Topic

Operational Design and Effective Capital Investment through Intelligent Building Performance

Speakers

Paul Silverthorne, P.Eng.
and
Peter Horvatis
Dimax Performance

Meeting - Wed Nov 21/2012

WESTERN FAIR DISTRICT
London

5:30pm Social  6:00pm-Dinner
7:00pm to 8:00pm - Program

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

$50 Nonmembers and Guests
$50 CASH AT DOOR (if not preregistered)
$40 London Chapter Member or $250.00 for meal plan
$10 for Students
**Presidents Message**

I would like to start off and thank all the students who came out to last month's meeting at Windermere Manor which was our first student night of the ASHRAE year. I would also like to thank Karman Siddiqui for speaking on the new Master's program being offered at Western University.

This month our meeting is going to be a week early on Nov 21st and for the first time we will have our meeting at Western Fair - Yuk Yuk's Buffet Room. Our speakers this month are Peter Horvatis and Paul Silverthorne from Dimax Performance and they will be speaking on "Operational Design and Effective Capital Investment through Intelligent Building Performance". We will also be visited by our Region II – DRC – Isabelle Laviole, who will speak to the chapter during our business session.

November will also be our Research Promotion night so we will get an update from our RP Chair Jason Vandenberghe.

We have scheduled a busy second half to the ASHRAE 20122013 year. We have some great speakers lined up and we are also going to continue changing the location of the monthly meetings so keep an eye on the newsletter for the set location of each month’s meeting. We are also working to arrange a technical tour in the second half at the new Ivey Building at Western.

I also want to mention that the annual ASHRAE Winter meeting is in Dallas this year and will run from Jan 26-30 and the AHR Expo will open on Jan 28-30 for all those who are considering attending. This will also result in our January meeting being moved up 1 week to Jan 21 to accommodate anyone wishing to attend the AHR in Dallas.

Just a reminder that there is no December meeting.

I look forward to seeing all of you at the Western Fair on Nov 21st.

Karl Gilroy  
Kgilroy@ehpricesales.com  
ASHRAE London (116) Chapter President 2012-2013

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**Upcoming Meetings**

**January 21, 2013** (moved up from the 28th due to ASHRAE Winter Meeting)  
Speaker: Frank Shadpour, P.E – SC Engineers, Inc., Distinguished Lecturer  
Topic: Rule of Thumb Checks for HVAC DDC Open Systems - Practical Examples & Rule of Thumb Checks  
OR  
Using DDC Systems as a Tool for Commissioning Sustainable Buildings

**February 25, 2013**  
Speaker: Tim McGinn, P.Eng, Partner, DIALOG, Calgary, AB  
ASHRAE Distinguished Lecturer, Participant of 2012 Webcast  
Topic: Low Impact Mechanical Systems

**March 25, 2013**  
Speaker: Andrew Bonnema, Somers Environmental  
Topic: Commercial and Industrial gas venting systems in ON

**April 18, 2013**  
1:00 - 4:00pm  
Webcast: Assessing Building Energy Performance: From Principles to Practice

**April 22, 2013**  
Technical Tour – New Ivey Building
**TOPIC**

Can greater clarity of HVAC operations improve management decisions?

In today’s highly complex world of real estate and facilities management, building managers must deal with an overwhelming number of issues related to the management of their heating and cooling equipment, including:

- Lowering operational costs
- Increasing asset value
- Improving tenant satisfaction
- Understanding all of the new technology options available
- Delivering enhanced environmental performance

How does a building manager make sense of the often confusing and incomplete technical and operational data that inundates them from subcontractors, equipment suppliers, consultants, utilities, and their own building operating systems?

Building managers need intelligent tools to help them convert this data into management information so that they can make more informed decisions around the operation of their facilities. Decisions that will ultimately drive improved performance regarding:

- Energy
- Maintenance and Repair
- Capital Renewal

**Speaker Bio’s**

**Paul Silverthorne, P.Eng.**

In a career spanning more than 4 decades, Paul has acquired a high level of expert knowledge on how to optimize HVAC operations. In his early career as a practicing consultant with Griffis Associates, H. H. Angus and Associates and Engineering Interface, he developed a strong foundation in mechanical and HVAC engineering principals, which has driven the evolution of intelligent tools to help building managers drive the overall performance of their facilities.

Paul earned a Bachelor of Applied Science from the University of Toronto and is a registered Professional Engineer. Paul has been a member of ASHRAE since 1970, and has published numerous articles related to improving operational performance of HVAC equipment and building systems.

**Peter Horvatis**

With over 25 years of experience in the commercial and corporate real estate industry, with past tenures at SNC-Lavalin O&M, CB Richard Ellis and O&Y Enterprise, Peter’s responsibilities have included developing strategic solutions and business partnerships in the areas of Facilities Management, Project Management, Finance and Accounting, Human Resources and Information Technology. Through this wealth of knowledge and experience Peter understands and appreciates the challenges facing real estate owners and managers, and has the ability to analyze and deliver new and innovative solutions to improve building performance and asset value.

Peter earned an MBA from the Schulich School of Business and an Honors Business Administration from the Richard Ivey School of Business.

**MEMBERSHIP**

If your Society payment was due this past summer, be sure to get your payment to ASHRAE Society. The recent handbook was set to all paid members in Aug. If you need to check on your membership status, use the www.ashrae.org web site to login or contact me.

MIKE PILUK
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ASHRAE LONDON CANADA - Membership Chair
NEW PAYMENT OPTION

The chapter is trying out using PAYPAL for meeting payments. This will allow you to use a credit card to pay before the meeting and will assist in getting a count for room set. Please use the system to register and pay before the meetings.

FREE ASHRAE WEBCAST

SAVE THE DATE - April 18, 2013  1:00 pm - 4:00 pm EDT

Assessing Building Energy Performance:
From Principles to Practice

This webinar will feature industry experts who will explain the importance of building energy performance and its far-reaching implications in both new and existing buildings. Viewers will also learn about the various tools and approaches that are available, as well as the many opportunities that assessing building energy performance presents.

This FREE webinar program will broadcast live via the internet.

Visit www.ashrae.org/ABEPwebcast for additional information about the program, sponsorships, continuing education credits, speakers, and registration.

Upcoming Distinguished Lecturer Coming to London Canada Chapter

On February 25th, we are pleased to be hosting Tim McGinn, P.Eng, an ASHRAE distinguished lecturer.

Tim was a participant in the panel that presented the 2011/2012 ASHRAE webinar.

Mr. McGinn is a LEED Accredited Professional and graduated with Electrical and Mechanical Engineering Degrees from University of Saskatchewan with twenty five years experience as a consulting engineer.

BE SURE TO MARK YOUR CALENDAR - Monday Feb 25/2013

ASHRAE Winter Conference - Dallas  Jan 26 to 30/2013

Over 1,700 companies have reserved more than 365,000 square feet of exhibit space, making the 2013 Expo the largest HVAC&R exposition ever held in the Southwest. Last year, the AHR Expo held in Chicago set new all time attendance records. We hope to see that same enthusiasm and interest at this year’s Expo. The Expo allows you to see, touch and compare the newest products representing the most innovative technology in the HVACR marketplace. In addition to exhibitors from around the world, the Show features special product sections, as well as New Product & Technology Theaters where you will find dozens of presentations on the latest products and solutions from participating exhibitors. The Expo takes place Jan. 28–30 (starting two days later than the Conference) at the Dallas Convention Center.

The ASHRAE Conference features a strong Technical Program with numerous technical tracks, some of which focus on HVAC&R systems and equipment, energy efficiency and energy modeling application, to name just a few. Nearly the entire technical program is approved for NY PDHs, AIA LUs and LEED® AP credits. To encourage attendance at the ASHRAE Conference, first-time Conference attendees receive a discounted early bird rate of $320 for the entire Conference. Registration information can be found at  www.ashrae.org/Dallas
Lighting. Equipment Efficiency Changes to Energy Standard Open for Public Comment

ATLANTA Proposed changes to the ASHRAE/IES energy standard would improve lighting and equipment efficiencies. Seventeen addenda to ANSI/ASHRAE/IES Standard 90.1-2010, Energy Standard for Buildings Except Low-Rise Residential Buildings, are currently open for public review. For more information, visit www.ashrae.org/publicreviews.

Among them are five proposed changes related to HVAC&R equipment efficiencies. These include addendum bp, which would add minimum efficiencies for evaporative condensers used in ammonia based refrigeration systems, and updates references to cooling tower standards published by the Cooling Technology Institute.

“The scope of Standard 90.1 was expanded in the 2010 edition to cover many new building types, including supermarkets and cold storage warehouses,” Frank Morrison, committee member, said. “As part of this expanded scope, the 90.1 committee worked with stakeholders to establish minimum efficiencies for evaporative condensers often used in the ammonia refrigeration systems found in these facilities.”

Specifically, the proposed requirements of addendum bp will help users to select energy efficient evaporative condensers as well as encourage manufacturers to develop more energy efficient designs in the future. It is also anticipated that future editions will incorporate requirements for an independent, third-party thermal performance certification program for evaporative condensers, which has proven successful for both open and closed circuit cooling towers.

The other addenda related to equipment efficiencies are:
- Addendum bi, which would harmonize the minimum energy efficiencies of 3-phase air-cooled commercial air conditioners and heat pumps less than 65,000 Btu/h with the efficiencies adopted by the U.S. Department of Energy (DOE) for residential central air conditioners. 
- Addendum bj, which would re-establish the product class for small duct high velocity air conditioners and heat pumps. The minimum energy efficiency levels proposed are 11 seasonal energy efficiency ratio (SEER) for air conditioners and 11 SEER/6.8 heating seasonal performance factor (HSPF) for heat pumps which are identical to the efficiencies established by DOE for single-phase residential small duct, high velocity (SDHV) products.
- Addendum bk, which would amend the minimum energy efficiency requirements for standard-size packaged terminal air conditioners and raises the minimum energy efficiency ratio (EER) to the same level as the packaged terminal heat pumps. This new minimum efficiency will become effective on Jan. 1, 2015.
- Addendum bo, which would modify service water heating efficiency requirements in Standard 90.1 for electric water heaters, heat pump pool heaters and oil storage water heaters.

Also among the proposed changes to the standard is addendum bh, which would modify the long-standing interior space-by-space lighting power density (LPD) tables for a variety of purposes, according to Eric Richman, chair of the lighting subcommittee. This includes an adjustment to some of the space type LPDs (some go up and some go down) based on the light level design recommendations found in the new 10th edition Lighting Handbook published by the Illuminating Engineering Society (IES).

The addendum also introduces a set of LPDs for specific spaces that are predominantly occupied by seniors in permanent living facilities. These new LPDs will partially address increasing aging population issues to ensure that these spaces receive appropriate allowances for the needs of the ageing eye. The revision also adds several new generic space type listings, including copy rooms and computer rooms, to address suggestions from users that some common items were missing.

Other addenda currently open for public review are addenda ac, bg, bi, bn, bq, bt, bu, bv, bw, bx and br.

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Additional Compliance Path Proposed for ASHRAE/IES Energy Standard

ATLANTA A proposed optional third path for compliance with the ASHRAE/IES energy standard would provide more flexibility for the industry. Addendum bm to ANSI/ASHRAE/IES (Illuminating Engineering Society) Standard 90.1-2010, Energy Standard for Buildings Except Low-Rise Residential Buildings, is currently open for public review from Oct. 12 until Nov. 26, 2012. For more information, visit www.ashrae.org/publicreviews. The proposed addendum would add a compliance path to Standard 90.1 to allow modeling in accordance with Appendix G (Performance Rating Method), provided the percentage improvement of at least 45 percent over a baseline design. In addition, this addendum proposes to make the baseline consistent with the prescriptive requirements of 90.1-2004, and it will remain that way in future versions of the standard. The current paths in the standard—the Energy Cost Budget method and the Performance Rating Method—can lead to different modeling protocols for different functions, according to Michael Rosenberg, a member of the Standard 90.1 committee. All require slightly different rules, and a single project could require two or more different baselines.

“By allowing an additional compliance option, the standard provides more credit for integrated design resulting in energy savings such as efficient use of building mass, optimized building orientation, efficient HVAC&R system selection and right sizing of HVAC&R equipment,” Rosenberg said.

The baseline could stay the same for beyond code programs as well such as the U.S. Green Building Council’s (USGBC) Leadership in Energy and Environmental Design (LEED®) rating program, ANSI/ASHRAE/USGBC/IES Standard 189.1, Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings, and the federal tax incentive programs. Each simply chooses their own “% better than” target, according to Rosenberg.

“In addition, the performance path will no longer lag behind the prescriptive path as in the past it was not possible to incorporate prescriptive changes that occurred near publication date into the performance path,” he said. “It also allows for a deliberate and consistent trend for energy reduction in each version of the standard, instead of just following the prescriptive path.”
ASHRAE, AHR Expo Return to Dallas, Texas for 2013 Winter Conference

ATLANTA—Deep in the heart of Texas, where the stars at night are big and bright, ASHRAE is convening for its 2013 Winter Conference to corral energy use and blaze the way in high performing building design.

The 2013 Winter Conference takes place Jan. 26-30 at the Sheraton Dallas. To register and for complete Conference information, visit www.ashrae.org/dallas.

The International Air-Conditioning, Heating, Refrigerating Expo®, held in conjunction with the Winter Conference, will run Jan. 28-30. The Expo, www.ahrexpo.com, is held at the Dallas Convention Center.

In keeping with ASHRAE’s goal of continuing education the Conference offers some 200 Professional Development Hours, as well as Continuing Education Units, which can be applied toward a professional engineering license.

The technical program features more than 200 sessions addressing energy conservation; facility management: operations, technology and energy improvements; large building design; standards, guidelines and codes; HVAC&R systems and equipment; HVAC&R fundamentals and applications; and refrigeration. One particular track of note is Industrial and Transportation Ventilation, focusing on the industrial and manufacturing sector prevalent in Texas. The full Technical Program offers the opportunity to earn a year’s worth of PDHs, NY PDHs, AIA LUs and LEED AP credits and runs Jan. 27-30.

Five Professional Development Seminars and 15 Short Courses are offered to help industry professionals stay current on HVAC technology, including how to apply the newest ASHRAE standards. The ASHRAE Learning Institute (ALI) is offering five new half-day short courses on everything from the basics of laboratory design to techniques for optimizing HVAC systems and components. The full-day professional development seminars focus on the commissioning process; data center energy efficiency; healthcare facilities; complying with Standard 90.1-2010 and energy modeling best practices. ALI courses are approved for renewal of professional engineer and professional architect licenses, as well as for industry certification programs. www.ashrae.org/Dallascourses.

The Conference’s Plenary will feature former Pittsburgh Steelers quarterback Rocky Bleier. Despite being wounded in both legs during the Vietnam War, he embarked on a two-year road to recovery, and eventually pressed on to become one of the Steelers’ top leading ground-gainers, passing the 1,000-yard rushing mark in one season, and contributing to four Super Bowl victories. Bleier’s speech, “Be the Best You Can Be,” motivates audiences to keep on striving for greater accomplishments. He shares his remarkable story during the Plenary, 3:15 p.m., Saturday, Jan. 26.

Additionally, ASHRAE offers a special administration of all six certification examinations on Wednesday Jan. 30: Building Energy Assessment Professional (BEAP), Building Energy Modeling Professional (BEMP), Commissioning Process Management Professional (CPMP), High-Performance Building Design Professional (HPBP), Healthcare Facility Design Professional (HFPD) and Operations & Performance Management Professional (OPMP). ASHRAE’s certification program recognizes industry professionals who have mastered knowledge and skills reflecting best practices in certain aspects of building design and operations. More information on each certification can be found at www.ashrae.org/certification.

ASHRAE Conference technical tours give you a first-hand look at technology developed by members to further the industry. Tours include the Southern Methodist University, the Baylor Charles A. Sammons Cancer Center and Cowboys Stadium.

ASHRAE, founded in 1894, is a building technology society with more than 50,000 members worldwide. The Society and its members focus on building systems, energy efficiency, indoor air quality, refrigeration and sustainability within the industry. Through research, standards writing, publishing and continuing education, ASHRAE shapes tomorrow’s built environment today.
Mandatory Commissioning for All Buildings Proposed for Green Building Standard

ATLANTA Commissioning for all buildings designed and built under a green building standard from ASHRAE, the U.S. Green Building Council (USGBC) and the Illuminating Engineering Society (IES) would become mandatory under a new proposal open for public input. ANSI/ASHRAE/USGBC/IES Standard 189.1-2011, Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings, provides a design standard for those who strive for high performance buildings. It covers key topical areas of site sustainability, water-use efficiency, energy ef- ficiency, indoor environmental quality and the building’s impact on the atmosphere, materials and resources.

Proposed addendum p would remove the “Acceptance Testing” provision (Section 10.3.1.1Building Acceptance Testing) for small buildings. The proposed addendum is open for public review from Oct. 19-Nov. 18, 2012. To comment on the proposed changes or for more information, visit www.ashrae.org/publicviews. Currently the standard implies that when a building area is less than 5,000 square feet it is considered to have simple building systems, and thus requires a reduced level of commissioning effort, referred to as Acceptance Testing, according to Jeff Ross-Bain, a member of the Standard 189.1 committee. However, building area does not relate to complexity as many buildings less than 5,000 square feet can be complex.

Under the proposed addendum, building commissioning per Section 10.3.1.2 becomes mandatory for all buildings that are designed and built under the requirements of the standard.

"Commissioning is a robust and well supported discipline with established guidelines (ASHRAE and others), a long history of use and with many practitioners," he said. “The commissioning process is one that adapts to the specific attributes of a given building. A ‘simple’ building would only require ‘simple’ commissioning regardless of size.”

Ross-Bain noted that “Acceptance Testing” is not a universally defined activity nor does there appear to be specific instructions or guidelines within the industry detailing how this activity is formally completed. Also, a review of the mandatory requirements of Standard 189.1 could be interpreted as producing a relatively complex building (i.e. consumption measurement, on-site renewable energy, daylighting control, outdoor air delivery monitoring, economizers, condensate recovery, etc.), which requires a higher degree of commissioning activity.

Finally, under the current “Acceptance Testing” section, Standard 189.1 would not meet the minimum commissioning prerequisite of the Leadership in Energy and Environmental Design (LEED) rating system, which requires all buildings to undergo the commissioning process.

Developed by ASHRAE, ASPE, AWWA, USGBC

Water Conservation Standard Opens for First Public Comment

ATLANTA With HVAC&R systems accounting for approximately a third of water consumption in a typical office building, the need to minimize water usage is a major consideration in the built environment industry.

A standard to provide baseline requirements for the design of buildings, site and mechanical systems is being developed by ASHRAE, the American Society of Plumbing Engineers (ASPE), the American Water Works Association (AWWA) and the U.S. Green Building Council (USGBC).


“Water efficiency and conservation is a critical factor in the design and operation of buildings,” John Swift, chair of the committee writing the standard, said. “Buildings consume 20 percent of the world’s available water, a resource that becomes scarcer each year. Efficient practices and products provide opportunities to save significant amounts of water. The reduction of energy use and operating costs and the expectation of increased government regulation will continue to drive faster adoption of water-efficient products and methods.”

The requirements in the standard would optimize the volume of water required to operate HVAC systems, plumbing systems and irrigation systems. There is currently no standard document that adequately and comprehensively addresses the issue of how to efficiently use water in the design, construction and operation of buildings, according to Swift.

The proposed standard covers HVAC&R and non-HVAC&R systems including: evaporative heat rejection, humidification systems, thermal storage, ground source pump systems, water heating systems, laboratory facilities and residential appliances. It would not apply to storm water management.

The standard will provide the tools that a design team needs to properly apply water efficiency measures on all aspects of a building design and construction project. In order to optimize water efficiency in buildings, plumbing, fire protection and HVAC&R engineers must work closely with civil engineers and landscape architects in putting together a functional building mechanical system.
ASHRAE to Hold “Breaking News” Standards Update at 2013 Winter Conference

ATLANTA “Extra! Extra! Hear All About It!” Attendees at ASHRAE’s 2013 Winter Conference will be the first to learn about the latest goings-on related to Society standards as part of the technical program. The 2013 Winter Conference, www.ashrae.org/dallas, takes place Jan. 26-30 at the Sheraton Dallas. The International Air-Conditioning, Heating, Refrigerating Expo® (AHR Expo), www.ahrexpo.com, held in conjunction with the Winter Conference, runs Jan. 28-30 at the Dallas Convention Center. The technical program features more than 200 sessions and offers the opportunity to earn a year’s worth of PDHs, NY PDHs, AIA LUs and LEED AP credits and runs Jan. 27-30.

Among the sessions is a seminar, “Conference Breaking News on Standards 90.1, 62.1 and 189.1,” 2:30 4 p.m. Monday, Jan. 28. Updates on the activities of the committees overseeing Standards 90.1 (ANSI/ASHRAE/IES Standard 90.1-2010, Energy Standard for Buildings Except Low-Rise Residential Buildings), 62.1 (ANSI/ASHRAE Standard 62.1-2010, Ventilation for Acceptable Indoor Air Quality) and 189.1 (ANSI/ASHRAE/USGBC/IES Standard 189.1-2011, Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings) will be shared by the committee chairs. “The track deals with two well known and pervasive standards in our industry,” Jon Cohen, who is chairing the track, said. “The third is a newer standard that has seen instant recognition and popularity, especially in light of our industry trend toward sustainability and net zero buildings. The fourth presentation goes hand in hand with the three standards. There are always advantages and disadvantages to achieving efficiency. Sometimes they must be weighed against each other. No matter what the decision, understanding consequences is important in design.”

Wade Conlan, a member of ASHRAE’s Conference and Exposition Committee who serves as technical chair for the Conference, said the goal in scheduling the program was twofold. “We wanted to provide a ‘breaking news’ program for the attendees as the presenters are talking about the latest and greatest changes/updates to the standards in a single program,” he said. “We also wanted to provide something that attendees can take back to their employers that will be as current as if you were on the committees.”

Presentations and speakers are:
- Standard 189.1, Dennis Stanke, Trane, La Crosse, Wis.

The session is part of an overall track dedicated to standards, guidelines and codes.

“The track highlights an extremely important aspect of ASHRAE, the development of standards,” Cohen said. “The track is not exclusive to ASHRAE standards, as other industry standards are important to our membership, but ASHRAE standards are an important and highly publicized portion of the Society.”

Other sessions in the track are:
- Forum: “Energy Monitoring of Systems and Equipment in ASHRAE Standards 90.1 and 189.1: How Far Should Building Codes Go?” 9:45-10:45 a.m., Jan. 28. Standard 189.1-2011 includes mandatory requirements for measurement devices with remote communication capability for energy sources above specified thresholds. Starting in 2013, Standard 90.1 will also require submetering of specific equipment or systems, but its provisions are based on different criteria and thresholds. This forum seeks input on issues related to energy consumption management in ASHRAE standards.
- Seminar: “How Federal and State Energy Policy Impact ASHRAE Members,” 2:30-4:30 p.m., Jan. 28, examines how federal and state government energy policy impacts ASHRAE and its members’ work on a day-to-day basis and the ways in which members may participate more fully in the crafting of laws and regulations guiding the HVAC&R field.
- Forum: “Specifying BAS Networks and Integration: Ensure that Guideline 13 Provides the Guidance You Need!,” 9:45-10:45 a.m., Tuesday, Jan. 29. Guideline 13, Specifying Direct Digital Control Systems, provides recommendations for specifying building automation systems, as well as recommendations for specifying integration of other building systems into a building automation system. Since this Guideline was originally published, the landscape of networks and integration has changed significantly as existing technologies and architectures have matured and additional system architectures have emerged. The committee updating Guideline 13 is seeking to provide better and more current guidance for specifying BAS network infrastructure and integration.
- Seminar: “Energy Benchmarks: Setting Standards or Feeding Fantasies?” 11 a.m.-12:30 p.m., Jan. 29. This seminar presents aspects of energy benchmarks that reflect their evolution, their perception, their fiscal value and their application in the fairly mature, and increasingly congested, European market.
- Seminar: “Modeling SEER Rated Equipment,” 9:45-10:45 a.m., Jan. 30. The Performance Rating Method of Standard requires the modeling of seasonal energy efficiency ratio (SEER) rated equipment in various baseline systems types. This can create issues if your modeling software does not accept SEER as an explicit input. What is SEER and how is it defined? Is there a conversion between SEER and energy efficiency ratio (EER)? The presentation and speaker is Modeling Part-Load Performance for SEER Rated Equipment, Duncan Synan McClellan, P.E., Clark Nexsen, Norfolk, VA.