

# THE HOT AIR DIFFUSER

## Chapter Newsletter

SEPTEMBER 2014 Volume 20 Issue 7



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## CHAPTER MEETING

### SEPTEMBER:

#### Topic: Practical Noise Control—Avoiding Sound Traps

Earl Mullins, PE (mechanical) will talk about the practical aspects of noise control. He has been an acoustical consultant for 30 years now, and has worked on more than 2100 different major and minor projects around the western US and around the world.

Learn about commonly tried sound reduction techniques that accomplish little or nothing. You will be able to apply information from this talk to your current work. Also feel free to bring specific questions about a current noise problem you are encountering. We start with the "how" and "why" of sound production and sound transmission, then cover the basic principles of noise control, and explain some of the industry jargon. We finish with case studies of some real-world projects, describing the noise control solutions that were used. This is a technical presentation about noise control, not a sales pitch for any particular product. You will leave with a better understanding of noise control principles, and hopefully enough knowledge to avoid making the most common errors. There is great value in simply knowing when to ask questions about noise. The program always includes a few minutes for Q & A. Program length including Q&A typically runs 55-60 minutes.

#### MULLINS ACOUSTICS



#### When:

Wednesday, September 10<sup>th</sup>, 2014  
11:45am to 1:00pm MST

#### Where:

Idaho Power Building  
1221 West Idaho Street  
Boise, ID 83702

Please Register online at:

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

ASHRAE, founded in 1894, is an international organization of some 50,000 persons. ASHRAE fulfills its mission of advancing heating, ventilation, air conditioning and refrigeration to serve humanity and promote a sustainable world through research, standards writing, publishing and continuing education.

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# HISTORY LESSON

## September

### Five Years Ago

The chapter president was Spencer Shepard. The meeting was held on September 11, 2009, at the new FAA tower at the Boise airport. YMC Mechanical conducted a tour of the new FAA tower.

### Ten Years Ago

The chapter president was Tony Sutton. The meeting was held on September 10, 2004, at the Double Tree Riverside. Joe Stagg gave a presentation on pipe expansion.

### Fifteen Years Ago

The chapter president was Ben Strawn. The meeting was held on September 10, 1999, at the Double Tree Riverside. The program was a recap of the Billings CRC and awards presentations.

### Twenty Years Ago

The chapter president was Bruce Cleveland. The meeting was held on September 9, 1994, at the Red Lion Riverside. The program is unknown.

### Twenty Five Years Ago

The chapter president was Dave Musgrove. The meeting was held on September 8, 1989, at the Kings Table Restaurant. The presentation was a slide show developed by ASHRAE on ozone depletion and CFC's.



## PRESIDENT'S WELCOME MESSAGE

Hello All,

I hope everyone has had a productive and relaxing summer. As the incoming President of our chapter I would like to start by thanking Dennis Fox, last year's President, for all his hard work and this continued commitment to helping the chapter. I would also like to thank Russ Pratt for taking the role of President Elect, and of course all the officers and BOG members. Please refer to the table below for this year's officers and board of governor (BOG) members.

Just a few weeks ago I was in Wichita, Kansas for our Region IX Chapter Regional Conference (CRC). Also attending was Dennis Fox as our Chapter Delegate, and Cory Law as the Region Alternate for the Nominating Committee. If you have never been to a CRC, I would encourage you attend. In part, it's the place to learn about the internal operations of the region and how to operate and improve the local chapter. I have returned from the CRC with renewed energy and optimism for this coming year. With the help of our BOG and you the members I hope to increase the value you get from ASHRAE by expanding our educational offerings and increasing member participation. With regard to our educational offerings, Randy Reed is this year's Chapter Technology Transfer Chair (CTTC). Randy has almost filled the calendar for our normal chapter meetings and the topics look exciting. We will be kicking off on September 10 at the Idaho Power building with a talk on acoustical issues in mechanical systems. In addition to our chapter meetings, I am proposing two evening educational talks accompanied by a social hour. These talks will be about two hours long and offer a more in-depth learning opportunity than we have at our lunch meeting. I have some ideas for topics but I would love to hear your ideas, not only for the evening talks but also for our annual Technical Conference, which will be on April 10<sup>th</sup> this year. With regard to increasing member involvement I look to you, the active member, who is still reading this address (thanks!). I would like to instill a culture of bringing a less active or new member to the chapter meetings. In talking with some of our local firm owners, they support ASHRAE, but feel requesting employees to become involved crosses an employee/employer line. So I ask that you the employee, encourage your fellow employees, friends, vendors, colleagues to come to a meeting with you. Another way I would like you to get more involved is around the President's Award of Excellence (PAOE). PAOE is a systems that the national office uses to help gauge how successful, active and effective our chapter is. Points aside, PAOE is really just a big list of activities that chapters should be doing to be successful. During the year, I will be using the newsletter to request member feedback on activities you have done. A small set of examples include: presenting engineering topics to school kids, attending national meetings, being on a technical committee, or for taking part in the Building Energy Quotient (bEQ) program. So during the year, look for requests related to PAOE points and let us know how you have been active in our society.

Lastly with regard to member involvement, please take a look at the list of Officers and Board of Governors members below. We are looking for co-chair positions and it a great way to become more involved. If you would like to get more involved, let one of us know.

Thanks, and I hope to see you at the meeting on September 10.

Brad Acker

President, Idaho ASHRAE

# NEWS FROM THE HOME OFFICE

## Papers Sought for International Conference on Energy and Environment in Ships

**ATLANTA**— Papers are being sought for a conference on ships and on land facilities that focuses on the state of the art and challenges related to environment, HVAC, energy security and health and safety among other topics.

Organized by ASHRAE, the Hellenic Navy, the Technical Chamber of Greece and the ASHRAE Hellenic Chapter, the International Conference on Energy and Environment in Ships takes place May 22-24, 2015, in Athens, Greece.

Abstracts (400 words in length) are due Oct. 13, 2014. If accepted, papers are due Jan. 26, 2015. Submittal information can be found at [www.ashrae.org/Ships2015](http://www.ashrae.org/Ships2015).

The Conference presents a comprehensive overview of the areas relevant to military and commercial ships.

The conference seeks to bring together the various professions in the shipping industry, operators, managers and technical personnel, according to Dimitris Charalambopoulos, conference chair.

“This conference will be the first of its kind to draw up the strong links to the Hellenic Navy, the shipping and the engineering community,” he said. “Attendees can expect to see current practices, new approaches, methodologies, technologies and identify areas of improvement.”

Topics include but are not limited to:

- Environmental Management
  - Working and living spaces in buildings and ships. IAQ, HVAC, smoke management, filtration, lighting Insulation, vibration and human comfort
  - Cargo spaces. HVAC, refrigeration, lighting, insulation and vibration
  - Harbor. Port reception facilities, pollution and noise pollution
  - Fuel storage tanks
  - Management of hazardous materials
  - Waste management and disposal
  - Social and Financial Impact
- Environmental Impact Assessment
  - Environmental footprint
  - Renewable energy sources

- Slow steaming
- Net zero energy and water use
- Energy Security and Power Safety
  - Crisis management
- Sustainability and Recycling
  - Working fluids
  - Low temperature heat utilization
  - Advanced paints
  - Alternative fuels
- Commissioning, Retro-commissioning, Operations and Maintenance
- Health and Safety
- Standards and Legislation
- Knowledge Gathering, Diffusion, Training and Education

## New Course on Building Demand Response and Coming Start Grid Offered by ASHRAE

**ATLANTA**— Peak demand management and response is a critical factor as most developed countries move toward a national smart grid, which will help provide a reliable and secure infrastructure that can meet future demand growth as well as more effectively integrate distributed renewable energy systems from photovoltaics and wind power.

“Peak demand management and response are becoming more important in building systems and their control,” Tom Lawrence, course instructor, said. “While demand management may not have much impact on the individual building total energy use, it may well be an effective tool for cost savings on electric utility bills. It also is vital for overall societal energy and environmental management. Thus, the considerations go beyond just one building’s energy cost and utilization.”

A new ASHRAE Learning Institute course, Building Demand Response and the Coming Smart Grid, addresses new technologies and design concepts that are leading the way to how buildings and their systems will interact with a coming smart electrical grid. The course is part of the ALI Fall Online series.

Demand response is the process a building, industry or residential electric consumer would use to reduce electricity use during peak demand periods on the electric grid. Lawrence points out that examples for demand response measures include changing set points for building air conditioning or chilled water systems, reduction in unnecessary lighting, selectively shutting off plug loads not currently in use, etc.

## NEWS FROM THE HOME OFFICE CONTINUED...

*Performance, Green Buildings Except Low-Rise Residential Buildings*, includes a requirement that the building be designed to have the capability of reducing peak electrical demand through active controls or other load-shifting measures by 10 percent of the building's projected peak demand. Similar requirements or incentives for demand response management are contained in the International Green Construction Code and with the latest version of the Leadership in Energy and Environment Design (LEED) program.

The course takes place Sept. 29. For registration costs and to register, visit [www.ashrae.org/onlinecourses](http://www.ashrae.org/onlinecourses).

The 13 ASHRAE Learning Institute fall online courses provide professional development through in-depth information that is timely, practical and targeted to provide engineers in consulting practices, facility management or supplier support with instruction on applying ASHRAE standards and employing new technologies essential for advanced building performance.

Course participants earn continuing education credits and qualify for Professional Development Hours for each course completed. Courses are instructor-led, drawing upon professional knowledge of leading practitioners.

Details on all the courses can be found at [www.ashrae.org/onlinecourses](http://www.ashrae.org/onlinecourses). The courses are:

- High-Performance Building Design: Applications and Future Trends, Sept. 8
- Air-to-Air Energy Recovery Applications: Best Practices, Sept. 10
- Complying with Standard 90.1-2013, Sept. 15
- Evaluation Methods for High-Performance Green Buildings, Sept. 22
- Fundamental Requirements of Standard 62.1-2013, Sept. 24
- Building Demand Response and the Coming Smart Grid, Sept. 29
- District Cooling and Heating Systems: Central Plants, Oct. 6
- Healthcare Facilities: Best Practices for Design and Applications, Oct. 8
- Maximizing Customer Benefits Using Key Electric Utility Products, Oct. 13
- Combined Heat and Power: Creating Efficiency through Design and Operations, Oct. 20
- Design of Commercial Ground Source Heat Pumps, Oct. 22
- Energy Efficiency in Data Centers, Nov. 3
- Commissioning for High-Performance Buildings, Nov. 5

- Exceeding Standard 90.1-2013 to Meet LEED® Requirements, Nov. 12

## ASHRAE Introduces New Strategic Plan at 2014 Annual Conference

**ATLANTA**— Major actions taken at ASHRAE's 2014 Annual Conference included introduction of its strategic plan, creation of a new indoor air quality alliance, and announcement of a milestone related to its research program and Foundation.

Some 1,700 people attended the Conference, held June 28-July 2 in Seattle, Wash.

During the Conference, ASHRAE introduced its newly adopted Strategic Plan. The plan's four strategic goals—connect, educate, extend, and adapt—serve as broad statements of what the organization most wants and expects to accomplish over the next several years. The goals are supported, in each case, by a handful of objectives that further define specific accomplishments to pursue within the plan horizon.

2013-14 President Bill Bahnfleth noted that the Society has had many significant accomplishments this year, but he views the most important one to be the new plan. The plan can be viewed at [www.ashrae.org/strategicplan](http://www.ashrae.org/strategicplan).

"Planning provides our map from the present to the future," Bahnfleth said. "In laying the ground-work for the new plan that can guide us over the next three to five years, we asked key questions of ourselves and others. Who are our members and what are their needs? How do we structure our Society to be truly global and financially sound? ASHRAE is a conservative organization and has a strong reputation and good financial health to show for it. However, there are times when we have to venture beyond certainties to meet new challenges and take advantage of critical opportunities. I believe we have been in such a period for nearly a decade. This plan allows us to be more proactive in shaping our future."

Coincidentally, Bahnfleth's father, Presidential Member Don Bahnfleth, oversaw creation of the Society's first strategic plan adopted in 1985. "We could not fully capitalize on the strength of our members' volunteer commitment if we did not provide a stable platform on which progress toward a collective goal could be built on from year to year," Don Bahnfleth said back in 1985 about the importance of planning.

The adoption of the new plan also shows how times have changed: the Society used ASHRAExCHANGE, its member-based social media platform, to engage the membership in discussion about the plan and how ASHRAE should evolve to meet industry and professional needs. ASHRAExCHANGE completed its first year of operation June 22, 2013, attracting 15,120 us-

## NEWS FROM THE HOME OFFICE CONTINUED...

users who generated a total of 80,082 page views, during that period. The Society also used its Association App to make attendees aware of the new plan.

In other news, it was announced that ASHRAE's 2013-14 RP campaign reached a new high of \$2.35 million donated by members, chapters and companies. ASHRAE RP Campaign funds are used to support ongoing research projects, ASHRAE Learning Institute, YEA Leadership activities and scholarships. In addition, the ASHRAE Foundation also surpassed a significant milestone -- more than \$10 million in funds and endowments. These funds are used to support the Society's scholarships and educational programs.

In addition, a memorandum of understanding creating the Indoor Environment Quality Global Alliance was signed. Other groups joining the Alliance are the American Industrial Hygiene Association (AIHA), Air Infiltration and Ventilation Centre (AIVC), the Air & Waste Management Association (A&WMA), the Indoor Air Quality Association (IAQA) and the Federation of European Heating and Air-Conditioning Associations (REHVA). The newly formed Alliance seeks to serve as a global source for information, guidance and knowledge on indoor environmental quality. More information can be found at [www.ieq-ga.net](http://www.ieq-ga.net).

The new president for 2014-15 is Thomas H. Phoenix, P.E., Fellow ASHRAE, ASHRAE-Certified Building Energy Assessment and Building Energy Modeling Professional, principal and vice president, Moser Mayer Phoenix Associates, Greensboro, N.C. His presidential theme is People, Passion, Performance. The speech is available at [www.ashrae.org/phoenix](http://www.ashrae.org/phoenix).

The Conference featured one Professional Development Seminar and seven Short Courses from ASHRAE Learning Institute. The most popular courses were "Commissioning for High-Performance Buildings," "Designing High-Performance Healthcare HVAC Systems," and "Exceeding Standard 90.1-2013 to Meet LEED® Requirements."

Best selling publications in the bookstore at the Conference included ASHRAE Green Guide, 4<sup>th</sup> ed., Pocket Guide, 8<sup>th</sup> ed.; District Heating and Cooling Guides Set; ASHRAE Guide for Buildings in Hot & Humid Climates, 2<sup>nd</sup> ed.; Standard 90.1-2013, *Energy Standard for Buildings Except Low-Rise Residential Buildings*; and the newly published Standard 90.1-2013 User's Manual; Guideline 13-2014, *Specifying Building Automation Systems*; and Guideline 0-2013, *The Commissioning Process*.

ASHRAE also offered its certification exams for the first time at an Annual Conference. Exams administered in Seattle were the Building Energy Modeling Professional and Building Energy Assessment Professional.

ASHRAE's 2015 Winter Conference takes place in Chicago, Ill., Jan. 24-28, at the Palmer House Hilton. Held in conjunction with the Winter Conference is the AHR Exposition, Jan. 26-28, at McCormick Place.

## ASHRAE, IAQA to Join Forces to Grow Resources for Indoor Air Quality Professionals

**ATLANTA**— ASHRAE and the Indoor Air Quality Association (IAQA) have agreed in principle to join forces, combining resources to improve indoor air quality in the built environment.

Pending a three to six month period of due diligence, IAQA will become a part of the ASHRAE organization while maintaining its own brand and Board of Directors. IAQA will operate independently within ASHRAE's organizational structure. Plans call for IAQA headquarters to relocate from Rockville, Md., to Atlanta, Ga., home of ASHRAE's international headquarters. The agreement was reached between the leadership of both associations and confirmed at ASHRAE's 2014 Annual Conference that concluded earlier this month in Seattle, Wash.

"This merger is beneficial to both ASHRAE and IAQA in that it strengthens the programs and services of both organizations," Tom Phoenix, ASHRAE president, said. "The work of IAQA complements the work of ASHRAE in its standards, research, publications and educational offerings. We now combine our resources to ensure the industry receives the best indoor air quality technical guidance and educational programs possible, which means improved indoor air quality for the world around us."

Among ASHRAE's major indoor air quality offerings are Standard 62.1, *Ventilation for Acceptable Indoor Air Quality*, and Standard 62.2, *Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings*, and publications such as the *Indoor Air Quality Guide: Best Practices for Design, Construction and Commissioning*. ASHRAE also recently announced the formation of the Indoor Environmental Quality Global Alliance, which included IAQA as a charter member. ASHRAE also has a strong research program related to indoor air quality with 10 current projects totaling \$2.8 million, representing 23 percent of ASHRAE's research budget.

"This merger allows IAQA to maintain its own brand while also providing its members with enhanced benefits and services," Kent Rawhouser, president of IAQA, said. "Our strong history of programs and products is expected to not only continue, but to grow as the merger allows us to take advantage of the resources and programs overseen by ASHRAE. Members of IAQA and ASHRAE will work collaboratively to strengthen indoor air quality programs for the industry, and most importantly, for the people who occupy homes and buildings around the world."

## NEWS FROM THE HOME OFFICE CONTINUED...

IAQA provides continuing education, conferences and expositions, certification programs, monthly webinars, technical publications and funds indoor air quality related research. IAQA subsidiary, Indoor Environmental Standards Organization (IESO), is an American National Standards Institute (ANSI) accredited standards developing organization focused on indoor air quality assessment, remediation and management of indoor environments.

ASHRAE and IAQA programs will be aligned to create high-impact resources for building professionals around the globe.

“Indoor air quality is vitally important to the health and welfare of people worldwide,” Phoenix said. “Air quality systems must work harmoniously with other systems in homes and buildings to ensure a healthy and sustainable built environment.”

### **ASHRAE/IBPSA-USA Building Simulation Conference Announces Preliminary Schedule**

**ATLANTA**— A preliminary schedule has been announced for the 2014 ASHRAE/IBPSA-USA Building Simulation Conference, Sept. 10-12, 2014, Atlanta, Ga. The Conference merges the ASHRAE Energy Modeling and IBPSA-USA SimBuild Conferences. In addition, the schedule of pre-conference courses has been finalized, and applications are now being accepted for student scholarships to attend the event.

“The Conference theme of ‘BIM, BEM and SIM – Integrated Building Design and Modeling’ focuses on workflow and integration,” Dennis Knight, Conference chair, said. “The papers and non-paper presentations selected for the Conference address these areas as well as innovations in modeling for the benefit of the energy modeling and building simulation industries.”

The papers and presentations are organized around the following topics:

- Urban Modeling
- State of the Art BIM
- Design Firms
- New Simulation Approaches
- BIM in the Cloud
- Codes and Rating Systems
- Life Cycle Cost Analysis

“Attendees will benefit by networking, by participating in numerous hands-on modeling and simulation presentations, and by seeing current tools available in the mar-

ketplace, their applications and workarounds,” Knight said.

In all, some 80 papers and some 80 non-paper presentations are slated to be presented.

A featured keynote speaker is Dru Crawley, Bentley, who is scheduled to deliver an address titled “BIM to SIM: Trends in Buildings, Technologies and Tools.” Additional keynote speakers are being identified.

A “Market-Reality Session - Modeling Tools” features major modeling and simulation vendors who will explain, defend and answer questions about their software’s capabilities. Confirmed vendors are: Autodesk, Carrier, EnergyPlus, IES, OpenStudio and Trane.

Early bird registration closes on July 24. For more information or to register, visit [www.ashrae.org/simulation2014](http://www.ashrae.org/simulation2014).

In addition, 12 courses and software training are scheduled prior to the Conference on Sept. 8-9. See the Web site for the course descriptions and registration.

Student scholarships are available to students and recent graduates to apply for support for registration, hotel and travel. The application cut-off is July 25, 2014. Visit [www.ashrae.org/simulation2014](http://www.ashrae.org/simulation2014) to submit a scholarship application.

A post-conference ASHRAE Building Energy Modeling Professional certification exam will be administered on Sept. 12. Separate registration is required.

## ADVERTISEMENTS

### **Online Advertising!!**

Get your business card posted on  
[www.idahoashrae.com](http://www.idahoashrae.com)

\*renewals are due now

Annual Business Card Ad on Website: **\$50**



### **Continuing Education Units**

Continuing Education Units (CEU) are now available at  
ASHRAE monthly meetings!





## **Building Simulation User's Group (BSUG) September Meeting**

**When:** September 24th @ 12:00pm—1:00pm MST

**Where:** Integrated Design Lab located on 306 S. 6th St Boise, ID

**Topic:** Rob Gugliemetti of NREL will be speaking on integration of physically-based lighting simulation with whole-building energy simulations.

\*Free lunch will be included if you RSVP by September 23rd.

\*Register @ <http://lime.idlboise.com/index.php/483822/lang-en>

\*Contact Katie Leichliter for more information @ 208-429-0220



# ASHRAE Building Energy Quotient (bEQ) Training



***Building Energy Quotient (bEQ) is a building energy rating program that provides information on a building's energy use.***

**If you see this mark, you are working with a bEQ Professional.**

This mark can only be used by individuals certified by ASHRAE as Building Energy Modeling Professionals or Building Energy Assessment Professionals. These individuals have earned the highest recognition of their ability to deliver one or both components of bEQ.

[www.buildingenergyquotient.org](http://www.buildingenergyquotient.org)



## **How to become a bEQ Professional?**

ASHRAE Utah is hosting two bEQ training sessions in Salt Lake City that will help you prepare for the bEQ exam and certification. Each session is 2 days and offered on Monday/Tuesday and Wednesday/Thursday. Testing will be offered on Friday for those interested in bEQ Certification at an extra cost.

"How to Make Existing Commercial Buildings More Efficient, Health & Comfortable" is a two day seminar that incorporates the technical retro-commissioning procedure in defining, analyzing and developing recommendations for a building owner to consider for not only quick fixes and no-cost/low-cost measures but also capital-intensive modifications that address the findings from the walk-thru, ASHRAE Level 1 energy audit activities.

**1<sup>st</sup> Day of Seminar** – Review of the following ASHRAE Publications, Standards and Programs: Procedures for Commercial Building Energy Audits, 2nd Edition, Energy Efficiency Guide for Existing Commercial Buildings: Business Case and Technical Implementation Publications, ASHRAE Standards 55, 62.1, 90.1 & 100, the ASHRAE Building Energy Quotient (bEQ) Program, and associated bEQ Worksheets.

**2<sup>nd</sup> Day of Seminar** – A site visit and walk-thru will be conducted in the morning by teams of seminar participants who will compile their discoveries and complete the bEQ Worksheets in preparation for a presentation to be made to the facility owner's representative during the afternoon session.

Date/Location: **Session 1** Monday-Tuesday, September 15-16, 2014  
(16 PDH Hrs) LDS Hospital, 8th Ave & C Street, SLC, UT  
Parking: Free (Parking Garage West Side of Hospital)

**Session 2** Wednesday-Thursday, September 17-18, 2014  
(16 PDH Hrs) VBFA Office, 330 South 300 East, SLC, UT  
Parking: \$5 per Day (Between 2<sup>nd</sup> and 3<sup>rd</sup> East, 300 South)

**Testing** Friday, September 19, 2014  
HR Block, 888 South 200 East, Salt Lake City, UT

Time: Both sessions 8am – 4pm

Cost: Sessions \$100 – includes light breakfast and lunch  
Testing ASHRAE Members \$295\*  
Non-ASHRAE Members \$415\*  
\* Separate registration required (see last line of e-mail)

**Presenter: Terry E. Townsend, P.E., Distinguished Lecturer**



Terry E. Townsend, P.E., Fellow ASHRAE, is president, Townsend Engineering Inc., Chattanooga, Tennessee, and Panama City, Florida. In 2006-07, he served as president of ASHRAE, where he focused the Society's efforts on The ASHRAE Promise: A Sustainable Future, highlighting ASHRAE's work in sustainability in the building environment. His achievements as president include launching ASHRAE's first ever certification program, accelerating and expanding the Advanced Energy Design Guide series, setting more stringent savings for ASHRAE's energy standard, and proving resources on how ASHRAE can minimize the impact of its meetings on the environment.

**PLEASE DO NOT REPLY DIRECTLY TO THIS E-MAIL**

**Limited Seating Available – RSVP for Seminar Today at: [bbirkes@vbfa.com](mailto:bbirkes@vbfa.com)**

*NOTE: RSVP will not be complete until payment received. Registration will be opened up to members of ASHRAE Region IX (11 State Area) on 8/21/2014.*

**Pay on the ASHRAE Utah Chapter Website <http://utahashrae.org/onlinestore/>**

**Register for Testing (\$295 ASHRAE Members / \$415 Non-Members) at: <https://xp20.ashrae.org/secure/certifications/computer/index.php?type=BEAP>**