



# AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS INC.

LONDON CANADA CHAPTER #116

<http://LondonCanada.AshraeChapters.org>

Thur April 21/2016

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## **Webcast Topic**

## **Making Net Zero Net Positive: Solving the Efficiency & Cost Paradox**

## **Speakers**

Marc Brune, P.E.  
Philip Macey, AIA  
Paul Torcellini, Ph.D., P.E.

Attend this FREE webcast program and you may be awarded three Professional Development Hours (PDHs).

## **Meeting - THU APRIL 21/2016 WEBCAST**

12:00noon - Lunch  
1:00 to 4:00 - Webcast  
4:30 to 5:30 - Soccer

ADVANCED PAYMENT BEFORE MEETING  
by using PAYPAL  
use the chapter web site to register and pay  
<http://LondonCanada.AshraeChapters.org>

location:

**BMO CENTRE**  
295 Rectory St, London

## President's Message

Winter reared it's ugly head for a brief time again but it looks like the promise of spring is going to be here to stay soon. This April, once again, we will integrate the ASHRAE Webcast into our monthly meeting. The topic for this years webcast is "Making Net Zero Net Positive: Solving the Efficiency & Cost Paradox". I always find these webcasts very informative and a great opportunity for networking and socializing when hosted as a chapter meeting. The panelists are invariably experts in their respective fields and provide plenty of food for thought, so to speak.

This month we will be trying a new location at the BMO Centre, and to go along with a new meeting and lunch location, we will be combining the meeting and webcast with a game of soccer. This should provide further opportunity for members to engage with each other in a laid back setting and work off some stress from the busy work week, I'm sure. This will be our last official monthly meeting of the 2015/2016 year. I would like to personally thank all of our members for your participation this year and making the year a success. We are once again looking forward to finishing off well with another exciting golf tournament! Please get your registration in for the golf tournament as soon as possible. We are about 70% full. The registration link can be found on the chapter website.

At the event we will be swearing in the new board of governors and chapter executive and getting ready to turn the page for the next chapter season. The first task of the new board will be to attend the Region II CRC which is in New Brunswick this year. If anyone is interested in joining the board of governors, please don't hesitate to contact any of the chapter board executive to express your interest and we will find you a position.

I know many of the local members were looking forward to the tour of the Music Building at Western at the end of the month, however, the decision has been made to postpone the tour to early in the fall. This will allow us to get better attendance from the student chapter.

Have a terrific week and I look forward to seeing you on April 21st at the BMO Centre.

Once again, I would like to thank everyone for being engaged with the chapter this year and making the year a success!

Regards,  
Jordan Foster  
Chapter President 2015/2016  
ASHRAE London Canada Chapter

## Upcoming Chapter Meetings

Monday June 4/2016 - Golf Tournament

### Other Meetings

May 9 to 11, 2016 = HVAC Design: Level 1 - Essentials, Halifax, Nova Scotia  
see the chapter web site for more information

June 25 to 29, 2016 = ASHRAE Annual Conference - St. Louis, MO  
Register before rates increase on April 26. [www.ashrae.org/stlouis](http://www.ashrae.org/stlouis)

Jan 28 to Feb 1, 2017 = ASHRAE Winter Conference - Las Vegas, NV



**Join us at  
ASHRAE's 2016  
Annual Conference**

**June 25-June 29  
St. Louis, Missouri**

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## **Thursday April 21/2016 - WEBCAST**

### **Making Net Zero Net Positive: Solving the Efficiency & Cost Paradox**

This webcast will feature industry experts who will define the importance of, and why we should strive for, net zero in the built environment. Viewers will be able to identify behaviors that create more effective ownership, design and construction teams, and will recognize the value of a collaborative process in building design and the impact on costs. With a strong emphasis on real-world applications, the program will also discuss the primary technical and financial challenges in achieving net zero buildings, and where this design approach can best be applied.

Attend this FREE webcast program and you may be awarded three Professional Development Hours (PDHs) brought to you by the Chapter Technology Transfer Committee (CTTC).

The webcast presenters are:

Marc Brune, P.E. - Senior Associate and Mechanical Engineer, PAE, Portland, OR

Philip Macey, AIA - National Director of Collaborative Delivery, JE Dunn, Denver, CO

Paul Torcellini, Ph.D., P.E. - Principal Engineer for Commercial Buildings Research, NREL, Golden, CO

## **ASHRAE LONDON CANADA CHAPTER BOARD ELECTIONS**

THE YEARLY CHAPTER ELECTIONS ARE NOW OPEN FOR BOARD POSITIONS President, VicePresident, Treasure, Secretary need to have names brought forward for the 2016-2017 year. If you are interested in helping the chapter operate, please offer your assistance. Chair positions also need to be filled.

New Board and Chairs are to be installed to their new positions at the June golf tournament so they can plan for the upcoming year.

## **ASHRAE LONDON GOLF TOURNAMENT Monday June 6/2016**

Fire Rock GCC  
10345 Oxbow Dr., Komoka

10:00am Registration and Social  
 11:00am BBQ Lunch  
 \*\*\*\*\* 11:30am Trick Show - Brett Cleverdon \*\*\*\*\*  
 12:00pm Golf  
 5:00pm Dinner and Banquet

HOLE IN ONE COMPETITION - 11th Hole = \$5,000

See chapter web site for flyer, registration form and Paypal links  
<http://londoncanada.ashraechapters.org>



[www.somersep.com](http://www.somersep.com)

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### March Chapter Meeting Highlights

ASHRAE Distinguished Lecturer, Dr Jerry Sipes, Ph.D., P.E. presented Designing Displacement Ventilation. Several examples of projects along with photos and how the systems functioned was presented.

See the chapter web site for a copy of the presentation files.

HVAC Design Training [www.ashrae.org/hvacdesign](http://www.ashrae.org/hvacdesign)

2 Training Courses, 5 Days of Intense Instruction  
see flyer in the newsletter

If you have a new employee that needs some training, look to the course offered in Halifax on May 9 to 11. See the



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## **ASHRAE RESEARCH**

The following have contributed to ASHRAE Research  
Honor Roll level contributors will be listed in the ASHRAE Journal.

### **Individual Donors - \$100+ (Honor Roll Level)**

Tom Pollard	Ibrahim Semhat
Jordan Foster	Karl Gilroy
James Scudamore	Philip Cook
Khalid El-Kadri	John Freeman
Peter Golem	Scott Edmunds
Jerald Lavender	Derek Vakaras
Daryl Somers	Andrew Piatek

### **Corporate Donors - \$250+ (Honor Roll Level)**

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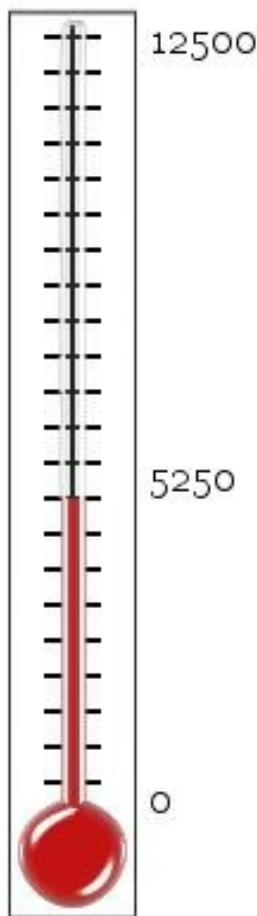
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Please assist ASHRAE Research and the London Canada reach it goal.

<http://www.ashrae.org/contribute>

Thank You to all the donors!  
ASHREA London Canada  
James Scudamore - RP Chair



**Chapter Goal**  
**\$12,500**

**Current Research**  
**contributions**  
**\$5,250**

**42% of goal)**





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## **Halifax HVAC Design Training**

### **May 9 - 11, 2016**

#### HVAC Design: Level I - Essentials

training provides participants with instruction that accelerates their transformation into effective members of a design, construction or facilities maintenance team. Developed by industry-leading professionals selected by ASHRAE, the training provides attendees with the fundamentals and technical aspects of HVAC design. Attendees will gain practical skills and knowledge to design and maintain HVAC systems that can be put to immediate use.

In addition to gaining in-depth knowledge and understanding, attendees will receive real-world examples of HVAC systems based on the renovated ASHRAE Headquarters building. The training also teaches a systematic approach to guide a design team to a solution that optimally meets the client's expectations. Engineered drawings of the ASHRAE Headquarters renovation will also be discussed so participants are exposed to plan reading and visual understanding of system design.

#### Registration Fees

(Register 30 days prior to training date, for Early Bird pricing)

Level I - Essentials	Mbr	Non-Mbr	Group 3+
Standard	\$1009	\$1,264	\$909

Fee Covers: Course admittance, course materials, publications, break refreshments, lunches, and reception.

Company Discount Fee: Enroll 3 or more participants from the same company at the same time and save.

#### Instructor

Joel Primeau, P.Eng., ASHRAE Member, HBDP, LEED®AP

#### Web Site

<https://www.ashrae.org/education--certification/hvac-design-training/halifax-hvac-design-training-may-2016>

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## **ASHRAE LOGO HISTORY**

A great article has been crafted by George Menzies about the evolution of the ASHRAE logos through the years. The article is posted on the Region 2 web site.

<http://region2.ashraeregions.org>

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## **CONNECT-A-COLLEAGUE**

Informing colleagues about ASHRAE takes less than 1 minute now with Connect-a-Colleague. During #MarchIntoMembership contest you could win a \$500 American Express gift card when your colleagues join ASHRAE through your customized email referral. Connect-a-Colleague simply creates an automated email on your behalf and the more people you invite during the month of March, the more chances you have to win.

ASHRAE member referrals continue to be the top reason new members join. As an ASHRAE member, your referral is a very powerful tool that can benefit your colleagues, your Society, and the HVAC&R industry. Please take a minute to Connect-a-Colleague today.

Get started now: Connect-a-Colleague

For #MarchIntoMembership contest rules please visit: [ashrae.org/connect](http://ashrae.org/connect)

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## **ASHRAE JOB BOARD**

Having trouble finding the time to search through all of the available jobs on ASHRAE Job Board? Let ASHRAE do the work for you! Create a personal job alert and new jobs that match your search criteria will be emailed directly to you.

Our Job Alerts will: match jobs to your customized criteria; notify you when potential opportunities become available; allow you to focus on other career-building activities, such as networking

Sign up for job alerts today on ASHRAE Job Board and you will be notified as soon as the jobs you want are posted!

### Lighting Requirements for High Rise Dwellings Proposed for Energy Standard

ATLANTA – A proposal that would set lighting requirements for high-rise dwellings in the energy standard published by ASHRAE and the Illuminating Engineering Society (IES) is open for industry comment.

Fourteen addenda to ANSI/ASHRAE/IES Standard 90.1-2013, Energy Standard for Buildings Except Low-Rise Residential Buildings, are open for public comment from March 25 until April 24, 2016. To comment or learn more, visit [www.ashrae.org/publicreviews](http://www.ashrae.org/publicreviews).

Among them is addendum do. Currently, lighting in dwelling units in high-rise buildings is exempt in both Standard 90.1 and ANSI/ASHRAE/IES Standard 90.2, Energy Standard for Low-Rise Residential Buildings.

"In general, lighting within someone's personal dwelling unit (home) has been exempt because it was not considered commercial, which is the focus of 90.1," Eric Richman, chair of the standard's lighting subcommittee, said. "The International Energy Conservation Code with its residential component and other similar state codes developed some basic requirements for dwelling unit lighting several years ago that addressed product efficacy. At the time, it was difficult to develop requirements that would ensure savings and still be practical for personal spaces. Over time, the lack of dwelling unit requirements in 90.1 presented a potential gap in energy savings. These new requirements would set efficacy minimums and/or controls for the lighting in dwelling unit spaces covered in the standard's scope, which includes multi-family structures of four stories or above."

The proposed requirements are similar to those in the U.S. Environmental Protection Agency's ENERGY STAR program for high efficacy lighting. They are simplified to apply to dwelling units in commercial buildings and to support compliance as well as being conservative to allow design flexibility. The proposed efficacy requirements will effectively eliminate the use of incandescent/halogen sources as well as less efficacious products in the compact fluorescent (CFL) and light emitting diodes (LED) categories.

Also among the addenda open for public comment is addendum ei, which tightens requirements to ensure that non-historic elements or areas of buildings meet the applicable requirements. Currently, the historic building exemption can allow for exempting the entire building, including parts that may be new additions or not part of the historic element, according to Richman.

Other addenda open for public comment until April 24, 2016, are:

Addendum bd requires monitoring chiller plant efficiency in large electric motor driven chilled water plants for plants with a peak chilled water output based upon equipment type and climate zone. The change is designed to help commissioning and ongoing operations of the aforementioned chilled water plants.

Addendum dw adds efficiencies for hydraulic elevator motors. The efficiency for the motors used in hydraulic elevators is substantially different than the motor efficiencies used for traction elevators. In addition the hydraulic elevator motors are usually not a type covered by the standard.

Addendum dz provides clarifications only to changes made as a result of addendum cp. This addendum does not change the criteria of the standard. The base assembly for metal building walls is clarified and reference to all insulation methods is recognized in Section A3.2 rather than indicating one insulation methodology as the "base assembly," which is not intended.

Addendum ea addresses minor inconsistencies in terminology in sections 5 thru 11 that have developed over time.

Addendum eb addresses minor inconsistencies in terminology in Appendices C and G that have developed over time.

Addendum ec. When preparing documentation to explain the derivation of each number in Table 4.2.1.1 (Building Performance Factors), a single number was found to be inconsistent with the derived values. This addendum corrects that inconsistency.

Addendum ed adds HVAC System Types 11, 12 and 13 to Section G.3.1.3.18 Dehumidification.

Addendum ef changes Table G3.1.1-2, based on updated 2012 U.S. Department of Energy's Commercial Building Energy Consumption (CBECS) information for baseline service water heating systems.

Addendum eg removes a sentence that is no longer necessary since the most common building energy modeling programs are able to simulate integrated water economizers.

Addendum ej modifies the text to use correct terminology for LED drivers.

Addendum ek establishes baseline commercial refrigeration limits for Appendix G, which are based on the California Energy Commission Appliance Efficiency Regulations 2005.

Addendum el adds a mandatory requirement for air-cooled direct expansion cooling units with economizers to have basic fault detection and diagnostic systems and were developed in consultation with unitary system and economizer control manufacturers.

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### Register today for the ASHRAE Conference in St. Louis.

Take advantage of the opportunity to discuss and examine the latest topics in the building industry and earn professional development credits. Hotels are filling up quickly! Register before rates increase on April 27. You can register at [www.ashrae.org/stlouis](http://www.ashrae.org/stlouis).

The technical sessions offer an excellent opportunity to learn the results of cutting-edge research and the latest standards that affect the built environment. Topics include nearly every technology used in HVAC&R including alternative refrigerants, fire and smoke control, smart control systems and sources and efficient utilization of renewable energy. In addition, learn the personal and business skills necessary to become and remain a leader in our industry. The Technical Program features eight tracks, 108 sessions and more than 400 speakers. The program offers over 130 Professional Development Hours, as well as Continuing Education Units, which can be applied toward a Professional Engineering license, including the state of Florida, AIA LUs and LEED AP credits.

Check out the new interactive Technical Program to find the topics, sessions and speakers of most interest to you! Featuring options to search by track, program type, date and keyword, the interactive Technical Program provides a detailed look at each session from color-coded tracks to sponsoring committees. Access, browse and bookmark the feature on your computer, tablet or smartphone.

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#### New ASHRAE Publication Explains the Impact of IT Equipment on Data Center Design

ATLANTA—The 13th book in ASHRAE's Datacom Series, "IT Equipment Design Impact on Data Center Solutions," is now available. The book was developed by ASHRAE's Technical Committee 9.9, Mission Critical Facilities, Data Centers, Technology Spaces and Electronic Equipment.

"Technology in general, including the data center industry, changes faster than other industries," Don Beaty, publications chair of TC 9.9, said. "Disruption is around the corner in all aspects of our lives: social media, online retail, access to information and entertainment. With everything from smartphones to thermostats generating data, backend IT systems are experiencing massive hardware demands. Data centers must have a footprint that is flexible, scalable and adaptable. They must be able to move as fast as new applications are developed and keep up with new ideas, new architectures, and new ways of thinking – all in real time."

Beaty explains how this is being addressed in this new publication.

"Book 13 is focused on the IT equipment impact on data center solutions," he said. "Although software is moving faster than hardware, hardware is still moving much faster than facilities. This book draws upon the foundations laid in the previous 12 Datacom books along with significant updated and new material to provide valuable insight to address this challenge with chapters on IT equipment, its thermal design and interactions between IT systems and the data center."

The cost of "IT Equipment Design Impact on Data Center Solutions" is \$50, ASHRAE members (\$59, non-members). To order, visit [www.ashrae.org/bookstore](http://www.ashrae.org/bookstore) or contact ASHRAE Customer Contact Center at 1-800-527-4723 (United States and Canada) or 404-636-8400 (worldwide) or fax 678-539-2129.

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#### 2016 Residential IAQ Standard Published by ASHRAE

ATLANTA – Multifamily units in all types of buildings are now covered in the scope of ASHRAE's residential indoor air quality standard, marking one of the biggest changes to the recently published 2016 version. ANSI/ASHRAE Standard 62.2-2016, Ventilation and Acceptable Indoor Air Quality in Residential Buildings, defines the roles of and minimum requirements for mechanical and natural ventilation systems and the building envelope intended to provide acceptable indoor air quality in residential buildings. Prior to this edition multifamily residential buildings four stories or above fell under the scope of ANSI/ASHRAE Standard 62.1, Ventilation for Acceptable Indoor Air Quality. Now the dwelling units themselves are covered by 62.2 regardless of building height, while common areas of those buildings remain in the scope of 62.1, according to Paul Francisco, chair of the Standard 62.2 committee.

Francisco said the change provides consistency of ventilation requirements for dwelling units regardless of building height. For new construction, this will result in a change of requirements for dwelling units in 4 story and above buildings. For the retrofit market, this change will result in coverage by ASHRAE ventilation standards for the first time in residential dwellings in 4 story and above story buildings. The 2016 standard also includes a method of claiming an infiltration credit for horizontally-attached units.

Another major change in the standard provides a means of determining equivalency for a variety of ventilation scheduling strategies. This change also includes a maximum short-term exposure to make sure that meeting annual equivalence does not unduly compromise short-term IAQ.

The cost of Standard 62.2-2016, Ventilation and Acceptable Indoor Air Quality in Residential Buildings, is \$54, ASHRAE members (\$64, non-members). To order, visit [www.ashrae.org/bookstore](http://www.ashrae.org/bookstore) or contact ASHRAE Customer Contact Center at 1-800-527-4723 (United States and Canada) or 404-636-8400 (worldwide) or fax 678-539-2129.

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#### ASHRAE, AIA Look to Future of Energy Efficiency with Signing of New MOU

ATLANTA – Building on past outreach, ASHRAE and the American Institute of Architects (AIA) have signed a Memorandum of Understanding, committing them to working together in a variety of built environment areas. The MOU recently was signed by ASHRAE President David Underwood and AIA President Russ Davidson. The agreement states the two organizations will work jointly in areas related to development of young professionals, advocacy and public outreach, publications, education, technical activities and research.

"ASHRAE and AIA share many common technical interests, including health and safety, energy efficiency, and resilience," David Underwood, ASHRAE president, said. "This agreement formalizes our plans to foster technical cooperation in these areas, providing needed guidance to the industry."

"We are at a pivotal juncture as an industry to address the growing number of design challenges," said AIA President, Russ Davidson, FAIA. "The extension of this agreement is important for our organizations to continue to work together to further sustainable design strategies, to be active on building codes related issues, as well as for providing tangible resources that are useful for our respective members in their daily practice."

In past projects with a focus on improving energy efficiency of buildings and systems, ASHRAE and AIA are part of a group that is developing a new version of the International Green Construction Code (IgCC) sponsored by the International Code Council (ICC), the Illuminating Engineering Society (IES) and the U.S. Green Building Council (USGBC). The code, scheduled to be released in 2018, will be powered by ANSI/ASHRAE/ICC/IES/USGBC Standard 189.1, Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings developed using the American National Standards Institute (ANSI) approved ASHRAE consensus process.

ASHRAE and AIA also joined together with IES, USGBC and the Department of Energy (DOE) in developing the Advanced Energy Design Guide series. The nine books in the series provide recommendations for achieving 50% and 30% energy savings over the minimum code requirements of ANSI/ASHRAE/IESNA Standard 90.1, Energy Standard for Buildings Except Low-Rise Residential Buildings



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### ASHRAE Celebrates New Faces of Engineering

ATLANTA – Two ASHRAE members are being recognized as part of a national effort to bring attention to the future generation of engineers. This week, DiscoverE announced the winners of its two New Faces of Engineering programs – Professional and College. Supporting associations of DiscoverE nominate members for each program. ASHRAE created the New Faces program in 2003, when it served as lead society for National Engineers Week. The New Faces of Engineering Professional Edition recognizes the outstanding talents, skills and abilities the next generation of engineering leaders (age 30 or younger) have shown on projects that significantly impact public welfare or further professional development and growth.

ASHRAE's top nominee for this program is Rachel Romero, P.E., an energy engineer at the National Renewable Energy Laboratory, Golden, Colo. Through her work, Romero serves as a project manager and technical expert for the Department of Homeland Security energy management program and has worked on the creation of the national Standard Work Specifications for residential building professionals to ensure quality outcomes for the home energy retrofit industry. Outside of work, she serves as the main competition organizer for the 2016 Race to Zero Student Design Competition, which brings together 34 collegiate institutions and over 300 students to inspire the next generation of building science professionals. She also is active in ASHRAE, serving at both the national and chapter levels. Her advice to engineering students? "Find an internship right now and get real-world experiences before you decide what type of engineer you want to be," she said. "Engineering is a broad career and there are so many facets to even our industry with ASHRAE."

The New Faces of Engineering College Edition, which targets 3rd, 4th and 5th year engineering college students, recognizes the nation's most promising engineering professionals of tomorrow.

ASHRAE's top nominee is Danielle Passaglia, an architectural engineering major, at the University of Nebraska-Lincoln, Omaha. She serves as president for the university's ASHRAE Student Branch and volunteers her time during Engineers Week and Introduce a Girl to Engineering Day, where she promotes opportunities available within engineering to students. Passaglia plans on using her education to help make an impact on the industry. "The opportunities that come with an engineering degree are endless, and it will allow me to find my niche in this field," she said. "I am excited to work with other individuals who share this passion and see how our ideas can come together to make something innovative."

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### An Efficient Future for Buildings of the Past Proposed Under ASHRAE Guideline

ATLANTA – Historical buildings – from those on the local Main Street to world-renowned structures – could be brought from the past into an energy reduced future under a proposed guideline from ASHRAE. ASHRAE Guideline 34P, Energy Guideline for Historical Buildings, provides advice for energy efficiency and energy conservation improvements involving historic structures. These improvements would seek to minimize disturbances to the historic character, characteristics and materials (significance, value and qualities). The proposed standard is open for a second public comment until May 2, 2016. To comment or learn more, visit [www.ashrae.org/publicreviews](http://www.ashrae.org/publicreviews).

"The worldwide preservation community recognizes the importance of reducing the consumption of fuels," William Rose, a member of the Guideline 34P committee, said. "Many codes and standards exempt such buildings from energy conservation requirements, based on an assumption that imposition of energy-saving measures may compete with preservation requirements. Nevertheless, preservationists generally wish to balance the mandate to maintain the integrity and authenticity of their buildings with growing needs for energy conservation. And some codes, notably the recent International Energy Conservation Code, have moved from a blanket exemption to a narrower provision-by-provision basis."

Guideline 34P, which offers assistance for the range of historic buildings, will help those engaged in preservation to design and provide energy conservation measures. Rose said it also will help those engaged in energy conservation to propose and adopt measures consistent with preservation practice. The guideline addresses planning and operation, mechanical systems, building envelopes and lighting. The guideline was the idea of Presidential Member Tom Watson for whom historical buildings are a pet project.

"We just can't give up on using historic buildings," he said. "They are too valuable and leave too large an environmental footprint to be neglected or abandoned."

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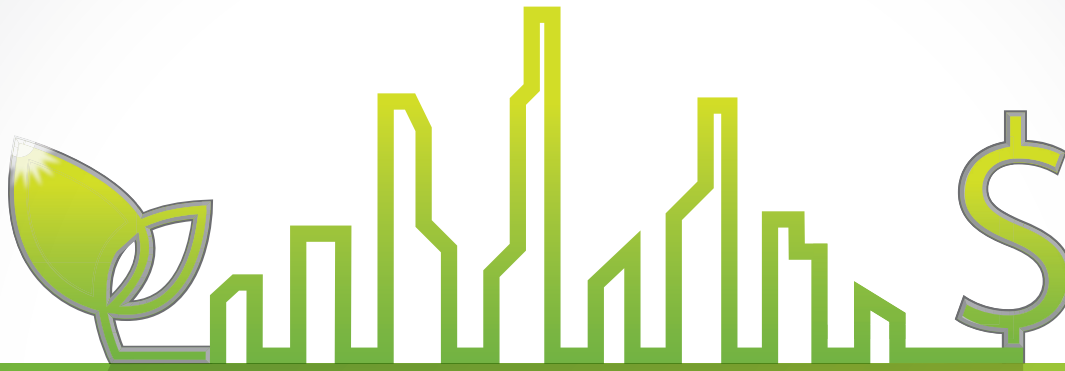
### Proposed ASHRAE Energy Simulation Standard Open for Public Review

ATLANTA – A draft standard that describes a methodology to apply building energy modeling to the design process is open for industry input. ASHRAE Standard 209P, Energy Simulation Aided Design for Buildings Except Low-Rise Residential Buildings, defines minimum requirements for providing energy design assistance using building energy simulation and analysis. The proposed standard is open for public comment until May 9, 2016. To comment or learn more, visit [www.ashrae.org/publicreviews](http://www.ashrae.org/publicreviews).

"ASHRAE recognizes that building energy simulation is most useful when it can inform the design process to reduce energy use," Jason Glazer, chair of the Standard 209P committee, said. "The standard was created to advance the use of timely building energy modeling to quantify how design decisions can affect building energy use when those design decisions are being made."

While earlier draft versions of the proposed standard incorporated energy modeling into the typical design process divisions of schematic design, design development, etc., the committee realized that many tasks, data and goals of each modeling effort, or cycle, were similar enough to create a "generic modeling cycle." The draft standard was rewritten to incorporate a generic modeling cycle that is augmented with additional directions to create several specific modeling cycles that are incorporated into the typical design process. Standard 209P defines seven design phase modeling cycles with specific modeling goals that are defined and coordinated with the typical design process, and three modeling cycles are defined that apply during construction and operation of the buildings. Each modeling cycle is an extension of a general modeling cycle that can be applied any time during the design process that energy modeling is needed to inform design decisions.





# **M**aking Net Zero Net Positive: Solving the Efficiency & Cost Paradox *April 21, 2016 | 1:00–4:00 p.m. EDT*

This webcast will feature industry experts who will define the importance of, and why we should strive for, net zero in the built environment. Viewers will be able to identify behaviors that create more effective ownership, design and construction teams, and will recognize the value of a collaborative process in building design and the impact on costs. With a strong emphasis on real-world applications, the program will also discuss the primary technical and financial challenges in achieving net zero buildings, and where this design approach can best be applied.

**Attend this FREE webcast program and you may be awarded three Professional Development Hours (PDHs).**



T. David Underwood, P.Eng.,  
Fellow ASHRAE,  
Life Member, CPMP



Marc Brune, P.E.



Philip Macey, AIA



Paul Torcellini,  
Ph.D., P.E.

# Realistic Net Zero to be the Focus of Next FREE ASHRAE Webcast



**Marc Brune**

**Philip Macey**

**Paul Torcellini**

ASHRAE's upcoming webcast, titled ***Making Net Zero Net Positive: Solving the Efficiency & Cost Paradox***, will broadcast live on **April 21, 2016, from 1:00 – 4:00 pm EDT**. This **FREE** webcast is brought to you by the Chapter Technology Transfer Committee.

"The presenters will discuss the primary technical and financial challenges in achieving net zero buildings," said Nathan Hart, chair of the CTTC Webcast Ad Hoc Committee. "Viewers will learn the importance of, and why we should strive for, net zero in the built environment. The focus will be on realistic solutions and methods of energy conservation."

## **The webcast presenters are:**

**Marc Brune**, P.E. | Senior Associate and Mechanical Engineer | PAE | Portland, OR

**Philip Macey**, AIA | National Director of Collaborative Delivery | JE Dunn | Denver, CO

**Paul Torcellini**, Ph.D., P.E. | Principal Engineer for Commercial Buildings Research | NREL | Golden, CO

Online registration for the webcast will begin on March 21, 2016. For more information on the webcast program, sponsorship opportunities, continuing education credits, and ASHRAE resources related to net zero, visit [www.ashrae.org/webcast](http://www.ashrae.org/webcast).

If you have questions about the webcast, call (678) 539-1200 or email [ashrae-webcast@ashrae.org](mailto:ashrae-webcast@ashrae.org).

# ASHRAE Learning Institute

## 2016 Spring Online Course Series

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**Phone:** Call toll-free at 1-800-527-4723 (US and Canada) or 404-636-8400 (worldwide)

**Price:** **\$284 (\$219 ASHRAE Member)**; Two-part courses: **\$484 (\$359 ASHRAE Member)**

**Note:** You may register up to 24 hours prior to an online course. Courses are in US Eastern Time.

#### **Combined Heat & Power: Creating Efficiency through Design & Operations**

Mon, March 28, 2016 – 1:00 pm to 4:00 pm EDT

#### **Commissioning Process & Standard 202**

Wed, March 30, 2016 – 1:00 pm to 4:00 pm, EDT

#### **IT Equipment Design Evolution & Data Center Operation Optimization**

Wed, April 6, 2016 – 1:00 pm to 4:00 pm, EDT

#### **Complying with Standard 90.1-2013: HVAC/Mechanical**

Wed, April 13, 2016 – 1:00 pm to 4:00 pm, EDT

#### **Laboratory Design: The Basics and Beyond**

Mon, April 18, 2016 – 1:00 pm to 4:00 pm, EDT

#### **Standard 188-2015 – Successfully Managing the Risk of Legionellosis**

Mon, April 25, 2016 – 1:00 pm to 4:00 pm, EDT

#### **Air-to-Air Energy Recovery Applications: Best Practices**

Wed, April 27, 2016 – 1:00 pm to 4:00 pm, EDT

#### **Fundamental Requirements of Standard 62.1-2013**

Mon, May 2, 2016 – 1:00 pm to 4:00 pm, EDT

#### **Variable Refrigerant Flow System Design & Applications**

Mon, May 16, 2016 – 1:00 pm to 4:00 pm, EST

**The following courses are comprised of two parts. Registrants must attend both parts in order to receive CEU/PDH credits.**

#### **Exceeding Standard 90.1-2013 to Meet LEED® Requirements**

**Part 1:** Mon, April 11, 2016 – 1:00 pm to 4:00 pm, EDT

**Part 2:** Wed, April 20, 2016 – 1:00 pm to 4:00 pm, EDT

#### **Operations & Maintenance of High-Performance Buildings**

**Part 1:** Tue, May 17, 2016 – 1:00 pm to 4:00 pm, EDT

**Part 2:** Wed, May 18, 2016 – 1:00 pm to 4:00 pm, EDT

## ASHRAE HVAC Design Training

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### **HVAC Design: Level II – Applications** - Registration is \$854 (\$699 ASHRAE Member)

*HVAC Design: Level II — Applications* provides instruction on HVAC system design for experienced HVAC designers and those who complete the HVAC Design: Level I – Essentials training. The training provides information that allows practicing engineers and designers an opportunity to expand their exposure to HVAC systems design procedures for a better understanding of system options to save energy.

Visit [www.ashrae.org/hvactraining](http://www.ashrae.org/hvactraining) to register.