

## THE RESEARCH & TECHNICAL ACTIVITIES REPORT

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FOR TC/TG/MTG/SSPC CHAIRS, VICE CHAIRS &  
RESEARCH SUBCOMMITTEE CHAIRS  
November 14, 2011

### 2011 FALL MEETINGS

The fall meetings of the Research Administration Committee (RAC), Technical Activities Committee (TAC), Technology Council, and the Board were completed recently.

### NEW PROJECTS AWARDED

The following three projects were approved for award as follows:

- **1458-TRP**, “*Modeling Person-to-Person Contaminant Transport in a Mechanical Ventilation Space;*” Responsible Committee: **TC 4.10** (Indoor Environmental Modeling); Co-Sponsor(s): None; Contractor: Building Energy and Environment Engineering LLP; Duration: 24 months; Cost to ASHRAE: \$116,245; Supports Research Strategic Goals: B3 (05-10) Plan
- **1504-TRP**, “*Extension of the Clothing Insulation Database for Standard 55 and ISO 7730 to Provide Data for Non-Western Clothing Ensembles, including Data on the Effect of Posture and Air Movement on that Insulation;*” Responsible Committee: **TC 2.1** (Physiology and Human Environment); Co-Sponsor(s): None; Contractor: Loughborough University; Duration: 15 months; Cost to ASHRAE: \$139,914; Supports Research Strategic Goals: A5, B1, B2 (05-10) Plan
- **1592-TRP**, “*CHP Design Guide – Update to the Cogeneration Design Guide;*” Responsible Committee: **TC 1.10** (Cogeneration Systems); Co-Sponsors: None; Contractor: Exergy Partners Corporation; Duration: 12 months; Cost to ASHRAE: \$65,000; Supports Research Strategic Goals: C6 (05-10) Plan

### PROJECTS THAT FAILED TO BE FUNDED BY COMMITTEE VOTE

- **1499-RP**, “*The Effect of Humidity on the Reliability of ICT Equipment in Data Centers;*” Responsible Committee: **TC 9.9** (Mission Critical Facilities, Technology Spaces and Electronic Equipment); Co-Sponsor(s): SSPC 90.1; Contractor: Missouri University of Science and Technology; Duration: 18 months; Cost to ASHRAE: \$200,000; Supports Research Strategic Goals: A6, D1 (05-10) Plan. Status: ASHRAE Board declined to accept substitute agreement proposed by contractor in place of ASHRAE model research agreement. Project will be rebid in spring 2012 and all previous bidders will be invited to bid again.

### PROJECTS PENDING AWARD

Proposals for the following tentative research project (TRP) and unsolicited research proposals (URPs) were received in the last six months, but a funding decision could not be made at this meeting for the following reasons:

- **1603-TRP**, “*Role of HVAC Systems in the Transmission of Infectious Agents in Buildings and Intermodal Transportation;*” Responsible Committee: **TC 9.3** (Transportation Air Conditioning); Co-Reviewers: TC 2.4 (Particulate Air Contaminants and Particulate Contaminant Removal Equipment), TC 9.6 (Healthcare Facilities), EHC (Environmental Health Committee); Status: Need recommendation from TC with vote to fund a particular proposal or to submit proposal clarification questions to bidders if additional information is still needed.
- **1646-URP**, “*Measurements of Thermal Conductivity of Pipe Insulations at Below Ambient Temperatures and in Wet Condensing Conditions with Moisture Ingress;*” Responsible

## *The Research and Technical Activities Report – Fall Meeting – November 14, 2011*

Committee: **TC 1.8** (Mechanical Systems Insulation); Co-Reviewers: None; Status: Need recommendation from TC with vote to fund or not to fund this proposal or to submit proposal clarification questions to proposer if additional information is needed.

- **1654-URP**, “*Assessing the Potential of Climate Forecast System Reanalysis Data to Provide Local Climate and Weather Profiles in Areas not Currently Covered by Ground Station Data;*” Responsible Committee: **TC 4.2** (Climate Information); Co-Reviewers: None; Status: Need recommendation from TC with vote to fund or not to fund this proposal or to submit proposal clarification questions to proposer if additional information is needed.
- **1656-URP**, “*Development of ASHRAE Database II for Thermal Comfort;*” Responsible Committee: **TC 2.1** (Physiology and Human Environment); Co-Reviewers: None; Status: Need recommendation from TC with vote to fund or not to fund this proposal or to submit proposal clarification questions to proposer if additional information is needed.

### **PROJECTS BIDDING IN FALL 2011**

ASHRAE is currently soliciting proposals for seven new research projects and three re-bid projects. Proposals are due December 15, 2011 and a funding decision on each is expected to be made at the Society’s winter meeting in Chicago.

#### Approved Work Statements Bidding this Fall 2011:

- **1399-TRP (re-bid)**, “*Survey of Particle Production Rates from Process Activities in Pharmaceutical and Biological Cleanrooms;*” Responsible Committee: **TC 9.11** (Clean Spaces).
- **1462-TRP**, “*Active Mechanisms for Enhancing Heat and Mass Transfer in Sorption Fluids;*” Responsible Committee: **TC 8.3** (Absorption and Heat Operated Machines).
- **1535-TRP**, “*A Heat Transfer and Friction Factor Correlation for Low Air-side Reynolds Number Applications of Compact Heat Exchangers;*” Responsible Committee: **TC 8.4** (Air-to-Refrigerant Heat Transfer Equipment).
- **1556-TRP**, “*Characterization of Liquid Refrigerant Flow Emerging from a Flooded Evaporator Tube Bundles;*” Responsible Committee: **TC 1.3** (Heat Transfer and Fluid Flow).
- **1565-TRP (re-bid)**, “*Development of the ASHRAE Design Guide for Dedicated Outdoor-Air Systems;*” Responsible Committee: **TC 8.10** (Mechanical Dehumidification Equipment and Heat Pipes).
- **1581-TRP (re-bid)**, “*Develop Alternate Set-up Guidelines for Unitary Air Conditioner Test Configurations Which Cannot Adhere to ASHRAE 37 /ASHRAE 116 specified Duct Dimensions and External Pressure Tap Locations;*” Responsible Committee: **TC 8.11** (Unitary and Room Air Conditioners and Heat Pumps).
- **1602-TRP**, “*Thermal-Fluid Behavior of Mixed Refrigerants for Cryogenic Applications;*” Responsible Committee: **TC 10.4** (Ultra-Low Temperature Systems and Cryogenics).
- **1616-TRP**, “*Revise Load Calculation Application Manual;*” Responsible Committee: **TC 4.1** (Load Calculation Data and Procedures).
- **1634-TRP**, “*Guide for Sustainable Refrigerated Facilities and Refrigeration Systems;*” Responsible Committee: **REF** (Refrigeration Committee).
- **1651-TRP**, “*Development of Maximum Technically Achievable Energy Targets for Commercial Buildings (Ultra Low Energy Use Building Set);*” Responsible Committee: **MTG.ET** (Energy Targets).

## POTENTIAL PROJECTS FOR BID IN SPRING 2012

A large portion of the following six tentative research projects that have been approved for bid are expected to be released for bid or re-bid next spring.

### Approved Work Statements Available to Possibly Release for Bid Spring 2012:

- **1447-TRP**, “*Performance of Pressurized Stairwells with Open Doors;*” Responsible Committee: **TC 5.6** (Fire and Smoke Control); Status: **Ready to Bid.**
- **1491-TRP**, “*Literature and Product Review and Cost Benefit Analysis of Commercially Available Ozone Air Cleaning for HVAC Systems;*” Responsible Committee: **EHC** (Environmental Health Committee); Status: **Ready to Bid.**
- **1499-RP (re-bid)**, “*The Effect of Humidity on the Reliability of ICT Equipment in Data Centers;*” Responsible Committee: **TC 9.9** (Mission Critical Facilities, Technology Spaces and Electronic Equipment); Co-Sponsor(s): SSPC 90.1; Status: **TC 9.9 needs to confirm with staff that draft RFP is ready for re-bid.**
- **1529-TRP**, “*Full-Frequency Numerical Modeling of Sound Transmission in and Radiation from Lined Ducts;*” Responsible Committee: **TC 2.6** (Sound and Vibration Control); Status: **Ready to Bid.**
- **1546-TRP**, “*Expansion and Updating of the Air Diffusion Performance Index Method;*” Responsible Committee: **TC 5.3** (Room Air Distribution); Status: **Ready to Bid.**
- **1561-TRP**, “*Procedures to Adjust Observed Climatic Data for Regional or Mesoscale Climatic Variations;*” Responsible Committee: **TC 4.2** (Climatic Information); Status: **TC 4.2 needs to confirm with staff that draft RFP is ready for Bid.**

Work statements for the projects listed above without the status “Ready to Bid” require additional information or work from the TC on the draft RFP before they are eligible for possible bid in spring 2012. Revised work statements or approved RFPs for these projects must be submitted to the Manager of Research and Technical Services (MORTS) on or before February 15<sup>th</sup>, 2012 in order to be eligible and ready to possibly bid or rebid in spring 2012.

## WORK STATEMENTS REVIEWED AND RETURNED WITH COMMENTS

A total of two work statements were submitted by the TCs for review at the fall meeting. One was approved as-is, and the following one was returned with comments:

- **1579-WS**, “*Testing and Evaluation of Ozone Filters for Improving IAQ;*” Responsible Committee: **TC 2.3** (Gaseous Air Contaminants and Gas Contaminant Removal Equipment); Co-Sponsors: EHC; Status: **Returned with comments.** Work with Research Liaison to resolve RAC’s comments before resubmitting.

A revised work statement for the project listed above can be submitted to the MORTS on or before December 15, 2011 in order to be considered at RAC’s next meeting. If it can’t be revised that quickly, the next deadline for RAC consideration of this work statement is May 15, 2012.

## WORK STATEMENTS PREVIOUSLY RETURNED TO TCs

TC/TGs should work with their Research Liaison to respond to written comments on the work statement provided by RAC via letter and revise the work statement appropriately. You can find a copy of the last draft submitted to RAC along with RAC’s comments by clicking on the links in the Society’s Research Implementation Plan posted on the “Research” page of the ASHRAE website. Please note that topics will be dropped from this plan if the work statement is not approved for bid after four years on the plan. The work statement forms that are now in use by RAC for Society year 2011-2012 can also be found on the “Research” page [www.ashrae.org/research](http://www.ashrae.org/research)

*The Research and Technical Activities Report – Fall Meeting – November 14, 2011*

**REVIEW OF RESEARCH TOPIC ACCEPTANCE REQUESTS (RTARS)**

RAC reviewed eight RTARs at their fall meeting and conditionally approved the following one for inclusion in the Society's Research Implementation Plan and for further development into work statements:

- **1609-RTAR**, “*Defining the Capabilities, Needs and Current Limitations of Building Information Modeling (BIM) in Operations and Maintenance;*” Responsible Committee: TC 7.3 (Operation and Maintenance Management); Status: Conditionally Accepted. Work with Research Liaison to make minor revisions to RTAR and then proceed with development of work statement.

RTARs Returned or Rejected with Comments:

- **1562-RTAR**, “*Development of Boundary Models for Particulate Matters Deposition at Solid Surfaces of Indoor Environment;*” Responsible Committee: TC 4.10 (Indoor Environmental Modeling); Status: Returned.
- **1625-RTAR**, “*Applicability of the IAQP to Achieve Healthy, Net Zero Energy Buildings;*” Responsible Committee: TC 2.3 (Gaseous Air Contaminants and Gas Contaminant Removal Equipment); Status: Returned.
- **1627-RTAR**, “*Actual Energy Performance of Small Office and K-12 School Buildings Designed in Accordance with the 30% ASHRAE Advanced Energy Design Guides;*” Responsible Committee: TC 2.8 (Buildings Environmental Impacts and Sustainability); Status: Returned.
- **1641-RTAR**, “*Effect of Unsaturated Fluorocarbon Contaminants on the Reliability and Performance of HVAC&R Equipment;*” Responsible Committee: TC 3.3 (Refrigerant Contaminant Control); Status: Returned.
- **1652-RTAR**, “*Computational Fluid Dynamics (CFD) for Planning Upper Room UVGI Placement, with Ventilation Systems, in Public Settings;*” Responsible Committee: TC 2.9 (Ultraviolet Air and Surface Treatment); Status: Returned.
- **1653-RTAR**, “*Study HVAC System Photo-degradation at the low level UVC Light Irradiance used for Coil Maintenance and Air Stream Disinfection;*” Responsible Committee: TC 2.9 (Ultraviolet Air and Surface Treatment); Status: Rejected.
- **1657-RTAR**, “*Effective Ventilation Systems for Airborne Infection Isolation Rooms to Reduce Potential Cross Infection;*” Responsible Committee: EHC (Environmental Health Committee); Status: Returned.

The RTAR form that is now in use by RAC for Society year 2011-2012 can be found on the “Research” page of the ASHRAE website, [www.ashrae.org/research](http://www.ashrae.org/research)

New or revised work statements and RTARs need to be received by the Manager of Research and Technical Services (MORTS), Mike Vaughn, [morts@ashrae.net](mailto:morts@ashrae.net), no later than **December 15, 2011** to be considered at RAC's winter meeting.

**SOCIETY RESEARCH IMPLEMENTATION PLAN**

The Society Research Implementation Plan is now being updated following the fall meeting of RAC. New RTARs will be added and tentative research project RFPs will be added or dropped depending on their bid status. This change to the way the implementation plan is updated necessitated that time limits be placed on how long a topic can remain on the plan without being approved for bid. The fall updates to the plan should be in place by December 1, 2011 or sooner. Please review the latest draft of the Implementation Plan posted on the ASHRAE “Research” page to see if any topics your TC is sponsoring are in danger of being dropped from the plan.

*The Research and Technical Activities Report – Fall Meeting – November 14, 2011*

**DEADLINES**

The following deadlines apply for the next several months. Please recognize that they are not arbitrarily set, but are set to meet subsequent events. So if you miss them, your input may be delayed for six months or in some cases, for a year. All submissions should be sent to the Manager of Research and Technical Services (MORTS), Mike Vaughn, ([morts@ashrae.net](mailto:morts@ashrae.net)).

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|--------------------------------------|--|
| <b>October 14, 2011</b>              | Fall 2011 Tentative Research Projects (TRPs) are released for bid.   |
| <b>October 21, 2011</b>              | Completed TC/TG/TRG Meeting room request form for 2012 winter meeting due to Judy Marshall ( <a href="mailto:jmarshall@ashrae.org">jmarshall@ashrae.org</a> ) at ASHRAE HQ. Subcommittee meeting rooms must be requested each meeting or they will be dropped automatically.             |
| <b>November 30, 2011</b>             | TC/TG/MTG/TRG Chairs receive 2012- 2013 roster update workbook for completion.   |
| <b>December 1, 2011</b>              | Applications for the ASHRAE New Investigator Award are due to MORTS.   |
| <b>December 15, 2011</b>             | Applications for ASHRAE Graduate Student Grant in Aid program are due to MORTS.  |
| <b>December 15, 2011</b>             | Nominations for the ASHRAE Homer Addams Award, which is given to graduate students assisting in current or recently completed ASHRAE sponsored research projects, are due to MORTS.  |
| <b>December 15, 2011</b>             | Bids are due for all TRPs released in fall 2011.   |
| <b>December 15, 2011</b>             | New or revised Work Statements and RTARs are due to MORTS for RAC consideration at the 2012 winter meeting.  |
| <b>December 21, 2011</b>             | TC/TG/TRG meeting agenda for the Chicago meeting are posted on TC website and distributed to membership.   |
| <b>January 24, 2012<br/>Midnight</b> | Roster update workbooks for 2012-2013 TC/TG/MTG/TRG rosters are due to section head  |
| <b>January 24, 2012<br/>Midnight</b> | Contractor recommendations are due to MORTS for all TRPs bid in fall 2011 or before. Place the Proposal Evaluation Summary sheet in MORTS lockbox outside ASHRAE Headquarters Room in Chicago.   |
| <b>February 13, 2012</b>             | Seminar and forum proposals due for 2012 Annual meeting in San Antonio, TX – Seven different tracks available – Tracks posted now on site - Submission website for seminars and forums opens January 13, 2012 – <a href="http://www.ashrae.org/sanantonio">www.ashrae.org/sanantonio</a> |
| <b>February 15, 2012</b>             | Conditionally approved tentative research projects that are approved for bid or re-bid must have all conditions satisfied with section Research Liaison and be in the hands of the MORTS by this date or sooner if they are to be eligible for bid in spring 2012.                       |

## **OTHER NEWS**

### **1. ASHRAE Innovative Research Grant Program – NEW!**

The ASHRAE Innovative Research Grant is a new program to provide seed funding for novel research deemed to have the potential to significantly advance the state-of-the-art in heating, ventilating, air-conditioning and refrigeration engineering. The idea is to encourage out-of-the box research to complement the research proposed and guided by technical committees. This award will carry a base grant of \$50,000 per year for two years, with an additional \$25,000 available in the third year if it is matched by an industrial contributor. The intent is to fund one award each year. However, RAC is not obligated to make an award every year if there is not an outstanding proposal, especially when research funds are limited.

A two-phase process managed by RAC will be used to select grant awardees. The initial phase will begin in the summer each year and entail the evaluation of pre-proposals consisting of a two-page whitepaper and two-page curriculum vitae for the principal investigator. Full proposals will be invited from five or fewer individuals in early March, and the possibility exists that there will be no invited full proposals if the pre-proposals fail to identify a project of sufficient novelty and merit.

During the programs' first year, 18 pre-proposals were submitted for consideration and the following five were invited to submit a full proposal next spring for further consideration by RAC:

- a) IRG-0005, Air-Side Heat Transfer Enhancement Using V-formation Vortex Generators in Heat Exchangers – Lawrence Tech Univ. – Liping Liu & Ken Christensen
- b) IRG-0011, Advanced Heat Pipe Systems for Passive Heating and Cooling – Peng Xu
- c) IRG-0012, Split-Airstream Desiccant Concept for Commercial Dehumidification – Taitem – Ian Shapiro
- d) IRG-0017, Magnetic Devices for Heating, Refrigeration, and Air Conditioning – Univ. of Victoria, Canada – A. Rowe
- e) IRG-0018, Data Center Cooling Using a Novel Heat Pipe System – Concordia Univ. – Leon Wang

### **2. ASHRAE Research – International Dissemination Travel Grant Program – NEW!**

A new International Travel Grant was also approved at Montreal that supports Direction 4 (ASHRAE will be a global leader in the building and energy system community.) of the ASHRAE Strategic Plan. This grant is offered to the principal investigators of ASHRAE sponsored research projects to improve worldwide dissemination of results from ASHRAE research. During the course of the research project or within one year of the completion of the project, the principal investigator (PI) for an ASHRAE sponsored research project will have the option of applying for this International Travel Grant to support travel expenses to a conference outside of North America to present a paper that is related to their ASHRAE research project. The maximum amount of the award is \$2,500 and must be approved based on documentation from the PI regarding the conference, the paper that will be presented and a breakdown of the travel expenses. Grant requests should be submitted to the Manager of Research and Technical Services, Mike Vaughn, at [mvaughn@ashrae.org](mailto:mvaughn@ashrae.org) or [MORTS@ashrae.net](mailto:MORTS@ashrae.net).

### **3. Multidisciplinary Task Groups (MTG)s**

A new ASHRAE technical committee type under TAC entitled Multidisciplinary Task Group (MTG) has been created as follows to address emerging technical topics and goals of the Society that are broader in scope or can be handled by a single TC:

Multidisciplinary Task Group (MTG): a committee of technical experts appointed by TAC when the Society has determined a need for activity in a field of interest that encompasses the expertise of TCs from two or more sections and/or from non-TC groups such as SSPCs or outside organizations. Each TC and non-TC group whose field of interest falls within the MTG defined scope, or is added after the

## *The Research and Technical Activities Report – Fall Meeting – November 14, 2011*

MTG starts, shall have a voting representative on the MTG. The functions of an MTG may include Handbook, Program, Publications, Research, and Standards as required by their specific charge, but the customary function of the MTG will be to coordinate those activities within the TCs and non-TC groups represented on the MTG.

The following four MTGs have been formed so far:

MTG.BIM Building Information Modeling

Chair: Chris Wilkins

Current Representation: TC 1.5, TC 4.1, TC 4.2, TC 4.7, TC 7.1, TC 7.3, SGPC20, SPC205P and the US GSA

MTG.BPM Building Performance Metrics

Chair: Tom Phoenix

Current Representation: TC 2.8, TC 7.4, TC 7.6, TC 7.9, SSPC 90.1, SSPC 90.2, GPC 14, BOMA, CIBSE, EHC, GSA and ISSO

MTG.EEC Energy Efficient Classification of General Ventilation Air-Cleaning Devices

Chair: Christine Sun

Current Representation: TC 2.3, TC 2.4, SSPC 90.1 and SSPC 90.2

MTG.ET Energy Targets

Chair: Rick Hermans

Current Representation: Professional Development Committee (PDC), Research Administration Committee (RAC), Research Promotion (RP), SPC 105, SPC 189.1 and Standards Committee (StdC).

Please contact me for additional information on any of these MTGs and their activities.

#### **4. Useful TC/TG/TRG Chair Information and forms on ASHRAE website**

Information for TC/TG/TRG chairs can be found on the Technical Committee page of the ASHRAE website at the following link: <http://www.ashrae.org/technology/page/104>.

The TC/TG/MTG/TRG Manual of Procedures (MOP) and TC/TG/MTG/TRG Scopes documents have been revised to include information on and procedures for the new Multidisciplinary Task Groups.

A new training webinar for TC webmasters is also now posted under the link “Web Site Hosting Service for TC/TG/TRGs” on the Technical Committee page.

The current roster with contact information for the committees to which you are a member can be accessed at [www.ashrae.org](http://www.ashrae.org) by logging into the “Members’ only” section. Once you log-in, go to update your bio and select the option “My Committees.”

#### **5. Upcoming Advanced Energy Design Guide (AEDG) Releases and Broad Peer Reviews**

The following four AEDGs have been recently completed or are in development now:

- 50% AEDG for Small-Med Office Buildings
  - Document now available for purchase & download
- 50% AEDG for K-12 School Buildings
  - Document now available for purchase & download
- 50% AEDG for Mid-Big Box Retail Buildings
  - The galley proofs are underway
  - Document will be available for download & purchase in January 2012

*The Research and Technical Activities Report – Fall Meeting – November 14, 2011*

- 50% AEDG for Large Hospitals
  - Peer review of the 90% draft is in progress and will run November 10-30, 2011.
  - Document will be available for download & purchase in May 2012

All dates listed above are subject to slight adjustments. Please check the AEDG section of the ASHRAE website at the following link for the latest information:

<http://www.ashrae.org/technology/page/938>

**6. New “Help Wanted” section for TCs to be Added to ASHRAE Website**

A new “Help Wanted” section will be added to the Technical Committee page of the ASHRAE website so that TCs can advertise requests for help. Requests could include calls for new members, a webmaster, reviewers and contributors for a handbook chapter or special publication, special expertise that resides outside the TC, equipment donors for a research project, etc. Requests should be for opportunities that need to be fulfilled within the next 6-12 months. Chapter Technology Transfer Committee (CTTC) will assist in this effort by making sure ASHRAE chapters are aware of this request list. Please pass on any requests for your TC on to the Manager of Research and Technical Services, Mike Vaughn, at [mvaughn@ashrae.org](mailto:mvaughn@ashrae.org) or [MORTS@ashrae.net](mailto:MORTS@ashrae.net).

**7. Subcommittee Meetings via Conference Calls and Web Meetings:**

More and more TCs are taking advantage of a new Society service that allows TCs to hold subcommittee meetings by phone and/or web. Many TCs are finding this to be a more efficient way for them to conduct subcommittee business and it also allows TC members that can't travel to meetings on a regular basis a way to still contribute to the TC. Such a change can also eliminate potential conflicts with the TC's program sessions at Society meetings. Please pass your conference call/web meeting/webinar requests on to the Manager of Research and Technical Services, Mike Vaughn, at [mvaughn@ashrae.org](mailto:mvaughn@ashrae.org) or [MORTS@ashrae.net](mailto:MORTS@ashrae.net).

**8. Upcoming Workshops and Conferences**

- **New Solutions for Heating System Design Seminar**, Nov. 24, 2011, London, U.K.  
<http://events.imeche.org/EventView.aspx?code=S1648>
- **International Congress on Heating, Refrigeration, and Air Conditioning**, Nov. 30 - Dec. 2, 2011, Belgrade, Serbia.
- **ACRECONF India 2012**, Jan. 12 - 13, 2012, <http://www.acreconf.org/>
- **8th Government Building Energy Efficient Technology Workshop**, Jan. 18-20, 2012, Chicago, IL
- **International Air-Conditioning, Heating, Refrigerating Exposition (AHR Expo)**, January 23-25, 2012. Cosponsored by ASHRAE and AHRI, <http://www.ahrexpo.com/>
- **High Performance Buildings Conference – A Focus on Deep Energy Savings**  
March 12-13, 2012, San Diego, California, <http://www.ashrae.org/events/page/hpbconf>
- **Cold Climate HVAC 2012**, November 12-14, 2012, Calgary, Canada,  
[www.ashrae.org/ColdClimate](http://www.ashrae.org/ColdClimate) Cosponsored by REHVA and SCANVAC – Call for papers currently open, but abstracts are requested by **Thursday, Dec. 1, 2011**

Please let me know if I can be of any other assistance.

Sincerely,  
Mike Vaughn