

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS, INC.  
1791 Tullie Circle, N.E./Atlanta, GA 30329  
404-636-8400

TC/TG/TRG MINUTES COVER SHEET

(Minutes of all TC/TG/TRG Meetings are to be distributed to all persons listed below within 60 days following the meeting.)

TC/TG/TRG NO.: TC 4.1 DATE: June 27, 2018

TC/TG/TRG TITLE: LOAD CALCULATION DATA AND PROCEDURES

DATE OF MEETING: June 25, 2018 LOCATION: Houston, TX

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
<p><b>Voting</b> Larry Sun Suzanne LeViseur Chris Wilkins Chip Barnaby Jingjuan Feng Elyse Malherek Rolando Legarreta Jeff Spitler Jim Pegues</p> <p><b>Non-Voting</b> Steve Bruning Glenn Friedman Bob Doeffinger Stephen Roth Rachel Spitler Som Shrestha Liam Buckley Ken Takahashi Russell D Taylor Jason DeGraw Scott Hellendrung Mini Malhotram Akshay Bhargava</p>		<p><b>Voting</b> [none]</p> <p><b>Non- Voting</b> Daniel Bustamante Trevor Butler Amanda J Kilbane Siwei Li Mini Malhotra Miguel Quinones Harjit Singh Minh Vu Mufeed Alshakhori Lucy Amankwah David O Ariyo Carsen Banister Alireza Behfar Amit Bhansali Fred S Bauman Benjamin Brannon Sonia B Brown Michael P Case Jui-Chen Roger Chang Charlie D Curcija Carlos Duarte Alan Paul Dunlavy Philip Farese Joseph S Ferdelman Daniel E Fisher Enrica Galasso Francisco Alba Scott Hellendrung Stephen P Kavanaugh Ken-Ichi Kimura Bryan Morris Gabrielle Powell Neeraj Pranavam Raveendran Sahil Priyadarshi Ghani Ramdani Ahmad K. Sleiti Laura Southard Russell D Taylor Branislav B Todorovic Edmund S.W. Wong Kevin C Wood Ke Xu YAO YU</p>		<p>Section head: Dennis Wessel</p> <p>Mike Pouchak</p> <p><b>Visitors</b> Phillip Stephen James Lnwry Navya Madineedi Ardeshir Moftakhari</p>

**DISTRIBUTION:** All Members of TC/TG/TRG

**ADDITIONAL DISTRIBUTION:**

TAC Chairman: Michael Bilderbeck	2017 HOF: David P. Yuill, P.E.
TAC Section Head: Dennis Wessel, P.E.	Standard Liaison: James Dale Aswegan
Research Liaison: Prof. Xudong Yang	Mgr of Standards: Stephanie Reiniche
ALI/PDC: James W Bochat	Staff Liaison: Michael R. Vaughn

"These draft minutes have not been approved and are not the official, approved record until approved by this committee."



# ASHRAE Technical Committee 4.1

*“Commitment to the ASHRAE Code of Ethics – In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, integrity and respect for others, and we shall avoid all real or perceived conflicts of interests. (See full Code of Ethics: <https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics>.)”*

## **Agenda for - TC4.1 Load Calculation Data & Procedures**

**Houston**  
**June 25, 2018**

**TC4.1 Load Calculation Data and Procedures**  
**Monday, 2:15 PM to 4:15 PM**  
**Hilton, 3<sup>rd</sup> Floor, Room 338**

1. Call to Order Larry Sun
2. Roll Call Jingjuan “Dove” Feng
3. Introduction of Visitors Larry Sun
4. Approval and/or Corrections to Chicago Meeting Minutes Larry Sun
  - Vote to approve the Chicago minute-2018 (all approved)
  - 9-0-0 with Chair voting
5. Liaison Comments Dennis Wessels,
  - Section Head
  - Electronic handout, see Appendix II
  - Make sure roster is update and accurate
  - Awards nomination available online
  - ASHRAE letterhead use for internal communication
  - 125-yr ASHRAE anniversary, looking for programs
  - ASHRAE MOP is available from the handout
  - Basecamp available for use. If need, connect to ASHRAE staff
  - Chapter Technology Transfer Christopher Adams
  - Research Michael Pouchak
    - Request milestone for work statement
    - Allow 100-word summary statement
    - Include research liaison for minutes, WS and research correspondences
    - Work with research liaison regarding RAC communication
    - Training for project monitoring
    - ASHRAE research training video on website available
  - Handbook Dr. Bass Abushakra
  - ALI/PDC James W. Bochat
  - Standards Liaison James Dale Aswegan
  - Staff, Research/Tech Services Michael R. Vaughn
  - TAC Chairman Kelley Cramm



## ASHRAE Technical Committee 4.1

### 6. Research Subcommittee Report

Rolando Legarreta

#### Co Sponsor Research TC9.6

- 1729 update: load research on radiant system
  - Majority of the experiment has been completed
  - About to start more evaluation on implications to RTS and HBM methods
  - Follow-up meeting need to be scheduled to continue discussion
  - Experimentation show that peak load for radiant system are higher systematically than air system, also total heat gain for radiant system is also larger
  - Simulation shows larger increase in load than experiment
  - Steve Bruning mentioned several things to consider: 1. mass-coupled radiant system, hydronic load is different than space load; 2. Ventilation air change rate in radiant space maybe lower than used in the experiments. Convection heat transfer rate maybe lower in radiant system because of lower ACH required
- RTAR by TC 4.7 on ground heat conduction heat transfer (looking for co-sponsor)
  - Not sure of the status at TC4.7
  - Residential load calculation chapter has the most updated data
- RTAT 1847 update
- See Appendix III for sub-committee meeting minutes

### 7. Programs Subcommittee Report

Glenn Friedman

- Rachel gave an update:
  - Workshop on missing link
  - Seminar on Research project 1792
- Future program ideas:
  - Deadline to submit next meeting
  - Follow-up workshop on missing link, focusing on YEA. Need some thoughts on what is the best approach to tackle the workshop. Need to define it.
  - Recent research on radiant system at university of Berkeley and UT Austin's work on RP 1729
  - Load calculations in Atrium
  - Larry motion, Chris move, Suzanne second: #1 workshop #1, is the radiant research, #3 Atrium load
  - Larry will chair the Missing Link Follow-up Workshop, Rachel and Chris will help Rachel put together the program
  - Rachel will Chair radiant seminar
  - Glenn chair the atrium load calculations
  - Vote 7-0-2 chair voting
- See Appendix III for sub-committee meeting minutes

### 8. Standards Subcommittee Report

Glenn Friedman

- No update

### 9. Handbook Subcommittee Report

- Residential Chapter 17
  - Residential content is old
  - Regression may need to be updated
  - If update needed, should reach out to the residential committee and 90.2

Chip Barnaby

TC 4.1 Web Site: <https://tc0401.ashraetcs.org/>



# ASHRAE Technical Committee 4.1

- Jim to reach out to residential standing committee to let them know we are reviewing the chapter

- Non-Residential Chap 18 Jim Pegues
  - In the process of review the chapter
  - Went through the tables and graphs need to be updated in sub-meeting
  - RP 1729 will likely contribute to handbook update, Dove and Chris to help update
  - Update using information from the missing link workshop and the follow-up workshop
  - Examples for load calculations in the handbook need update
  - See Appendix III for sub-committee meeting minutes

10. ASHRAE Website for TC4.1 Jim Pegues

- Up to date

11. BIM.MTG Jim Pegues

- Two research projects:
  - use case to support GMXML
  - program track: engineers and architectural, co-sponsor with 7.1

12. Old Business Larry Sun

13. New Business Larry Sun  
 Jeff Harper approached us to consider a research project to either update RTS to a more teachable format somehow matching CLTD or to accept CLTD as teaching tool. Also, the book used in Architectural School for Building systems (Walter Gronski) has been keeping the use of CLTD as the teaching method due to its simplicity and the limited time to teach. Possibility to develop RTAR or Work Statement.

14. Adjournment Larry Sun

### Officers and voting members for 2017/2018:

Larry Sun	Chair	Voting
Suzanne LeViseur	Vice Chair	Voting
Jingjuan Feng	Secretary	Voting
Jim Pegues	Handbook Subcommittee Chair / BIM.MTG Liason	Voting
Glenn Friedman	Standards/Programs SubC Chair	Nonvoting
Rolando Legarreta	Research Subcommittee Chair	Voting
Chris Wilkins		Voting
Jeff Spitler		Voting
Charles Barnaby		Voting
Elyse Malherek		Voting



# ASHRAE Technical Committee 4.1

## Meetings

### **TC 4.1 Load Calculation Data and Procedures**

Monday 2:15pm-4:15pm  
Hilton, 3<sup>rd</sup> Floor, Room 338

### **TC 4.1 Handbook Subcommittee**

Sunday 3:00pm-4:00pm  
Hilton, 3<sup>rd</sup> Floor, Room 340AB

### **TC 4.1 Research Subcommittee**

Sunday 4:00pm-5:00pm  
Hilton, 3<sup>rd</sup> Floor, Room 340AB

### **TC 4.1 Programs & Standards Subcommittees**

Sunday 5:00pm-6:00pm  
Hilton, 3<sup>rd</sup> Floor, Room 340AB

### **RP-1729 Project Monitoring Subcommittee**

#### **Radiant Cooling**

Sunday 8:00am-9:00am  
Hilton, 3<sup>rd</sup> Floor, Room 337A

#### **Workshop 5**

Load Calculations Missing Link:  
Taking Load Calculations Through  
Equipment Sizing  
Sunday 1:30-3:00 pm  
George R. Brown, 3<sup>rd</sup> Floor, Room 372AD

#### **Seminar 61**

Convective vs. Radiant Load Calculations: Are  
They Different?  
Wednesday 8:00-9:30 am  
George R. Brown, 3<sup>rd</sup> Floor, Room 372CF

**AGENDA**  
**SECTION TC/TG/TRG CHAIR'S BREAKFAST MEETING**  
2018 Annual Meeting  
Houston, TX

**Sunday, June 24th**

**6:30 A.M. – 8:00 A.M. CDT**

**Hilton Hotel – ALL Section meetings located on 4<sup>th</sup> Floor except for Section MTG section, which is on 3<sup>rd</sup> floor.**

<b>Section 1</b> , Grand C Room, 4 <sup>th</sup> Floor	<b>Section 2</b> , Grand D Room, 4 <sup>th</sup> Floor
<b>Section 3</b> , Grand F Room, 4 <sup>th</sup> Floor	<b>Section 4</b> , Grand G Room, 4 <sup>th</sup> Floor
<b>Section 5</b> , Grand H Room, 4 <sup>th</sup> Floor	<b>Section 6</b> , Grand I Room, 4 <sup>th</sup> Floor
<b>Section 7</b> , Grand J Room, 4 <sup>th</sup> Floor	<b>Section 8</b> , Grand E Room, 4 <sup>th</sup> Floor
<b>Section 9</b> , Grand K Room, 4 <sup>th</sup> Floor	<b>Section 10</b> , Grand L Room, 4 <sup>th</sup> Floor
<b>Section MTG</b> , Boardroom 334 Room, 3 <sup>rd</sup> Floor	

- I. CALL TO ORDER
- II. ROLL CALL AND INTRODUCTIONS (5 minutes)
- III. ADDITIONS AND/OR CHANGES TO THE AGENDA (5 minutes)
- IV. REVIEW SPECIAL ASSIGNMENTS, ACTION ITEMS FROM LAST MEETING, AND NEW ISSUES (10 minutes).  
New Assignments:
  - A. **Respond to TAC's Survey on TC Strengths –Weaknesses – Opportunities – Threats (SWOT) before Wednesday 6/27**
- V. DISTRIBUTE WRITTEN INFORMATION AND REQUESTS FROM SOCIETY LIAISONS TO TC/TG/TRG CHAIRS (30 minutes).

Additional Announcements/Reminders:

- A. NEW!
  1. 2018-2019 George B. Hightower Award Nominations due to Section Head September 1, 2018 & 2018-2019 Service to ASHRAE Research Award Nominations due to Research Liaison Sep. 1, 2018
  2. Discuss if TGs, TRGs, and MTGs in section will continue in 18-19 Society Year
  3. TC members improperly using ASHRAE letterhead – **Urgent Request!**
  4. 18-19 Rosters Access & Distribution
  5. MTGs that have been formed since Chicago Meeting – MTG.EBO (Effective Bldg. Operations)
  6. Let's Celebrate ASHRAE's Technical Excellence Historically!
  7. Oversight of TC websites with regard to Technical Bulletins (White Papers)
  8. TC E-mail Position Aliases Annual Update
  9. TC MOP (Manual of Procedures)
  10. Distribution of TC minutes changed in TC MOP
  11. How to Import Your TC Roster Information into MS-Outlook
  12. Updated TAC Presentation Template Available for TC members to use with local Chapter
  13. Basecamp Information from ECC
  14. Notes from TAC / SSPC 90.1 Interface Meeting in Chicago & TC Survey Responses prior to Chicago.
- B. AT THIS MEETING
  1. On-Site Training Options – Incoming TC Chair Training on Duties and Responsibilities
  2. Location of Section Head Mailboxes & Free Wi-Fi Access at this Society Meeting
  3. RPM (Remote Participation Meetings)

## Announcements and Reminders for TC/TG/TRG & MTG Chairs Houston 2018

### C. UPCOMING DEADLINES

1. TC Activity Forms for the Houston Meeting are Due to Section Heads before Wednesday, 6/26/18
2. Seminar and Forum proposals for Atlanta are due by Friday, August 3, 2018

### D. REMINDERS

1. 2018-2019 Rosters Access & Distribution
2. Useful TC/TG/TRG/MTG Chair Information and forms on ASHRAE Website
3. Request for each TC to review ASHRAE Code of Ethics at start of TC meeting
4. Make Special Effort to Welcome New Members and Visitors (Potential Members) to TC Meeting
5. Option for TC Subcommittee Meetings via Conference Calls and Web Meetings
6. Is your TC Website Up-to-date?
7. 18-19 TC Master Calendar – Now Available through Google

### E. RECENT ANNOUNCEMENTS

1. CEC's Standing Request for Future Society Meeting Program Track Suggestions
2. CEC Seeks TC Volunteers willing to Support Content Development and Quality Control for Society Technical Program at Society Meetings
3. The Professional Development Committee (PDC) is seeking ideas for new ASHRAE Learning Institute (ALI) courses

### F. CURRENT & UPCOMING ASHRAE CONFERENCE PROGRAMS

1. Program Focus of Houston Meeting
2. Atlanta Meeting – January 12 – 16, 2019 – Early this year! Plan ahead!
3. Kansas City Meeting – June 22 – 26, 2019

### G. OTHER UPCOMING WORKSHOPS AND CONFERENCES

See Announcements & Reminders for list

### VIII. REMARKS FROM SOCIETY LIAISONS TO TC/TG/TRG CHAIRS

Liaison members from Research Administration, ASHRAE Program, Handbook, Standards, and other standing committees will have an opportunity to describe their committee activities that relate to the TC/TG/TRG functions, if time permits. Written announcements must be provided as a minimum by liaisons in order to have an opportunity to speak at this meeting.

ADJOURN

**Announcements and Reminders for TC/TG/TRG & MTG Chairs  
Houston 2018**

**A. NEW!**

1. **Nominations for Hightower and Service to ASHRAE Research Awards due September 1, 2018 to SH & RL, respectively.**
2. **Discuss and confirm that TGs, TRGs, and MTGs in section will continue in 18-19 Society Year**  
TBD

3. **URGENT Request – Some TC members recently began to improperly use ASHRAE Letterhead to submit Comments on Standards and Codes in Public Review, which implies to the code authority or standard writing organization that it is an official comment of ASHRAE**

For Standards and Codes there is a clear process. It comes through with a vote by the TC to the Manager of Standards (MOS) and then the ASHRAE President has to approve it before it is submitted. If denied, each TC member can still submit their comments as individuals, but not on ASHRAE letterhead.

4. **18-19 Rosters Access & Distribution** - Remember, the current 2017-2018 roster for your TC, TG or MTG is in effect until after the June meeting this year – through Saturday, June 30th.

By now, each TC, TG and MTG chair should have received a PDF & MS-Excel file of their new 2018-2019 roster from their Section Head or staff for distribution to the committee. In addition, each member can view all of the rosters of their committees on the ASHRAE Website. Go to [www.ashrae.org](http://www.ashrae.org) <http://www.ashrae.org> and log-in (if you have not logged in lately, you might need to set up a new username and password), click on the "Membership" tab in the header, Go to the "My ASHRAE" section of the Membership page and click on "My Participation" text, and scroll down to the "Manage" link. Click on the "Committees" link in the left sidebar. Now, you should see all of the committees that you are a member of will appear. Click on the "blue" roster text on the right hand side of a committee name to reveal the roster in various file formats

The Provisional Corresponding Member (PCM) position is a relatively new position on TC/TG/TRG rosters. This position allows potential new members to be added by staff to the committee roster any time a request for membership is made by an individual. The position has a 2-year term on the committee. Staff will notify the chair and reissue a new roster to the committee chair any time a provisional member is added. The TC/TG/TRG chair has the option each year during the regular roster update process to convert provisional CMs that have been active participants on the committee the past year into regular CMs or voting members or drop them. If no action is taken, they will time expire from the roster and be removed by staff.

**5. MTG.EBO (Effective Building Operations)**

**Scope:** MTG.EBO will coordinate the activities of multiple TC/TG/TRG and other stakeholders in the area of training and tools to support the operation of buildings to enhance the indoor environment and use energy effectively. Responsibility will include suggestions for research as well as development of technical programs and special publications on effective building operation for energy management.

The initial MTG roster includes Voting Representatives and Alternates for TCs 1.4 (Control Theory and Application), 7.3 (Operation and Maintenance Management) 7.8 (Owning and Operating Costs) and GPC 1.3 (Building Operation and Maintenance Training for the HVAC&R Commissioning Process)

Other TCs GPCs, and SPCs may also now wish to participate in this MTG with a Voting Representative and Alternate(s) given its scope and charge.

**6. Let's Celebrate ASHRAE's Technical Excellence Historically!**

ASHRAE is highly regarded for its technological advances. Consider that these advances evolved from the efforts of our predecessors and you, and the current members of ASHRAE's Technical Committees in advancing HVAC&R technology are building on a deep foundation. So, what is the historical foundation of your Technical Committee specialty? ASHRAE will be celebrating its 125th anniversary in a couple years. The Historical Committee has a project to publish articles in the ASHRAE Journal and organize paper presentations celebrating our technical heritage for the anniversary. We plan to emphasize technical advances after 1920. Can you help with an article or a paper or can your TC organize and sponsor a program session for the 2019-2020 meetings?

Here is a list of topics that TC members have already suggested.

- Development of open communication protocols such as BACNET.
- Modern improvements in psychrometrics (Goff & Gratch).
- History and effect of the Environmental movement on our technology. How technology and equipment has improved the indoor environment.
- The refrigerant revolution
- Solving the problems of "sick buildings."
- The re-discovery of past technology and its application today (such as district energy, hydrocarbon refrigerants, off peak energy storage, "total energy" systems, etc.)
- History of the application of electronics to HVAC&R technology.
- ASHRAE's long history in applying innovative technology.
- History and importance of frozen food technology.

All of these topics and others you may think of need to be written up and/or presented by someone.

How about YOU?

## Announcements and Reminders for TC/TG/TRG & MTG Chairs Houston 2018

If you can't write a paper, the Historical Committee is also interested in suggestions for the best ASHRAE technical papers since 1995.

The 125th anniversary will be celebrated at the 2019 Annual meeting and the 2020 winter and Annual meetings. The Historical Committee has been charged with the responsibility of organizing Society and industry history projects for the 125th. If you would like to submit an article or a paper organize a program session, or suggest the best technical paper(s) since 1995, contact Chris Preyor, [cpreyor@ashrae.org](mailto:cpreyor@ashrae.org).

There is a deadline – please submit abstracts or outlines before **December 7, 2018** for consideration for the Orlando 2020 or Austin 2020 meetings.

7. **Oversight of TC websites with regard to *Technical Bulletins (White Papers)* and alignment with Society positions, policy, or opinions**

TCs are allowed to develop Technical Bulletins - A Technical Bulletin does not result from a technical meeting and is a brief 1-2 page statement on a special interest HVAC&R topic that has been developed by either a technical or grassroots committee of ASHRAE. After the TC approves the Technical Bulletin, TAC is responsible for coordinating a peer review by a minimum of three persons with expertise in the field of the bulletin before it can be posted. In addition, ASHRAE's policy for websites states the following: **"4 (3) f. Statements and presentations may not appear on web sites that state, purport, or imply that they present ASHRAE positions, policy, or opinions."**

8. **TC E-mail Position Aliases Annual Update**

SY 17-18 TC Position e-mail alias addresses for the mandatory positions of the Technical Committee management team (Secretary, Standards Sub. Chair, Program Sub. Chair, Handbook Sub. Chair, and Webmaster) will stay in effect until July 1st. The 17-18 E-mail Alias list with these position aliases is posted on the ASHRAE website [www.ashrae.org/TCs](http://www.ashrae.org/TCs) under the heading *Procedures, Forms & Information for TCs/TGs/MTGs and TRGs.* The new SY 18-19 E-mail Alias list will be posted in the same location shortly after the Houston meeting.

9. **TC MOP (Manual of Procedures)**

TAC has restructured the TC MOP so that it is easier to navigate and find information. The new TC MOP can be found on the ASHRAE website [www.ashrae.org/TCs](http://www.ashrae.org/TCs) under the heading *Procedures, Forms & Information for TCs/TGs/MTGs and TRGs.*

10. **Distribution of TC minutes changed in TC MOP**

The TC MOP and *TC/TG/MTG/TRG Minutes Cover Sheet* form have both been updated and you are no longer required to send the TAC chair a copy of your minutes after each meeting. The new minutes cover sheet can be found on the ASHRAE website [www.ashrae.org/TCs](http://www.ashrae.org/TCs) under the headings *Procedures, Forms & Information for TCs/TGs/MTGs and TRGs – Routine Forms for TC/TG/MTGs/TRGs.*

**11. How to Import Your TC Roster Information into MS-Outlook**

Detailed instructions on how to import your TC roster information into MS-Outlook has been created and an e-mail announcement will be issued to all TC chairs, vice chairs, and secretaries once these instructions and the restructured TC MOP are posted to the TC page of the website ([www.ashrae.org/TCs](http://www.ashrae.org/TCs) )

**12. Updated TAC Presentation Template Available for TC members to use with local Chapter**

TAC recently updated the standard presentation and presentation notes that TC members can use, without a lot of effort, to explain what TCs do for the Society and how that work benefits members in your local ASHRAE Chapter. You should also know that use of this presentation at a chapter meeting in SY 18-19 will earn a chapter 50 (100 points maximum) PAOE points.

The new presentation and presentation notes files are posted now at the following link [www.ashrae.org/tcs](http://www.ashrae.org/tcs) under the heading *General TC Information* at the top of the page in case you prefer to direct others to these files posted online. The presentation material is now also available in both English and Spanish.

**13. Basecamp Information from ECC**

More and more TCs and standing committees are making use of ASHRAE's subscription to Basecamp3 to better organize, store, and distribute on-line committee files that are needed for their meetings through a dedicated committee Basecamp site. If you would like to learn more about Basecamp and how to request a site for your particular committee, please go to the Electronic Communications Committee (ECC) web page: (<https://www.ashrae.org/communities/committees/standing-committees/electronic-communications-committee> ) and scroll down to the section titled *Basecamp Guidance*

**14. Notes from TAC / SSPC 90.1 Interface Meeting in Chicago & TC Survey Responses prior to Chicago.**

See meeting notes at the end of this document for additional information and for written responses to individual comments from TCs that responded to survey prior to the Chicago meeting.

**B. AT THIS MEETING**

**1. On-Site Training Options**

**i. TC/TG/TRG Chair's Training Workshop Reminder**

Sunday June 24th, 9:45-10:45 AM in Room #382A, 3<sup>rd</sup> Floor, in the George R. Brown Convention Center (GRBCC). The training will start with a brief presentation on how to run Effective Meetings and then highlight some of the online resources that are available through the TAC training portal for additional training and information on a variety of topics. The training session will also have a Q&A session so that you can also get answers to your specific questions.

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### ii. **RAC's Research Subcommittee Chair's Breakfast**

Monday, June 25th, 6:30 AM – 9:30 AM in BOA DEF room, 2<sup>nd</sup> Floor, Hilton Hotel. Please encourage your Research Subcommittee Chair or another representative from the TC to attend this meeting so that your RAC Research Liaison (RL) can get an update on the TC's research activities and so that your RL can help resolve issues & questions that TC may have concerning their research program. The training portion of this meeting will focus on the various ASHRAE *research grant and award programs and RAC announcements on upcoming deadlines and other items.*

### iii. **TC Program Subcommittee Chair Training in St. Louis**

Tuesday, 6/26, 11:15 AM – Noon, Room #382C, 3<sup>rd</sup> Level, in the George R. Brown Convention Center (GRBCC). *Don't complain about the meeting program and your TC's submissions if you have not been to training.*

A few things you might learn in training are as follows:

- Incomplete program submissions is the biggest reason for rejection now. All information is needed up front for CEC selection process.
- A packaged session on a similar topic is the best way to greatly improve your chances for acceptance.
- There is no difference in how CEC handles 60 and 90 minute program slots. 60 minute slots are just as good as 90 minute slots if complete.

### iv. **Workshop 6 – Speaking the Same Language: Best Practices in Standards**

**Authoring** – Mon. 6/25, 11 AM – 12 PM – Room 372AD, 3<sup>rd</sup> Floor, GRBCC – Sponsor; TC 1.6 Terminology – **Printed program lists this workshop by mistake as being held on Wednesday, 6/27**

### v. **Handbook Training for TCs** - 8:00 to 9:00 a.m. - Room: 327 (3<sup>rd</sup> Floor)—Hilton

This session will cover the ASHRAE Authoring Portal for collaborative work on Handbook chapters or other publications. The session will also show new TC Handbook chairs (and TC chairs) what they need to know about Handbook chapter development and revision—the process, the product, and how to succeed. Includes time for Q&A and discussion.

## 2. **Location of Section Head Mailboxes & Free Wi-Fi Access at this Society meeting**

Mailboxes are located just outside ASHRAE Headquarters Office (343 A & B – 3<sup>rd</sup> floor) – Hilton Hotel).

Also, Internet access and computers for e-mail are available in the Cyber Café located in the registration area during operating hours. Please be considerate to others and limit your usage to five minutes.

Wireless internet will be available in all meeting rooms at the Hilton Hotel, and George R. Brown Convention Center (GRBCC). ASHRAE will be working with the internet provider to manage the bandwidth so that member expectations of accessibility and

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speed are fulfilled. We would like to request that everyone limit their usage to functions that do not use excessive bandwidth. Applications such as Facebook, YouTube, streaming video, etc. use excessive bandwidth.

Hilton & GRBCC Wi-Fi Access: Network Name: ASHRAE2018, Username: ASHRAE2018, PWD: houston18 (both case sensitive).

### 3. RPM (Remote Participation Meetings) being held in Houston

The 14<sup>th</sup> RPM (Remote Participation Meeting) Capable Society Meeting, which allows some TC members to participate in the TC meeting from a remote location electronically, will occur in Houston and the following fourteen TCs have asked to participate in this effort: TC 1.9, TC 2.6, TC 4.2(4), TC 4.3, TC 4.7, TC 5.11, TC 6.6(2), TC 7.3, TC 8.12, TC 9.2, TC 9.3(4), TC 9.4, TC 9.8(4) , and TC 10.6 – Many of the TCs host their main Meeting and Subc. Meetings now using RPM capability as noted above parenthetically. A total of 35 RPM meetings will be hosted in Houston when you include project committee and other committee meetings. For comparison, a total of 43 RPM meetings were hosted in Long Beach last year at this time.

The chairs of those TCs participating should provide to their Section Head feedback on their RPM meeting experience before TAC meets on Wednesday morning, 6/28.

### 4. Retiring TC/TG/TRG/MTG Chair Certificates

TC chairs that are completing their terms as chair at this Society meeting will be presented with a certificate of appreciation. Please coordinate with your Section Head as to when and where at the meeting you would like to be presented with the certificate (Section meeting or TC meeting).

## C. UPCOMING DEADLINES

### 1. TAC Survey on TC Strengths – Weaknesses – Opportunities and Threats (SWOT)

Please Ask Your TC Membership to Participate in the before Wednesday, 6/27/18 using the following survey link: <https://www.surveymonkey.com/r/S9LRZKB>

### 2. TC Activity Forms for the Houston Meeting are due to Your Section Head before Wednesday, 6/27/18

*TC/TG/TRG Activity Feedback Form (Excel)* can downloaded from the Technical Committee webpage under the “TC Forms and Documents” page - <https://www.ashrae.org/standards-research--technology/technical-committees/tc-forms-and-documents>. Section heads can also provide an electronic copy of the form if requested.

### 3. Thank You Letters to Employers

ASHRAE President – Bjarne Olesen – has offered to send letters to the employers of TC volunteers this year thanking them for supporting their employee’s service on an ASHRAE TC during Society year 2017-2018. If requested by the volunteer, the letter will be sent to his/her employer by the end of July or early August and the volunteer will receive a copy.

## Announcements and Reminders for TC/TG/TRG & MTG Chairs Houston 2018

Please let your committee members know that they will be receiving an email about employer thank you letters in early July with details on how to request a thank you letter.

#### 4. Seminar and Forum proposals for Atlanta are due by Friday, August 3rd, 2018.

Please visit the following site to submit your proposal:

For more information, go to: [www.ashrae.org/atlanta](http://www.ashrae.org/atlanta)

#### 5. 2018-2019 Hightower Award & Service to ASHRAE Research Award Nominations by Friday, September 1st

Nominations for the 2018-2019 *George B. Hightower Technical Achievement Award* are due to you Section Head by September 1, 2018. The award recognizes outstanding technical leadership and contributions on a TC/TG/TRG during the past four years, excluding research and standards activities. Please go to the Technical Committee page of the ASHRAE website at the following link under the "Procedures, Forms..." heading: <http://www.ashrae.org/tcs>

Nominations for the 2018-2019 *Service to ASHRAE Research Award* for TC volunteer efforts in research are due to RAC research liaison by September 1, 2018. Please go to the Research page of the ASHRAE website at the following link under the "Research Grants and Awards" heading: <http://www.ashrae.org/research>

#### 6. 2018 RPM (Remote Participation Meetings) Request for Chicago Meeting

RPM Meetings at ASHRAE Winter Conference in Atlanta

- RPM meetings are not automatically assigned; you must request the RPM meeting every meeting.
- If you think you might need an RPM meeting in Atlanta, please submit your request via the committee meeting room request link on the ASHRAE website before the submission deadline of **Friday, October 5th**
- Use the form for Technical Committees under the Committee Meetings accordion.
- Requests should be received by the deadline set by ASHRAE meetings staff.
- Please provide the reason for your RPM request in the box provided on the form.
- Everyone who requests an RPM meeting will get an email to confirm their request 4 to 6 weeks prior to the ASHRAE conference.
- If your committee no longer needs the RPM, please let us know in response to the confirmation request so we can provide RPM access to other committees that have requested during the same time slot.
- The final RPM meeting schedule will be sent out 1 to 2 weeks prior to the start of the ASHRAE conference.
- Please note that Sunday, Monday, and Tuesday tend to overbook and requests may need to be prioritized.
- Scheduling priority will be given to committees that are trying to meet quorum and who are up to date on deadlines and meeting notes.
- Last minute requests are very hard to accommodate and priority will be given to emergency situations.

**D. REMINDERS**

**1. Useful TC/TG/TRG/MTG Chair Information and forms on ASHRAE website**

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

**2. Request for each TC to briefly review ASHRAE Code of Ethics at start of meeting**

See the following link for the latest version of the ASHRAE Code of Ethics:  
<https://www.ashrae.org/about-ashrae/>

**3. Make a Special Effort to welcome new Members, and Visitors to TC meeting**

Potential new members for your committee have been encouraged to drop-by your meeting. As a result, please make a special effort to recognize and warmly welcome all visitors to your meeting – A TC can never have too many willing and able volunteers.

**4. Option for TC 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)

**5. Is Your Committee Website up to Date?**

If not, please ask your webmaster to at least post the latest minutes and the Houston meeting times and agenda. If your website has been neglected, add an action item for this meeting to appoint a responsible member of the TC/TG/TRG who will bring it back to life. The new TC website template has greatly simplified the duties of the TC webmaster and this form of communication is critical to the efficient operation of your committee, and for attracting new members.

The recent conversion to a new TC website platform highlighted a couple areas where a refresher of the ASHRAE rules on website maintenance is warranted. First be aware that ASHRAE Products (i.e., handbook chapters, journal articles, final reports from research projects, etc.) cannot be published on your TC's website. It is very appropriate to post the title and scope of the product and then link the reader to the ASHRAE bookstore or other location on the ASHRAE site where the product may be purchased. Any possible exceptions to this rule must be sent through Mark Owen for review and approval ([mowen@ashrae.org](mailto:mowen@ashrae.org)). The second issue involves timely posting of the draft minutes. Draft minutes (and final, approved minutes from the prior meeting) should be posted to your website (or otherwise distributed to the members) within 60 days after the meeting. Please ensure that your secretary and webmaster are aware of this deadline. To assist your secretary in understanding the procedures for taking and reporting

## Announcements and Reminders for TC/TG/TRG & MTG Chairs Houston 2018

minutes, a video has been developed and posted on the Technical Committees' Training page (<http://www.ashrae.org/tcs>). On the same page, a video has also been posted for use by webmasters to learn about the procedures and schedule to maintain the new websites.

### 6. **TC 2018-2019 Master Calendar – Now Available through Google** - The Technical Committee Master Calendar is now available through Google. In order to access this calendar you need to have a Google account.

Once you log into your Google account, follow the instructions below:

To add a friend's calendar, just follow these steps:

- At the bottom of the calendar list on the left, click Add and select Add a friend's calendar.
- Enter the appropriate email address (techservices1791@gmail.com) in the field provided, then click Add.

This calendar is public and will appear under 'Other Calendars' in the left column.

To set up Google Calendar Sync to your Outlook:

- Make sure you're using a supported operating system and Outlook version.
- Download Google Calendar Sync (version 0.9.3.6) at
- [http://dl.google.com/googlecalendarsync/GoogleCalendarSync\\_Installer.exe](http://dl.google.com/googlecalendarsync/GoogleCalendarSync_Installer.exe)
- Once a dialog box appears, click Save File. The downloaded file should open automatically. If it doesn't, manually open it from your browser's download window.
- Click OK to confirm that you're aware this is an executable file.
- Read through the Google Calendar Sync Terms of Service, and click I Agree.
- Follow through the Installation Options and click Install to finish the set-up process.

Once Google Calendar Sync is installed on your computer, the Google Calendar Sync Settings window will appear:

In the Settings window, enter your email address and password and select the Sync Option you prefer. Read about each Sync Option.

You'll also be able to set the time interval for syncing to occur. Please keep in mind that 10 minutes is the minimum time interval allowed.

After the initial set-up, you can access the Google Calendar Sync Settings window again by double-clicking the calendar icon in your Windows System Tray.

**E. RECENT ANNOUNCEMENT**

**1. CEC's Standing Request for Future Society Meeting Program Track Suggestions**

The Conferences and Expositions Committee (CEC) oversees ASHRAE's annual and winter conferences and other specialty conferences and expositions globally. The CEC continually works to improve the conference experience for all attendees. To help keep a "pulse" on the technical issues facing professionals in the HVAC&R marketplace, and to create meetings that reach all of ASHRAE's constituencies, the CEC seeks ideas for tracks for the Orlando 2020 winter meeting and annual and winter conferences beyond as well as topics for specialty conferences from TC members.

Please submit your suggestions to ASHRAE Staff member Tony Giometti ([Giometti@ashrae.org](mailto:Giometti@ashrae.org)). You can also add your track suggestion in the "Comment" section of the TC Activity form for the Houston meeting.

**2. CEC Always Seeks TC Volunteers willing to Support Content Development and Quality Control for Society Technical Program at Society Meetings**

Provide to your Section Head after each Society meeting a list of qualified volunteers from your TC that are potential Technical Session chairs and reviewers of session papers that are related to TC's scope for use by the Conferences & Expositions Committee (CEC) in developing technical content for future technical programs.

**3. The Professional Development Committee (PDC) is seeking ideas for new ASHRAE Learning Institute (ALI) courses.**

The Professional Development Committee (PDC) is actively seeking ideas for new ASHRAE Learning Institute (ALI) courses. We need practical courses of broad interest to be presented as face-to-face seminars or short courses, instructor-led online courses and self-paced courses. Examples include courses with a focus on new technologies that need to be shared, fundamentals for engineers new to the discipline, standard applications that need explanation, and courses based on new design guides. Does your TC have a potential course idea?

Contact Karen Murray (ASHRAE staff) [kmurray@ashre.org](mailto:kmurray@ashre.org) or Charlie Henck (2018-19 PDC chair) [PDCchair@ashrae.net](mailto:PDCchair@ashrae.net) with your course ideas.

**F. CURRENT & UPCOMING ASHRAE CONFERENCE PROGRAMS**

**1. Houston Annual Conference - June 23 – June 27, 2018**

Conference Website: <https://www.ashrae.org/conferences/annual-conference>

Conference Program Chair: Cynthia Moreno

Program Focus at Long Beach Annual Conference

i. Track 1: HVAC&R Systems and Equipment

ii. Track 2: Fundamentals and Applications

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- iii. Track 3: District Energy and Cogeneration Plants
- iv. Track 4: HVAC & Resiliency: Safeguarding our World
- v. Track 5: Residential – Modern Building in Hot and Humid Climates
- vi. Track 6: Professional Skills
- vii. Track 7: Research Summit
- viii. Track 8: HVAC&R Control Freaks
- ix. Track 9: HVAC&R Analytics

### 2. Atlanta Winter Conference – Jan. 12 – Jan. 16, 2019

Seminar and Forum proposals for Chicago are due by **Friday, August 3, 2018**.

Conference Website: <https://www.ashrae.org/conferences/winter-conference>

Conference Program Chair: Corey Metzger

#### Program Focus at Atlanta Winter Conference

- i. Track 1: Systems and Equipment
- ii. Track 2: HVAC&R Fundamentals and Applications
- iii. Track 3: Refrigeration
- iv. Track 4: Construction, Operation, and Maintenance of High Performance Systems
- v. Track 5: Common System Issues and Misapplications
- vi. Track 6: The Convergence of Comfort, Indoor Air Quality, and Energy Efficiency
- vii. Track 7: Building Integrated Renewables and Natural Systems
- viii. Track 8: The Engineer's Role in Architecture

TC Meeting Room Request forms and RPM requests for Atlanta meeting are due **Friday October 5<sup>th</sup>**.

### 3. Kansas City Annual Conference - June 22 – June 26, 2019

Seminar and Forum proposals for Houston are due by **TBD**.

Conference Website: [TBD](#)

Conference Program Chair: TBD

#### Program Focus at Kansas City Annual Conference:

Current Conference Tracks:

## Announcements and Reminders for TC/TG/TRG & MTG Chairs Houston 2018

- Fundamentals and Applications\*
- HVAC&R Systems and Equipment\*
- Professional Development\*
- Research Summit\*

\*indicates Tracks that will be part of the Program

### Potential Additional Track Ideas:

- Optimization in HVAC&R
- Commissioning/Continuous Commissioning/Automated Fault Detection
- Modeling Throughout the Building Life Cycle
- Hydronic System Design
- Existing Buildings
- High Performance from Energy Intensive Building Types
- Energy Efficiency & Renewables
- Energy Recovery and Cascade Systems
- Building Certification and Operating Metrics
- Ground-Coupled Systems
- Life Safety
- Indoor Air Quality

Final list of tracks for Kansas City meeting will be finalized by the Conferences & Exposition Committee in Houston.

## **G. OTHER UPCOMING WORKSHOPS, CONFERENCES AND EVENTS**

### **1. 2018**

- i. **EPRI Electrification 2018 International Conference & Exposition** – August 20 to 23, 2018 – Long Beach, CA USA  
<https://www.ashrae.org/conferences/ashrae-endorsed-conferences/epri-electrification-2018-international-conference-exposition>
- ii. **1st IIR International Conference on the Applications of HFO Refrigerants** Sep. 2 to 5, 2018 – Birmingham, England  
<https://www.ashrae.org/conferences/ashrae-endorsed-conferences/1st-iir-international-conference-on-the-applications-of-hfo-refrigerants>
- iii. **2018 JSRAE Annual Conference** – Sep. 4 to 7, 2018 - Fukushima 963-8642, Japan – Contact: <https://www.ashrae.org/conferences/ashrae-endorsed-conferences/2018-jsrae-annual-conference>
- iv. **IBPC 2018** – Sep. 23 to 26, 2018 – Syracuse, NY USA – Contact: <https://www.ashrae.org/conferences/ashrae-endorsed-conferences/ibpc-2018>

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- v. **Building Simulation 2018** – Sep. 26 – Sep. 28, 2018 – Chicago, IL USA – Contact:  
<https://www.ashrae.org/conferences/topical-conferences/2018-building-performance-analysis-conference-and-simbuild>
- vi. **AHR Expo-Mexico** - October 2-4, 2018 – Mexico City, Mexico -  
<https://www.ashrae.org/conferences/ashrae-endorsed-conferences/ahr-expo-mexico>
- vii. **The Third International Conference on Efficient Building Design – Materials and HVAC Equipment Technologies** - October 4–5, 2018 - Beirut, Lebanon  
<https://www.ashrae.org/conferences/topical-conferences/the-third-international-conference-on-efficient-building-design>
- viii. **AHR Expo 2019** – Jan. 14 to 16 – Atlanta, GA USA – Contact:  
<https://www.ashrae.org/conferences/winter-conference/ahr-expo>
- ix. **ICR 2019** – August 24-30, 2019 – Montréal,, Québec, H2Z 1H2, Canada – Contact:  
<https://www.ashrae.org/conferences/ashrae-endorsed-conferences/icr-2019>

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### Meeting Notes

#### **ASHRAE Technical Activities Committee Interface Meeting with SSPC 90.1**

**Monday, January 22, 2018**

Note: This meeting was held to discuss ongoing concerns between the Technical Committees and SSPC 90.1 leadership. The group reviewed TCs responses to a survey issued prior to the meeting, and formulated responses. The following were present at the meeting:

#### Attendees:

Drake Erbe, Chair SSPC 90.1

Richard Lord, Vice-Chair SSPC 90.1

Tom Culp, Vice-Chair SSPC 90.1

Kelley Cramm, Chair TAC

Tom Justice, Vice-Chair TAC

Bert Phillips – TAC Section 2 Section Head

Krishnan Gowri – TAC Section 9 Section Head & SSPC 90.1

Mark Smith – TC 5.2 Liaison to SSPC 90.1)

Steve Ferguson, ASHRAE Senior Manager of Standards

Mike Vaughn, ASHRAE Senior Manager of Research and Technical Services

Connor Barbaree, ASHRAE Manager of Codes

The group had some discussion regarding the process for a TC to establish a liaison to SSPC 90.1 The process appears to be somewhat cumbersome. The TCs don't hear back from the 90.1 committee in a timely manner. The process seems secretive to the TCs. Drake noted that the 90.1 committee has a process which they must follow and it includes establishing copyright paperwork before an individual is allowed to join the committee. The TC should vote on a liaison and then the TC Chair should send an email to the 90.1 Chair informing them of the vote. The liaison should go ahead and attend the 90.1 meeting. Drake will check to see if the 90.1 committee can establish a "provisional liaison" which would allow the TC representative to participate prior to final approval.

The following question was sent to TC Chairs:

**"As a TC Chair, what issues or concerns do you have with the current version of Standard 90.1 or with the development process for Standard 90.1? (Please include TC number in response)"**

#### **1. From TC 5.1:**

Effectiveness of the limitations in the fan and fan systems energy use. 1/4/2018 8:13 PM

#### **Response from TAC/SSPC 90.1:**

TC 5.1 needs to assign a formal liaison to SSPC 90.1 so they can give input on this subject.

#### **2. From TC 4.1:**

None in particular, but continuing to keep documents like these as simple and straight-forward as possible is always an interest to our committee. Also continuing to bear in mind that peak load calculation and energy calculations are uniquely separate exercises is important. Unfortunately we cannot send someone to the working group because this is the time slot for our main committee meeting. 1/2/2018 11:10 AM

#### **Response from TAC/SSPC 90.1:**

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Acknowledged. Thank you for your input.

**3. From unidentified TC:**

No particular issues with the current version or development process. Just a continuous concern for the ASHRAE 90.1 committee to continue to provide a path for minimally compliant equipment.

12/27/2017 2:35 PM

**Response from TAC/SSPC 90.1:**

Please note that there is a new compliance path using Appendix G.

**4. From TC9.2:**

The biggest concern I have is we still need clear recognition that safety concerns for Industrial applications need to be met before energy efficiency goals are applied.

12/13/2017 11:33 AM

**Response from TAC/SSPC 90.1:**

Safety is always a priority over energy savings. The standard agrees.

**5. From TC 8.02:**

Impact of centrifugal chiller efficiency on customers and manufacturers 12/8/2017 8:45 AM

**Response from TAC/SSPC 90.1:**

The efficiency requirements were extensively cost justified with input from AHRI.

**6. From TC 7.6 (Building Energy Performance):**

While our TC is cognizant for Std. 90.1, which we follow regularly, our focus is on how the design elements of 90.1 are implemented in occupied buildings and whether they in fact produce energy savings. Our main concern is verifying that 90.1 is implemented in buildings deemed to be in compliance; how can we show, using measured data, that 90.1 does in fact lead to the lower EUIs projected by analysis? While this may not be within the scope of 90.1 we all should be concerned about this. As for the 90.1 development process our only concern is how do we get TC 7.6 members interested enough to get involved in SSPC 90.1 working groups or subcommittees? The development process seems to be quite rigorous and adequate; it is slow but needs to be to be thorough and to maintain quality. 12/7/2017 10:55 AM

**Response from TAC/SSPC 90.1:**

There are 2 liaisons from TC 7.6 that have not yet participated. We encourage them to do so. The DOE is working on a study to determine if buildings are actually saving energy. Please follow DOE "Commercial Buildings Energy Code Field Study".

**7. From TC9.10:**

Not sure if 90.1 folks fully understand consequences of some energy saving ideas on the safety and function of lab spaces. We have a liaison, but the interaction can be spotty. 12/4/2017 5:25 PM

**Response from TAC/SSPC 90.1:**

Please submit a proposal to the 90.1 committee if you see problems with lab safety created by the standard.

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**8. From TC 3.2 (Refrigerant System Chemistry):**

Does not get into energy efficiency requirements. 12/4/2017 10:51 AM

**Response from TAC/SSPC 90.1:**

No response

**9. From TC 2.08:**

Focuses on building sustainability and has direct correlation with 90.1. In addition, the Green guide by TC 2.08 is directly influenced by 90.1. Hence TC 2.08 would suggest a more inclusive standard development process wherein we are more involved. 12/4/2017 1:33 AM

**Response from TAC/SSPC 90.1:**

Please assign 1 or 2 liaisons to actively participate in the 90.1 committee.

**10. From MTG.OBB:**

Standard 90.1 has evolved for a long history. I am concerned about the new developments focus on many small issues and making the standard too complicated for code officials and energy modelers, while ignoring key drivers of actual energy use in buildings. Static data and simplified assumptions have been used in energy modeling and simulations to calculate energy use of buildings and evaluate technology performance before technology measures get adopted in the standard. No considerations have been given to variation of weather data due to climate change, actual problems in buildings (operation and maintenance issues), and stochastics of energy-related occupant behavior in buildings. 12/4/2017 1:32 AM

**Response from TAC/SSPC 90.1:**

Please reach out to the 90.1 committee leadership so we can work together.

**11. From TC 7.3 Operations and Maintenance:**

Although Standard 90.1 is more catered to the designer than the facility manager and operator, input from the TC on life cycle considerations, which may result in energy efficiencies, might be helpful. 12/3/2017 9:40 PM

**Response from TAC/SSPC 90.1:**

This happens at the building permit time frame so ongoing operations, maintenance, and commissioning are not addressed in the standard. The 90.1 committee would love to have more end users involved.

**12. From TC 9.07 Education Facilities:**

90.1 is highly biased to commercial buildings, or better stated, not structured to be inclusive of diversity of buildings found on college and university campuses. Applying the requirements of the code generally intended for commercial structures creates challenges for higher education. A performance based alternative (not the ECB method) to the prescriptive method would be valuable. Universities, colleges, and K-12 if had the flexibility to design, model, and operate building assets based upon a performance threshold (not a high performance building, but a reasonable baseline 20-30% better than the median of the appropriate building stock), this would allow for owners and

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designers to incorporate innovative technologies and practices to achieve greater energy efficiency without financial constraints of prescriptive measures. The diverse buildings types of most benefit include sporting arenas / stadiums, science & research laboratories, large auditoriums, student recreation spaces, student services buildings unions with food service, etc. 12/3/2017 7:09 PM

**Response from TAC/SSPC 90.1:**

We agree; the 90.1 committee has limitations and can't address multiple building types individually.

**13. From TC 6.6, Service Water Heating:**

We have representation on the committee via a liaison, so I feel like our TC is abreast of happenings. Committee members frequently express concerns that hot water energy consumption is not covered to the detail needed, but I am not sure how involved those members have been in 90.1 development. 12/3/2017 10:55 AM

**Response from TAC/SSPC 90.1:**

We now have a liaison from your committee. We appreciate the help we're receiving from TC 6.6.

**14. From TC 1.6:**

Would like greater harmonization of terms (glossary) between 90.1 and other ASHRAE stds/guidelines and iccc and appraisers. 12/3/2017 12:06 AM

**Response from TAC/SSPC 90.1:**

We agree. The committee always attempts to align definitions but since many industry standards/codes/guidelines don't align, this task is not always working. We always look at ICC definitions but can't always align them.

## Conferences and Expositions Committee Information Items for Technical Committees 2018 Annual Conference, Houston, Texas

This “handout” includes recent updates and upcoming deadlines in the preparation of the technical program for the Winter, Annual and Topical conferences. It is being provided in advance of the conference for your information so that it does not have to be presented during the onsite TC section breakfasts. CEC will provide a short update at the TC breakfasts and answer any questions. *Kevin Marple, 2017-2018 CEC Vice Chair, kmarple@benzco.com*

### 1. 2019 Annual Conference Research Summit Call for Papers

The 2019 Annual Conference in Kansas City, MO features a call for papers for the Research Summit track. Please consider submitting papers or groups of papers as entire sessions from your TC for the conference. Abstracts are due August 21, 2018. If you have any questions, please contact Melanie Derby, the Research Summit Track Chair at [derbym@ksu.edu](mailto:derbym@ksu.edu)

### 2. Student Authors Recognized at 2018 Annual Conference

Starting at the 2017 Winter Conference, CEC began recognizing student papers. Certificates were awarded to students at their assigned conference paper session. Certificates in the categories “*Best Paper*” and “*Honorable Mention*” were presented to graduate candidates and PhD candidates.

Four students will be recognized with CEC student paper awards at the 2018 Annual Conference.

### 3. Program statistics for Houston; for a total of 108 available slots:

#### **Conferences Papers**

- 127 conference paper abstracts submitted, 105 approved
- 67 conference papers presented
- 20 Conference Paper Sessions

#### **Technical Papers**

- 21 Technical papers received
- 14 Technical papers presented
- 4 Technical Paper Sessions

#### **Seminars**

- 100 submitted
- 72 presented

#### **Workshops**

- 9 submitted
- 7 presented

#### **Forums**

- 11 submitted
- 4 presented

#### **Debates**

- 2 submitted
- 1 presented

#### **Panels**

- 4 submitted
- 1 scheduled (withdrawn)

### 4. 2019 ASHRAE Winter Conference in Atlanta, January 12-16:

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

- a. Conference Papers are due July 9
- b. Seminar, Forum, Debate, Panel and Workshop proposals are due August 3
- c. Program notifications go out September 14
- d. Web site opens for presentation uploads on November 30
- e. All presentations due online January 4, 2019

2019 Winter Conference Chair is Corey Metzger, [corey.metzger@resourcece.com](mailto:corey.metzger@resourcece.com)

Tracks and Track Chairs

**Track 1: Systems and Equipment**

Joe Firrantello, [j.firrantello@gmail.com](mailto:j.firrantello@gmail.com)

**Track 2: HVAC& R Fundamentals and Applications**

Rick Hermans, [herma015@umn.edu](mailto:herma015@umn.edu)

**Track 3: Refrigeration**

Sonya Pouncy, [sonya.pouncy@gmail.com](mailto:sonya.pouncy@gmail.com)

**Track 4: Construction, Operation and Maintenance of High Performance Systems**

Leticia De Oliveira Neves, [leneves@gmail.com](mailto:leneves@gmail.com)

**Track 5: Common System Issues and Misapplications**

Lee Riback, [lee.riback@gmail.com](mailto:lee.riback@gmail.com)

**Track 6: The Convergence of Comfort, Indoor Air Quality and Energy Efficiency**

Ashish Rakheja, [ashish.rakheja@aeonconsultants.in](mailto:ashish.rakheja@aeonconsultants.in)

**Track 7: Building Integrated Renewables and Natural Systems**

Maggie Moninski, [maggie.moninski@gmail.com](mailto:maggie.moninski@gmail.com)

**Track 8: The Engineer's Role in Architecture**

Ashu Gupta, [ashu.energy@gmail.com](mailto:ashu.energy@gmail.com)

5. **2019 ASHRAE Annual Conference in Kansas City, MO:** [www.ashrae.org/kansascity](http://www.ashrae.org/kansascity)
  - a. Conference Paper Abstracts, Technical Papers and Paper Session requests due August 21, 2018
  - b. Conference Papers due November 30, 2018

2019 Annual Conference Chair is Carrie Anne Monplaisir, [carrie.monplaisir@gmail.com](mailto:carrie.monplaisir@gmail.com)

Tracks and Track Chairs

**Track 1: Systems & Equipment in the Built Environment**

Kimberly Pierson, [kdpwildcat@gmail.com](mailto:kdpwildcat@gmail.com)

**Track 2: Fundamentals and Applications**

Gary Debes, [gary.debes@comcast.net](mailto:gary.debes@comcast.net)

**Track 3: Optimization in HVAC&R**

Vikrant Aute, [vikrant@umd.edu](mailto:vikrant@umd.edu)

**Track 4: Commissioning New & Existing Buildings**

Raul Simonetti, [raul.simonetti@carel.com](mailto:raul.simonetti@carel.com)

**Track 5: Occupant Health & Safety**

Chris Reinders-Caron, [creinders@cannondesign.com](mailto:creinders@cannondesign.com)

**Track 6: Modeling Throughout the Building Life Cycle**

Nivedita Jadhav, [nivi2307@gmail.com](mailto:nivi2307@gmail.com)

**Track 7: Professional Development**

Rich Rose, [richr@mticontrols.com](mailto:richr@mticontrols.com)

**Track 8: Research Summit**

Bing Liu, [bliu@neea.org](mailto:bliu@neea.org)

**Track 9 (Mini-Track): Radiant Heating & Cooling Mini-Track**

Devin Abellon, [devin.abellon@yahoo.com](mailto:devin.abellon@yahoo.com)

## 6. Potential Sources Bias Disclosure

In accordance with the ASHRAE Code of Ethics, speakers have been asked to fill out a potential sources bias disclosure document that will note affiliations/ involvement with any organizations with financial or commercial interest in the subject matter to be discussed.

## 7. TC Opportunities:

- a. TC members who want to submit a program should consult the Track Chair for assistance in preparing a good abstract, learning objectives, and Q&A to help assure complete submission.
- b. TCs and Sections are welcome to suggest new presentation formats (like how the Workshop was born). Best way to present material to benefit attendee is a goal.
- c. TCs and Sections are encouraged to work with a track chair to put together a series of sessions that can be used as a mini-track.
- d. Putting together an entire track of programs in cooperation with other TCs is also encouraged; keeping in mind that track subjects are typically determined 14-15 months prior to a conference.

## 8. CEC Announces a Call for Reviewers and Paper Session Chairs

ASHRAE has a number of conferences coming up that include papers, and CEC seeks your help in reviewing them. Additionally opportunities to chair a paper session are available. Specifically, there is an immediate need for reviewers and session chairs for the 2019 Winter Conference and various topical conferences.

Please submit your interest in reviewing a paper or chairing a paper session using the online form: [http://web.ashrae.org/cec\\_request/](http://web.ashrae.org/cec_request/). Please contact Tiffany Cox, ASHRAE Assistant Manager, Conference Programs, at [tcx@ashrae.org](mailto:tcx@ashrae.org) for more information.

## 9. Topical Conferences

ASHRAE's topical conferences are focused on a particular aspect of the industry and bring together professionals for networking and professional development. Two topical conferences are available for the remainder of 2018.

### **2018 Building Performance Analysis Conference and SimBuild, co-organized by ASHRAE and IBPSA-USA**

<http://www.ashrae.org/BuildPerform2018>

September 26-28, 2018, Chicago, Illinois

The conference program includes peer-reviewed papers, non-paper presentations and new program format types as well as the fourth annual ASHRAE LowDown Showdown modeling competition with a record 14 teams competing.

### **The Third International Conference on Efficient Building Design**

<http://www.ashrae.org/Beirut2018>

October 4–5, 2018, Beirut, Lebanon

The conference is to present advanced research on the topics of advanced building and bioclimatic designs for attaining occupant comfort and good environmental quality addressing systems and technologies adapted to the Arab region in both moderate and hot humid climates.

## 10. Program Types

### Technical Paper Session:

These sessions present papers on current applications or procedures, as well as papers resulting from research on fundamental concepts and basic theory. Papers presented in these sessions have successfully completed a rigorous peer review. Forms for written comment are available at each session, and sent to respective authors for reply and publication in ASHRAE transactions, if received by a certain date.

### Conference Paper Session:

These sessions present papers on current applications or procedures, as well as papers reporting on research in process. These papers differ from technical papers in that they are shorter in length and undergo a much less stringent peer review.

### Seminar:

These sessions feature presentations on subjects of current interest. There are not papers attached to seminars.

### Workshop:

These sessions enable technical committees and other ASHRAE committees to provide a series of short presentations on a topic requiring specific expertise. These short presentations are provided with an increased emphasis on audience participation and training in a specific set of skills. There are not papers attached to workshops.

### Forum:

The sessions are “off-the-record” discussions held to promote a free exchange of ideas. Reporting of forums is limited to allow individuals to speak confidentially without concern of criticism. There are not papers attached to forums.

### Panel Discussion:

Panel discussions can feature a broad range of subjects and explore different perspectives on industry related topics. This session format includes a panel of 3-4 speakers each addressing a facet of the session topic, followed by an interactive discussion lead by the session chair. Panel Discussions may be 60 minutes or 90 minutes in length and will be posted online in the Virtual Conference.

### Debate:

Debates highlight hot-button issues commonly faced by our membership. Industry experts, either on teams or as individuals, argue opposing sides of an issue, concluding with position summaries and audience feedback. Debate sessions may be 60 minutes or 90 minutes in length and will be posted online in the Virtual Conference.

**TC 4.1 Research Report**  
**Houston, Monday, June 25, 2018**

Section 4 Research Liaison - Michael Pouchak include him in research Communications.

E-Mail him updates communications/correspondence.

Milestones need to be included in work statements.

Provide Milestone updates.

When assigning PMS Chairs, they need to go to training

Video on ASHRAE research public website. Training

Upcoming - Active research website for section 4 PMS/PES will record quarterly reports, etc. directly in the website.

**TC 4.1 RESEARCH PROJECTS**

1. **RP 1729 RADIANT LOADS** - " Experimental Verification of Cooling Load Calculations for Spaces with Non-Uniform Temperature Radiant Surfaces" – PMS Chair – Glenn Friedman. Presentation to PMS on Sunday June 24. Progress is on-going and as listed below.

<b><u>TASK</u></b>	<b><u>DESCRIPTION</u></b>	<b><u>PERCENT COMPLETE</u></b>
<b>1</b>	Extend the Heat Balance Method, HBM, to allow radiant system load calculations.	20%
<b>2</b>	Analyze the impact of (a) different thermal mass levels and (b) heat gains for various solar and internal loads (internal loads at various radiant fractions).	90%
<b>3</b>	Experiments to measure and compare the dynamic cooling loads in the test rooms conditioned by (1) radiant panels, (2) air-based systems, and (3) any combination thereof.	100%
<b>4</b>	Validate the ability of the extended HBM to predict overall cooling load and determine the contribution of individual heat exchanges when radiant panels are used (heat exchanger in air system vs. radiant panels).	100%
<b>5</b>	Develop guidance for load calculations for spaces using radiant or partially radiant systems, based on experimental results that define differences between radiant cooling and convective cooling systems. Address the limitations found in the Radiant Time Series Method, RTSM.	80%
<b>6</b>	Prepare the final project report. Update the ASHRAE Load Toolkit (Pedersen et al., 2003), and prepare technical papers.	60%

Chris Wilkins, Glenn Friedman, and Jingjuan (Dove) Feng commented on the progress that was presented and the results: from preliminary reports/results, the model may be overpredicting even though there is a difference not as large but noticeable between the measured load and what the model predicts; the results simply that the loads when using radian cooling seem to increase.

2. WS-1816 (Imaging Equipment) – Glenn Friedman (Liaison from TC4.1)
3. RTAR xxxx (No Number assigned) - TC4.7 – Improved simplified method of describing and calculating heat conduction between building and ground – Author McDowell and Krug. Ground heat transfer - in basements – Vote to Co-sponsor RTAR on ground heat loss/conduction,

**TC 4.1 Research Report**  
**Houston, Monday, June 25, 2018**

authored by Neal Krus and Tim McDowell. Since this information will appear in our chapter TC4.1 should co-sponsor. Chip Barnaby to follow up. RAC Liaison was asked to include TC Research Chair in the loop and communications.

4. 1847 TRP – Co-sponsoring with 4.02 AND 5.06 - Updating Climatic Design Information for the 2021 ASHRAE HB Standard 169 and Handbook of Smoke Control Engineering.
5. 1850 WS Co-Sponsoring with 4.02 and 5.06 – Evaluation of ASHRAE Design Day Procedure against recorded weather data. TC 4.02 needs to submit work statement first draft before March 15, 2020 or topic will be removed from display on plan. WS shall be submitted and approved for bid by May 1, 2022.
6. 1778-TRP, Heat and Moisture Load from Commercial Dish room Appliances and Equipment – TC 4.1 is co-sponsoring. PES Meet last week to review proposals and recommend Researcher. Rolando Legarreta to be the Liaison with TC5.10.
7. Jim Pegues has started developing the list of tables that need update and possible research.

**RAC UPDATE - pending**

1. 3 RTARs considered: 1 accepted, 1 conditionally accepted, and 1 rejected. 2 Work Statements considered; all conditionally accepted, and 1 Innovative Research Grant (IRGF) proposal approved.
2. RESEARCH AWARDS
  - A. Grant in Aid (GIA) – Deadline for Application March 1. Granted to full-time Graduate Students each year for the following academic year.
  - B. Service to ASHRAE – Nominations needed by September 30. Recognizes an individual for his/her excellence in volunteer service to the area of Society Research.
  - C. Homer Adams Award – Nominations by December 3. Recognizes a Graduate Student who has been engaged in ASHRAE Research Project.
  - D. New Investigator Award – Nominations by December 3. To enhance the academic careers of recent PhD. Recipients by providing support to research activities.
3. PMS Training
  - A. RAC will hold another PMS training webinar in the fall, prior to Winter meeting. Date and time will be sent to TCs well in advance.
  - B. In ASHRAE website under Research look for a 20-minute video which provides the guidelines.
4. Disposition of ASHRAE Research
  - A. At the conclusion of a project, the PMS shall prepare and submit a “Disposition of ASHRAE Sponsored Research Results” form to the MORTs (ASHRAE Research Manual, section 9).
  - B. Form is being improved but continue to use the form from Section 10 of Research Manual.
5. RTARs, WS, and TRP Bids needed by Monday, December 3, 2018 if they are to be considered during the Winter Meeting. This deadline also applies to New Investigator Award and Homer Adams award.

**TC 4.1 Research Report**  
**Houston, Monday, June 25, 2018**

**New Business – Proposed Research**

1. Jeff Harper approached us to consider a research project to either update RTS to a more teachable format somehow matching CLTD or to accept CLTD as teaching tool. Also, the book used in Architectural School for Building systems (Walter Gronski) has been keeping the use of CLTD as the teaching method due to its simplicity and the limited time to teach. RTS being a more complex method, mathematically speaking doesn't lend itself for students to grasp. There is currently a research paper (under peer review – Student is Mao Chun?) from Texas A&M in which currently lists the inaccuracies of CLTD is the solar model; TC4.1 should consider update the solar model for CLTD, or to re-define RTS in a way to develop a series of tables or prepare a tool that can do such? Topic for further expansion in the next winter meeting to decide if this should be provided with an RTAR or as offered by RAC a Work Statement.

**To Keep in mind for Future**

- a. Update on equipment Loads in 2020
- b. Narrow down to 0.4 w/sf; maybe 10 years before it is done again. Probably for the 2025 HB – Start Research in 2021-2022;



# ASHRAE Technical Committee 4.1

## Handbook Subcommittee Report

Houston, TX

June 24, 2018

1. Work Schedule for 2021 Handbook – Fundamentals – Chapters 17 and 18

Date or Timeframe	Work Phase	Description
1/2018 – 10/2018	Review	Review current chapter to identify revisions and additions.
11/2018 – 1/2020	Construction	Make revisions and additions
1/2020	Approval	Committee vote to approve revisions
6/2020	Submission	Submission of revised chapters to ASHRAE staff.
6/2021	Publication	Handbook sent to members.

2. Chapter 18 - Non-Residential Chapter Review

a. Current volunteers for review. PDFs will be circulated immediately after the ASHRAE Conference.

Steve Bruning
Dove Feng
Reviewers recruited by Chris Wilkins
Reviewers recruited by Rolando Legaretta
Bob Doeffinger

3. Status Review of Data Tables

a. Status of data tables was reviewed and update actions for 2021 edition of Chapter 18 were identified. See "Actions" column in Table 1.

**Table 1. Evaluation of Data Tables in Chapter 18**

Table #	Content	Date of Data	Actions
1	Occupant Heat Gains	1967	Chris W – Check with RAC contact to see if any new research. TC41 –Consider initiating research project with cognizant TC.
2	Lighting Power Densities	2013	Jim P – Update to 90.1-2019 data.
3	Lighting Fixture Heat Gains	2016	OK. No change.
4A	Motor Minimum Efficiencies 60hz Genl Purpose	2013	Jim P – Update to 90.1-2019 data.
4B	Motor Min Efficiencies – Polyphase Small Motors	2017	OK. No change.
5A	Unhooded Electric Kitchen Appliances	2016	OK. No change.
5B	Hooded Electric Kitchen Appliances	2016	
5C	Hooded Electric Kitchen Appliances – During Idle	2009	
5D	Hooded Gas Kitchen Appliances – During Idle	2009	
5E	Hooded Solid Fuel Appliances – During Idle	2008	
5F	Warewashing Equipment	2016	RP-1778 developing new heat gain data. Bidder selected June 2018.

			Data delivery 18 months out from project start. Rolando L. is monitoring.
6	Typical Medical Equipment	1999	TC 9.6 submitted WS to measure imaging eqpt heat gains. Bob D. is monitoring.
7	Typical Laboratory Equipment	1999	
8A	Typical Desktop Computers	2017	OK. No changes.
8B	Typical Laptops and Docking Stations	2017	
8C	Typical Tablet PC	2017	
8D	Typical Monitors	2017	
9	Typical Printers	2017	
10	Heat Gain for Miscellaneous Equipment	2017	
11	Load Factors for Types of Offices	2017	
12	Diversity Factor for Different Equipment	2017	
13	Single Layer Glazing Data – Window7.4.6	2017	Update with data from latest LBNL WINDOW program.
14	Rad/Convective Splits for Internal Heat gains	2007	OK. No changes.
15	Solar Absorptance Values of Various Surfaces	2000	Check data with TC 4.4.
16	Wall Conduction Time Series Tables	2017	OK. No changes.
17	Roof Conduction Time Series Tables	2017	
18	Thermal Properties of Layers	2017	Check vs Chapter 26, Table 4.
19	Nonsolar RTS Values, Light to Heavy Construct.	1999	Need to review and update these RTS factors. Changes to the RTS derivation have occurred since these factors were first generated.
20	Representative Solar RTS Values, Light to Heavy	1999	
21	RTS Representative Zone Constructions	1999	
22	Average U-Factor for Basement Walls	1969	Update if TC 4.7 research yields new data or procedures. More likely for 2015 Handbook cycle. Minor corrections for Chicago discussion.
23	Average U-Factor for Basement Floors	1969	
24	Heat Loss Coefficient Fp of Slab Floors	1969	
25	Common Sizing Calculations in Other Chapters	2017	OK. No changes.
26	Summary of RTS Load Calculation procedures	2013	OK. No changes.
27	Monthly 5% Design Temps	2017	See later discussion of Example Problem. All these tables will change with the example.
28	Cooling Load Component: Lighting	2017	
29A	Conduction: Wall Component of Solar Irrad...	2017	
29B	Conduction: Wall Component of Sol-Air...	2017	
30	Window Component of Heat Gain	2017	
31	Window Component of Cooling Load...	2017	
32	Window Component of Cooling Load...	2017	
33	Window Component of Cooling Load...	2017	
34	Single Room Example Cooling Load (Jul 3pm)..	2017	
35	Single Room Example Cooling Load (Sep 5pm)...	2017	
36	Block Load Example: Envelope Area Summary	2017	
37	Block Load Example – First Floor...	2017	
38	Block Load Example – Second Floor...	2017	
39	Block Load Example – Overall Building	2017	

4. Status Review of Figures
  - a. Figures still valid and do not need updating
5. Review of Research Projects that could yield data for the Chapter.

**Table 2. Evaluation of Research Products Yielding Data**

#	Subject	Notes / Actions
RP-1742	Office Equipment Heat Gain (Bach)	Results included in 2017 HOF. Need to update table references to final research report.
RP-1729	Radiant Cooling Load Calculations	Project will be finished 1/31/2019. Chris Wilkins and Dove Feng will condense and summarize results for inclusion in Chapter 18.
WS-1816	Imaging Equipment	Will yield imaging eqpt heat gain data. Completion date TBD.
RTAR	Construction of Design Day Profiles	TC 4.2 RTAR initiated by Joe Huang. Will not yield data for Chapter 18 for this cycle.
RP	Climatic Design Data Update for 2021	TC 4.2 project goes to bid in August. A little behind schedule, but TC 4.2 is not concerned about having data in time for 2021 HOF.
RTAR	Ground Heat Transfer Calculation	TC 4.7 RTAR. Status not known. Monitor
RTAR	Climatic data for Tall Buildings	TC 4.2 and TC 9.12 collaborating on project to develop guidance for climatic data for upper stories of very tall buildings. For short term, general guidance may be available for 2021 HOF. For longer term research results may be available for 2025 HOF.

6. New Proposed Revisions

**Table 3. Carryover and New Proposals**

#	Subject	Actions
1	Synchronize solar azimuth angle calculation with Chapter 14	Use newest calculation procedure in 2021 example problem.
2	Synchronize variable naming in equations.	Deferred from 2017. (assigned to Jim Pegues)
3	Minor typos in equations 24 and 25	Assigned to Jim Pegues.
4	Heating warmup factors per Larry Spielvogel: With newer tighter construction and intermittently occupied buildings, there is concern that building systems do not have enough capacity to cool down or warm up. As a result, operators are running systems longer to maintain building conditions. Larry proposes adding verbiage for safety factors addressing these types of conditions.	Chris Wilkins will review current statement on safety factors and incorporate Larry's sentence.
5	Room loads to equipment sizing missing link.	See discussion in item 8 below.
6	Example Problem.	See discussion in item 9 below

8. Room Loads to Equipment Sizing Missing Link
  - a. There was a long, productive discussion of the outcome of Workshop 5, ASHRAE member feedback on what was needed, and possible paths forward. The final consensus is this needs more discussion and

input, particularly from young engineers. The plan is to submit another Workshop for Atlanta to collect that input, and there will be further discussion of this topic for the Handbook in Atlanta as well.

- b. Summary of key comments from the discussion:
- ASHRAE should not specify how to do this in detail because there are too many considerations and variations. A prescriptive discussion had too much risk for creating problems. (Workshop audience)
  - Start small – provide a basic VAV example. (Bob Doeffinger)
  - Identify the key factors to consider (Chris Wilkins – his workshop group was not sharp on details and could have used this guidance)
  - Provide guidance with new engineers in mind (Rachel Spitler and colleagues as new engineers at an MEP firm could use basic guidance to become more proficient with the design process).
  - Develop a flow chart of the process instead of an example. More visual (Bob Doeffinger).
  - Review ACCA Manual S for conceptual example of what others have done (Stephen Roth)
  - We need more member feedback, particularly from YEA members, to direct this. (Dove Feng, Rachel Spitler)
  - Note what load calculation outputs are used for. This may be more feasible than flow chart or example. (Larry Sun)
  - Reference industry resources on this subject. Need to do a minor literature search to discover these references. (Dove Feng). Dove noted a PG&E document on VAV design that Taylor Associates developed.
  - Do a “Workshop – Part 2” as a kind of “live” and interactive survey at the Atlanta conference.

9. Discussion of Chapter 18 Example Problem

- a. Current example is too elaborate and labor intensive to maintain as it deals with the whole ASHRAE Headquarters building with about 100 rooms.
- b. The concept for the current example was part of a strategy by a past TAC chair to use the ASHRAE HQ building as the basis for consistent examples across many HOF chapters. That strategy was not implemented. TC 4.1 is the only TC that implemented the example, and we have been maintaining it for about 4 editions.
- c. ASHRAE will be selling its current headquarters building and moving to a different facility in 2020. Therefore when the 2021 HOF is published the subject building will no longer be the ASHRAE HQ.
- d. Proposal: Adapt the simpler, more focused example problem from the Load Applications Application Manual (LCAM). In that manual Jeff Spitler used a single room that happened to come from the ASHRAE HQ building.
- e. Discussion.
- Use hypothetical weather data instead of HOF Atlanta weather. That might free you from having to recalculate each time TC 4.2 updates weather. (Chris Wilkins)
  - Choose single room examples from a few different building types. An example for an office doesn't necessarily provide all the application guidance you need. Office and restaurant were suggested. (Jeff Spitler)
  - Review ACCA Manual J for a conceptual example of how others have approached this (Stephen Roth)
  - For those who want a more extensive, whole building example, we can reference the 2017 HOF editions. If we use a simpler example going forward, we can still leverage the old examples. (Larry Sun)
  - A single room example, with some additional guidance could be effective. (Larry Sun)
- f. Action: Jim Pegues will develop one or two concepts for a new example problem considering the discussion suggestions. For discussion at Atlanta meeting in January.

10. Chapter 17 - Residential Chapter Review

- a. Current volunteers for review. PDFs will be circulated immediately after the Houston conference.

Dove Feng
Stephen Roth

## TC 4.1 Programs and Standards Subcommittee Meeting

5-6 PM, Sunday, June 24, 2018

Room 340AB, Third Floor of the Hilton

Minutes prepared by co-chair, Rachel Spitler ([rspitler@cyntergy.com](mailto:rspitler@cyntergy.com))

1. Meeting was convened immediately following the Research subcommittee meeting; the chair was absent, but the co-chairs and about fifteen others were present.
2. The committee and guests were informed about the programs at the current meeting: Workshop 5, "Load Calculations Missing Link: Taking Load Calculations Through to Equipment Sizing" (1:30-3:00 PM on Sunday, June 24, in Room 372AD, Third Floor of the George R. Brown Convention Center) and Seminar 61, "Convective Vs. Radiant Load Calculations: Are They Different?" (8:00-9:00 AM on Wednesday, June 27, in Room 372CF, Third Floor of the George R. Brown Convention Center).
3. The main item of discussion was future programs, specifically for the 2019 Winter meeting in Atlanta, GA. Program submissions for Atlanta are due August 3, 2018.
4. The possibility of a seminar reporting the results of RP 1729 was raised. Fred Bauman reported that University of California-Berkeley has also been researching radiant system loads and volunteered to also present. Consensus was reached to recommend to the full committee a seminar by University of Texas-Austin and UC-Berkeley for Winter 2019, if UT-Austin was amenable.
5. A lengthy discussion occurred on the possibility of a follow-up seminar to the "Missing Link" workshop presented earlier that day. Based on the results of the workshop, it was apparent that there was a need for some guidance on how to handle the "Missing Link" between load calculations and system selection, but no clear vision on what form the guidance should take. A consensus was reached that more feedback was needed from young engineers about what they would find useful to address this issue. Based on this, it was recommended that another workshop be conducted with the goal of garnering this information from the audience. Due to the typical high attendance at winter meetings, particularly of students and YEA, a consensus was reached to recommend a workshop to the full committee for Winter 2019. Larry Sun, Jim Pegues, and Rachel Spitler volunteered to organize the workshop.
6. There was no update on Standards.
7. The meeting adjourned around 5:25 PM.



# ASHRAE Technical Committee 4.1

*“Commitment to the ASHRAE Code of Ethics – In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, integrity and respect for others, and we shall avoid all real or perceived conflicts of interests. (See full Code of Ethics: <https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics>.)”*

## **Agenda for - TC4.1 Load Calculation Data & Procedures**

**Houston  
June 25, 2018**

**TC4.1 Load Calculation Data and Procedures  
Monday, 2:15 PM to 4:15 PM  
Hilton, 3<sup>rd</sup> Floor, Room 338**

- |   |   |
|---|---|
| 1. Call to Order  | Larry Sun   |
| 2. Roll Call  | Jingjuan “Dove” Feng  |
| 3. Introduction of Visitors   | Larry Sun   |
| 4. Approval and/or Corrections to St. Louis Meeting Minutes   | Larry Sun   |
| 5. Liaison Comments<br>Section Head<br>Chapter Technology Transfer<br>Research<br>Handbook<br>ALI/PDC<br>Standards Liaison<br>Staff, Research/Tech Services<br>TAC Chairman | Dennis Wessels,<br>Christopher Adams<br>Michael Pouchak<br>Dr. Bass Abushakra<br>James W. Bochat<br>James Dale Aswegan<br>Michael R. Vaughn<br>Kelley Cramm |
| 6. Research Subcommittee Report<br>Co Sponsor Research TC9.6  | Rolando Legarreta   |
| 7. Programs Subcommittee Report   | Glenn Friedman  |
| 8. Standards Subcommittee Report  | Glenn Friedman  |
| 9. Handbook Subcommittee Report<br>Residential Chap 17<br>Non-Residential Chap 18   | Chip Barnaby<br>Jim Pegues  |



## ASHRAE Technical Committee 4.1

10. ASHRAE Website for TC4.1	Jim Pegues
11. BIM.MTG	Jim Pegues
12. Old Business	Larry Sun
13. New Business	Larry Sun
14. Adjournment	Larry Sun

### Officers and voting members for 2017/2018:

Larry Sun	Chair	Voting
Suzanne LeViseur	Vice Chair	Voting
Jingjuan Feng	Secretary	Voting
Jim Pegues	Handbook Subcommittee Chair / BIM.MTG Liason	Voting
Glenn Friedman	Standards/Programs SubC Chair	Nonvoting
Rolando Legarreta	Research Subcommittee Chair	Voting
Chris Wilkins		Voting
Jeff Spitler		Voting
Charles Barnaby		Voting
Elyse Malherek		Voting



# ASHRAE Technical Committee 4.1

## Meetings

### **TC 4.1 Load Calculation Data and Procedures**

Monday 2:15pm-4:15pm  
Hilton, 3<sup>rd</sup> Floor, Room 338

### **TC 4.1 Handbook Subcommittee**

Sunday 3:00pm-4:00pm  
Hilton, 3<sup>rd</sup> Floor, Room 340AB

### **TC 4.1 Research Subcommittee**

Sunday 4:00pm-5:00pm  
Hilton, 3<sup>rd</sup> Floor, Room 340AB

### **TC 4.1 Programs & Standards Subcommittees**

Sunday 5:00pm-6:00pm  
Hilton, 3<sup>rd</sup> Floor, Room 340AB

### **RP-1729 Project Monitoring Subcommittee**

#### **Radiant Cooling**

Sunday 8:00am-9:00am  
Hilton, 3<sup>rd</sup> Floor, Room 337A

### **Workshop 5**

Load Calculations Missing Link:  
Taking Load Calculations Through  
Equipment Sizing  
Sunday 1:30-3:00 pm  
George R. Brown, 3<sup>rd</sup> Floor, Room 372AD

### **Seminar 61**

Convective vs. Radiant Load Calculations: Are  
They Different?  
Wednesday 8:00-9:30 am  
Monroe, Palmer House 6<sup>th</sup> Floor

	B	C	D	E	F	G	H	I	J	K	L	M	
1	<b>TC/TG/TRG Activity Feedback Form</b>												
2													
3	Please provide feedback on your TC/TG/TRG activities and return this form by <b>Tuesday night 9:00 pm</b> to your Section Head by email or drop off a printed copy in the Section Head's mailbox folder outside the ASHRAE Headquarters Room.												
4	Include activities performed since the last TC meeting (e.g. any letter ballots, submissions to RAC, award nominations, etc.)												
5	<b>PLEASE DO NOT LEAVE NUMERIC CELLS EMPTY. ENTER 0 IN CELLS IF THERE IS NO COUNT.</b>												
6													
7	TC	04.01 Load Calculation Data and Procedures											
8	Chair:					Larry Sun							
9													
10	Meeting was Held (City)	Houston				(Day)	Monday			(Date)	6/25/2018		
11													
12	<b>Membership</b>					Quorum Established			YES				
13						Number Present		Remote Participants		Total on Committee Roster			
14	Voting Members (excluding Non-Quorum Members)					9		0		9			
15	Non-Quorum Members					0		0		0			
16	Corresponding Members					9		0		46			
17	Provisional Members					4		0		20			
18	Visitors/Guests					6		0		n/a			
19	All members/guests who are ALSO YEA members					7		0		0			
20													
21	<b>Handbook Responsibilities</b>					<b>Standards Responsibilities</b>							
22	Total Number of Chapters					2		Total Number of Standards			2		
23	# Chapters voted out this meeting					0		# Standards recommended			0		
24	Special Publications (last six months)					0		Title:					
25													
26	<b>Program Activities (For This Meeting)</b>												
27	Total # of Forums			Total # of Seminars			Total # of Paper Sessions			Other Presentations			
28													
29	Submitted*	Sponsor	Co-sponsor	Submitted*	Sponsor	Co-Sponsor	Submitted*	Sponsor	Co-Sponsor	TC Research Results	Other Papers**		
30	0	0	0	2	2	0	0	0	0	0	0	0	
31													
32	<b>Current Research Activities (active)</b>					<b>TC Management</b>							
33	# of new/revised RTARs submitted					0		Minutes completed on time?			YES		
34	# of other active RTARs					0		Agenda distributed on time?			YES		
35	# of Work Statements submitted					0		Did Chair attend training?			NO		
36	# of other active Work Statements					0		Did Vice Chair attend?			YES		
37	# of active TRPs					0		Did Program Chair attend training?			NO		
38	# of active RPs					1		Did Handbook Chair attend training?			NO		
39	Problems getting RTAR/WS approved?					NO		Did Research Chair attend breakfast?			NO		
40													
41	<b>Other Technical Activities</b>					<b>Award Nominations (last six months)</b>							
42	# FAQs updated this meeting					0		# of Distinguished Service Nominations			0		
43	# New members added to roster					9		# of Exceptional Service Nominations			0		
44								# of Other Nominations: Hightower, Research, Fellow,etc			0		
45								Specify Award :					
46													
47	<b>Any Concerns or requests for the Technical Activities Committee? (Please type in Space Below)</b>												
48													
49													
50													
51													
52													
53													
54													



Shaping Tomorrow's  
Built Environment Today

### TC Sign-in Sheet

Meeting Info: TC 4.1

Date: 6/25/2018

Name	Affiliation	E-mail	Member (Voting, Corresponding, or Guest?)	VEA Member? (Yes/No)
Arena Friedman	Taylor Engineering	gfriedman@taylor-engineering.com	CM AVM	N
Jingwan Dove Feng	Taylor Engineering	dfeng@taylor-engineering.com	Voting Secretary	N
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