

ASHRAE
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 7.9
TC/TG/TRG/TITLE:	Building Commissioning
DATE OF MEETING:	February 2 nd , 2020
LOCATION:	Orlando, FL

MEMBERS

PRESENT	MEMBER NAME	TERM	PRESENT	MEMBER NAME	TERM
<input checked="" type="checkbox"/>	Justin Seter – Chair	2016 - 2020	<input type="checkbox"/>	Bradley Brooks	2017 - 2021
<input checked="" type="checkbox"/>	Mina Agarabi – Vice Chair	2019 - 2022	<input checked="" type="checkbox"/>	Wade Conlan	2017 - 2021
<input checked="" type="checkbox"/>	Dave Shipley – Secretary / Research / Web	2019 – 2022	<input checked="" type="checkbox"/>	Roger Lautz	2018 - 2022
<input checked="" type="checkbox"/>	Walter Grondzik	2019 - 2023	<input checked="" type="checkbox"/>	Justin Garner	2018 - 2022
<input checked="" type="checkbox"/>	Ole Teisen	2016 - 2020	<input checked="" type="checkbox"/>	Jim Vallort – Programs & Handbook	2018 - 2022
<input type="checkbox"/>			<input type="checkbox"/>		

NON-VOTING MEMBER SUBCOMMITTEE CHAIRS

PRESENT	NAME
<input checked="" type="checkbox"/>	Tom Cappellin – Membership

EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE

See Attached sign in sheet

DISTRIBUTION

<i>All Members of TC/TG/TRG plus the following:</i>	
TAC Section Head:	Craig Messmer
TAC Chair:	Thomas Justice
All Committee Liaisons As Shown On TC/TG/TRG Rosters:	Steve Hammerling
Manager of Standards	Rick Heiden
Manager of Research & Technical Services	Michael R. Vaughn

1. Call To Order / Scope / Introduction

- Justin Seter (Chair) called the meeting to order at 3:02 PM. All who were present provided self-introductions, including their name and affiliation.

2. Voting Member Roll Call

- There were 8 voting members present out of a total of 10 voting members. A quorum of voting members was present for the meeting.

3. Approval of Kansas City Minutes

- The draft minutes from Kansas City were reviewed. Motion was made and seconded to approve draft minutes as published.
 - Jim moved to approve, Roger seconded.
- Motion passed: 8 – 0 – 0 (Yea – Nay – Abstain)

4. ASHRAE Administrative Matters / Issues from TC Chairs Breakfast

TC Chair's Breakfast Notes:

1. There was a proposal to streamline TCs, to combine where it made sense. After some discussion, there are at least three mergers that are going to happen, to be voted at this meeting, and possibly more. It is going to be a voluntary process and has to be voted on by the relevant TCs.
2. Roster updates need to be done by Tuesday night. We need to replace some members who are rolling off.
3. Please log into your bio on the ASHRAE website and correct anything that is wrong. We get quite a few kickbacks from wrong emails.
4. As a TC and an organization, program submissions have been great. Jim will talk about that, but the due dates for Austin are very soon: 10 February! Number one reason program submissions get turned down is because they are incomplete.
5. There is training available on-site at the conferences. Take a look at what's available.
6. We have not done remote participation meetings for the last couple of conferences. We have had some requests again to run that and may try it again.
7. Hightower Award nominations have sometimes not been awarded because there were no submissions. Please consider filling out a nomination if you know a deserving candidate.
8. ASHRAE's strategic vision has been newly published, covering 2020 to 2024. The link was provided in the agenda.
9. There is a dedicated TC collaboration space, so if you need a space to have an additional ad hoc meeting there is one now.
10. The full notes from the TC Chairs Breakfast are provided at the end of these minutes.

5. Correspondence / Announcements

Most correspondence has pertained to things like journal reviews and paper reviews.

6. Society Liaisons

Bill Murphy, Research Liaison. Dave Shipley will attend the Research Subcommittee breakfast Monday morning. They are always looking for new RTARs. There is a new system for publications, called a PTAR. This provides a different path, because

publications didn't fit well in the RTAR path, and often publications will not go forward unless there is some funding. They are welcoming submissions that may lead to a publication that can be sold in the bookstore.

Craig Messmer, Section 7 head. He asked if anyone had any concerns, but there were none. This committee is probably too large to be part of the pattern of mergers. He asked us to turn in the activity form and any roster changes by Tuesday.

7. Sub-Committee Reports

- Membership..... Tom Cappellin
 - 230 people on the roster
 - 10 voting members (one non quorum)
 - 1 non-voting subcommittee chair
 - 57 provisional corresponding members
 - 162 Corresponding members
 - 26 YEA

- Program Jim Vallort
 - February 10 is the deadline for program submissions for Austin. We no longer have a month after the meeting to get program submissions together, because they are due the Monday after we get home. The presentation does not have to be done, but you need a title and abstract, and you need to answer all the questions.
 - This meeting now needs to focus on the Chicago meeting and after.
 - We have one of the largest TCs in ASHRAE. It is an incredible network. We have four programs we sponsored, and there are another five with the word commissioning in the title.
 - We are soliciting people to put a check mark beside their name on the sign-in sheet if they want to join one of our three subcommittees.
 - Chicago has a track ideally suited to commissioning, so we should start planning for it now. Submissions for seminars will be due July 8. There are even a couple of other tracks that might be suitable for commissioning presentations.
 - Notes of the subcommittee meeting are provided at the end of these minutes.

- Research..... David Shipley
 - Dave Shipley wrote an RTAR on a project to test whether the new (not yet published) Standard 207P works well and produces appropriate results. TC 7.5 is the natural home for that RTAR and they are talking about it right now in their FDD subcommittee. Dave will attend their research subcommittee meeting tomorrow and their main TC meeting on Tuesday to find out how it is proceeding. We hope they will take it on board, make improvements to it, and then ask us for co-sponsorship.
 - We have some other research ideas, but nothing as active as that one.
 - Notes of the subcommittee meeting are provided at the end of these minutes.

- Handbook (Applications - Chapter 43)..... Open
 - There is a draft revised chapter prepared by Charlie Shieh, with some additional sections. Jim Vallort is going to go through it and insert all its changes into the version on the authoring portal. There are some other needed additions, such as monitoring-based commissioning. He has a couple of volunteers to help him, but is certainly looking for other help. There is the published book version of our chapter, which comes out every four years, and there is an online version that is virtually under continuous maintenance

- Standards Walter Grondzik

- This committee has only one member. It is a resource for someone who wants to propose a new standard related to commissioning. This subcommittee will work with you to help you get it through the standards approval process. Guideline 1.6 was the last one to come to the subcommittee. He can also help with special publications that are not intended to go through the PTAR process (through research).
- Web Site..... David Shipley
 - Website: <http://tc0709.ashraetcs.org/>
 - Lots of great content that goes back over 20 years
 - Forward all content that should be on website to Website Subcommittee Chair i.e. Meeting Minutes, Programs
- Journal and Insights Bradley Brooks
 - Nothing to report. It has been challenging getting the Journal/Insights editor to provide any information on what is being published or going to be published related to TC 7.9 Commissioning. On the other hand, no one on TC 7.9 or within ASHRAE have ever reached out to Bradley to offer information to be included in Journal/Insights editor. He wonders if it is worth having a liaison.
 - We do get Journal/Insights contacting our TC looking for review.
- Honors & Awards Walter Grondzik
 - Requesting anyone that wants to be awarded by ASHRAE, please send requests to Honors & Awards chair. Walter is a resource for you, to help you get the nomination through the process.

8. Cognizant Committee Liaison Reports

- ALI Commissioning Courses..... Walter Grondzik
 - TC 7.9 is the cognizant TC for these, with a few exceptions. Rick Casault’s full-day course preceded this TC’s involvement. Walter was asked to consolidate courses for new commissioning guideline and standard into one course, which will be offered this meeting. A one-hour course on existing commissioning has been approved and is under development. It may be offered later this year.
 - ALI has also asked him to develop a 6-hour course on navigating ASHRAE’s certification process. It has not been formally approved, and he cannot obtain access to the exam to target the course material. We should be able to obtain the outline of the number of questions on each topic area (the JTA).
 - There are two more one-hour courses proposed by ALI. They will probably be developed by Sarah Maston.
- SSPC 300 The Commissioning Process..... Jerry Kettler
 - Jerry provided a report on the activities of SSPC. Full notes of his report are provided at the end of these minutes.
 - Jerry moved the creation of a Guideline 1.7 for Ongoing Commissioning. Roger seconded. It needs a title, purpose, and scope. Jerry would write that in the next month. The motion is amended to clarify it: to explore the creation of a title, purpose, and scope for an Ongoing Commissioning guideline. Vote was 8-0-1. Motion passed.
 - Guideline 1.1 has been revised and approved to be submitted for publication public review.
 - Jay is looking for volunteers to be chair and members of some of the guideline committees.
- GPC 1.2 Tom Cappellin

- Guideline 0.2 Committee is in limbo at the moment, waiting for 300 to provide direction.
- This committee needs a chair and members.
- GPC 1.4 Tom Cappellin
 - This has been published and is available in the bookstore.
- GPC 1.6..... Wade Conlan
 - They have some sections completed that should go out for a vote shortly, and are working on some new sections.

9. Other Committee Liaison Reports

- SPC-90.1 “Energy Efficient Design of New Buildings” Jay Enck
 - Already covered under the report on SSPC 300.
- SPC-90.4 – Energy Efficient Design of Data Centers Gerardo Alfonso
 - Standard 90.4 2019 version was published. It is available at the bookstore. It incorporates appendix E, section 6 lowered values for MLC (Mechanical Load Component) and section 8 lowered ELC (Electrical Loss Component) segment values for UPS. Harmonized sections numbering with Standard 90.1.
 - Working on how to incorporate renewables and sync up publication date with 90.1 in order to 90.1 include the 90.4 latest version.
- SPC-111 - Testing and Balancing for New Buildings”Justin Garner
 - Standard is being submitted for public review.
- TC 7.1 “Integrated Building Design” David Allen
 - David Allen not present.
- TC 7.3 “Operation and Maintenance Management”Mina Agarabi
 - Subcommittees Meet on Monday and Main Committee is Tuesday
 - There is an MTG on Existing Building Operations, Tuesday, that could use representation from TC 7.9
 - There is a debate on Operations and Maintenance
 - They will be making an effort to team up with 7.9 for submissions for Chicago.
- TC 7.7 Testing and Balancing Justin Garner
 - Meeting is tomorrow afternoon. Biggest thing going on is co-sponsorship of RP 1741. “Understanding Fan Coil Components and How They Relate to Energy Consumption and Energy Modeling.” Papers are being presented at the ASHRAE conferences.
- TC 9.6 “Healthcare” Roger Lautz
 - 9.6 meets after us, but subcommittees are Sunday. Main item is research and getting more data for healthcare. Commissioning is pretty set with healthcare for now.
- TC 1.6 “Terminology” Roger Lautz
 - Meet at the same time as SPC 300. There are well over 10,000 terms in the database. Most of the ASHRAE terms are on the website. The database is available to anyone who is writing a standard or guideline or any publication.
- TC 9.10 “Laboratory Systems” Wade Conlan / Mike Amstadt
 - They are editing the chapter for the laboratory design guide.

- AEDG “Advanced Energy Design Guidelines” Jay Enck
 1. ZEB Multi-family Guide
 - a. Project Status Update
 - b. 60% Peer Review & Advisory Group
 2. Standard 202 Penetration into Codes and other Standards
 - a. 90.1-2018
 - i. Requires commissioning and cites STD 202. It has commissioning requirements for commissioning in all the major sections. See Cx requirements in Chapter 4 and Appendix H
 - ii. 90.1-2018 also makes the Cx provider responsible for reviewing and enforcing the 90.1 requirements, and apparently makes the CxP a building inspector
 - b. ICGCC-2018.1001.3.1.2 Says “the Cx process shall be performed in accordance with this section using ANSI/ASHRAE/IES Standard 202 or other generally accepted engineering standards acceptable to the AHJ”
 - c. ASTM E 2813 Practice for Building Enclosure Commissioning 2.2 references “ASHRAE Guidelines and Standards: ANSI/ASHRAE/IES Standard 202 “Commissioning Process for Buildings and Systems”,
 - d. E2847-15 Standard Guide for Building Enclosure Commissioning states: “This guide is complementary to Practice E2813 and is aligned with ANSI/ASHRAE/IES Standard 202 and ASHRAE Guideline 0 “The Commissioning Process”
 3. LEED v4.1
 - a. USGBC recently released LEED V4.1 BD+C and opened the beta registration in January. The new version is touted as bigger, stronger, and bolder.
 - i. The highlights include 3 major changes, two of them in Energy and Atmosphere (EA) related credits:
 1. The energy metrics include both cost and greenhouse gas emissions (a first for LEED).
 2. An upgrade to ASHRAE 90.1-2016.
 - ii. Applicable and achievable credit requirements throughout the rating system:
 1. Rainwater Management requirement with a lower minimum percentile storm events and added guidance for zero-lot-line projects.
 2. Renewable Energy credit that addresses diverse methods of renewables procurement and evolving global renewables markets.
 3. Restructured Materials and Resources credits that include options acknowledging efforts at varying levels, bridging the gap from where the market is currently to the goals identified in LEED v4 and carried into LEED v4.1.

10. Other Association Reports

- BCA Tom Poeling
 - An ongoing commissioning best practices guide will be presented at booth 8818. You can go see it there.
 - Annual conference in September in Phoenix. Abstracts are welcome.
 - They have joined a professional credential council to track legislation on bills to ban private certifications.

- They are putting together a podcast.
- They are soliciting for awards for young people in the field.
- They are looking at risks to the profession.
- NEBB: Curtis Anthony
 - NEBB offers the following certification programs:
 - BSC-CP: Building Systems Commissioning Certified Professional
 - CXCT: Commissioning Technician Certification
 - RCx EB: Retro Commissioning Certified Professional
 - CxPP: Commissioning Process Professional
 - Two are ANSI standard certifications.
 - Their annual conference will be at Greenbriar in West Virginia in April.
- ACG Jim Magee
 - 1. Cx Energy 2020 in San Diego, CA on April 6 – 9.
 - 1.1. Conference Program available online @ www.cxenergy.com
 - 1.2. Program Link: <https://www.cxenergy.com/wp-content/uploads/CxEnergy-2020-Preliminary>
 - 2. Cx Energy Pre-Conference Activities
 - 2.1. CxA Workshop and Exam
 - 2.2. EMP Workshop and Exam
 - 2.3. AABC TBE Workshop and Exam
 - 2.4. Cx Energy Open Golf Tournament sponsored by EMA
 - 2.5. Full-Day Seminar: Uptime Institute Mission Critical Tier Standards
 - 3. Cx Energy Post Conference Activities
 - 3.1. San Diego Airport technical tour
 - 3.2. UCSD Utility Plant technical tour
 - 3.3. Closing Happy Hour
 - 4. ACG Guideline 3rd Edition
 - 4.1. Reimagined with ASHRAE Commissioning Essential foundation
 - 4.2. Liaison committee with ASHRAE
 - 4.3. Essays/explanations of best practices and alternative methods
 - 4.4. Reflect updated 5g IT/AI/IIoT tools for efficient process implementation
 - 4.5. Discipline-specific sections for numerous building systems
 - 4.6. Electronic publication with evolving platform
 - 5. ACG Membership Survey
 - 5.1. Ongoing development
 - 6. EMA Industry Collaboration
 - 6.1. Webinars
 - 6.2. Training
- CxEnergy Jim
 - CX Energy is in San Diego this year. There are a number of training opportunities being offered in conjunction.
 - A membership survey is underway.
- AABC Justin Garner
 - No report.
- ASTM H. Jay Enck
 - They have a guide and a standard that are referencing our guidelines now.
- Section 7 Head – Update Craig Messmer
 - See above under Society Liaisons.

11. Old Business

- The JR Anderson Scholarship is now fully funded in perpetuity, for young engineers to attend a meeting like this.
- A copy of the scholarship application form is provided at the end of these minutes.

12. New Business

- ASHRAE sent an email soliciting feedback on a survey on the strategic plan.

13. Next Meeting

- Sunday, June 28th @ 3:00 PM EST in Austin

14. Adjournment

- Meeting adjourned at 4:57 P.M. EST

15. Action Items

- No Items.

16. Motions

- Motion for meeting minutes for Kansas City approval – PASSED
- Motion to explore the creation of a title, purpose, and scope for an Ongoing Commissioning guideline - PASSED

END OF MINUTES

Attachments

- Notes from TC Chair's breakfast meeting
- Program subcommittee meeting notes
- Research subcommittee meeting notes
- Report on SSPC 300, STD 202 and Industry Programs
- Application form for JR Anderson Scholarship

Announcements and Reminders for TC/TG/TRG & MTG Chairs Orlando 2020

A. NEW!

1. Discuss and confirm that TGs, TRGs, and MTGs in section will continue in 20-21 Society Year

From TC MOP:

1.5. Review

- 1.5.1.** Once a year, preferably at, or prior to, each Annual meeting, the Committee Chair and Committee Membership shall evaluate their progress in accomplishing the purpose for which they were constituted and recommend one of the following actions to their Section Head:
- a) Continue as a TC, TG, MTG, or TRG
 - b) Convert from a TG to a TC
 - c) Convert from a TRG to a TG or TC
 - d) Merge with a TC/TG/TRG and submit a revised scope for the merged committee
 - e) Dissolve the TC, TG, MTG, or TRG.
 - i) If a TC/TG/TRG/MTG votes to disband, it must establish whether any current responsibilities should be continued and, if so, recommend existing TC/TRG/MTG(s) to assume responsibility and obtain those committee's written concurrence

2. 20-21 Roster Update & Schedule

Remember, the current 2019-2020 roster for your TC, TG or MTG is in effect until after the June meeting later this year.

By now, each TC Chair should have received a unique link to an online workbook for your particular TC that will allow you to update membership and roster assignments in order to create your SY20-21 roster. Please make sure that you received this link and that the completed workbook is submitted on or before Tuesday night, February 4th, of the Winter Meeting. On-site training will be available at the Winter Meeting immediately after the TC chairs breakfast. A recorded training presentation on how to use this workbook is posted on our website at www.ashrae.org/technical-resources/technical-committees/tc-training-and-presentations.

3. New Section Head/TC leadership Basecamp

A new Basecamp (<https://3.basecamp.com/3106353/projects/15520814>) is set up to communicate and transfer documents between TAC Section Heads and TC leadership (Chairs, Vice Chairs, Secretary) at TC members can participate at <https://3.basecamp.com/3106353/join/8MHSs5gveaLg>.

4. TC Re-Org update

Status update sent to TCs by section heads. Summary letter available on 'TAC Section Heads and TC Leadership' Basecamp (<https://3.basecamp.com/3106353/projects/15520814>).

5. New Collaborative Meeting Space at ASHRAE Headquarters

- **TC Collaboration Area** (Hilton Orlando LL, Orange D)
- Available for your use
- Sunday, Monday, Tuesday 7:30 AM – 4:00 PM,
- Wednesday 7:30 AM – 1:00 PM
- You are encouraged to use it for various TC functions – meetings that did not make the official schedule, ad hoc meetings, any other TC related activity

6. MTGs that have been formed since Kansas City Meeting

- **MTG.CEA** (Controlled Environment Agriculture)

- **MTG.RAC** (Refrigeration and Air Conditioning)
Both are meeting in Orlando

7. 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)

B. AT THIS MEETING

1. On-Site Training Options

- TC/TG/TRG/MTG Chair's Training Topic - "Roster Updates & TC Activity Sheets"**
Sunday February 2nd, 8:00-9:00 AM in Room Orlando I/II (LL) in the Orlando Hilton. The training will immediately follow the joint TC Chair's Breakfast.
- RAC's Research Subcommittee Chair's Breakfast**
Monday, February 3rd, 6:30 AM – 9:00 AM in Room Orlando I/II (LL) in the Orlando Hilton. 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.
- TC Program Subcommittee Chair Training**
Tuesday, February 4th, 11:15 AM – Noon in Room Lake Down B (L). *"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.

2. Free Wi-Fi Access at this Society meeting

Orlando Hilton & GRBCC Wi-Fi Access: Network Name: **ASHRAE**, PWD: **ASHRAE125** (both case sensitive).

C. UPCOMING DEADLINES

1. TC Activity Forms for the Orlando Meeting are due to Your Section Head before Wednesday, 2/5/2020

TC/TG/TRG Activity Feedback Form (Excel) can downloaded from the TAC Section and TC Leadership Basecamp - 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.

2. Seminar and Forum proposals for Austin are due by Monday, February 10, 2020.

Please visit the following site to submit your proposal:

For more information, go to: www.ashrae.org/austin

3. 20-21 Roster Update & Schedule

Please make sure that the completed workbook is submitted on or before Tuesday night, February 4th, of the Winter Meeting. On-site training will be available at the Winter Meeting immediately after the TC chairs breakfast. A recorded training presentation on how to use this workbook is posted on our website at www.ashrae.org/technical-resources/technical-committees/tc-training-and-presentations.

4. 2020 RPM (Remote Participation Meetings) Request for Austin Meeting

- If you think you might need an RPM meeting in Austin, please submit your request via the committee meeting room request link on the ASHRAE website before the submission deadline of ~ **April 1, 2020**
- Use the form for Technical Committees under the Committee Meetings accordion.

5. 2020-2021 Hightower Award Nominations by Tuesday, September 1st

TAC wishes to encourage TCs to make nominations for the 2020-2021 *George B. Hightower Technical Achievement Award*. Nominations are due to Section Heads by September 1, 2020 or sooner. 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>

D. REMINDERS

- 1. 19-20 Rosters Access & Distribution** - Remember, the current 2019-2020 roster for your TC, TG or MTG is in effect until after the June meeting this year – through Sunday, June 30th.
- 2. 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>
- 3. 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: www.ashrae.org/about-ashrae.
- 4. 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.
- 5. 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 Technical Services, Steve Hammerling at shammerling@ashrae.org or

MOTS@ashrae.net.

6. Is Your Committee Website up to Date?

If not, please ask your webmaster to at least post the latest minutes and the Kansas City 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. Please note a listserv is available to TCs to communicate with rostered members and all interested in keeping track of TC activities.

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). 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 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.

7. TC 2019-2020 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
- 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.

8. TC E-mail Position Aliases available

SY 19-20 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 19-20 E-mail Alias list with these position aliases is posted on the ASHRAE website www.ashrae.org/TCs under the heading *Procedures, Forms & Information for TCs/TGs/MTGs and TRGs*.

9. Restructured 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 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 under the headings *Procedures, Forms & Information for TCs/TGs/MTGs and TRGs – Routine Forms for TC/TG/MTGs/TRGs*.

11. 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.

The new presentation and presentation notes files are posted now at the following link 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.

12. 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*

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 Chicago 2021 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). You can also add your track suggestion in the “Comment” section of the TC Activity form for the Orlando 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 or Charlie Henck (2018-19 PDC chair) PDCchair@ashrae.net with your course ideas.

4. ASHRAE Certification Committee seeking ideas from TCs for possible professional certification programs

Certification Committee seeking ideas from TCs for possible professional certification programs related to 1) support adaptability, resilience and recovery of buildings and communities, 2) promote understanding of indoor environmental quality (IEQ) among practitioners). Representatives from the Certification Committee will meet with TCs in Orlando that expressed an interest or had ideas.

F. CURRENT & UPCOMING ASHRAE CONFERENCE PROGRAMS

1. Orlando Winter Conference – Feb. 1 – Feb. 5, 2020

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

Conference Program Chair: Melanie Derby.

Program Focus at Orlando Winter Conference

- i. Track 1: HVAC&R Fundamentals and Applications
- ii. Track 2: Systems and Equipment
- iii. Track 3: Refrigeration & Refrigerants
- iv. Track 4: Cutting Edge Approaches
- v. Track 5: High Efficiency Design and Operation
- vi. Track 6: Big Data and Smart Controls
- vii. Track 7: Ventilation, IAQ and Air Distribution Systems
- viii. Track 8: Standards, Guidelines and Codes

2. Austin Annual Conference - June 27 – July 1, 2020

Seminar and Forum proposals for Austin are due by **February 10, 2020**.
Conference Website: www.ashrae.org/austin
Conference Program Chair: Bing Liu

Program Focus at Austin Annual Conference:

- i. Track 1: Fundamentals and Applications
- ii. Track 2: HVAC&R Systems and Equipment
- iii. Track 3: Research Summit
- iv. Track 4: Professional Development
- v. Track 5: Grid-Interactive Efficient Built Environment
- vi. Track 6: Multifamily and Residential Buildings
- vii. Track 7: Resilient Buildings and Communities
- viii. Track 8: Zero Energy Buildings and Communities: Opportunities and Challenges
- ix. Track 9: Building Myths

3. Chicago Winter Conference – January 23-27, 2021

Seminar and Forum proposals for Chicago are due by **July 8, 2020**.
Conference Website: www.ashrae.org/chicago
Conference Program Chair: tbd

Possible Track ideas at Chicago Winter Conference:

- HVAC&R Fundamentals and Applications
- Systems and Equipment
- Refrigeration and Refrigerants
- Environmental Health through IEQ
- Building Performance and Commissioning for Operation and Management
- Energy Conservation
- International Design
- Standards, Guidelines and Codes

G. OTHER UPCOMING WORKSHOPS, CONFERENCES AND EVENTS

1. 2020

- i. 13th IEA Heat Pump Conference – May 11 to 14, 2020 – Ramada Plaza Hotel, Jeju, Korea – <http://www.hpc2020.org> - Abstract Submission Deadline extended to June 30, 2019. See handout at end of this document
- ii. 2020 Building Performance Analysis Conference & SimBuild Co-organized by ASHRAE and IBPSA-USA – August 12-14, 2020 – Chicago, IL - www.ashrae.org/buildperform2020.
- iii. Ventilation 2021: 13th International Ventilation Conference for Contaminant Control – August 15-18, 2021 – Toronto, Canada – www.ashrae.org/ventilation2021.

- iv. IAQ 2020: Indoor Environmental Quality Performance Approaches: Transitioning from IAQ to IEQ – September 14-16, 2020 – Athens, Greece - www.ashrae.org/iaq2020
- v. 4th International Conference on Efficient Building Design: Materials and HVAC Equipment Technologies – October 1-2, 2020 – Beirut, Lebanon – www.ashrae.org/beirut.
- v. AHR Expo 2021 – January 25-28, 2021 – Chicago, IL - <https://ahrexpo.com/>

TC 7.9 Program Sub-Committee Meeting Notes

1. Planning for 2020 Summer Austin program submissions
 - a. Deadline: Monday, February 10, 2020 Program (Seminar, Forum, Workshop, Debate and Panel) and Extended Abstract Paper Due
 - b. <https://www.ashrae.org/conferences/2020-annual-conference-austin-texas>
 - c. Austin Session Chairs
 - i. We will need sessions chairs to help finalize the sessions
 - d. Jim Vallort will combine any presentations submitted into a session if an individual presentation is submitted.
2. Planning for 2021 Winter Chicago program submissions
 - a. <https://www.ashrae.org/conferences/2021-winter-conference-chicago>
 - b. Tracks of specific interest to TC 7.9
 - i. Building Performance and Commissioning for Operation and Management:
 - ii. Energy Conservation
 - iii. Standards, Guidelines and Codes
 - c. Wednesday, July 8, 2020: Final Conference Papers Due - Submitted for Review (Includes Bio, Learning Objectives and Methods of Assessment); Request for Conference Paper Sessions Due
 - d. We will be striving to get sub-committee membership for Programs, Handbook and Research. This will allow for communications to be sent to focused volunteers. For example, in May 2020 we can start thinking about program topics, approach clients about case studies, etc all before coming to Austin. This will allow us to finalize program submissions at the Summer meeting for the Winter Meeting.
3. The success of integrating Commissioning into other TCs
 - a. It has been observed that the concept of Commissioning has been integrated into many other TC's within ASHRAE. This is a success for 7.9; we need all members who volunteer in other TCs to remind them to reference TC7.9 as a co-sponsor if the session is related to Commissioning
4. Closing message
 - a. If you have a potential presentation that would benefit ASHRAE members – Contact Jim Vallort JVALLORT@Comcast.net . The deadline is February 10th for completed submissions.
 - b. If you want to be a session chair – Contact Jim Vallort JVALLORT@Comcast.net .
 - c. Let's start planning for Chicago 2021. We have a dedicated track on Cx!
5. Adjourn

TC 7.9 Research Subcommittee Meeting Draft Minutes

2020 Winter Meeting

Saturday, February 1st, 7:00 – 10:00 am, Hilton Orlando Turkey Lake Room (L)

Meeting is combined with Handbook and Programs (Programs and Handbook are before us, so we should start around 9)

1. Call to Order: David Shipley

Present: Reinhard Seidl, Gerald Kettler, Bill Stump, Mike Amstadt, Wade Conlan, Ian Nelson, Tim Corbett, Justin Seter, Larry Ollice, Mina Agarabi, Jim Vallort

2. Planned Research Activities

Priority	Title	Author	Documents	Most recent status
1	Evaluation of ASHRAE Standard 207P	David Shipley	Draft RTAR available upon request (from author)	<p>February 2020: This draft RTAR will be discussed in the FDD subcommittee and the research subcommittee of TC 7.5 (Smart Buildings). We are hopeful that someone from 7.5 will take it on and modify it appropriately before it gets submitted. 7.5 is the natural home for the RTAR and should have the expertise to improve it substantially. Dave will not attend TC 7.5's FDD subcommittee, because it meets during TC 7.9's main meeting (and Dave is taking over as TC secretary at this meeting). Dave will get to the 7.5 research subcommittee and the main TC meeting and will monitor the progress of this RTAR. If it proceeds as hoped, we can offer to co-sponsor it.</p> <p><i>June 2019: Draft RTAR from 207P. Dave asked whether the group would like to review this RTAR if it becomes more ready for submission, to consider whether TC 7.9 should co-sponsor it. The consensus was that we should consider it.</i></p>
	Identification and Collection of Performance Metrics for Building Construction Projects	Kristin Heinemeier		<p><i>January 2019: Kristin has had some discussions with reviewers of the RTAR on whether the initial study is to include both commissioned and non-commissioned buildings. The study that compares two groups of buildings may be more attractive to research topic reviewers. The downside is that it would be more complicated to collect data on both commissioned and non-commissioned buildings. The study would collect metrics from construction projects that may potentially be affected by commissioned, to establish a baseline in non-commissioned buildings. There has been a white paper from BCA/LBNL (recently redone) that presents some of the costs and benefits of commissioning. One idea would be to try to make our study, in addition to what else we collect, compile a dataset of metrics BCA/LBNL used to serve as a control group for that study. We could look for the largest subset of their dataset, in terms of building type and region, and focus our study on the same building type and region. Kristin will change the topic to "Identification and Collection of Performance Metrics for Building Construction Projects." In a lot of places, people are now commissioning minimally, only because they are forced to by regulation. Should we change the study to compare buildings that are commissioned only to code versus buildings that are commissioned more thoroughly? Kristin will review the LBNL report to figure out how we can provide some linkage between</i></p>

Note: All the current RTARs and work statements will be made available on the TC website. Please go and download anything you need.

Priority	Title	Author	Documents	Most recent status
				<p><i>that and our study, so we can provide some kind of control group for that study. She will rewrite the RTAR, with help from Dave Shipley, Reinhard Seidl. She will reach out to Elliott Crowe, who led the LBNL study. Mina Agarabi is providing Kristin the contact information for Ole Teisen. He has been working on quality management and digitalization for building performance. The draft RTAR will be distributed to the group for consideration by November.</i></p> <p>June 2018: The challenge of this project is that the only way it can provide a statistically valid sample for comparing against the commissioned buildings we might collect in a subsequent study, you would probably need a much larger number of buildings. 12 of each building type will have too much variability to provide a good baseline. It might be better to narrow this down to one building type or one region, in order to reduce the variability and get better statistical validity for the same study. You need sample size to overcome the noise in the data.</p> <p><i>January 2018: Kristin has drafted the start of an RTAR. The current working title is "Identification and Collection of Performance Metrics for Non-Commissioned Building Construction Projects." She will not be attending the meeting, but would like the group to discuss this draft and provide feedback. Others who are interested in the topic would be welcome to help develop it. Contact Dave Shipley or Kristin Heinemeier to obtain a copy of the draft. Dave will send this draft to Reinhard Seidl and Chuck Dorgan, so they can provide feedback to Kristin.</i></p> <p>June 2017: Nothing has happened on this project since the idea was first suggested in June 2016. Kristin has not made any progress yet, but will commit to moving it forward. Ideally this would identify the difficulties with buildings that are not commissioned.</p> <p><i>January 2017: Dave should move this up into the current research ideas. Nothing has happened on it since June, as far as we know.</i></p> <p>June 2016: What can ASHRAE do about alleviating the one big barrier to the widespread adoption of commissioning? What is that? Probably convincing the owner that commissioning is required to obtain a building that works properly. The owner thinks he is already paying for a building that works properly and doesn't understand why he needs to pay more for commissioning in order to get that.</p> <p>Problem of the cost of an "epidemiological" study of buildings commissioned versus non-commissioned. Can we find a metric that is cheap to collect, to be able to quickly assess the cost of not commissioning a building? Can we find a quick way of assessing the commissioning of a building?</p>

Note: All the current RTARs and work statements will be made available on the TC website. Please go and download anything you need.

Priority	Title	Author	Documents	Most recent status
				Kristin will volunteer to work on an RTAR on this topic. John Gibbemeyer will review whatever Kristin drafts.

3. Completed Research Projects

Title	Author	Documents	Most recent status
WS 1587: Improved Tools for Control Loop Performance Measurement and Evaluation	Steve Taylor, TC 1.4		June 2017: This project is complete. The final report is available on the ASHRAE website.

4. Other Items

Columns will be added to the sign-in sheet that circulates at the main TC, to solicit people’s membership on the three subcommittees. We will post rosters on the website. We will try to do interim subcommittee meetings as required in between the meetings.

There was a general discussion about sources for new research topics.

- How has code requirements for commissioning affected the practice of commissioning? Might be more of a SurveyMonkey than an RTAR.
- Mina brought up the old idea of testing comfort in conference centers, using ASHRAE YEA people with portable monitoring equipment. Dave volunteered to take the old material and try to reformat it as an RTAR.

TC 7.9 – Commissioning

Orlando Meeting – February 2, 2020

Report on SSPC 300, STD 202 and Industry Programs

By Gerald J Kettler, PE, CCP, CPMP, BEAP, BEMP

1. SSPC 300, Commissioning
 - a. SSPC 300 is the master committee overseeing all the ASHRAE Cx standards and guidelines, and documentation coordination with Cx Industry organizations.
 - b. There are active sub-committees for Standard 202, Guideline 0, 1.1, 1.4, and 1.6. Guideline 1.5, Smoke Control has been republished and Guideline 1.3, Training is not currently active.
 - c. A new committee has been formed to develop an ASHRAE Standard 230 for Commissioning Process for Existing Systems and Assemblies. The development process is working with PNNL and DOE to provide a standard that serves the jurisdictions that require energy audits and retro-commissioning.
 - d. Standard 202 and Guideline 0, 0.2, and 1.4 are under Continuous Maintenance. Other Cx guidelines will be placed in continuous maintenance to facilitate changes as they are republished.
 - e. Guideline 1.1, HVAC&R Technical Requirements for the Commissioning Process, has been revised and being submitted for review and republication.
 - f. Liaisons have been appointed to Standards 189.1, and 90.1.
 - g. Liaisons exist on SSPC 300 with ACG, AIA, BCA, ICC, IES, NEBB, NFPA and NIBS

2. Standard 202-2018 The Commissioning Process for Buildings and Systems
 - a. Republishing of Standard 202 was completed in the fall of 2018.
 - b. STD 202 adopted by 189.1-2017 and 90.1-2018 and is a possibility on 62.1
 - c. Informative Appendix 'H' on commissioning process and documentation has been included in 90.1-2018. The commissioning requirements in 90.1-2018 includes the inspection and enforcement of the 90.1 building requirements including the building enclosure
 - d. Edits for 202 annexes and appendixes are being developed for 202 and for standardized use in other Cx guidelines and standards.
 - e. Revisions are being made to delineate the separation of new building commissioning and existing building commissioning.

- f. Discussions are underway on the addition of On-Going Commissioning Process as added chapters to existing documents and/or a separate Guideline.
- 3. Commissioning Application, a Stakeholder's Guide publication has been published as a special publication of ASHRAE and BCxA. It contains Cx process and application information as well as over 50 checklists that are available on the ASHRAE cloud.
- 4. USDOE/NIBS CWCC Program and Certifications – Commissioning Provider (1 of 5 titles)
 - a. DOE completed program development in 2015. It licenses organizations that meet the ISO 17024 and DOE requirements to certify individuals. ACG, ASHRAE, and BCA have been ANSI certified and licensed by DOE. AEE and EMA now licensed for non-commissioning certifications.
 - b. A certification program on building blast protection design is being developed.
 - c. A certification program for building enclosure commissioning is being developed.
 - d. DOE program has certification and certificate programs.
- 5. National Institute of Building Science (NIBS)
 - a. A centralized resource library for commissioning documentation is being discussed for the NIBS program and website.
- 6. International Standards Organization (ISO)
 - a. An ISO standard is being developed (based on Standard 202) for the development of Commissioning Plans. It is titled 'Building Commissioning Process Planning – Part 1: New Buildings'. Development time is anticipated to be three years.
- 7. International Code Council (ICC)
 - a. 2015 versions of IECC and IGCC require HVAC test and balance and commissioning. The IECC -2018 code issue is following very similar requirements to 2015. IGCC-2018 is based on ASHRAE Standard 189.1-2017 and has a Cx section that basically conforms to Standard 202 and coordinates with IECC.
 - b. ICC Guideline G-4 – Guideline for Commissioning, has been revised by ICC and industry committee and has been republished.
 - c. ICC has initiated an international program to develop codes for resiliency.
 - d. ICC is initiating a certification program for Green Code Reviewers and inspectors.

8. ASHRAE Standard 189.1 – Standard for the Design of High Performance Green Buildings
 - a. ICC IGCC-2018 utilizes ASHRAE 189.1-2017 for all requirements except for IGCC administration chapter One.
 - b. Cx requirements have been included in 189.1-2017 to follow Standard 202 process requirements and coordinate with other codes.
 - c. Revisions to 189.1 are being developed to facilitate usage and adoption. It does not appear at this time that the commissioning requirements will be modified.

9. CAL Green – Title 24
 - a. Includes Commissioning requirements
 - b. Has developed checklists for new construction.

10. Retro-Commissioning and City Ordinances
 - a. Several cities including: Seattle, New York, Washington DC, Chicago, Atlanta, San Francisco, Los Angeles and others have passed ordinances mandating energy auditing and Retro-commissioning or “Building Tune Up” for many of their buildings.
 - b. Many of these programs utilize ASHRAE Standard 211-2018, Standard for Commercial Building Energy Audits, as the energy audit process. The DOE website has extensive process and checklist information already available.
 - c. DOE with assistance with PNNL is developing a parallel program and website processes for use by the Cities and others on Retro-Commissioning and building tune up.

11. Commissioning Industry Interface with Existing Processes (Documents) and New Developments
 - a. Documents and organizations that utilize or relate to commissioning should have representation from the commissioning industry.
 - b. New developments such as the Sustainability and Resilience movements should have commissioning input and representation.

12. Develop and Broaden the Commissioning Process for Inclusion of Sustainability and Resilience?



SOCIETY TRAVEL & CERTIFICATION AWARD SCHOLARSHIP APPLICATION

I am applying for:

JR Anderson Travel Award (Student or YEA member)

JR Anderson Building Commissioning Certification Award (YEA member)

PERSONAL DATA *(Please type or print in ink)*

Last Name, First, MI Preferred Telephone No. E-mail

Student's Home Address

City State or Province Country Zip Code

Student's Campus Address (if applicable)

City State or Province Country Zip Code

Birthplace Date of Birth Citizenship Gender

EDUCATION

College or University Attending (or did Attend) Location Major Program of Study

Cumulative Grade Point Average Class Rank (___ of ___) What is the base of the GPA at your school? (What number does "A" represent?)

No. of Terms to Complete College Degree (excluding current term) Anticipated Month & Year of College Graduation

PROFESSIONAL GOALS – What is your particular interest in the field covered by ASHRAE? Do you have a special interest in HVAC&R equipment or systems (i.e. commissioning, installing, designing, testing, troubleshooting, teaching, etc)?
(Answer 100 to 200 words)

HVAC&R INVOLVEMENT: To what extent have you participated in HVAC&R activities to advance your above stated "goals"?
(Answer 100 words or less)

PROFESSIONAL DATA (Supply a brief resume of your work experience in chronological order starting with the most recent)

Job Title	Hours/Week	Dates of Employment	Wages
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Duties

Job Title	Hours/Week	Dates of Employment	Wages
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Duties

ASHRAE CHAPTER CONTACT: Applicants are strongly encouraged to contact the Student Activities Chair or an officer of the ASHRAE chapter nearest their home or school for an interview to learn more about the Society & how it can help you achieve your career goals. Visit <https://www.ashrae.org/communities/chapters/ashrae-chapters> for a list of ASHRAE chapters and contacts.

Chapter Contact Name _____ Phone/ Email: _____

SCHOOL & COMMUNITY SERVICE ACTIVITIES

List below membership in professional or honorary societies/organizations, including office(s) held, if any

Society/Organization	Office
----------------------	--------

1. _____
2. _____
3. _____

REFERENCES *(Please list three references – A personalized signed letter of recommendation is required from each, excluding family members)*

1. Instructor or Faculty Advisor _____ E-mail/Phone Number _____

2. Former or Current Employer/Co-worker _____ E-mail/Phone Number _____

3. Other _____ E-mail/Phone Number _____

Scholarships for the JR Anderson Travel Award are awarded based on the following and are for the ASHRAE Winter Conference, which is typically held in late January/ early February. If applying for the JR Anderson Building Commissioning Certification Award, applicant should follow the requirements to take the exam, and then apply for the award as a reimbursement.

1. A cumulative grade point average (GPA) of at least 3.0 on a scale where 4.0 is the highest and/or a class standing of no less than the top 30% evidenced by an official transcript of grades or written statement from a school administrator.
2. Three letters of recommendation, including one from an instructor or faculty advisor, a current or past employer, and another character reference. In the case of schools with an ASHRAE student branch, a letter from the faculty advisor of that branch may be one of the three letters of recommendation.
Visit <https://www.ashrae.org/communities/student-zone/student-branches> for a list of ASHRAE student branches.
3. Potential service to the HVAC and/or refrigeration profession.
4. Excellence, Character, Leadership (Fully describe academic achievement and other leadership roles)
5. Service to community & others (Detail participation in the arts/music, athletics, volunteerism, environmental/humanitarian groups, or other service organizations)

Visit www.ashrae.org/scholarships for complete eligibility requirements & list of scholarships

IMPORTANT: Submit completed application with the following supporting documents on or before the application deadline: for students, an official transcript of grades, letters of recommendation. Official transcripts must be mailed and received in a separately sealed envelope postmarked on or before the application deadline. Reference letters must be signed.

Date

Signature of Applicant

ANNUAL APPLICATION DEADLINES:

January 10: JR Anderson Travel Award

Anytime: JR Anderson Building Commissioning Certification Award, upon "passing" grade on exam

Submit one application & all supporting documents on or before the application deadline to:

Sarah Maston: sarah@greenfootprintscx.com