimization, outdoor air controls and building pressurization.

The Commerce Court retrocommissioning project is credited with an overall one-year energy savings in 2012 of 7 percent, resulting in a simple payback of less than one year. Since the first Energy Master Plan was implemented in 2007, Commerce Court has avoided over \$5 million in utility costs through conservation, including \$1 million in incentives.

Paul Hollins is a true energy conservation advocate and leader. In addition to his work at Commerce Court, he has freely shared his expertise through technical presentations in Canada and abroad. He also participated in a voluntary review of Ontario's conservation efforts for the Chief Energy Conservation Officer at the Ontario Power Authority.

# Wednesday Awards Luncheon

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## **Mr. Stephen Carpenter, President of Enermodal Engineering**

### 2013 ICEBO Energy Award Winner

Mr. Stephen Carpenter, President of Enermodal Engineering, a member of the MMM Group Limited, is recognized for his outstanding pioneering work, promoting efficient design and operation of buildings in Canada.

As CEO, Enermodal Engineering is Canada's largest engineering consulting firm exclusively dedicated to creating green buildings and communities. Stephen has spent over 30 years actively advocating building commissioning, the integration of solar energy in buildings and many other inventive approaches. His firm pioneered some of the most innovative, yet practical, green building technologies available, including rainwater cisterns, onsite bio-filtration, radiant cooling, building renewable energy systems and variable-flow refrigerant systems.

Mr. Carpenter's work has had a significant impact in Canada in advancing energy efficient buildings. Enermodal Engineering is one of Canada's largest consulting firms dedicated exclusively to creating green buildings and communities. With a professional staff of over 100 green building specialists in Kitchener, Calgary, Edmonton, Winnipeg, Halifax, Vancouver and Toronto; Enermodal is working on sustainability projects worth over \$5 billion.

And to prove it can be done effectively, Mr. Carpenter recently led the design of one of the most energy efficient buildings in Canada -- their new, head office of Enermodal Engineering which consumes 68 kWh/m<sup>2</sup>, [0.72 watts/ft<sup>2</sup>]; earned a top Energy Star rating of 100 and a one the few triple LEED platinum rated buildings in the world.

These and many other accomplishments, widely recognized by his peers led to the selection of Mr. Carpenter for an ICEBO 2013 Energy Award. He is a true energy efficiency leader and outstanding green building engineer.

# Pre-Conference Workshops Outline

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## Tuesday, October 8

- 7:30 - 8:00      Registration & Breakfast  
Conference level
- 8:00 - 4:00      **Workshops:**
- 1) Continuous Commissioning® Process**  
                    Dr. David E. Claridge Ph.D, P.E.  
                    LaSalle Room
- 2) Primer on Smart Buildings, Smart  
                    Cities, Open Systems, and Best Practices  
                    for Enhanced Operation, Energy  
                    Efficiency, and System Integration**  
                    Mr. Ron Bernstein  
                    Lachine Room
- 9:45                30 minute coffee break, Verdun Room
- 11:45 - 12:45    Lunch in Verdun Room
- 2:15                30 minute coffee break, Verdun Room  
                    Continuous Commissioning® Process  
                    workshop dismissal
- 4:00                Wrap-up, critiques & dismissal

# Conference Sessions

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DAY ONE

## Wednesday Morning, October 9

- 7:00 - 5:00      **Registration - conference level**
- 7:15 - 7:50      **Breakfast Meeting for all Presenting Authors and Session Chairs**  
Verdun Room
- 7:15 - 7:50      Continental breakfast for attendees  
Foyer Lachine
- 8:00 - 9:05      Welcoming Remarks & Keynote  
Outremont Ballroom

**Frank Des Rosiers**, Assistant Deputy Minister, Innovation and Energy Technology Sector - Natural Resources Canada

**Dr. David Claridge**, Director, Energy Systems Laboratory at Texas A&M University

**Keynote Speaker: David B. Bartlett**, Vice President, IBM Smarter Buildings

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### 9:15 - 11:50      **Sessions 1 - 5**

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#### **TRACK 1      Policy, Program & Regulations**

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##### Session 1

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Session Chair: Guy Newsham  
Lachine Room

- 9:15 - 9:45      **"Canada's National Energy Code for Buildings,"** Heather Knudsen, National Research Council Canada
- 9:50 - 10:20      **"Building Management System Corporate Standards Program,"** Suncor Energy
- 10:20 - 10:45      Coffee Break and Exhibits - Foyer
- 10:45 - 11:15      **"Energy Efficiency, a Priority,"** Robert Patenaude, The National Bank of Canada
- 11:20 - 11:50      **"China's Energy Plan,"** Dr. Qingpeng Wei, Tsinghua University

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#### **TRACK 2      Monitoring Tools and Building Diagnostic Products**

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##### Session 2

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Session Chair: Dr. Gilles Jean  
Verdun Room

- 9:15 - 9:45      **"Diagnostic Agent for Building Operation,"** Xavier Bonifay, IFCS
- 9:50 - 10:20      **"Energy Intelligence for Commercial Buildings,"** Andrew Scorsone, Pulse Energy
- 10:20 - 10:45      Coffee Break and Exhibits - Foyer
- 10:45 - 11:15      **"CopperTree Solution,"** Drew Perrin, CopperTree Analytics

# Conference Sessions

DAY ONE

11:20 - 11:50 **"Bells and whistles or just plain effective? The new generation of wireless controls and existing commercial buildings,"** Sandra LaFlamme, Efficiency Vermont

## **TRACK 3 Existing Building Commissioning (EBCx)**

### Session 3

Session Chair: Sophie Hosatte  
St. Pierre Room

9:15 - 9:40 **"Customers benefit from a persistent commissioning utility program - Case Study,"** Wes Morgan, EnerNOC, Inc.

9:45 - 10:10 **"IBM and Energy Management Systems,"** Yves Veilleux, IBM

10:15 - 10:25 Coffee Break and Exhibits - Foyer

10:30 - 10:55 **"44 Market Street – Refurbishment and retro-commissioning of a dual duct building,"** Chris Bloomfield, Exergy Australia Inc.

11:00 - 11:25 **"Systems Recommissioning & Optimization, IBM Bromont Plant,"** Jean-Pierre Boulianne, IBM

11:30 - 11:55 **"Energy Management Practices at Dallas/Fort Worth International Airport,"** Jerry Dennis, DFW Airport Board

## **TRACK 4 Building Simulation, Smart Controls & Optimization Strategies**

### Session 4

Session Chair: Ron Bernstein  
LaSalle Room

9:15 - 9:45 **"Personalized conditioning with human-in-the-loop control approach,"** Jacob Verhaart, TU Eindhoven University

9:50- 10:20 **"Use of building automation system trend data for parameter identification in bottom-up simulation calibration,"** Nicholas Zibin, Concordia University

10:20 - 10:45 Coffee Break and Exhibits - Foyer

10:45 - 11:15 **"Case Study: The Effective Use of an Extensive Logical Rule Based Data Analytics Approach in Establishing Root Cause of Performance Issues in Widespread Deployments of Unitary Space Air Conditioning Units,"** Niall Brady, IBM Research - Ireland

11:20 - 11:50 **"Analysis of the 'Operational Effective Enthalpy' in the cooling regression modeling for hot and humid climates,"** Xiaoli Li, Energy Systems Laboratory

# Program at-a-glance

<b>Tuesday 8 Oct.</b> 8:00 am-4:00 pm	<b>Pre-Conference Workshops</b> - Primer on Intelligent Buildings, Smart Infrastructure, & Cities - Continuous Commissioning ® Introduction		LACHINE LASALLE			
<b>Wednesday 9 Oct.</b> 7:15am	<b>Presenters Breakfast Meeting</b> Attend to meet session chairs and learn session format <b>Attendee Continental Breakfast</b>		VERDUN  FOYER LACHINE			
<b>Wednesday 9 Oct.</b> 8:00-9:10am	<b>Welcome, Introductory Remarks &amp; Keynote Address by David B. Bartlett, Vice President, IBM Smarter Physical Infrastructure</b> <b>OUTREMONT Ballroom</b>					
<b>WEDNESDAY MORNING, OCTOBER 9 TECHNICAL SESSIONS</b>						
<b>10:15am</b> <b>Coffee Break - Exhibit Area</b>	<b>Track 1</b> Policy, Programs & Regulations - Drivers for Enhanced Operation <b>LACHINE Room</b>	<b>Track 2</b> Monitoring Tools & Building Diagnostics <b>VERDUN Room</b>	<b>Track 3</b> Existing Building Commissioning (EBCx) - Case Studies <b>ST. PIERRE Room</b>	<b>Track 4</b> Building Simulation, Smart Controls & Optimization Strategies <b>LASALLE Room</b>	<b>Track 5</b> Intelligent Buildings & Best Practices <b>FUNDY Room</b>	
9:15-11:50am	<b>Session 1</b>	<b>Session 2</b>	<b>Session 3</b>	<b>Session 4</b>	<b>Session 5</b>	
12:00-1:30pm	<b>ICEBO Energy Awards Luncheon Sponsored by Distech Controls with Keynote Address By Stephen Carpenter, Enermodel Engineering</b> <b>OUTREMONT Ballroom</b>					
<b>WEDNESDAY AFTERNOON, OCTOBER 9 TECHNICAL SESSIONS</b>						
<b>2:45 - 3:05pm</b> <b>Coffee Break - Exhibit Area</b>	<b>Track 1</b> Policy, Programs & Regulations - Drivers for Enhanced Operation <b>ST. LAMBERT Room</b>	<b>Track 2</b> Monitoring Tools & Building Diagnostics <b>VERDUN Room</b>	<b>Track 3</b> Existing Building Commissioning (EBCx) - Case Studies <b>ST. PIERRE Room</b>	<b>Track 4</b> Building Simulation, Smart Controls & Optimization Strategies <b>LASALLE Room</b>	<b>Track 5</b> Intelligent Buildings & Best Practices <b>FUNDY Room</b>	
1:40-4:45pm	<b>Session 6</b>	<b>Session 7</b>	<b>Session 8</b>	<b>Session 9</b>	<b>Session 10</b>	
5:00-6:30pm	<b>Welcome Reception Sponsored By CES Group, in SALON BONAVENTURE – Hotel lobby level</b>					
<b>THURSDAY MORNING, OCTOBER 10 TECHNICAL SESSIONS</b>						
<b>10:05-10:25am</b> <b>Coffee Break - Exhibit Area</b>	<b>Track 7</b> HVAC Optimization Strategies <b>ST. LAMBERT Room</b>	<b>Track 2</b> Monitoring Tools & Building Diagnostics <b>VERDUN Room</b>	<b>Track 4A</b> Building Simulation, Smart Controls & Optimization Strategies <b>LACHINE Room</b>	<b>Track 4B</b> Building Simulation, Smart Controls & Optimization Strategies <b>LASALLE Room</b>	<b>Track 5</b> Intelligent Buildings & Best Practices <b>ST. PIERRE Room</b>	
9:00-11:00am	<b>Session 11</b>	<b>Session 12</b>	<b>Session 13</b>	<b>Session 14</b>	<b>Session 15</b>	
11:30-1:15pm	<b>Conference Luncheon sponsored by Coppertree Analytics with Keynote By Ron Zimmer, Pres. &amp; CEO, CABA</b> <b>OUTREMONT Ballroom</b>					
<b>THURSDAY AFTERNOON, OCTOBER 10 TECHNICAL SESSIONS</b>						
2:30 - 4:00pm Refreshments - Foyer Lachine	<b>Track 8</b> Green Buildings in Operation: Myths and Reality <b>ST. LAMBERT</b>	<b>Track 2</b> Monitoring Tools & Building Diagnostics <b>VERDUN Room</b>	<b>Track 4A</b> Building Simulation, Smart Controls & Optimization Strategies <b>LACHINE Room</b>	<b>Track 4B</b> Building Simulation, Smart Controls & Optimization Strategies <b>LASALLE Room</b>	<b>Track 6</b> Benchmarking: International Perspective <b>ST. PIERRE Room</b>	
1:30-3:50pm	<b>Session 16</b>	<b>Session 17</b>	<b>Session 18</b>	<b>Session 19</b>	<b>Session 20</b>	
4:00-4:45pm	<b>Closing Remarks and Invitation to ICEBO 2014 – Beijing, China</b> <b>OUTREMONT Ballroom</b>					

# Conference Sessions

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DAY ONE

## **TRACK 5      Intelligent Buildings & Best Practices**

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### Session 5

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Session Chair: Dr. David Claridge  
Fundy Room

- 9:15 - 9:45      **"The Progression from Intelligent to Smart Buildings,"** Alex Buckman, University of Sheffield
- 9:50 - 10:20      **"Development of self-correcting algorithms for complete supply air temperature sensors,"** Danielle Monfet, École de technologie supérieure
- 10:20 - 10:45      Coffee Break and Exhibits - Foyer
- 10:45 - 11:15      **"The role of Linked Data and the Semantic Web in Building Operation,"** Edward Corry, National University of Ireland-Galway, Informatics Research Unit for Sustainable Energy
- 11:20 - 11:50      **"A tool as a support for energy performance contracting,"** Nicolas Couillaud, Centre Scientifique et technique du bâtiment

### **12:00 - 1:30      ICEBO Awards Luncheon** **Sponsored by Distech Controls**

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**Keynote Speaker: Stephen Carpenter,**  
**Enermodal Engineering**

**Outremont Ballroom**

## **Wednesday Afternoon, October 9**

### **1:40 - 4:45      Sessions 6 - 10**

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## **TRACK 1      Policy, Programs and Regulations**

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### Session 6

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Session Chair: Bahman Yazdani  
St. Lambert Room

- 1:40 - 2:10      **"Calculation of Integrated NOx Emissions Reductions from Energy Efficiency and Renewable Energy (EE/ RE) Programs across State Agencies in Texas,"** Bahman Yazdani, Energy Systems Laboratory
- 2:15 - 2:45      **"Analysis of Code-Compliant Construction in Texas Based on Texas Building Energy Performance Standards (TBEPS),"** Dr. Juan Carlos Baltazar, Energy Systems Laboratory
- 2:45 - 3:05      Coffee Break and Exhibits - Foyer
- 3:05 - 3:35      **"Comparing the performance of a 2009 IECC Code-Compliant House Employing Code-Compliant Residential Simulation Programs,"** Jaya Mukhopadhyay, Energy Systems Laboratory



# Conference Sessions

DAY ONE

## TRACK 2 **Monitoring Tools and Building Diagnostic Products**

### Session 7

Session Chair: Malcolm Verdict  
Verdun Room

- 1:40 - 2:10 **"SGE Building Software,"** Herve Frank  
Nouanegue, Hydro Quebec
- 2:15 - 2:45 **"VAV control system includes fault detections, productivity and energy efficiency applications - Designed for System Integrators and Facility Managers,"** Charles Pelletier, ing. jr., Product Director, Distech Controls
- 2:45 - 3:05 Coffee Break and Exhibits – Foyer
- 3:05 - 3:35 **"McGill University's building energy dashboard,"** Jerome Conraud, Jr. Eng.
- 3:40 - 4:10 **"BuildingIQ - Predictive energy optimization software,"** Peter Dickinson, CTO, BuildingIQ

## TRACK 3 **Existing Building Commissioning (EBCx)**

### Session 8

Session Chair: Joe Martinez  
St. Pierre Room

- 1:40 - 2:10 **"Case Study: Successful use of Existing Building Commissioning (EBCx) in a large building complex in Toronto,"** Scott Rouse, Energy@Work, Inc.; Paul Hollins, GWL Realty Advisors Inc.
- 2:15 - 2:45 **"Comfortable Performance – Retro-Commissioning Building Operations,"** Liviu Botan, CB Consulting
- 2:45 - 3:05 Coffee Break and Exhibits – Foyer
- 3:05 - 3:35 **"On Going Commissioning of 6M sq. ft. building that is in a Constant State of Flux,"** Wanda Lenkewich, Chinook Systems Inc.
- 3:40 - 4:10 **"Whole Building Level Fault Detection and Monitoring at TU,"** Jan Hensen, TU Eindhoven University
- 4:15 - 4:45 **"Application of the Continuous Commissioning® Process at a Major Independent School District in Texas,"** Meet Shah, Energy Systems Laboratory

# Conference Sessions

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DAY ONE

## **TRACK 4 Building Simulation, Smart Controls & Optimization Strategies**

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### **Session 9**

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Session Chair: James Watt  
LaSalle Room

- 1:40 - 2:10      **“Validation of Simulated Thermal Comfort using a Calibrated Building Energy Simulation (BES) model in the context of Building Performance Evaluation & Optimisation,”** Daniel Coakley, National University of Ireland, Galway Informatics Research Unit for Sustainable Energy
- 2:15 - 2:45      **“The Impact of CO<sub>2</sub>-Based Demand-Controlled Ventilation on Energy Consumptions for Air Source Heat Pumps in Schools,”** Nabil Nassif, North Carolina A&T State University
- 2:45 - 3:05      Coffee Break and Exhibits – Foyer
- 3:05 - 3:35      **“Calibration of a building energy model with hourly measured data using eQuest,”** Andreea Mihai, Center for Zero Energy Building Studies, Concordia University
- 3:40 - 4:10      **“Intelligent Agent Application in the Built Environmental: Case Study of Process Control in Buildings with Glass Facades,”** Timilehin Labeodan, TU Eindhoven University

## **TRACK 5 Intelligent Buildings & Best Practices**

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### **Session 10**

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Session Chair: Trevor Nightingale  
Fundy Room

- 1:40 - 2:10      **“Predictive Energy Optimization: The Next Generation of Energy Management,”** Peter Dickinson, CTO, BuildingIQ
- 2:15 - 2:45      **“Evaluation of a case-based reasoning energy prediction tool for commercial buildings,”** Danielle Monfet, École de technologie supérieure
- 2:45 - 3:05      Coffee Break and Exhibits – Foyer
- 3:05 - 3:35      **“A Multi-Level Approach for Model-Based Predictive Control (MPC) in Buildings,”** Jose Agustin Candanedo and Vahid Raissi Dehkordi, CanmetENERGY
- 3:40 - 4:10      **“Design of a Multi-Agent System for optimizing multiple energy flows in Building,”** Gert Boxem, Eindhoven University of Technology

## **5:00 - 6:30 PM Welcome Reception Sponsored by C.E.S. Group Ltd.**

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Salon Bonaventure, hotel lobby level  
Hors d’oeuvres, networking, entertainment, prizes

# Conference Sessions

DAY TWO

## Thursday Morning, October 10

8:15 - 12:00 Registration - conference level

### 9:00 - 11:45 Sessions 11 - 15

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#### TRACK 7 HVAC Optimization Strategies

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##### Session 11

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Session Chair: Daniel Choiniere  
St. Lambert Room

- 9:00 - 9:30 **"Optimization of Ice Thermal Storage System Design for HVAC systems,"** Nabil Nassif, North Carolina A&T State University
- 9:35 - 10:05 **"Using CO2 Measurements to Improve Ventilation Performance,"** Rob Bishop, Energy Solutions Ltd. New Zealand
- 10:05 - 10:25 Coffee Break and Exhibits – Foyer
- 10:30 - 11:00 **"Optimization control strategy for an air handling unit with dedicated rotary desiccant dehumidification wheel in hot & humid climate,"** Lei Wang, Energy Systems Laboratory

#### TRACK 2 Monitoring Tools and Building Diagnostics

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##### Session 12

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Session Chair: Michael Bobker  
Verdun Room

- 9:00 - 9:30 **"Measurement and Verification, Best Approaches in its Design and Commissioning,"** Homayoun Khatami, C.E.S. Group Ltd.
- 9:35 - 10:05 **"M&V Process in the NYC Municipal Building Energy Conservation Program,"** Michael Dipple, Division of Energy Management, City of New York
- 10:05 - 10:25 Coffee Break and Exhibits – Foyer
- 10:30 - 11:00 **"Monitoring-Based Commissioning with Advanced Energy Management Information System Operational Analysis,"** Boban Ratkovich, C.E.S. Group Ltd.

#### TRACK 4A Building Simulation, Smart Controls & Optimization Strategies

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##### Session 13

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Session Chair: Juan Carlos Baltazar  
Lachine Room

- 9:00 - 9:30 **"Exceeding Energy Consumption Design Expectations,"** Holly F. Castleton, Univ. of Sheffield
- 9:35 - 10:05 **"Assessment and prediction of the thermal performance of a centralized latent heat thermal energy storage utilizing artificial neural network,"** Azeldin El-Sawi, Concordia University

# Conference Sessions

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## DAY TWO

- 10:05 - 10:25 Coffee Break and Exhibits – Foyer
- 10:30 - 11:00 **“Building occupants positioning: track and trace for optimal process control,”** Timilehin Labeodan, TU Eindhoven University

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## TRACK 4B Building Simulation, Smart Controls & Optimization Strategies

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### Session 14

Session Chair: Meli Stylianou  
LaSalle Room

- 9:00 - 9:30 **“Demand response in Quebec’s commercial buildings: potential and strategies,”** Marie-Andrée Leduc, Hydro Quebec
- 9:35 - 10:05 **“Process Control on Workplace Level – User Centered Energy Reduction,”** Jacob Verhaart, TU Eindhoven University
- 10:05 - 10:25 Coffee Break and Exhibits – Foyer
- 10:30 - 11:00 **“Temperature – and load-profiles based operation of active BITES systems using frequency domain models,”** YuXiang Chen, A. Athienitis, K. Gala, Concordia University

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## TRACK 5 Intelligent Buildings & Best Practices

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### Session 15

Session Chair: Maria Corsi  
St. Pierre Room

- 9:00 - 9:30 **“Operator Effectiveness in the Use of BAS,”** Michael Bobker, City University of New York (CUNY)
- 9:35 - 10:05 **“Real-time Building Occupancy Sensing for Supporting Demand Driven HVAC Operations,”** Tobore Ekwevugbe, De Montfort University
- 10:05 - 10:25 Coffee Break and Exhibits – Foyer
- 10:30 - 11:00 **“How to Become Mobility Nobility: Make Innovative Mobile Technologies for Asset Tracking Your Crowning Achievement,”** Wayne Liko, Horizant

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### 11:30 - 1:15 ICEBO Luncheon

**Sponsored by Coppertree Analytics**

**Keynote Speaker: Ron Zimmer, President & CEO, CABA (Continental Automated Buildings Association)**

**Outremont Balloom**

# Conference Sessions

DAY TWO

## Thursday Afternoon, October 10

Refreshments Available from 2:30 - 4:00, Foyer

**1:30 - 3:50**      **Sessions 16 - 20**

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### **TRACK 8**      **Green Buildings in Operation: Myths and Reality**

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#### Session 16

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Session Chair: Caroline Bordeaux  
St. Lambert Room

- 1:30 - 1:50      **"Opening session: The Business Case for Green Buildings,"** Caroline Bordeaux, Energy@Work
- 1:50 - 2:20      **"The post-occupancy performance of green office buildings: evidence from the field,"** Guy Newsham, National Research Council Canada
- 2:20 - 2:40      **"The value of an effective tenant engagement program in commercial office buildings,"** Caroline Bordeaux, Energy@Work
- 2:40 - 3:10      **"The effect of personal lighting controls on energy use and occupant well-being in offices,"** Guy Newsham, National Research Council Canada
- 3:10 - 3:50      **"The value of a dynamic environmental building certification – the BOMA BEST example,"** Hazel Sutton, BOMA Canada

### **TRACK 2**      **Monitoring Tools and Building Diagnostics**

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#### Session 17

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Session Chair: Steven Harrell  
Verdun Room

- 1:30 - 2:00      **"Qualitative Model-Based Fault Detection and Diagnosis for Heating and Cooling Circuits,"** Thorsten Müller, Fraunhofer Institute for Solar Energy Systems – Freiburg
- 2:05 - 2:35      **"Automated Fault Detection and Diagnosis in Commercial Air Handling Units: Tool Development and Field Testing Results,"** Ken Bruton, University College Cork, Ireland
- 2:40 - 3:10      **"To cope with the uncertainty in Smart Energy Systems: office buildings as a source for energy flexibility,"** Timilehin Labeodan, TU Eindhoven University

### **TRACK 4A**      **Building Simulation, Smart Controls & Optimization Strategies**

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#### Session 18

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Session Chair: Meet Shah  
Lachine Room

# Conference Sessions

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## DAY TWO

- 1:30 - 2:00      **"Automated Demand Response Demonstration for Large Customers in New York City using Open ADR,"** Joyce J. Kim, Environmental Energy Tech Division, Lawrence Berkeley National Laboratory
- 2:05 - 2:35      **"Calibration of an EnergyPlus building energy model,"** Karine Lavigne, Hydro-Québec
- 2:40 - 3:10      **"Three Case Studies of the Application of Energy Systems Optimization Best Practices for Automatic Demand Response,"** Carlos Yagua, Energy Systems Laboratory

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## TRACK 4B      Building Simulation, Smart Controls & Optimization Strategies

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### Session 19

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Session Chair: Radu Zmeureanu  
LaSalle Room

- 1:30 - 2:00      **"Weather Forecast Data – An Important Input into Building Management Systems,"** Lewis Poulin, Meteorological Service of Canada
- 2:05 - 2:35      **"Improving Energy Efficiency in the Residential Buildings Sector of Turkmenistan,"** Arslanmurat Zomov, United Nations Development Programme
- 2:40 - 3:10      **"Innovative, Cost Effective and Energy Efficient Design for New Construction at a Texas High School,"** Saleem Khan, Texas Energy Engineering Services, Inc.

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## TRACK 6      Benchmarking: International Perspectives

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### Session 20

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Session Chair: Scott Rouse  
St. Pierre Room

- 1:30 - 2:00      **"Sharing Canadian experience from the 2013 BOMA Benchmarking study,"** John Smiciklas and Hazel Sutton, BOMA
- 2:05 - 2:35      **"A comparison of international benchmarks compared with Canada's experiences,"** Chris Bloomfield, Exergy Australia Pty, Ltd
- 2:40 - 3:10      **"Portfolio Manager's Introduction to Canada,"** Michel Gauvin, Natural Resources Canada
- 3:15 - 3:45      **"IPD Study: The Value of BOMA BEST,"** Joost Groeneveld, IPD Canada

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## 4:00 - 4:45      Closing Remarks by Hosts

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### Outremont Ballroom

Invitation to ICEBO 2014, September 2014 at Tsinghua University, Beijing, China; Dr. Qingpeng Wei

# Tours & RETScreen Workshop

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## **Friday, October 11, 8:15 AM - 5:00 PM Verdun Room**

8:15 - 9:00	Registration
9:00 - 10:15	Presentation: Introduction to RETScreen Plus Software
10:15 - 10:45	Break in Lachine Room
10:45 - 12:00	Assignment to participants: Power project – 10,8 kW Photovoltaic
12:00 - 1:30	Lunch in Lachine Room
1:30 - 2:45	Presentation: On-going Energy Performance Analysis
2:45 - 3:15	Break in Lachine Room
3:15 - 4:30	Assignment to participants: Energy efficiency measures project – Industrial – Rock Excavation
4:30 - 5:00	Conclusion

## **FRIDAY TOURS 8:30 – 11:30 AM**

Tour high-efficiency buildings at four unique Montreal venues.

### **Select one tour from A, B, or C:**

**Tour A - Biodome:** recreates some of the most beautiful ecosystems of the Americas (metro transportation provided; includes admission to exhibits)

**Tour B - La Tohu:** the prime North American circus venue (metro transportation provided)

**Tour C -** Walking tours to both sites  
**Maison du Développement Durable:** cutting-edge new building covered by green roof made from vegetation

**Maison du Symphonique:** new home of the Orchestre symphonique de Montréal, advanced top noise reduction level

\* Tours will leave from hotel lobby at 8:30 am. Paid guests are welcome (\$25).

# ICEBO STAFF AND COMMITTEES

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## ICEBO Staff

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Alissa Simpson, Conference Manager  
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Gilles Jean	CanmetENERGY / Natural Resources Canada
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