



MINUTES

TECHNICAL ACTIVITIES COMMITTEE

2024 Winter Meeting

January 20 & January 24, 2024

Note: These draft minutes have not been approved and are not the official, approved record until approved by the Technical Activities Committee.

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January 20 & January 24, 2024

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**PRINCIPAL MOTIONS
TECHNICAL ACTIVITIES COMMITTEE
January 20 & January 24, 2024**

No.	Motion	Status
1	that the TAC Minutes from the January 11, 2024 meeting be approved.	PASSED
2	That TAC approve the proposal for MTG.GAI	PASSED
3	That TAC approve changes to the Reference Manual (as amended)	PASSED
4	that TG9.SPACE be converted to TC 9.13 SPACE (Extraterrestrial and Deep Space Environmental Control Systems)	PASSED
5	That TC 1.9 scope be changed as shown:	PASSED
6	That TC 9.7 scope be changed as shown:	PASSED

**ACTION ITEMS
TECHNICAL ACTIVITIES COMMITTEE
January 20 & January 24, 2024**

No.	Responsible Party	Action	Status
1	Staff	Explore tools that can be utilized by TC for document development	
2	TAC	Review TAC MOP to align positions with current practice.	
3	TAC	Send ideas on how TAC and CTTC can promote grass roots participation in technical and society level of ASHRAE activities.	
4	Staff	Post list of FG and ALI course assignments	
5	Staff	Make sure TC 1.5 scope on ASHRAE website matches the scope on TC website	
6	SH1 & SH6	monitor and engage TC 1.10 and section 6 FGs about potential move to Section	
7	SH3	monitor the TC 3.1 motion on a merge TC 3.8	
8	TAC	Communicate issues with 6 month track planning timeline to CEC	
9	Staff	Send out Handbook development Deadlines to FGs	
10	TAC	Discuss at future TAC meeting – how can ASHRAE help better inform new attendees to help them navigate an ASHRAE meeting	
11	TAC	TAC would develop a list for slides on best practices on increasing engagement/recruitment/retainment.	
12	Staff/Chair	Staff was asked to send a thank you letter to the TAC chair to send to nominator of any Hightower Award nominations that did not win the award.	
13	TAC	discuss and develop list of training topics at next TAC meeting	
14	Staff	Send Handbook deadline list for 2026 volume to Mathur	Complete

15	Staff	Send Aute information on the ASHRAE position document process	
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LIST OF ATTACHMENTS

- ATTACHMENT A:** MTG.GAI proposal
ATTACHMENT B: Updated TAC Reference Manual
ATTACHMENT C: proposal for TG9.SPACE to TC 9.X, SPACE
ATTACHMENT D: PEAC report
ATTACHMENT E: Updates to TAC 2023-24 MBOs

LIST OF ACRONYMS

ALI	ASHRAE Learning Institute	MTG	Multi-disciplinary Task Group
AI	Action Item	PCM	Provisional Corresponding Members
ASHRAE	American Society of Heating, Refrigerating and Air-conditioning Engineers	PDH	Professional Development Hours
BOD	Board of Directors	PEAC	Presidents Elect Advisory Committee
CEC	Conference and Exposition Committee	ROB	Rules of the Board
CEU	Continuing Education Units	RP	Research Project
CNV	Chair Not Voting	SH	Section Head
CRC	Chapter Regional Conference	TAC	Technical Activities Committee
CTTC	Chapter Technology Transfer Committee	TC	Technical Committee
DL	Distinguished Lecturer	TFBD	Task Force for Building Decarbonization
Ex-O	Ex-Officio	TG	Task Group
FG	Functional Group	TRG	Technical Resource Group
GTIC	Global Technical Interaction Committee	YEA	Young Engineers in ASHRAE
MBO	Management by Objectives		
MOP	Manual of Procedures		

MINUTES
TECHNICAL ACTIVITIES COMMITTEE
January 20 & January 24, 2024

MEMBERS PRESENT:

James Bennett, *Chair*
 Kevin Mercer, *Vice Chair*
 Satheesh Kulankara, *Training Coordinator*
 Jason Atkisson, *Section 1*
 Tina Brueckner, *Section 3*
 Patrick Marks, *Section 4*
 Kevin Marple, *Section 5*
 Doug Reindl, *Section 6*
 Kashif Nawaz, *Section 8*
 Brad Cochran, *Section 9*
 GD Mathur, *Section 10*
 Vikrant Aute, *MTG*
 Ongun Kazanci, *MTG*
 Luke Leung, *BOD Ex-O*
 Ashish Rakheja, *Coordinating Officer*

GUESTS:

John Constantinide
 Nolan Demos
 Ernie Freeman
 Krishnan Gowri
 Corey Metzger
 Kevin Muldoon
 Christine Reinders
 Larry Smith
 Phillip Trafton
 Martin Weiland

ASHRAE STAFF:

Steve Hammerling, *MOTS*
 Tara Thomas, *AA*

MEMBERS NOT PRESENT:

Lan Chi Nguyen Weekes, *Section 2*
 Money Khanna, *Section 7*

1. **Call to order**
 Chair Jamie Bennett called TAC meeting to order at approximately 8:00 AM EDT.
2. **Code of Ethics:**
In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, inclusiveness and respect for others, which exemplify our core values of excellence, commitment, integrity, collaboration, volunteerism and diversity, and we shall avoid all real or perceived conflicts of interests. See full ASHRAE Code of Ethics: <https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics>
3. **Roll call/Determination of quorum**

TAC Member 2023-24	Role
Jamie Bennett (24)	Chair
Kevin Mercer (25)	Vice Chair & GTIC
Satheesh Kulankara (26)	Training Coordinator
Jason Atkisson (25)	Section 1
Lan-Chi Nguyen Weekes (27)	Section 2
Tina Brueckner (26)	Section 3
Patrick Marks (26)	Section 4 & Data Coordinator
Kevin Marple (24)	Section 5 & YEA Liaison
Doug Reindl (25)	Section 6
Money Khanna (27)	Section 7

Kashif Nawaz (27)	Section 8
Brad Cochran (24)	Section 9 & Mentor
Joy Altwies (25)	Section 9 - CTTC liaison
Gursaran Mathur (27)	Section 10
Ongun Kazanci (27)	Section MTG (ACR, BIM, CEA, CYB, EBO, BEQ)
Vikrant Aute (26)	Section MTG (HCDG, LowGWP, RAC, RES, VIC)
Ashish Rakheja	Coordinating Officer
Luke Leung	BOD Ex-O

Roster for 2023-24 on TAC Basecamp ([here](#)).

Staff confirmed quorum at the start of the meeting with 12 of 16 members in attendance at the start of the meeting.

4. **Changes to the agenda**

No changes were requested.

5. **DRAFT minutes from TAC #5 Virtual Meeting**

(1) It was moved (Marks) and seconded (Marple) that the TAC Minutes from the January 11, 2024 meeting be approved.

BACKGROUND: Posted to TAC Basecamp (<https://3.basecamp.com/3106353/projects/389454>) Jan. 17th.

MOTION 1 VOTE: 12-0-0 CNV - PASSES

6. **Chair Announcements (Bennett)**

Bennett summarized an ExCom meeting with Larry Smith describing ongoing efforts to get local chapter members involved in Society level and technical committee side of ASHRAE. An estimated 1,000 of the 52,000 ASHRAE members attend ASHRAE conferences. Smith is working with a team to get more involvement/communication from grass roots members at the Society level. Various outreach efforts have been started to bring grass roots members and younger members involved. A number of ideas were generated:

- Have formal liaisons from TAC to CTTC (Altwies) and CTTC to TAC (Muldoon) to foster this effort and develop ideas
- Section Heads to ask how many FG chairs (and members) attend local chapter meetings. Current estimate is 5-8%.
- Survey local chapters to see their involvement at the Society level. What would they need to attend meetings or participate in FGs or what is preventing them from doing so?
- Reindl noted there have been efforts to market conference to local chapters within driving distance (~100 miles?).
 - Could we ask DLs to plug conference attendance/national society involvement?
 - Can we communicate this in a more targeted way? Highlight conference themes, PDHs, TC involvement, etc. for local draw.
- Atkisson suggested ASHRAE develop marketing videos to introduce younger engineers to TCs and encourage attending and participation. A video from YEA members with personal stories or encouragement and success stories.
- Reindl noted TAC can again encourage TCs to welcome and engage new TC members. This has been successful but can always be stressed.

- Suggested TCs attend chapter meetings with a couple slides of presentations. Can highlight local members who do participate at Society level.
- Ask Section Heads to ask TC leadership to attend local meetings. TC chairs can reach out to chapter Presidents, Region leadership RVC.
- Prepare presentations on TC participation for CRCs

7. Possible Motions

A. Motion to approve MTG.GAI

(2) it was moved (Reindl) and seconded (Marks) to approve the proposal for MTG.GAI.

BACKGROUND: Proposal responded to previous comments with changes. TAC removed one bullet point from scope of proposal (**Attachment A**).

MOTION 2 VOTE: 12-0-0 CNV - PASSES

B. Motion to approve TAC Reference Manual changes

(3) It was moved (Atkisson) and seconded (Nawaz) to update the TAC Reference Manual (as amended)

BACKGROUND: The changes shown in **Attachment B**. Tech Council asked for references to the Functional Group (FG) Manual of Procedures (MOP) be changed to FG Reference Manual.

MOTION 3 VOTE: 12-0-0 CNV PASSES

Change to TAC Reference Manual will be reported to Tech Council as no approval is required. TAC MOP changes from Jan. 11 will be reported to OPS for their consideration.

C. Discussion of Space TG→TC. Possible motion

(4) It was moved (Mercer) and seconded (Reindl) that TG9.SPAC be converted to TC 9.13 SPACE (Extraterrestrial and Deep Space Environmental Control Systems)

BACKGROUND: The proposal is included as **Attachment C**.

MOTION 4 VOTE: 12-0-0 CNV PASSES

8. TAC 23/24 Successes

- Monthly TAC meetings.
- Completed conference track reviews for Chicago meeting
- TC 2.1 scope was updated to make way for new TC 7.10 OBB
- Other FG updates and transformations
- Online roster tool updates
- TAC MOP Changes
- TAC, FG, and MTG Reference Manual Changes
- New MTGs – BEQ and GAI
- TC 9.13, Space
- Other

9. **Old business / Action Items (Please be prepared to respond to below action items)**

Actions from Tampa

No.	Responsible Party	Action	Status
2	TAC	Develop TC training on balance category selection/balance	Complete for now. TAC to discuss how to implement balance. Idea is to keep things more practical and have as an internal TC process, subject to section head approval.
3	Staff	Send request to members to update their balance category listing	Ongoing. TAC should propose interest categories first.
4	Staff	Check with IT to allow section heads to review balance categories.	Closed. TAC to explore employment categories(not interest) (govt, mfr, academic, etc) available to TC chairs.
5	Staff	Determine if roster links can include TC name/number	Ongoing
12	Staff	Research tools for helping recruit TC members. See attached emails from Larry Smith (TechC) and John Constantinide (CTTC)	Discussed pivot to CTTC liaisons (Altwies) and outreach. This Action Item can be closed.

Actions from TAC #2

No.	Responsible Party	Action	Status
1	TAC – Weekes	TAC members fill out Strategic Plan feedback form for Staff to compile	Mercer to address at breakfast, SHs to reiterate to FG leaders. TAC to ask for 1 or 2 goals from FG that supports strategic plan - (https://strategicplanfeedback.ashrae.org/)

Actions from TAC #3

No.	Responsible Party	Action	Status
6	Mercer	Submit proposal for new leadership course based on Goldschmidt videos.	Ongoing. Mercer reported meeting w Karen Murray to see what can be done.

10. **Section issues (Section Heads)**

Issues of note:

- Section 9 (Cochran)
A FG in Section 9 noted they have a need for document editing and collaboration tool. Can they use ASHRAE products and tools for these purposes? The authoring portal, OneHub, Sharepoint were mentioned as Basecamp doesn't necessarily offer the collaboration tools, security, etc. necessary.

Staff was asked to see if authoring portal, or another tool, can be utilized by TC for document development (**Action Item #1**).

- Section 1 (Atkisson)
TC 1.9 wishes for TAC to formally consider scope change they had approved earlier: **Technical Committee 1.9** is concerned with electrical systems insofar as they interact with the HVAC&R- built environment.

It was noted that the built environment is much broader than HVAC&R. Atkisson would discuss with TC to ask reason for change and more specificity to discuss at Part B meeting.

- MTGs were asked in Atlanta to fill out an evaluation form. Only two replied at that time. Will we require this here in Chicago? Should a different form be developed or should they have a different process. It was noted that the FG Manual requires 'quarterly reporting' and this was deemed sufficient for MTGs. MTG Section Heads can make annual determination if MTG should be disbanded.

11. **(Leung) BOD Ex-O / (Rakhejah) Coordinating Officer**

a. BOD Ex-O report

Leung gave PEAC report to TAC (**Attachment D**). Highlights of interest to TAC include:

- Incoming President's theme is workforce development. 2 billion people on Earth now use HVAC, this will grow to 6 billion in future, so workforce needs to grow. Number of HVAC&R equipment to grow from 2 billion to 10 billion in future.
 - Reindl noted that if the theme included technician level workforce development organizations like RSES, NATE, RETA, technical colleges and trade schools are doing work in this area as well.
- Asked for nominations to ASHRAE committees before Feb. 16th ([here](#)).

b. CO report

No report given at this time.

c. Leung on TFBD update

ASHRAE TFBD (www.ashrae.org/about/ashrae-task-force-for-building-decarbonization) is wrapping up initial work with two publications and six more in coming year. This group is transitioning into a Center of Excellence on Decarbonization.

12. **New/Unfinished Business**

a. GTIC Update (Mercer)

TAC VC is member of GTIC. One of the GTIC goals is to link experts within ASHRAE to international efforts. TAC assisted in this with finding a Section 6 member to participate as an ISO standard expert review. There will be an update on GTIC from the current Chair at the Breakfast tomorrow.

b. Roster Tool Update (Staff)

The Online Rostering project is complete and ready for rollout. Staff will send update links shortly after Winter Meeting, recording training materials for use and education of FG leadership. TAC members tested the tool and ASHRAE Staff responded to feedback.

c. Leadership video CEUs (Mercer)

This effort was discussed earlier under action items.

13. **(Kulankara and Mercer) Training**

a. Draft Breakfast agenda:

TAC finalized breakfast meeting agenda:

Breakfast Agenda:

<u>Speaker</u>	<u>Topic</u>	<u>Start</u>	<u>End</u>	<u>Duration (min.)</u>
Olu	GTIC	7:00 AM	7:10 AM	10:00
Luke	TFBD	7:10 AM	7:20 AM	10:00
Raul	Program mini-training	7:20 AM	7:45 AM	25:00
Tara/ Steve	Roster training	7:45 AM	8:00 AM	15:00
Alice	GAO	8:00 AM	8:10 AM	10:00
Kevin M	ASHRAE Strategic Plan	8:10 AM	8:15 AM	05:00
Section Head	Strategy Session Breakout	8:15 AM	9:00 AM	45:00

With some TAC members not able to attend the Winter meeting, Mercer would cover Section 2 in the morning, Kulankara would cover Section 7 and Bennett would cover Section 10.

Related to the breakfast, Mercer noted TAC is always looking for training topics, topics from within ASHRAE, etc. for future breakfasts. Ideas included:

- Review of FG Evaluation Form – how to use it, how its being used, etc.
- can we review FG eval form? Let them know how its being used, etc.

- b. Updated FG Activity Form and Section Head Tool ([here](#))
These updated tools are posted to TAC Basecamp. The FG Activity form is posted [there](#) and to TAC/TC Leadership Basecamp ([here](#)).
- c. Transition from Mercer to Kulankara
- d. Breakfast Handouts
The following are posted to [TAC/TC Leadership Basecamp](#):
 - i. Chair's Checklist and Publication
 - ii. Publications handout
 - iii. Reminders and Notification
 - iv. Slides from Breakfast Presentation
- e. Succession planning
Marks has replaced Kulankara as Data Coordinator.

It was pointed out that a number of positions (Training Coordinator, Membership Coordinator, Operations Coordinator) are listed in the TAC MOP but not currently appointed.

The Data Coordination, new CTTC liaison, and mentorship positions are not in MOP either.

The work is being done but TAC may wish to review the MOP to align with current practice (**Action Item #2**).

14. **2023-24 MBOs**

Updates to TAC 2023-24 MBOs (**Attachment E**) would be reported to Tech Council' Operations Subcommittee.

RECESS – Bennett recessed TAC meeting until 7 AM on Wednesday. The TAC/TC Training Breakfast would take place tomorrow at 7 AM.

RECONVENE - Bennett reconvened TAC for Part B meeting at 7:00 AM on Wednesday January 24, 2024

15. **Unfinished Business**

Revisited balance category discussion. Reindl forwarded standard section balance categories ([here](#) – page 33) which may be a good starting point.

Guest John Constantinide addressed TAC and discussed work with Larry Smith and CTTC. He noted their charge and focus is on opening the world of technical side of ASHRAE to chapters members, grass roots. They have started a renewed marketing campaign to chapters, are encouraging TCs to present to chapters with a canned TAC/TC presentation. TC websites should have information on how to participate on their committees (TC 5.2 and 9.7 do this now). DL's can have slide in their presentations on TC participation. All ideas are welcome in this ongoing effort (**Action Item #3**).

TAC took action of appointing TAC Liaison to CTTC (Altwies) in reaching out to TCs to help CTTC do their TC promotion. Constantinide noted he is CTTC liaison to TAC.

Guest Christine Reinders addressed TAC on ALI engagement with TC for courses. Can TAC help TCs to coordinating with TCs to find instructors (new ideas, current courses). Each course cognizant TC should be discussing course instructor succession plans, updates, new courses, etc. Each TC has an ALI coordinator, but TAC can list courses with cognizant TCs assignments and share with TCs (**Action Item #4**).

16. **Section Head Reports (3 to 5 minutes per section)**

Section Heads were asked to submit Section Head reports in week after conference. Bennett asked all to include any strategic discussion items in their written section reports.

Section Heads were asked to report and present highlights only from their written reports:

Section 1

Staff was asked to make sure TC 1.5 scope on ASHRAE website matches the scope on TC website (**Action Item #5**). Atkisson noted TAC approved earlier but spots on ASHRAE site were not updated.

There was discussion about TC 1.10, *Combined Heat and Power Systems*, moving to Section 6, *Heating Equipment, Heating and Cooling Systems and Applications*. TAC asked TC 1.10 to discuss with TC 6.7 and other relevant Section 6 FGs. TC 6.7 is discussing their scope as well. Two areas identified that coverage include electrical energy storage and fuel cells, which may involve TC 1.9 as well. TAC would monitor and engage relevant Section 1 and Section 6 FGs in these discussions (**Action Item #6**).

TC 1.9 wishes to change scope. It was asked in TAC Part A if change to built environment was too broad but it was pointed out that many FGs now reference the built environment in their scope.

(5) it was moved (Atkisson) and seconded (Mercer) that TC 1.9 scope be changed as shown:

Technical Committee 1.9 is concerned with electrical systems insofar as they interact with the HVAC&R: built environment.

MOTION 5 VOTE: 12-0-0 CNV

Section 2

Nguyen-Weekes was not in attendance but Mercer covered Section Head Breakfast. Nguyen-Weekes would submit Section Head tool and can report at next TAC meeting.

Section 3:

Brueckner noted TC 3.8 was discussing merging with TC3.1 or 3.2. TC 3.1 has agreed to bring 3.8 into 3.1. They are working on a revised scope that would incorporate the TC 3.8 scope as well. TC 3.8 has not voted on the merge but will have to. They have no research ongoing but are cognizant of standards 147 and 196, which would move to TC3.1.

Reindl noted the TFBF has a big focus on refrigerant leakage/containment. This is a TC 3.8 activity now. ASHRAE should figure out how to get more people involved in this topic. G26 on topic. How can we revitalize to help meet coming needs?

Brueckner noted their focus is on a merge of the two TCs vs. disbanding TC 3.8, so this has not been discussed. TC 3.8 work will stay active under TC 3.1. Bennett asked Brueckner to help draft or monitor the TC 3.1 motion on a merge with background and modified TC 3.1 scope for future meeting and TC(s) approvals (**Action Item #7**). TAC will keep on future TAC agenda to monitor.

Brueckner noted a number of TCs wish to send CEC feedback on rooms in Chicago. TCs were referred to their TC program committee liaison. It was suggested that TAC share our attendance numbers with TCs to properly request meeting room sizes?

Section 4:

7/8 activity forms were returned and FGs were well attended. AV issues were a common report, typically with ASHRAE provided Webex and less so with other platforms (Zoom, Teams, etc.).

It was noted there was a disconnect with CEC – FGs used to get a year in advance on track designations, but not get six months, making developing any program other than a seminar proposal difficult. It was noted that FGs should be developing programs anyways, separately of tracks to have in the pipeline, but yes, papers, etc. are more difficult to target to specific or topical tracks. Reindl noted Section 6 commented on this as well. TAC would communicate this issue to CEC (**Action Item #8**).

TC 4.7 has a title/scope change they are discussing. Their proposed title may have some overlap with other TCs so Marks agreed to ask for more review and justification.

TC 4.1 and other section 4 FGs communicated need for section meetings. One goal would be to identify and settle discrepancies amongst various ASHRAE publications. Marks agreed to help chair these meetings with TC 4.1 chair as the vice chair.

Section 5:

Marple noted there are a couple of TCs he is monitoring (5.4, 5.7) to help bolster membership and

He reiterated comments on CEC, track notices and meeting accommodations made by other FGs.

Marple summarized a conversation with a YEA member that was signed up as a provisional corresponding member (PCM), was active and attending meetings, but dropped after two years. This auto-drop helps keep the roster clean but we can lose a good participant if chair doesn't keep them on? Are we frustrating people from participating? Can TAC consider alternatives such as an auto roll on as a corresponding member (CM)? TAC can highlight that each TC (perhaps through a membership chair) has to manage this process, monitor whos participating, and keep good candidates involve. Mercer is hesitant to mandate a membership chair, but there are certainly examples where this would be greatly helpful, especially with bigger FGs. TAC can consider FG Reference Manual change to recommend FGs with >10 voting members or 50 CMs need (or recommend?) to have membership chair. Alternatively, this could be a FG Vice-Chair responsibility. TAC will consider to thing about.

Another issue that may be keeping good members from participating is that members who are rolling off cannot reapply. Perhaps this can be reconsidered as well.

This discussion emphasizes need for a standing membership training at Winter Meeting. A push on roster clean up, best practices, etc. may make sense. TAC can give recommendations on how/when to trim rosters, keep active members involved, etc. A training or FAQ or best practices makes sense.

Staff was asked to send out Handbook development Deadlines (**Action Item #9**). Many Fundamentals deadlines are as soon as March 1.

SECTION 6:

Reindl noted he attended all FG meetings in the Section in Chicago. Reindl highlighted some barriers in getting new attendees, grass roots attendees to FG meetings and to stay engaged. One is the program listing committee numbers only (TC 2.6, 2.9, SSPC etc.) and not committee names so people would know what to attend. This makes it difficult for new attendees to understand what's going on, unless they already know.

How can TAC help better inform new attendees to help them navigate an ASHRAE meeting? There is an ASHRAE crash course on Sunday morning that does this but perhaps this can be promoted to TCs/new attendees. Can we target a list of first time attendees to give them information, when registering, to make them aware of this session, develop a 'welcome packet' for 1st time attendees when they register? Reindl suggested discussing at next TAC meeting and discuss with CEC (**Action Item #10**).

Reindl followed up on TAC earlier discussion polling how many TC members were active in their local chapters. Some TCs had 2-3 people, some more, but generally they were separate/distinct member types with little mixing. The most common reason for not attending the national meetings expressed was cost.

Reindl suggested TAC members and FG leadership develop an 'elevator pitch' or tiktok video to quickly explain what they do on their committee. The aim would be to recruit new members or increase participation. TC 6.7 on solar has an outreach subcommittee that does youtube videos and has other engagement activities.

It was suggested that TAC develop a list of tips for attracting and keeping new members engaged to share at a future TAC breakfast. Ideas include the videos, speech, thanking new members and new

attendees at and after meetings to help with engagement. TAC would develop a list for slides on best practices on increasing engagement/recruitment/retainment (**Action Item #11**).

Reindl reported that 6.10, Fuels and Combustion, is stabilizing with a newer chair. Their meeting was well attended, they have program ideas, and are expected to perform well. They are looking at renewable fuels such as hydrogen as included within their scope. They had a program proposal on the topic for Chicago that was not accepted but would be retooled and submitted for a later conference. TAC can continue to monitor performance.

SECTION 7:

Kulankara attended Section Head breakfast and meetings on behalf of Khanna, reminding all to send latest activity form.

SECTION 8:

Nawaz attended most Section 8 TCs. There were no major concerns about TC performance. Nawaz highlighted a productive section brainstorming strategic planning related to load-based equipment testing. There was enough interest on this strategic issue to where a regular activity makes sense so they are planning on monthly meetings.

Also, TC 8.10 is looking at procedures to help regulate testing for field deployment. There is discussion on what can reasonably be done.

SECTION 9:

Cochran notes all FGs in the section met quorum and got forms in late last night as requested. Cochran reiterated AV issues expressed earlier. TC 9.9 posted a Teams meeting link that was posted in the program and had a better experience than with staff's Webex platform. He reiterated that FGs can use whatever platform they want. If they include in meeting request (or make staff aware before meeting) it will be included in the official ASHRAE program.

TC 9.6 and s241 – reach out to OAC to see if 241 being presented for inclusion in WHO

TC 9.7 approved a scope change for TAC consideration.

(6) It was moved (Mercer) and seconded (Marple) TC 9.7 scope be changed as shown:

TC 9.7 is concerned with the application of heating, ventilating, air-conditioning, refrigeration, life safety, air quality, and energy conservation systems to educational (~~secondary school, college~~) facilities.

MOTION 6 VOTE: 12-0-0 CNV

Other Section 9 items of note:

- Noted limit to 200 members on activity page. TC 9.9 has 354.
- TC 9.8 title change needs to be updated on activity sheet
- TG.CCD thinking about another conference and on updating cold climate design guide so they would like to keep this group active.
- Staff was asked to send a thank you letter to the nominator of any Hightower Award nominations that did not win the award. Staff would draft an email for TAC chair to send (**Action Item #12**).
- With the ASHRAE Fellow process being streamlined to get more nominations, it was emphasized that the stringent requirements should be kept high. Past TAC chair Tom

Lawrence is the incoming chair of the College of Fellows. A one-pager on the nomination process would be a helpful tool for FG members to recruit nominees.

SECTION 10:

Bennett attended all TC meetings. Noted a training session, list of tips, etc. on roster change process would be a great help to FGs. TAC would discuss and develop list of topics at next TAC meeting (**Action Item #13**). TAC can consider a standing webinar in the fall for training ahead of Winter Meeting on roster issues.

Bennett noted Section 10 FGs have an extremely arduous Handbook chapter responsibilities. TC 10.1 has 12 chapters assigned. TC 10.2 has 22 chapters assignments making a great deal of work, especially give TC roster turnover. This can lead to stagnant or outdated chapters, so ideas to improve or relieve this burden may be helpful.

Staff was asked to send Handbook deadline list for 2026 volume to Mathur (**Action Item #14**).

Few TC members involved in local chapters .

Bennett also polled FG members on local chapter participation and also reported low participation.

Section MTG:

Here are current MTG liaison assignments:

Kazanci: MTG (ACR, BIM, CEA, CYB, EBO, BEQ)

Aute: (HCDG, LowGWP, RAC, RES, VIC)

Aute noted a full review of MTGs to assure they are active and wish to continue makes sense. MTG.BIM, VIC, RAC may be disbanding. There are some other MTGs with websites listed that have been disbanded and should be removed.

Staff was asked to get Aute information on the ASHRAE position document process for a MTG considering developing one (**Action Item #15**).

17. Unfinished Business

- GTIC (Mercer)

A general update on GTIC updates took place at the Training Breakfast. TAC's role is to provide GTIC with experts from FGs under TAC for international activities include ISO standards. We need ASHRAE subject matter expertise (SME) for review of these international publications/standards.

Continuity on TAC/GTIC will be needed. Currently the TAC VC is on GTIC and will explore having TAC Training Coordinator attend GTIC as well.

- New TFBD Center of Excellence will report directly to BOD Executive Committee. The team will include representatives from all three ASHRAE Councils. Mercer noted TAC can think about how they'd like to see this work to assure TAC/TC representation.

18. New Business

None

19. Review Action Items

Action Items to be summarized in minutes after meeting.

20. **Next Meeting**

- a. Monthly TAC meeting in February/March t.b.d.
- b. ASHRAE Annual Conference – June 22 & 26, 2024 – Indianapolis, IN

21. **Adjournment**

TAC meeting was adjourned at approximately 10 AM CST.

DRAFT

MTG PROPOSAL FORM

Return Form to:
Assistant Manager of Research & Technical Services
ASHRAE
180 Technology Parkway NW
Peachtree Corners, Georgia 30092
☎404-636-8400 • Fax 404-321-5478
E-mail: amorts@ashrae.net

Date: December 15, 2023
* Turn in no later than 3 weeks prior to the meeting for consideration by TAC

MTG Name: GenAI: Generative AI for the HVAC Industry

MTG Scope: *MTG.GenAI* will coordinate TC/TG/TRG technical activities to help support the adoption of generative AI by compiling technology adoption resources, best practice development guidelines and undertaking research projects to benefit ASHRAE members and for society operations and members services.

Background of scope or problem

Artificial Intelligence (AI) applications for HVAC in the past have often been focused on knowledge-based expert systems for design and operation, and fault diagnosis. More recently data science techniques have been used for energy use predictions and time-series data analysis to improve building operation and maintenance. Current advances in Large Language Models (LLMs) have resulted in generative AI tools and techniques that have transformed processing all forms of digital information to solve every day problems in all domains.

Integrating generative AI technology application in the HVAC (Heating, Ventilation, and Air Conditioning) industry can offer various benefits, including energy efficiency, predictive maintenance, and improved system optimization. There are several specific application scenarios currently envisioned:

- Develop a generative AI application for the HVAC industry to enhance energy efficiency, predictive maintenance, and system optimization.
- Develop Chatbots or other user-interfaces to access ASHRAE standards, research publications and handbooks.

- Develop related RTARs that address ASHRAE research needs that can utilize AI and coordinate the RTAR's with appropriate FGs. These may include using AI to analyze Utilize historical data analysis to predict equipment failures, optimize energy consumption, and dynamically adjust HVAC parameters. Using AI to assess/Implement fault detection algorithms, occupancy pattern recognition, and seamless integration with Building Management Systems.
- Provide a user friendly interface for real time monitoring and visualization.
- Ensure compliance with energy efficiency standards and regulations, prioritize security and privacy, and offer continuous improvement mechanisms.

Models like Chat GPT and other open-sourced counterparts demonstrate proficiency in mechanical engineering, HVAC code compliance, BACnet protocol, and HVAC control system troubleshooting.

Clear Statement of Tasks & Deliverable(s)

1. Compile generative AI knowledge resource and development tools:

There is much information already available regarding machine learning methods, generative AI concepts and development tools. This first task will compile and create training materials targeted to help educate ASHRAE members on generative AI technologies and available tools.

2. Develop working prototype tools and workflow that can be developed further by the society and industry:

ASHRAE Society activities and publications can benefit from developing new products and services incorporating generative AI to improve internal processes and develop new tools to add value in disseminating the information without compromising the intellectual property. These could be in the form of Chatbots trained on ASHRAE Standards, handbooks and publications to answer specific questions or data needed by members.

3. Develop a list of potential research topics and ideas:

There are several other application areas that can create comprehensive generative AI solutions tailored to the specific needs and challenges of the HVAC industry. Collectively with the participation of all interested TCS, this MTG can generate a list of new research topics of

generative AI applications (one such idea for building operation and maintenance is discussed in the TC Impact section).

4. Undertake research and development to demonstrate the application of generative AI:

While this MTG intends to work with interested TCs to develop work statements and RTARs for future research, this process could require a longer timeline and the MTG could initiate a project to demonstrate the value of the technology. Ideas for such an RTAR is discussed in the TC Impact section of this proposal.

Anticipated timeline and suggested sunset date:

MTG-GenAI will complete these four deliverables within 3 society years with an estimated completion date of June 2027.

Impact on TC/TG/TRGs and Other MTGs:

Generative AI applications have potential impact on all aspects of engineering consulting, design, operation, maintenance and general productivity improvements. TC 1.5, TC 1.6, TC1.13, TC 4.7, TC 4.10 and TC 7.5 have several ideas and initiatives on application of generative AI for design, energy modeling, energy use predictions and fault detection and diagnostics. There are other industry initiatives in monitoring building automation system data to dynamically identify operational adjustments and maintenance requirements. There is a new career path as “Prompt Engineering” by which intelligence can be extracted from data sets and internet knowledge that is publicly available.

~~ASHRAE sponsored a Kaggle competition in the past that has resulted in the development of several Python scripts that can be used by practicing engineers. A similar initiative to Kaggle data science competition could be an Industrial Control System (ICS) cybersecurity competition, often referred to as "capture the flag" events within the cybersecurity industry. ICS has gained increasing popularity, particularly within critical infrastructure sectors, where competitions are held to promote awareness and enhance skillsets in a competitive and non-real world setting.~~

~~In a competitive ICS cybersecurity event, it's possible to evaluate the capabilities of generative AI or a Large Language Model (LLM) in a capture the flag style competition. In this scenario, humans could play the role of hackers, while the LLM could serve as a cybersecurity anomaly detection apparatus. The~~

objective of the human participants would be to attempt various means and methods to mimic the corruption of critical HVAC operations, creating a challenging and dynamic testing environment.

Another avenue for a creative competition could involve the development of virtual building operator assistants. In this scenario, multiple distinct Large Language Models (LLMs) could be designed specifically for this application in the edge environment, and each could be showcased in a competitive format, featuring various scenarios commonly encountered in building operations related to HVAC controls, BACnet, HVAC engineering, and compliance with code requirements. Additionally, the competition could test the LLMs' ability to respond effectively to situations that commonly arise in RCx (Retro-Commissioning), particularly when dealing with intricate and challenging control systems that require troubleshooting. This would provide a comprehensive assessment of each LLM's performance under a range of conditions, helping determine which one offers the most optimal responses in complex HVAC system scenarios.

Besides the above mentioned competitions, ASHRAE can initiate research projects either as part of this MTG or in collaboration with a cognizant TC. One example project is further developed below highlighting the application of generative AI for optimal building operations.

This can be realized through research exploring the potential applications of Large Language Models (LLMs), particularly in edge environments. Presently, models require compression to operate efficiently on CPU or memory constrained devices. Further investigation is necessary to determine whether these devices can yield performance levels comparable to those of larger multi-billion parameter LLMs, especially in the context of optimizing building operations and addressing complex HVAC challenges.

This research endeavor should encompass a thorough examination of the prompt engineering templates required to tailor the LLM to specific roles, such as that of a "virtual building operator." It also involves studying the data derived from OT HVAC systems and other smart building

technologies. The "magic" lies in the effectiveness of these prompt templates in providing context to the LLM.

Advancing this project would entail extensive testing to ensure that the bot or LLM delivers valuable feedback. Additionally, conducting real-world pilot projects and gathering feedback from building operators would be essential to gauge the technology's practicality and effectiveness in real-world scenarios.

In the context of building operation scenarios, LLMs within the edge environment could continually process data through common edge IoT practices. Subsequently, engineering templates and scripts can be deployed to alert building operators when anomalies are detected or to guide them through troubleshooting procedures via a chat interface. This technology can also ensure that the building operates in compliance with established codes related to ventilation, IAQ, and energy efficiency.

Generative AI and Large Language Models (LLMs) hold significant promise in aiding building operators to enhance the efficiency of building operations within edge environments. Within Retro-Commissioning (RCx), there is a recurring issue of suboptimal building operations, often stemming from inadequate staffing of human building operators or insufficient training. Notably, building operators may not possess advanced mechanical engineering degrees or have diverse work experience in IT or even scientific backgrounds related to IAQ. Often, it's quite common for the building operator to also be the buildings custodian especially particularly in educational settings like school districts.

In the context of facilities such as hospitals, research labs, aquariums, data centers, and similar non-commercial buildings, HVAC systems can be highly complex, and the facilities management staff might lack the resources to continuously monitor alarms and troubleshoot intricate issues. These issues may range from mechanical problems with HVAC systems to electronic troubleshooting embedded within HVAC control devices and possibility IT networking issues if devices are offline. As

LLM and generative AI technology evolves, it becomes increasingly relevant in edge environments. Some models can be optimized to run efficiently on CPUs with modest RAM resources.

Another valuable application is the use of a smartphone app that leverages LLM capabilities to monitor HVAC system “health.” This enables building operators to remotely check the status of the building's HVAC while attending to emergency repairs, especially in situations where the issue may be located far from the central facilities management OT command center or in challenging-to-reach places, like above ceiling tiles.

Furthermore, beyond HVAC monitoring, LLMs can be employed to analyze cybersecurity-related data. They can provide insights related to the Industrial Control System (ICS) security industry, including intrusion detection, device health assessments, analysis of BACnet packet captures (PCAPs), and tallying the number of devices detected during Operations Technology (OT) Local Area Network (LAN) scans within the building where then this data could be continuously compared to what devices should be on this OT LAN where then the LLM could provide feedback or even notify the human that something looks out of place.

MTG Roster:

	<i>Position</i>	<i>Person's Name:</i>	<i>TC/TG/TRG or Non-TC Group Affiliation</i>	<i>Category</i>	<i>ASHRAE Member #</i>
1	Chair:	Krishnan Gowri	TC 1.5	User	
2	Vice-Chair:	Ben Bartling	TC 1.5	User	0084610111
3	Voting Member:	Dennis Knight	TC 7.1	General	
4		Tim Dwyer	CIBSE, International	General	
5		Jennifer Lather	MTG.BIM	Producer	
6		Mike Pouchak	TC 1.4	Producer	
7		Bruce Billedaux	TC 1.6	user	
8		TBD	TC 4.7		
9		Mohammed Hajiniard	TC 4.10	General	
10		Carol Monaco	TC 7.5	Producer	
11		Andrew Rodgers Ace IoT	TC 1.5	Producer	
12		TBD	TC 1.13		
1	Alternate Members:	Stephen Roth	TC 1.5	Producer	
2		Edward Tsui	Independent	General	Edward.tsui@intelligent-net.com
3		Kevin Lawson	Independent	Producer	Ripple Inc.
4		Apporv Khanaja	Independent	General	U. Cincinnati

Requirements below apply to MTG Rosters Only:

- * Only one person from each TC/TG/TRG or non-TC group participating in MTG may serve as voting member.
- * The Chairs or leaders of participating TC/TG/TRG s or non-TC groups will designate the MTG member to represent their group with a vote on the MTG.
- * Alternate Members are nominated by the MTG Chair, and there are no restrictions on the number or affiliations of nominees
- * Alternate Members are expected to participate in MTG activities and attend meetings when possible.
- * An Alternate Member normally has no right to vote at the MTG level, but can vote at the MTG subcommittee level
- * An Alternate Member may be given proxy authority, however, by a MTG voting member to vote in his or her absence so that groups participating in the MTG are always represented in a MTG vote.
- * Chair & Vice Chair must be ASHRAE members

T A C U S E O N L Y :

Date Received: _____ Date Sent to TAC/FP: _____ Meeting Date: _____ Approved? Yes No



Shaping Tomorrow's
Built Environment Today

REFERENCE MANUAL

FOR

TECHNICAL ACTIVITIES COMMITTEE

REVISED: 01/20/2024

FOREWORD

The Technical Activities Committee (TAC) is a General Standing Committee of the Society and operates under the direction of the Board of Directors and Technology Council. The Rules of the Board (ROB) for the Technical Activities Committee are the constitution of the committee. Proposed changes to the ROB and their appendices must be approved by the Board of Directors.

This Reference Manual is a supplement to the TAC MOP and describes in detail the methods and procedures by which the committee accomplishes the duties and responsibilities assigned to it. The Reference Manual is an internal document of the committee for its own guidance and is maintained as described in the TAC MOP.

YOUR COMMENTS ARE WELCOME

Submit comments or suggestions about this document electronically to the ASHRAE Manager of Technical Services (MOTS).

E-mail: MOTS@ashrae.net

The MOTS will consolidate comments for TAC. TAC intends to maintain this Reference Manual as a “living document” and update it as it is needed and practical.

RECENT REVISIONS

1/20/2024	<u>Updated references to FG & MTG MOP to Reference Manual</u>
6/25/2020	Updated with editorial changes
12/11/2017	Updated to reflect the latest TAC Coordinator Positions and Responsibilities

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CHAIR AND VICE CHAIR

1. Chair Responsibilities

- 1.1. Preside over all meetings of TAC and the TAC Executive Committee.
 - 1.1.1. Responsible for the preparation of agendas for meetings of TAC and the TAC Executive Committee with the advice of the Manager of Research and Technical Services and TAC members.
 - 1.1.2. Responsible for ensuring that the Manager of Research and Technical Services provides minutes of the meetings of TAC and the TAC Executive Committee within 30 days of the meetings.
 - 1.1.3. Ensure that all draft minutes distributed by TAC include the following notice on the bottom of the cover page: "These draft minutes have not been approved and are not the official, approved record until approved by this committee."
- 1.2. Appoint committee Chairs as detailed in the ~~TC/TG/TRG~~ **FG** and MTG ~~Manual of Procedures~~ Reference Manual
 - 1.2.1. MTGs are expected to have a finite term within which to complete their assigned task. MTG Chairs and Vice Chairs are reappointed each year and there is no limit on the consecutive terms served, but the reappointment should only be made if it serves the best interest of the Society and the member is willing to serve.
 - 1.2.2. Voting members of an MTG shall be reappointed each year if willing to serve and endorsed by the chair/leader of the ~~TC~~ FG or non-~~TC~~ FG group they represent, and there is no limit on the consecutive terms served. The reappointment, however, should only be made if it serves the best interest of the Society and the TC or non-TC group represented.
- 1.3. With the assistance of the Manager of Technical Services (MOTS), the Chair prepares and submits to the Technology Council and the Board of Directors, through the Executive Vice President, a semi-annual report, an annual report, and such other reports as are required to be submitted to the Board.
 - 1.3.1. The Chair submits a written or an oral report at the fall meeting of Technology Council.
- 1.4. The Chair is responsible for providing information to Society members to publicize the activities of the Functional Groups ~~Technical Committees, Task Groups, and Multidisciplinary Task Groups, and Technical Resource Groups~~; and other items of current significant interest concerning the operation of TAC. The chair normally works with the MOTS to prepare and distribute relevant information. This is done at least 2 times per year in advance of the Winter and Annual meetings.

A status report on the objectives is included in the semi-annual report submitted to the Technology Council at the Society Winter meeting. A final report of the objectives is

included in the annual report submitted to the Technology Council at the Society Annual meeting.

1.5. Thank retiring ~~TC/TG/TRG~~/FG and MTG Chairs for their services.

2. Vice Chair Responsibilities

2.1. Responsible for seeing that the budget of TAC is prepared. Details of the budgeting process are in **Appendix C** (Calendar/Process for Budget/Four-Year Plan) of the Technology Council MOP.

2.1.1. Periodically, the Vice Chair reviews, with the Manager of Research and Technical Services, expenditures and budget allocations and takes any action deemed necessary, in cooperation with the Executive Vice President and the director of Technology, to stay within the established budget.

2.2. Appoint mentors for all incoming TAC members and oversee the mentoring of new members according to the guidelines given in **Appendix A**.

2.3. No later than 30 days prior to the Annual and Winter Society meetings, prepare and distribute a draft list of reminders about upcoming activity deadlines and deliverables to Section Heads to edit and then distribute to ~~TC, TG, FG~~ and MTG, ~~and TRG~~ Chairs.

2.4. Within 30 days after the Annual and Winter Society meetings, with assistance from Section Heads and TAC ExCom, prepares and distributes a ~~TC~~ FG Activities Summary Report to TAC members.

2.5. Perform other duties that may be assigned by the Chair.

2.6. Prior to the Society Annual meeting, prepare objectives for the committee for the next year using the format given in **Appendix B** and present these objectives to TAC for review and approval at the Society Annual meeting.

2.6.1. Each objective should be measurable and should include a projected completion date, fiscal impact, and other information that would clarify the intent of the objective.

2.6.2. The objectives will be included in the TAC annual report to the Technology Council at the Society Annual meeting as an information item, and a copy of the objectives will be sent to headquarters staff (Assistant to the BOD).

2.6.3. Staff (Assistant to the BOD) will send copies of objectives to the BOD Ex Officio, TAC staff liaison and Technology Council staff liaison. Staff liaisons will send objectives to TAC and Technology Council members.

EXECUTIVE COMMITTEE (TAC EXCOM)

3. Membership

- 3.1. The members of the Technical Activities Executive Committee are detailed in the TAC MOP.
- 3.2. The following Ex-Officio members of the Technical Activities Executive Committee may participate in the discussions but are not eligible to vote:
 - 3.2.1. Manager of Technical Services (MOTS)
 - 3.2.2. Director of Technology
 - 3.2.3. Board Ex Officio
 - 3.2.4. Coordinating Officer

4. Meetings

- 4.1. The Technical Activities Executive Committee meets before the first scheduled meetings of TAC at the Annual and Winter Meetings of the Society.
 - 4.1.1. The Chair determines the time of meeting with consideration for the responsibilities and convenience of the members.
 - 4.1.2. The meeting may be held at the same location as the meeting of TAC or may be an electronic meeting held prior at the discretion of the Chair.
- 4.2. Executive Committee meetings are open to all members of TAC, all Society members, all registered guests at scheduled Society meetings, and those invited by the Chair and subject to Robert's Rules of Order. If an official 'Executive Session' is required, only members of the Executive Committee are allowed in the meeting and all others shall be asked to leave by the Chair for the duration of that portion of the meeting.
- 4.3. Meetings of the TAC Executive Committee are called by the Chair whenever appropriate to conduct the business of the committee between the Winter and Annual meetings.
 - 4.3.1. Special face-to-face meetings of ExCom involving travel require approval from the President or the committee's Coordinating Officer when, in their opinion, an urgent action is required.
 - 4.3.2. The Chair designates the time and place of special meetings in coordination with MOTS.
 - 4.3.3. The Chair should consider 'wrap-up' meetings within 30 days of the Winter and Annual meetings to review the assigned action items and issues that need immediate attention.
- 4.4. The Chair is responsible for ensuring that a written notice of a meeting is sent to all members, ex-officio members, members of TAC and invited individuals and that proper notification is provided according to the rules for open meetings unless an executive session is specifically called.
- 4.5. The Chair shall report actions and recommendations of the Executive Committee at the next meeting of TAC.

COORDINATORS

5. Coordinator Selection

- 5.1. The TAC Chair currently appoints the following coordinators: Operations, Membership, and Training
- 5.2. If a member's term of service on TAC continues into the next Society year, they may be reappointed by the incoming Chair.
 - 5.2.1. Coordinators are members of TAC, however, the Chair may appoint Consultants to a Coordinator position when there is a need for members who have expertise and experience in certain areas that are of immediate importance and not available from TAC members.

6. Operations Coordinator (OC) Responsibilities

- 6.1. The TAC MOP and Reference manual have been extensively revised to bring them up to date with current practice. Items have been moved from the MOP to the Reference manual as appropriate and duplication between documents eliminated where possible.
 - 6.1.1. Standards Committee
 - 6.1.2. Electronic Communications Committee
 - 6.1.3. Handbook Committee
 - 6.1.4. Chapter Technology Transfer Committee
 - 6.1.5. Research Administration Committee
- 6.2. Prior to each Winter and Annual Society meeting, provide a summary about TAC and its underlying committees with information that may be of interest to those committees and councils.
- 6.3. Coordinate activities involving technology transfer from, ~~TC/TG/TRG~~FGs and MTGs to the rest of the Society and the HVAC industry through members designated by those committees or councils. A report summarizing these activities shall be submitted to TAC at the Annual Society meeting.
- 6.4. Improve technology transfer from TCs to chapters through program, handbook, standards, research and other means as required.
- 6.5. Research continued improvements to electronic communications such as website enhancements and collaboration tools. With Electronic Communications Committee advice, review, recommend to TAC and oversee implementation of methods for improving the conduct of the business of TAC, ~~TC/TG/TRG~~FGs/MTGs and the dissemination of information about their activities.
- 6.6. Review, recommend and oversee implementation of periodic updates and changes to the ~~TC/TG/TRG~~ FG website template

- 6.7. Annually review and recommend changes to ASHRAE website policies that apply to TAC and ~~TC/TG/TRGFGs~~/MTGs for the Electronic Communications Committee consideration and implementation.
- 6.8. Coordinate the identification, development, and maintenance of other resources as needed to assist TAC members and ~~TC/TG/TRGFG~~/MTG Chairs in carrying out their responsibilities.
- 6.9. Review and propose changes to the TAC MOP, Reference Manual and ROB as directed.
 - 6.9.1. Maintain the reference manual procedures as described in the TAC MOP

7. Training Coordinator (TrC) Responsibilities

- 7.1. Work with ASHRAE staff to implement approaches which improve access to TC training
- 7.2. Develop and present training for incoming TAC members
- 7.3. The content of and material used for the training session is prepared by the TrC in cooperation with the OC and shall be reviewed by TAC
- 7.4. Identify training needs to support successful TC operations and conduct training sessions at the Annual and/or Winter meetings for ~~TC/TG/TRGFG~~/MTG Chairs and Vice Chairs.
- 7.5. The TrC or an individual appointed by the TrC leads the training sessions.
- 7.6. In cooperation with the Operations Coordinator and the affected committees, prepare information suitable for technology transfer.
- 7.7. Continued expansion and maintenance of new On-line training portfolio
- 7.8. In cooperation with the Director of Marketing and as appropriate, work with liaisons of other committees (and Operations Coordinator) to develop, maintain, and disseminate presentation material that describe the functions and responsibilities of the technical committees and addresses technical issues in response to inquiries by Society members and the public.
- 7.9. Coordinate the maintenance of the TAC website with the Manager of Technical Services.

8. Membership Coordinator (MC) Responsibilities

- 8.1. Identify and assist ~~TC/TG/TRGFGs~~ with difficulty getting/retaining membership to improve their breadth of membership and committee operation.
- 8.2. Assist ~~TC/TGFGs~~ in finding volunteers or groups to help maintain/update Handbook volume chapters that are not being properly maintained.

- 8.3. Monitor, evaluate and develop improvements to coordinate the annual ~~TC/TG/TRG~~FG/MTG roster update process and improvements thereto. Testing and Roll-out of New On-line roster update system.
 - 8.4. Identify and implement activities that improve the ability of ~~TCs~~ FGs to attract and develop new membership not just recycle the old ones.
 - 8.5. Maintain and refine the criteria and forms for the outstanding ~~TC~~FG award so that they help the ~~TC~~FGs to become better. Review the results in cooperation with the Section Head to identify and improve the performance of all committees under TAC purview.
 - 8.6. Oversee improved quality, process efficiency, and expansion of RPMs (Remote Participation in Meetings) – Opens ASHRAE up to the world.
 - 8.7. Liaison with Conferences and Expositions Committee (CEC) to coordinate improvements between the ~~TC/TG/TRG~~FG/MTGs and CEC
 - 8.8. Coordinate the maintenance/development of criteria and yearly award selection for the George B. Hightower Technical Achievement Award based on the procedures described in **Appendix E**.
 - 8.9. Coordinate the development and application of procedures for reviewing technical content in Society publications in cooperation with other committees as appropriate.
 - 8.10. On a regular basis, work with staff to quantify the impact that ~~TCs~~ FGs have had within ASHRAE and to society as a whole by quantifying, for example, the amount of volunteer time that is devoted to ~~TC~~ FG work each year. Convert those estimates into a dollar amount when practical.
9. Other Responsibilities for All Coordinators
- 9.1. The Coordinators report their activities and make recommendations for action as needed at the appropriate point in the agenda of the TAC meeting.
 - 9.2. Before each meeting, in cooperation with the Operations coordinator, staff will provide each liaison to TAC from another committee and all section heads a copy of the “Liaison speaking guidelines” found in **Appendix D**.

SECTION HEADS

10. Organization

- 10.1. Sections are groups of ~~TCs, TGs,~~FGs and MTGs, ~~and TRGs~~ that have been formed and organized by TAC according to fields of interest or for administrative purposes.

10.2. The ~~TCs, TGs, FGs~~ and MTGs, ~~and TRGs~~ are currently grouped into eleven (11) Sections based on their technical scopes as follows:

- SECTION 1.0, FUNDAMENTALS AND GENERAL
- SECTION 2.0, ENVIRONMENTAL QUALITY
- SECTION 3.0, MATERIALS AND PROCESSES
- SECTION 4.0, LOAD CALCULATIONS AND ENERGY REQUIREMENTS
- SECTION 5.0, VENTILATION AND AIR DISTRIBUTION
- SECTION 6.0, HEATING EQUIPMENT, HEATING AND COOLING SYSTEMS AND APPLICATIONS
- SECTION 7.0, BUILDING PERFORMANCE
- SECTION 8.0, AIR-CONDITIONING AND REFRIGERATION SYSTEM COMPONENTS
- SECTION 9.0, BUILDING APPLICATIONS
- SECTION 10.0, REFRIGERATION SYSTEMS
- SECTION MTG, MULTIDISCIPLINARY TASK GROUPS

11. General Responsibilities

11.1. Coordination and liaison

- 11.1.1. The Section Head advises ~~TC/TG/TRG~~FG/MTG Chairs of operating policies and procedures of the Society and/or TAC as described in the Reference Manual for Technical Committees, Task Groups, Multidisciplinary Task Groups, and Technical Resource Groups.
- 11.1.2. The MTG Section Head is responsible for the coordination and development of the activities of the MTGs within their Section and shall provide liaison between them and TAC. The MTG scope may also involve interactions with other Standing Committees and Councils, and those interaction activities shall be managed by the MTG Section Head and reported through TAC to Technology Council.
- 11.1.3. The Section Head represents the interest of their Section to TAC and is responsible for ensuring that their opinions and views are made known.
- 11.1.4. The Section Head arranges for spokespersons, when requested, to represent ~~TC/TG/TRG~~FG/MTGs before TAC.
- 11.1.5. The Section Head establishes and maintains contact with liaisons assigned by standing committees of the Society to the committees in their Section in order to strengthen and develop the ~~TC/TG/TRG~~FG/MTGs.
- 11.1.6. The Section Head requires each ~~TC/TG/TRG~~ FG in their Section to have, as a minimum, subcommittees and subcommittee chairs on Research, Program, Handbook, and Standards. MTGs are excluded from this requirement, unless their scope specifically includes one of these responsibilities.
- 11.1.7. Prior to August 1 of each Society Year, each Section Head should furnish the TAC Chair with a list of individuals that they recommend to be considered for appointment to TAC.

12. Specific Responsibilities

- 12.1. The MTG Section Head promotes interaction between identified technical groups outside ASHRAE and ASHRAE ~~TC/TG/TRGFG~~/MTGs through members designated by those organizations. Attends meetings of these organizations at the Winter and Annual Society meetings when possible.
 - 12.1.1. A list of organizations outside ASHRAE that we maintain contact with is kept by MOTS. Some of them are:
 - 12.1.1.1. USNC/IIR
 - 12.1.1.2. Nuclear HVAC Users Group
 - 12.1.1.3. Building Smart Alliance
 - 12.1.2. Prior to each Winter and Annual Society meeting, provide a summary of TAC and its underlying committees with information that may be of interest to the organizations.
- 12.2. As needed, the Section Head assists the ~~TC/TG/TRGFG~~/MTG Chairs in their Section to carry out their assigned responsibilities.
- 12.3. No later than February 28 each year, using the roster update process described in the ~~TC/TG/TRGFG~~/MTG Reference Manual ~~MOP~~, the Section Head furnishes the Administrative Assistant for Research and Technical Services with a list of individuals that they recommend to be appointed as members of the ~~TC/TG/TRGFG~~/MTGs in their Section.
 - 12.3.1. Each Section Head, before finalizing their recommendations, considers all the factors associated with the position of member of a ~~TC/TG/TRGFG~~/MTG to ensure that the persons they recommend will serve in the best interest of the Society. The MTG Section Head will also consult with the chairs/leaders of the ~~TCs and TFGs~~ and non-FGTC groups that are represented on the MTG to confirm that the FG ~~TC, TG~~ or non-FGTC group endorses their designated representatives on the MTG.
- 12.4. Each year, the Section Head reviews rosters prepared by ~~TC/TG/TRGFG~~/MTG Chairs in their section to verify that the rosters comply with the provisions of the ~~TC/TG/TRGFG~~/MTG Reference Manual ~~MOP~~. The importance of a correct roster cannot be overemphasized: no official committee work can be carried out without a roster, and much committee work could be invalidated if voted on by an improperly constituted committee. The roster update procedure is as follows:
 - 12.4.1. Each year prior to the Winter Meeting, staff sends a “Roster Update Form” to each ~~TC/TG/TRGFG~~/MTG Chair. The forms are to be completed and e-mailed to the Section Heads not later than 9:00 PM on Tuesday of the Winter Meeting.
 - 12.4.2. The Section Head reviews the forms submitted by each Chair in their Section to ensure that the conditions for ~~TC/TG/TRGFG~~/MTG membership given in the ~~TC/TG/TRGFG~~/MTG Reference Manual ~~MOP~~ are met. If changes are required, the Section Head works with the ~~TC/TG/TRGFG~~/MTG Chair to correct the information on the forms until both the ~~TC/TG/TRGFG~~/MTG

Chair and Section Head approve the information. The Section Head then sends the approved forms to the Administrative Assistant for Research and Technical Services no later than February 28.

- 12.4.3. Staff creates the rosters for the next Society year and send a first draft to the Section Head. The Section Head reviews the draft roster against the input that was provided in the approved Roster Update Form. Corrections are sent to staff within two weeks. If no changes are necessary, the Section Head must so indicate. These procedures are repeated until each Section Head has indicated that no further changes are necessary.
- 12.4.4. After each Section Head has indicated to staff that the roster has the correct information staff sends out appointment letters to each ~~TC/TG/TRG~~FG/MTG member with a copy of the roster for the upcoming Society year. Roster changes after this time must be made using the Emergency Roster Change Procedures and be approved by the Section Head.
- 12.5. No later than 30 days prior to the Technology Weekend meeting of TAC, the Section Head reviews the title, scope, and activities of each ~~TC, TG, FG and MTG~~ and ~~TRG~~ within their section and makes recommendations to TAC on continuing, merging, or disbanding existing committees, forming new committees, or altering scopes to fulfill the needs of the Society in the areas of responsibility of their Section.
- 12.6. For each TAC meeting, the Section Head prepares a written and oral Section Head report of actions, problems, and concerns from the ~~TC/TG/TRG~~FG/MTGs in their Section to be included in the TAC meeting minutes.
- 12.7. The Section Head or designee presides over their Section meeting with ~~TC/TG/TRG~~FG/MTG Chairs and Vice Chairs at the Annual and Winter Society meetings. The Section Head contacts the ~~TC/TG/TRG~~FG/MTG Chairs and Vice Chairs at least 30 days before the Section meeting to remind them to attend. (Guidelines for conducting the Section Meetings are given in **Appendix C**).
- 12.8. The Section Head ensures that each ~~TG/TG/MTG~~FG/TRG in their Section distributes its meeting agenda at least 30 days before each Annual and Winter meeting, and that the minutes are distributed within 60 days following each meeting.
- 12.9. The Section Head periodically reviews ~~TC/TG/TRG~~ FG websites in their Section for violations of ASHRAE website policies and to ensure that the websites reflect current activities. The Section Head communicates website violations and needs for improvement to the ~~TC/TG/TRG~~FG Chair.
- 12.10. Information on the current activities of MTGs will be posted to a section of the ASHRAE website and will be reviewed periodically by the MTG Section Head to ensure the information is up-to-date, accurate, and complete.
- 12.11. The Section Head presents a certificate of appreciation to each retiring ~~TC/TG/TRG~~FG/MTG Chair in their Section at the Annual meeting. (see B2.6.2)
- 12.12. Each Section Head informs their committees and solicit nominations for the Hightower Award following the Annual meeting to be submitted to TAC for consideration before September 1 of each year as described in **Appendix E**.

ANCILLARY RESPONSIBILITIES

13. Review of Awards

TAC reviews all requests or suggestions for new awards, revisions to current awards, or award deletions according to the guidelines for awards outlined Appendix F. In order to minimize the entire committee time, it is suggested that a subcommittee of one or more TAC members be established by the TAC Chair to consider the request and report to TAC for a formal disposition of the request.

14. Broad Peer Review of Special Publications

14.1. When the publication requires a broader peer review by members of other TC/TG/TRGFG/MTGs, ~~per the broad peer review procedure described in Appendix F of the TC/TG/TRG/MTG MOP,~~ the TAC Chair shall:

14.1.1. Ensure that all committees and members under TAC's purview are notified of the proposed publication through staff action.

14.1.2. In consultation with the Section Heads, shall identify one or more TC/TG/TRGFG/MTGs who should participate and assign participation/review responsibilities to them if necessary.

14.1.3. Arrange for a TAC vote on the proposed publication if recommended by the working group and the review committee.

14.2. The Section Head(s) involved work with the identified committees to obtain representation on the special publication working group from each identified committee.

14.3. The Section Head of the sponsoring committee works with the Chair of that committee to appoint the members of the working group from those identified.

APPENDIX A Mentoring Program

Based on ROB Mentoring program

Before or during the final meeting of the Fiscal Year (Annual meeting), the TAC Vice Chair:

1. Assigns an incumbent TAC mentor to each incoming new member prior to the first meeting.
2. Assures that time is allotted at the beginning of the first meeting sufficient for proper introduction of the new member by the assigned mentor.
3. Before the Annual meeting and in cooperation with the Chair, assesses effectiveness of the mentor/new member relationship and suggest changes and improvements.
4. Provides assistance that enhances the mentor/new member relationship.

The mentor has the following responsibilities:

- Ensure that the new member has received a copy of the group Rules of the Board (ROB), Manual of Procedures (MOP), and a copy of the most recent meeting minutes to acquaint them with the functions and focus of the group.
- Contact their assigned new TAC member before the next Committee Meeting to introduce themselves and explain the relationship and its purpose.
- The mentor should make every effort to update the new member on:
 - ✓ Committee functions, focus and objectives.
 - ✓ Review the appropriate Rules of the Board and Manual of Procedures (MOP) with the new member.
 - ✓ Discuss the typical meeting format and member duties and responsibilities.
- The mentor should meet the new member before the respective meeting is scheduled to start.
- The new member should be encouraged to develop rapport with other members to effectively work with fellow members and maximize productivity.
- Since the new member will replace an existing section head or coordinator, help them to contact the outgoing member to ensure that the new member is current on the activities and challenges of the position they will be representing.

The relationship terminates at the end of the new member's first year as a member of TAC.

APPENDIX B – Management by Objectives (MBOs)

The objectives are shown on an MS Word document that is provided to the Committee Chair and Vice Chair. The following is an example of the information currently required.

TAC MBOs Technical Activities Committee MBOs 2015-2016
Tom Lawrence, Chair 1/23/2016

Item #	MBO	Status	Date Due	Assigned To	Applicable Strategy #	MBO Comments	Strategic Direction Specific Comments	Fiscal Impact
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- List objectives, **not action items or ongoing committee activities** such as updating the committee's MOP.
- State objectives in clear, concise, measurable language. If necessary, cite sub-tasks and interim steps as a means of measuring objective completion.
- Cite both the completion dates for the overall objective as well as individual sub-tasks.
- State fiscal impact in dollars, man-hours, or man-trips. State whether the program has been approved by the council and whether it is cost has been included in the budget.
- State the primary responsible individual, subcommittee, or body.
- Report a brief but complete statement of status. Cite completion date if objective is fulfilled.

APPENDIX C - OPERATIONAL GUIDELINES FOR SECTION MEETINGS

1. Each ~~TC/TG/TRGFG~~/MTG chair and Vice Chair meets with their Section Head at each Annual and Winter meeting. The meeting room is listed in the program, and is usually held from 6:30 AM to 8 AM on Sundays.
2. The purpose of the Section meeting is to provide an opportunity for personal communication between the ~~TC/TG/TRGFG~~/MTG Chairs and their Section Head on technical and administrative issues facing their section and/or the Society. Liaison members of other standing general committees need an opportunity to distribute written announcements to address administrative matters relating to ~~TC/TG/TRGFG~~/MTG activities.

Liaisons wishing to speak at the meeting may do so at the invitation of the Section Head and in accordance with the **Liaison Speaking Guidelines** (See Appendix D.).

3. The Section Head invites the ~~TC/TG/TRGFG~~/MTG Chairs and Vice Chairs to the meeting.
4. The Section Head conducts the meeting in the same way that they would conduct a TC meeting, with the Section Head serving as Chair.
5. The Section Head sends out the Section meeting agenda at least 30 days before each Annual and Winter meeting, and the minutes (with attachments) within 60 days following each meeting.
6. The Section Head, in collaboration with the ~~TC/TG/TRGFG~~/MTG Chairs and Vice Chairs, identifies Section MBOs for the upcoming year and introduced them at the Annual meeting.
7. Suggested agenda:
(The agenda and times estimated are for guidance only and should be modified to be sure the most important information is discussed and that there is adequate time to discuss things important to the committee chairs. Note that the time estimates shown allow for other important business to be conducted within the time frame allotted.)
 - a) Introduction of ~~TC/TG/TRGFG~~/MTG Chairs, Vice Chairs, and guests (5 minutes).
 - b) Review and approval of agenda (2 minutes). (Note that you might want to solicit additions and corrections at the time the draft agenda is sent to the ~~TCFG~~ Chairs – it is almost impossible to do anything in only 2 minutes)
 - c) Review and approval of minutes (3 minutes).
 - d) Summarize discussion from last meeting and status of actions assigned (5 minutes).

- e) Liaisons from other committees should each be given a chance to speak and distribute information pertinent to the section from their committee. An effort should be made to accommodate their schedules without major disruption of the Section meeting (15 Minutes).
 - a. Research Administration
 - b. Conference and Exposition Committee (CEC)
 - c. Handbook
 - d. Other Standing Committees

- f) Discuss the MBOs set for the year and how the section can work together to address them (10 minutes).

- g) Review summary report for the Section prepared from the TC/TGFG activity database and TAC (15 minutes).
 - a. Section activities and trends will be discussed relating to membership, research, programs, publications and new communication tools and services.
 - b. Identify shared opportunities and challenges for section (10 minutes).
 - c. Adjourn.

APPENDIX D - Liaison speaking guidelines.

Liaisons,

Whether you are attending the TAC TCFG Breakfast or a ~~Technical Committee~~ TCFG meeting, your primary task is to be sure that the committee understands what the most important information your committee wants this committee to know and to do it in the most effective way possible. The following guidelines will ensure that you are successful and that you continue to have a cordial relationship.

1. INFORM the Section Head or Committee Chair in advance (if possible) that you will be attending and if you have specific time limitations for attending (such as you need to leave by XX:XX).
2. Before the meeting starts, BE SURE YOU TELL the Section Head or Committee Chair who you are, that you are available, wish to speak (if you do) and other responsibilities during the same time frame so that you can be recognized appropriately without interrupting the meeting as agendas are usually tight during the meeting. Committee Chairs recognize that you probably have other meetings you attend at the same time and they are always willing to make as much accommodation as they can without totally disrupting the meeting. However, you are probably not the most important thing on the agenda or your presence would have been requested in advance.
3. PROVIDE an electronic copy of the written material to the Committee Chair(s) and/or Secretary so that your information can be included in their documentation. You may also bring the written material to the breakfast or committee meeting.
4. DO NOT READ any written material you bring. All of our committee members can read.
5. BE PREPARED to summarize the **3** most important points. The rest can be read when the committee member gets a chance. This will keep your presentation brief, efficient and highlight the most important things you need to be sure everyone hears.
6. PLAN on your presentation taking no longer than 2 – 4 minutes exclusive of discussion or questions by the group. If the Section Head or Committee Chair wants to entertain discussion or questions, it is their choice.
7. If you are a new liaison to the section or committee, leave your contact information with the Section Head and Committee Chair(s) or Secretary.
8. Sign the attendance sheet.

APPENDIX E - PROCEDURE FOR GEORGE B. HIGHTOWER TECHNICAL ACHIEVEMENT AWARD

1. PURPOSE.

The purpose of the George B. Hightower Technical Achievement Award is to recognize annually an individual for excellence in volunteer service in the area of ~~TC/TG/TRGFG~~ technical leadership and contribution, which includes all TC, TG MTG, and TRG activities except for research and standards. The award will serve to heighten general membership awareness of, and interest in, Society activities at the ~~TC/TG/TRGFG~~ level.

George B. Hightower was an exceptional ASHRAE member. A member since 1938, he regularly attended Society meetings until his health began to fail. No other person has received more Society level awards than George B. Hightower. He received the ASHRAE-Alco Medal for Distinguished Public Service in 1974; became an ASHRAE Fellow in 1977; received the Distinguished Service Award in 1984; the Distinguished 50-Year Member Award in 1988; the Andrew T. Boggs Service Award in 1997; and the Louise and Bill Holladay Distinguished Fellow Award in 2000.

2. AWARD PRESENTATION.

The George B. Hightower Technical Achievement Award is presented annually but may be omitted if a suitable candidate is not identified. The award will consist of an acrylic trophy with the recipient's name and the year of the award etched into the face of the trophy. The award will be donated by the Atlanta Chapter, to which Mr. Hightower belonged.

3. ELIGIBILITY.

The award is open to ASHRAE ~~TC/TG/TRGFG~~ voting and corresponding members who meet the minimum point requirement detailed in Section 7. Technical Activities Committee (TAC) and Technology Council members or current ~~TC~~ and ~~TGFG~~ chairs of the nominating committee(s) are not eligible for receipt of the George B. Hightower Technical Achievement Award during the terms they serve on the respective committees, or positions. Past recipients of the award are not eligible.

MTGs participate in the George B. Hightower award through one or more of the ~~TCs/TGFGs~~ that comprise the MTG.

4. NOMINATION.

A nomination for the George B. Hightower Technical Achievement Award is made by a ~~TC/TG/TRGFG~~ chair completing a nomination form that confirms the eligibility and outlines the special contribution that the nominee has made to the work of the nominating committee(s) during the most recent four years.

The chair submits the nomination to the lead nominating committee's TAC Section Head by September 1.

5. JUDGING

The TAC Section Head reviews all nominations received from their Section and forwards eligible nominees from that Section to TAC for its consideration at their Fall Meeting. Prior to the ASHRAE Winter Meeting, TAC shall recommend a candidate to the Honors and Awards Committee. The recommended candidate shall be chosen from all nominations that meet eligibility requirements as outlined under Section 7 Criteria for Selecting Recipients and approved by TAC. TAC shall consider award points and the explanation provided by the nominating ~~TC/TG~~TRGFG in its deliberations. TAC should also review the candidate's ASHRAE online bio for verification of points.

Because it is a 'pass through award', TAC reports the name of the recipient to Technology Council as an information item and sends the recommendation to H&A who in turn recommends the name to Members Council for approval.

All nominators (not just the winning nomination) are to be apprised of the person selected by the TAC chair no later than 60 days after the selection process has been completed.

6. PRESENTATION

At the ASHRAE Annual Meeting, the George B. Hightower Technical Achievement Award is presented during the recipient's ~~TC/TG/~~TRGFG meeting.

7. PART I - ELIGIBILITY REQUIREMENTS

7.1 Nominees must have earned a minimum of 10 points **during their career** on ~~TC/TG/~~TRGFG/MTGs as defined below to be eligible for the award.

7.2 If eligible, the award is given **based only on the most recent four years of service** on ~~TC/TG/~~TRGFG/MTGs. This service must be detailed in the explanation for it to be considered and is the actual basis for receiving of the award.

Eligibility points are defined as follows:

A "tour" is an appointment for 1 year. Assignment to the same position for multiple years each count as a separate tour.

A.	Program Subcommittee	
	1. Forum Moderator	½ point per forum
	2. Seminar Chair	1 point per seminar
	3. Conference Chair	2 points per session
	4. Technical Chair	3 points per sympos
	5. Subcommittee member	1 point per tour
	6. Subcommittee Chair	2 points per tour
B.	Handbook Subcommittee	
	1. Chapter contributor/reviewer	1 point per chapter
	2. Chapter author	3 points per chapter
	3. Subcommittee member	1 point per tour
	4. Subcommittee Chair	2 points per tour

C.	Technical Inquiries	
	1. Respond to Question from Headquarters	1/4 point per question
	2. Author Frequently Asked Question	1 point per question
D.	Accept Special Assignment from Chair assignment at Chair's discretion.	Up to 3 points per
E.	TC/TGFG/MTG/TRG Officers	
	1. ALI Coordinator	2 points per tour
	2. Webmaster	2 points per tour
	4. Secretary	2 point per tour
	5. Vice-Chair	2 point per tour
	7. Chair	3 points per tour
F.	MTG member	1 point per tour
G.	Inter-Society Liaison Appointed by TAC	1 point per tour

8. PART II – TECHNICAL LEADERSHIP AND CONTRIBUTION

This part determines the actual award winner.

Provide a one page explanation of the nominee's outstanding technical leadership and contributions to the committee(s) **during the past four years** including details on why you think this person deserves the award. (Research and standards activities are NOT to be considered even if done as part of a committee assignment.)

SUBMIT NOMINATION FORM TO SECTION HEAD BY SEPTEMBER 1.

The form (ASHRAE GEORGE B. HIGHTOWER TECHNICAL ACHIEVEMENT AWARD NOMINATION FORM) can be found on the ASHRAE website at <https://www.ashrae.org/TCs> under the heading "Procedures, Forms & Information for TCs/TGs/MTGs and TRGs"

APPENDIX F - GUIDELINES FOR AWARDS

All requests or suggestions for new awards, revisions to current awards, or award deletions shall be forwarded to the Honors and Awards Committee for review and recommendation before being forwarded to the BOD for review and approval.

ASHRAE awards are grouped into the following categories, each of which has their defined forms of award:

1. Personal Honors
2. Personal Awards for General Society Activities
3. Personal Awards for Specific Society Activities
4. Paper Awards
5. Society Awards to Groups or Chapters

Awards will normally carry the name of an ASHRAE activity (e.g., Distinguished Service Award, Fellow, Journal Papers Award) No business, product, or commercial name shall be used for an award. Only in very exceptional instances may consideration be given to naming the award for an individual member.

Proposers of awards shall submit a detailed description, including the name of the award, the suggested category for the award, the reason for establishing the award, and the proposed selection and awarding process to the Honors and Awards Committee.

Proliferation of awards that would tend to detract from the worth of existing awards must be avoided. The award must first be considered as applying to an important field of ASHRAE related activity; the name of the award would then add prestige.

The committee shall include in their supporting material for candidates only information pertinent to the requirements for the particular award for which the candidate is being recommended. (70-07-01-11)

It is the policy of the Society not to consider for approval any Society honors or awards posthumously, other than the Hall of Fame

**APPENDIX G - ASHRAE Outstanding Technical Committee Award
(OBSOLETE)**

IT WAS DECIDED THAT THIS AWARD IS SERVING NO REAL PURPOSE AND THE OPERATIONS COORDINATOR WAS ASKED TO REMOVE IT. – KWC June 2017

Appendix H - REVISIONS TO RULES AND PROCEDURES
(This section is for informational purposes only and revisers should always look at the current information)

Part 1 Revisions to Rules of the Board (ROBs)

Proposed changes to Rules of the Board (ROBs) may be submitted by committees, councils, and Board members. Changes proposed by a committee shall be submitted through the body to which it reports; councils and Board members may submit proposed changes directly to the Board of Directors.

To propose a change to an existing ROB:

Present a two-column comparison showing the current ROB number and wording and the proposed ROB wording. A proposed change, at a minimum, shall include the ROB number the proposed change, and the reasons for the change.

To propose a new ROB:

Present the wording for the new rule and include a statement indicating a recommended placement of the new rule within the ROB framework. Examples:

It is recommended that this rule be placed in ROB, Book II, Publishing Council ROB.

It is recommended that this rule be placed in ROB, Book I, Section 300, Meetings of Members.

To propose rescinding an existing ROB, include in the recommendation the ROB book in which the rule is located, the rule number or other identification code, and the wording of the rule.

Appendices to the ROB are considered part of the ROBs; therefore, revisions to appendices shall follow the same procedure as revisions to ROBs.

Proposed changes to Society-wide policies and procedures (e.g., Travel Reimbursement Policy, Election and Appointment Procedures) shall follow the same procedure as for changes to ROBs.

Part 2 Revisions to Manual of Procedures

Revisions to the Manual of Procedures must be approved by the Technology Council or designated council subcommittee.

Revisions and additions to the TAC Reference Manual are made by the Operations Coordinator as suggested by TAC members and maintained by staff. TAC members shall be informed about additions, changes and revisions as described in the TAC MOP.

TC UPGRADE PROPOSAL

Return Form to:
Manager of Research & Technical Services
ASHRAE
1791 Tullie Circle, NE
Atlanta, Georgia 30329-2305
☎ 404-636-8400 • Fax 404-321-5478
E-mail: techserv@ashrae.org

Date: _____

- Turn in no later than 3 weeks prior to the meeting for consideration by TAC

Current FG Name: Extraterrestrial and Deep Space Environmental Control Systems

Current FG Section: Section 9

Current FG Scope: TG 9.SPACE is concerned with environmental control systems and components, as well as their function and ability to establish and maintain habitable levels of indoor environmental quality, located in and servicing enclosed spaces at deep space and extraterrestrial locations. The committee addresses environmental control system safety, operation and maintenance, refrigerant usage, and performance in conditions different from Earth and Earth's atmosphere.

Impact on Other FGs: _____

To date, TG 9.SPACE is the only Functional Group (FG) to address environmental control and refrigeration systems in enclosed spaces located in deep space and extraterrestrial settings. Our TG complements other FGs in providing insight into currently known facility types in conditions different from Earth and Earth's atmosphere. Although habitable levels of indoor environmental quality in enclosed spaces at deep space and extraterrestrial locations may be addressed by FGs addressing indoor environmental quality in spaces on Earth, the appropriate application of maintaining those habitable levels in deep space and extraterrestrial locations are still not adequately addressed by any FG.

Status of Activities: TG 9.SPACE has the following status of proposed activities upon formation of the FG.

- **Complete** - Investigate completed and current standards and research related to environmental control systems in deep space and extraterrestrial environments.

- Develop program sessions for 2023 Winter (Atlanta) and 2023 Annual (Tampa) as applicable, starting with forums for discussion and leading to seminars

FG formed after deadline for 2023 Winter (Atlanta).

Complete for 2023 Annual Tampa.

In progress: 2024 Annual (Indianapolis) and 2025 Winter (Orlando).

- Research

- Develop one or two RTARs, depending on co-sponsorships of other TCs, to pursue relevant research related to said environmental control systems that lead to research proposals: 3-5 months

In progress. Most FGs were not responsive or unable to provide sufficient data to co-sponsor research. The following topics are intended have an RTAR be proposed.

- Air treatment and revitalization
- Application of deep space and environmental construction for incorporation of construction and maintenance of high-performance and net-zero buildings on Earth

- Anticipated timeline for research project(s): 2-4 years

In progress.

- Standards

- Recommend ANSI numerical suffix for deep space and extraterrestrial application (e.g. Standard ###.7 or some other numerical designator): 6 months to 1 year

Closed. No ANSI numerical suffix exists for deep space and extraterrestrial application.

- Develop one standard focused on requirements for environmental control systems in deep space and extraterrestrial environments: 3-5 years

In progress. 62.X Working Group is forming a prospective standard for Acceptable Indoor Air Quality for Deep Space and Extraterrestrial Environments.

Beyond the proposed activities, TG 9.SPACe is inquiring with the Handbook Committee about the best route for incorporation of handbook content addressing facilities in deep space and extraterrestrial environments.

Current FG Roster:

- minimum of 6 members; maximum of 18 members
- no more than one (voting) member from each company
- identify subcommittee chairmen where possible
- Chair & Vice Chair must be ASHRAE members
- maximum of 2 member non quorum

NOTE: Roster reflects updated FG roster, with a proposal to cycle out the Chair, move members in new position with the Chair cycling out, and add a Handbook Subcommittee Chair & Voting Member.

	<i>Person's Name:</i>	<i>Company</i>	<i>ASHRAE Member #</i>
Chair:	Mr. John M Constantinide	U.S. Space Force	8160800
Vice-Chair & Voting Member:	Dr. Hamidreza Najafi	Florida Institute of Technology	8277071
Secretary & Voting Member:	Jonathan Smith, PE	Siemens	7980316
Program Subcommittee Chair & Voting Member:	Mr. Keith Reihl	Reihl Engineering	50277731
Standards Subcommittee Chair & Voting Member:	Mr Christopher Lee	Adaptis	8260861
Research Subcommittee Chair & Voting Member:	Dr Arup Bhattacharya	Louisiana State University	8379259
Handbook Subcommittee Chair & Voting Member:	Mr. John M Constantinide	U.S. Space Force	8160800
Voting Member:	Mr. Evan Connell	Optima Engineering, P.A.	8293558
Voting Member:	Mr. Clark Denson	Smith Seckman Reid, Inc.	7982348
Corresponding Member:	Dr Rafael Rodriguez	Embry-Riddle Aeronautical University	8217788
Corresponding Member:	Mr Fatih Evren	Pacific Northwest National Laboratory (PNNL)	8262956
Corresponding Member:	Mr William S Goodspeed	Flow Control Technology Company	8431288
Corresponding Member:	Dr Dennis R Landsberg	L&S Energy Services Inc	417623
Corresponding Member:	Dr Chao-Hsin Lin, PE	Boeing	7988695
Corresponding Member:	Dr Rafael Rodriguez		8217788
Corresponding Member:	Mrs Cherish L Samuels, PE	Amazon	8059912
Corresponding Member:	Mr Fatih Evren	Pacific Northwest National Laboratory (PNNL)	8262956
Corresponding Member:	Mr William S Goodspeed	Flow Control Technology Company	8431288
Corresponding Member:	Dr Dennis R Landsberg	L&S Energy Services Inc	417623
Corresponding Member:	Dr Chao-Hsin Lin, PE	Boeing	7988695
Corresponding Member:	Mr. Bruce B Lindsay	Lindsay & Associates	8312229
Corresponding Member:	Mrs Cherish L Samuels, PE	Amazon	8059912
Corresponding Member:	Mr Fatih Evren	Pacific Northwest National Laboratory (PNNL)	8262956

<i>Corresponding Member:</i>	Mr William S Goodspeed	Flow Control Technology Company	8431288
<i>Corresponding Member:</i>	Dr Dennis R Landsberg	L&S Energy Services Inc	417623
<i>Corresponding Member:</i>	Dr Chao-Hsin Lin, PE	Boeing	7988695
<i>Provisional Corresponding Member:</i>	Mr Nick H Agopian	Renewaire LLC, A Soler & Palau Company	2008563
<i>Provisional Corresponding Member:</i>	Mr Christopher J Ahne	Genesis Air	5193681
<i>Provisional Corresponding Member:</i>	David Ajilore		8458040
<i>Provisional Corresponding Member:</i>	Camen A Andrews	B&I Contractors	8468310
<i>Provisional Corresponding Member:</i>	Mr Geoffrey Bares	CenTrio Energy	8141681
<i>Provisional Corresponding Member:</i>	Mr Tsubasa Bolt	Surbana Jurong Consultants Pte. Ltd.	8183638
<i>Provisional Corresponding Member:</i>	Mr Michael D Corbat	Rensa Filtration, Inc	8021170
<i>Provisional Corresponding Member:</i>	Miss Emily Crawley		8463990
<i>Provisional Corresponding Member:</i>	Ms Gabrielle Davis	Camfil USA	8432180
<i>Provisional Corresponding Member:</i>	Mr Rafael Da Costa Dutra	Trane	8283237
<i>Provisional Corresponding Member:</i>	Mr Kajen Ethirveerasingham	Enerlife Consulting	8273724
<i>Provisional Corresponding Member:</i>	Mr Nissun Feiner, C.E.T	Delta-T Designs	8266831
<i>Provisional Corresponding Member:</i>	Dr Jamie Fine	RWDI	8301396
<i>Provisional Corresponding Member:</i>	Mr Henry T Greist	Lennox Industries	8061284
<i>Provisional Corresponding Member:</i>	Mr Carl A Griffin		8460132
<i>Provisional Corresponding Member:</i>	Dr George Gruetzmacher	WI State Laboratory of Hygiene, UW Madison	8439758

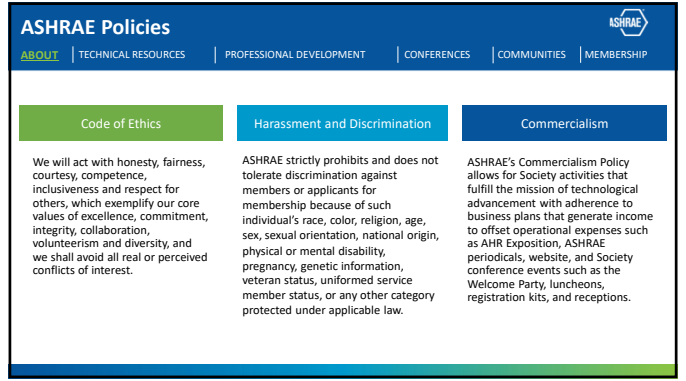
<i>Provisional Corresponding Member:</i>	Mrs Traci A Hanegan	Coffman Engineers	5153450
<i>Provisional Corresponding Member:</i>	Prof Juan David Kruger	ASISBUSINESS ECI	8462601
<i>Provisional Corresponding Member:</i>	Stephanie Katherine Licht	The Boeing Company	8383185
<i>Provisional Corresponding Member:</i>	Dr Liang Chung James Lo	Drexel University	8133601
<i>Provisional Corresponding Member:</i>	Mr Adam Michalson	Montana State University	8304993
<i>Provisional Corresponding Member:</i>	Mr Matt Middlebrooks	Camfil USA	5199474
<i>Provisional Corresponding Member:</i>	Mr Christopher O Muller	AAF Flanders	5116301
<i>Provisional Corresponding Member:</i>	Will Pepi	RPI	8459144
<i>Provisional Corresponding Member:</i>	Mr Duncan A Phillips	Rowan Williams Davies & Irwin	5101310
<i>Provisional Corresponding Member:</i>	Jialei Shen	NIST	8360633
<i>Provisional Corresponding Member:</i>	Mr Marios Iakovos Tsakiris, Sr	ZEB SA	8411388
<i>Provisional Corresponding Member:</i>	Muhammad Usman	Sochi AC Unit Fix Cont. LLC	8370903
<i>Provisional Corresponding Member:</i>	Mr Christopher Vizcaino	Molecular Products	8443278
<i>Provisional Corresponding Member:</i>	Dr Wangda Zuo	Penn State University	8094751

T A C U S E O N L Y :

Date Received: _____ Date Sent to TAC/FP: _____ Meeting Date: _____ Approved? Yes No



1



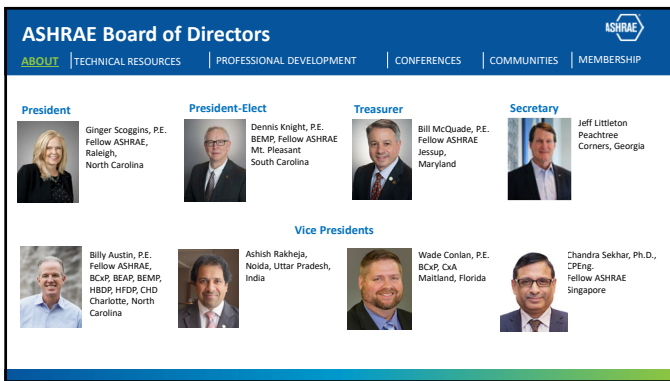
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5



6

ASHRAE Directors at Large

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 Doug Cochrane, P.Eng. Mississauga, Ontario, Canada	 Blake Ellis, P.E. Overland Park, Kansas	 Dru Crawley, Ph.D., BEMP Washington, D.C.
 Corey Metzger, P.E. Ames, Iowa	 Art Gesler Colleyville, Texas	 Wei Sun, P.E. Ann Arbor, Michigan
 Kishor Khankari, Ph.D. Ann Arbor, Michigan	 Luke Leung, P.E., BEMP Clarendon Hills, Illinois	 Heather Schopplein-Anderson, P.E. San Jose, California

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Government Affairs


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GOVERNMENT OUTREACH



Get Involved!


GOVERNMENT AFFAIRS UPDATE



BI-WEEKLY NEWSLETTER

Sign up online or email
GovAffairs@ashrae.org

LETTERS & TESTIMONY



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Research: Supporting ASHRAE's Mission

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Society Year 2022-2023

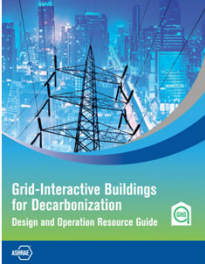
 \$800,000 Raised for Endowments	Research Promotion Campaign Total \$2.7M <i>(Research, YEA, AI, Scholarships, General)</i>
 \$298,750 Awarded through 76 Scholarships	 Within the RP Campaign \$2M Raised for Research
 \$50,000 Raised by College of Fellows and Life Members Club	 \$1M Given by ASHRAE Regions, Chapters and Sections

More than 4,000 contributions from Members, Organizations and other Associations

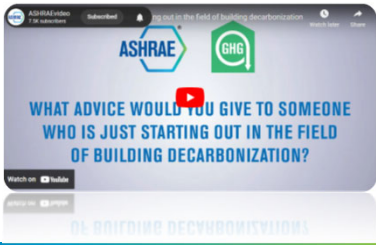
9

Task Force for Building Decarbonization

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Grid-Interactive Buildings for Decarbonization
Design and Operation Resource Guide




WHAT ADVICE WOULD YOU GIVE TO SOMEONE WHO IS JUST STARTING OUT IN THE FIELD OF BUILDING DECARBONIZATION?

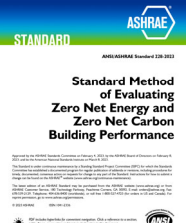
10

Standards

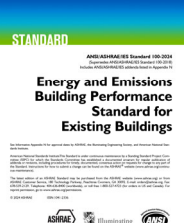
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ASHRAE Standard 55-2018
Control of Infectious Aerosols



ASHRAE Standard 209-2018
Standard Method of Evaluating Zero Net Energy and Zero Net Carbon Building Performance

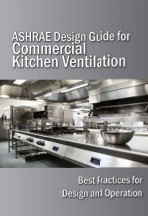


ASHRAE Standard 189-2019
Energy and Emissions Building Performance Standard for Existing Buildings


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ASHRAE Bookstore

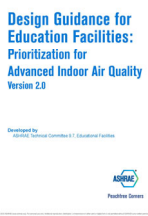
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ASHRAE Design Guide for Commercial Kitchen Ventilation
Best Practices for Design and Operation



Lucy Goes Green Book Signing!
ASHRAE Bookstore at the Marriott Marquis, Sunday, Jan. 21 at 9:00 AM.



Design Guidance for Education Facilities: Prioritization for Advanced Indoor Air Quality Version 2.0

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Technology Portal

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Now even more convenient. >>>

Quickly access a wide range of resources and products.

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Professional Development

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eLearning | **ASHRAE Learning Institute** | **Certifications**

Recently Updated
 eLearning
FUNDAMENTALS: HVAC SYSTEMS (I-P)

New Course
 STANDARD
Control of Infectious Aerosols

New Certification
DECARBONIZATION CDP CERTIFIED PROFESSIONAL

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2024 Topical Conferences

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- Madrid, April 17-19
2024 ASHRAE International Conference on Building Decarbonization
- Indianapolis, June 24-26
2024 ASHRAE Conference for Integrated Design, Construction & Operations
- Chicago, September 26-27
Women in ASHRAE Leadership Symposium
- New York City, October 21-23
2024 ASHRAE Decarbonization Conference: Decarbonizing Existing Tall Buildings
- Beirut, October 3-4
The Sixth International Conference on Efficient Building Design

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Events & Conferences: Tradeshows

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AHR Chicago

Meet and Greet with President Ginger Scoggins
 3:00 -4:00 PM | Monday, Jan 22
 ASHRAE Booth S6810

ASHRAE at Industry Events
cmpx Canadian Mechanical & Plumbing Exposition
 Toronto, ON | March 20-24
 Visit ASHRAE at Booth 646

ACREX India 2024
 New Delhi, India | Feb. 15-17

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Get Involved with Committees & Chapters

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Find Committees and Nominate Yourself or Others

- FEB 2024** February: Nominations for appointed committees are due **February 16, 2024**.
- JUN 2024** June: Speak with your committee ExO/CO if your current appointment/elected position ends to be nominated for another.
- SEP 2024** September: Nominations for elected positions are due. (Publications & Education Council, Tech Council, RAC, TAC, Standards, Handbook, Nominating)

Find Chapter Information Using the Chapters Map

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Membership

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NEW Benefit!
 ASHRAE Guidelines added to annual membership benefit selection for new & renewing full dues paying members.

eLearning Course 95+ to choose from	ASHRAE Standard or Guideline 100+ to choose from	ASHRAE Handbook PDF version of the most recent	Handbook Online 4 most recent	ASHRAE Certification Exam Study Guide 3 to choose from
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Honors & Awards

The following award nominations have a **May 1** deadline:
 Fellow | Honorary Member | ASHRAE Hall of Fame | F. Paul Anderson Award
 ASHRAE Pioneers of the Industry | ASHRAE Award for Distinguished Public Service

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Asked to make a statement
on behalf of ASHRAE?

Please send all media
inquiries to
publicrelations@ashrae.org
before responding to
members of the press.

Thank you!
Questions or Comments?

Council: Technology

Chair: James Bennett

Committee: Technical Activities

Vice-chair: Kevin Mercer

MBO #	Description	Metric	Initiative #	Goal #	Completion % /Date	Financial Assist Req'd?	MBO Comments
		(how do we determine success?)					
1	Promote balance in TCs by Section Heads reviewing FG rosters	10 Section Head Reports submitted that indicate review of rosters to help assure technical balance in new and continuing committees	1, 2, 3, 4	2	50% by February 1st 2024 and 100% by June 30th 2024	No	Will track this as we approach roster season. Balance reporting due from section heads on Jan. 24th. TAC working to develop guidance on 'interest categories' to help FG chairs in assuring balance on FG.
2	Help ad hoc committees move under TAC	2 new TAC FGs that were ad hocs	3	3	100% by June 30th 2024	No	MTG.BEQ (Building Energy Quotient) approved. MTG.GAI (Generative AI) approved. Complete.
3	Empower sections for strategic engagement	10 Section level meetings (one for each section) held between each Conference	1, 4	2	50% by February 1st 2024 and 100% by June 30th 2024	No	Action item for TAC members to respond to Planning Committee's via website for the January 31st data pull. Chairs Breakfast in Chicago featured sections breakout session for targeted section-level strategy ideation.
4	Work on global collaboration through TCs	TAC VC attends all GTIC activities and reports to TAC	1, 3, 4	1	100% by June 30th 2024	No	This is happening/ongoing. Chair of GTIC gave a presentation on GTIC at Chairs Breakfast in Chicago. TAC VC is member of GTIC and is actively participating. TAC regularly updates membership and FG leadership on GTIC activities.
5	Emphasize TC Chairs training for effective operations, using existing administrative resources and procedures and outreach to other standing committees (like Handbook)	Chairs Breakfast program includes a training from a different standing committee	3	2, 3	50% by February 1st 2024 and 100% by June 30th 2024	No	Chairs Breakfast in Chicago included a presentation by the Conf.&Expo Committee on successful program submission and a handout from Publications. A handout on Handbook deadlines will be discussed at TAC Part B on Jan. 24th.
6	Continue online rostering project	complete or incomplete	3	2	100% by June 30th 2024	Yes	This project is complete and ready for rollout. Staff will send update links shortly after Winter Meeting, recording training materials for use and education of FG leadership. TAC members tested the tool and ASHRAE Staff responded to feedback.
7	Train new TAC members	TAC Training Coordinator establishes Section Head mentoring process through an update to the TAC Reference Manual	3	2	100% by June 30th 2024	No	One mentor position running already. Will document in Reference Manual this spring. Reference Manual will be updated to align with current TAC practices.
8	Update TAC informational tools, e.g. Functional Group Evaluation Workbook, TAC webpage	complete or incomplete	3, 4	2, 3	100% by June 30th 2024	No	Updated for this Society Year and distributed to FGs. Further updates for next Society year.
9	Develop TAC Strategic Plan (using these MBOs as benchmarks)	Post updated plan to TAC webpage	3	1, 2, 3	100% by February 2024	No	VC and Chair are working on this including inputs from TAC members.
10	Victor's leadership training videos. Apply for PD credit mechanism. Consider professionalizing the videos.	Module A approved for PDC	3, 4	2	100% by June 30th 2024	No	VC has a meeting scheduled with Karen Murray to work through issues with these videos, including not being able to work with Victor. Pivoting to working with Larry Smith, the producer of the videos, for permissions etc.
11	Provide situation advocacy for FGs	Note specific actions during each TAC meeting	3	2	50% by February 1st 2024 and 100% by June 30th 2024	No	This will be ongoing. Examples include approval of MTG.GAI, TG.SPACE to TC 9.13, MTG.OBB to a TC, scope changes, representation on TFBD, etc. TAC has appointed a liason to CTTC to help FGs recruit new talent from the large pool of members active in their local chapters.
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