1. CALL TO ORDER – Mehboob

2. CODE OF ETHICS - Mehboob

   *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 shall avoid all real or perceived conflicts of interest. (Code of Ethics: https://www.ashrae.org/about/governance/code-of-ethics)

   (Core Values: https://www.ashrae.org/about/ashrae-s-core-values)*

3. ROLL CALL/INTRODUCTIONS - Mehboob

4. REVIEW OF MEETING AGENDA - Mehboob

5. APPROVAL OF MINUTES – Mehboob

   A.* August 15, 2022

6. REVIEW OF ACTION ITEMS – Mehboob

   A.* June 29, 2022

   B.* August 15, 2022

7. POSTPONED MOTIONS – Mehboob

   A.* Wednesday, June 29, 2022

   The Society implement the recommended revisions to the ASHRAE Board of Directors and councils’ structure as listed in APPENDIX I of the Board Composition and Leadership Structure Subcommittee Final report dated June 26, 2022 (ATTACHMENT F).

   B.* Monday, August 15, 2022

   The BOD DEI Advisory Subcommittee recommends to the ASHRAE Board of Directors consider issuing a response to the request from Society of Women Engineers of coordinating efforts between ASHRAE and AIA on a Building Industry Statement to address the recent ruling overturning Roe vs. Wade.

8. EXCOM REPORT TO THE BOD

   A.* August 31, 2022
9. TREASURER’S REPORT
   A.* Financial Update FY21-22 Results
   B.* FY22-23 YTD through August – Dashboards and Financial Statements
   C.* Finance Committee Report to the BOD

10. BOD SUBCOMMITTEES REPORTS
    A.* BOD DEI Advisory Subcommittee – Thomle
    B. Financial Focus Subcommittee - Knight
    C.* Society Streamlining Subcommittee – Maston
    D. Strategic Business Development Subcommittee – Macauley

11. COUNCIL REPORTS
    A.* Members Council - Scoggins
    B. Publishing and Education Council - Macauley
    C.* Technology Council - Maston

12. COMMITTEE REPORTS
    A. Building EQ Committee – Maston (Chris Balbach)
    B.* Development Committee – Austin (Tiffany Bates Abruzzo)
    C. Audit Committee - Jensen

13.* ASHRAE BRAND RECOGNITION - Mehboob

14. TASK GROUP REPORTS
    A.* ASHRAE at International Conferences Task Group – Sepulveda
    B.* Champions Club – Mehboob (Tim Wentz)
    C. Task Force for Building Decarbonization ExCom – Kent Peterson

15. EXECUTIVE SESSION

16. OLD BUSINESS
    A.

17. NEW BUSINESS
    A.

18. INFORMATION ITEMS
    A.* Publication Analysis Sheets – September 2022

*Indicates New/Revised Attachment
19. **UPCOMING MEETINGS**

*BOD Election* | December 6, 2022 | 8:00am – 12:00pm ET (UTC-05:00)

*2023 ASHRAE Winter Conference* | Atlanta, GA  
February 5, 2023 | 1:30 – 5:30pm ET (UTC-05:00)  
February 8, 2023 | 2:00 – 6:00pm ET (UTC-05:00)

20. **ADJOURNMENT**
MINUTES

BOARD OF DIRECTORS MEETING

Monday, August 15, 2022

Note: These draft minutes have not been approved and are not the official record until approved by the Board of Directors.
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Monday, August 15, 2022

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### PRINCIPAL APPROVED MOTIONS

**Board of Directors Meeting**  
**Monday, August 15, 2022**

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<th>Motion</th>
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<td>1 – 2</td>
<td>The open session minutes from the June 26, 2022 and June 29, 2022 Board of Directors’ meetings be approved.</td>
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| 2 – 4     | The following six motions be accepted as a consent agenda  
| 4 – 9     | **MOTION 3:**  
  *The BOD DEI Advisory Subcommittee recommends to the ASHRAE Board of Directors consider issuing a response to the request from Society of Women Engineers of coordinating efforts between ASHRAE and AIA on a Building Industry Statement to address the recent ruling overturning Roe vs. Wade.*  
  The motion be postponed until the October 13-14, 2022 BOD meeting. |
**ACTION ITEMS**

Board of Directors Meeting  
Monday, August 15, 2022

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<td>Littleton and Macauley</td>
<td>Adjust the payments to members analysis to indicate what portion of payments are reimbursement for travel.</td>
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MINUTES
BOARD OF DIRECTORS MEETING
Monday, August 15, 2022

MEMBERS PRESENT:
Farooq Mehboob, President
Ginger Scoggins, President-Elect
Billy Austin, Vice President
Dunstan Macauley, Vice President
Sarah Maston, Vice President
Ashish Rakheja, Vice President
Jeff Littleton, Secretary
Steven Sill, Region I DRC
Ronald Gagnon, Region II DRC
Mark Tome, Region III DRC
Bryan Holcomb, Region IV DRC
Jim Arnold, Region V DRC
Susanna Hanson, Region VI DRC
Chris Gray, Region VII DRC
Tyler Glesne, Region IX DRC
Devin Abellon, Region X DRC
Eileen Jensen, Region XI DRC
John Constantinide, Region XII DRC
Cheng Wee Leong, Region XIII DRC
Andres Sepulveda, Region XIV DRC
Richie Mittal, RAL DRC
Blake Ellis, DAL
Luke Leung, DAL
Wei Sun, DAL
Dru Crawley, DAL
Ken Fulk, DAL
Art Giesler, DAL
Wade Conlan, DAL
Kishor Khankari, DAL
Adrienne Thomle, DAL

GUESTS PRESENT:
A. Praveen
Abbas Sajid
Abdul Rehman
Abdulrahil Kalendar
Ade Awuioola
Afzaal Malik
Ahmed Alaa Eldin
Ahmed Gulzar
Triantafyllos Andreas
Triantafyllopoulos
Altaf Safar
Ammad Monus
Ammar Bahman
Anoop Peediayakan
Asif Khan
Atam Hayat
Ather Naseem Siddiqui
Atilla Biyikoglu
Babatunde Badru
Bassel Anbari
Bilal Javed
Chad Smith
Dalip Singh
Danish Tahir
Danyal Butt
Doug Cochrane
N. Kaplan
Manoj Gupta
Rashid Alshatti
Emeka Achebe
Yaqoub Almatouq
Fahim Ishaq
Farman Khan
Ghassan Al Ali
Southam Pitchikala
Harrison Kesling
Hossam Hassaan
Hugh Crowther
Ibad Hasan
Jayson Bursill
Jennifer Leach
Jonathan Smith
Julia Timberman
Kay Thrasher
Khawaja Khalid Iqbal
Khurram Raja
Krishna Mitra
Lukasz Semla
Mahesh Prabhu
Mahroo Eftekhari
Manoj Khati
Mehiar Asfari
Mirza Adnan
Mirza Ajmal Sharif
Mobarak Alqenaei
Mohammed Murtaza
Mohsin Ashraf
Moiz Ashraf
Money Khanna
Monica Del Fresno
Mohammad Riaz Baig
Mohammed Zahir
Muhammad Aamir
Muhammad Farooq Saeed
Muhammad Mohsin
Muhammad Zubair
Nitin Naik
Nivedita Jadhav
Noman Qamar
Numan Ghani
Olubukunmi Olatunbosun
Om Taneja
Omer Khan
Pallab Kar
CALL TO ORDER

Mr. Mehboob called the meeting to order at 8:00 am.

CODE OF ETHICS

Mr. Mehboob read the code of ethics commitment and advised that the full code of ethics and core values are available on ashrae.org.

REVIEW OF MEETING AGENDA

Mr. Mehboob reviewed the meeting agenda. There were no changes or additions.

APPROVAL OF MINUTES

Mr. Macauley moved and Mr. Gagnon seconded that

1. The open session minutes from the June 26, 2022 and June 29, 2022 Board of Directors’ meetings be approved.

MOTION 1 PASSED (Unanimous Voice Vote, CNV).
EXCOM REPORT TO THE BOD

JUNE 29, 2022

Mr. Mehboob reported that there were no recommendations for the BOD’s consideration.

He reported that ExCom received reports from all bodies reporting to ExCom. He stated that ExCom had a brief discussion on scope three emissions.

JUNE 30, 2022

Mr. Mehboob reported that there were no recommendations for the BOD’s consideration. He reviewed the information items.

Mr. Mehboob reviewed ExCom’s discussion of payments to members. He reported that 130 payments were made last Society Year, with the average payment being approximately $3,918. He stated that what he found concerning was that four of the five highest paid members, who were cumulatively paid $229,000, were BOD members. He reported that no decisions were made by ExCom as of yet.

Mr. Conlan suggested that fees paid out of Society’s budget be separated from fees paid by other organizations via contract work. For example, work has been done and paid for by NYSERDA.

Mr. Mehboob responded that Mr. Conlan’s comments were excellent and the more data available, the better.

Mr. Crawley suggested that travel reimbursement payments be broken out to better understand what payments are travel reimbursements and which are payments for courses.

Staff and Mr. Macauley will adjust the payments to members analysis to indicate what portion of payments are reimbursement for travel.

Mr. Khankari asked for additional information on the AIA MOU. He asked what Society’s plans are for implementation so that the BOD can understand the progress on that MOU.

The AIA Liaison Committee members were shown on screen.

Mr. Littleton reported that he, coincidentally, had a recent meeting with Lakeisha Woods, the new AIA Executive Vice President. One of the interesting things that came up with Mr. Littleton’s meeting with Ms. Woods is that AIA is open to co-sponsoring an ASHRAE Standard. If this possibility were to move forward, it could result in greater pick up and awareness of ASHRAE Standards moving forward.

He reported that the relationship with AIA is great and quite strong, and the AIA liaison group has been quite strong as well.

Ms. Abrams reported that the relationship with AIA is ongoing, for example, participation on each other’s committees.

TECHNOLOGY COUNCIL REPORT

Ms. Maston reported on behalf of Technology Council. She reminded members of the BOD to review the forthcoming motions for adherence to ASHRAE’s Procedures for Standards Actions (PASA) and ANSI
Essential Requirements and not technical content. If the BOD disapproves a Standards Committee Document for publication, please detail reason(s) for the record.

She reported that the publication motions presented are addenda that have unresolved objectors, negative project committee votes with reason, or a threat of legal action. These motions are preceded by formally voted recommendations from the project committees and Standards Committee. The rules do not require a vote from Technology Council. Appeals procedures now allow for consideration of an appeal of a BOD standards action or inaction only if the negative vote or unresolved comment is based solely upon procedural grounds.

Ms. Maston reported that consent motions one through six have unresolved commenters or negative committee votes but no negative votes by Standards Committee. The reasons for the negative votes were technical in nature with no alleged process violations subject to appeal. Please refer to the analysis sheets for the full detail on the reasons for negative votes and/or unresolved commenters and a summary of Project Committee responses that were distributed prior to the meeting.

Ms. Maston moved that

2. The following six motions be accepted as a consent agenda


**MOTION 2 PASSED** (Unanimous Voice Vote, CNV).
ASHRAE BRAND RECOGNITION

Mr. Mehboob reported that ‘ASHRAE Brand Recognition’ was an initiative started under Mr. Schwedler’s Presidential year. The name of the group has been adjusted slightly. The group has done a great deal of work and has been led by Mr. Khankari.

Mr. Khankari reported that the work of the group was completed a while ago. He thanked the members for their time.

He presented the group’s report. The full report was attached to the agenda.

Mr. Mehboob opened the floor to questions and comments and requested that they be addressed to Mr. Khankari.

Ms. Gupta shared what the Society is already doing as it relates to the recommendations. She provided the following updates:

- On average 50-60 press releases are sent each year to members, non-members, 800 media contacts across the globe, MOU associations, and AASA members.
- 50% of the Society’s social media followers are non-members.
- The ASHRAE 365 app has 30,000 users.
- 70 emails are sent annually from Society to members and non-members and the typical distribution is 100,000.
- The weekly HVAC Newsletter is sent to 92,000 recipients.
- Society has an ASHRAE Podcast as well as a YouTube channel.
- The ETF was sourced to do over 700 media news articles which reached 11 billion people, who were largely the general public.
- When ‘ASHRAE’ is put in the Google search field, our metrics show that Society is the first thing that comes up. For searches that do not include ‘ASHRAE,’ Google analytics can be conducted.

Mr. Mehboob thanked Ms. Gupta for the information and stated that the Marketing Department is doing a great job. He stated that Mr. Khankari and his group are suggesting another approach. Do we offer products and services that have a wider outreach? Do we determine if the Marketing team needs more resources? Where else can we branch out?

Mr. Khankari stated that the Marketing Department is doing outstanding work. He reported that the work of the group is forward looking at how the Society can remain relevant in the next 50-100 years. He reported that in order for Society to remain relevant in that time, what is currently being done must be added to.

Ms. Gupta was asked how the Marketing team could contact all councils and committees. She reported that the Marketing team would have to determine how best to do that.

Mr. Gray stated that all of the updates provided by Ms. Gupta is outreach to groups that already understand Society and the ASHRAE brand. He suggested that Society work to reach those that may not get the current media outreach. For example, major media outlets.
He stated that there was just life changing legislation for decarbonization in the US and Society ought to be out there discussing the role that buildings play and addressing each of those items of legislation.

Mr. Gray suggested that video content, in addition to written content, is needed.

Mr. Sun suggested that efforts be linked to grassroots PAOE.

Mr. Rahkeja stated that the group deliberated on the need for spreading the word about Society. He stated that the challenge put forward was not just for the US. He suggested that the topic needs far more deliberation and support from staff.

Mr. Littleton stated that there is a great deal of passion from the BOD on this subject. He stated that it is important that this be a staff/volunteer partnership. He suggested that it was a missed opportunity to take advantage of the wisdom of the Marketing team as these recommendations were developed.

Mr. Khankari responded that this was the very first attempt towards this subject and the group was just brainstorming some ideas. He stated that on a long-term basis he agrees that the staff/volunteer partnership is important. He reported that he did reach out to Ms. Gupta regarding these activities. He expressed agreement with Mr. Littleton that the long-term plan should include a staff/volunteer partnership.

Mr. Rakheja stated that from the discussions, there is strong agreement that recommendations from staff would have been useful. He suggested that more work be done on this topic.

Mr. Mehboob stated that this topic will go forward and staff will be involved. He stated that he is a strong advocate of the staff/volunteer partnership and expressed that the partnership will yield the best results moving forward. He stated that he will present a plan to the BOD in the future.

**DEI SUBCOMMITTEE REPORT**

Ms. Thomle apologized for the report not being attached to the agenda. The full report is included in ATTACHMENT A.

Ms. Thomle moved that

3. The BOD DEI Advisory Subcommittee recommends to the ASHRAE Board of Directors consider issuing a response to the request from Society of Women Engineers of coordinating efforts between ASHRAE and AIA on a Building Industry Statement to address the recent ruling overturning Roe vs. Wade.

Ms. Thomle reported that in response to feedback from SWE’s membership, the organization issued a statement on their website regarding the change in US policy. Beth Thomlinson from Region VI, representing SWE, requested that efforts be coordinated between ASHRAE and AIA on a Building Industry Statement to address the recent ruling overturning Roe vs. Wade.

She reported that the consensus of the BOD DEI Advisory Subcommittee was that this issue was important and at a minimum warrants discussion at the BOD level. The BOD DEI Advisory Subcommittee
acknowledges that this is a nuanced topic for ASHRAE to address without the appearance of ASHRAE involving itself in political matters.

Ms. Thomle spoke against the motion. She stated that ASHRAE is an international society and should not be involved in one country’s political issues.

Mr. Mehboob set the parameters of the discussion. He stated that this was not the first case that had come before the BOD, requesting that Society address what is fundamentally a social issue. He requested that BOD members focus comments on whether Society should be involved in these types of matters, no matter where they come from.

He stated that the fundamental issue before the BOD is, is Society in the business of addressing social issues? A summary of that discussion is below:

- **Spoke against the motion.** Society did not take a stance on the conflict in Ukraine. Other countries have differing views on not just abortion, but other topics as well. (Arnold)

- **Expressed agreement with the previous comments.** Society should not be engaged in this area of DEI. (Leong)

- **Spoke against the motion.** (Constantinide)

- **Neither for nor against the motion.** The BOD is not really voting on what Society should say and a statement does not necessarily need to take a position. One possibility is to state the Society’s apolitical stance, but acknowledge the challenges posed to our constituents. The statement could acknowledge that members are sincerely and viscerally impacted by this. This could be an opportunity to articulate a lot of the principles that Society has adhered to. (Hanson)

- **Spoke against the motion.** Tend to think that when Society gets involved in political and social issues, it exposes the organization to criticism and possibly alienating members. This is a minefield that we should not step onto. Making a statement is taking a position. (Fulk)

- **Spoke against the motion.** The way I read the motion is it is not Society’s statement, but it is a building industry statement that Society’s name would be attached to. If Society does make a statement, it should be on our own. (Ellis)

- **Undecided on the motion.** The motion is requesting that the BOD consider issuing a response to the request. Suggest a courteous response to SWE that we choose not to make a statement at this time. (Jensen)

- **Spoke in favor of the motion as written.** Heard a lot of comments as to whether this is a social or political issue and something that we need to be careful with. The DEI Subcommittee was created to ensure that all people and members have the same opportunities, and this ruling does have an impact on a certain demographic. At the very least, Society should consider issuing a response. (Abellon)

- **Toying with the idea that this be postponed until the next BOD meeting.** Mr. Mehboob asked a broader question at the start of this discussion that needs more thought. Also need more time to
read both SWE’s response as well as Society’s diversity commitment to formulate my thoughts. (Gray)

The motion is just requesting that Society issue a response to SWE. (Austin)

Agree that the motion should be postponed. Need to delay so BOD members have time to process. The issue is multifaceted on so many levels and BOD members need the opportunity to review what is going on. (Maston)

Mr. Mehboob reminded the BOD that he is limiting the discussion on whether Society should be involved in these types of discussions – issuing statements, taking political stances, etc. There are over 130 countries represented in ASHRAE. If people want a long list of social and political issues it will be a never-ending list. He stated that he wants to first establish if Society is in this game. If the BOD determines that Society is in the game, the discussion can be postponed to a later BOD meeting.

Discussion resumed.

Expressed agreement with Mr. Mehboob. Spoke against the motion. It is odd to pick on a Supreme Court decision and want to respond to that. There are many supreme court decisions on this topic. By choosing to respond to this Supreme Court decision it would show Society’s priority. (Leung)

Is a human rights issue and will likely not be the only one we are brought. Would like to charge the DEI Subcommittee to come up with draft language. (Glesne)

Wish to not go down the road as it relates to human rights. Not relevant to ASHRAE. Human rights are a slippery slope in my opinion. (Mehboob)

Any statement made at this point in history related to eliminating barriers to having women in the work force will be seen as the Society choosing a side in the Roe vs. Wade debate. Concerned about Society taking that position. Feel we could lose thousands of members. Also have to be cautious with our mission as it relates to being a 501(c)3; there are IRS guidelines that require Society to stay in line with our core purpose. Having said that, work force development is a front and center issue for ASHRAE. There are ways we could do that but we would have to be cautious about that and take into account our mission and 501(c)3 status. (Littleton)

Could one of our members petition the IRS and notify them that ASHRAE is participating in these types of activities? (Mehboob)

Yes, if Society were to hypothetically issue a generic statement and if some members perceived us as taking a side on the Roe vs. Wade issue, they could report Society to the IRS. If enough people did that, the IRS could do an investigation. (Littleton)

Agree with the previous comments. ASHRAE is a technical society, not political or religious. (Sun)

Personal opinion aside, when I look at this motion, feel that Society should respond, and it should be neutral. Would like to see the statement before voting. Our DEI is focused on ASHRAE, not
larger issues outside of our Society. Owe SWE a response one way or the other; no response will be just as loud as a response one way or another. (Conlan)

There are two issues that have been brought up, one is setting a strategic direction for ASHRAE on how we address social issues, and the other is the motion on the floor. To me, it seems most prudent to postpone the motion and add the strategic issue as a discussion point. (Jensen)

Ms. Jensen moved and Mr. Macauley seconded that

4. **MOTION 3:**

The BOD DEI Advisory Subcommittee recommends to the ASHRAE Board of Directors consider issuing a response to the request from Society of Women Engineers of coordinating efforts between ASHRAE and AIA on a Building Industry Statement to address the recent ruling overturning Roe vs. Wade.

be postponed until the October 13-14, 2022 BOD meeting.

**MOTION 4 PASSED** (Unanimous Voice Vote, CNV).

Mr. Mehboob asked the DEI Subcommittee to present a report on activities between the Toronto meeting and now. He requested that the report be submitted by the Spring BOD Meeting. The written report will be circulated to the entire BOD.

Ms. Thomle reported that the DEI Subcommittee is planning on having a panel, forum, or workshop at every Annual and Winter Conference. For the January 2023 Conference, a cultural workshop has been approved.

She reported that the subcommittee is continuing to work with the consultant to provide additional training and videos to members and chapters.

She reported that Mr. Khankari and Ms. Hayter have organized a book club to discuss *Blind Spot*; the first two chapters will be discussed in September and the third and fourth will be discussed in October.

Mr. Khankari reported that the first book club meeting will be September 23 at 11:00 am ET. All BOD members will receive a meeting invite. He requested that all BOD members attend. He reported that a representative from MP will be in attendance as well. He reported that Mr. Knight will be sharing his thoughts on the first two chapters and Ms. Hayter will lead discussion of chapters three and four.

Mr. Mehboob thanked the DEI Subcommittee for their great work.

**STRATEGIC BUSINESS DEVELOPMENT SUBCOMMITTEE REPORT**

Mr. Macauley presented on behalf of the subcommittee. The full report is included in ATTACHMENT B.

He reported that the subcommittee has not had a formal meeting as of yet, but they have started initial brainstorming on the work plan.
Mr. Macauley presented the first version of the work plan.

Mr. Mehboob requested, and Mr. Macauley confirmed, that a timeline will be created to accompany the presented work plan.

Mr. Macauley stated that this is a key subcommittee. He opened the floor for discussion and noted that there is nothing like collective wisdom. Below is a summary of the discussion:

*Suggestion to look at the international level as well. RAL translated some standards and would be happy to assist.* (Mittal)

*Four members have been contacted to provide a global perspective as well as young engineers’ perspectives related to where Society goes from here. Global perspective is huge and leadership recognizes it is a growing sector of our industry.* (Mehboob)

*Surprised at the task. BOD members should think more strategically and assign this item to Pub and Ed Council. What we need to see is beyond products and services. Why can’t all these tasks be assigned to Pub and Ed Council?* (Khankari)

*Anything that generates revenue is a product or service. Kept it to that broader term because that is what will generate revenue.* (Mehboob)

*Agree with the previous comments but the tasks listed can be assigned to Pub and Ed Council. The BOD needs to think more strategically.* (Khankari)

*Urge you to review the charge to this subcommittee. The intention is not to consider publications individually. Society is faced with lots of opportunities. For example, Society is not currently doing business to business or electronic services. The thinking here must be strategic. Many of the areas of focus can go to Pub and Ed Council, which is why Mr. Macauley is chairing the subcommittee. In broad terms, products and services are all of the opportunities that exist, much of which has not been done.* (Mehboob)

*Goes hand in hand with having CRC roundtables and getting feedback from market leaders. Need the information from the market, not just from the membership, and these roundtables could be a way to gain that information.* (Sepulveda)

*Think it is good to reach out to members but there is a huge market beyond the 50,000 members. A lot of other societies have large memberships and there are opportunities globally for us to draw revenue from.* (Crawley)

**FISCAL FOCUS SUBCOMMITTEE REPORT**

Mr. Crowther presented on behalf of the subcommittee.

Mr. Crowther reported that the subcommittee is not proposing that all decisions need to be determined by money, but at the same time the BOD needs to understand financial commitments. Need to make sure that the requests are in line with the risk the Society is signing up for.
Mr. Giesler reported that he already contacted staff and council leaders for their feedback and input. The subcommittee will evaluate the feedback and come back to the BOD with a proposal.

Mr. Crowther reported that this is streamlining and empowering the organization to make the right decisions at the right level.

He stated that the subcommittee is conscious of not making these tools so onerous that nobody brings new ideas forward. If we ask our people to make sure we understand what is being proposed, then we can assist with clarifying the financial implications.

He stated that if Society has good analytics, it will allow decision makers to understand how ASHRAE is financially performing. This will empower the BOD, councils, and committees.

Mr. Crowther reported that the subcommittee created three working groups. The full subcommittee has already had its first meeting, which the Finance team attended.

Mr. Mehboob stated that this task was very important to securing the Society’s future. He thanked the subcommittee for coming to the BOD for thoughts and input. He asked BOD members to share their thoughts, ideas, and comments.

Mr. Crawley stated that this was a great step forward. One comment is to include some scope of level of volunteer effort.

Mr. Khankari asked that the new tool be made as simple, easy, and clear as possible. He asked, what exactly are the fiduciary responsibilities of BOD members? He expressed his hope that this group will train the BOD. He suggested that the subcommittee create a training module that can be a permanent training module for BOD members.

Mr. Mehboob thanked Mr. Crowther and the subcommittee for their work and effort.

STREAMLINING SUBCOMMITTEE

Ms. Maston reported on behalf of the subcommittee. She stated that the report would be very informal.

She stated that from her experience several years ago, this is an important topic to President Mehboob.

She reported that the subcommittee had met twice and was struggling to find a good day and time when everyone can meet.

She reported during their first meeting that they looked through the materials that other streamlining groups had presented. They also looked through the BOD motion and presentation that is being given at the regions. She stated that it was not the task of the group to continue the work of the previous groups, but she wanted to ensure that all subcommittee members understood what was on the table.

She reported that she also reached out to Mr. Crowther, who is the best person she knows that does lean presentations.
She reported that the subcommittee is looking at this topic from the council level to better understand what the councils have already done and what still needs to be done.

**DISCUSSION ON BOD COMPOSITION AND LEADERSHIP**

Mr. Mehboob stated that he placed this item on the agenda because of the pending motion that will be voted on in Istanbul. He stated that it is important in the interim that the BOD fully understand. Directors will have the opportunity to have their concerns addressed.

He stated that Mr. Macauley and his group have worked hard to provide very detailed responses to all directors’ concerns. All BOD members have received this list of concerns and comments.

He stated that he would first like to have the directors who made comments give a brief overview of their comments or concerns and allow Mr. Macauley to address them.

Mr. Glesne stated that he did not prepare responses to the responses and had no follow up questions or comments. He stated that he reviewed the comments that were submitted in writing. He stated that he foresees the international regions expanding beyond the few that Society currently has.

Mr. Macauley stated that Mr. Glesne made a good point. He stated that the subcommittee was determining feasibility. If the proposed motions pass, Members Council will be asked to review and make recommendations. He stated that the proposed structure is meant to facilitate growth and the group wanted it to be flexible enough for growth.

Mr. Macauley reported on the subcommittee’s plans to conduct Society wide town hall meetings.

Mr. Mehboob asked why the subcommittee did not decide districts ahead of time. He suggested that members may be hesitant to support the plan until those decisions are made.

Mr. Macauley responded that the subcommittee felt it was important to make decisions related to the districts as close to the grassroots as possible. He reported that, if approved, there would be an eight to ten year transition period and that there was no way all of the necessary details could be decided at once. Which is why a Transition Ad Hoc was recommended, to manage the process. The Transition Ad Hoc and Members Council will make recommendations to the BOD. If the BOD feels this task is critical at this juncture, Members Council could be tasked with making recommendations.

Mr. Conlan stated that there was more than one way for those regional relationships to be organized and the subcommittee felt that decision was best made by Members Council. He stated that Members Council would be provided a framework and it would then be up to them to develop a plan to meet requests.

Ms. Scoggins reported that there will be a Members Council meeting in September where the council will begin discussing possibilities.

Mr. Mehboob stated his opinion that preliminary thinking will be very helpful.

Mr. Macauley reported that the subcommittee discussed ExCom at length. The subcommittee’s recommendation was that Society needs the ability to handle issues in between BOD meetings. He
Mr. Ellis stated that his comments were to point out that Nominating Committee reports to the membership. He stated that his second comment was on a better way to create a graphic.

Ms. Thomle stated that she appreciated the response regarding districts. She expressed concern that District Directors would have a lot of responsibility and suggested that they should have chapter and Members Council experience.

Mr. Macauley responded that the subcommittee wanted to empower the chapters to make those decisions. He stated that if the ARC was not appointed by the President, that member would not be able to sit in as proxy.

Ms. Thomle stated that she would specifically like to see separation between names for directors.

Mr. Fulk stated that some of his questions had already been answered. He expressed agreement that the ARC should be a President-Elect selection.

Mr. Macauley responded that the recommendation is that regional chairs be selected by the regions. Based on the current rules, each region would put a name forward for District Director, the Nominating Committee would get up to three names to evaluate and would then make a recommendation to the membership for one name.

Mr. Macauley reported that at least nine more regions would have to be added before a new district would need to be created.

Mr. Fulk expressed concern with one region dominating regional director.

Mr. Macauley responded that the group wanted to stay away from quotas. The subcommittee felt that Nominating Committee would be a neutral body to select the best candidate. In the Society’s current structure, there is no way to prevent one chapter from dominating DRC. Regions can work out their won succession plan if they so choose. He reported that the subcommittee did not want to restrict them but wanted to be sure there was the ability to put names forward and allow a neutral body (Nominating Committee) to resolve any conflicts.

Mr. Khankari stated that his biggest concern was not seeing a connection between what is being done and why. He stated that he would look through Mr. Macauley’s comments. He suggested that there was no logic presented for reducing the number of DALs. He suggested that response and input was needed from the Technical Committees. He suggested that exercise needed to be looked at holistically.

Mr. Constantinide summarized his written comments, expressing his concern with the optics of the activity. He suggested that the districts be embedded into the BOD and expressed his opinion that interaction between the two was very important.

Mr. Macauley responded that the subcommittee did not want to add another layer. He stated that the subcommittee’s recommendations are not to reduce the size of the BOD, instead, the recommendations are to improve operational efficiencies. He stated that DRCs are wearing the hats of society director and
regional chair; both of which tend to be full time hats. He stated that a district director, sitting on the BOD, could interface with the member firms in the area and would be an interface between the BOD and the regions.

Mr. Gray stated that his comments were around looking at ExCom and looking at whether four Vice Presidents are needed. He stated that overall, there is support in his region to reorganize the BOD. He stated that members felt the reorganization did not impact them so long as they had the ability to select their representative.

He suggested that there be clear written guidelines for ExCom and BOD responsibilities.

Mr. Mittal stated that he felt his comments had been addressed.

Mr. Macauley reported that the number of districts are flexible. He stated that the number of districts needs to be a discussion and the subcommittee wanted to have that discussion.

Mr. Rakheja stated that the Region XII submitted comments after Mr. Macauley’s presentation and they were well responded to. He added a concern that came up from Region XII that they feel they are an international region as they represent all of South America. He shared the Region’s strong fear that if the international regions are combined Region XII’s voice might get lost. He suggested that this point should be emphasized when Members Council looks at districts.

Mr. Mehboob stated that he was positive and hopeful that the BOD might be seeing the end of the road. He thanked the subcommittee for their work. He stated that the subcommittee has done a fantastic job.

**EXECUTIVE SESSION**

Executive session was called at 11:34 am.

Open session reconvened at 11:43 am.

**INFORMATION ITEMS**

Mr. Mehboob reported that analysis sheets were attached for the BOD’s review and covered as part of Technology Council’s report to the BOD.

**UPCOMING MEETINGS**

Mr. Mehboob reported that the next BOD meeting would be October 13-14, 2022 in Istanbul, Turkey.
ADJOURNMENT

The meeting adjourned at 11:43 am.

Jeff H. Littleton, Secretary

ATTACHMENTS:
A. DEI Subcommittee Report
B. Strategic Business Development Subcommittee Report
C. Virtual Meeting Chat Log
Recommendations for Board Approval:

1. **MOTION:** The BOD DEI Advisory Subcommittee recommends to the ASHRAE Board of Directors consider issuing a response to the request from Society of Women Engineers of coordinating efforts between ASHRAE and AIA on a Building Industry Statement to address the recent ruling overturning Roe vs. Wade.

**BACKGROUND:** An email was received by Beth Tomlinson representing Society of Women Engineers (SWE) asking for a response from ASHRAE's DEI Advisory Subcommittee in regard to coordinating efforts between ASHRAE and AIA on a Building Industry Statement to address the recent ruling overturning Roe vs. Wade. SWE provided a statement and due to membership outcries, revised their response: [https://swe.org/swes-statement-on-u-s-supreme-court-ruling-on-dobbs-v-jackson-womens-health-which-overturns-the-1973-roev-wade-decision/](https://swe.org/swes-statement-on-u-s-supreme-court-ruling-on-dobbs-v-jackson-womens-health-which-overturns-the-1973-roev-wade-decision/)

The consensus of the BOD DEI Advisory Subcommittee is that this issue is important and at minimum warrants discussion at the Board level. The BOD DEI Advisory Subcommittee acknowledges that this is a nuanced topic for ASHRAE to address without the appearance of ASHRAE involving itself in political matters.

**VOTE:** 5-1-0, CNV

*Secretary’s note:* Kishor Khankari voted negatively because he does not believe this is a DEI issue.

**FISCAL IMPACT:** None.

**Section 1: Committee Progress:**

1. The BOD DEI Advisory Subcommittee consists of the following members Adrienne Thomle, Chair, Kishor Khankari, Vice Chair, Billy Austin, Devin Abellon, Susanna Hanson, Dennis Knight, Ashish Rakheja, Wei Sun and Tanisha Meyers-Lisle (Staff).

2. For SY 2022-2023, the BOD DEI Advisory Subcommittee has refined our Purpose and listed updated MBOs as shown in Attachment A. In an effort to organize our efforts, we have developed several working groups and assigned liaisons accordingly.

3. The BOD DEI Advisory Subcommittee is in progress of developing the next DEI Forum/Panel Session.

4. The BOD DEI Advisory Subcommittee is working to secure several quotes with our outside DEI Consultant, Mindy Gulati of Fundamental Advisory. We would like for her to provide additional trainings around unconscious bias, microaggressions, age and professional bias for Directors and Staff.

5. The BOD DEI Advisory Subcommittee is developing a Book Club. Kishor Khankari is working with Sheila Hayter to create a formal book club which will be open to everyone to join. We will discuss our recent reading of Blind Spot: Hidden Biases of Good People by Mahzarin R. Banaji and Anthony G. Greenwald.
The purpose of the Board DEI Advisory Subcommittee is to advise the Board of Directors on the following:

<table>
<thead>
<tr>
<th>All matters relating to diversity, equality, and inclusion - with a view to improving organizational awareness and performance in these areas amongst both staff and the Society membership.</th>
<th>Continue with BOD and leadership training Coordinate with MP for membership awareness training</th>
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<tbody>
<tr>
<td>Establish annual budgets for DEI program and ongoing initiatives.</td>
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<td>The prioritization of inclusivity issues which have relevance to ASHRAE, together with plans for addressing these issues.</td>
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<td>The ongoing work of the subcommittee will consist of the below:</td>
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<tr>
<td>Recommend to the BOD actions to increase and improve inclusion within ASHRAE and the HVAC&amp;R Industry and help the Society meets its commitments to fairness and equal opportunities. Recommendations would be expected to apply to</td>
<td></td>
</tr>
<tr>
<td>Appointments</td>
<td>Nominating Committee liaison Make Nominating committee members aware of DEI and unconscious bias during nominating process</td>
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<tr>
<td>Honors and Awards</td>
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<td>Technical Group Membership</td>
<td>Tech Council and Membership Council liaisons</td>
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<tr>
<td>Volunteer Engagement</td>
<td>Membership promotion liaison</td>
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<tr>
<td>Chapter programs and initiatives</td>
<td>Membership promotion liaison</td>
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<tr>
<td>Monitor inclusion within the Society and assist the BOD by advising on policies and initiatives to improve inclusion amongst the membership.</td>
<td>Membership promotion liaison</td>
</tr>
<tr>
<td>Keep under review the Society’s policy and practices relating to equity and diversity.</td>
<td>Annual review of ROB and BOD MOP</td>
</tr>
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<td>Set and publish goals based on our gaps and missing indicators</td>
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<tr>
<td>Advise the BOD on the nature of the data to be collected from current members and applicants that may improve inclusion.</td>
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</tr>
<tr>
<td>Facilitate communications between ASHRAE and other relevant organizations, and to work in collaboration with them, to promote and embed inclusion and diversity in the engineering, construction, and related sectors.</td>
<td>Meet with CIBSE twice a year to share best practices Support board member and alternate for INWIC</td>
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<td>Item #</td>
<td>MBO</td>
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<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>1.1</td>
<td>Determine gaps/needs/obstacles for DEI through engagement with significant ASHRAE committees and leadership</td>
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<tr>
<td>1.2</td>
<td>Continue with BOD and leadership DEI and Unconscious bias training</td>
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<tr>
<td>1.3</td>
<td>Recommend Chapter and Society programs on DEI (webcasts, training and education program, Insight</td>
</tr>
<tr>
<td>Articles, forums, conferences, and webinars</td>
<td>New</td>
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<td>---------------------------------------------</td>
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<tr>
<td>New</td>
<td>6/30/2023</td>
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<td>New</td>
<td>6/30/2023</td>
</tr>
<tr>
<td>New</td>
<td>6/30/2023</td>
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</table>

### 2. Internal Activity Coordination and Support

#### 2.1 Recommend to the BOD actions to increase and improve inclusion within ASHRAE and the HVAC&R Industry and help the Society meets its commitments to fairness and equal opportunities.

<table>
<thead>
<tr>
<th>New</th>
<th>10/15/2022</th>
<th>Nominating committee liaison</th>
<th>Make Nominating committee members aware of DEI and unconscious bias during nominating process</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-going</td>
<td>6/30/2023</td>
<td>Committee chair/Vice chair</td>
<td>Meet with CIBSE twice a year to share best practices Support board member and alternate for INWIC</td>
</tr>
</tbody>
</table>

#### 2.2 Review BOD MOP and ROB for DEI

| On-going | 6/30/2023 | Committee chair/Vice chair | Include sexual harassment and unconscious bias training in ROB for all councils and committees (state of NY videos) |

### 3. DEI Administration

#### 3.1 Establish liaisons with ASHRAE committees

| New | 9/30/2022 | Committee chair/Vice chair | Create liaisons with the following Councils/Committees: Members Council, Student Activities and Membership Promotion; Tech Council; Pub Ed; and Nominating |

#### 3.2 Establish publication/communication work group

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<tr>
<th>New</th>
<th>7/31/2022</th>
<th>Committee chair/Vice chair</th>
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</table>
ASHRAE Strategic Business Development Subcommittee
Goals

Develop an actionable strategic business plan for rolling out new products and services. Existing products and services need to be re-evaluated, modified and/or discontinued to generate additional revenue for ASHRAE at an appropriate gross margin. It should be noted that ASHRAE has products and services which are a member benefit, those products and services must be evaluated based on the value of the member benefit versus the investment.
**Understand Where the Market is Today**

- Review our current products and services to determine the profitability of our current products and services.
- SWOT Analysis of our products
- Review the current business models, operating practices and marketing strategies to determine how revenues/gross margins can be enhanced.
- Identify top 5 products in each category.
- Identify bottom 5 products in each category.
Understand Where the Market is Today

• Consult with ASHRAE chapters and industry partners to determine products and services desired based on global geographical regions
• Determine the needs of the industry in key geographical regions and determine if ASHRAE is positioned to fill the void?
• Determine opportunities to collaborate with industry partners to promote key topic areas globally?
• Identify opportunities to enhance brand recognition.
• Determine the products and services that our members desire. Also determine the needs of non-members (or potential new members). Do we know what our members want for content? More importantly, do we know what our non-members (and possible future members) want for content?
• Scan the market to establish the demand for potential new products and services which ASHRAE is qualified and should provide.
Work Plan

Select Our Key Areas of Focus

• We need to be looking for gaps in the built environment that ASHRAE is best positioned to fill.
• Identify the value adds of ASHRAE and how we can differentiate from others organizations
• How do we maximize the effectiveness of our virtual platforms?

Develop Possible Products & Services

• Identify potential new revenue streams or opportunities to bolster existing ones.
• Develop a business plan for new products.
• Identify opportunities to collaborate with industry partners.

Present Recommendations

• Get market feedback on potential products and services.
• Adjust based on feedback and make recommendations for additional sustainable product development pipeline.

Implementation

• Develop products and services.
• Get market feedback on the products and services and adjust as necessary.
Thank You!
STRATEGIC BUSINESS DEVELOPMENT SUBCOMMITTEE OF THE ASHRAE BOARD OF DIRECTORS

Goals

Develop an actionable strategic business plan for rolling out new products and services. Existing products and services need to be re-evaluated, modified and/or discontinued to generate additional revenue for ASHRAE at an appropriate gross margin. It should be noted that ASHRAE has products and services which are a member benefit, those products and services must be evaluated based on the value of the member benefit versus the investment.

Develop a strategic evaluation of the market trends and identifying business development goals over the next five years.

Work Plan

1. Understand Where ASHRAE is Today: Review our current products and services to determine the profitability of our current products and services.
   a. SWOT Analysis of our products
   b. Review the current business models, operating practices and marketing strategies to determine how revenues/gross margins can be enhanced.
   c. Identify top 5 products in each category.
   d. Identify bottom 5 products in each category.

2. Understand Where the Market is Today (Market Research)
   a. Consult with ASHRAE chapters and industry partners to determine products and services desired based on global geographical regions
   b. Determine the needs of the industry in key geographical regions and determine if ASHRAE is positioned to fill the void?
   c. Determine opportunities to collaborate with industry partners to promote key topic areas globally?
   d. Identify opportunities to enhance brand recognition.
   e. Determine the products and services that our members desire. Also determine the needs of non-members (or potential new members). Do we know what our members want for content? More importantly, do we know what our non-members (and possible future members) want for content?
   f. Scan the market to establish the demand for potential new products and services which ASHRAE is qualified and should provide.

3. Select Our Key Areas of Focus
   a. We need to be looking for gaps in the built environment that ASHRAE is best positioned to fill.
   b. How do we maximize the effectiveness of our virtual platforms?

4. Develop Possible Products & Services
   a. Identify potential new revenue streams or opportunities to bolster existing ones.
   b. Develop a business plan for new products.
   c. Identify opportunities to collaborate with industry partners.

5. Present Recommendations
   a. Get market feedback on potential products and services.
   b. Adjust based on feedback and make recommendations for additional sustainable product development pipeline.
6. Implementation
   a. Develop products and services.
   b. Get market feedback on the products and services and adjust as necessary.
I'm in Tokyo using hotel internet...so some of the talking is breaking up...will do my best to understand!

I am encountering bandwidth issues, as well.

I am here.

Thanks Dunstan!

I'm here. Microphine issues

I am here too. Thanks.

Ibad Hasan - ASHRAE Pakistan Chapter

hi everyone.

ASHRAE Branding. This mission should be percolated down to the Chapter level and assign PAOE points for working on this. Guidelines need to be provided to Chapters and should be the President's KRA to take this forward at local level.

Can we have media contact at local newspapers and releases - include local technical journals and journals of other associate technical bodies.

Should I understand that in a way Ashrae is going to act as a regulatory / Governing body or Recommendation authority for HVAC products/equipment's in future

Since ASHRAE is an international org, Society Govt Affairs committee to approach various Govt maybe directly or through some internl org

Since ASHRAE is an international org, Society Govt Affairs committee to approach various Govt maybe directly or through some internl org

To brand ASHRAE

I agree that the Chapters can certainly help with branding, however, we need to make sure that the tools for outreach are given to them to do the job.

Ashrae commercialism policy restricts to promote ashrae on grass root level or making it brand for household level. It should be more lenient in promotions and society level programs

I feel the technology is keeps on changing every and to handle the products we must share the new procedures to down the line and should have some kind of counter check, by doing this way many accidents and produces damage can be avoided,

I like the idea to link the ASHRAE Branding/Recognition with chapters' PAOE points to have a wide spread efforts

this could be through the technical trainings.
August 15, 2022 8:53 AM from Muhammad Farooq Saeed to everyone: If it permit the ASHRAE chapter student can be used for ASHRAE branding & marketing ideas to have some brilliant ideas from fresh minds.

August 15, 2022 8:56 AM from John Constantinide to everyone: Farooq and all, I am having bandwidth issues. However, I concur with Adrienne's comment and speak against the motion on the same grounds.

August 15, 2022 8:56 AM from Jennifer Leach to everyone: This is a women's rights issue. Not social.

August 15, 2022 8:56 AM from Jennifer Leach to everyone: I don't speak for or against. Just that words are important.

August 15, 2022 8:57 AM from Kay Thrasher to everyone: ASHRAE should absolutely not be involved in this!

August 15, 2022 8:57 AM from Yash AK to everyone: No. ASHRAE is a technical society and should be limited to this scope. Should not get involved in any political or religious issues globally.

August 15, 2022 9:00 AM from Mahroo Eftekhari Region XIV to everyone: No ASHRAE should not be involved.

August 15, 2022 9:10 AM from Susanna Hanson to everyone: Why wouldn't our response to SWE be what we have been discussing here - the response is to SWE, in the motion, not to the decision.

August 15, 2022 9:12 AM from sayani to everyone: Jeff

August 15, 2022 9:26 AM from Anoop Peediayakkan - Kuwait (privately): Hi Chandrias...Hope you are fine.

August 15, 2022 9:26 AM from Anoop Peediayakkan - Kuwait (privately): I'm getting connection issues..

August 15, 2022 9:27 AM from Anoop Peediayakkan - Kuwait (privately): you will mute me right.when I'm logging in.

August 15, 2022 9:28 AM from Atam Hayat to everyone: Thanks Mr. President & everyone else

August 15, 2022 9:31 AM from Jennifer Leach to everyone: Black tie optional.

August 15, 2022 9:31 AM from Adrienne T (privately): Hi Chandrias would you please forward the document you showed for the report I need to write?

August 15, 2022 9:31 AM from Adrienne T (privately): Thanks Adrienne

August 15, 2022 9:33 AM from Sarah Maston (privately): Can I share during my subcom report shortly, or can you bring up the streamlining subcom charge?

August 15, 2022 9:45 AM from Eileen Jensen, Reg. XI DRC to everyone: Region XI CRC sent a motion to Society to utilize member volunteers to translate standards into other languages.

August 15, 2022 9:52 AM from Yash AK to everyone: When the standards are used for certifications, manufacturers will be a huge pool of customers. aka AMCA etc.

August 15, 2022 9:58 AM from Yash AK to everyone: Develop certifications/licensing programs for HVAC contractors. In countries like India there are no HVAC licensed contractors. This can improve qualityof
HVAC construction. For example, buildings designed and constructed by ASHRAE certified contractors can get additional points. This can lead to members or non-members aspiring to be ASHRAE certified INSPECTORS/QUALITY AUDITORS etc. Most importantly this should be done at local body level through Local/Regional Chapters. Guidelines should be developed by ASHRAE but parameters and licensing fees/tests should be based on local/regional criterion.

August 15, 2022 10:00 AM from Yash AK to everyone: Integrate LEED/USGBC etc certification with ASHRAE contractor licensing, ASHRAE certified Auditors and Quality Inspectors

August 15, 2022 10:47 AM from Yash AK (privately): Hi. Can you share the email address where I can send my comments.

August 15, 2022 10:51 AM to Yash AK (privately): Hi. Comments can be sent to cdevaughn@ashrae.org. Please be sure to provide your name and the date of today’s meeting.

August 15, 2022 10:53 AM from Yash AK (privately): Thanks. Yes. Shall mention the details as mentioned by you.

August 15, 2022 10:55 AM from Rick Hermans to everyone: If ExCom went away, decisions between BOD mtgs would have to be made by staff.

August 15, 2022 11:04 AM from Eileen Jensen, Reg. XI DRC to everyone: Wouldn’t the same hold true for the Regional Chair filling in for the District Director?

August 15, 2022 11:05 AM from Ken Fulk (privately): I was temporarily disconnected just so you know.
<table>
<thead>
<tr>
<th>No. - Pg.</th>
<th>Responsibility</th>
<th>Summary of Action</th>
<th>Status</th>
<th>Goal Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 14</td>
<td>Littleton</td>
<td>Ensure that future Standards and TPS motions include a fiscal impact for the BOD’s consideration.</td>
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<tr>
<td>2 – 20</td>
<td>Littleton</td>
<td>Investigate if there are any legal impediments to creating a WhatsApp Group for the BOD.</td>
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</table>
### ACTION ITEMS
Board of Directors Meeting
Monday, August 15, 2022

<table>
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<tr>
<th>No. - Pg.</th>
<th>Responsibility</th>
<th>Summary of Action</th>
<th>Status</th>
<th>Goal Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 3</td>
<td>Littleton and Macauley</td>
<td>Adjust the payments to members analysis to indicate what portion of payments are reimbursement for travel.</td>
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</tr>
</tbody>
</table>
APPENDIX I: Recommended Revisions to the ASHRAE Structure

1. Create a new supervisory level, call a DISTRICT, consisting of a minimum two (2), and a maximum of four (4) regions.

2. The Director and Regional Chair (DRC) role for their region and the Regional Members’ Council Representative (RMCR) role shall be merged into a new role which shall be defined as Regional Chair (RC).

3. The RC shall manage the region as currently defined in Section 4.5 of the Manual of Procedures for Officers and Directors.

4. The RC will serve on Members Council as currently defined under the RMCR Roles in Section 2.301 of the Rules of the Board.

5. The RC shall be a regional elected position by members of the regions they serve.

6. Each region shall nominate an Assistant Regional Chair (ARC) to assist the RC in executing their duties.

7. The ARC shall be a presidential appointed position; similar to the RVC positions.

8. A District will be chaired by a District Director (DD), who will be a member of the ASHRAE Board of Directors.

9. All current Director roles and responsibilities, as described in Article 4.2 and 4.3 of the Manual of Procedures for Officers and Directors shall be performed by the DD

10. The District Leadership shall consist of the District Director, Regional Chairs, and Assistant Regional Chairs of all regions within the district boundaries.

11. Board of Directors
   a. The Board of Directors shall consist of the following individuals:
      i. President
      ii. President Elect
      iii. Treasurer
      iv. Four Vice Presidents
      v. One Director from each District
      vi. Six Society Directors at Large
      vii. Executive Vice President (NVM)

12. Members Council
   a. The members of the council who are not Regional Chairs or current Chairs of the committees reporting to the council shall be elected by the Board of Directors. The Regional Chairs and Chairs of the committees reporting to the council shall be appointed as currently stipulated in the Rules of the Board.
   b. The members of the council shall be as follows:
      i. Chair: President-Elect of the Society (V)
      ii. Vice-Chair: Treasurer of the Society (V)
      iii. The Regional Chair from each Region of the Society (V)
      iv. One (1) past member of the Board of Directors (V)
      v. Current Chair of the following committees:
         • Chapter Technology Transfer, (V)
         • Communications, (V)
• Conferences & Exposition, (V)
• Government Affairs, (V)
• Honors & Awards, (V)
• Membership Promotion, (V)
• Research Promotion, (V)
• Student Activities, (V)
• Young Engineers in ASHRAE, (V)

vi. Four (4) Society Board Directors (NV)

c. The Vice Chair of the council shall be the liaison to the Finance Committee.

d. The past BOD member on the council shall be the liaison to the Planning Committee.

13. Publishing and Education Council

a. The members of the council who are not current Chairs of the committees reporting to the council shall be elected by the Board of Directors. The Chairs of the committees reporting to the Council shall be appointed as currently stipulated in the Rules of the Board.

b. The members of the council shall be as follows:

i. Chair: A Vice President of the Society (V)
ii. Vice-Chair: A Vice President of the Society (V)
iii. Two (2) members in good standing who have served as a chair of a standing committee or have served as a Regional Chair. (V)
iv. One past member of the Board of Directors (V)
v. One past voting member from each of the following committees:
   • Certification, (V)
   • Training and Education, (V)
   • Handbook, (V)
   • Publications, (V)
   • Historical. (V)

vi. Current Chair of the following committees:
   • Certification, (V)
   • Training and Education, (V)
   • Handbook, (V)
   • Publications, (V)
   • Historical. (V)

vii. Current Vice-Chair of the following committees:
   • Certification, (NV)
   • Training and Education, (NV)
   • Handbook, (NV)
   • Publications, (NV)
   • Historical. (NV)

viii. Four (4) Society Board Directors (NV)

c. The Chair of the council shall be the liaison to the Finance Committee.

d. The Vice Chair shall be the liaison to the Planning Committee.

14. Technology Council
a. The members of the council who are not current Chairs of the committees reporting to the Council shall be elected by the Board of Directors. The Chairs of the committees reporting to the Council shall be appointed as currently stipulated in the Rules of the Board.

b. The members of the council shall be as follows:

   i. Chair: A Vice President of the Society (V)
   ii. Vice-Chair: A Vice President of the Society (V)
   iii. Two (2) members in good standing who have served as a chair of a standing committee and has served at least four (4) years as a voting member of a TC, SPC, SSPC, GPC, and/or MTG, or have served as a Regional Chair and has served at least four (4) years as a voting member of a TC, SPC, SSPC, GPC, and/or MTG. (V)
   iv. One past member of the Board of Directors (V)
   v. One past voting member from each of the following committees:
      - Research Administration (V),
      - Standards (V),
      - Technical Activities, (V)
      - Refrigeration, (V)
      - Environmental Health(V)
      - Residential Buildings. (V)
   vi. Current Chair of the following committees:
      - Research Administration, (V)
      - Standards, (V)
      - Technical Activities, (V)
      - Refrigeration, (V)
      - Environmental Health(V)
      - Residential Buildings. (V)
   vii. Current Vice-Chair of the following committees:
      - Research Administration, (NV)
      - Standards, (NV)
      - Technical Activities, (NV)
      - Refrigeration, (NV)
      - Environmental Health (NV)
      - Residential Buildings. (NV)
   viii. Four (4) Society Board Directors (NV)

c. The Chair of the council shall be the liaison to the Finance Committee.

d. The Vice Chair shall be the liaison to the Planning Committee.

15. Upon adoption by ASHRAE membership, create a Society Transition Committee to manage the transition process. At a minimum, the committee shall consist of members of the Board of Directors and members of Members Council.
Recommendations for Board Approval:

1. **MOTION:** The BOD DEI Advisory Subcommittee recommends to the ASHRAE Board of Directors consider issuing a response to the request from Society of Women Engineers of coordinating efforts between ASHRAE and AIA on a Building Industry Statement to address the recent ruling overturning Roe vs. Wade.

**BACKGROUND:** An email was received by Beth Tomlinson representing Society of Women Engineers (SWE) asking for a response from ASHRAE’s DEI Advisory Subcommittee in regard to coordinating efforts between ASHRAE and AIA on a Building Industry Statement to address the recent ruling overturning Roe vs. Wade. SWE provided a statement and due to membership outcries, revised their response: [https://swe.org/swes-statement-on-u-s-supreme-court-ruling-on-dobbs-v-jackson-womens-health-which-overturns-the-1973-roe-v-wade-decision/](https://swe.org/swes-statement-on-u-s-supreme-court-ruling-on-dobbs-v-jackson-womens-health-which-overturns-the-1973-roe-v-wade-decision/)

The consensus of the BOD DEI Advisory Subcommittee is that this issue is important and at minimum warrants discussion at the Board level. The BOD DEI Advisory Subcommittee acknowledges that this is a nuanced topic for ASHRAE to address without the appearance of ASHRAE involving itself in political matters.

**VOTE:** 5-1-0, CNV

*Secretary's note:* Kishor Khankari voted negatively because he does not believe this is a DEI issue.

**FISCAL IMPACT:** None.

Section 1: Committee Progress:

1. The BOD DEI Advisory Subcommittee consists of the following members Adrienne Thomle, Chair, Kishor Khankari, Vice Chair, Billy Austin, Devin Abellon, Susanna Hanson, Dennis Knight, Ashish Rakheja, Wei Sun and Tanisha Meyers-Lisle (Staff).

2. For SY 2022-2023, the BOD DEI Advisory Subcommittee has refined our Purpose and listed updated MBOs as shown in [Attachment A](#). In an effort to organize our efforts, we have developed several working groups and assigned liaisons accordingly.

3. The BOD DEI Advisory Subcommittee is in progress of developing the next DEI Forum/Panel Session.

4. The BOD DEI Advisory Subcommittee is working to secure several quotes with our outside DEI Consultant, Mindy Gulati of Fundamental Advisory. We would like for her to provide additional trainings around unconscious bias, microaggressions, age and professional bias for Directors and Staff.

5. The BOD DEI Advisory Subcommittee is developing a Book Club. Kishor Khankari is working with Sheila Hayter to create a formal book club which will be open to everyone to join. We will discuss our recent reading of Blind Spot: Hidden Biases of Good People by Mahzarin R. Banaji and Anthony G. Greenwald.
The purpose of the Board DEI Advisory Subcommittee is to advise the Board of Directors on the following:

<table>
<thead>
<tr>
<th>All matters relating to diversity, equality, and inclusion - with a view to improving organizational awareness and performance in these areas amongst both staff and the Society membership.</th>
<th>Continue with BOD and leadership training Coordinate with MP for membership awareness training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish annual budgets for DEI program and ongoing initiatives.</td>
<td></td>
</tr>
<tr>
<td>The prioritization of inclusivity issues which have relevance to ASHRAE, together with plans for addressing these issues.</td>
<td></td>
</tr>
</tbody>
</table>

The ongoing work of the subcommittee will consist of the below:

<table>
<thead>
<tr>
<th>Recommend to the BOD actions to increase and improve inclusion within ASHRAE and the HVAC&amp;R Industry and help the Society meets its commitments to fairness and equal opportunities. Recommendations would be expected to apply to</th>
<th>Nominating Committee liaison Make Nominating committee members aware of DEI and unconscious bias during nominating process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appointments</td>
<td></td>
</tr>
<tr>
<td>Honors and Awards</td>
<td></td>
</tr>
<tr>
<td>Technical Group Membership</td>
<td>Tech Council and Membership Council liaisons</td>
</tr>
<tr>
<td>Volunteer Engagement</td>
<td>Membership promotion liaison</td>
</tr>
<tr>
<td>Chapter programs and initiatives</td>
<td>Membership promotion liaison</td>
</tr>
<tr>
<td>Monitor inclusion within the Society and assist the BOD by advising on policies and initiatives to improve inclusion amongst the membership.</td>
<td>Membership promotion liaison</td>
</tr>
<tr>
<td>Keep under review the Society’s policy and practices relating to equity and diversity.</td>
<td>Annual review of ROB and BOD MOP</td>
</tr>
<tr>
<td>Set and publish goals based on our gaps and missing indicators</td>
<td></td>
</tr>
<tr>
<td>Advise the BOD on the nature of the data to be collected from current members and applicants that may improve inclusion.</td>
<td></td>
</tr>
<tr>
<td>Facilitate communications between ASHRAE and other relevant organizations, and to work in collaboration with them, to promote and embed inclusion and diversity in the engineering, construction, and related sectors.</td>
<td>Meet with CIBSE twice a year to share best practices Support board member and alternate for INWIC</td>
</tr>
</tbody>
</table>
Recommend Chapter and Society programs on DEI (webcasts, training and education program, Insight Articles, forums, conferences, and webinars) |
Coordinate with Membership Council and Membership Promotion for Regional and Chapter Webcasts |
Create 2 articles a year for DEI in Journal or other publications |
Request seminar or forum/panel at each annual and winter meeting

Publish and regularly showcase the work of inspirational HVAC&R engineers from under-represented groups.

Develop/source society training programs to members on DEI including, but not limited to:
- sexual harassment
- high performance team building
- recognizing and avoiding unconscious bias
Include unconscious bias training BOD and leadership training
Coordinate with MP for regional and chapter unconscious bias training programs

The BOD DEI Advisory Subcommittee will report to the BOD twice a year regarding the above initiatives.

<table>
<thead>
<tr>
<th>Item #</th>
<th>MBO</th>
<th>Status</th>
<th>Due Date</th>
<th>Assigned</th>
<th>MBO Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td></td>
<td>New</td>
<td>12/30/2022</td>
<td>Adrienne Thomle, DEI Chair, Kishor Khankari &amp; Megan Tosh</td>
<td>Incorporate DEI initiatives into ASHRAE to produce, distribute and monitor DEI activities (Presidential Initiative)</td>
</tr>
<tr>
<td>1.2</td>
<td></td>
<td>New</td>
<td>6/30/2023</td>
<td>Adrienne Thomle DEI Chair, Kishor Khankari &amp; Megan Tosh</td>
<td>Recognize that there are financial barriers for the best and the brightest to participate. We need innovative ways to address this barrier. (Presidential Initiative)</td>
</tr>
<tr>
<td>1.3</td>
<td></td>
<td>On-going</td>
<td>6/30/2023</td>
<td>DEI subcommittee</td>
<td>Incorporate DEI initiatives into ASHRAE to produce, distribute and monitor DEI activities (Presidential Initiative)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New</td>
<td>6/30/2023</td>
<td>Publication work group</td>
<td>Coordinate with Members Council and Membership Promotion for Regional and Chapter Webcasts</td>
</tr>
<tr>
<td>Articles, forums, conferences, and webinars)</td>
<td>New 6/30/2023</td>
<td>Publication work group</td>
<td>Create 2 articles a year for DEI in Journal or other publications</td>
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<tr>
<td></td>
<td>New 6/30/2023</td>
<td>Publication work group</td>
<td>Request seminar or forum/panel at each annual and winter meeting</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>New 6/30/2023</td>
<td>Committee Liaisons</td>
<td>Develop training programs, webinars, podcasts, and presentations to improve DEI across Society. <em>(Presidential Initiative)</em></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>New 6/30/2023</td>
<td>Membership Promotion liaison</td>
<td>Coordinate with MP for regional and chapter unconscious bias training programs</td>
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</tr>
</tbody>
</table>

### 2. Internal Activity Coordination and Support

#### 2.1 Recommend to the BOD actions to increase and improve inclusion within ASHRAE and the HVAC&R Industry and help the Society meets its commitments to fairness and equal opportunities.

<table>
<thead>
<tr>
<th>New 10/15/2022</th>
<th>Nominating committee liaison</th>
<th>Make Nominating committee members aware of DEI and unconscious bias during nominating process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ongoing 6/30/2023</td>
<td>Committee chair/Vice chair</td>
<td>Meet with CIBSE twice a year to share best practices Support board member and alternate for INWIC</td>
</tr>
</tbody>
</table>

#### 2.2 Review BOD MOP and ROB for DEI

| Ongoing 6/30/2023 | Committee chair/Vice chair | Include sexual harassment and unconscious bias training in ROB for all councils and committees (state of NY videos) |

### 3. DEI Administration

#### 3.1 Establish liaisons with ASHRAE committees

| New 9/30/2022 | Committee chair/Vice chair | Create liaisons with the following Councils/Committees: Members Council, Student Activities and Membership Promotion; Tech Council; Pub Ed; and Nominating |

#### 3.2 Establish publication/communications work group

| New 7/31/2022 | Committee chair/Vice chair | |
Recommendations for Board Approval:

1. **MOTION:** ExCom recommends that the BOD approve the MOU with the UAE Ministry of Energy (ATTACHMENT A).

   **BACKGROUND:** This MOU is the equivalent of an MOU with the Department of Energy in the US. The MOU doesn’t fully commit Society to anything but is an important and strategic partnership for Society.

   **FISCAL IMPACT:** None.

2. **MOTION:** ExCom recommends that the BOD approve the new Toronto Chapter scholarship (ATTACHMENT B).

   **BACKGROUND:** Criteria for the proposed scholarship is noted in the “Purpose” section of the attached agreement between the ASHRAE Foundation and the ASHRAE Toronto Chapter dated and signed July 6, 2022.

   Current list of schools in Toronto with an ASHRAE student branch:
   - Ryerson University – ACTIVE
   - Seneca College – ACTIVE
   - Sheridan Institute of Technology – ACTIVE
   - University of Toronto – ACTIVE
   - Humber College – ACTIVE
   - Centennial College – ACTIVE
   - George Brown College – ACTIVE
   - Lakehead University – ACTIVE

   Current list of schools in Toronto with programs accredited by Engineers Canada (a signatory of the Washington Accord):
   - Ryerson University
   - University of Toronto
   - York University

   **FISCAL IMPACT:** None.

3. **MOTION:** ExCom recommends to the BOD that ASHRAE sign on as a supporting organization of the Carbon Leadership Forum MEP 2040 Challenge.

   **BACKGROUND:** The Building Decarbonization Task Force ExCom discussed in length the need for ASHRAE to be a part of the organizations that have signed on as supporters of the MEP 2040 Challenge. Embodied carbon is important and it would benefit ASHRAE to have a close relationship with the CLF.

   Signing on as a supporting organization of the MEP 2040 Challenge requires no financial commitment by ASHRAE nor does it imply or state that ASHRAE endorses any of the engineers or engineering firms that have committed to the challenge. ASHRAE would be signing alongside twenty-four other supporting organizations including AIA.

   The recommendation also supports the Board of Directors motion from the Las Vegas Winter Conference that stated “ASHRAE, as a matter of policy with BOD oversight, address decarbonization of the global built environment with the same level of importance and urgency as ASHRAE tackled energy efficiency during the energy crisis.” Signing on to the MEP 2040 Challenge is similar to ASHRAE signing on as a supporter of the DOE Better Building Climate Initiative.

   **FISCAL IMPACT:** None.
Information Items:

1. The Executive Committee had a lengthy conversation regarding the sharing of information on payments to members for work on ALI courses and on the selection of course instructors.

   The process for selecting courses and course instructors was reviewed. There are two paths for course selection – solicited and unsolicited courses. Solicited courses are ones where the Training and Education Committee issue an RFP for a specific presentation on a specific topic. Unsolicited courses are those recommended from members or TCs. The majority of courses presented are unsolicited and most of the recommendations come from TCs.

   It was reported that the process is very transparent but there are opportunities to make some changes. It was suggested that that process could be highlighted more online. Additionally, top performing courses could also be reviewed to see if there are additional opportunities to translate them into languages other than English.

   Mr. Macauley was tasked with drafting a policy for the selection and review of ALI instructors. He was also asked to gather information on HVAC Level I and II (or any other courses which earn significant income) – when was the course developed, who developed the course, and how much was paid to instructors on an annual basis. Information for 2012 through 2022 will be collected and reviewed.

2. A potential MOU with GCC Standardization Organization (GSO) was discussed. ExCom had no objection with moving forward on the MOU and sending the redlined comments to GSO for review. Once finalized, the draft MOU will be forwarded to ExCom for review and consideration.

3. Staff was asked to investigate how much Society spends on legal fees annually and make a recommendation as to whether Society should hire in-house counsel.

   Mr. Littleton reported that there is a pretty big gap between what Society is currently spending on legal fees ($75K) and the cost of in-house counsel ($275K). It was recommended that Society not move forward with hiring in-house legal counsel.

4. The Executive Committee discussed MOUs with members of AASA. There was discussion of whether MOUs are needed with AASA members.

   Staff was tasked with developing a draft template for MOUs with AASA members and coordinating review of the draft template with AASA Chair, Sheila Hayter.

______________________________     ________________________________
Date     Chair
MEMORANDUM OF UNDERSTANDING

مذكرة تفاهم

between

وزير الطاقة والبنية التحتية

and

الجمعية الأمريكية لمهندسي التدفئة والتبريد وتكيف الهواء

Dated

الإمارات العربية المتحدة

United Arab Emirates
MEMORANDUM OF UNDERSTANDING

It is on this day…./…./…/2022, agreed by and between:

(1) The Ministry of Energy and Infrastructure, represented herein by H.E.……., in his capacity as……., having its address in the UAE, located in………….Emirate, PO. Box……., Telephone……., Fax……. (hereinafter referred to as First Party)

(2) The American Society of Heating, Refrigerating and Air-Conditioning Engineers, represented herein by H.E.……., in his capacity as……., having its address in the UAE, located in………….Emirate, PO. Box……., Telephone……., Fax……. (hereinafter referred to as Second Party)

(Each hereinafter referred to individually as a Party ("Party") and collectively as the Parties)

Preamble

Proceeding from the Leadership vision and the strategic directions of the UAE, the keenness of the Parties to establish the joint strategic cooperation between them, benefiting from the services provided by them, in a way that ensures achievement of institutional integration between the parties.

Whereas, the importance of the present Memorandum lies in developing and strengthening cooperation relationships between the Parties, which contributes to organizing, coordinating, the procedures and legal systems in force between the Parties, in pursuance to an institutional framework that consistent with each party’s obligations and competencies;

إنها في يوم …./…./…/2022، تم الاتفاق بين كل من:

(1) وزارة الطاقة والبنية التحتية، يُمثلها في التوقيع على هذه المذكرة:

(2) الجمعية الأمريكية لمندسي التدفئة والتبريد وتكييف اليواء يُمثلها في التوقيع على هذه المذكرة:

(وُشار إليها فيما بعد "الطرف الأول").

(وُشار إليها فيما منفرداً بلقب "الطرف" و"الطرفان")

المبكر

انطلاقاً من رؤية القيادة والتوجيهات الإستراتيجية للدولة وحرص الطرفين على إرسال أسس التعاون الإستراتيجي المشترك بينهما والاستفادة من الخدمات المقدمة من الطرفين بما يضمن تحقيق التكامل المؤسسي بين الطرفين.

وحيث تكمن أهمية المذكرة المآلية في تطوير وتعزيز علاقات التعاون بين الطرفين مما يسهم في التنظيم والتنسيق والإجراءات والأنظمة القانونية الفعلية بين الطرفين وفق إطار متساوي يتوافق مع التزامات واختصاصات كل طرف.
Whereas, the First Party (MOEI) is a federal entity incorporated by virtue of Decretal Federal Law No. (16) of 2020 Amending Certain Provisions of Federal Law No. (1) of 1972 On the Powers of the Ministries and Competencies of the Ministers, as amended, which could be referred to hereinafter as (First Party);

As the Second Party, The American Society of Heating, Refrigerating and Air-Conditioning Engineers, is the competent authority for standards, guidelines, and scientific research to arrive at knowledge society with global competitiveness that satisfies the future requirements of the labor market by ensuring the quality of outcomes and providing distinguished services to internal and external customers, hereinafter be referred to as the “Second Party”.

In accordance with the strategic visions of both parties and the strengthening of collaboration and coordination between the Ministry of Energy and Infrastructure and The American Society of Heating, Refrigerating and Air-Conditioning Engineers, the two parties agreed to conclude this Memorandum and develop an official framework between them according to the following terms:

1. Objective
This Memorandum aims at strengthening cooperation between the two parties and achieving successful strategic partnership through developing the main common frameworks and coordination with the Stakeholders to find current and future ways of cooperation in various fields, to benefit from the accumulated mutual experiences of both parties and exchange studies and research aimed at improving the institutional work, in order to establish partnership between the Parties to attain common strategic objectives, developing

وقد يكون الطرف الثاني الجمعية الأمريكية لمهندسي التدفئة والتبريد وتفعيل اليواء في الجهة المختصة بالمواثفات والأدلة الإدارية والبحث العلمي وصولاً لمجتمع معرفي ذي تنافسية علمية وليست احتياجات سوق العمل المستقبلية وذلك من خلال ضمان جودة المخرجات وتقديم خدمات متميزة للمتعاملين الداخليين والخارجيين.

ويمكن أن يشار له فيما بعد ب “الطرف الثاني”.

ووفقًاً لخطط الاستراتيجية لكلا الطرفين تعزيز أواصر التعاون والتنسيق بين وزارة الطاقة والبنية التحتية الجمعية الأمريكية لمهندسي التدفئة والتبريد وتفعيل اليواء فقد اتفق الطرفان على إبرام هذه المذكرة ووضع إطار عمل رمزيًا بيضاء طبقًاً للموا%@

الهدف:

1. التفتيش هذه المذكرة إلى تعزيز أواصر التعاون بين الطرفين لتحقيق الشراكة الاستراتيجية الممولة من خلال وضع أطر العمل الرئيسية المشتركة والتنسيق مع الجهات المختصة لإيجاد سبيل التعاون الحالة المستقبلية في مختلف المجالات. والاستفادة من الخبرات التراكبية المتبادلة لدى كل من الطرفين وتبادل الدراسات والبحث الراهن إلى تحقيق العمل الفعالي لبناء علاقة شراكة بين الطرفين لتحقيق الأهداف الاستراتيجية المشتركة. وتطوير الخدمات الفنية للمشاريع، وتنسيق مجالات العمل المشترك. بحجة تحسين أداء العمليات وتبسيط الإجراءات
technical services for the projects, coordinating areas of joint work, in order to enhance the performance of operations, simplify the procedures, collaboration between the Parties within the framework of joint functional and practical cooperation to develop technical and administrative capacities of both Parties' Employees.

2. Areas of Cooperation:

First Party’s Commitments:
1. To coordinate and collaborate to pave the way to benefiting from the Ministry’s practical experience in planning, designing, executing, managing and maintenance of infrastructure projects within the UAE, which have been carried out by it. Regulating and developing the Energy, Water and Mining Sector, regulating and developing the Land, Maritime Transportation and Railway Sector in the UAE, through coordination with the Second Party in the fields related to educational awareness, Artificial Intelligence and regulatory policy making.
2. Provide the Second Party with any analytical studies in infrastructure projects, energy, water, mining, and transportation and making the same available within the legal framework of property rights and the exchange of information.
3. Collaborate and coordinate in order to provide the Second Party the opportunity to participate in technical competitions and awards offered by the Ministry.

Second Party’s Commitments:

1. Collaborate with the First Party in exchange of experiences in the fields of
Infrastructure, Energy, Water, Mining and Transportation.


3. Developing of training programs, professional and scientific development, workshops and conferences related to the Ministry’s fields of work.

4. Cooperation in conducting joint technical studies and research that serve the fields of infrastructure, energy, water, mining, and transportation.

3. Communication and Exchange of Information

3.1 The parties shall, regularly, agree on exchange of information and understanding in matters of common interest, which in their opinion are likely lead to their mutual collaboration.

4. Implementation Arrangements

4.1 When the Parties are desirous to engage in more specific cooperation (such as projects and private events), under the framework of this Memorandum, they shall sign off another Memorandum of Cooperation or an addendum to this Memorandum that covers the Parties’ responsibilities and areas of cooperation, where such a memorandum shall be separate for a specific project to be carried out and executed based on this Memorandum, which shall include a clause that refers to this Memorandum, where the programs and projects resulted hereof.
4.2 This MOU, per se, shall not impose any financial obligations on either party.

5. Trademark and Communications

5.1 Neither Party shall use the name, logo or trademarks of the other party or any abbreviation thereof, in connection with its business without obtaining prior written approval of the other Party in each case.

5.2 Each party acknowledge that it is familiar with principles and objectives of the other party and recognizes that its name and logo shall not be used in a manner inconsistent with the brand guidelines.

5.3 Parties agree to approve and endorse this partnership, as required. Each Party shall inform the other party and share with it all publications and promotional materials prior their use and display, to obtain a written approval from the other party before initiating printing, publication or general distribution.

5.4 Any external communication with the media regarding the partnership from either party shall be agreed upon in writing.

5.5 Neither party shall speak nor make public statements on behalf of the other party, nor claim to represent it, except in specific cases where express agreement is given in writing.

6. Legal Compliance

Each party shall cooperate in the activities envisaged under this MOU in accordance with their own internal regulations, rules, and by-laws. Specific activities determined under this MOU that
require financial commitments or liabilities of either party shall be subject to separate written agreements.

7. Duration, Termination and Modification of this memorandum

7.1 This MOU shall enter into force for two years, on the date of signing off by authorized signatories.

7.2 Either party may terminate this MOU by virtue of written notice to be addressed to the other party one month of its expiry. In the event of termination, the parties shall undertake all measures for quick and organized termination for its activities, as well as termination of such activities instigated within separated arrangements under the MOU, as mutually agreed. Where a party breached the conditions of the MOU, then it may be terminated without prior notice.

7.3 This MOU may be amended by mutual consent, provided that one of the parties notifies the other in writing of the proposed amendment.

8. Privileges

Nothing in or relating to this MOU shall be deemed a waiver, expressed, or implied of any of the privileges.

9. ASSIGNMENT

Neither Party may assign or otherwise transfer any of its rights or obligations under this MOU, in whole or in part, to a third party, unless agreed in advance by the other Party.

10. APPLICABLE LAW AND DISPUTES SETTLEMENT

لا يجب أن يكون الحقوق في هذا الاتفاق أجراء بما يقتضى بمذكرة التفاهم الممثلة يعتبر تنازلً.
لإنه لا يجوز لكل طرف التنازل بما جاء في هذا المذكرة أو تحويلها بشكل جزئي أو كلي إلى الغير دون موافقة خطية مسبقة من الطرف الآخر.
The Parties agreed that in the event of any disagreement or dispute arising out of, or in connection with, the implementation of this MOU, the Arabic languages shall be used to construe its provisions. The Parties shall exert their efforts to arrive at amicable solution, settle the dispute in question, wherein this MOU shall not be considered as legal contract between the Parties.

11. CONFIDENTIALITY

The Parties shall maintain the confidentiality and existent of this MOU, objective, content and all confidential information. Neither Party shall utilize confidential information for their commercial purposes, disclose of any confidential information to third parties without procuring the other party’s consent. For the purposes of Article (6), “Confidential Information” shall mean all information, regardless of its nature, wholly or partially related to any project or either party’s affairs:

- Provided by a party or on its behalf to the other party, whether orally, in writing or otherwise, and whether before or after the date of this MOU.
- Obtained by a party, in writing or orally, through or after discussions with the Management, Staff, Agents or Consultants of other Party.
- Acquired by observation or attendance by a Party at the offices or other premises of the other Party;

Each Party shall take all appropriate procedures to ensure that the confidentiality of the Confidential Information is preserved.

Article 6 of this MOU shall not prohibit disclosure or use of any information if and to the extent:

- The information is or becomes publicly available (other than by breach of this MOU).

- The information is or becomes publicly available (other than by breach of this MOU).
- The other Party has given prior written approval to the disclosure or use.
- The information is independently developed by a Party after the date of this MOU.
- The disclosure or use is required by applicable Law on which the shares of either party or any of its Subsidiaries is listed.
- The disclosure or use is required for the purpose of any judicial or arbitral proceedings arising out of this MOU or any documents to be entered pursuant to it.
- The disclosure of information to any competent tax authority to the extent such disclosure is reasonably required for the purposes of the tax affairs of the Party concerned or any of its Affiliates.
- The disclosure of information by a Party to its Affiliates, and its respective directors, officers, employees, agents and advisers on a need-to-know basis and on terms that such parties undertake to comply with the provisions of this Clause 6 as if they were a party to this MOU.

Except as required by applicable law, each Party agrees that it will not issue or release for external publication any article or advertising or publicity matter relating to this MOU or the Projects without the prior written consent of the other Party, which consent shall not be unreasonably withheld or delayed.

The Parties acknowledge and agree that damages would not be an adequate remedy for any breach of this Article No. 6 and the remedies of injunction, specific performance and other equitable relief are appropriate for any threatened or actual breach of any such provision and no proof of special damages shall be necessary for the enforcement of the rights under this Article 6.
The Parties agree that they shall enter into an applicable Confidentiality MOU in respect of each Project at the appropriate time.

13-General

1. Each Party shall bear its own costs and expenses (including due taxes) incurred in connection with the execution of this MOU unless otherwise agreed by the Parties. In case of any costs, expenses or fees resulting from execution of this MOU, they should be paid in accordance with the Action Plan and Schedule for execution of such works, which is mutually illustrated in the Addendum herewith.

2. References to Preamble and Articles are be references to Preamble, Articles or Sub-Articles of this MOU.

3. This MOU creates partnership, assignment or engagement; yet, it does not authorize any party to act as an agent, service provider or an employee of other party.

4. No amendments, changes to this MOU shall be effective unless agreed by the Parties, made in writing and signed by the duly authorized representatives of the Parties.

5. The Parties shall commit and comply with intellectual property laws, in force in the UAE, which includes but not limited to intellectual property rights related to the Name, Trademark, Logos, Application software, Patents and any other intellectual property rights.

6. This MOU may be executed by one or more Parties to any counterparty, each of which shall be deemed an original and all of which
7. All notices and other communications required or authorized to be given under this MOU shall be sufficient and effective when the same is in writing and either personally served to an officer of the Party to whom it is given or mailed by registered or certified mail, return receipt requested, postage pre-paid, addressed as follows:

IN WITNESS WHEREOF the representatives of Ministry of Energy and Infrastructure and The American Society of Heating, Refrigerating and Air-Conditioning Engineers do affix their signatures:

<table>
<thead>
<tr>
<th>Name:</th>
<th>Signature:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chairman of The American Society of Heating, Refrigerating and Air-Conditioning Engineers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undersecretary of the Ministry of Energy and Infrastructure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

إشهادًا على ما تقدم، وقع ممثلو وزارة الطاقة والبنية التحتية والجمعية الأمريكية لمهندسي التدفئة والتبريد وتكيف الهواء
This Agreement is between the Toronto Chapter of ASHRAE (Donor) and ASHRAE Foundation, Inc. (The Foundation), located in DeKalb County Georgia, on behalf of and for the benefit of the American Society for Heating, Refrigerating & Air Conditioning Engineers (ASHRAE). In accordance with the Foundation’s tax-exempt status, the gift will be placed in endowment and used for the stated purpose.

1. **Pledge**

The Donor, in consideration of an abiding interest in ASHRAE and for support of the Society, pledges to ASHRAE Foundation the amount of $60,000 US Dollars (Total Gift) subject to the provisions below to be paid via multi-year installments as follows: The Total Gift will be paid to the ASHRAE Foundation in a period of five years, with the first installment of $12,000 US Dollars to be paid on or by June 30, 2022. Future installments will be paid annually to fulfill this pledge until it is complete according to the following payment schedule:

- $12,000 by June 30, 2023;
- $12,000 by June 30, 2024;
- $12,000 by June 30, 2025;
- $12,000 by June 30, 2026;

Donor understands that the first scholarship under this agreement may not be awarded until at least one year following receipt of the Total Gift. In the event that the pledge for the Total Gift is not fulfilled according to the schedule set forth above, then this Agreement may be terminated and the fund balance and any unspent earnings may be transferred to an undesignated fund and used for a purpose as closely related to the original purpose as possible, keeping in mind the original intent of the Donor.

The Foundation will hold the Total Gift together with any other properties that may later be brought within the operation of this Agreement, for the purposes described in this Agreement.

The Foundation and Donor agree that the Donor and others have the right to make additional donations, either by gift or bequest, to be added to the Donor’s Total Gift at the Foundation for the purposes outlined by this Agreement. Any such additional donations shall not in any way alter the purposes outlined in Section (2) below.

2. **Purpose**
The Toronto Chapter Scholarship Endowed Fund is to encourage local university and college students to pursue studies that will qualify them for employment in the heating, refrigeration and air conditioning industry.

Applications will only be accepted from students attending a college or university in the Greater Toronto Area which has an active ASHRAE Student Branch or the school is accredited by Engineers Canada, a signatory of the Washington Accord or the Canadian Council of Technicians and Technologists (CCTT), a signatory of the Sydney Accord.

Qualified applicants must be full-time undergraduate mechanical, architectural, sustainability, or building science engineering or engineering technology students enrolled in a program leading to a professional degree or advance diploma in a field of study that has traditionally been a preparatory curriculum for the HVAC&R profession. Applicants must have a class standing of no less than the top 30% and meet at least one of the following criteria.

Applications and all supporting documents must be in English.

If there are no qualified applicants available the scholarship would not be awarded for that year, and the funds will be available the following year to award two scholarships.

The Donor agrees to follow the ASHRAE “Scholarship Program Guidelines” in selection of the scholarship recipient, approved by the ASHRAE Board of Trustees as of June 29, 2011 and revisions to those guidelines as may be made in the future. The Donor should be advised of any proposed changes to these guidelines to allow the chapter to provide their input on proposed changes.

Pursuant to ASHRAE Foundation’s spending policy for each fiscal year, as determined by the ASHRAE Foundation Trustees after considering the factors described in the Official Code of Georgia Section 44-15-4(a), 1-7, the applicable earnings portion of the Fund each year shall be used to support a deserving Engineering undergraduate student through the award of a scholarship. This amount is determined upon approval of the Foundation Trustees. As of the date of this agreement, the Foundation’s spending policy is 5% of the Donor’s Total Gift in American dollars.

3. **Administration**

The Foundation will manage the Fund in accordance with its financial management policies by the Board of the Foundation and use the Total Gift only to support the purpose outlined in Section (2). The ASHRAE Society Scholarship Trustees will select the scholarship recipient annually.

4. **Changed Circumstances**

It may be that at some future time it becomes impossible or impracticable, as decided by the Board of the Foundation, for all or part of the Toronto Chapter Scholarship to be used for the specific purpose set
forth above. The Board of the Foundation shall direct that its principal and income be devoted to purposes that it deems to be most consistent with the wishes and intentions of the Donor.

5. **Recognition**

Donor here agrees that the Total Gift may be noted in future ASHRAE Foundation and ASHRAE Society publications.

In witness whereof, the Donor and the Foundation have executed this Agreement on the dates indicated below.

---

**Mr. Abhishek Kherana**
Toronto Chapter of ASHRAE
Chapter President

__June 26, 2022__
Date

---

**Mr. Jeff Littleton, Secretary**
ASHRAE Foundation, Inc.

__07/06/2022__
Date

---

**Mr. Tom Watson, Foundation Chair 2021-22**

__07/06/2022__
Date
Appendix A

Certificate of Compliance

On **June 26**, 2016 the ASHRAE Foundation and the Toronto Chapter of ASHRAE entered into an agreement governing a scholarship established by the Canadian Chapter. The Chapter transferred an initial gift to the Foundation. The Foundation agreed to invest the Chapter’s scholarship funds in the Foundation’s endowment for the benefit of the Chapter. The Chapter agreed to notify the Foundation each year of the name or names of the scholarship recipient.

The Chapter hereby certifies that it is in compliance with the ASHRAE Scholarship Program Guidelines in effect as of the date of this certificate. Among these requirements is Section 3.3 requiring a non-discriminatory selection process by the Toronto Chapter. Section 3.3 states, among other things, that the selection criteria are reasonably related to the scholarship purpose and that the scholarship may not be used to benefit an ASHRAE member, to recruit employees or to induce employees to continue their employment. A complete copy of the current Scholarship Program Guidelines are available on request from the Foundation.

Abhishek Khurana
Name
Toronto Chapter of ASHRAE President

**June 26, 2022**
Date
Financial Update

Board of Directors

Dennis Knight, Treasurer
October 13, 2022
Fall Meeting 2022
Financial Status

FY 21-22
Fund Structure – FY21-22

General
Revenue $22.9M
Expenses $22.7M
Surplus/(Deficit) $0.2M

General Reserves
$12.2M

Research
Revenue $3.6M
Expense $3.2M
Surplus/(Deficit) $0.4M

Research Reserves
$6.0M

Consolidated
Revenue $26.5M
Expense $25.9M
Surplus/(Deficit) ($0.6M)
# FY 2021-22 General Fund Results (in Thousands)

<table>
<thead>
<tr>
<th></th>
<th>Actual (FY21-22)</th>
<th>Budget (FY21-22)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenues</strong></td>
<td>$22,864.0</td>
<td>$25,065.7</td>
</tr>
<tr>
<td><strong>Expenses</strong></td>
<td>$22,666.7</td>
<td>$24,956.4</td>
</tr>
<tr>
<td><strong>Operating Surplus/(Deficit)</strong></td>
<td>$197.3</td>
<td>$109.3</td>
</tr>
</tbody>
</table>
Revenue Trends – General and Research Funds

Revenue/Income (in thousands)

- 21-22
- 20-21
- 19-20
- 18-19
- 17-18

- Membership Dues
- Publications
- Advertising
- Meetings/Conferences
- Education
- Contributions
- Expo
- Other

ASHRAE®
QUESTIONS?
### General Fund Dashboard

**For the Two Months Ending August 2022**

<table>
<thead>
<tr>
<th>Item</th>
<th>LYTD</th>
<th>YTD</th>
<th>Diff v LY</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRev</td>
<td>$1,265.1</td>
<td>$1,314.1</td>
<td>4%</td>
</tr>
<tr>
<td>Rev</td>
<td>$1,267.4</td>
<td>$1,318.9</td>
<td>4%</td>
</tr>
<tr>
<td>BExp</td>
<td>$1,153.5</td>
<td>$1,305.2</td>
<td>13%</td>
</tr>
<tr>
<td>Exp</td>
<td>$978.0</td>
<td>$1,279.7</td>
<td>31%</td>
</tr>
<tr>
<td>BNet</td>
<td>$111.6</td>
<td>$8.9</td>
<td>($102.7)</td>
</tr>
<tr>
<td>Net</td>
<td>$289.4</td>
<td>$39.2</td>
<td>($250.1)</td>
</tr>
<tr>
<td>Margin</td>
<td>22.8%</td>
<td>3.0%</td>
<td>-19.9%</td>
</tr>
</tbody>
</table>

---

**Last Year To Date - GENERAL (Fund 2)**

<table>
<thead>
<tr>
<th>Item</th>
<th>LYTD</th>
<th>YTD</th>
<th>Diff v LY</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRev</td>
<td>$1,265.1</td>
<td>$1,204.6</td>
<td>6%</td>
</tr>
<tr>
<td>Rev</td>
<td>$1,186.7</td>
<td>$1,202.5</td>
<td>1%</td>
</tr>
<tr>
<td>BExp</td>
<td>$2,037.4</td>
<td>$1,809.2</td>
<td>-11%</td>
</tr>
<tr>
<td>Exp</td>
<td>$1,541.6</td>
<td>$1,581.1</td>
<td>3%</td>
</tr>
<tr>
<td>BNet</td>
<td>$10.6</td>
<td>$14.7</td>
<td>40%</td>
</tr>
<tr>
<td>Net</td>
<td>$2,568.5</td>
<td>$2,576.9</td>
<td>3%</td>
</tr>
<tr>
<td>Margin</td>
<td>-25.0%</td>
<td>-36.0%</td>
<td>-11%</td>
</tr>
</tbody>
</table>

**Current Year To Date - GENERAL (Fund 2)**

<table>
<thead>
<tr>
<th>Item</th>
<th>LYTD</th>
<th>YTD</th>
<th>Diff v LY</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRev</td>
<td>$1,267.4</td>
<td>$1,228.4</td>
<td>2%</td>
</tr>
<tr>
<td>Rev</td>
<td>$1,186.7</td>
<td>$1,202.5</td>
<td>1%</td>
</tr>
<tr>
<td>BExp</td>
<td>$2,037.4</td>
<td>$1,809.2</td>
<td>-11%</td>
</tr>
<tr>
<td>Exp</td>
<td>$1,541.6</td>
<td>$1,581.1</td>
<td>3%</td>
</tr>
<tr>
<td>BNet</td>
<td>$14.7</td>
<td>$14.7</td>
<td>0%</td>
</tr>
<tr>
<td>Net</td>
<td>$2,576.9</td>
<td>$2,576.9</td>
<td>0%</td>
</tr>
<tr>
<td>Margin</td>
<td>-25.0%</td>
<td>-36.0%</td>
<td>-11%</td>
</tr>
</tbody>
</table>

**LEGEND:**

- **BRev** = Budgeted revenue;
- **Rev** = Actual revenue;
- **BExp** = Budgeted expense before OH&BOD;
- **Exp** = Actual expense before OH&BOD;
- **BNet** = Budgeted net;
- **Net** = Actual net;
- **LYTD** = last fiscal year to date;
- **YTD** = current fiscal year to date;
- **Diff** = Difference between LYTD and YTD, either percentage or dollars.
- **Data source** = Financial statements (roll-ups for BOD, Overhead, MC, PEC, TC). Values = US$ x1000.
### ASHRAE CONSOLIDATED

**For the Two Months Ending Wednesday, August 31, 2022**

#### REVENUES

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2022</td>
<td>FY 2023</td>
<td>JUNE 30 Draft</td>
<td>JUNE 30 Forecast</td>
</tr>
<tr>
<td><strong>Actual</strong></td>
<td><strong>Actual</strong></td>
<td><strong>Budget</strong></td>
<td><strong>Budget</strong></td>
</tr>
<tr>
<td><strong>Total Revenue</strong></td>
<td>26,897.0</td>
<td>19,744.0</td>
<td>26,530.0</td>
</tr>
<tr>
<td><strong>Twelve Months Ending June 30</strong></td>
<td>28,948.3</td>
<td>28,948.3</td>
<td>29,704.0</td>
</tr>
<tr>
<td><strong>Total Revenue - FY 2022</strong></td>
<td>26,897.0</td>
<td>19,744.0</td>
<td>26,530.0</td>
</tr>
</tbody>
</table>

#### EXPENSES

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2022</td>
<td>FY 2023</td>
<td>JUNE 30 Draft</td>
<td>JUNE 30 Forecast</td>
</tr>
<tr>
<td><strong>Actual</strong></td>
<td><strong>Actual</strong></td>
<td><strong>Budget</strong></td>
<td><strong>Budget</strong></td>
</tr>
<tr>
<td><strong>Total Expenses</strong></td>
<td>25,941.7</td>
<td>20,114.9</td>
<td>25,866.6</td>
</tr>
<tr>
<td><strong>Twelve Months Ending June 30</strong></td>
<td>28,977.3</td>
<td>28,977.3</td>
<td>29,447.9</td>
</tr>
<tr>
<td><strong>Total Expenses - FY 2022</strong></td>
<td>25,941.7</td>
<td>20,114.9</td>
<td>25,866.6</td>
</tr>
</tbody>
</table>

#### SURPLUS (DEFICIT) before reserve income

- **959.2**
- **1,275.0**

### SUMMARY

- **OVERALL SURPLUS (DEFICIT) after re**
- **1,525.7**

---

### Notes

- **1,260.4**
- **91.5**
- **91.6**
- **91.8**
- **91.9**

---

**Actual** | **Forecast** | **Budget** | **Budget**
---|---|---|---
1,260.4 | 91.5 | 91.6 | 91.8
91.9 | 91.0 | 91.8 | 91.9
1,525.7 | 1,413.5 | 807.2 | 1,290.2
<table>
<thead>
<tr>
<th>Fiscal YTD Through Month of Aug</th>
<th>Actual</th>
<th>Budget</th>
<th>Actual</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2022</td>
<td>$1,247.4</td>
<td>$1,235.5</td>
<td>$1,280.3</td>
<td>$1,298.2</td>
</tr>
<tr>
<td>FY 2023</td>
<td>476.4</td>
<td>469.2</td>
<td>561.4</td>
<td>481.6</td>
</tr>
<tr>
<td>FY 2024</td>
<td>357.7</td>
<td>339.7</td>
<td>356.4</td>
<td>363.0</td>
</tr>
<tr>
<td>FY 2025</td>
<td>154.6</td>
<td>145.4</td>
<td>132.0</td>
<td>184.5</td>
</tr>
<tr>
<td>FY 2026</td>
<td>6.2</td>
<td>2.4</td>
<td>0.2</td>
<td>2.2</td>
</tr>
<tr>
<td>FY 2027</td>
<td>22.0</td>
<td>37.5</td>
<td>27.9</td>
<td>15.6</td>
</tr>
<tr>
<td>FY 2028</td>
<td>165.6</td>
<td>191.0</td>
<td>124.3</td>
<td>156.5</td>
</tr>
<tr>
<td>FY 2029</td>
<td>25.4</td>
<td>5.5</td>
<td>5.1</td>
<td>7.2</td>
</tr>
<tr>
<td>FY 2030</td>
<td>10.0</td>
<td>10.0</td>
<td>6.8</td>
<td></td>
</tr>
<tr>
<td>FY 2031</td>
<td>28.3</td>
<td>42.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FY 2032</td>
<td>14.0</td>
<td>61.5</td>
<td>80.5</td>
<td>61.4</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>2,479.2</strong></td>
<td><strong>2,568.5</strong></td>
<td><strong>2,568.1</strong></td>
<td><strong>2,577.0</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TWELVE MONTHS ENDING JUNE 30</th>
<th>Actual</th>
<th>Forecast</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2022</td>
<td>$1,727.4</td>
<td>$7,713.0</td>
<td>$7,708.1</td>
</tr>
<tr>
<td>FY 2023</td>
<td>3,722.2</td>
<td>3,521.4</td>
<td>3,383.5</td>
</tr>
<tr>
<td>FY 2024</td>
<td>3,548.3</td>
<td>1,723.3</td>
<td>2,313.4</td>
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<tr>
<td>FY 2025</td>
<td>657.6</td>
<td>1,047.5</td>
<td>1,178.8</td>
</tr>
<tr>
<td>FY 2026</td>
<td>1,693.9</td>
<td>532.5</td>
<td>1,453.9</td>
</tr>
<tr>
<td>FY 2027</td>
<td>219.7</td>
<td>248.7</td>
<td>227.0</td>
</tr>
<tr>
<td>FY 2028</td>
<td>1,498.2</td>
<td>1,218.3</td>
<td>1,777.2</td>
</tr>
<tr>
<td>FY 2029</td>
<td>51.6</td>
<td></td>
<td>73.9</td>
</tr>
<tr>
<td>FY 2030</td>
<td>29.0</td>
<td>228.7</td>
<td>83.9</td>
</tr>
<tr>
<td>FY 2031</td>
<td>10.0</td>
<td>125.0</td>
<td>(133.4)</td>
</tr>
<tr>
<td>FY 2032</td>
<td>28.3</td>
<td></td>
<td>34.3</td>
</tr>
<tr>
<td>FY 2033</td>
<td>14.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>23,084.4</strong></td>
<td><strong>16,852.7</strong></td>
<td><strong>22,864.0</strong></td>
</tr>
</tbody>
</table>

**REVENUES:**
- 31 Membership Dues
- 32 Public Sales
- 34 Advertising Income - Print
- 34 Advertising Income - Non-Print
- 35.1 Meetings/Conferences Registration
- 35.2 Certification Registration
- 35.3 Education Registration
- 37 Special Project Income
- 38 Contribution Income
- 41.1 AHFExposition Income
- 41.2 Contributions and Matching Gifts
- 41.3 Exposition Income - Other Countries
- 44 Reserve Transfers
- 46 Miscellaneous Income

**EXPENSES:**
- 51 Salaries
- 52 Payroll Taxes, Benefits, Personnel
- 56 Publishing
- 56 Promotion (All Depts)
- 64 Meetings/Conferences
- 64 Education Courses/Trainings
- 66 Travel
- 68 Awards, Certif, Logo Cost of Goods Sold
- 71 Research Projects & Grants
- 73 Special Projects
- 76 Public Relations
- 78 Occupancy
- 82 Office Expense and Organizational Dues
- 84 Outside Services
- 86 Other Expenses
- 86.1 Prepaid Expenses (contra acct)
- 90 Depreciation
- 91 Allocation of Overhead & BOD

**TOTAL EXPENSES**

**SURPLUS (DEFICIT) before reserve income**

**ASHRAE GENERAL FUND**

For the Two Months Ending Wednesday, August 31, 2022

**REVENUES:**

**EXPENSES:**

**TOTAL EXPENSES**

**SURPLUS (DEFICIT) after re**
### Fiscal YTD Through Month of Aug

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Actual</strong></td>
<td><strong>Budget</strong></td>
<td><strong>Actual</strong></td>
<td><strong>Budget</strong></td>
</tr>
<tr>
<td>FY 2022</td>
<td>FY 2022</td>
<td>FY 2023</td>
<td>FY 2023</td>
</tr>
<tr>
<td>$20.0</td>
<td>$1.5</td>
<td>$2.5</td>
<td>$1.5</td>
</tr>
<tr>
<td>12.8</td>
<td>0.2</td>
<td>0.0</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>20.1</strong></td>
<td><strong>14.5</strong></td>
<td><strong>2.5</strong></td>
<td><strong>3.9</strong></td>
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</tbody>
</table>

### REVENUES

<table>
<thead>
<tr>
<th></th>
<th>FY 2020</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
<th>FY 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>38 Contribution Income</td>
<td>$175.3</td>
<td>$41.8</td>
<td>$9.3</td>
<td>$9.3</td>
<td>$9.3</td>
<td>$9.5</td>
</tr>
<tr>
<td>44 Reserve Transfers</td>
<td>1.1</td>
<td>0.4</td>
<td>0.8</td>
<td>10.0</td>
<td>10.0</td>
<td>10.2</td>
</tr>
<tr>
<td>46 Miscellaneous Income</td>
<td>1.1</td>
<td>0.4</td>
<td>0.8</td>
<td>10.0</td>
<td>10.0</td>
<td>10.2</td>
</tr>
<tr>
<td><strong>TOTAL REVENUES</strong></td>
<td>1.1</td>
<td>175.7</td>
<td>42.6</td>
<td>19.3</td>
<td>19.3</td>
<td>19.3</td>
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</table>

### EXPENSES:

<table>
<thead>
<tr>
<th></th>
<th>FY 2020</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
<th>FY 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>51 Salaries</td>
<td>1,143.0</td>
<td>1,160.0</td>
<td>1,045.7</td>
<td>1,113.0</td>
<td>1,113.0</td>
<td>1,232.1</td>
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<tr>
<td>52 Payroll Taxes, Benefits, Personnel</td>
<td>356.1</td>
<td>234.5</td>
<td>332.1</td>
<td>310.3</td>
<td>310.3</td>
<td>350.5</td>
</tr>
<tr>
<td>61 Publishing</td>
<td>2.5</td>
<td>2.4</td>
<td>2.5</td>
<td>22.1</td>
<td>22.1</td>
<td>22.1</td>
</tr>
<tr>
<td>62 Promotion (All Depts)</td>
<td>13.3</td>
<td>70.7</td>
<td>13.5</td>
<td>69.9</td>
<td>69.9</td>
<td>69.9</td>
</tr>
<tr>
<td>64 Meetings/Conferences</td>
<td>57.4</td>
<td>0.1</td>
<td>155.4</td>
<td>74.3</td>
<td>74.3</td>
<td>78.3</td>
</tr>
<tr>
<td>66 Travel</td>
<td>559.8</td>
<td>32.6</td>
<td>438.2</td>
<td>888.3</td>
<td>888.3</td>
<td>784.8</td>
</tr>
<tr>
<td>68 Awards, Certif, Logo Cost of Goods Sold</td>
<td>19.9</td>
<td>4.7</td>
<td>12.3</td>
<td>4.4</td>
<td>4.4</td>
<td>4.4</td>
</tr>
<tr>
<td>71 Research Projects &amp; Grants</td>
<td>9.4</td>
<td>9.4</td>
<td>9.4</td>
<td>9.4</td>
<td>9.4</td>
<td>9.6</td>
</tr>
<tr>
<td>72 Office Expense and Organizational Dues</td>
<td>3.3</td>
<td>3.4</td>
<td>15.0</td>
<td>48.1</td>
<td>48.1</td>
<td>48.1</td>
</tr>
<tr>
<td>84 Outside Services</td>
<td>78.0</td>
<td>56.1</td>
<td>101.5</td>
<td>284.1</td>
<td>284.1</td>
<td>226.6</td>
</tr>
<tr>
<td>86 Other Costs</td>
<td>6.9</td>
<td>12.9</td>
<td>16.1</td>
<td>16.1</td>
<td>16.1</td>
<td>16.4</td>
</tr>
<tr>
<td>90 Depreciation</td>
<td>40.0</td>
<td>40.0</td>
<td>40.0</td>
<td>25.0</td>
<td>25.0</td>
<td>25.0</td>
</tr>
<tr>
<td>91 Allocation of Overhead &amp; BOD</td>
<td>(2,280.3)</td>
<td>(1,621.7)</td>
<td>(2,116.5)</td>
<td>(2,865.1)</td>
<td>(2,865.1)</td>
<td>(2,867.4)</td>
</tr>
<tr>
<td><strong>TOTAL EXPENSES</strong></td>
<td>(216.4)</td>
<td>(8.8)</td>
<td><strong>8.8</strong></td>
<td><strong>8.8</strong></td>
<td><strong>8.8</strong></td>
<td><strong>8.8</strong></td>
</tr>
</tbody>
</table>

### Surplus (Deficit) before reserve income

<table>
<thead>
<tr>
<th></th>
<th>FY 2020</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
<th>FY 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.1</td>
<td>192.9</td>
<td>(10.0)</td>
<td>19.4</td>
<td>19.4</td>
<td>19.4</td>
</tr>
</tbody>
</table>

### ASHRAE BOARD OF DIRECTORS 2-5nn

For the Two Months Ending Wednesday, August 31, 2022
## ASHRAE
### OVERHEAD 2-9nn
For the Two Months Ending Wednesday, August 31, 2022

<table>
<thead>
<tr>
<th>Fiscal YTD Through Month of Aug</th>
<th>REVENUES</th>
<th>EXPENSES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
<td>Budget</td>
<td>Actual</td>
</tr>
<tr>
<td>FY 2022</td>
<td>FY 2022</td>
<td>FY 2023</td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>4.5</td>
<td>15.7</td>
<td>43.8</td>
</tr>
<tr>
<td>4.5</td>
<td>73.7</td>
<td>43.8</td>
</tr>
</tbody>
</table>

### REVENUES

<table>
<thead>
<tr>
<th>Description</th>
<th>FY 2022</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>41.1 AHR Exposition Income</td>
<td>$6,012.6</td>
<td>$5,397.6</td>
<td>$6,400.0</td>
<td>$6,400.0</td>
<td>$6,400.0</td>
</tr>
<tr>
<td>41.2 Contributions and Matching Gifts</td>
<td>(1,900.0)</td>
<td>(1,500.0)</td>
<td>(1,600.0)</td>
<td>(1,600.0)</td>
<td>(1,700.0)</td>
</tr>
<tr>
<td>41.3 Exposition Income - Other Countries</td>
<td>34.3</td>
<td>58.0</td>
<td>58.0</td>
<td>58.0</td>
<td>200.0</td>
</tr>
<tr>
<td>44 Reserve Transfers</td>
<td>29.7</td>
<td>34.3</td>
<td>34.3</td>
<td>34.3</td>
<td>34.3</td>
</tr>
<tr>
<td>46 Miscellaneous Income</td>
<td>9.5</td>
<td>95.0</td>
<td>196.1</td>
<td>117.4</td>
<td>117.4</td>
</tr>
</tbody>
</table>

**TOTAL REVENUES:**

<table>
<thead>
<tr>
<th>FY 2022</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,122.1</td>
<td>95.0</td>
<td>4,128.0</td>
<td>4,975.4</td>
<td>4,975.4</td>
</tr>
<tr>
<td>5,017.4</td>
<td>5,117.7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### EXPENSES:

<table>
<thead>
<tr>
<th>Description</th>
<th>FY 2022</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>51 Salaries</td>
<td>2,458.6</td>
<td>2,118.1</td>
<td>2,147.9</td>
<td>2,320.4</td>
<td>2,320.4</td>
</tr>
<tr>
<td>52 Payroll Taxes, Benefits, Personnel</td>
<td>757.1</td>
<td>464.2</td>
<td>600.0</td>
<td>655.9</td>
<td>655.9</td>
</tr>
<tr>
<td>61 Publishing</td>
<td>4.8</td>
<td>19.5</td>
<td>8.4</td>
<td>7.1</td>
<td>7.1</td>
</tr>
<tr>
<td>62 Promotion (All Depts)</td>
<td>66.8</td>
<td>32.9</td>
<td>95.2</td>
<td>95.2</td>
<td>95.2</td>
</tr>
<tr>
<td>64 Meetings/Conferences</td>
<td>3.0</td>
<td>0.3</td>
<td>13.2</td>
<td>13.2</td>
<td>13.2</td>
</tr>
<tr>
<td>66 Travel</td>
<td>92.5</td>
<td>4.8</td>
<td>101.4</td>
<td>101.4</td>
<td>101.4</td>
</tr>
<tr>
<td>68 Awards, Certif, Logo Cost of Goods Sold</td>
<td>18.5</td>
<td>8.6</td>
<td>30.4</td>
<td>30.4</td>
<td>30.4</td>
</tr>
<tr>
<td>76 Public Relations</td>
<td>54.2</td>
<td>20.9</td>
<td>74.9</td>
<td>74.9</td>
<td>74.9</td>
</tr>
<tr>
<td>78 Occupancy &amp; Insurance</td>
<td>748.0</td>
<td>626.9</td>
<td>668.4</td>
<td>803.5</td>
<td>803.5</td>
</tr>
<tr>
<td>82 Office Expense and Organizational Dues</td>
<td>347.2</td>
<td>271.8</td>
<td>270.1</td>
<td>407.2</td>
<td>407.2</td>
</tr>
<tr>
<td>84 Outside Services</td>
<td>703.7</td>
<td>687.8</td>
<td>816.4</td>
<td>828.4</td>
<td>828.4</td>
</tr>
<tr>
<td>88 Other Expenses</td>
<td>75.8</td>
<td>78.1</td>
<td>129.2</td>
<td>107.6</td>
<td>107.6</td>
</tr>
<tr>
<td>90 Depreciation</td>
<td>248.2</td>
<td>590.5</td>
<td>837.6</td>
<td>846.9</td>
<td>846.9</td>
</tr>
<tr>
<td>91 Allocation of Overhead &amp; BOD</td>
<td>5,575.8</td>
<td>4,937.6</td>
<td>6,293.2</td>
<td>6,293.2</td>
<td>6,293.2</td>
</tr>
</tbody>
</table>

**TOTAL EXPENSES:**

<table>
<thead>
<tr>
<th>FY 2022</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.6</td>
<td>(36.8)</td>
<td>39.8</td>
<td>(0.2)</td>
<td>(0.1)</td>
</tr>
<tr>
<td>351.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SURPLUS (DEFICIT) before reserve income:**

<table>
<thead>
<tr>
<th>FY 2022</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,119.5</td>
<td>131.8</td>
<td>4,088.2</td>
<td>4,975.6</td>
<td>4,975.6</td>
</tr>
<tr>
<td>5,017.5</td>
<td>4,766.5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## ASHRAE

MEMBERS COUNCIL (2-2nn & 2-8nn)

For the Two Months Ending Wednesday, August 31, 2022

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal YTD Through Month of Aug</td>
<td>Actual</td>
<td>Budget</td>
<td>Actual</td>
</tr>
<tr>
<td>FY 2022</td>
<td>FY 2022</td>
<td>FY 2023</td>
<td>FY 2023</td>
</tr>
<tr>
<td>$1,247.4</td>
<td>$1,235.5</td>
<td>$1,280.3</td>
<td>$1,298.2</td>
</tr>
<tr>
<td>6.2</td>
<td>2.4</td>
<td>0.2</td>
<td>2.2</td>
</tr>
<tr>
<td>0.9</td>
<td>1.7</td>
<td>0.9</td>
<td>3.8</td>
</tr>
<tr>
<td>10.0</td>
<td>10.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.8</td>
<td>15.6</td>
<td>37.4</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>1,267.3</strong></td>
<td><strong>1,265.2</strong></td>
<td><strong>1,318.8</strong></td>
<td><strong>1,314.2</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWELVE MONTHS ENDING JUNE 30</td>
<td>Actual</td>
<td>Actual</td>
<td>Actual</td>
<td>Forecast</td>
<td>Budget</td>
<td>Budget</td>
</tr>
<tr>
<td>FY 2020</td>
<td>FY 2021</td>
<td>FY 2022</td>
<td>FY 2023</td>
<td>FY 2023</td>
<td>FY 2024</td>
<td>FY 2025</td>
</tr>
<tr>
<td><strong>REVENUES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31 Membership Dues</td>
<td>$7,727.4</td>
<td>$7,713.0</td>
<td>$7,708.1</td>
<td>$7,858.5</td>
<td>$7,858.5</td>
<td>$7,913.6</td>
</tr>
<tr>
<td>35.1 Meetings/Conferences Registration</td>
<td>1,693.9</td>
<td>532.5</td>
<td>1,453.9</td>
<td>1,771.5</td>
<td>1,771.5</td>
<td>1,991.1</td>
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<tr>
<td>35.3 Education Registration</td>
<td></td>
<td>25.4</td>
<td></td>
<td>0.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38 Contribution Income</td>
<td>18.9</td>
<td>26.6</td>
<td>14.4</td>
<td>21.0</td>
<td>21.0</td>
<td>21.0</td>
</tr>
<tr>
<td>41.2 Contributions and Matching Gifts</td>
<td>30.0</td>
<td>25.0</td>
<td>49.0</td>
<td>22.1</td>
<td>22.1</td>
<td>22.1</td>
</tr>
<tr>
<td>46 Miscellaneous Income</td>
<td>114.2</td>
<td>133.5</td>
<td>205.2</td>
<td>129.5</td>
<td>129.5</td>
<td>96.7</td>
</tr>
<tr>
<td><strong>TOTAL REVENUES</strong></td>
<td>9,584.4</td>
<td>8,456.0</td>
<td>9,430.9</td>
<td>9,802.6</td>
<td>9,802.6</td>
<td>10,044.5</td>
</tr>
</tbody>
</table>

| EXPENSES: | | | | | | |
| 51 Salaries | 1,479.2 | 1,502.8 | 1,667.2 | 1,767.0 | 1,767.0 | 1,876.5 | 1,914.0 |
| 52 Payroll Taxes, Benefits, Personnel | 445.0 | 334.0 | 479.8 | 492.6 | 492.6 | 533.8 | 544.4 |
| 61 Publishing | 14.6 | 17.1 | 19.0 | 31.6 | 31.6 | 31.6 | 32.2 |
| 62 Promotion (All Depts) | 202.5 | 146.3 | 266.4 | 255.8 | 255.8 | 290.9 | 296.7 |
| 64 Meetings/Conferences | 1,168.7 | 118.8 | 2,082.6 | 1,855.8 | 1,855.8 | 1,813.3 | 1,849.5 |
| 66 Travel | 445.4 | 0.1 | 339.8 | 806.1 | 806.1 | 811.7 | 827.9 |
| 68 Awards, Certif, Logo Cost of Goods Sold | 41.5 | 77.3 | 106.0 | 126.0 | 126.0 | 126.0 | 128.5 |
| 71 Research Projects & Grants | 166.1 | 157.2 | 160.5 | 173.3 | 173.3 | 173.3 | 176.7 |
| 82 Office Expense and Organizational Dues | 327.3 | 300.8 | 290.3 | 397.6 | 397.6 | 398.2 | 406.1 |
| 84 Outside Services | 164.2 | 339.4 | 285.6 | 170.6 | 170.6 | 160.6 | 163.8 |
| 88 Other Expenses | 268.3 | 259.0 | 431.1 | 361.7 | 361.7 | 337.7 | 344.4 |
| 88.1 Prepaid Expenses (contra acct) | (5.9) | 19.4 | | | | | |
| 91 Allocation of Overhead & BOD | 1,963.7 | 1,703.7 | 2,168.7 | 2,530.9 | 2,530.9 | 2,591.0 | 2,642.8 |
| **TOTAL EXPENSES** | 6,680.6 | 4,975.9 | 8,297.0 | 8,969.0 | 8,969.0 | 9,144.6 | 9,327.0 |

| SURPLUS (DEFICIT) before reserve income | 2,903.8 | 3,480.1 | 1,133.9 | 833.6 | 833.6 | 899.9 | 930.7 |
# ASHRAE

**PUBLISHING & EDUCATION COUNCIL (2-4nn & 5-5nn)**

For the Two Months Ending Wednesday, August 31, 2022

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## REVENUES

<table>
<thead>
<tr>
<th></th>
<th>FY 2022</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 Publication Sales</td>
<td>$3,722.2</td>
<td>$3,521.4</td>
<td>$3,383.5</td>
<td>$3,819.7</td>
</tr>
<tr>
<td>34 Advertising Income - Print</td>
<td>2,584.3</td>
<td>1,723.3</td>
<td>2,313.4</td>
<td>2,524.0</td>
</tr>
<tr>
<td>34 Advertising Income - Non-Print</td>
<td>657.6</td>
<td>1,047.5</td>
<td>1,178.8</td>
<td>1,275.0</td>
</tr>
<tr>
<td>35 Certification Registration</td>
<td>219.7</td>
<td>248.7</td>
<td>227.2</td>
<td>270.0</td>
</tr>
<tr>
<td>35 Education Registration</td>
<td>1,498.2</td>
<td>1,193.0</td>
<td>1,776.8</td>
<td>2,120.0</td>
</tr>
<tr>
<td>41 Contributions and Matching Gifts</td>
<td>135.0</td>
<td>100.0</td>
<td>116.5</td>
<td>116.0</td>
</tr>
<tr>
<td>46 Miscellaneous Income</td>
<td>440.3</td>
<td>224.2</td>
<td>162.9</td>
<td>133.3</td>
</tr>
<tr>
<td><strong>TOTAL REVENUES</strong></td>
<td><strong>9,267.4</strong></td>
<td><strong>8,084.9</strong></td>
<td><strong>9,186.9</strong></td>
<td><strong>10,288.0</strong></td>
</tr>
</tbody>
</table>

## EXPENSES:

<table>
<thead>
<tr>
<th></th>
<th>FY 2022</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>51 Salaries</td>
<td>2,665.2</td>
<td>2,453.3</td>
<td>2,387.5</td>
<td>2,666.5</td>
</tr>
<tr>
<td>52 Payroll Taxes, Benefits, Personnel</td>
<td>785.8</td>
<td>588.8</td>
<td>690.3</td>
<td>766.7</td>
</tr>
<tr>
<td>61 Publishing</td>
<td>1,576.7</td>
<td>1,080.3</td>
<td>1,581.3</td>
<td>1,206.9</td>
</tr>
<tr>
<td>62 Promotion (All Depts)</td>
<td>819.7</td>
<td>661.4</td>
<td>785.0</td>
<td>926.8</td>
</tr>
<tr>
<td>64 Meetings/Conferences</td>
<td>9.0</td>
<td>17.4</td>
<td>23.1</td>
<td>23.1</td>
</tr>
<tr>
<td>64 Education Courses/Trainings</td>
<td>475.0</td>
<td>233.4</td>
<td>529.3</td>
<td>654.5</td>
</tr>
<tr>
<td>66 Travel</td>
<td>51.7</td>
<td>0.6</td>
<td>43.2</td>
<td>116.7</td>
</tr>
<tr>
<td>68 Awards, Certif, Logo Cost of Goods Sold</td>
<td>0.2</td>
<td>0.1</td>
<td>0.3</td>
<td>1.2</td>
</tr>
<tr>
<td>78 Occupancy &amp; Insurance</td>
<td>51.0</td>
<td>53.8</td>
<td>30.9</td>
<td>39.0</td>
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<tr>
<td>82 Office Expense and Organizational Dues</td>
<td>676.0</td>
<td>496.9</td>
<td>471.7</td>
<td>539.6</td>
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<tr>
<td>84 Outside Services</td>
<td>1,004.3</td>
<td>837.3</td>
<td>744.4</td>
<td>985.1</td>
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<tr>
<td>88 Other Expenses</td>
<td>122.9</td>
<td>123.7</td>
<td>260.1</td>
<td>250.7</td>
</tr>
<tr>
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<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>91 Allocation of Overhead &amp; BOD</td>
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<td>2,784.3</td>
<td>3,115.7</td>
<td>3,789.4</td>
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<tr>
<td><strong>TOTAL EXPENSES</strong></td>
<td><strong>11,796.1</strong></td>
<td><strong>9,314.5</strong></td>
<td><strong>10,657.7</strong></td>
<td><strong>11,966.2</strong></td>
</tr>
</tbody>
</table>

## SURPLUS (DEFICIT) before reserve income

<table>
<thead>
<tr>
<th></th>
<th>FY 2022</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(354.8)</strong></td>
<td><strong>(832.9)</strong></td>
<td><strong>(378.5)</strong></td>
<td><strong>(580.8)</strong></td>
<td><strong>(354.8)</strong></td>
</tr>
<tr>
<td></td>
<td>Actual FY 2022</td>
<td>Budget FY 2022</td>
<td>Actual FY 2023</td>
<td>Budget FY 2023</td>
</tr>
<tr>
<td>----------</td>
<td>----------------</td>
<td>----------------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td><strong>Revenue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37 Special Project Income</td>
<td>$51.6</td>
<td>$73.9</td>
<td>$41.2</td>
<td>$14.7</td>
</tr>
<tr>
<td>46 Miscellaneous Income</td>
<td>$57.8</td>
<td>$41.2</td>
<td>$1.6</td>
<td>$30.4</td>
</tr>
<tr>
<td><strong>Total Revenue</strong></td>
<td><strong>109.4</strong></td>
<td><strong>41.2</strong></td>
<td><strong>75.5</strong></td>
<td><strong>30.4</strong></td>
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<tr>
<td><strong>Expense</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>51 Salaries</td>
<td>$1,241.6</td>
<td>$1,212.0</td>
<td>$1,300.7</td>
<td>$1,388.4</td>
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<td>52 Payroll Taxes, Benefits, Personnel</td>
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<td>$312.5</td>
<td>$398.0</td>
<td>$387.1</td>
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<td>61 Publishing</td>
<td>$0.2</td>
<td>$0.0</td>
<td>$0.0</td>
<td>$2.7</td>
</tr>
<tr>
<td>62 Promotion (All Depts)</td>
<td>$0.3</td>
<td>$0.3</td>
<td>$0.3</td>
<td>$0.3</td>
</tr>
<tr>
<td>64 Meetings/Conferences</td>
<td>$11.6</td>
<td>$0.6</td>
<td>$7.1</td>
<td>$7.1</td>
</tr>
<tr>
<td>66 Travel</td>
<td>$103.5</td>
<td>$34.8</td>
<td>$181.1</td>
<td>$181.1</td>
</tr>
<tr>
<td>68 Awards, Certif, Logo Cost of Goods Sold</td>
<td>$0.2</td>
<td>$0.1</td>
<td>$0.4</td>
<td>$1.9</td>
</tr>
<tr>
<td>73 Special Projects</td>
<td>$217.0</td>
<td>$61.5</td>
<td>$21.2</td>
<td></td>
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<tr>
<td>82 Office Expense and Organizational Dues</td>
<td>$98.1</td>
<td>$99.2</td>
<td>$98.5</td>
<td>$122.6</td>
</tr>
<tr>
<td>84 Outside Services</td>
<td>$63.6</td>
<td>$7.6</td>
<td>$39.4</td>
<td>$76.4</td>
</tr>
<tr>
<td>88 Other Expenses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>88.1 Prepaid Expenses (contra acct)</td>
<td>$(75.5)</td>
<td>$79.7</td>
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<tr>
<td>90 Depreciation</td>
<td>$35.5</td>
<td>$35.5</td>
<td>$35.5</td>
<td>$35.0</td>
</tr>
<tr>
<td>91 Allocation of Overhead &amp; BOD</td>
<td>$1,661.5</td>
<td>$1,424.0</td>
<td>$1,690.4</td>
<td>$2,007.2</td>
</tr>
<tr>
<td><strong>Total Expense</strong></td>
<td><strong>3,711.7</strong></td>
<td><strong>3,232.1</strong></td>
<td><strong>3,619.5</strong></td>
<td><strong>4,210.0</strong></td>
</tr>
<tr>
<td><strong>Surplus (Deficit) before reserve income</strong></td>
<td>$(3,602.3)</td>
<td>$(3,190.9)</td>
<td>$(3,544.0)</td>
<td>$(4,179.6)</td>
</tr>
</tbody>
</table>

**Fiscal YTD Through Month of Aug**

**TEN WEEKS ENDING JUNE 30**
### ASHRAE RESEARCH FUND
For the Two Months Ending Wednesday, August 31, 2022

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fiscal YTD Through Month of Aug</strong></td>
<td><strong>Actual Budget</strong></td>
<td><strong>Actual</strong></td>
<td><strong>Budget</strong></td>
</tr>
<tr>
<td>FY 2022</td>
<td>FY 2022</td>
<td>FY 2023</td>
<td>FY 2023</td>
</tr>
<tr>
<td>$25.5</td>
<td>$24.9</td>
<td>$25.9</td>
<td>$26.4</td>
</tr>
<tr>
<td>26.3</td>
<td>62.0</td>
<td>93.0</td>
<td>100.7</td>
</tr>
<tr>
<td>45.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>51.8</strong></td>
<td><strong>131.9</strong></td>
<td><strong>118.9</strong></td>
<td><strong>127.1</strong></td>
</tr>
</tbody>
</table>

#### REVENUES

<table>
<thead>
<tr>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TWELVE MONTHS ENDING JUNE 30</strong></td>
<td><strong>Actual</strong></td>
<td><strong>Actual</strong></td>
<td><strong>Actual</strong></td>
<td><strong>Forecast</strong></td>
<td><strong>Budget</strong></td>
<td><strong>Budget</strong></td>
</tr>
<tr>
<td>FY 2020</td>
<td>FY 2021</td>
<td>FY 2022</td>
<td>FY 2023</td>
<td>FY 2023</td>
<td>FY 2024</td>
<td>FY 2025</td>
</tr>
<tr>
<td>31 Membership Dues</td>
<td>$157.4</td>
<td>$157.7</td>
<td>$157.6</td>
<td>$160.6</td>
<td>$160.6</td>
<td>$167.2</td>
</tr>
<tr>
<td>38 Contribution Income</td>
<td>1,696.0</td>
<td>1,685.8</td>
<td>1,945.9</td>
<td>1,800.0</td>
<td>1,800.0</td>
<td>1,910.0</td>
</tr>
<tr>
<td>41.2 Contributions and Matching Gifts</td>
<td>1,900.0</td>
<td>1,500.0</td>
<td>1,600.0</td>
<td>1,600.0</td>
<td>1,700.0</td>
<td>1,734.0</td>
</tr>
<tr>
<td>44 Reserve Transfers</td>
<td>1,000.0</td>
<td>1,000.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL REVENUES</strong></td>
<td><strong>3,753.4</strong></td>
<td><strong>2,843.5</strong></td>
<td><strong>3,603.5</strong></td>
<td><strong>3,832.6</strong></td>
<td><strong>3,832.6</strong></td>
<td><strong>4,017.2</strong></td>
</tr>
</tbody>
</table>

#### EXPENSES:

| 51 Salaries | 507.3 | 570.2 | 569.5 | 580.2 | 580.2 | 570.7 | 582.2 |
| 52 Payroll Taxes, Benefits, Personnel | 145.0 | 149.9 | 128.3 | 161.8 | 161.8 | 162.3 | 165.6 |
| 61 Publishing | 5.5 | 4.1 | 4.4 | 24.0 | 24.0 | 24.0 | 24.5 |
| 62 Promotion (All Depts) | 3.5 | 3.0 | 4.2 | 10.2 | 10.2 | 10.2 | 10.4 |
| 64 Meetings/Conferences | 24.0 | 5.2 | 20.3 | 20.3 | 20.3 | 20.3 | 20.8 |
| 66 Travel | 72.4 | 35.5 | 145.7 | 145.7 | 145.7 | 148.6 |
| 68 Awards, Certif, Logo Cost of Goods Sold | 29.8 | 29.9 | 42.5 | 39.4 | 39.4 | 39.4 | 40.2 |
| 71 Research Projects & Grants | 2,166.0 | 1,169.5 | 1,583.5 | 1,875.4 | 1,875.4 | 2,110.7 | 2,152.9 |
| 76 Public Relations | 0.3 | 0.3 | 0.3 | 0.3 |
| 82 Office Expense and Organizational Dues | 27.5 | 17.7 | 19.3 | 68.0 | 68.0 | 68.0 | 69.4 |
| 88 Other Expenses | 48.0 | 38.6 | 49.4 | 77.5 | 77.5 | 77.5 | 79.0 |
| 91 Allocation of Overhead & BOD | 672.8 | 647.2 | 740.9 | 829.9 | 829.9 | 788.1 | 803.8 |
| **TOTAL EXPENSES** | **3,701.8** | **2,630.1** | **3,182.7** | **3,832.7** | **3,832.7** | **4,017.2** | **4,097.7** |

#### SURPLUS (DEFICIT) before reserve income

| (273.7) | (250.0) | (268.5) | (311.3) |

#### Reserve Investment Income:

| 123.7 | 3.3 | 113.4 | 43.3 |
| (45.0) | | | |

#### Overall Surplus (Deficit) after reserves

| (150.0) | (291.7) | (155.1) | (268.0) |

#### Remaining Reserve Investment Income

| (147.2) | 526.6 | (775.8) | (12.2) | (12.2) | 20.0 | 20.4 |

#### Overall Surplus (Deficit) after reserve

| (95.6) | 740.0 | (355.0) | (12.3) | (12.3) | 20.0 | 20.2 |
Recommendations for Board approval:

Motion 1: Finance Committee recommends to the Board of Directors (BOD) a proposed dues increase in ASHRAE Society Year 2023-2024 using indices that more closely reflect annual operational cost increases. This adjustment is in accordance with the Finance Committee Reference Manual, Section 8 – Dues Increase Guideline.

Background:

A. Refer to Attachment A which outlines the recommended Fiscal Year 2023-2024 dues.

B. Until a few years ago, dues calculation was being calculated using the Consumer Price Index (CPI) as the only basis for adjustments. It is currently used as a comparison to the revised dues formula for discussion and as a point of reference.

C. The revised dues formula includes the use of a combination of indices including the Producer Price Index, Employment Cost Index and actual staffing cost increases and rounds the calculated figures to the closest 5 or 0.

D. The BOD still has the prerogative to make individual adjustments in dues for any membership grade at any time as they may desire based on conditions that exist at the time of consideration. (Motion passed 6-0-0, CNV)

Fiscal Impact: It is expected that this will have approximately $300,000 positive impact on membership dues revenue in FY23-24.

Information Items:

1. The Finance Committee discussed financial results through August 31, 2022. The Statement of Financial Position (General and Research Funds) showed net assets increasing almost $400K to $43.1 million as compared to 12 months ago. This is primarily attributable to the payoff of the $4.5 million building loan and the decrease in Accounts Payable of $670K partially offset by the decrease in cash/short term investments of $3.3 million, decrease in pledges receivable (building) of $700K, and the decrease in prepaid expenses of $600K (HQ PV and Caesar’s deposit in 2021) were the primary cause of this increase in net assets.

Actual YTD net results through August 31, 2022 for the General Fund were $367K better than budgeted. This primarily is the result of the timing of certain outside services and other expenses as compared to the monthly budgets. No adjustments to the FY22-23 forecast are needed at this time.

2. Planning Subcommittee reported on their work on the various training programs/presentations presented throughout the ASHRAE organization. The existing presentations have been gathered and the Subcommittee will continue to work on these and refine over the coming months.

3. Investment Subcommittee made a motion to Finance Committee:
Motion: Finance Investment Sub-Committee recommends to the Finance Committee that Society utilize a dollar cost averaging method for excess cash being transferred to reserves.

Background: The investment sub-committee reviewed the excess cash position of nearly two million dollars and in coordination with its advisor believes the excess cash should be placed into investment reserves. The funds would be transferred over the remaining calendar year in equal monthly increments.

Fiscal Impact: $0 (Transferring cash to investments)

Finance Committee discussed and approved this motion (7-0-0 CNV).

Investment Subcommittee also reported on their meeting and review of investment results with ASHRAE’s investment firm, Fiducient Advisors. Fiducient reported that as of August 31, 2022, ASHRAE’s General Reserve Fund did increase in total asset value by 2.8% and the Research Reserve Fund decreased by 11.3% in value. But, total asset value increased in value due to $2 million in cash being transferred to the General Reserve fund in July 2022. This helped offset the negative investment returns. For both the General and Research Reserve Funds, investment returns were a decrease of 11.3%, as compared to 12 months ago.

4. Finance Committee received two referral motions from the Spring/Fall 2022 CRCs:

a) From Montreal Chapter – That Society make available to chapters a liquid low risk investment vehicle that enables them to park/invest money in good years to hedge for bad years. This motion was discussed by Finance Committee and defeated (0-7-0 CNV) as intermingling Chapter funds with Society funds is complicated and, in most cases, legally not allowed. Also, it was felt that Society instead could provide guidance to the Chapters through the Manual of Chapter Operations regarding recommendations on what to do with excess short term operational cash.

b) From Philippines Chapter – That the membership rates (all membership grades) be reduced back to prior, pre-pandemic rates for developing economies for Society Fiscal Year 2023-2024. This motion was discussed by Finance Committee and defeated (0-7-0 CNV) as this motion was a bit unclear regarding exactly which membership grade this applied to, and Society has a hardship case policy and process in place for requests such as this and recommends the Chapter pursue that option instead.

5. Status of MBOs –
1) Financial Dashboards/Monthly/Annual Presentations and distribution to BOD – working closely with consultant to refine information presented and correct errors in original construction.

2) Review current financial training materials/modules for the various governing bodies within ASHRAE and modify, update or develop from scratch. These include but are not limited to budgeting, financial management, reporting guidelines, limits of authority, financial statement understanding, and roles and responsibilities. – Ongoing


September 28, 2022
Date

Dennis Knight, Chair
## Membership Dues

<table>
<thead>
<tr>
<th>Grade</th>
<th>FY 2022-23 (Current)</th>
<th>FY 2023-24 (Calculated)</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Full/Associate/Fellow Grade</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular</td>
<td>$240</td>
<td>$260</td>
<td>65.0% of Full Member Dues</td>
</tr>
<tr>
<td>Developing Economy</td>
<td>$155</td>
<td>$170</td>
<td>65.0% of Full Member Dues</td>
</tr>
<tr>
<td><strong>Affiliate Grade</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>$60</td>
<td>$65</td>
<td>25.0% of Full Member Dues</td>
</tr>
<tr>
<td>Year 2</td>
<td>$90</td>
<td>$100</td>
<td>37.5% of Full Member Dues</td>
</tr>
<tr>
<td>Year 3</td>
<td>$120</td>
<td>$130</td>
<td>50.0% of Full Member Dues</td>
</tr>
<tr>
<td>Developing Economy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>$40</td>
<td>$41</td>
<td>25.0% of Dev. Eco. Member Dues</td>
</tr>
<tr>
<td>Year 2</td>
<td>$60</td>
<td>$66</td>
<td>37.5% of Dev. Eco. Member Dues</td>
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<tr>
<td>Year 3</td>
<td>$80</td>
<td>$86</td>
<td>50.0% of Dev. Eco. Member Dues</td>
</tr>
<tr>
<td><strong>Student Grade</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular</td>
<td>$25</td>
<td>$25</td>
<td>10.0% of Full Member Dues</td>
</tr>
<tr>
<td>Developing Economy</td>
<td>$15</td>
<td>$15</td>
<td>50.0% of Student Member Dues</td>
</tr>
<tr>
<td><strong>Student Transfer Program (SmartStart)</strong></td>
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<td></td>
</tr>
<tr>
<td>Regular</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>$25</td>
<td>$25</td>
<td>100.0% of Student Member Dues</td>
</tr>
<tr>
<td>Year 2</td>
<td>$90</td>
<td>$100</td>
<td>37.5% of Full Member Dues</td>
</tr>
<tr>
<td>Year 3</td>
<td>$120</td>
<td>$130</td>
<td>50.0% of Full Member Dues</td>
</tr>
<tr>
<td>Developing Economy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>$15</td>
<td>$15</td>
<td>100.0% of DE Student Grade Member Dues</td>
</tr>
<tr>
<td>Year 2</td>
<td>$60</td>
<td>$66</td>
<td>37.5% of Dev. Eco. Member Dues</td>
</tr>
<tr>
<td>Year 3</td>
<td>$80</td>
<td>$86</td>
<td>50.0% of Dev. Eco. Member Dues</td>
</tr>
<tr>
<td><strong>Retired</strong></td>
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<td></td>
</tr>
<tr>
<td>Regular</td>
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<td>$40</td>
<td>15.0% of Full Member Dues</td>
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<tr>
<td>Developing Economy</td>
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<td>$20</td>
<td>50.0% of Retired Member Dues</td>
</tr>
<tr>
<td><strong>Life</strong></td>
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<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Rounded up/down to closest 0 or 5**
REPORT TO THE BOARD OF DIRECTORS
From the BOD DEI Advisory Subcommittee
As of October 3, 2022

Recommendations for Board Approval:

No motions

Committee Progress on Initiatives:

1. Matters relating to diversity, equality, and inclusion - with a view to improving organizational awareness and performance in these areas amongst both staff and the Society membership. (40% complete)
   - Continue with BOD and leadership training received quotes for additional training from Fundamental Advisory and create a budget based on the quotes. Three staff (1 director level and 2 staff level) 3-hour trainings for ASHRAE staff planned for Q2 2022 and Q1 2023
   - Purchase additional books “The Blindspot” for new BOD members for 2023-2024
   - Began a BOD members book club, reviewed first 4 chapters of the Blindspot in first meeting. Meetings will continue with Blindspot and additional books.
   - Coordinate with MP for membership awareness training. Eileen Jensen assigned as a liaison to MP to MC from DEI SC and will request a meeting of MP for feedback. YEA liaison is Madison Schultz and Student Activities is Eileen Jensen.

2. Develop a DEI strategic plan prioritizing DEI issues and establish annual budgets for the DEI program. (70% complete) BOD DEI SC prioritized training needs, established working relationships with CIBSE and INWIC, and set up liaisons to major standing committees. Requested and received quotes for additional training from Fundamental Advisory and planning a budget based on the quotes.

3. Recommend to the BOD policies to increase and improve inclusion within ASHRAE and the HVAC&R Industry and help the Society meets its commitments to fairness and equal opportunities. Recommendations would be expected to apply to:
   - Appointments (20% complete) Nominating Committee liaison to make Nominating committee members aware of DEI and unconscious bias during nominating process Sheila Hayter is representing DEI SC on the nominating committee to remind them we need the most qualified person for the job.
   - Honors and Awards (5% complete) Wei Sun - will be looking for ways to incorporate DEI into H&A. Will review DEI concepts and definitions.
   - Technical Group Membership (5% complete) Tech Council and Membership Council liaisons Tech Council liaisons are Steve Sill, Ashish Rakheja and Susanna Hanson; Tech Council members advised they need to report to Steve and committee actions they are taking in regards to DEI.
   - Volunteer Engagement Membership promotion liaison (5% complete) MP has indicated that they would like to be involved with DEI since they see this as their responsibility. They are going to work on creating chapter chair training assets so the chapter chairs will know what they are responsible for doing. They would like the BOD DEI subcommittee to provide them with the ASHRAE message for DEI. Devin Abellon is working with the DEI Publishing subcommittee to determine if their subcommittee is doing this or if it is being contracted out. MP wants clarity from the BOD DEI subcommittee on what is DEI and its benefits. MP will then take this to create training for the chapter chairs. MP is looking to potentially set up a DEI Basecamp chapter community.
   - Chapter program and initiatives (25% complete) See comments from Volunteer engagement above.
4. Monitor inclusion within the Society and develop appropriate metrics for evaluation. (25% complete)
   Membership promotion liaison Eileen Jensen assigned as a liaison to MP to MC from DEI SC and will request a
   meeting of MP for feedback.
5. Keep under review the Society’s policy and practices relating to equity and diversity. (90% complete) Annual
   review of ROB and BOD MOP DEI SC Reference Manual is 90% written; SRC updating ROB, MOP and Reference
   Manual for generic “Companion” terms after determined what they should be.
6. Facilitate communications between ASHRAE and other relevant organizations, and to work in collaboration with
   them, to promote and embed inclusion and diversity in the engineering, construction, and related sectors. (50% complete)
   - Meet with CIBSE twice a year to share best practices; coordinating meetings with CIBSE for November
     2022 meeting (second meeting).
   - Support board member and alternate for INWIC Sarah Matson is board member representing ASHRAE and
     Sheila Hayter is alternate
7. Recommend Chapter and Society programs on DEI (webcasts, training and education program, Insight Articles,
   forums, conferences, and webinars) (70% compete)
   - Coordinate with Membership Council and Membership Promotion for Regional and Chapter Webcasts,
     sponsoring WIA breakfast speaker in Atlanta;
   - Create 2 articles a year for DEI in Journal or other publications, on-going;
   - Request seminar or forum/panel at each annual and winter meeting, workshop has been requested
     waiting for approval.
8. Recommend publication and showcasing the work of inspirational HVAC&R engineers from under-represented
   groups. (0% complete) No action
9. Help develop/source society training programs for members on DEI including, but not limited to; (10% complete)
   - Creation of 3 PowerPoint presentations, “What is DEI”, “Micro Aggressions” and “Understanding Implicit
     Bias & Unconscious Bias” to be presented to ASHRAE by Fundamental Advisory, recorded and available for
     presentation at Regional and Chapter meetings. Presentations to be created in Q4 2022 and Q2 2023. Follow up forum
     with interested members to answer any questions they may have based on presentations
   - Coordinating with MP for regional and chapter unconscious bias training programs Requested and
     received quotes for additional training from Fundamental Advisory and planning a budget based on the quotes
     - Sexual harassment
     - High performance team building
     - Recognizing and avoiding unconscious bias
   - Creation of 2 additional PowerPoint presentations, “Cultural fluency and cultural competency” and
     “Equity versus Equality” to be presented to ASHRAE DEI Ambassadors by Fundamental Advisory, recorded
     and available for presentation at Regional and Chapter meetings in society year 2023-2024
10. Develop a manual of procedures, and ROB for the committee. (90% complete) Reference Manual is 90% written

______________________________  ________________________________
Date     Chair
BOD Subcommittee for Streamlining

Discussion Team Leaders
• Members Council: Eileen Jensen, Richie Mittal
• Pub&Ed Council: Chris Gray, Jim Arnold
• Technology Council: Tyler Glesne, John Constantinide
• BOD/ Excom Std Cmtes: Andres Sepulveda, Kim Mitchell, Tim Wentz

With assistance from staff members Joyce Abrams (MC), Mark Owen (PEC), Stephanie Reiniche (TC), and Kirstin Pilot
Why Are We Here?

- Free the Board/ ExCom for strategic operations
- Eliminate silos and speed up decision making
- Push decision making lower down in the organization
- Be market focused
- Remove the waste/ reduce operating costs
DMAIC- Continuous Improvement Process

- Define the improvement opportunity (Voice of the Customer)**

- Measure: what is necessary to meet customer requirements?

- Analyze the data

- Improve: Identify, evaluate and select the right solution

- Control: Execute the plan, lessons learned

**we are here in the process
## DMAIC- Continuous Improvement Process (2)

<table>
<thead>
<tr>
<th>Objective</th>
<th>Main Activities</th>
<th>Key Deliverables</th>
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<tbody>
<tr>
<td><strong>1.0 Define</strong>&lt;br&gt;To identify and/or validate the improvement opportunity, define critical customer requirements.</td>
<td>• Validate/Identify Business Opportunity&lt;br&gt;• Identify and Map Processes&lt;br&gt;• Identify Quick Wins and Refine Process&lt;br&gt;• Translate Voice of the Customer (VOC) into Critical Customer Requirements (CCRs)</td>
<td>• Action Plan&lt;br&gt;• Process Maps&lt;br&gt;• Quick Win Opportunities&lt;br&gt;• Critical Customer Requirements</td>
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<td><strong>2.0 Measure</strong>&lt;br&gt;To identify critical measures that are necessary to evaluate the success meeting critical customer requirements and begin developing a methodology to effectively collect data to measure process performance. To establish baseline for the processes the team is analyzing.</td>
<td>• Identify Input, Process, and Output Indicators&lt;br&gt;• Develop Operational Definition &amp; Measurement Plan&lt;br&gt;• Determine if Special Cause Exists&lt;br&gt;• Collect Baseline Data</td>
<td>• Input, Process, and Output Indicators&lt;br&gt;• Operational Definitions&lt;br&gt;• Data Collection Formats and Plans&lt;br&gt;• Baseline Performance</td>
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<td><strong>3.0 Analyze</strong>&lt;br&gt;To stratify and analyze the opportunity to identify a specific problem and define an easily understood problem statement. To identify and validate the root causes that assure the elimination of “real” root causes and thus the problem the team is focused on.</td>
<td>• Stratify Process/ Data &amp; Identify Specific Problem&lt;br&gt;• Develop Problem Statement&lt;br&gt;• Identify Root Causes&lt;br&gt;• Validate Root Causes&lt;br&gt;• Enhance Team Creativity &amp; Prevent Group-Think</td>
<td>• Data Analysis&lt;br&gt;• Process Maps&lt;br&gt;• Validated Root Causes&lt;br&gt;• Problem Statement</td>
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<td><strong>4.0 Improve</strong>&lt;br&gt;To identify, evaluate, and select the right improvement solutions. To develop a change management approach to assist the organization in adapting to the changes introduced through solution implementation.</td>
<td>• Generate Solution Ideas&lt;br&gt;• Determine Solution Impacts: Benefits&lt;br&gt;• Evaluate and Select Solutions&lt;br&gt;• Develop Process Maps &amp; High Level Plan&lt;br&gt;• Communicate Solutions to all Stakeholders</td>
<td>• Solutions&lt;br&gt;• Process Maps and Documentation&lt;br&gt;• Implementation Milestones&lt;br&gt;• Improvement Impacts and Benefits</td>
</tr>
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<td><strong>5.0 Control</strong>&lt;br&gt;To understand the importance of planning and executing against the plan and determine the approach to be taken to assure achievement of the targeted results. To understand how to disseminate lessons learned, identify replication and standardization opportunities, processes, and develop related plans.</td>
<td>• Develop &amp; Implement Pilot Plan Solution&lt;br&gt;• Verify Reduction in Root Cause Sigma Improvement Resulted from Solution&lt;br&gt;• Identify if Additional Solutions are Necessary to Achieve Goal&lt;br&gt;• Identify and Develop Replication &amp; Standardization Opportunities&lt;br&gt;• Integrate Lessons Learned&lt;br&gt;• Identify Teams Next Steps &amp; Plans for Remaining Opportunities</td>
<td>• Process Control Systems&lt;br&gt;• Standards &amp; Procedures&lt;br&gt;• Training &amp; Evaluation&lt;br&gt;• Implementation Plans&lt;br&gt;• Potential Problem Analysis&lt;br&gt;• Trained Associates&lt;br&gt;• Replication Opportunities&lt;br&gt;• Standardize Opportunities&lt;br&gt;• Planned Benefits&lt;br&gt;• Turnover to Process Owner</td>
</tr>
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Starting the Conversation

• How can we eliminate silos? What operations begin in this council but require interactions with others? What committees would benefit by working together more?
• Are there any decisions/regular actions that could be sped up?
• What decisions are made at the BOD level that could be pushed to the councils? What council decisions could be pushed to committees?
• How can we be more market-focused? Who is our market?
• What decisions/actions take too long in your opinion?
• Other issues with council/committee actions/decisions?
REPORT TO THE BOARD OF DIRECTORS
From the Members Council
Meeting of September 30 - October 1, 2022

Information Items:

1. Members Council approved the New York Chapter name change to the New York City Chapter.

2. Three new Student Branches were approved
   a. The LPU School of Architecture Student Branch, Punjab, India. (Region-At-Large)
   b. The Vivekananada Global University Student Branch, Jaipur, India. (Region-At-Large)
   c. The State University of Amazonas Student Branch, Manaus, Amazonas, Brazil (Region XII)

3. Members Council added a Legal Guidance section to the MCO

   2021-22 MBO - MCO update (Section 1: Chapter Officers – 1.7; move 1.7 to 1.8):
   Legal Guidance
   If a Chapter or Chapter officer receives a threat of a lawsuit related to ASHRAE work, they should take the following steps as soon as possible.
   A. Limit all written communication about the issue or situation, including but not limited to emails and documents. In the unlikely event that a lawsuit moves forward, all written statements and information can be requested as evidence. Due to this possibility, be mindful of what information is in writing and how that information is worded.
   B. Set up a call or meeting with the DRC, RMCR and Executive Vice President to let them know of the issue or situation.

4. Members Council approved a motion for Chapters to always get credit for (RP) funds submitted. The society shall no longer have a dead period for RP funds that does not recognize the corresponding chapter

October 4, 2022
Date
Chair
Recommendations for Board Approval:
NOTE: The publication motions presented below are addenda that have unresolved objectors, negative project committee votes with reason, or a threat of legal action. These motions are preceded by formally voted recommendations from the project committees and Standards Committee. The rules do not require a vote from Technology Council. Appeals procedures now allow for consideration of an appeal of a BOD standards action or inaction only if the negative vote or unresolved comment is based solely upon procedural grounds. A reminder to Board members – members are to review these motions for adherence to ASHRAE’s Procedures for Standards Actions (PASA) and ANSI Essential Requirements and not technical content. If the BOD disapproves a Standards Committee Document for publication, please detail reason(s) for the record.

A summary of any unresolved commenters and/or negative project committee votes on these publication drafts is included in the analysis sheets that were distributed prior to the meeting. By default, all Standards Committee Documents will be processed by our ANSI Audited Designator procedures unless otherwise indicated by the Board. In all cases, the fiscal impact for publication drafts is within existing budgets.

Consent motions 1 through 9 have unresolved commenters or negative project committee votes but no negative votes by Standards Committee. The reasons for the negative votes were technical in nature with no alleged process violations subject to appeal. Please refer to the analysis sheets for the full detail on the reasons for negative votes and/or unresolved commenters and a summary of Project Committee responses that were distributed prior to the meeting.

STANDARDS PUBLICATION MOTIONS

1. Standards Committee recommends that BSR/ASHRAE Addendum x (relocates exhaust requirements) to ANSI/ASHRAE Standard 62.1-2022 Ventilation and Acceptable Indoor Air Quality, be approved for publication.

StdC Vote: 17-0-1 CNV

2. Standards Committee recommends that BSR/ASHRAE Addendum i (establishes minimum requirements for ozone emissions of air-cleaning systems) to ANSI/ASHRAE Standard 62.2-2022, Ventilation and Acceptable Indoor Air Quality in Residential Buildings, be approved for publication.

StdC Vote: 18-0-0 CNV

3. Standards Committee recommends that BSR/ASHRAE Addendum J (prohibits the installation of unvented combustion space heaters within dwelling units) to ANSI/ASHRAE Standard 62.2-2022, Ventilation and Acceptable Indoor Air Quality in Residential Buildings, be approved for publication.

StdC Vote: 18-0-0 CNV

4. Standards Committee recommends that BSR/ASHRAE Addendum m (minimum efficiency of certain filters) to ANSI/ASHRAE Standard 62.2-2022, Ventilation and Acceptable Indoor Air Quality in Residential Buildings, be approved for publication.

Jennifer Isenbeck abstained because she is on the SSPC.
StdC Vote: 18-0-0 CNV

5. Standards Committee recommends that BSR/ANSI/ASHRAE Addendum \( h (ELC \ revisions) \) to ANSI/ASHRAE Standard 90.4-2019, \textit{Energy Standard for Data Centers}, be approved for publication.

StdC Vote: 18-0-0 CNV


StdC Vote: 17-0-1\(^2\) CNV


StdC Vote: 17-0-1\(^3\) CNV


StdC Vote: 18-0-0 CNV


StdC Vote: 16-0-2\(^4\) CNV

Consent Motions 10 and 11 address proposed changes to PASA, and revisions to ROB 2.425.001 \textit{Scope and Purpose} and 2.425.003 \textit{Operation}

10. Technology Council recommends that proposed changes to the Procedures for ASHRAE Standards Actions (PASA) within Section 4. Approval Of Proposed Standards, Section 5. Relationships with other Standards-Developing Organizations, Section 7. Criteria for Approval, Withdrawal, and Discontinuance of ASHRAE Standards and Guidelines, Annex A1: Definitions, Annex B: Appeals of Board of Directors’ Standards Actions or Inactions, and Annex C: Complaints of Actions or Inactions by the StdC, its Subcommittees or PCs, be approved as shown:

\textbf{4.1 RESPONSIBILITY}

The Standards Committee is responsible for \textit{the} formation of project committees and the development, preparation, interpretation, revision, reaffirmation, and withdrawal — and submittal to the Board of Directors or its designee for approval — of ASHRAE Standards Actions for Standards, and for Guidelines, except as noted. The Board of Directors or its designee will counsel and offer guidance to the Standards Committee on policy-level Standards, contentious issues during the development of the standards or guidelines.

\(^2\) Gwelen Palagia abstained because he is a recent past member of the SSPC.

\(^3\) Gwelen Palagia abstained because he is a recent past member of the SSPC.

\(^4\) Gerald Kettler and Tom Cappellin abstained because they are members of the SSPC.
4.3.1 Project Committees
Project committees are authorized by the Standards Committee as either Standard Project Committees (SPCs), which are ad hoc committees, or Standing Standard Project Committees (SSPCs), Guideline Project Committee (GPC), or Standing Guideline Project Committee (SGPC). Project committees are the consensus bodies of the Society. If a standard project committee is not balanced, efforts to recruit materially affected and interested parties from diverse interest categories to become members of a non-balanced SPC shall be on-going and documented.

A member of the SPLS is appointed as StdC Liaison to the new project committee. A call-for-members announcement is conducted. Drawing from the resulting applications and recruiting efforts, candidate committee members are recommended in consideration of their personal expertise and their effect on committee balance. Recommended members and non-policy level PC Chairs are approved by a majority vote of a designated subcommittee of Standards Committee, normally SPLS. Standards Committee must concur by majority vote for all policy level PC Chairs.

4.3.3 PC Activity Initiation
At the first official meeting of a new PC, the PC shall vote on whether to concur with, or propose changes to, the original Title, Purpose and Scope (TPS). The PC may conduct business (for example, pass motions) only after the balanced membership roster with at least 5 voting members has been approved by SPLS or the StdC. However, the PC Chair may hold organizational meetings for individuals interested in becoming members of the PC, and the group may begin developing the Standard or Guideline.

4.3.4 Use of Subcommittees
The PC Chair may organize the committee structure using formal subcommittees. If subcommittees are used, the Chair’s recommendation for subcommittee Chair must be approved by SPLS. Responsibilities of various PC subcommittees typically are to develop drafts of one or more assigned clauses of a standard, annexes, or addenda; prepare a system of units; prepare text in appropriate language; establish educational activities; develop draft responses to requests for interpretation; or develop proposed responses to comments resulting from public review. Subcommittees may also be formed to draft Standards Committee-approved standards or guidelines related to the subject matter of the parent project committee. Subcommittee actions shall be submitted as recommendations for action by the parent PC.

4.3.6 PC Members
A PC shall have individual members and designated PCs may have organizational members (see section 4.3.10). Individual members are appointed as “personal members,” not as representatives of any organization, corporation, partnership, or employer. There shall not be more than one PCVM from any one company, association, or agency or entity.

4.3.8 Removal for Cause
The PC Chair may recommend removal of a PC member from the roster for due cause, by submitting a recommendation and justification outlining the reasons for said recommendation. The PC Chair must submit a copy of communications between the PC Chair and PC member concerning this subject with the recommendation, in writing to the SPLS Liaison and Manager of Standards (MOS). The MOS will transmit the recommendations of the PC Chair and SPLS Liaison and related correspondence to SPLS for action in a meeting or by letter ballot. The SPLS Chair may call an executive session of the SPLS or the PC to discuss the matter. Failure of the PC member to properly disclose any conflict of interest shall be grounds for removal from the PC by SPLS.
4.3.12 Project Committee Size
The PC shall be balanced and consist of no less than 5 PCVMs with no upper limit, including the Chair. In addition to the PCVMs, the PC membership may also include PSVMs if the PC is organized into subcommittees or NVMs if not organized into subcommittees.

5.2 Joint Sponsorship
A request to jointly sponsor a standard shall be evaluated by the Standards Committee, considering overlap of expertise and responsibility. The evaluation must be reported to Technology Council. A recommendation for joint sponsorship including a recommendation for the lead organization shall be forwarded to the Technology Council for approval and reported as an information item to the Board of Directors for approval. A recommendation against joint sponsorship shall be forwarded as an information item to Technology Council and the Board of Directors.

If joint sponsorship is approved by the Board of Directors, standards-writing and approval procedures must be negotiated with the other organization by the MOS on behalf of the Standards Committee. The standards-writing and approval procedures should be those of the lead organization. If ASHRAE procedures are not adopted, the adopted procedures must be compatible with ASHRAE procedures in regard to openness of proceedings, public review of drafts, and delegation of technical content to the project committee.

7.2.1.1 Advisory Public Review (APR)
A PC may vote by majority of the voting membership to recommend to the SPLS Liaison and SPLS Chair that a draft standard, guideline, or portion thereof, be subjected to an APR if the PC believes that the draft contains new, unusual or potentially controversial elements that the PC believes would benefit from increased public scrutiny prior to finalizing the draft for publication public review (no continuation letter ballot, no roll call vote record, no marked up roster, or submittal form is needed). Any comments received as a result of an APR are deemed to be "supportive" and do not need to be "resolved". Apart from acknowledging receipt of each comment, communication with commenters is optional but may be undertaken to clarify a comment's intent or to invite further participation in the standard development process. The underlying concept of the APR is to gain increased public participation early in the development process and thus to deal with, and potentially resolve, controversy before publication approval is sought. APRs are not submitted through the ANSI process.

7.2.1.3 Fast Track Public Review (FTPR)
A standards action approved by the PC for publication public review that meet all of the following criteria shall be processed as a fast track:

a) there are no negative votes with reason within the PC;
b) there is no credible threat of legal action (in writing) against ASHRAE has been made related to the proposed draft; and
c) the SPLS Liaison has not notified the MOS within ten calendar days, from the receipt of the package, with specific justification, that the PC has violated due process.

No additional approvals for issuing the standard, guideline or portion thereof, for public review are required.

7.2.2 Publication Approval
Approval of Standards Action by the ASHRAE Board of Directors Standards Committee that have unresolved objectors or a threat of legal action shall be preceded by formally voted recommendations by the project committee and Standards Committee. Standards Actions with unresolved objectors shall be reported to Technology Council and the ASHRAE Board of
Directors. The ASHRAE Board of Directors shall approve Standards Actions that have unresolved objectors with a credible threat of legal action.

Approval of Standards Actions that have no unresolved objectors and no threat of legal action shall be preceded by formally voted recommendations by the project committee and processed for publication by ASHRAE Staff. These Standards Actions shall be reported as an informational item to the Standards Committee, Technology Council and the ASHRAE Board of Directors.

The standard, guideline or portion thereof, shall be deemed to have been approved by the BOD Standards Committee upon approval of its designee.

7.2.3 Quorum Requirements
To conduct standards-related business at a meeting of a project committee, StdC or its subcommittees, Technology Council or the Board of Directors, a quorum must be present. A quorum exists if a majority of the voting membership is present.

7.2.4.2 Numerical Requirements for Standards Action Votes
Standards actions votes must be approved by the project committee with (1) affirmative recorded votes by the majority of the total voting membership of the project committee, whether present or not, excluding abstentions of the project committee, and (2) affirmative votes from at least two-thirds of those voting, excluding abstentions of the project committee.

7.2.4.6 Approval of Standards Actions by Approval Bodies
When recommendations for standards action votes are considered by SPLS or, Standards Committee and the Board of Directors, the recommendation must be approved by a majority of those voting at a meeting, or by letter ballot.

7.2.5 Voting Rules for Meetings
Actions of PCs and PC subcommittees require approval by a majority of those voting at a meeting. Standards action votes must comply with 7.2.4. Issuance of an official interpretation requires affirmative votes of the majority of the voting membership and of at least two-thirds of those voting, excluding abstentions.

7.2.6.1 Numerical requirements for letter ballots
Actions of the PC and subcommittees that are not standards action votes, conducted by letter ballot, require approval by a majority of the voting membership of the committee. Standards action votes must comply with 7.2.4.2. The issuance or revision of an official interpretation require affirmative votes of the majority of the membership and of at least two-thirds of those voting, excluding abstentions.

7.4.4.2 Complaints of Inactions by the Standards Committee, its Subcommittees or Project Committees
In addition to formal appeal of Board Standards Committee standards actions or inactions, failure of the Standards Committee, its subcommittee(s), or a Project Committee to consider a written request may be addressed by writing (including electronic communication) to the Manager of Standards at any time. (See Annex C.)

7.4.5 Public Review Period
The public review comment period shall normally be the minimum allowed by ANSI unless more time is justified. Limited revisions, such as Independent Substantive Changes (ISCs) and addenda up to 5 pages may have a 30-day comment period.
7.4.6.2 Comments Received Under Continuous Maintenance
An SSPC or SGPC that is designated by the Standards Committee as operating under continuous maintenance procedures shall take documented, consensus action on each request for change to any part of its standard or guideline.

7.4.7 Consideration of Standards Proposals
Prompt consideration shall be given by the Standards Committee to proposals made for developing new standards or guidelines or revising, reaffirming, or withdrawing existing standards and guidelines.

7.7.3 Other Bases for Withdrawal of Approval - updated
The ASHRAE Board of Directors Standards Committee or its designee also may withdraw approval of an ASHRAE Standard, Guideline or portion thereof, upon (a) advice of counsel, based on evidence of a legal nature, or (b) consideration of facts that have subsequently come to the attention of the Board of the Standards Committee.

7.8.1 Project Discontinuation Due to Lack of Membership
Project discontinuation due to lack of membership shall be based on the following:
a) A new project shall be discontinued by the MOS if a PC Chair and balanced membership have not been approved by SPLS within twelve months after the project is approved by the Board of Directors Standards Committee.

7.11 Interpretation Requests of Standards
Interpretation requests for a standard must be submitted to the MOS in writing. The Manager of Technical Services or the Chair of the current or past cognizant PC or the Chair’s designee may respond in writing to written requests for unofficial personal interpretations. Cognizant SSPCs, if they exist, and SPCs that have not yet been disbanded will be asked to respond to requests for official interpretations in writing. If no PC exists, StdC will form an Interpretations Committee (IC) to respond. Procedures for interpretations of published Standards, Guidelines or portion thereof, are provided in StdC MOP Reference Manual Section 10. An issuance or revision of an official interpretation requires affirmative votes for the majority of the memberships, of each approving and of at least two-thirds of those voting, excluding abstentions.

7.12 Interpretation Requests of ASHRAE Standards Development Procedures
Interpretations requests for ASHRAE’s standards development procedures must be submitted to the MOS in writing. ASHRAE Staff may respond in writing to written requests for unofficial personal interpretations. Requests for official interpretations of procedures shall be submitted to PPIS. An issuance of an official interpretation requires affirmative votes for the majority of the memberships of PPIS and of at least two-thirds of those voting, excluding abstentions.

A1 DEFINITIONS:

normal track: an approval procedure applied to a Standard, Guideline or portion thereof, that meets one or more of these criteria:
a) receives one or more negative votes with reason upon approval for publication or
b) where ASHRAE receives a written legal threat

policy level document: a standard, guideline, designated as “policy level” by the Board of Directors or the Board’s designee.

subcommittee: a group of individuals appointed by the project committee chair from among the project committee membership who vote on subcommittee activities and whose responsibility it is to develop drafts of one or more assigned sections of a standard, annexes, or addenda;
develop draft responses to requests for interpretation; or develop proposed responses to comments resulting from public review; all submitted as recommendations for action by the parent project committee. Subcommittees may also be formed to draft Standards Committee approved standards or guidelines related to the subject matter of the parent project committee.

ANNEX B: APPEALS OF BOARD OF DIRECTORS’ STANDARDS COMMITTEE STANDARDS ACTIONS OR IN ACTIONS

B2 APPEALABLE MATTERS
An action or inaction of the Board of Directors (BOD) Standards Committee to adopt a new ASHRAE Standard, Guideline, an addendum to an existing Standard or Guideline, or to revise, reaffirm, or withdraw an existing ASHRAE Standard or Guideline is subject to appeal.

B3 WHO MAY APPEAL
Any person directly and materially interested who has been or will be adversely affected by the publication of a new, revision, reaffirmation, or withdrawal of an ASHRAE Standard, Guideline or portion thereof, or lack of such action, may appeal the BOD Standards Committee action or inaction. The appellant must be an unresolved public review commenter, associated with a new, revision, reaffirmation or withdrawal of the ASHRAE Standard or Guideline being appealed, or a PC member who cast a negative vote with reason(s) in relation to his/her vote on the consensus body associated with the creation, revision, reaffirmation or withdrawal of the ASHRAE Standard or Guideline being appealed.

B4 SCOPE OF APPEAL AND BURDEN OF PROOF
An appeal of a BOD Standards Committee standards action or inaction shall be solely based upon procedural grounds. When appeals are filed, the appellant shall demonstrate that ASHRAE Standards development procedures were not followed. Appeals arguments that are based on actions that took place in previous revision cycles will not be considered.

B6 NOTIFICATION PROCEDURES
Within 15 working days following BOD Standards Committee action on a standard, that results in approval of a new, revision, reaffirmation or withdrawal of a standard or addenda to a standard, the Manager of Standards (MOS) shall notify in writing (including electronic communication) all unresolved public review commenters and/or a PC member who cast negative votes with reason(s) in relation to his/her vote on the consensus body of the BOD Standards Committee action and inform them of their right to appeal that action.

B6.1 An appeal, must be received by the Manager of Standards (MOS) of ASHRAE within 15 working days of the date on the notification letter regarding the BOD Standards Committee action. The Chair of the Appeals Board may grant an extension, if requested prior to the close of the initial 15 working day period and if sufficient justification is provided.

B6.2 Normally, any standards action by the BOD Standards Committee will be suspended during pendency of appeal(s), appropriately filed. The President of the Society may, however, maintain the BOD Standards Committee action until and if the Appeals Panel decides to dismiss the appeal, without a hearing, up to a maximum of 90 days. If the Panel decides to dismiss the appeal without a hearing, the President may maintain the action until the next meeting of the Board of Directors Standards Committee. The appealed BOD Standards Committee action shall be immediately suspended if the Appeals Panel does not dismiss the appeal.

B8.2 Ineligible Panel Members
Any Member of the Appeals Board that served as a PCVM or PSVM on the project committee that is the subject of the appeal during the three years prior to the standards action under appeal shall be ineligible to serve on the Panel. Any Member of the Appeals Board that voted on
the draft that is the subject of the appeal as a member of the Standards Committee or Board of Directors shall be ineligible to serve on the Panel.

B8.4 Non-Dismissal of Appeal
If the appeal is not dismissed, the BOD StdC action which has been appealed shall be immediately suspended, if not already suspended according to the first sentence of B6.2, and each claim in the appeal shall be considered separately and basic grounds given for each decision.

B9.3 Guests
A Standards Committee Liaison and the BOD Ex-Officio member of the Standards Committee shall be invited by MOS to attend the hearing. The hearing shall be open to observation by representatives of directly and materially interested persons, although the number of observers may be limited at the discretion of the Appeals Panel Chair. Anyone planning to attend the hearing shall notify the MOS no less than 15 days prior to the hearing date. Guests that are not designated to speak on behalf of the Appellant or Respondent are not allowed to speak during the hearing or during the question period.

B10 APPEALS PANEL DECISION
The Appeals Panel shall decide within 15 business days of the hearing or after the receipt of the rebuttal, by majority vote, that the appeal, or any parts of the appeal, be upheld or denied. The Appeals Panel Chair shall, within 14 days following the Appeals Panel’s decision, notify the Appellant(s), Chief Staff Officer, Director of Technology, Manager of Standards, President, Chair of Technology Council, Chair of the Standards Committee, and Chair of the PC of the decision. The decision of the Appeals Panel to uphold, deny, or dismiss an appeal shall be final. If the appeal is dismissed or denied by the Appeals Panel, the action of the BOD Standards Committee, which was appealed shall become effective immediately.

ANNEX C: Complaints of Actions or Inactions by the StdC, its Subcommittees or PCs
In addition to formal appeal of BOD Standards Committee Standards actions or inactions (PASA Annex B), failure of the StdC, its subcommittee(s), or a PC to consider a written complaint may be addressed by writing to the MOS at any time. The complaint must identify the section of procedures that was violated and provide sufficient detail to support the complaint. Any committee tasked with reviewing a complaint may dismiss the claim if insufficient detail is provided.

BACKGROUND: At the Toronto meeting, the Technology Council Operations subcommittee tabled this motion to allow members time to review the proposed. These proposed changes were then also shared as an information item to both Tech Council and the Board of Directors during the Toronto Annual Meeting in June. These changes are part of the Standards Committee effort to streamline the standards development procedures. These changes move the standards actions approvals to the lowest approval body and include a simpler voting calculation to promote efficiency in the standards development process. These changes will have to go out for public review and approval through ANSI. This public review process and approval is between six months and a year depending on the comments received.

Tech C Vote: 11-0-0, CNV

11. Tech Council recommends that proposed changes to the Rules of the Board Section 2.425.001 Scope and Purpose, and Section 2.425.003 Operation, be approved as shown below:

2.425.001 SCOPE AND PURPOSE
The Standards Committee shall be responsible for the selection, development, and preparation, and submittal to the BOD of all code language documents, standards and guidelines in the
fields of heating, refrigerating, air conditioning, and ventilating engineering, including all revisions, re-affirmations or withdrawals thereof, to be considered for approval. It shall cooperate with and supervise the Society’s participation in other organizations in the development, preparation, and adoption of codes, standards and guidelines. (SBL 7.9)

2.425.003 OPERATION

2.425.003.1 General Requirements (11-06-29-13)

A. This committee shall plan and implement activities in support of ASHRAE Policy on Use of ASHRAE Standards in Building Codes. (ROB 1.201.003) (98-01-16-41)

B. This committee shall, as the standards coordinating committee of an ANSI-accredited organization, submit its Procedures for ASHRAE Standards Actions (PASA), and all changes, to ANSI for approval. (95-02-02-54)

C. ASHRAE Standards Committee documents shall be developed in accordance with the Procedures for ASHRAE Standards Actions (PASA) except that balance on guideline project committees is not required but desired.

D. Adoption, revision, reaffirmation or withdrawal of a standard or guideline shall require approval of the Board of Directors Standards Committee, and the Board of Directors Standards Committee will determine that ASHRAE’s procedures have been followed. In the event of credible threat of legal action related to adoption, reaffirmation, or revision of a standard or guideline approval by the Board of Directors shall be required. The effective date of a new, revised or reaffirmed standard, guideline or addendum shall be in accordance with the following unless otherwise approved by the Board of Directors Standards Committee.

1. For a new standard the date of Board Standards Committee approval of the standard.

2. For a revised standard, which is intended to replace an ANSI-approved American National Standard, the date of ANSI approval of the revised standard. If such standard fails to achieve ANSI approval, the effective date will be determined by the Board Standards Committee, subsequent to the failure to achieve ANSI approval.

3. For a revised standard which will replace an ASHRAE standard which is not an approved American National Standard, the date of Board Standards Committee approval of the revised standard.

4. For an addendum to an ANSI-approved American National Standard that is not code intended, the date of ANSI approval of the addendum. For an addendum to an ANSI-approved American National Standard that is code intended, the date of publication announced on the ASHRAE website. If such addendum fails to achieve ANSI approval, the effective date will be determined by the Board Standards Committee, subsequent to the failure to achieve ANSI approval. (10-10-23-02)

5. For an addendum to an ASHRAE standard, which is not an ANSI-approved American National Standard the date of Board- Standards Committee approval.

6. For a new, revised or reaffirmed guideline or addendum to a guideline the date of Board Standards Committee approval of the document.

2.425.003.3 (98-01-18-02/05-06-30-27/11-06-29-13)

A. All ASHRAE standards shall be submitted for ANSI approval as American National Standards.

B. ASHRAE may obtain ANSI approval either by utilizing its ANSI Audited Designator status or by submitting to the ANSI Board of Standards Review for approval. Unless otherwise specified by the Board of Directors, the Audited Designator path will be used. (04-07-01-45)
C. Following approval by the Board of Directors Standards Committee, an announcement of approval and availability of each standard, guideline, revision or reaffirmation thereof, or withdrawal of a standard or guideline shall be made. (67-05-25/08/86-001-23-56/88-05-21-49/00-06-25-7B)


A. The Standards Committee evaluates the need for joint sponsorship of standards or guidelines, considering overlap of expertise and ASHRAE responsibility. A request for joint sponsorship, including a recommendation for the lead organization, is submitted to Technology Council for approval and reported to the Board of Directors. If approved, standards writing and approval procedures are negotiated with the other organizations by the Manager of Standards on behalf of the Standards Committee.

B. The standards-writing and approval procedures should be those of the lead organization. If ASHRAE procedures are not adopted, the adopted procedures should be compatible with ASHRAE procedures; e.g., openness of proceedings, public review of drafts, and delegation of technical content to the project committee. The chair and members of the project committee shall be selected and approved in accordance with the negotiated joint sponsorship agreement.

C. The Standards Committee, operating at the direction of the Board of Directors, is responsible for recommending the approval of a standard, guideline, or revision, reaffirmation or withdrawal thereof or an addendum, thereto, to the Board of Directors upon recommendation of the Project Committee after reviewing all negative votes cast by the Project Committee, and all unresolved comments. Technology Council is responsible for approving Standards Committee recommendations for publication of users’ manuals for selected standards.

BACKGROUND: These proposed changes were submitted by Staff as part of the streamlining efforts made to PASA. These changes contain the same changes as were in PASA but most importantly the removal of standards actions approvals to a lower approval body. These changes are contingent on final approval of PASA by ANSI. The Chair of Society Rules Committee in 2022 was part of Standards Committee when this motion was considered.

Tech C Vote: 11-0-0, CNV

12. Technology Council recommends that the Board of Directors approve the revised Infectious Aerosols position document (PD) as shown in Attachment A.

BACKGROUND: This PD is a revision to the current ASHRAE position document on Infectious Aerosols published April 14, 2020. This version 9 (Attachment A) was sent to the Board of Directors (BOD) on September 9th. An earlier version (version 5) of this PD was sent to BOD members on May 21, 2022, with a request for review and comments. The May 21, 2022 version was also sent to the Board on September 9th for comparison. Comments were collected, sent to the PD committee and considered and/or addressed by the PD committee in the latest draft. There is not a track changes version comparing V9 to V5 as the format was drastically changed to conform with the new PD format approved by the Document Review Subcommittee (DRSC) and Tech Council in Toronto. The DRSC vote was 6-0-1, CNV (Chandra Sekhar abstained because he was on the PD Committee). The PD Committee unanimously approved the document. If approved by the BOD, ASHRAE editing staff will work with the PD Chair and make any editorial changes deemed necessary prior to publishing to the website.

Tech C Vote: 10-0-1\textsuperscript{5}, CNV

\textsuperscript{5} David Yashar abstained because he had comments that weren’t submitted during the review period and decided that it would be improper to submit them for consideration at this time.
INFORMATION ITEMS:

1. ASHRAE Standards Staff, the Code Interaction Subcommittee and Standards Committee are monitoring the processing of the latest version of the IECC under the ICC’s new standards development process of the code. The document is now out for public review and the appropriate ASHRAE technical committees are reviewing the draft to determine if ASHRAE will submit comments on specific portions of the draft.

2. Technical Activities Committee approved a new Task Group, TG9.SPACE with the following title and scope: Extraterrestrial and Deep Space Environmental Control Systems, 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 will also address environmental control system safety, operation and maintenance, refrigerant usage, and performance in conditions different from Earth and Earth’s atmosphere.

3. Environmental Health Committee is working to form a Multi-disciplinary Task Group (MTG) to develop an IEQ Building Audit Assessment tool. EHC will identify a scope for such a tool and reach out to standard committees, technical committees and others that would have an interest in participating.

4. Research Activities Committee has taken steps to update the research page of the ASHRAE website this fall to indicate that for SY 22-23 RAC will be accepting applications or nominations for the following grants and awards:
   - Graduate Student Grant in Aid Program (GIA)
   - New Investigator Award (NIA)
   - Innovative Research Grant (IRG)

5. Refrigeration Technology Committee for Comfort, Process and Cold-Chain reported that a request to add two voting members to the roster will be submitted for consideration at the Winter Conference in Atlanta.

Respectfully Submitted,

Sarah E. Maston
Technology Council Chair
ASHRAE Position Document on

Infectious Aerosols

Approved by the ASHRAE Board of Directors [DATE] Expires [DATE]

ASHRAE is a global professional society of over 55,000 members, committed to serve humanity by advancing the arts and sciences of heating, ventilation, air conditioning, refrigeration and their allied fields (HVAC&R). ASHRAE position documents are approved by the Board of Directors and express the views of the Society on specific issues. These documents provide objective, authoritative background information to persons interested in issues within ASHRAE’s expertise, particularly in areas where such information will be helpful in drafting sound public policy. The documents also clarify ASHRAE’s position for its members and building professionals.

Infectious Aerosols is a Public Interest Issue

The magnitude of risk from aerosolized pathogens has become increasingly obvious, especially during the Covid crisis. These risks are particularly elevated in enclosed buildings.

Public health officials, policy makers, building owners, designers, and members of the public all need accurate, reliable guidance for appropriate ways to mitigate the risk from these pathogens. Available risk mitigation strategies include pharmaceutical interventions, non-engineering controls, and engineering controls. Given the concurrent climate crisis, the optimal mitigation bundle of interventions must achieve the highest possible risk reduction with the lowest possible resultant emissions.

Why ASHRAE Takes Positions on Infectious Aerosols

ASHRAE consensus standards and design guides provide the technical foundation for international building practices and energy codes that balance the need for energy efficiency with the need to keep the indoor environment healthy and comfortable for occupants. The design, installation and operation of buildings’ mechanical systems can improve—or can impede—the buildings’ ability to mitigate risk from infectious aerosols.

Consequently, ASHRAE’s positions, standards and design guidance can help avoid health risks associated with Infectious Aerosols.
ASHRAE Takes The Positions That:

1. Exposure to infectious aerosols is an important factor in the transmission of infections in indoor environments between a source and a susceptible individual.
2. Engineering controls demonstrated to reduce the risk of exposure to infectious aerosols include dilution with outdoor air provided by mechanical or natural ventilation, filtration of indoor air, indoor airflow patterns, and disinfection by germicidal ultraviolet light and other technologies proven to be effective and safe.
3. Strategies using engineering controls for managing the risk from infectious aerosols should focus on reducing exposure to infectious aerosols in the breathing zone.
4. Effective design, installation, maintenance, and operation of ventilation controls are critical to achieve needed risk mitigation.
5. Existing evidence for the effects of temperature and humidity on infection risk does not justify changes to ventilation and IAQ standards, regulations, and guidelines at this time.
6. The effectiveness of any one risk mitigation strategy depends on many factors. The use of multiple risk mitigation strategies will usually be more effective than reliance on any single strategy.
7. Risk mitigation measures should be adaptable to levels of risk in a particular space.
8. Combinations of engineering controls and non-engineering controls can be optimized for effectiveness, cost, and energy use.

ASHRAE Recommends that:

A multidisciplinary Research & Development (R&D) working group be established, aiming to improve coordination between engineers, scientists and health professionals, prioritize and accelerate the research agenda, development process and dissemination. As a minimum, this research should include the following topics.

- Controlled intervention studies to quantify impact on infection transmission resulting from various engineering controls considered singly and in combination with other non-engineering controls with respect to infectious aerosols of varying characteristics.
- Real time detection methodologies for the purpose of improved variable control of HVAC controls responsive to different levels of risk.
- Methods to reduce the life-cycle cost and carbon emissions of engineering controls in all conditions.
- Studies to characterize the size-resolved emission rate of infectious aerosols for different pathogens and different respiratory activities and metabolic intensities, determine the relationship between size and risk of transmission, and predict the fate and transport of these aerosol particles in indoor environments.
- Quantitative infection risk evaluation tools for infectious aerosols (quantitative microbial risk assessment is widely used for water and food, but much less for aerosols).
- Impact of indoor airflow patterns on the transmission of infectious aerosols and resulting risk of infection.
ASHRAE commits to:

1. Support model codes and standards that address exposure to infectious aerosols, balancing quality of evidence, risk mitigation, cost of installation and operation, and energy use and carbon emissions.
2. Support model codes and standards using variable amounts of outdoor/clean air delivery in response to measurement of air quality to optimize indoor air quality in an efficient way.
3. Promote research to enhance HVAC technologies and knowledge to mitigate the risk of infection due to airborne transmission.
4. Develop protocols for better testing and certification of control technologies.
5. Encourage publication of test data indicating removal efficiency by particle size for each filter as part of the certification process. This data should include information on performance effects associated with filter loading and electrostatic charge (if applicable).
Appendix A: Background Information

This document is not a design guide. The purpose is to advise policymakers to identify appropriate engineering control strategies for various settings, various normal/epidemic disease states, and in combination with non-engineering strategies, based on the best available science, the amount of benefits and costs resulting from various strategies including their carbon implications, using principles of Evidence-Based Medicine.

A. Infectious Aerosols Risk

Respiratory diseases are among the most common causes of severe illness and death worldwide (Forum of International Respiratory Societies, 2017). Acute respiratory infections (ARIs) are the leading cause of morbidity and mortality from infectious disease in the world. Almost four million people die from ARIs each year, with 98% of these deaths due to lower respiratory tract infections (World Health Organization, 2014) The current Covid-19 pandemic, caused by the SARS-CoV-2 virus, and the increasing rate of emergent respiratory viral infections in recent years are of great concern, as some of the epidemic-prone ARIs may create global public-health emergencies.

Pathogens are classified in different risk groups describing the relative hazard posed by infectious agents or toxins. Considerations used in a biological risk assessment include the (a) pathogenicity of the agent and infectious dose, the (b) potential outcome of exposure, (c) natural route of infection, (d) other routes of infection resulting from manipulations, the (e) stability of the agent in the environment, (f) information available from animal studies and (g) the availability of effective prophylaxis or therapeutic interventions (World Health Organization Staff & World Health Organization, 2004).

While multiple factors must be considered for risk assessment, design of engineering and environmental mitigation measures should be guided by the specific route of transmission or contaminant dissemination. Transmission of infection is a complex process; the risk of disease is determined by numerous factors that have considerable and uncertain variability including: the characteristics of the pathogen concerned, the infectiousness of the host, the media through which the infectious agent passes from source to new host, and the immune response of the new host (Noakes & Sleigh, 2009). Transmission or dissemination through the air complicates this further by adding other influencing factors (Sze To & Chao, 2010).

B. Mechanisms of Transmission of Infectious Aerosols

An infectious aerosol is a collection of pathogen-laden particles in air. Typically, infectious aerosols are released by an infected person as part of respiratory activities such as breathing, talking, singing, coughing and sneezing. All people, whether infected or not, release droplets of respiratory fluid (mucus, sputum or saliva) spanning a wide range of sizes during such respiratory activities. Some droplets are so large that they cannot remain suspended for more than a few seconds in the expired jet. Some droplets are small enough to be considered aerosol particles (aerosols) that can remain suspended in air for an extended period. Under all but the most humid conditions, the smallest droplets rapidly evaporate, leaving behind solid or semi-solid residue consisting of non-volatile components of the respiratory fluid. If a person is infected, their respiratory droplets and aerosols may carry pathogens and may be infectious.
Traditional definitions of “airborne” and “droplet” transmission have been shown to be misleading, and revised definitions of transmission routes are more closely aligned with the actual mechanisms by which pathogens are transferred from one person to another (Marr & Tang, 2021). These revised routes are (1) inhalation of aerosols, (2) spray of large droplets, and (3) touching a contaminated surface. The first supplants the traditional airborne route, which was assumed to apply only at long distance, while the second and third correspond to the traditional droplet and fomite (or contact) routes. To facilitate readability and understanding, this committee agreed to leverage recently proposed terminology.

Inhalation of infectious aerosols can cause infection, though the risk of infection of any individual is a function of the infectivity of the particular organism, its ability to remain infectious in air, the susceptibility to infection of the person exposed, the number of particles inhaled, the amount of infectious virus in the inhaled particles, where the particles are deposited along the respiratory tract, and other factors.

In the past, transmission of most respiratory pathogens was thought to be associated primarily with larger droplets, of concern only to people at close range to an infected person. It is now clear that transmission of COVID-19 and other respiratory infections is likely dominated by inhalation of infectious aerosols both at close range and long range (Wang et al., 2021)

Pathogen-carrying droplets and aerosolized particles that fall to a surface can be a source of infection through touch and subsequent touching of the eyes or nose, or through re-aerosolization (or resuspension) followed by inhalation.

C. Factors affecting respiratory infection risk

Both proximity and duration of exposure to the source - a person who exhales infectious aerosols- are risk factors. Proximity to others influences the risk because airborne pathogens are most concentrated in the expiratory jets close to the point of release (Cortellessa et al., 2021). The concentration of aerosols decreases with distance. As infectious aerosols move through a space, they may lose infectivity over time. The risk of transmission also increases with duration of exposure (Buonanno et al., 2020).

From the perspective of potential risk mitigation interventions, there are three primary factors that influence the chain of infection for aerosolized pathogens: source, route, and susceptibility.

The source encompasses the emitters of the pathogen, the quantity of pathogen produced by each infected host, and the infectiousness of the pathogen.

In the case of aerosolized pathogens, the source will normally be an infected person. In some cases, the source may consist of a surface on which particles have fallen, and which may be re-suspended due to disturbance. In some cases, fecal material and waterborne pathogens may aerosolize to create yet a third kind of source. Many factors influence the risk from a particular source, but the most important is the infectiousness (e.g., transmissibility) of the particular pathogen.
Exhalations release droplets spanning a wide range of sizes, including those small enough to be considered aerosols. The number, size and velocity of these droplets and aerosols vary widely by individual, type of respiratory activity and/or metabolic intensity, volume of vocalization and stage of disease if the person is infected. Speaking loudly, singing, deeper breathing associated with physical activity and the like, increase the number and speed of droplets and aerosols discharged into the air (Coleman et al., 2021; Pöhlker et al., 2021; Tomisa et al., 2021; Wang et al., 2021).

The pathway refers to the physical movement of the pathogen between the source and the new host, the duration of time the source and new host are proximate, the medium of transfer from the source to the new host and the characteristics of the medium (in the case of air, humidity, temperature, indoor airflow patterns, etc.).

Exposure depends on the inhalation rate (volume per unit time), which varies with physical activity (Wang et al., 2021).

Vulnerability refers to the defenses the new susceptible host has to the particular pathogen being transmitted. This refers to both their immune response and behavior. Vulnerability at a population level is affected by the number of potential new hosts in proximity to a source. Therefore, risk is higher in “hubs for community transmission.” Vulnerability at a population level is similarly high in locations with large numbers of persons who are more than normally susceptible to infection and with higher risk of severe disease when infected (Bueno de Mesquita et al., 2022).

D. Managing Risk

Risk from pathogen spread can be reduced by non-engineering interventions (pharmaceutical interventions, administrative controls, etc.), and engineering controls. The risk of exposure to and infection from various aerosolized pathogens is unlikely to be reduced to zero. The goal, therefore, must be to select a bundle of strategies, both engineering and non-engineering, that most practically minimizes risk and minimizes waste.

Given the variability of factors affecting the risk of infection in any given circumstance, no single set of mitigation strategies can balance the evidence, effectiveness, timeliness, and cost against all possible combinations of risk factors.

In general, policymakers face two broad sets of operating conditions: normal circumstances, where we have a somewhat regular level of risks, and epidemic states, where we have temporarily higher levels of risks.

In a normal state, largely because of the public health measures implemented over time, we experience a relatively similar, relatively low risk of transmission of all disease from infectious aerosols in most buildings. Some buildings and spaces, such as healthcare buildings, normally contain larger numbers of infectious persons and larger numbers of immunocompromised or otherwise vulnerable persons. Those spaces therefore warrant higher levels of risk mitigation under normal circumstances.
In an epidemic state, risks step upwards, generally because of the presence of a particular pathogen with a particularly high reproduction rate and few or no medical controls widely available. The risks will vary with public adherence to various behavior protocols (closing bars and shopping malls, social distancing, mask-wearing, etc.).

To mitigate the risks of infection, policymakers have at their disposal different public health measures. These measures include source controls, pathway controls, and controls to protect vulnerable persons. Source controls include administrative controls (limiting access to a space, requiring screening, etc.), pharmaceutical controls (vaccination), Personal Protective Equipment (PPE), isolation/separation, contact tracing to facilitate isolation/separation, and sometimes cleaning or water management. Pathway controls include both engineering controls (powered or natural ventilation, passive and active filtration, air cleaning, indoor airflow patterns, temperature and humidity controls) and non-engineering controls (daylight, surface disinfection, barriers). Controls to protect vulnerable persons include administrative controls, pharmaceutical controls, PPE, and isolation/separation. Usually, the right response to a particular situation will be a bundle of strategies from within each of these categories, which are likely to vary over time in response to evolving levels of risk.

A complicating factor is the velocity of risk variation combined with uncertainty about the characteristics of a novel disease. The shift from a normal to an epidemic state can occur so rapidly that significant harm may ensue before controls are implemented. However definitive evidence of transmission modes may not be available for a long time and insistence on incontrovertible evidence can cause long delays in response. Consequently, there is a strong argument for invoking the “precautionary principle” in such cases, i.e., “(o)ne should take reasonable measures to avoid threats that are serious and plausible.” (Resnik 2004). Application of the precautionary principle would require that engineering controls capable of coping with the worst likely event are already present and ready for use when needed, or that plans exist for rapidly deploying effective controls. The importance of the precautionary principle also extends to the public health guidance that is essential to the initiation of a timely response to a serious threat.

One important consideration for all policy makers is the need to prescribe controls for the varying states of risk that will be faced by every building. In general, operating at an epidemic-appropriate state all of the time will waste resources. The optimal policy will be one that defines appropriate controls for a normal state (including those spaces with higher than normal levels of risk) with the flexibility to ramp up at appropriate velocity to match a developing epidemic.

An important difficulty that policy makers face in prescribing the optimal bundle of risk mitigation measures is the varying response to administrative controls and PPE measures, and the difficulty of balancing “freedoms.” That is, in some cases, people may refuse to socially distance themselves, vaccinate, and/or wear masks. The need for engineering controls in such instances is much greater as a backstop, but forcing all building owners to spend capital for extensive engineering controls in order to enable the freedom of others to not wear masks is a fundamental collision of rights.

This PD assumes a reasonable implementation of non-engineering controls to mitigate risks by the population at large, and policy makers will be well-advised to use their influence to encourage such implementation.
Policymakers will define acceptable levels of risk and propose optimal risk mitigation responses. The optimal response to risk management, then, will begin with an assumption of a reasonable level of public adoption of recommended public health behaviors. Based on anticipated levels of risk and available resources (including time of response), the response will be a layered set of engineering and non-engineering interventions, tiered from least cost and highest benefit/evidence until the appropriate level of mitigation has been achieved.

ENGINEERING CONTROLS FOR MITIGATING AEROSOL TRANSMISSION

This Position Document uses the term “engineering controls” to refer to a group of measures typically associated with “ventilation.” These include introducing outside air and/or removing contaminated air through mechanical or natural means, controlling flow of air within a space or between spaces, air cleaning (inactivation of infectious aerosols), temperature control, and humidity control. Engineering controls interrupt the pathway for aerosol transmission.

Effective application of most engineering controls requires technical and professional expertise in the design, installation, validation, operation, and maintenance of those controls, implying the need for an ecosystem and financial resources for cost-effective applications (Shen et al., 2021). Systems that do not operate correctly may create a false sense of security, similar to the Peltzman effect (Iyengar et al., 2021), leading occupants to take avoidable risks assuming that the engineering controls will protect them.

Engineering controls for which there is a strong evidence basis for both effectiveness and safety, as well as established quantitative design methods, include ventilation, filtration, certain air cleaning and aerosol inactivation technologies, and effective indoor airflow patterns. Other technologies may also be applicable that are not supported by the same level of independent evidence.

A. Ventilation

Ventilation is the process of supplying air to or removing it from a space by natural or mechanical means for purposes that include control of air contaminant levels. Ventilation may involve supply of outdoor air, recirculated air that has been filtered or otherwise treated, or a combination of the two. Its primary function is to dilute and displace contaminated air in a space by replacing/mixing it with less contaminated or uncontaminated air. Ventilation is closely connected with space air distribution because air flow patterns impact the effectiveness of delivery of ventilation air and can affect occupant exposure.

In many studies, treated outdoor air ventilation rates have shown a positive correlation with indoor air quality, including reduced sick building syndrome symptom incidence and absenteeism and better task performance and learning performance (Sundell et al., 2011). Likewise, higher ventilation rates are associated with lower incidence of airborne diseases. However, systematic reviews of research on the quantitative relationship between risk of infection and ventilation rate have concluded that sufficient data to specify minimum ventilation rates for infection control does not exist (Li et al., 2007).
ASHRAE Standard 62.1 affirms that the rates in the ventilation rate procedure table are not meant for infection control. “The requirements of this table provide for acceptable IAQ. The requirements of this table do not address the airborne transmission of airborne viruses, bacteria, and other infectious contagions.” (ASHRAE 62.1).

Nevertheless, empirically based ventilation rates for the purpose of infection control have been proposed and even implemented in standards and codes in the past. In the early years of the 20th century, Billings proposed, and ASHRAE’s predecessor society ASHVE recommended, outdoor air flow rates of 30 cfm/person (14.2 L/s-person) based on considerations of infection prevention (Janssen, 1999). Current minimum outdoor airflow rates found in standards are typically about 15 cfm/person (ASHRAE, 2019b). During the Covid-19 pandemic, the World Health Organization recommended minimum outdoor airflow rates of 10 L/s-person (21.2 cfm/person) for non-healthcare facilities and 60 L/s-person (127 cfm/person) for most spaces in healthcare facilities (World Health Organization, 2021). What seems indisputable is that existing minimum outdoor air ventilation rates are significantly lower than levels recommended for infection control. This is due to the use of a definition of indoor air quality that does not address infection risk mitigation.

Naturally ventilated buildings, without mechanical ventilation, are common in much of the world. Using a “push-pull” strategy (with features designed both to introduce outside air and to encourage removal of contaminated air) in these buildings will help deliver a continuous supply of outdoor air with minimal stagnant indoor zones (Gilkeson et al., 2013). This strategy will also help to provide a positive or negative pressurization with respect to the external environment for different modes of operation.

Natural ventilation systems are relatively low in both first cost and operating cost, if appropriately integrated into a building during the design phase. These systems also have a low carbon footprint. However, they are difficult to control with precision, they do not permit temperature or humidity control, and they do not filter the incoming air. Mechanical ventilation systems have significantly higher costs, both for initial installation and for ongoing maintenance and operation. Depending on the local fuel mix, these systems also have a relatively high carbon footprint, in the aggregate. However, given the evidence and effectiveness of mechanical ventilation systems, the key to successful deployment is to ensure the maximum effectiveness without incurring excess costs and increasing carbon emissions by ventilating more than needed to reduce transmission risk.

B. Filtration

Filtration removes particles from air within a space or from air that is recirculated by centralized or distributed HVAC system components. Filters used in HVAC applications are typically mechanical filters made from fibers that capture larger particles mainly by interception and impaction, and finer particles mainly by diffusion. Filters are classified by various schemes such as the Minimum Efficiency Reporting Value (MERV) scale defined in ASHRAE Standard 52.2 (2017). The MERV scale runs from 1 to 16, with larger numbers indicating higher efficiency. Filters performance is assessed in three size ranges: 0.3 to 1 µm (E1), 1 to 3 µm (E2) and 3 to 10 µm (E3). ASHRAE Standard 62.1 generally requires filters in HVAC systems of at least MERV 8, which has no specified minimum efficiency in range 1, 20% in range 2, and 70% in range 3. Given the size distribution of respiratory aerosols, MERV 8 filters have low effectiveness for reducing exposure to infectious aerosols. ASHRAE’s Covid-19 guidance
recommended upgrading of filters to MERV 13 if possible. MERV 13 filters have minimum efficiency requirements of 50%, 85%, and 90%, respectively, in ranges 1, 2, and 3. In healthcare and other critical applications, higher MERV filters and even high efficiency particulate air (HEPA) filters tested to be 99.97% or higher efficiency for 0.3 µm particles may be used. It is important to understand that even though filter ratings are generally based on particles 0.3 µm and larger, they can, in fact, capture much smaller particles.

Since filtration is a mechanism designed to permit the re-circulation of already heated/cooled air, it can be deployed to mitigate risk from infectious aerosols while avoiding an increase in the amount of heating/cooling energy. A filter provides resistance to air movement, so moving air through a filter does require higher amounts of fan energy compared to unfiltered air. Since filtration and recirculation of air avoids the need to heat/cool air, it provides a way to mitigate risk with a smaller operating cost relative to simply taking air from the outside and treating it before use. The relative benefit of filtration varies with both climate and seasonal weather, as the energy for heating and cooling varies.

Filtration has been demonstrated to effectively remove particles that could be infectious (Bueno de Mesquita et al., 2022, p. 11). In addition, as the electrical grid becomes increasingly renewable, the carbon footprint of this measure will reduce, as well as reducing the need for initial heating or cooling energy, which generally derives from on-site combustion with its higher carbon footprint.

Filtration can be performed within the ducts for a system, or in a room with a recirculating system. The strength of evidence for the effectiveness of filtration for recirculated air is relatively high (Bueno de Mesquita et al., 2022). As with other ventilation interventions, the question for filtration is not whether it works; the question is how much is needed for how much impact. Liu et al. (2022) performed the systematic scientific review and reported that there is sufficient scientific evidence that in-room air cleaners (IACs) can eliminate airborne SARS-Co-V2. Beyond the effectiveness of an IAC to remove virus laden aerosols, the size and number of units need to be chosen in the context of the volume of the space they are cleaning. Similar to other filtration systems, IACs are associated with increased energy consumption.

C. Other Air Cleaning Technologies

In addition to ventilation and filtration, other technologies exist that inactivate airborne microorganisms or increase the rate of removal of infectious aerosols from the air by electrostatic effects. These include germicidal ultraviolet disinfection (GUV, also referred to as ultraviolet germicidal irradiation, UVGI), and a number of “electronic air cleaners” that produce various reactive species such as ions, hydroxyl radicals, and peroxides, among others. With the exception of GUV, which has been extensively studied and applied for nearly a century (Kowalski, 2010) and is approved by the US Centers for Disease Control and Prevention as a control for tuberculosis in healthcare settings (Jensen et al., 2005; Whalen, 2009), most of these technologies are not well characterized due to a combination of quality of evidence, and, for some, concerns regarding byproduct production. The current status of air cleaning technologies is reviewed in the ASHRAE Position Document on Filtration and Air Cleaning (ASHRAE, 2021).
The main byproduct of concern for electronic air cleaners is ozone, which can be produced by corona discharge and by certain wavelengths of ultraviolet light. One of the two positions of the ASHRAE Filtration and Air Cleaning position document addresses ozone production. It states that ozone based air cleaners should not be used and that extreme caution should be used if air cleaners produce ozone as a byproduct. This concern and position is further reflected in ASHRAE Standard 62.1-2019 (ASHRAE, 2019b), which requires that all electronic air cleaners pass the UL 2998 standard, which requires no more than 5 ppb ozone concentration in the emission of an air cleaner (Underwriters Laboratories Inc., 2020). Both germicidal UV sources and some types of reactive species air cleaners have received this certification. However, ozone is not the only byproduct of concern. Recent research has reported production of various chemical contaminants and aerosols when reactive species air cleaners are used (Joo et al., 2021; Ye et al., 2021). Reactive species themselves (ions, H22, etc) can also be potentially hazardous (Collins et al, 2021). Whether the amount of such production represents a significant hazard requires further study and is currently one factor that argues for caution in applying air cleaners known to create byproducts.

UV radiation in the UV-C band inactivates microorganisms by affecting genomic and structural components. The susceptibility of hundreds of microorganisms has been determined experimentally (Kowalski, 2010). The most commonly used germicidal wavelength is 254 nm UV-C produced by mercury vapor or amalgam lamps. Because this wavelength can cause short term eye and skin irritation, and even severe and lasting eye damage, it is applied in ways that prevent or minimize exposure of building occupants. Germicidal ultraviolet systems can be applied in a variety of ways. The oldest implementation of GUV to disinfect air is the “upper room” system in which wall mounted or pendant fixtures create a disinfection zone above the occupied zone. Such systems were first used in the 1930s and demonstrated very good effectiveness against measles and other childhood diseases in schools (Wells et al., 1942). GUV is also effective for airstream disinfection in HVAC systems and in closed air cleaners. (ASHRAE, 2019a) Airstream disinfection systems installed in air handling units can simultaneously prevent microbial growth on cooling coils with resulting reductions in maintenance cost and energy use (Bahnfleth, 2017). Germicidal UV also has been used to disinfect surfaces in unoccupied spaces, in particular, to control healthcare associated infection (HAI) pathogens in healthcare facilities (Weber et al., 2016; Wong et al., 2016).

Emerging germicidal UV source technologies (LEDs and excimer lamps) have the potential to enable new applications of GUV. In particular, “far UV-C” at shorter wavelengths in the UV-C range (approximately 200-230 nm), have demonstrated both good germicidal effectiveness and the potential for safe exposure of occupants. This would permit full-volume irradiation of occupied spaces to simultaneously disinfect air and surfaces, providing protection against both airborne and fomite transmission (Buonanno et al., 2020).

D. Indoor Airflow Patterns

Indoor airflow patterns can affect the flow path of aerosols from the source. The breathing zone of occupants is the most critical space where the concentration and movement of aerosols can directly affect the risk of infection. The effectiveness of ventilation in indoor spaces depends on several factors related to the design and operation of HVAC systems, which can impact the airflow patterns in indoor spaces. Ideally, the clean supply air should sweep the contaminants from the breathing zone
without significant recirculation and stagnation that form pockets of high concentration. Clean air should not escape the space without collecting contaminants from the breathing zone. Indoor airflow patterns, the resulting flow path of airborne contaminants, and the risk of infection can depend on several factors including the number, location, and type of supply diffusers in space; supply airflow rates, air change rates, and associated diffuser throws; supply air temperature; number, size, and locations of return/exhaust grilles; the location and strengths of various heat sources in a room; arrangement of furniture and other obstructions to airflow; location, type, and capacity of in-room air cleaners; and importantly, the relative positions of contaminant sources in space. Strategic selection and layout of air supply diffusers and exhaust grilles can form aerodynamic containment zones of the indoor airflow patterns that can help reduce the risk of contaminant exposure in indoor spaces (Khankari, 2021).

Physical testing and real-time measurements of all the parameters that affect the ventilation performance of enclosed spaces are often time and labor-intensive, if not impossible. In such situations, Computational Fluid Dynamics (CFD) analyses provide a feasible alternative to gain comprehensive insights into the ventilation performance. CFD analyses, if performed properly with adequate expertise, can help designers understand complex indoor airflow patterns and the flow path of aerosols. Such insights gained during the early stages of the design and retrofit process can help improve the ventilation performance and reduce the risk of infection in indoor spaces (Khankari, 2016, 2021).

Effective indoor airflow patterns (Bolashikov & Melikov, 2009; Khankari, 2021) are a primary factor that drives the dilution and not solely quantity of air that is supplied to the space. No studies have provided sufficient data to quantify the amount of ventilation needed to achieve effective risk mitigation (Bueno de Mesquita et al., 2022; Li et al., 2007). The key underlying reason is the lack of data related to the infectious source strength and dose-response to estimate the necessary level of dilution (Li et al., 2007; Pantelic & Tham, 2012).

There has been an increased awareness of IAQ in the microenvironment during the COVID-19 pandemic that has led to the exploration of innovative ventilation systems and indoor airflow strategies. Personalized ventilation systems that supply 100% outdoor, filtered, or UV-disinfected air directly to the occupant’s breathing zone could offer protection against exposure to contaminated air and mitigate the risk of infectious aerosol transmission (Bolashikov et al., 2009; Cermak et al., 2006; Danca et al., 2022; Ghaddar & Ghali, 2022; Licina, Melikov, Pantelic, et al., 2015; Licina, Melikov, Sekhar, et al., 2015; Pantelic et al., 2009, 2015). Personalized ventilation systems, when coupled with localized or personalized exhaust devices, further enhance the overall ability to mitigate exposure in breathing zones, as seen from both experimental and CFD studies in healthcare settings (Bivolarova et al., 2016; Bolashikov et al., 2015; Yang et al., 2014; Yang et al., 2013, 2014, 2015). There are no known epidemiological studies that clearly demonstrate a reduction in infectious disease transmission from indoor airflow patterns.

Evidence of the effectiveness for indoor airflow control to mitigate risk from infectious aerosols is moderate (Bueno de Mesquita et al., 2022, p. 15).

Indoor airflow pattern control incurs little additional cost or carbon beyond basic ventilation strategies, but may require more extensive design expertise with attendant costs.

E. Humidity and temperature control
Research suggests that the persistence of various infectious pathogens in aerosols may be affected by environmental conditions, including temperature and humidity (Tang, 2009). Different pathogens respond differently to varying temperature and humidity conditions. Therefore, attempting to modify risk through these mechanisms is problematic. "Although evidence exists that survival time of SARS-CoV-2 virus is longer at low temperature and humidity, it is not clear that manipulation of either temperature or humidity as risk mitigation measures will have a major impact compared to other controls." (W. Bahnfleth & Degraw, 2021) (Yang & Marr, 2011).

Humidification imposes significant costs for both installation and operation, and generates a significant energy and carbon footprint. It can also create other microbial issues (e.g. mold growth) within the built environment.

F. Demand-controlled ventilation

Ventilation has long been based on estimates of the number of people in a space or the volume of the space. These are static estimates of the necessary flow and do not always adjust as occupancy changes. The use of carbon dioxide (CO2) concentration as a proxy for ventilation rate per occupant, is commonly used to modulate the flow of ventilation air (Bhagat et al., 2020; Franco & Schito, 2020; Zivelonghi & Lai, 2021). However, there are challenges with this approach as CO2 measurements may not always be representative of the actual demand in a given space, especially with multi-zone recirculation type VAV systems. Additionally, it is important to note that CO2 concentration is unaffected by filtration and most other air cleaning methods, so it should not be used as a direct indicator of infection risk. ASHRAE has developed a separate Position Document and guidance documents that address the use of CO2 for control of indoor air quality, including risk of airborne infection. (ASHRAE, 2022).

New sensor technologies allow for the direct measurement of fine airborne particulate (PM2.5), which may include infectious aerosols (Kaliszewski et al., 2020). Increasing availability and falling cost of PM sensors suggests that their use for ventilation control may be feasible. Low-cost IAQ sensors for continuous monitoring (Zhang et al., 2021) and as early warning systems for COVID-19 infections (Peladarinos et al., 2021) have been reported. While the sensors cannot differentiate between infectious aerosols and other types of particulate matter, the concentration of fine particulates is an important measure of air quality that can be used to modulate the flow of ventilation or control of air cleaning systems. Additional research and application protocols are needed, including protocols to validate performance.

NON-ENGINEERING CONTROLS FOR AEROSOL TRANSMISSION

Non-engineering controls generally target reduction of the source, and protection of vulnerable new hosts.

A. Pharmaceutical Controls

Pharmaceutical controls include vaccination, prophylaxis, treatment, and other strategies. In general, these strategies work to reduce the source (e.g. number of infected persons, amount of aerosolized
pathogens), and to protect the vulnerable new host. These strategies generally do not work to affect the path of transmission.

Two features of pharmaceutical controls make them problematic in some ways. First, pharmaceutical controls rely on public adherence, and adequate access. Experience shows that neither is perfect, and, so, by themselves, pharmaceutical controls can be insufficient to the task. Second, especially in the context of an epidemic, where velocity of change in risk is high, these controls may not be adequate to the risk mitigation need.

Therefore, as with other non-engineering control measures, this one is vitally important, but often insufficient by themselves.

B. Elimination of the Hazard

Elimination of the hazard literally separates sources of infection from uninfected populace. Examples of such interventions might include stay at home orders to keep people from coming into contact with one another to minimize risk of transmission or closing buildings or spaces to some or all people. Other examples of this kind of elimination strategy are social distancing (separating the source of infection by a distance calculated to mitigate the risk of transmission) and barriers between persons in a space. In the case of droplets, but not aerosols, barriers between people in a space can mitigate transmission risk (Wang et al., 2021, p. 15).

Elimination-of-the-hazard strategies are highly dependent upon compliance by the population, and therefore, they are heavily dependent upon voluntary compliance. During normal times, threat levels are low enough that sloppy uptake and adherence is relatively unimportant. Variation in compliance during epidemics and in high-risk locations may be highly problematic and will call on leaders to lead responsibly and effectively.

The recent experience with COVID-19 shows dramatically the potential variance in uptake of such measures, and the ensuing results for local, regional, national and international populations.

In some sense, stay at home orders might be seen to be relatively low-cost, low-energy interventions. However, they also have serious economic implications to certain segments of the working population, as well as to the economy as a whole. Some workers, deemed to be essential, must continue to work through a time of elevated risk, creating stark inequities in terms of risk exposure. These factors accumulate as their enforcement endures over time.

C. Administrative Controls

Administrative controls are exercised by the entities who control access to, and use of particular spaces. These strategies include shutting down buildings or spaces; limiting the number of people and duration of occupancy in buildings or spaces; and requirements for vaccinations, testing, and PPE.

The strategy of shutting down buildings or spaces altogether by definition eliminates the risk within those buildings and spaces. The cost and energy/carbon impacts are both relatively low, in terms of direct cost. However, the cost to an economic entity, the people who must derive their incomes from
working there, the people who are denied services that might have come from the activities in the building, and the cost to the economy as a whole can be huge.

A more nuanced approach is to use administrative controls to limit the number and distance between people in a building or space, including limiting the amount of time that one or more persons are permitted into a space. The efficacy of this strategy will vary as a function of pathogen reproduction rates, and the details and effectiveness of the implementation. On the whole, however, this strategy can mitigate the costs of the building shut-down strategy while capturing many of the benefits. It will therefore reduce many of the indirect costs of the building shut-down strategy while imposing additional costs to the entity implementing the administrative controls.

A third class of administrative controls is over the personal behaviors of the building occupants. That is, the entity controlling access to a building or space can require proof of vaccination, or testing, or PPE as a condition precedent to a person entering a space. This strategy uses the high efficacy of the individual strategies with an overlay of administrative control to enforce certain levels of risk mitigation. In general, this kind of strategy is a higher cost than administrative controls focused strictly on numbers, but with higher efficacy. Building owners must account for jurisdictional laws regulating the disclosure of personal health information when requiring proof of vaccination or testing.

D. Cleaning

Cleaning may provide a benefit when aerosolized or droplet pathogens may be deposited on surfaces where they have a long enough life to come into contact, either physical or re-entrainment in the air—with an uninfected person. Thorough cleaning in its many forms can greatly mitigate this risk, where it occurs. Evidence of benefits of cleaning to reduce transmission of aerosolized pathogens, however, is weak (Bueno de Mesquita et al., 2022, p. 15).

E. Masking and PPE

Masking can either contain a pathogen, if the wearer is infected, or protect against a pathogen, for non-infected persons. Evidence shows that this strategy can be highly effective, and has very low costs and very low carbon impact (Wang et al., 2021).

F. Barriers

The use of plastic barriers within a space may provide some mitigation against spray of droplets at short distances, but only with corresponding modifications to ventilation systems (Capron, et. Al 2022). In some cases, plastic barriers within rooms increase risk (de Meszuita, 2021). Height of barriers are more impactful than width of barriers. Evidence for the effectiveness of barriers is low, but costs and energy costs are low.
Appendix B: Strength of Recommendations Taxonomy Analysis

A. Introduction

This appendix attempts to bridge the world of evidence based medicine (EBM) and the imperative to use available evidence to make needed recommendations in the practical world of application of ventilation systems. Historically, the world of application of ventilation systems has not had the kinds of investments into research necessary to reach the levels demanded by the rigors of EBM. However, decisions have to be made, based on the best available evidence. Bringing these worlds together brings a level of transparency and rigor to the practical need for guidance to policymakers, while also representing a call for further research to provide us with better data in the future.

Policymakers confront innumerable challenges in determining how to allocate incentives and penalties in guiding the public towards outcomes that best balance risks and rewards. The science of ventilation is still imprecise with respect to the specification of minimum rates to control transmission of infectious aerosols. Thus, policymakers need to have the most rigorous, transparent information at their disposal with which to make needed determinations. Policymakers also need to prioritize research to better determine the effectiveness of the various strategies so as to permit better prescriptions in the future. The methodology used in this exercise takes an important step towards addressing this need.

Because we are dealing with interventions targeting a health outcome - we are using ventilation as an intervention to reduce risk of infection - we have chosen to develop a version of a tool commonly used in Evidence Based Medicine (EBM).

The essence of EBM is to provide guidance to practitioners and policymakers by integrating the best research evidence with clinical expertise and patient values (Sackett et al, 2000), as well as the setting and circumstances in which health interventions are being delivered (G. Guyatt et al., 2008). A central methodology for EBM is the use of Strength of Recommendation Taxonomy (SORT). In general, SORT methodologies try to assess the evidence supporting the use of a particular intervention, balanced against undesirable aspects of the intervention, such as side-effects (G. H. Guyatt et al., 2008).

Direct translation of EBM methodologies to the science of ventilation is difficult, due to the type of evidence generally available for informing ventilation decisions. This effort uses an appropriate SORT to provide both rigor and transparency, in ways that should elevate the credibility of the recommendations.

B. Measuring Quality of Evidence

The SORT begins with an assessment of available evidence. Here, the Quality of Evidence was assessed using the below described methodology. A search question was developed for each intervention comparing outcome with and without the specific engineering measure. i.e., in areas with airborne pathogen transmission (Population), what is the effect of Air Cleaning (UVGI) (Intervention) on respiratory pathogens transmission (Outcome) compared with settings without UVGI technology (Control). With the developed PICO (Population, Intervention, Control, Outcome), a literature search was done in JSTOR digital library, PubMed and ScienceDirect.
Only systematic reviews addressing the specific intervention and respiratory pathogens were included. Only 6 papers were finally included.


While the quality of evidence from the strict perspective of Evidence-Based Medicine is low, another class of studies, properly classified as “Natural Experiments” has gained attention in areas where controlled trials are difficult (DiNardo, 2008) (Dinardo, 2010). Indeed, the 2021 Nobel prize in economics was awarded to pioneers in the use of Natural Experiments. In some sense, the kinds of studies generally available with respect to the value of ventilation in mitigating risk, as powerfully exemplified by the work of the ASHRAE Epidemic Task Force during the Covid crisis, fall squarely in this domain. And, while the worlds of science and law may have an uneasy relationship, various legal standards for decision making use a preponderance of such evidence in the face of uncertainty – the kind of uncertainty that inevitably faces policymakers. In coming to their conclusions, experts such as those carefully assembled for this Position Document must rely heavily on such Natural Experiments, along with fundamental, inviolable laws of physics combined with an understanding of exposure and dose, to inform their judgments. And, so, we have expressed the available evidence from the strict perspective of Evidence Based Medicine and the indirect evidence from the perspective of the Natural Experiments and fundamental science currently available to us.

C. Assessing the Benefit, Cost, and Energy/Carbon Impacts of an Intervention
A key insight for SORT is the balance between “the desirable and undesirable consequences of the alternative management strategies, on the basis of the best estimates of those consequences” G. H. Guyatt et al., 2008). In our case, the benefits are impossible to quantify. That is, given the wide range of pathogens of different virulence and infectivity, coupled with the uncertain adoption of other non-ventilation interventions, the line-drawing problem associated with ventilation strategies (how much better are 4 air changes per hour than 2?); and the difficulty of predicting the frequency of occurrence make the benefits impossible to state with precision. Therefore, we rely on a multi-disciplinary, expert consensus-based estimate of effectiveness using the Delphi Technique. (Yousuf, 2007)

The Delphi Technique obtains consensus within a panel of experts through a series of questionnaires that are fed back to the panel after each subsequent round. It was the most suitable method for this committee because:

1. The Delphi methodology gathers opinion without the need to bring panelists together physically; especially problematic with a cohort of experts geographically dispersed.
2. Questionnaires are completed independently and confidentially, preventing the dominance of particular individuals and allowing participants to express their ideas without worry of being associated with those ideas. This could not be achieved using focus group discussion.
3. The feedback process encourages participants to consider items raised by others which they may have missed themselves and allows them to change opinion throughout the process (Couper, 1984). It also presents the group collective opinion in a non-adversarial manner (Hasson et al., 2000). This type of feedback mechanism is absent from direct interviews. (Smithson, 2000)

The technique involves three basic steps.

The first survey or questionnaire sent to the panel of experts (in this case, the members of this committee) asks for a list of opinions involving experiences and judgments and a list of predictions. In the second round, a copy of the collective list is sent to each expert, and the expert is asked to rate each item by criterion of importance provided in the survey. The third questionnaire includes the list, the ratings indicated, and the consensus. The experts are asked to either revise their opinions or discuss their reasons for not coming to consensus with the group.

The cost of each item was assessed as an “average” of life cycle cost, including both first cost and ongoing cost. These costs are a kind of aggregate average, and do not necessarily reflect the relative costs in any particular location. Note that this estimate is a relative one, in that it distinguishes between absolute costs, and not costs in the context of available resources. So, for example, one strategy might be considered low cost in a relatively affluent setting, but a high cost in a relatively low-resourced setting. Nonetheless, in either event it will be lower in cost than other alternatives, and, so, we note it to be a low-cost strategy.

A second dimension of cost is the cost in energy consumption and resulting carbon emissions. Recognizing the science and the urgency of the need to address climate change, together with the heavy influence of the built environment on this critical issue, ASHRAE has recently created a team to study ways to decarbonize buildings. Consistent with the science and the direction of this
organization, we thus provide relative estimates of the lifetime emissions potential of the strategies under consideration. Obviously, the urgency of an epidemic may outweigh the much more diffuse and longer-range impacts of climate change associated with a particular strategy. However, we also recognize that the mass deployment of a particular strategy that is higher in global warming potential (GWP) will create a permanent source of emissions. So, in comparing two potential strategies, each with similar evidence and similar benefit, we should prefer the solution with lower GWP.

D. Recommendations

The final step in a SORT is to reach a recommendation based on the strength of evidence and the balance between desirable and undesirable aspects of a particular intervention.

Some versions of SORT use algorithms to derive the strength of recommendation from the Benefit, Cost and Strength of Evidence. In our assessment, due to the relative lack of definitive research, we again used the Delphi technique to best determine the consensus of our Committee of Experts. The resulting table, then, expresses our best attempt to tier our recommended measures for risk mitigation, based on the best evidence we were able to assemble. This exercise indicates a need for a multi-disciplinary in-depth research involving these techniques and a large pool of subject matter experts from a wide variety of disciplines.

E. Summary of Strategies

The current evidence of the association between ventilation rate and airborne infection is weak in terms of study design. However, there is solid indirect evidence to show that increased ventilation and related strategies discussed herein are associated with a reduced risk of airborne infection (Li et al., 2007). Ventilation mitigates risk, but the minimum ventilation requirements to mitigate the risk of infectious aerosols demand further investigation.

We acknowledge that, from the strict perspective of rigorous evidence-based medicine, the available evidence has low quality due to the specific set of methods and procedures used to collect and analyze data in ecological and retrospective studies. The ethical limitations, the multiple factors involved in airborne mechanisms and the specificity of indoor ventilation dynamics, urge an innovative methodology to produce solid evidence to inform building environment regulatory bodies and public health institutions.
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* Schenk et al., 2021
** Bueno de Mesquita et al., 2022
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Tomisa, G., Horváth, A., Farkas, Á., Nagy, A., Kis, E., & Tamási, L. (2021). Real-life measurement of size-fractionated aerosol concentration in a plethysmography box during the COVID-19 pandemic and


# DOCUMENT REVISION COMMITTEE ROSTER

The ASHRAE Position Document on Infectious Aerosols was developed by the Society’s Position Document Revision Committee formed on **Date (Month, day, year)**, with Walt Vernon as its chair.

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<tr>
<th>Name</th>
<th>Affiliation</th>
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<tr>
<td>William P. Bahnfleth, PhD, PE</td>
<td>Pennsylvania State University</td>
<td>State College, Pennsylvania, United States</td>
</tr>
<tr>
<td>Luca Fontana</td>
<td>World Health Organization</td>
<td>Geneva, Switzerland</td>
</tr>
<tr>
<td>Kishor Khankari, PhD, FASHRAE</td>
<td>Ansight LLC</td>
<td>Ann Arbor, MI, United States</td>
</tr>
<tr>
<td>Yuguo Li, PhD</td>
<td>The University of Hong Kong</td>
<td>Hong Kong, China</td>
</tr>
<tr>
<td>Linsey Marr, PhD</td>
<td>Virginia Tech</td>
<td>Blacksburg, Virginia, United States</td>
</tr>
<tr>
<td>Jovan Pantelic, PhD</td>
<td>Well Living Laboratory</td>
<td>Rochester, MN</td>
</tr>
<tr>
<td>Chandra Sekhar, PhD, FASHRAE</td>
<td>National University of Singapore</td>
<td>Singapore</td>
</tr>
<tr>
<td>Wayne Thomann, PhD</td>
<td>Duke University</td>
<td>Durham, North Carolina, United States</td>
</tr>
<tr>
<td>Walt Vernon, PE, MBA, JD, LLM</td>
<td>Mazzetti</td>
<td>San Francisco, California, United States</td>
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## Cognizant Committees

The chair of Environmental Health Committee also served as an ex-officio member.

**Luke Leung**  
Environmental Health Committee, Chair  
Skidmore Owings & Merrill  
Clarendon Hills, IL
DOCUMENT HISTORY

The following summarizes the revision, reaffirmation, or withdrawal dates:

6/24/2009—BOD approves Position Document titled *Airborne Infectious Diseases*

1/25/2012—Technology Council approves reaffirmation of Position Document titled *Airborne Infectious Diseases*

1/19/2014—BOD approves revised Position Document titled *Airborne Infectious Diseases*

1/31/2017—Technology Council approves reaffirmation of Position Document titled *Airborne Infectious Diseases*

2/5/2020—Technology Council approves reaffirmation of Position Document titled *Airborne Infectious Diseases*

4/14/2020—BOD approves revised Position Document titled *Infectious Aerosols*

xx/xx/2022—BOD approves revised Position Document titled *Infectious Aerosols*
Recommendations for Board Approval:

1. MOTION: N/A

BACKGROUND:

FISCAL IMPACT

Information Items:

1. A motion brought forward by the Montreal Chapter from a CRC was sent to the Foundation Board, which then referred it to the Development Committee. This issue involved both the Foundation’s policies and the policies that govern the RP Campaign and involved how Canadian dollars are counted relative to US dollars.

A Task Group, including representatives from both the Foundation Board and the RP Committee, was appointed to address this issue and to bring recommendations back to the Development Committee. The modified language to the policy made by the Ad Hoc Committee was not accepted by the full Development Committee. The policy has been sent back to the Foundation Board to propose revisions for consideration by the Development Committee.

2. Two Task Groups focused on Decarbonization and IEQ have been created.

   • The IEQ Task Group is identifying areas of focus within ASHRAE that deal with IEQ issues. Once done, the Development Committee will work with staff to create funding opportunities and to reach out to prospects.
   • The Decarbonization Task Group has not yet met. However, they will help staff in pulling together the work of ASHRAE in this area and determining funding opportunities.
   • Both Task Groups are preparing “success stories” about ASHRAE standards, programs and efforts to share with foundations and use in fundraising for new projects.

3. Per the Development Committee’s MBO’s, Development Committee members will be reaching out to BOD members this fall to request support of ASHRAE through direct monetary contributions. Having 100% of the BOD making financial contributions in support of the organization’s mission is important when reaching out to private foundations for support.

October 6, 2022
Date

Chair
ASHRAE Brand Recognition Ad hoc

MEMBERS
Kishor Khankari – Chair
Blake Ellis – Vice Chair
Ken Fulk - Member
Karine Leblanc – Member
Steven Sill – Member
Adeeba Mehboob – Member
Vanita Gupta – Member/Staff
Alice Yates – Member/Staff
Mark Owen – Member/Staff

1.0 BACKGROUND

ASHRAE brand has a relatively less recognition among non-ASHRAE members and general public. ASHRAE brand recognition can potentially help in:

- New revenue sources through branding
- New membership potential
- New product development paths
- Enable fundraising from institutional grants based on global impacts

After a study carried out by a Board group led by Kishor Khankari it is clear that ASHRAE needs to focus on improving its brand recognition. For the recommendations of the group to be implemented action at various levels in ASHRAE is required as well as structured dialogue to establish a brand recognition enhancement plan. This speaks strongly to the society theme ‘securing our future’ and the presidential initiatives for society year 22-23.

In order to enhance ASHRAE brand recognition a focused effort is required

It is also necessary to evaluate the available organizational resources and infrastructure needed to enhance brand recognition.

This presidential ad hoc is being appointed to address this important issue.

2.0 GOALS

I. Be recognized as the single most reputable and reliable resource for issues related to the HVAC and R industry by the general public and/or adjacencies in the built environment.

II. Brand recognition should be utilized to promote ASHRAE’s membership and products and services during the course of listening to the market.
3.0 SCOPE

The scope of the work will cover the following major areas:

I. Scan the brand recognition scene to evaluate where ASHRAE and the HVACR industry stand.
II. Identify public segments where we need to focus our brand recognition enhancing efforts and which segments constitute ‘low hanging’ fruit.
III. Assign appropriate groups to investigate ASHRAE logo branding on items/equipment which are certified via an ASHRAE Method of Test.
IV. Push interviews from ASHRAE leadership or subject matter experts to journalists/news agencies, social media and the ASHRAE web site via a concerted Mass Media Relations beyond the current level of communication which is mainly focused on ASHRAE members.
V. Review resources allocated to marketing and linkages between departments and volunteers. Are there silos and bottlenecks.
VI. Harvest ideas and comments from ASHRAE bodies through interactive discussions.
VII. Develop brand recognition evaluation metrics.

4.0 DELIVERABLES & TIMELINES

The deliverable is a plan to be approved by the board of directors which should:

I. Identify clear actions internal and external to ASHRAE required to address the goals and how each recommendation addresses the goals.
II. Recommend structural or process changes needed in our marketing efforts to enhance ASHRAE’s brand recognition. Each change to be justified.
III. Evaluate if additional resources are required in terms of HR and financing or professional branding consultants.
IV. Identify potential consultants for possible consideration.
V. Implementation timeline.

It is intended that the Ad hoc will complete its work in SY 2022-2023 prior to the spring BOD meeting where its final report and recommendations can be offered to the BOD for approval. Following approval at the spring BOD meeting, final preparations will be made for implementation starting July 1, 2023.

5.0 OPERATING METHODOLOGY

The Ad hoc should conduct its business virtually. A face-to-face meeting may be scheduled at the Society meetings, logistics permitting.

6.0 RESOURCE MATERIAL

The following resource material is attached:

- Board presentation by Kishor Khankari
ASHRAE AT INTERNATIONAL CONFERENCES

SHOULD ASHRAE HAVE AN INTERNATIONAL CONFERENCE WITH BOD INVOLVEMENT EVERY THREE YEARS?

WHY?
- Demonstrate to our membership that ASHRAE is truly **global:** ✓
- Connect the BOD with international members to gain **perspective outside N.A.**:
- Enhance **value for N.A. companies** about opportunities outside N.A.:
- Increase ASHRAE’s **relevancy outside N.A.**:
- Inspiration for **new** products and services:
- Benefit from **collaboration with international** and influential **partners:** ✓
- **Balance** international regions **coverage:** ✓

**Vision:** A healthy and sustainable built environment for **ALL.**

<table>
<thead>
<tr>
<th>ASHRAE at International Conferences Task Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andres Sepulveda</td>
</tr>
<tr>
<td>Cheng Wee Leong</td>
</tr>
<tr>
<td>Ronald Gagnon</td>
</tr>
<tr>
<td>Art Giesler</td>
</tr>
<tr>
<td>Richie Mittal</td>
</tr>
<tr>
<td>Christine Reinders – Caron</td>
</tr>
<tr>
<td>Mick Schwedler</td>
</tr>
<tr>
<td>Tony Giometti</td>
</tr>
</tbody>
</table>

**Options to evaluate:**
- Having an international board meeting along with the CRC of an international region.
- **Should ASHRAE host an international conference**
- Should ASHRAE’s board members attend scheduled conferences.
- What should be the frequency of the events and the level of participation by the board i.e. should the full board or part of the board attend so that over 3 years every director has attended the events
## ASHRAE AT INTERNATIONAL CONFERENCES

### ASHRAE AT INTERNATIONAL CONFERENCES OUTSIDE NA ROAD MAP

<table>
<thead>
<tr>
<th>Type of Conference</th>
<th>Area</th>
<th>CRC</th>
<th>Host Chapter</th>
<th>City</th>
<th>Date</th>
<th>No-day</th>
<th>Conference</th>
<th>Partnership</th>
<th>Sponsor</th>
<th>Business Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Summit</td>
<td>RAL</td>
<td>Co-located with CRC</td>
<td>Y</td>
<td>Istanbul</td>
<td>Oct. 2022</td>
<td>6 days</td>
<td>Meeting</td>
<td>Y</td>
<td>Y</td>
<td>tba</td>
</tr>
<tr>
<td>Global Summit</td>
<td>Region XIV/XIII</td>
<td>Co-located with CRC</td>
<td>Y</td>
<td>Istanbul</td>
<td>Oct. 2024</td>
<td>6 days</td>
<td>Meeting</td>
<td>Y</td>
<td>Y</td>
<td>tba</td>
</tr>
<tr>
<td>International Conference</td>
<td>Region XIV</td>
<td>Co-located with CRC</td>
<td>Y</td>
<td>Madrid</td>
<td>Nov. 2025</td>
<td>6 days</td>
<td>Meeting</td>
<td>C/R</td>
<td>tba</td>
<td>tba</td>
</tr>
</tbody>
</table>

### Issues discussed to be explored:

- **Areas**
- **Frequency**
- **Type of Conference**
- **BOD attendance**
- **Instead of topical conferences?**
- **Coinciding with a local HVAC Expo:**
  - 1/2 days prior to the Expo inauguration?
  - Troubles with IEC?
- **Conference sponsors. Any conflicts with exhibitors?**
- **Partners to co-organize the IC**
- **Job fair**
- **Coordination with CEC**
- **Resources required**
- **Involvement/Cooperation with National Government Officials**
- **Cooperation with main Universities**
- **IC offer**
- **Business case: BEP worst scenario**
- **Decision: short/medium term**
Next steps:

• Discussions with specific ASHRAE Regions
• Program schemes
• Regional partners candidates
• Potential sponsors
• Three business cases:
  • With an HVAC Expo: Madrid 2025 November
  • Without a HVAC Expo
  • 2025 ASHRAE Annual Conference outside N.A.
ASHRAE AT INTERNATIONAL CONFERENCES

2025 ASHRAE FALL CONFERENCE
Madrid, Nov 18 - 21

2025 ASHRAE ANNUAL CONFERENCE
Madrid, June 21 - 25
REPORT TO BOARD OF DIRECTORS  
From CHAMPION’S CLUB  
OCTOBER 14, 2022

Motion for ASHRAE Executive Committee:

1. MOTION: None

BACKGROUND:

FISCAL IMPACT

Information Items:

1. The Champion’s Club was formed specifically to monitor the initiatives related to the 2022-2023 Society year theme, identify any obstacles that might prevent successful implementation, and make recommendations as necessary to overcome any obstacles identified. A “champion” was assigned to monitor each initiative.

2. The Champion’s Club is scheduled to meet quarterly with the “champions” of each initiative via an online platform.

3. A spreadsheet was developed and approved by the Champion’s Club to monitor the initiatives related to the Society theme. The spreadsheet is attached.

4. The first meeting of the Champion’s Club was held on August 10, 2022. The results of that meeting are contained in the Champion’s Club spreadsheet, updated as of Sept. 5, 2022. As can be seen in the spreadsheet, several of the initiatives are already complete.

5. At this point in time, no obstacles to completing the Society theme initiatives have been observed.

6. Separate reports on some of the initiatives will be made by the Council, Committee or staff member that has been assigned the initiative.

Respectfully submitted,

Tim Wentz, Chair
<table>
<thead>
<tr>
<th>Initiatives</th>
<th>Action</th>
<th>Ownership</th>
<th>Champion</th>
<th>Category</th>
<th>Metric</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Making ASHRAE More Transparent</strong></td>
<td>Live stream BOD and Council meetings (View only)</td>
<td>Staff</td>
<td>Jeff Littleton</td>
<td>Transparency</td>
<td>Launched in Toronto. Will do the same thing for the next BOD meeting. Investment of $5,000 for HDD video equipment. Attendees can raise their hand but not chat.</td>
<td>Complete</td>
</tr>
<tr>
<td></td>
<td>BOD/ExCOM/Committee agendas sent to chapter officers with links allowing attendance at open meetings</td>
<td>Staff</td>
<td>Jeff Littleton</td>
<td>Participation</td>
<td>Had about 20 virtual attendees. Link on website to attend future meetings and see future agendas. Capacity up to 1,000 “panelists”.</td>
<td>Complete</td>
</tr>
<tr>
<td></td>
<td>Quarterly newsletter from BOD to Chapter Presidents</td>
<td>President, ExCom and Staff</td>
<td>Jeff Littleton</td>
<td>Transparency</td>
<td>Launched first newsletter to chapter presidents last week.</td>
<td>Complete</td>
</tr>
<tr>
<td></td>
<td>Recognize that there are financial barriers for the best and the brightest to participate. We need innovative ways to address this barrier.</td>
<td>DEI Committee (perhaps add in Finance Committee to help)</td>
<td>Adrienne Thomle DEI Chair, Kishor Khankari &amp; Megan Tosh</td>
<td>Diversity</td>
<td>Not going to be complete for a long time. DEI will start the process to address this. Appointed liaisons between Councils to start with. Focus on how we address financial barriers at first. How do we improve participation in TCs?</td>
<td>Just started. Will need long term solutions.</td>
</tr>
<tr>
<td></td>
<td>Provide transparency to membership on the work of Technical Committees and connect grass roots to TC's</td>
<td>TechC, TAC, RAC, StdC - Link grassroots to the technical side.</td>
<td>Ginger Scoggins, Members Council chair and Sarah Maston, Tech Council</td>
<td>Transparency</td>
<td>Ginger to send spreadsheet on progress. Tech Council has started the discussion on the topic.</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Provide training on ASHRAE financial reporting &amp; management process</td>
<td>Finance Committee</td>
<td>Dennis Knight, chair</td>
<td>Transparency</td>
<td>Created MBOs to address this issue on Finance. Don Brandt is working on the training aspect. Michael Cooper of Planning is also working on the process. Not met yet, but a lot planning has been done.</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Develop Products and services directed to different parts of the world in local languages if possible.</td>
<td>Pub/Ed Council</td>
<td>Dunstan Macauley, chair</td>
<td>Participation</td>
<td>Turning these into MBOs in Pub/Ed Council. Dovetails into other initiatives and Strategic Business Development subcommittee.</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Initiate program of locally focused guides/ tools etc. to be developed by regions / chapters in collaboration with TC's</td>
<td>TechC, TAC, RAC, StdC - Link grassroots to the technical side. Publications for implementing tech side to local chapters.</td>
<td>Dunstan Macauley (Pub/Ed chair) and Sarah Maston (Tech Council chair)</td>
<td>Participation</td>
<td>Study underway to take our documents to make them more local. Streamlining may have an impact on this as the Regions/Chapters will be closer to decision making. PAOE-like system on the transfer of knowledge and TC participation. Perhaps a couple of pilot programs on soliciting technical ideas of TC and then ask for volunteers to participate. Part of the problem are the silos within ASHRAE. How do we break down the silos between the technical side and the grassroots.</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Making ASHRAE Truly Diverse.</td>
<td>Develop training programs, webinars, podcasts, and presentations to improve DEI across Society.</td>
<td>Members Council, CTTC (DL program), and YEA</td>
<td>DEI (Adrienne Thomle, chair) who will work with the Councils</td>
<td>Diversity</td>
<td>Working on developing workshops at the annual and winter meeting.</td>
<td>Ongoing</td>
</tr>
<tr>
<td>In incorporate DEI initiatives into ASHRAE to produce, distribute and monitor DEI activities</td>
<td>DEI Committee</td>
<td>Adrienne Thomle, DEI Chair, Kishor Khankari &amp; Megan Tosh</td>
<td>Diversity</td>
<td>Working on creating presentation and materials for chapters.</td>
<td>Ongoing</td>
<td></td>
</tr>
<tr>
<td>Harnessing the Power of our Relationships</td>
<td>Conduct a program of virtual joint chapter meetings focusing on the critical issues of the day between North American ASHRAE Chapters and Chapters outside of North America. Use input from Global HVAC&amp;R Summit.</td>
<td>Members Council</td>
<td>Ginger Scoggins, chair</td>
<td>Transparency</td>
<td>MBO on Members Council. Been assigned to Regional Operations Committee.</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Develop Global HVACR Summit - Istanbul fall of 2022 to identify the 'Critical Issues of the Day' from stakeholders and develop an action plan to address.</td>
<td>Summit Coordinating Committee</td>
<td>Tim Wentz &amp; Hugh Crowther</td>
<td>Critical Issues of the Day</td>
<td>Underway. Develop a BOD training program to ensure they can take advantage of the strategic opportunities.</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Harvesting the Information in the Service of our Members</td>
<td>Develop training programs, webinars, podcasts, roundtables and other material on the critical issues of the day</td>
<td>Tech Council and Pub/Ed Council</td>
<td>Dunstan Macauley (Pub/Ed chair) and Sarah Maston (Tech Council chair)</td>
<td>Critical Issues of the Day</td>
<td>Pub/Ed Council MBO. This may have to be a special project budget to support this effort. Also on MBOs for Tech Council. Will coordinate. More will be done after the Summit.</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Create a program to connect chapter members from around the world</td>
<td>Members Council</td>
<td>Ginger Scoggins, chair</td>
<td>Transparency</td>
<td>MBO on Members Council. Been assigned to Regional Operations Committee.</td>
<td>Ongoing</td>
</tr>
<tr>
<td></td>
<td>Conduct roundtables at Region XIII (Tokyo Fall 2022), Atlanta (winter meeting) and Region VIII (Monterey, Spring 2023) to identify the 'Voice of the Customer'</td>
<td>DRCs &amp; CRC Chair</td>
<td>DRCs</td>
<td>Diversity/Critical Issues of the day</td>
<td>Set up at Region XIII and ready to go. Dennis will be co-moderator. Andres wants to hold a roundtable at Region XIV CRC.</td>
<td>Will be complete August 21.</td>
</tr>
<tr>
<td>Embracing Change by streamlining</td>
<td>Streamline the Society to make it faster, leaner and more agile</td>
<td>All Councils and Committees - Strategic Goals by BOD, ExCom and Planning - tactical action taken by all committees and councils</td>
<td>TBD based upon the outcomes from the BOD ad hocs first, then decide on the path forward.</td>
<td>Diversity</td>
<td>Will be addressed by the BOD in Istanbul for resolution. The path forward will be determined at that time. Town Hall meetings between August 15 and Oct. 13. Other streamlining efforts can be implemented regardless of BOD vote.</td>
<td>We will know the path forward by Oct. 13.</td>
</tr>
<tr>
<td></td>
<td>Expand leadership and financial training offerings at the Regions and Chapters.</td>
<td>Finance Committee and Members Council</td>
<td>Dennis Knight, Finance chair &amp; Ginger Scoggins, Members Council chair</td>
<td>Participation/Diversity</td>
<td>MBO on Members Council and Finance Committee.</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Raise our Profile</td>
<td>ASHRAE Brand Recognition</td>
<td>Kishor Khankari</td>
<td>Participation</td>
<td>Was initiated previously. Presentation to the BOD on August 15 meeting. Have each BOD member to provide 3 ways in which that can increase ASHRAE’s brand. Will focus on low-hanging fruit.</td>
<td>Ongoing. This is a long-term initiative.</td>
<td></td>
</tr>
</tbody>
</table>
MEMORANDUM

DATE: September 23, 2022

TO: Board of Directors
   Standards Committee

FROM: Connor Barbaree

SUBJECT: List of potential standards, guidelines, and addenda to be considered during the August Board of Directors Meeting

Attached are analysis sheets for standards, guidelines, and addenda that may be presented to Standards Committee and the Board for publication approval during the upcoming meeting. The analysis sheets are sent in advance of the meeting to provide information in preparation for voting on withdrawal or publication of proposed documents.

If you have a question about the unresolved comments on a publication draft or the attempts to resolve the comments, please contact me to view an electronic copy of this documentation, at: cbarbaree@ashrae.org, 678-539-1125.

Please note the following important information regarding the analysis sheets:

- Analysis sheets are included only for those publications having unresolved public review commenters and/or negative PC votes.
- PASA require only those publications with unresolved objectors and/or those where legal action has been threatened to come forward to the Board for approval.
- PASA changes approved by ANSI and the ASHRAE Board of Directors allow documents with no unresolved objectors to be processed by staff for publication and reported to Standards Committee and the Board of Directors.
- Due to ANSI requirements, only commenter information for the last full public and any subsequent ISC\(^1\) public reviews on the analysis sheets are provided.
- Information regarding comments reflects on-time comments only.
- In compliance with ANSI requirements, the Project Committee (PC) vote states the vote tallies for yes-votes, no-votes, no-votes without comments, abstentions, and unreturned letter ballots. Votes for Standards Committee do not require this information.

\(^1\) ISCs are “independent substantive changes” to a previous public review draft. In an ISC only the marked-up changes are open for comment.
ANALYSIS SHEET

RECOMMENDATION TO BOARD OF DIRECTORS FOR APPROVAL TO PUBLISH PROPOSED STANDARD/GUIDELINE/ADDENDUM


2. Chair: Jennifer Isenbeck

3. Cognizant TC: 4.3, Ventilation Requirements and Infiltration


5. Comments Received: 2nd Public Review (FULL): 15 comments from 5 commenters

6. Unresolved Comments: 2nd Public Review (FULL): 0 comments from 0 commenters
   TOTAL: 0 comments from 0 commenters

7. PC Approval Vote: 15-1-0-1-3
   (Yes-No-No without comment-Abstain-Ballot not returned)

8. Total # Unresolved Objectors to be Offered Right to Appeal: Two (2) – There are no unresolved comments on the 2nd public review and 1 negative project committee vote on the final vote for publication with unresolved objectors (Eli Howard). There were 2 negative PC votes on the vote for the 2nd publication public review (Gregg Gress and Eli Howard).

9. StdC Vote for Approval: 17-0-1^2 CNV
   (Yes-No-Abstain)

10. Description: The exhaust procedure in Standard 62.1-2022 contains requirements in notes of Table 6-2, Minimum Exhaust Rates. This addendum relocates those requirements to the body of the standard. The performance compliance path is modified to be consistent with the changes to the IAQ Procedure.

11. Summary of Unresolved Comments and Negative PC Votes: There are no unresolved comments on the 2nd public review and 1 negative project committee vote on the final vote for publication with unresolved objectors (Eli Howard). There were 2 negative PC votes on the vote for the 2nd PPR (Gregg Gress and Eli Howard).

   Initially this proposed publication referenced unapproved addenda in 2019. These references are now published and now editorially updated in this addendum to the 2022 edition. This results in a concise defined procedure to resolve the majority of comments. The negative PC vote remains due to a single ASHRAE Std. 154, Ventilation for Commercial Cooking Operations, reference in the addendum in which the PC member suggests numerous references should be included. The committee felt the AHJ would have ultimate authority regarding additional references.

^2 Jennifer Isenbeck abstained because she is on the SSPC.
12. Summary of PC Response
Unresolved Comments and Negative PC Votes:

See comment reports and final publication submittal form.

Eli Howard - ASHRAE Standard 154 is not the defining document for kitchen exhaust systems and therefore should not be referenced unless all applicable documents relating to kitchen exhaust systems are included. Additionally, just referencing ASHRAE Standard 154 and then stating any other applicable standards is prejudice against the other governing documents for kitchen exhaust systems.

Chair Response: Nothing in the standard should be construed to relieve compliance from local building codes. ASHRAE Standard 154 includes references and requirements that are similar to those of model building codes in the United States. Inclusion of local codes as a requirement is perilous since the codes may refer to the standard and thus create a recursive reference. If specific references are not included in ASHRAE Standard 154 that prescribe requirements that should be included in ASHRAE Standard 62.1 these may be added through the continuous maintenance process.

13. Galley Status:
The Chair has approved the galleys.

Addendum x relocates the exhaust requirements from notes in Table 6-2 to the body of the standard.
ANALYSIS SHEET

RECOMMENDATION TO BOARD OF DIRECTORS FOR APPROVAL TO PUBLISH PROPOSED STANDARD/GUIDELINE/ADDENDUM


2. Chair: Mike Moore

3. Cognizant TC: 4.3, Ventilation Requirements and Infiltration


5. Comments Received: 2nd Public Review (FULL): 2 comments from 2 commenters

6. Unresolved Comments: 2nd Public Review (FULL): 1 comment from 1 commenter

7. PC Approval Vote: 19-2-0-5-4 (Yes-No-Abstain-Ballot not returned)

8. Total # Unresolved Objectors to be Offered Right to Appeal: Three (3) - There is 1 unresolved comment from 1 commenter (Larry Fletcher) on the 2nd public review. There are no negative PC votes on the vote for the 2nd publication public review. There are 2 negative votes on the vote for final publication with knowledge of unresolved objectors (David Delaquila and Armin Rudd).

9. StdC Vote for Approval: 18-0-0 CNV (Yes-No-Abstain)

10. Description: Ozone and similar reactive oxygen species are hazardous both directly and through the indoor chemistry they promote. Some air-cleaning systems may produce ozone intentionally or incidentally. By reference to ASHRAE Standard 62.1, Addendum i establishes minimum requirements for ozone emissions of air-cleaning systems that incorporate ultraviolet light or the creation of charged particles, ions, or free radicals.

11. Summary of Unresolved Comments and Negative PC Votes: There is 1 unresolved comment from 1 commenter (Larry Fletcher) on the 2nd public review. There are no negative PC votes on the vote for the 2nd publication public review. There are 2 negative votes on the vote for final publication with knowledge of unresolved objectors (David Delaquila and Armin Rudd).

The PC members casting negative votes expressed concern that the unresolved commenter’s comments were compelling, especially as related to alleged commercialization violations attributed to UL 2998. Further investigation of this matter followed the continuation letter ballot, and this effort determined that the commercialization concerns were unfounded. This information was circulated to the committee during the recirculation ballot through the chair’s response to Armin Rudd, included in the final publication submittal form for reference.
Dave Delaquila: “The commenter made compelling arguments for not moving forward with addendum i. I think it is premature to move forward with the addendum until those issues are resolved.”

Armin Rudd: The committee chair stated, “After hearing conflicting testimony, the committee submitted a requested to Standards Committee to clarify whether referencing 62.1’s requirement for listing and labeling in accordance with UL 2998 would violate the commercialization policy of ANSI/ASHRAE. This question was forwarded by Standards Committee to ASHRAE staff, but no definitive answer was provided.” SSPC 62.2 should wait until it definitively knows the answer.

12. Summary of PC Response
Unresolved Comments and Negative PC Votes:

See comment reports and final publication submittal form.

Negative PC vote see responses below.

Chair’s response – David Delaquila: The commenter claimed that the listing and labeling requirement of UL 2998 violated ANSI commercialization policies because UL 2998 prohibits testing of products in accordance with the standard at all laboratories except for UL. Conversely, another guest commented that Intertek’s lab was actively “listing and labeling in accordance with UL 2998,” indicating that there are multiple laboratories testing to the standard and presumably dismissing the unresolved commenter’s commercialization concern. After hearing conflicting testimony, the committee submitted a requested to Standards Committee to clarify whether referencing 62.1’s requirement for listing and labeling in accordance with UL 2998 would violate the commercialization policy of ANSI/ASHRAE. This question was forwarded by Standards Committee to ASHRAE staff, but no definitive answer was provided. Committee members who believe that 62.2 should do more research may choose to vote NO on the motion to recommend approval of Addendum I for publication with knowledge of unresolved objectors. Committee members who believe that 62.2 has fulfilled its obligation by referencing an ANSI/ASHRAE standard that presumably complies with ANSI/ASHRAE commercialization protocols may choose to vote YES on the motion. Please note that if the 62.2 motion is successful, the unresolved commenter will still have the opportunity to present his case to Standards Committee prior to publication. Standards Committee can choose to reject the 62.2 motion if they find the unresolved commenter’s commercialization concerns to be persuasive.

Chair’s response - Armin Rudd: After further investigation, members of 62.2 were able to determine that there are other laboratories besides UL that are listing and labeling products in accordance with UL 2998. Please see Intertek’s Zero Ozone Program FAQ document which states, “All verified products are listed on Intertek Sustainability’s public database of sustainable products.” Based on this information, there is no known violation of ANSI’s or ASHRAE’s commercialization policy.

13. Galley Status:

The Chair has approved the galleys.
Addendum i establishes minimum requirements for ozone emissions of air-cleaning systems that incorporate ultraviolet light or the creation of charged particles, ions, or free radicals.
ANALYSIS SHEET

RECOMMENDATION TO BOARD OF DIRECTORS FOR APPROVAL TO PUBLISH
PROPOSED STANDARD/GUIDELINE/ADDENDUM

1. Designation: BSR/ASHRAE Addendum j to ANSI/ASHRAE Standard 62.2-2022,
Ventilation and Acceptable Indoor Air Quality in Residential
Buildings

2. Chair: Mike Moore

3. Cognizant TC: 4.3, Ventilation Requirements and Infiltration


5. Comments Received: 1st Public Review (FULL): 53 comments from 36 commenters

6. Unresolved Comments: 1st Public Review (FULL): 34 comments from 19 commenters
TOTAL: 34 comments from 19 commenters

7. PC Approval Vote: 19-3-2-2-4
(Yes-No-Abstain-Ballot not returned)

8. Total # Unresolved Objectors to be Offered Right to Appeal: Twenty-one (21) - There are 34 unresolved comments from 19 commenters (listed below). There are 4 negative PC votes on the vote for the 1st publication public review (David Noyes, David Delaquila, Gregg Gress and Darren Meyers). Darren Meyers did not provide a reason for his negative vote. There are 5 negative votes on the vote for final publication with knowledge of unresolved objectors (Shannon Corcoran, David Delaquila, Mary Koban, Gregg Gress, and Ted Williams). Shannon Corcoran and Mary Koban did not provide a reason for their negative votes.

Unresolved commenters/comments:
• BRIAN STREISEL - 0002/001, 002, 003, 005
• CHARLIE OLDS - 0003/001
• KERRY LEASON - 0007/001
• WILLIAM RICHARDSON – 0008/001
• DON DENTON – 0010/001, 002, 003, 004, 005, 006, 007, 008, 009
• WILLIAM MASSEY – 0011/001
• MARY KOBAN – 0012/001, 002
• RON SMITH – 0013/001
• DAVID DELAQUILA – 0014/001, 002, 003, 004
• BRUCE DRESNER – 0022/001
• ERIC ADAIR – 0023/001
• RANDALL COOPER – 0024/001
• BRIAN VANDRAK – 0028/001
• COLIN MCCORMICK – 0029/001
• BRUCE SWIECICKI – 0030/001
• JAMES RANFONE – 0031/001
• TED WILLIAMS – 0033/001
• RENEE LANI – 0034/001
• PETER BAKER – 0035/001

9. StdC Vote for Approval: 18-0-0 CNV (Yes-No-Abstain)
10. Description: Addendum j prohibits the installation of unvented combustion space heaters within dwelling units. Unacceptable concentrations of products of combustion can be generated at the ventilation rates allowed in this standard when combustion appliances are unvented. This determination was made by the committee after several years of study and debate on this topic. Technical references that were considered by the committee in the process of arriving at this determination include, but are not limited to:

- ANSI Standard Z21.11.2 “Gas-Fired Room Heaters, Volume II, Unvented Room Heaters” 2019
- ASHRAE Position Document (PD) on Unvented Combustion Devices and Indoor Air Quality.
- ASHRAE Position Document on Indoor Air Quality,

11. Summary of Unresolved Comments and Negative PC Votes:

There are 34 unresolved comments from 19 commenters (listed above). There are 4 negative PC votes on the vote for the 1st publication public review (David Noyes, David Delaquila, Gregg Gress and Darren Meyers). Darren Meyers did not provide a reason for his negative vote. There are 5 negative votes on the vote for final publication with knowledge of unresolved objectors (Shannon Corcoran, David Delaquila, Mary Koban, Gregg Gress, and Ted Williams). Shannon Corcoran and Mary Koban did not provide a reason for their negative votes.

Overall, the comments could be characterized as addressing five general themes: process violations, the committee’s citation of a
technical paper that was not published at the time Addendum J was drafted, adequacy of safety standard ANSI Z21.11.2 as an alternative to Addendum J, technical arguments citing references that do not support a prohibition of unvented combustion space heaters, and alternative proposals for resolution. To resolve the comment about the technical paper not being available, the committee waited until the paper was published in the ASHRAE Journal, provided notification to the commenters, and invited them to another comment session at the following meeting. Two committee workgroups were formed to explore alternative solutions to Addendum J; both were chaired by negative commenters, and both were dissolved by the chairs after the workgroup failed to reach consensus on an acceptable alternative. The committee considered each comment over multiple meetings, encouraged and sought resolution in accordance with PASA, and provided responses to each of the commenters. Unfortunately, these efforts were not able to resolve many of the negative commenters, but this failure to reach compromise should not be misconstrued as a failure to seek resolution.

12. Summary of PC Response
   Unresolved Comments and Negative PC Votes:
   See comment reports and final publication submittal form.

13. Galley Status:
   The Chair has approved the galleys.
**ANALYSIS SHEET**

**RECOMMENDATION TO BOARD OF DIRECTORS FOR APPROVAL TO PUBLISH PROPOSED STANDARD/GUIDELINE/ADDENDUM**

1. **Designation:** BSR/ASHRAE Addendum m to ANSI/ASHRAE Standard 62.2-2022, *Ventilation and Acceptable Indoor Air Quality in Residential Buildings*

2. **Chair:** Mike Moore

3. **Cognizant TC:** 4.3, *Ventilation Requirements and Infiltration*


5. **Comments Received:** 1st Public Review (FULL): 6 comments from 2 commenters

6. **Unresolved Comments:** 1st Public Review (FULL): 5 comments from 2 commenters  
   **TOTAL:** 5 comments from 2 commenters

7. **PC Approval Vote:** 21-4-0-2-3  
   (Yes-No-No without comment-Abstain-Ballot not returned)

8. **Total # Unresolved Objectors to be Offered Right to Appeal:** Four (4) - There are 5 unresolved comments from 2 commenters (David Delaquila and Armin Rudd). There are 2 negative PC votes on the vote for the 1st publication public review (David Delaquila and Armin Rudd). There are 4 negative votes on the vote for final publication with knowledge of unresolved objectors (Shannon Corcoran, David Delaquila, Mary Koban, and Armin Rudd).

9. **StdC Vote for Approval:** 18-0-0 CNV  
   (Yes-No-Abstain)

10. **Description:** Addendum m increases the designated minimum efficiency of certain filters from MERV 6 to MERV 11, with comparable increases to minimum particle size efficiencies established using AHRI Standard 680. This change improves indoor air quality by reducing the concentration of particulate matter, specifically by establishing a minimum performance to address particulates with a diameter of 0-2.5 μm.

11. **Summary of Unresolved Comments and Negative PC Votes:** There are 5 unresolved comments from 2 commenters (David Delaquila and Armin Rudd). There are 2 negative PC votes on the vote for the 1st publication public review (David Delaquila and Armin Rudd). There are 4 negative votes on the vote for final publication with knowledge of unresolved objectors (Shannon Corcoran, David Delaquila, Mary Koban, and Armin Rudd).

   The themes communicated by the unresolved commenters or negative PC voters included: moving to MERV 11 was not justified using quantitative rationale (it’s simply an incremental improvement), requiring MERV 11 would cause systems to fall out of compliance if not provided, and that some systems may not be able to accommodate the incremental pressure drop associated with moving from MERV 6 to MERV 11. Responses to these concerns...
were provided and are summarized in the REASONS FOR NEGATIVE VOTES section of the final publication submittal form vote record.

Shannon Corcoran: Although I agree with the premise of the addendum, I think the mandatory MERV 11 needs to be reconsidered. I don’t think the proposal is ready to move forward.

Dave Delaquila: “Retaining the current MERV 6 filter requirement allows for a home owner to install a higher MERV filter while remaining in compliance with the standard. Moving to MERV 11 could put the system out of compliance if the home owner unwittingly installed a lower MERV filter. In the end, the incremental increase to MERV 11 will not have the effect that the Committee desires.”

Armin Rudd: The committee still cannot come up with a quantifiable rationale for justifying MERV 11 as the necessary minimum air filtration level for acceptable indoor air quality in residences. The committee has no quantifiable PM2.5 target for acceptable indoor air quality. This was admitted by several committee members in the discussions. The committee continues to simply rely on the premise that MERV 11 is expected to be better than MERV 6 by some unknown measure. However, the scope of ASHRAE 62.2 is to provide acceptable indoor air quality, not better or best, or near zero risk. The optional filtration credit that already exists in ASHRAE Standard 62.2 section 4.1.4 is appropriate for those who want to optionally do better with air filtration and be rewarded with a trade-off in lower ventilation airflow rate, which helps with humidity control in humid climates.

Three references were provided to me by the committee and I reviewed them with the committee. They were provided to me as the best known references intended to support MERV 11 filtration as a minimum. None of them established a basis for MERV 11 as a minimum filtration level for acceptable indoor air quality. The most relevant of the three references, Dan Zhao, Parham Azimi, and Brent Stephens (2015), only addressed effects of indoor fine particulate matter (PM2.5) that comes from outdoors, while addendum m addresses only indoor recirculation air filtration, not source control via filtration of incoming outdoor air. Further, that reference does not specifically address MERV 11 filters and concludes that, at best, even including HEPA filters compared to MERV 5 filters, the increase in life expectancy was about TWO WEEKS.

None of this supports an increase in the minimum filtration requirement imposed by ASHRAE Standard 62.2 addendum m. There is no need for addendum m since there is a lack of health-based evidence to support it and Standard 62.2 already has a good mechanism for handling improved air filtration.

Mary Koban: AHRI notes that MERV filtration may unduly limit mini-split applications and/or limit existing or new building designs. AHRI would prefer that MERV filtration was placed in a non-
mandatory appendix, similar to the action taken by the IMC in the most recent code cycle.

12. Summary of PC Response

Unresolved Comments and Negative PC Votes:

See comment reports and final publication submittal form.

Negative PC vote see responses below.

Chair’s response – Shannon Corcoran: The committee elected to pursue MERV 11 as a measure to reduce indoor air particle concentrations after debating and considering multiple perspectives and options. Because no specific reason has been provided by the commenter that the addendum should be reconsidered, the committee’s action should carry without further delay.

Chair’s response – David Delaquila: It is understood that compliance with the standard is determined by conformance with its requirements. The committee expects the improvement in filter performance to result in lower concentrations of particles that have been shown to be harmful to health.

Chair’s response – Armin Rudd: In its response to comments on Addendum M, the committee stated: “The standard defines acceptable indoor air quality as follows: “air toward which a substantial majority of occupants express no dissatisfaction with respect to odor and sensory irritation and in which there are not likely to be contaminants at concentrations that are known to pose a health risk.” There is no minimum concentration of PM2.5 below which no health risks exist. Modifying the standard to improve the designed minimum filter efficiency is therefore aligned with the purpose of the standard to provide acceptable indoor air quality.” While Addendum M will require an improvement from MERV 6 to MERV 11 in some cases, users may still take credit for this improvement via compliance with Section 4.1.4.

The references provided by the committee are to articles that address expected benefits of improved filtration; they were not meant to establish that MERV 11 is the minimum filtration level for acceptable indoor air quality or to quantify the expected benefit for replacing the current MERV 6 requirement with a MERV 11 requirement. The Zhao et al. reference’s estimates for the benefits of improved filtration could be expected to be conservative for multiple reasons. For example, the study does not address PM2.5 originating indoors nor resuspension of particles once indoors, despite noting that filtration in HVAC systems, “is increasingly being used to reduce concentrations of particulate matter of both indoor and outdoor origin inside residences.” Because operation of an air handler will address particles originating indoors, particles originating outdoors, and particles that are resuspended once indoors, we can expect the reference’s estimates for economic and health benefits to be conservative with respect to this addendum. Further, the Zhao study assumed a MERV 5 for supply ventilation systems; in some cases, the proposed MERV 11 filtration requirement of this addendum would also apply to supply ventilation systems, thereby further improving the estimated benefits of the Zhao study.
Chair’s response – Mary Koban: The committee considered this argument, and testimony was provided that such concerns could be mitigated either by proper design or by selection of MERV 11 filters with low pressure drop.

13. Galley Status: The Chair has approved the galleys.

Addendum m increases the designated minimum efficiency of certain filters from MERV 6 to MERV 11, with comparable increases to minimum particle size efficiencies established using AHRI Standard 680.
### Analysis Sheet

**Recommendation to Board of Directors for Approval to Publish Proposed Standard/Guideline/Addendum**

1. **Designation:** BSR/ASHRAE Addendum h ANSI/ASHRAE Standard 90.4-2019, *Energy Standard for Data Centers*

2. **Chair:** Marcus Hassen

3. **Cognizant TC:** TC 9.9

4. **Public Review Dates:** 1st Public Review (FULL): July 15, 202, to August 14, 2022

5. **Comments Received:** 1st Public Review (FULL): 1 comments from 1 commenters

6. **Unresolved Comments:** 0 unresolved comments

7. **PC Approval Vote:**
   - Public Review Approval: 17-1-0-0-4
   - Publication Approval: 15-0-0-0-7
   (Yes-No-No without comment-Abstain-Ballot not returned)

8. **Total # Unresolved Objectors:** 1 unresolved objector (Rosenstock)

9. **StdC Vote for Approval:** 18-0-0 CNV (Yes-No-Abstain)

10. **Description:** Addendum h makes changes to the UPS requirements due to recent changes in UPS efficiency. Likewise, due to changes in transformer efficiency, Addendum h also adjusts the minimum efficiency (maximum loss) requirements for the ITE Distribution Segment of the ELC to correspond to the loading levels more common to data centers (80% for non-redundant, and 40%-45% for redundant systems). The result is increased ITE Distribution Segment efficiency requirements at load levels above and below the federally prescribed 35% level as well as adherence to the maximum loss values prescribed in Electrical Codes for Feeders and Branch Circuit Conductors. To parallel the MLC, the ELC has now been adjusted to require compliance at all four load levels. The ELC Maximum Loss (Minimum Efficiency) tables have been revised to reflect these changes. Lastly, Addendum h requires adherence to federal transformer regulations and Electrical Code dictums and restricts the ELC calculation to the UPS and Distribution segments.

11. **Summary of Unresolved Comments and Negative PC Votes:** Rosenstock expressed concerns that information was good to have but belongs in an informative note. As of date, Rosenstock has not indicated he would be considered resolved.

12. **Summary of PC Response Unresolved Comments and Negative PC Votes:** The PC reached a consensus on a response to the negative voter and agreed a full review of the standard should be completed after this publication cycle and adoption of this addendum. Performing a comprehensive review would allow for the informative changes to take place at once.
13. Galley Status: The Chair has approved the galleys.

*Addendum h – ELC revisions*
ANALYSIS SHEET

RECOMMENDATION TO BOARD OF DIRECTORS FOR APPROVAL TO PUBLISH PROPOSED STANDARD/GUIDELINE/ADDENDUM

1. Designation: BSR/ASHRAE/ICC/USGBC/IES Addendum k

2. Chair: Katherine Hammack

3. Cognizant TC: TC 2.8


5. Comments Received: 1st Public Review (FULL): 8 comments from 2 commenters

6. Unresolved Comments: 0 unresolved comments

7. PC Approval Vote: Public Review Approval: 23-3-0-2-0
   Publication Approval: 24-2-0-2-0
   (Yes-No-No without comment-Abstain-Ballot not returned)

8. Total # Unresolved Objectors: 5 total. There are 4 negative Project Committee voters (McMillen, McLaughlin, Schoen, and Winters) and 2 commenters (DeAngelis and McNulty). McNulty is considered resolved.

9. StdC Vote for Approval: 17-0-1^3 CNV (Yes-No-Abstain)

10. Description: Addendum k to 189.1-2020 to Section 8. The new sections require a centralized control system to adjust ventilation rates in the event of an emergency. Examples include nearby wildfires, chemical spills, and a pandemic. The control system will have an automatic timer-based reset not exceeding 7 days and include the following control actions: ventilation shutdown, economizer shutdown, and ventilation increase. Buildings meeting certain exceptions are also included.

11. Summary of Unresolved Comments and Negative PC Votes:
    Schoen expressed the greatest number of concerns as negative voter with a separate document used to address these concerns. In the PR ballot, Schoen offered a separate document to address his concerns. In general, the language did not offer enough specifics for handling a ventilation emergency. Some of these include the following:
    (1) Guidance on ventilation rates to increase or decrease given the emergency
    (2) Enforcing this in new systems in existing buildings or additions.
    (3) Changes in thermal comfort and pressure changes when dampers and ventilation change
    (4) Referencing ASHRAE 62.1, Section 5.3 to coordinate with its Ventilation System Controls

^3 Gwelen Palagia abstained because he is a recent past member of the SSPC.
In the publication with knowledge of unresolved objectors ballot, Schoen expressed concerns where he says according to procedure, responses do not address his reasons. Specifically, he states the following were not addressed in his reply:

1. The additions to buildings and larger system replacements
2. A system’s “off” status and tying it to the ventilation rates with listed with occupancies listed in ASHRAE 62.1
3. Use terminology and requirements in 62.1
4. State the purpose of the section: outdoor ventilation reduction or outdoor ventilation increase
5. Address thermal comfort limitations and critical pressure relationships
6. Control systems individually and not with one building-wide switch.

These concerns were addressed. Responses to Schoen’s concerns were developed and presented to the SSPC as well as the other negative voter’s reasons. The responses address the concerns specifically and in their entirety.

McMillen’s reason addresses concerns around specific scenarios including proper ventilation for certain building spaces (e.g., toilet or kitchen exhaust, and janitorial closets). He suggests including reducing or eliminate ventilation to occupied spaces and exempt others. Winters points to the same concerns Schoen addressed earlier.

Invitations were sent to DeAngelis and McNulty to include them in the committee discussion from comments. DeAngelis did not mark as resolved after receiving the comment response. McNulty marked as resolved for one of the three comments and the other 2 are supportive and accepted by the committee.

12. Summary of PC Response

Unresolved Comments and Negative PC Votes:

The PC voted on the response to commenters and reviewed the response to negative voters. In general, this addendum offers a minimum capability with flexibility of the building owner/operator to adjust the settings as needed given the emergency. Many of the objectors would like to see more specifics to the emergency protocol. DeAngelis did not mark as resolved after receiving the comment response. McNulty marked as resolved for one of the three comments and the other 2 are supportive and accepted by the committee. As unresolved objectors, McMillen, Schoen, Winters, and DeAngelis should be offered the right to appeal.

13. Galley Status:

The Chair has approved the galleys.

Addendum k – Emergency Ventilation Rates
Section 8.3.1
1. Designation:  
BSR/ASHRAE/ICC/USGBC/IES Addendum m  

2. Chair:  
Katherine Hammack

3. Cognizant TC:  
TC 2.8

4. Public Review Dates:  
1st Public Review (FULL): January 21, 2022, to March 07, 2022

5. Comments Received:  
1st Public Review (FULL): 5 comments from 4 commenters

6. Unresolved Comments:  
0 unresolved comments

7. PC Approval Vote:  
Public Review Approval: 19-6-0-3-0
Publication Approval: 25-0-1-2-3
(Yes-No-No without comment-Abstain-Ballot not returned)

8. Total # Unresolved Objectors:  
2 total.

9. StdC Vote for Approval:  
17-0-14 CNV (Yes-No-Abstain)

10. Description:  
Addendum m to 189.1-2020 to Section 7.5. This addendum revises Section 7.5, the Energy Performance Option, to reflect updates to source values that have occurred since the publication of 189.1-2020. A new table has been introduced to create alignment between source energy and emissions values used in the standard compared to the latest data from EIA, EPA, NETL, and NREL. This addendum also modifies the method for evaluating energy performance through a new definition/metric called the Zero Carbon Emissions Factor (zCEF), which is based on the ratio of greenhouse gas emissions in the proposed building versus the baseline building. Lastly, Informative Appendix J was replaced and now includes emission rates based on GWP20 and GWP 100.

11. Summary of Unresolved Comments and Negative PC Votes:  
All commenters marked themselves as resolved or did not respond to the response. There are no unresolved commenters. The issues brought up by all commenters were addressed with the informative revisions made by the committee.

Bradley and Subasic are the only negative voters that have not indicated they are resolved by the changes, although the changes suggested (including GWP100) were added. In the publication with knowledge of unresolved objectors, Bradley voted against but did not

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4 Gwelen Palagia abstained because he is a recent past member of the SSPC.
give a reason. Bradley and Subasic should still be offered the right to appeal given the original negative vote in the public review ballot.

12. Summary of PC Response
Unresolved Comments and Negative PC Votes:
The PC voted on the response to commenters, the informative changes in text and the new informative Appendix J. The changes included both the 20 year and 100 year GWP information which alleviated the concerns from the negative voters and commenters.

13. Galley Status:
The Chair has approved the galleys.

Addendum m – Emissions and SECFs Update, new Informative Appendix J – GWP 20 and GWP 100
### ANALYSIS SHEET

#### RECOMMENDATION TO BOARD OF DIRECTORS FOR APPROVAL TO PUBLISH PROPOSED STANDARD/GUIDELINE/ADDENDUM

1. **Designation:** BSR/ASHRAE/ICC/USGBC/IES Addendum y

2. **Chair:** Katherine Hammack

3. **Cognizant TC:** TC 2.8

4. **Public Review Dates:**
   - 1st Public Review (FULL): July 08, 2022, to August 07, 2022

5. **Comments Received:**
   - 1st Public Review (FULL): 0 comments from 0 commenters

6. **Unresolved Comments:**
   - 0 unresolved comments

7. **PC Approval Vote:**
   - Public Review Approval: 24-1-0-2-1
   - Publication Approval: 24-0-0-2-5
   - (Yes-No-No without comment-Abstain-Ballot not returned)

8. **Total # Unresolved Objectors:**
   - 1 negative voter (Cudahy)

9. **StdC Vote for Approval:**
   - 18-0-0 CNV
   - (Yes-No-Abstain)

10. **Description:**
    - Addendum y to 189.1-2020. This addendum adds language to section 8.3.1.7 to add a prohibition on vaping and requires signage for any designated smoking areas.

11. **Summary of Unresolved Comments and Negative PC Votes:**
    - Cudahy expressed a concern on the enforceability of this addendum as to whether or not the signage alone is what is required to enforce a prohibition on smoking and vaping. Cudahy also offered a proposed solution.

12. **Summary of PC Response Unresolved Comments and Negative PC Votes:**
    - A response was issued by the PC to Cudahy explaining the signage required is enforceable by the AHJ and the prohibition of smoking is enforceable by the building owner. Cudahy has not indicated he is resolved. In the publication ballot, Cudahy voted to abstain. Cudahy should be offered the right to appeal.

13. **Galley Status:**
    - The Chair has approved the galleys.

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**Addendum y – Prohibition of Smoking and Vaping**
ANALYSIS SHEET

RECOMMENDATION TO BOARD OF DIRECTORS FOR APPROVAL TO PUBLISH PROPOSED STANDARD/GUIDELINE/ADDENDUM


2. Chair: H. Jay Enck

3. Cognizant TC: TC 7.9, Building Commissioning


5. Comments Received: 1st Public Review: 5 comments from 4 commenters

6. Unresolved Comments: 1st Public Review: 2 comments from 1 commenter
   TOTAL: 2 comments from 1 commenter

7. PC Approval Vote: 19-0-0-0-1
   (Yes-No-No without comment-Abstain-Ballot not returned)

8. Total # Unresolved Objectors to be Offered Right to Appeal: 1 – there is 1 unresolved first public review commenter, Luis Chinchilla (lchinchilla@opiacr.com).

9. StdC Vote for Approval: 16-0-2\(^{5}\) CNV
   (Yes-No-Abstain)

10. Description: This standard establishes the minimum requirements for commissioning an existing building and allows the Owner to define the specific scope of work and project budget.

11. Summary of Unresolved Comments and Negative PC Votes:

   There are 2 unresolved comments from 1 commenter (Luis Chinchilla).

   The first comment stated that since the draft standard foreword did not include a reference to ANSI/NEBB S120, Technical Retro-Commissioning of Existing Buildings, the draft ASHRAE standard should be withdrawn until “evidence” can be provided “that the adequate verification of existing proprietary concepts within a published ANSI standard was conducted and all conflicts were identified and addressed on the published standard.”

   The second comment stated that the draft ASHRAE standard is similar in nature and intent to ANSI/NEBB S120 and requested “evidence that the adequate review of an existing standard was conducted and how this new standard is different in nature and intent in order to offer the technical community a unique and distinctive product that does not emulate an approved ANSI standard.”

   The SSPC 300 committee responded to the commenter that a review of NEBB S120 was conducted in accordance with ANSI criteria to identify possible conflicts in terms or duplication of requirements with the draft ASHRAE standard. The committee provided an

\(^{5}\) Gerald Kettler and Tom Cappellin abstained because they are members of the SSPC.
explanation of their justification for development of the drafts ASHRAE standard and how it differs from the published NEBB standard.

The commenter replied that he was not satisfied with the committee’s response as “no background was indicated for the rejection,” and stated an intention to appeal the publication of the standard.

Refer to attached comment reports.

12. Summary of PC Response
Unresolved Comments and Negative PC Votes:

13. Galley Status: The Chair has not approved the galleys.