



Shaping Tomorrow's
Built Environment Today

MINUTES (DRAFT)

**Refrigeration Committee Technology Committee
for
Comfort, Process, and Cold-Chain
(REF-CPCC)
Annual Meeting,
Wednesday June 24th, 2020
Web Meeting**

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

MEMBERS PRESENT:

Rajan Rajendran, *Chair*
Yunho Hwang, *Vice-Chair*
Walid Chakroun
Didier Coulomb – joined after minutes vote
Martin Dieryckx
Ayman Eltalouny
Charles Hon
Dustin Lilya
Carlos Alberto Mitroga
William Walter
Sarah Maston, *BOD Ex-O*

GUESTS:

Nannette Lockwood – GAC liaison to REF-CPCC
Wade Conlon – incoming *BOD Ex-O*
Steve Kujak – incoming member
Brian Fricke – TC 10.7
Jim Caylor -TC 10.1 & 10.3
Kashif Nawaz – TC 8.4 Res. Subc. Chair
Harshal Surange – incoming member
Georgi Kazachki - Guest

MEMBERS NOT PRESENT:

Tony Welter
Stephen Gill – WRD duties
Malcolm Knight, CO

ASHRAE STAFF:

Mike Vaughn, MORTS

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Separate File

ATTACHMENT D - Board ExO Presentation on the Society Activities

MOTIONS

No.	Motion	Page
1	Meeting agenda be modified to include a discussion on the TC 1.6 Terminology effort titled <i>Harmonizing Technical Terminology to Create Understanding</i> Motion Passed: 7-0-1-4 ¹ (12) CNV AE/YH – See Attachment B for additional information.	1
2	2020 REF-CPCC Committee minutes from the 2020 spring meeting be approved. Motion Passed 7-0-1-4 ² (12) CNV DL/AE	1
3	The Refrigeration Technology Committee for – Comfort – Process and Cold-Chain hereby recommends that ASHRAE officially recognize and promote annually June 26th as World Refrigeration Day to serve as a means of raising awareness and understanding of the important contribution that refrigeration, air conditioning, and heat pumps make globally across many aspects of modern life and society. Fiscal impact: No additional impact Motion Passed 9-0-1-2 ³ (12) CNV CH/WC	1
4	Revised ASHRAE Position Document titled <i>ASHRAE Position Document on Refrigerants and Their Responsible Use</i> – be passed on to Technology Council for consideration after the text “Refrigeration & Air-Conditioning” is replaced throughout the document with the text “HVAC&R” – Motion Passed 9-0-1-2 ⁴ (12) CNV CH/DL	5
5	Motion to adjourn meeting - Motion Passed 9-0-1-2 ⁵ (12) CNV RR/YH	6

¹ Coulomb, Gill, Welter, Mitroga absent for agenda addition vote

² Coulomb, Gill, Welter, Mitroga absent for minutes vote

³ Gill, Welter, absent for World Refrigeration Day vote

⁴ Gill and Welter absent for vote on Refrigerants and their Responsible use Position Document revision

⁵ Gill and Welter absent for vote to Adjourn

NEW ACTION ITEMS – Annual 2020 – Meeting

No.	Responsibility	Action Item	Status/ Page
1	Staff	Include spring 2020 Subcommittee Meeting reports or summary notes in 2020 Annual Meeting Minutes.	Complete / 2
2	Staff	Staff send a list of all TCs related to HVAC to HVAC Subc. members. <u>List of TCs related to HVAC</u> : 4.3, 5.1, 5.2, 5.3, 5.4, 5.5, 6.1, 6.2, 6.3, 6.5, 6.8, 6.9, 8.3, 8.7, 8.9, 8.10, and 8.11	Complete /2
3	Ayman	Award Subc. meet between now and Oct. to combine the Milt Garland and Comfort Cooling award and then evaluate the application from the Hong Kong Chapter. Also meet in the fall to select a SY 19-20 recipient for the George Briley ASHRAE Journal Article Award	New / 2
4	Nawaz	Kashif Nawaz has volunteered to chair the REF-CPCC Research Subc. in place of Chair Yunho. TC 6.8, 8.4, and 8.6 have also agreed to work with us. This group of TCs has already brainstormed 15 research topics to explore further that they will share with us.	New / 2
5	Dustin	Cold-Chain Subc. proposes to develop program topic and guidelines or research on maintaining cold-chain in 1st 6 hours of outage event.	New / 2
6	Staff	Include report from Bi-Annual Ref. Tech Report Subc. in meeting minutes	Complete /3
7	Hwang	Identify and name new Alternate #1 to MTG.RAC to replace Walid and back-up Carlos	New / 6
8	All	Look at revised position document Refrigerants and their Responsible Use to make sure heat pumps reflected properly in document – HVAC&R replaces Refrigeration & Air Conditioning	Complete / 6
9	All	Recast Ammonia position document as a White Paper – MBO #2 – Translate to other languages besides English. Very important in developing countries. Incoming member Harshal Surange volunteered to help with translation and overall effort.	New /6
10	Hwang	Identify a REF-CPCC member (Hon?) to serve as a liaison to GAC and coordinate with our new GAC liaison Nanette Lockwood.	New / 7
11	Hwang	Identify and name a new Subc. Chair for the HVAC Subc. to replace Walid. – Steve Kujak new HVAC Subc. Chair	Complete / 7

ACTION ITEMS – Spring 2020 – Meeting

No.	Responsibility	Action Item	Status
1	(All Sub. Chairs and Staff)	<p>Select meeting start times, meeting duration, and days to poll for a subcommittee web meeting in April or May for each of the eight REF-CPCC Subcommittees and notify Mike Vaughn so he can generate the meeting polls and set-up the web meeting in order to be able to report at REF-CPCC Virtual Annual meeting</p> <p>4/21/20 – HVAC Subc. meeting 5/1/20 – Awards Subc. meeting 5/7/20 – Research Subc. meeting 5/13/20 - Research Subc. meeting 5/29/20 – Awards Subc. meeting 6/1/20 – Cold-Chain Subc. meeting 6/11/20 – Position Doc. Subc. meeting 6/16/20 - Bi-Annual Report Subc. meeting – 7 members – purpose – scope and outline developed – need volunteers from outside USA. 6/22/20 – Position Document Subc. meeting No Program Subc. meeting was held due to other duties of chair regarding WRD planning.</p>	Complete
2	Gill	Send two Program Subcommittee Objectives for this year to staff for Ref-CPCC MBOs spreadsheet	On-going
3	Nawaz	Explore with Research Subc. the following focus areas for possible REF-CPCC research projects: Health & Wellness, Food Safety, Loss, and Waste	On-going
4	Maston	<p>Find out additional information on why the Comfort Cooling Award was cancelled by Members Council and the Board in Orlando.</p> <p><u>Answer:</u> 5 Consecutive years without a nomination.</p>	Complete
5	Ayman/Staff	<p>Investigate why Donald A. Siller Refrigeration Award is administered by Chapter Technology Transfer Committee (CTTC) and not REF-CPCC.</p> <p><u>Answer:</u> This award recognizes exceptional performance by a <u>Chapter Refrigeration Chair</u> for planning activities and providing technology transfer about refrigeration to chapters.</p>	Complete
6	Maston/Staff	<p>Check to see if Rules of the Board could be modified to allow most recent Past Chair to be a non-voting consultant position on SY 20-21 roster or if Society budget constraints will not allow for this change now. <u>Answer:</u> Budget constraints prevent this right now.</p>	Complete

7	Staff	Add to agenda for next REF-CPCC meeting (Virtual Annual) a discussion on how to formalize permanent representatives on REF-CPCC for International bodies. <u>Answer:</u> Budget constraints prevent this right now.	Complete
8	Staff	Set-up web meeting for the 1 st week May for Rajan, Yunho, Martin, Didier & Sarah to discuss Organizational representatives on REF-CPCC. Answer: same as AI #7	Complete
9	All Members	Help to find speakers for World Refrigeration Day (WRD) webinar if possible & help promote webinar. 90-minute webinar with 5-7 speakers. Ayman heading webinar Subc. so, pass-on possible speaker names to him. https://www.ashrae.org/about/news/2020/ashrae-supports-world-refrigeration-day-2020	Complete
10	Staff	Add Bill Walter and Adan Ayub to R in ASHRAE Subc. and share R-ASHRAE webpage link with R in ASHRAE Subc. Link: https://www.ashrae.org/technical-resources/refrigeration	Complete
11	Staff	Double check subcommittee rosters to make sure they have been updated to include all new volunteers from Orlando meeting	Complete
12	Staff	Add latest TC Scopes document to REF-CPCC Basecamp	Complete
13	Gill/Staff	Send e-mail request to full REF-CPCC roster and meeting attendees asking for program ideas for 2021 Winter meeting	Complete
14	Chair/Gill/Ayman/IIAR rep.	Form small working group to implement recommendation to add Ammonia to Refrigerants and Responsible Use Position Document. Doug Scott volunteered help find IIAR Rep. May 2020 Target end date for this effort.	Complete
15	Gill/ Staff	Send information on Real Zero Refrigerant Training – Free online training course – open to all - send to all.	Complete
16	Hon	Work with the Government Affairs Committee Chair to establish Liaisons between REF-CPCC and GAC. Nanette Lockwood is our new GAC liaison. We now need to identify a liaison from REF-CPCC to GAC.	Complete

CARRYOVER ACTION ITEMS – Winter 2020 – Meeting

No.	Responsibility	Action Item	Status
2	Chair/Staff	Need better communication method to Regions. Invite all seven current Regional Refrigeration Vice Chairs (RVCs) to next REF-CPCC web meeting.	On-going
4	Chair/Gill/Staff	Investigate if REF-CPCC leadership and Program Subc. can help identify Distinguished Lecturer (DL) topics & speakers and then take up with CTTC for approval. https://www.ashrae.org/communities/chapters/distinguished-lecturers	On-going
6	Ayman/Staff	Re-educate Society on new scope for REF-CPCC with help from ASHRAE Marketing and R in ASHRAE webpage.	On-going
8	R in ASHRAE Subc.	R in ASHRAE subc. create regular communication document targeted to RVCs. Also, develop training session material for RVCs at CRCs – Invite to attend REF-CPCC meetings too.	On-going

LIST OF ACRONYMS

AI	Action Item	MORTS	Manager of Research & Technical Services
ASHRAE	American Society of Heating, Refrigerating and Air-conditioning Engineers	MOU	Memorandum of Understanding
BOD	Board of Directors	MTG	Multidisciplinary Task Group
CNV	Chair Not Voting	OPS	TechC Operations Subcommittee
CTTC	Chapter Technology Transfer Committee	PAOE	Presidential Award of Excellence
DRSC	TechC Document Review Subcommittee	PD	Position Document
Ex-O	Ex-Officio	RatRU	Refrigerants and their Responsible Use
GCCA	Global Cold Chain Alliance	REF-CPCC	Refrigeration Technology Committee for Comfort, Process, and Cold-Chain
IIR	International Institute of Refrigeration	SY	Society Year
IoR	Institute of Refrigeration	TAC	Technical Activities Committee
MBO	Management by Objectives	TC	Technical Committee
MOP	Manual of Procedures	UNEP	United Nations Environment Programme

**Refrigeration Committee Technology Committee
for
Comfort, Process, and Cold-Chain
(REF-CPCC)
Spring Meeting,
Wednesday April 1st, 2020
Web Meeting**

1. CALL TO ORDER

Chair Rajan Rajendran called the meeting to order at 12:00 PM ET. Members and guests introduced themselves. Staff confirmed quorum.

2. ASHRAE CODE OF ETHICS COMMITMENT

In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, inclusiveness and respect for others, which exemplify our core values of excellence, commitment, integrity, collaboration, volunteerism and diversity, and we shall avoid all real or perceived conflicts of interests.

(Code of Ethics: <https://www.ashrae.org/about/governance/code-of-ethics>)

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

3. REVIEW OF AGENDA

Program Subcommittee Objectives for this year still need to be defined for this year in committee MBOs.

How can REF-CPCC contribute in the COVID 19 battle? Ayman reminded committee of the UNEA food lost & waste – cold chain connection to safety. See Orlando Minutes Attachment G - “Promoting Sustainable Practices and Innovative Solutions for Curbing Food Loss and Waste” for more information.

Walid asked to provide an update on GAC and our new Liaison from GAC - Nannette Lockwood

MOTION #1

It was moved (AE) and seconded (YH)

- (1) Meeting agenda be modified to include a discussion on the TC 1.6 (Terminology) effort titled *Harmonizing Technical Terminology to Create Understanding*.

MOTION #1 PASSED: 7-0-1-4 (12) CNV AE/YH – This agenda item will carry-over to fall meeting agenda since we ran out of meeting time.

4. MINUTES

MOTION #2

It was moved (DL) and seconded (AE) that,

- (2) the minutes from the 2020 REF-CPCC Spring Meeting be approved.

BACKGROUND: Minutes were distributed on March 30th via email from staff.

MOTION #2 PASSED: 7-0-1-4 (12), CNV DL/AE

5. WORLD REFRIGERATION DAY

MOTION #3

It was moved (CH) and seconded (WC) that,

- (3) The Refrigeration Technology Committee for – Comfort – Process and Cold-Chain hereby recommends that ASHRAE officially recognize and promote annually June 26th as World Refrigeration Day to serve as a means of raising awareness and understanding of the important contribution that refrigeration, air conditioning, and heat pumps make globally across many aspects of modern life and society.

BACKGROUND: No Fiscal impact

MOTION #3 PASSED: 9-0-1-2 (12) CNV CH/WC

6. CHAIR'S REPORT – Rajendran

The primary purpose of the REF-CPCC spring meeting was to continue to take steps to launch the following eight new subcommittees for REF-CPCC by making plans for their spring 2020 web meetings. Much effort has also been spent since the spring meeting to update the ASHRAE Position Document Refrigerants and their Responsible Use in partnership with IIAR in order to incorporate Ammonia into the PD now that the Ammonia PD has expired:

New REF-CPCC Subcommittee Structure:

1. Program - Chair: **Stephen Gill** – Members: Coulomb, Kazachki, Ravi, Miyara, Hwang
2. Research – Chair: **Yunho Hwang** – Members: Ayub, Nawaz, Chakroun
3. HVAC – Chair: **Walid Chakroun** – Members: Hourahan, Abdelaziz, Kujak
4. Cold Chain – Chair: **Dustin Lilya** – Members: Ayub, Hon, Scott
5. R in ASHRAE – Chair: **Didier Coulomb** – Members: Rajendran, Selbert, Walter, Ayub
6. Refrigeration Technology Report – Chair: **Martin Dieryckx** – Members: Rajendran, Welter, Kazachki, Zha, Ayub
7. MTG.RAC – Chair: Carlos Mitroga – Alternates: #1 Tony Welter, #2 Dustin Lilya, #3 Stephen Gill – Walid rolled-off as Alternate #1 in June.
8. Award Subcs – Briley and Garland- Chair: **Ayman Eltalouny** – Members: Dieryckx, Hon, Mitroga

2020 Annual – AI #1 (Staff) – Include spring 2020 Subcommittee Meeting reports or summary notes in 2020 Annual Meeting Minutes.

Spring 2020 Subcommittee Meeting Dates & Summary Notes:

4/21/20 – HVAC Subc. meeting – 3 members total

Meeting Notes: Need to identify partner groups. Work w/CEC and other organizations to disseminate information on HVAC workshops, seminars, and conferences to partners.

2020 Annual – AI #2 (Staff) provided list of all TCs related to HVAC: TCs 4.3, 5.1, 5.2, 5.3, 5.4, 5.5, 6.1, 6.2, 6.3, 6.5, 6.8, 6.9, 8.3, 8.7, 8.9, 8.10, 8.11

5/1/20 & 5/29/20– Awards Subc. meeting – 4 members total

2020 Annual – AI #3 (Ayman) Award Subc. meet between now and Oct. to combine the Milt Garland and Comfort Cooling awards and then evaluate the application from the Hong Kong Chapter. Also meet in the fall to select a SY 19-20 recipient for the George Briley ASHRAE Journal Article Award

5/7/20 & 5/13/20 – Research Subc. meeting – 3 members total

See Orlando Minutes Attachment G - “Promoting Sustainable Practices and Innovative Solutions for Curbing Food Loss and Waste” for more information.

2020 Annual – AI #4 (Nawaz) has volunteered to chair the REF-CPCC Research Subc. in place of Chair Yunho. TC 6.8, 8.4, and 8.6 have also agreed to work with us. This group of TCs has already brainstormed 15 research topics to explore further that they will share with us.

6/1/20 – Cold-Chain Subc. meeting – 7 members total

2020 Annual – AI #5 (Dustin) – Cold-Chain Subc. proposes to develop program topic and guidelines or research on maintaining cold-chain in 1st 6 hours of outage event.

6/11/20 & 6/22/20 – Position Doc. Subc. meeting – 9 members total

Focus of meetings was on updating PD *Refrigerants and their Responsible Use* with assistance from IIAR on adding Ammonia to this PD now that Ammonia PD has expired.

6/16/20 - Bi-Annual Report Subc. meeting – 7 members – purpose – scope and outline developed – need volunteers from outside USA.

2020 Annual – AI #6 (Staff) – Include report from Bi-Annual Ref. Tech Report Subc. in meeting minutes

Below are initial notes from today's Bi-Annual Ref. Tech Report subcommittee meeting.

Attendees: Martin, Rajan, Alaa, Tony, Georgi.

Absent: Shitong, Adnan

The agenda is as follows:

- Opening of the meeting by the chair.
- Introducing each other
- Background of the subcommittee by the chair
- Draft purpose of the report
- Distribution of the regions and product groups
- Preparations for next meeting.
- Closing of the meeting

Key Points:

- No results were found when Google was searched for Refrigeration Technology Reports.
- Purpose of Subc. is to identify and explain various refrigeration circuit technologies from a global/regional perspective.
- Not a report to be used for R&D or research.
- Current ASHRAE Refrigeration HDBK volume not a good source for non-USA technology – not even state-of the art USA technology in some cases.
- Sister organizations (IIAR, IOR, etc.) have no such information currently.
- Current Subc. lacks members from Japan or China.
- Report will only mention publicly available information or information a company has given us permission to use in the report from various regions around the world.
- Evaluate after 1 year if process should continue.
- Focus of report on Refrigeration Circuits only!
- May need expertise from outside ASHRAE

Action Items:

- Find out why other organizations such as AHRI, IOR, etc. have not done such as report before – should we try to find out before we proceed further? ALL
- Formulate draft proposal for report (Purpose, Scope, Skeleton Outline) in MS-Word and send to full Subc. – Martin
- Review current HDBK volumes on what information is currently missing related to Refrigeration Circuits – Gap analysis of Technology that can be passed on to TCs – ALL
- All think about how we can best report gap/analysis results to TCs – ALL
- Attempt to recruit new Subc. members from Japan & China – All pass names & contact info. suggestions on to Mike so he can follow-up with suggested members.
- Next meeting will be in 2 months – Martin to provide poll dates to Mike so Doodle poll can be generated.

2020 Annual – AI #7 (Hwang) Name new Alternate #1 to replace Walid and back-up Carlos – MTG.RAC

No Program Subc. meeting was held due to other duties of Subc. Chair regarding WRD planning.

7. BOD Ex-Officio REPORT – Maston

Board ExO Sarah Maston gave a PowerPoint Presentation on the 2020 Virtual Conference, upcoming topical conferences, the new leadership for the next Society year, as well as made a plea for committee member nominations for the next Society year, which are due to your Board ExO before mid-February 2021. More information on this presentation can be found in **ATTACHMENT C**.

8. SUBCOMMITTEE SPRING MEETINGS

SPR20 AI # 1 (All Sub. Chairs and Staff) – Select meeting start times, meeting duration, and days to poll for a subcommittee web meeting in April or May for each of the eight REF-CPCC Subcommittees and notify Mike Vaughn so he can generate the meeting polls and set-up the web meeting in order to be able to report at REF-CPCC Virtual Annual meeting – Status: **Complete**

1. Staff update on New Subcommittees:

See **ATTACHMENT A** below for further information on each Subcommittee and current membership of each. The subcommittee information now includes a table showing the availability of subcommittee members based upon their home time zone that can be used to help poll for a subcommittee meeting.

2. MTG RAC Plant Assessment Guide

REF-CPCC joined the new MTG.RAC Plant Assessment Guide and named Carlos Mitroga as voting member and Walid Chakroun as Alternate #1. Both have since been added to the MTG.RAC roster and should be getting MTG meeting information now. Three additional Alternates (Welter, Lilya, and Gill) have been named since the Orlando meeting.

3. Program Subcommittee

Subcommittee Chair: Stephen Gill reported that February 10th is the deadline for Austin Conference program submissions. The topic of recruiting more distinguished lecturers on Refrigeration Technology topics was also discussed.

4. Research Subcommittee

Subcommittee Chair: Yunho Hwang reported that committee does not have any active research projects underway or in development yet but mentioned that the next generation compressor might be based on electro-chemical compression if we wish to explore this technology further. Goal is to create collaborative research program with TCs. Adnan Ayub, Walid Chakroun, and Kashif Nawaz volunteered to join the subc. during meeting.

SPR20 AI #3 (Hwang) - Explore with Research Subc. the following focus areas for possible REF-CPCC research projects: Health & Wellness, Food Safety, Loss, and Waste

5. Awards Subcommittee

Subcommittee Chair: Ayman Eltalouny reported SY18-19 Briley Award was presented at this meeting to Dr. Abu-Heiba of Oak Ridge National lab for his ASHRAE Journal article *Setting Charge Limits for Flammable Refrigerants* published in the July 2018 (Vol. 60 (7)) edition of the ASHRAE Journal.

The subcommittee also reported that they conducted a 5-year review of the Comfort Cooling Award and Milt Garland Award at the request of Honors and Award Committee. No

nominations for the Milt Garland award or the Comfort Cooling Award were submitted in the last 4 years, but the subc. recommended that both awards continue.

Note: Staff learned at the Wednesday Board meeting in Orlando that Honors and Awards Committee recommended to the Board through Members Council that the Comfort Cooling Award should be dropped due to low interest. The Board approved H&A's recommendation.

We now have as pass through awards from Honors & Awards Committee for the Briley Award and the Milt Garland Award to select.

6. Refrigeration Technology Report

Subcommittee Chair - Martin Dieryckx reported that Goal is to create every 2 years an update on refrigeration technology on the global level and to identify what technology is most important or promising now. Information from this report will also be shared with the TCs to help keep the Refrigeration Handbook Volume up to date and relevant to today's engineers. Target member for subcommittee is a manager of technical issues based anywhere in the world for broad international representation. Focus will not be on new refrigerants but on new and established technologies. Result from this subcommittee could possibly be the basis for an ASHRAE Tech Hour webinar presentation.

7. Cold-Chain

Subcommittee Chair – Dustin Lilya reported that a new application for cold chain technology is concrete cooling. Doug Scott, Adnan Ayub, Charlie Hon, volunteered to join the subc. It was also suggested that IIR and IIAR should be encouraged to join the subc. also

8. HVAC

Subcommittee Chair – Walid Chakroun reported that he plans to recruit at least three members and is finalizing subcommittee scope statement. First goal will be document latest technology related to heat pumps. Glenn Hourahan, Omar Abdelaziz and Steve Kujak volunteered to join the Subcommittee during the meeting. Walid also suggested that we should ask TechC to look at all information we have to help control Corona virus out-break and send to all regions.

9. POSITION DOCUMENT UPDATES REPORTS

A. Refrigerants and Responsible Use PD

Implement recommendation to add ammonia to Refrigerants and their responsible use PD Working Group members: Rajan, Steven Gill, IIAR representative identified by Doug Scott is Dave Rhule.

Scheduled to expire now June 21, 2021. April 1 or May Target end date for this effort.

2020 Annual – AI #8 (All) – Look at revised position document Refrigerants and their Responsible Use to make sure heat pumps reflected properly in document – HVAC&R replaces Refrigeration & Air Conditioning

MOTION #4

It was moved (CH) and seconded (DL) that,
Revised ASHRAE Position Document titled *ASHRAE Position Document on Refrigerants and Their Responsible Use* – be passed on to Technology Council for consideration after the text “Refrigeration & Air-Conditioning” is replaced throughout the document with the text “HVAC&R”

MOTION #4 Passed 9-0-1-2⁶ (12) CNV CH/DL

B. Ammonia as a refrigerant PD – expired Feb. 1, 2020

2020 Annual - AI#9 (All) - Recast Ammonia position document as a White Paper – MBO #2 – Translate to other languages besides English. Very important in developing countries. Incoming member Harshal Surange volunteered to help with translation and overall effort.

10. OTHER INFORMATION – WORLD REFRIGERATION DAY

World Refrigeration Day is on Friday June 26, 2020 this summer

<https://www.ashrae.org/about/news/2020/ashrae-supports-world-refrigeration-day-2020>

Thank you to all REF-CPCC members that helped with this effort!

11. STRATEGIC ISSUES

SPR20 AI #16 (Hon) – Work with the Government Affairs Committee Chair (Walid now) to establish Liaisons between with REF-CPCC and GAC. – Complete: Nanette Lockwood is our new Liaison to GAC

2020 Annual – AI #10 (Hwang) – Identify a REF-CPCC member (Hon?) to serve as a liaison to GAC and coordinate with our new GAC liaison Nanette Lockwood.

2020 Annual – AI #11 (Hwang) - Identify and name a new Subc. Chair for the HVAC Subc. to replace Walid.

12. VICE CHAIR'S REPORT

Vice Chair Hwang recognized and thanked the Chair (Rajan) and the other members (Walid, Stephen, and Sarah), who are all rolling off REF-CPCC after this meeting for their service. He also outlined briefly his four MBOs for the coming Society year. Two MBOs carry-over from this Society year and two MBOs are new.

13. NEXT MEETING – Fall Web Meeting in September or October

14. ADJOURNMENT

MOTION #5

It was moved (MD) and seconded by (YH) that, the meeting adjourn

MOTION #5 PASSED: 9-0-1-2 (12), CNV MD/YH

ATTACHMENT A

Refrigeration Technology Committee for Comfort, Process, and Cold-Chain (REF-CPCC)

REF-CPCC Awards Subcommittee			
Scope:	REF-CPCC Awards Subcommittee will develop award recipient recommendations each year for the Briley and Garland awards and possibly develop new refrigeration related awards.		
Chair:	Ayman Eltalouny – ayman.eltalouny@unep.org – Ph. 0097317825110		
SY 19-20 Objectives:			
Objective #1	Ensure wider engagement of Ref. Committee members in the process of judging the Briley and Garland Awards		
Objective #2	Map existing ASHRAE awards and recommend other award categories in relation to the scope of the Refrigeration Committee		
Subc. Members:			
Name	Email	Phone Number	Affiliation
Ayman Eltalouny, Chair	ayman.eltalouny@unep.org	0097317825110	UNEP
Martin Dieryckx	dieryckx.m@daikineurope.com	477663625	Daikin
Charles Hon	chon@truemfg.com	(636) 240-2400x1383	True Mfg.
Carlos Mitroga	cmitroga@danfoss.com	56228978811	Danfoss

AWARDS Subcommittee Meeting Start Time Options based upon home base locations of members:

Ayman	Martin	Charlie	Carlos	TBD	TBD	TBD
4pm	3pm	8am	10am			
5pm	4pm	9am	11am			
6pm	5pm	10am	12pm			
7pm	6pm	11am	1pm			

**Refrigeration Technology Committee for Comfort, Process, and Cold-Chain
(REF-CPCC)**

Cold Chain Subcommittee			
Draft Scope:	REF-CPCC Cold Chain Subcommittee will research and study current topics related to temperature-controlled supply chain and disseminate this new information to a broader audience through collaboration with the Program, Research subcommittees or through other organizations.		
Chair:	Dustin Lilya - dlilya@dcengineering.net – Ph. (208) 288-2181		
SY 19-20 Objectives:			
Objective #1	Recruit and form the Subcommittee membership and define roles responsibilities for the committee members.		
Objective #2	Reach out to cold chain community and collect information on relevant current topics of interest <u>Food Safety and Food Security</u> . Communicate the relevant topics to the other stakeholders (Research and Program Committees)		
Subc. Members:			
Name	Email	Phone Number	Affiliation
Dustin Lilya, Chair	dlilya@dcengineering.net	(208) 288-2181	DC Engineering
Adnan Ayub	adnan@iso-therm.com	(817) 472-9922	Isotherm Inc.
Charles Hon	chon@truemfg.com	(636) 240-2400x1383	True Mfg.
Doug Scott	dscott@vacomtech.com	(909) 374-1113	VaCom Technologies
Alaa Olama	alaaolama@gmail.com	+201006099950	Montreal Protocol
Michael Saunders	Mike.saunders@emerson.com	937-726-4928	Emerson
John Gallaher	John.gallaher2@gmail.com	(828) 577-1122	ASHRAE Member
Harshal Surange	harshalsurange@gmail.com	937-706-48458	ACR Project Consultants
Ayman Eltalouny	ayman.eltalouny@unep.org	0097317825110	UNEP

COLD CHAIN Subcommittee Meeting Start Time Options based upon home base locations of members:

Doug	Dustin	Adnan	Charlie	MikeS.	JohnG.	Alaa	Ayman	Harshal
7am	8am	9am	9am	10am	10am	4pm	4pm	7:30pm
8am	9am	10am	10am	11am	11am	5pm	6pm	8:30pm
9am	10am	11am	11am	12pm	12pm	6pm	7pm	9:30pm
10am	11am	12pm	12pm	1pm	1pm	7pm	8pm	10:30pm

Refrigeration Technology Committee for Comfort, Process, and Cold-Chain (REF-CPCC)

HVAC Subcommittee			
Scope:	REF-CPCC Comfort Cooling and Heating Subcommittee will research and study current topics related to comfort cooling in the refrigeration spectrum and disseminate this information to a broader audience through collaboration with the Program, Research subcommittees or through other organizations.		
Chair:	New Chair needed now that Walid has rolled off REF-CPCC		
SY 19-20 Objectives:			
Objective #1	Identify councils, committees, subcommittees and other entities within ASHRAE that may help meeting the scope of the HVAC subcommittee		
Objective #2	Work with ASHRAE CEC and other organizations to document and disseminate HVAC workshops, seminars and conferences related to comfort cooling.		
Subc. Members:			
Name	Email	Phone Number	Affiliation
Steve Kujak, Chair	skujak@tranetechnologies.com	(608) 787-3766	Trane
Glenn Hourahan	ghoura@comcast.net	(703) 625-2522	Hourahan Consulting, LLC
Omar Abdelaziz	omar.abdel.aziz@gmail.com	(865)387-0725	Oak Ridge National Lab

HVAC Subcommittee Meeting Start Time Options based upon home base locations of members:

Steve	Glenn	Omar	TBD	TBD
7am	8am	2pm		
8am	9am	3pm		
9am	10am	4pm		
10am	11am	5pm		

Refrigeration Technology Committee for Comfort, Process, and Cold-Chain (REF-CPCC)

Program Subcommittee			
Scope:	REF-CPPC Program Subcommittee will develop technical programs of various types (Technical Paper Sessions, Conference Paper Sessions, Seminars, Debates, Forums, Panels, and workshops) for the REF-HRAC committee that can be presented at Society meetings or at other organizations conferences. The subcommittee will also work with other Society committees and other organizations to co-sponsor programs that jointly benefit both committees or organizations.		
Chair:	Steven Gill - ASHRAE@stephencgill.com – PH: 1949850651		
SY 19-20 Objectives:			
Objective #1	TBD		
Objective #2	TBD		
Subc. Members:			
Name	Email	Phone Number	Affiliation
Steven Gill, Chair	ASHRAE@stephencgill.com	1949850651	Stephen Gill Associates
Didier Coulomb	d.coulomb@iifiir.org	33142273235	IIFIIR
Dr. Georgi Kazachki	kazachki@comcast.net	(678)576-7135	CRYOTHERM Consulting
Gurunarayana Ravi	gurunarayana.ravi@lennoxind.com	(281)907-2901	Lennox
Prof. Akio Miyara	miyara@me.saga-u.ac.jp	81952288623	
Prof. Yunho Hwang	yhhwang@umd.edu	(301) 405-5247	U. Maryland

Program Subcommittee Meeting Start Time Options based upon home base locations of members:

Didier	Steven	Georgi	Yunho	Ravi	Akio	TBD
2pm	1pm	8am	8am	7am	9pm	
3pm	2pm	9am	9am	8am	10pm	
4pm	3pm	10am	10am	9am	11pm	
5pm	4pm	11am	11am	10am	12pm	

Refrigeration Technology Committee for Comfort, Process, and Cold-Chain (REF-CPCC)

Research Subcommittee			
Scope:	REF-CPCC Research Subcommittee will develop research projects for bid that support and advance the scope of REF-HRAC (via RTARs, WS, TRPs, and RPs) The subcommittee will also work with other Society committees and outside organizations to co-sponsor research projects that jointly benefit both committees or organizations.		
Chair:	Kashif Nawaz – nawazk@ornl.gov – Ph. 865-574-9338		
SY 19-20 Objectives:			
Objective #1	New! - Develop list of suggested refrigeration research topics for consideration by the new Research Advisory Panel (RAP) so that they can be included in new Research Strategic Plan for Society. Recruit Research Subcommittee members, brainstorm research topics, and develop RTARs		
Objective #2	Reach-out to specific TC research subcommittee chairs and work towards developing cooperative research program.		
Subc. Members:			
Name	Email	Phone Number	Affiliation
Kashif Nawaz, Chair	nawazk@ornl.gov	(865) 574-9338	DOE- ORNL
Yunho Hwang	yhhwang@umd.edu	(301) 405-2025	U. Maryland
Adnan Ayub	adnan@iso-therm.com	(817) 472-9922	Isotherm Inc.

Research Subcommittee Meeting Start Time Options based upon home base locations of members:

Yunho	Kashif	Adnan	TBD	TBD	TBD
8 am	8 am	7 am			
9 am	9 am	8 am			
10 am	10 am	9 am			

Research Topic Ideas:

1. Refrigerant Leakage Study:
 - a. Evaluate the HVAC system performance degradation due to refrigerant leaks.
 - b. A comprehensive study on the HVAC components that further contribute to leakages
 - c. Determination and analysis specific improvements that can reduce specific leakages within the vapor-compression cycle.
2. Other Ideas
 - a. Thermal performance prediction and analysis on the economized vapor injection air-source heat pump in hot climate region of Middle East
 - b. Application characteristics of variable refrigerant flow heat pump system with vapor injection in severe hot region.
 - c. Exergo-economic analysis and optimization of two-stage vapor injected system for cooling applications.
 - d. Charge-sensitive modeling of vapor compression systems for off-design performance simulation
 - e. Rooftop air-conditioning unit performance improvement using refrigerant circuitry optimization.
 - f. Investigation of Nano-lubricants Applied to Residential Air-Conditioning System.

Refrigeration Technology Committee for Comfort, Process, and Cold-Chain (REF-CPCC)

R in ASHRAE Subcommittee			
Scope:	REF-CPCC R in ASHRAE Subcommittee will be responsible for maintaining the “R in ASHRAE” web page on the ASHRAE website and with developing new content for this webpage on a regular basis.		
Chair:	Didier Coulomb – d.coulomb@iifiir.org – Ph. 33142273235		
SY 19-20 Objectives:			
Objective #1	Identifying ASHRAE technical committees involved in refrigeration issues and their activities		
Objective #2	Identifying ASHRAE technical committees involved in refrigeration issues and their activities		
Subc. Members:			
Name	Email	Phone Number	Affiliation
Didier Coulomb, Chair	d.coulomb@iifiir.org	33142273235	Intl. Institute of Refrigeration
Rajan Rajendran	Rajan.Rajendran@emerson.com	(937) 726-0620	Emerson
Rachel Selbert	rachel.selbert@icf.com	(202) 791-8879	EPA/ENERGY STAR
Bill Walter	Bill.Walter@carrier.com	(315) 657-7407	Carrier
Adnan Ayub	adnan@iso-therm.com	(817) 472-9922	Isotherm Inc.

R in ASHRAE Subcommittee Meeting Start Time Options based upon home base locations of members:

Didier	Rachel	Bill	Rajan	Adnan	TBD
1pm	7am	7am	7am	6am	
2pm	8am	8am	8am	7am	
3pm	9am	9am	9am	8am	
4pm	10am	10am	10am	9am	

Refrigeration Technology Committee for Comfort, Process, and Cold-Chain (REF-CPCC)

Refrigeration Technology Bi-Annual Report Subcommittee			
Scope:	REF-CPCC Bi-Annual Refrigeration Technology Report Subcommittee will develop every other year the bi-annual Refrigeration Technology Report for publication and distribution.		
Chair:	Martin Dieryckx - Dieryckx.m@daikineurope.com – Ph. 0477663625		
SY 19-20 Objectives:			
Objective #1	Define the scope and basic structure of the bi-annual report		
Objective #2	Organize the required membership of the subcommittee in order to prepare the report in SY20-22		
Subc. Members:			
Name	Email	Phone Number	Affiliation
Martin Dieryckx, Chair	Dieryckx.m@daikineurope.com	0477663625	Daikin
Rajan Rajendran	Rajan.Rajendran@emerson.com	(937) 726-0620	Emerson
Tony Welter	tony.welter@hendersonengineers.com	(913) 742-5484	Henderson Engineers
Georgi Kazachki	kazachki@comcast.net	(678)576-7135	CRYOTHERM Consulting
Shitong Zha	shitongzha@gmail.com	(470) 328-9018	
Adnan Ayub	adnan@iso-therm.com	(817) 472-9922	Isotherm Inc.

Refrigeration Technology Bi-Annual Report Subcommittee Meeting Start Time Options based upon home base locations of members:

Martin	Rajan	Georgi	Shitong	Adnan	Tony
2pm	8am	8am	8am	7am	7am
3pm	9am	9am	9am	8am	8am
4pm	10am	10am	10am	9am	9am
5pm	11am	11am	11am	10am	10am

Refrigeration Technology Committee for Comfort, Process, and Cold-Chain (REF-CPCC)

Refrigeration Representatives to MTG.RAC			
Scope:	The MTG will coordinate and oversee the creation of an ASHRAE/UNEP Guide for Refrigeration and Air-Conditioning (RAC) Plant Assessments. The Guide aims to be an international reference for the safe and sustainable operation and maintenance of air-conditioning and refrigeration plants, with special focus on developing markets. The Guide is to form the basis of tools that will verify compliance to recommended practices that can be verified through a point-based qualification or verification scheme. The work will be a cooperative effort with United Nations Environment due to the critical need for such guidance in the developing world with availability of UNEP funding to offset authoring expenses.		
REF-CPCC Voting Representative	Carlos Alberto Mitroga - cmitroga@danfoss.com - 541147564100		
SY 19-20 Objectives:			
Objective #1	Support the MTG.RAC in the development of Guide for Refrigeration and Air-Conditioning (RAC) Plant Assessments		
Objective #2	Report back regularly to REF-CPCC on progress made on the guide and solicit assistance from REF-CPCC members as required to help complete the Guide in a timely fashion.		
Alternate Members			
Name	Email	Phone Number	Affiliation
Alt. #1 Tony Welter	tony.welter@hei-eng.com		
Alt. #2 Dustin Lilya	dlilya@dcengineering.net	208-288-2181	
Alt. #3 Stephen Gill	ASHRAE@stephencgill.com	44 7970 786893	

MTG.RAC Voting Representative & Alternates Meeting Start Time Options based upon home base locations of members:

Carlos	Stephen	Tony	Dustin
9am	2pm	7am	8am
10am	3pm	8am	9am
11am	4pm	9am	10am
12pm	5pm	10am	11am

ATTACHMENT B
Refrigeration Technology Committee for Comfort, Process, and Cold-Chain
(REF-CPCC)

Harmonizing Technical Terminology to Create Understanding

By Art Hallstrom, P.E., BEMP, Fellow/Life Member ASHRAE

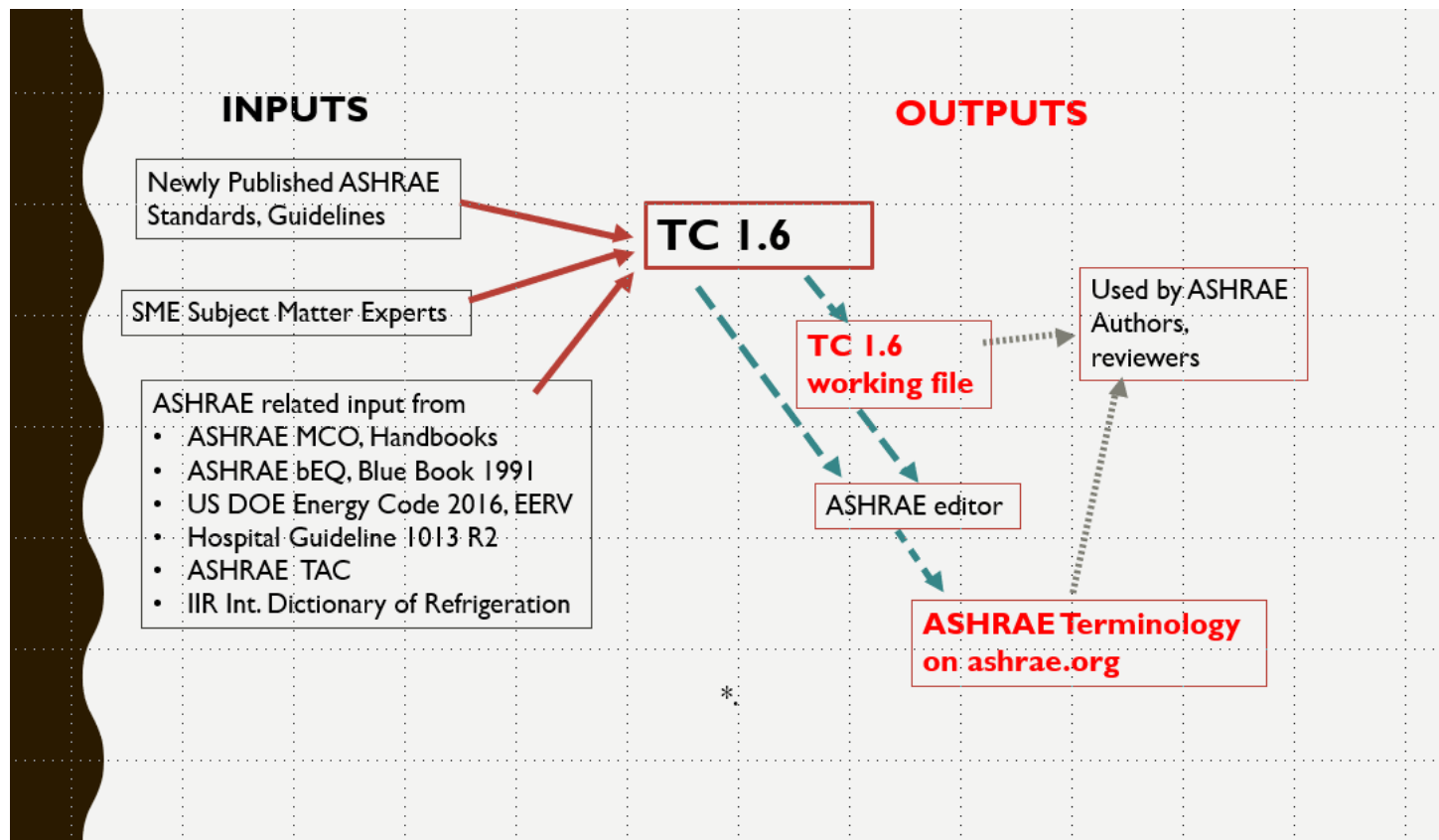
From ASHRAE Journal Newsletter, June 23, 2020

Designing high efficiency systems is challenging enough when all the team members know what each other is saying. Differences in terminology or definitions among ASHRAE and other industry partners can further inhibit ASHRAE members from effectively communicating and designing systems.

Harmonization can help. This process takes definitions for the same term from different sources and merges them into typically one definition. Harmonizing within and with organizations outside ASHRAE enhances communications. The results are generally better products and increased brand visibility for both organizations.

Last year, ASHRAE TC 1.6, Terminology, expanded its inside ASHRAE harmonization efforts by going outside ASHRAE for the first time. They worked with Refrigeration Subject Matter Experts (SMEs) from ASHRAE and the International Institute of Refrigeration (IIR)—another international HVAC&R organization—to create agreed-upon harmonized definitions for terms used by both IIR and ASHRAE. These “super-harmonization” terms increase the prominence of participating organizations.

How the Harmonization Process Worked with IIR



The first step includes ASHRAE and IIR finding the SMEs, exchanging organizational glossaries, and the refrigeration SMEs began harmonizing refrigeration-related terms.

The second step involves the ASHRAE TC 1.6 working file. This Excel file contains about 27,000 terms and definitions from 10 years of ASHRAE standard and guideline glossaries and other sources like Building EQ, *ASHRAE Handbook* volumes, Position Documents and ENERGY STAR.

Light editing is done to make the terms consistent in the working file format. For example, the term “air, standard” becomes “standard air.” Informational notes are removed. Nested terms are separated so each one is a standalone term.

Material from some external sources is not included in the working file because the source is marketing their glossary as a member benefit or is selling it. In those cases, the external source glossary is provided only to the SME’s working on the topic. For example, the ASHRAE-IIR formal harmonization agreement limits the IIR glossary use to the refrigeration SMEs.

Once the working file is ready, the last step involves ASHRAE and IIR SMEs using the working file to create super-harmonized terms. The first group of terms (cooling, refrigeration, chilling, freezing and cold chain) were approved by ASHRAE, ASHRAE Staff, IIR, TC 1.6 and added to ASHRAE Terminology webpage in 2019.

ASHRAE TC 1.6 Working File

All authors of standards, guidelines and related publications can use the TC 1.6 working file as a tool to help harmonize their glossary, thus making the publications more understandable to others. The working file is free for ASHRAE members and can be obtained by contacting [TC 1.6](#).

ASHRAE Terminology

In 2010-11, ASHRAE President Lynn Bellinger created a Presidential ad hoc committee that recommended making the printed ASHRAE Society Blue Book Glossary of industry terms into a free online resource—what is now ASHRAE Terminology. It now includes about 4,000 terms. Terms published in ASHRAE Terminology are generally more generic and harmonized than the terms found in a specific publication.

For example, seven ASHRAE standards have six different definitions for “standard barometric pressure.” In [ASHRAE Terminology](#) they have been harmonized to one definition.

ASHRAE encourages authors and reviewers to seek authoritative or cooperative sources inside and outside ASHRAE to evaluate the best possible definitions from all sources, especially where ASHRAE is not uniquely qualified to define a term. Ideally, authors should try to harmonize so fewer separate definitions exist, but not at the expense of accuracy.

ASHRAE TC 1.6 welcomes new committee members interested in being a SME or harmonizing terminology. Join [here](#).

ATTACHMENT C – SY 19-20 MBOs and SY 20-21 MBOs

REFRIGERATION TECHNOLOGY COMMITTEE FOR COMFORT, PROCESS, AND COLD-CHAIN
2019-2020 MBOs
Rajan Rajendran, Chair
Date: 8/6/2019

MBO #	MBO	Status	Date Due	Assigned To	Applicable initiative #	MBO Comments	Strategic Direction Specific Comments	Fiscal Impact
1	Reorganize subcommittee structure within REF	COMPLETE	January 2020	Rajan R; Yunho Hwang; Bill W	3	1. Program subcommittee; 2. Research subcommittee; 3. HVAC subcommittee; 4. Cold Chain subcommittee; 5. R in ASHRAE Subcommittee; 6. Refrigeration Technology Report Subcommittee	#3a, b, c	None
2	Appoint a voting Representative and Alternate member to the new MTG.RAC - RAC Plant Assessment Guide	COMPLETE	January 2020	Rajan R; Yunho Hwang	3	Join the MTG and participate to add value to ASHRAE	#3a, b, c	None
3	Take ownership of the new "R" in ASHRAE webpage for further implementation and on-going maintenance. Promote the new REF committee organization and name throughout society; put together the plan for a bi-annual report on refrigeration technology (last year's MBO)	COMPLETE	October 2019	RAC Chair and Vice Chair Yunho Hwang; Michael Vaughn; Martin D;	2 & 3	Establish a subcommittee and work closely with ASHRAE staff to continue highlighting the R in ASHRAE; expand and add new content as relevant; at mid-year, revisit the website and looking for ways to improve; develop a plan and start implementation of the bi-annual Refrigeration Technology report	#2c; #3a, b, c	None
4	Update REF MOP and Reference Manual and secure TechC approval on update to REF MOP.	COMPLETE	October 2019	Rajan R; Michael V	3	Have a draft ready for Tech Council approval in Fall 2019 meeting	#3a, b, c	None
5	Work with partnership organizations to identify and implement collaboration opportunities to promote HVAC&R	COMPLETE	June 2020	Dieter C; Ayman E	1 & 2	Starting with list of interested parties, IOR, and working with the (to be established) Research subcommittee, identify suggested research topics focused on refrigeration technology and pass on to new RAP for consideration.	#1a, #1b, #2b	None
6	Better coordinate and communicate REF activities and information transfer to ASHRAE Chapter Refrigeration Committees, possibly in coordination with and support from Section 10 TCs.	ON-GOING	June 2020	TBD	#3 & #4	Prepare short report after each Society meeting that goes to all Chapter Refrigeration Committee Chairs and highlights things such as upcoming Winter meeting Refrigeration program track, upcoming refrigeration conferences, and ASHRAE research in development, underway, or completed related to refrigeration	#3a & #3b	None
7	Create working group within REF to help develop a proposed 1st draft of work plan between ASHRAE & IIAR for inclusion in new ASHRAE/IIAR MOU prior to the MOU being finalized by ASHRAE and IIAR	ON-GOING	June 2020	TBD	#2	Utilize technical experts within network of REF members and interested ASHRAE members that work for IIAR and serve on SSPCs 15 & 34 to develop a draft work plan prior to the MOU being finalized. Build-off work this year with IIAR on Refrigerants & Responsible Use PD	#2b	None

REFRIGERATION TECHNOLOGY COMMITTEE FOR COMFORT, PROCESS, AND COLD-CHAIN
2020-2021 MBOs
Yunho Hwang, Chair
Date: 7/6/2020

MBO #	MBO	Status	Date Due	Assigned To	Applicable initiative #	MBO Comments	Strategic Direction Specific Comments	Fiscal Impact
1	Work with partnership organizations to identify and implement collaboration opportunities to promote HVAC&R	Continuation SY19-20 MBO #5	June 2020	Dieter C; Ayman E; Stephen G.	#1a, #1b, #2b	Starting with list of interested parties, IOR, and working with the (to be established) Research subcommittee, identify suggested research topics focused on refrigeration technology and pass on to new RAP for consideration.	On-going - New REF-CPCC Research SubC formed and first task will be to develop list of suggested research topics for consideration by the new Research Advisory Panel	None
2	Take ownership of the new "R" in ASHRAE webpage for further implementation and on-going maintenance. Promote the new REF committee organization and name throughout society; put together the plan for a bi-annual report on refrigeration technology (last year's MBO)	Continuation SY19-20 MBO #3	June 2021	Didier C; Michael V; Rajan R, Martin D;	#2c; #3a, b, c	Establish a subcommittee and work closely with ASHRAE staff to continue highlighting the R in ASHRAE; expand and add new content as relevant; at mid-year, revisit the website and looking for ways to improve; develop a plan and start implementation of the bi-annual Refrigeration Technology report	On-going - New Subcommittee formed. SubC. Chair's finalizing scope statement and defining objectives for this year. SubC. Members being recruited	None
3	Create working group within REF to help develop a proposed 1st draft of work plan between ASHRAE & IIAR for inclusion in new ASHRAE/IIAR MOU prior to the MOU being finalized by ASHRAE and IIAR	New	June 2021	TBD	#2	Utilize technical experts within network of REF members and interested ASHRAE members that work for IIAR and serve on SSPCs 15 & 34 to develop a draft work plan prior to the MOU being finalized. Build-off work this year with IIAR on Refrigerants & Responsible Use PD	On-going - REF-CPPC & IIAR working group formed, but initial focus has been on incorporating Ammonia into Refrigerants PD	None
4	Cooperate Research and Program with TCs and communicate REF activities and information to ASHRAE Chapter Refrigeration Committees.	New	June 2021	Yunho H; Stephen G.; Kashif N.	#3b	Communicate and participate in relevant TC SubC meetings; Prepare short report after each Society meeting that goes to all Chapter Refrigeration Committee Chairs including upcoming Winter meeting Refrigeration program track, upcoming refrigeration conferences, and ASHRAE research in development, underway, or completed related to refrigeration technology.	On-going - Goal is to communicate with relevant TC SubC chairs and issue the 1st REF-CPPC activity summary to Chapter Refrigeration Committees after virtual Annual meeting.	None

Goals and Initiatives for 2019-2024 Society Strategic Plan

Initiatives:

#1 Resilient Building and Communities

#2 Indoor Environmental Quality

#3 Organizational Streamlining

#4 Improve Chapter Engagement, Capacity and support

Goals:

Goal 1: Position ASHRAE as an Essential Knowledge Resource for a Sustainable, High-Performance Built Environment

#1a Position ASHRAE as an Essential Knowledge Resource for a Sustainable, High-Performance Built Environment

#1b Expand capabilities globally to create, aggregate and disseminate essential information and knowledge focusing on emerging market trends and transformative approaches

Goal 2: Maximize Member Value and Engagement

#2a Infuse enthusiasm, vitality and diversity throughout ASHRAE events and services

#2b Expand the impact of collaboration and partnerships with industry organizations, universities and government agencies

#2c Leverage technology to increase member engagement, awareness and value

Goal 3: Optimize ASHRAE's Organizational Structure to Maximize Performance

#3a Prototype and launch new approaches that will increase ASHRAE's relevance and speed to market for key offerings

#3b Optimize ASHRAE's organizational systems and structures to increase capacity, efficiency and effectiveness

#3c Cultivate industry and member philanthropy to extend ASHRAE's impact and reach

ASHRAE 2020 **Virtual Conference** ►

ASHRAE UPDATE

ExO Report to Committees

ASHRAE 2020 Virtual Conference



CELEBRATING
125
YEARS

In this and all other ASHRAE meetings...

Code of Ethics

“We will act with honesty, fairness, courtesy, competence, inclusiveness and respect for others, which exemplify our core values of excellence, commitment, integrity, collaboration, volunteerism and diversity, and we shall avoid all real or perceived conflicts of interest.”



Upcoming Conferences



2020 Virtual Conference | June 29-July 2, 2020

- 90+ sessions covering trends and technology in the HVACR industry
- Leadership presentations and addresses
- Virtual social events and professional development
- **Registration is open now! Visit ashrae.org/2020virtual**



2021 Winter Conference & AHR Expo in Chicago, IL | Jan. 23-27, 2021

- Over 100 sessions and topics presented by over 300 speakers
- The world's largest HVACR show
- Social events, tours and professional development
- **Registration opens September 2020, visit ashrae.org/chicago**

Please visit ashrae.org/conferences for the latest updates on these and other conferences

The recent pandemic may have an impact on these events

Upcoming Topical Conferences



2020 Building Performance Analysis Conference & SimBuild Co-organized by ASHRAE and IBPSA-USA | September 29- October 1, 2020 | Virtual

- Registration is open now! Visit ashrae.org/BuildPerform2020

The Fourth International Conference on Efficient Building Design | Postponed to 2021 | Beirut, Lebanon

- Visit ashrae.org/Beirut



IAQ 2020: Indoor Environmental Quality Performance Approaches | Postponed to 2021 | Athens, Greece

- Visit ashrae.org/IAQ2020



Ventilation 2021: 13th International Industrial Ventilation Conference for Contaminant Control | August 15-18, 2021 | Toronto, Canada

- Visit ashrae.org/Ventilation2021

Please visit ashrae.org/conferences for the latest updates on these and other conferences

The recent pandemic may have an impact on these events

Leadership Moments



Leadership Moments taking place at the 2020 Virtual Conference
June 29 – July 2 at 12:30pm

Monday, June 29

State of the Society/Farewell Address
2019-20 ASHRAE President Darryl K. Boyce, P.Eng.

Tuesday, June 30

Secretary's Report
ASHRAE Executive Vice President Jeff Littleton

Wednesday, July 1

ASHRAE Board Recognition

Thursday, July 2

ASHRAE's Vision For the Future
The ASHRAE Digital Lighthouse and Industry 4.0.
2020-21 ASHRAE President Chuck Gulledge, P.E.

Learn more at ashrae.org/2020virtual



Nominations Needed NOW!

- Nominations for appointed standing committees are sought annually
- Speak with your committee ExO if your current appointment ends **June 2021** and you wish to be nominated for another committee Society Year 2021-22
- Self-nomination is also encouraged
- Nominations are due by **mid-February 2021**
- Councils are elected by the Board of Directors, but nominations are welcome
- Council, RAC, TAC, Standards and Handbook nominations are due **mid-September 2020**



For more information, visit: ashrae.org/committee-nominations



ASHRAE Commercialism Policy

ASHRAE's Commercialism Policy allows for Society activities that fulfill the mission of technological advancement with adherence to business plans that generate income to offset operational expenses such as AHR Exposition, ASHRAE periodicals, website, and Society conference events such as the Welcome Party, luncheons, registration kits, and receptions.

Principles for Managing Advertising and Sponsorships

Content should be labeled as advertising or sponsored.

Use of commercial names and logos shall not imply ASHRAE endorsement, approval or certification of products or services.

The inclusion of commercial information shall be fair and unbiased so as to avoid explicit promotion of a product or commercial entity.

Content shall adhere to accepted business practices specified by the U.S. Federal Trade Commission and recognized publishing authorities.

Activities including events at chapter meetings shall be managed to prevent an atmosphere in which commercial entities are encouraged to critique one another in the public forum.

ashrae.org/commercialism



Sexual Harassment

The Society takes Sexual Harassment seriously and does not condone it.

Every employee is given our policy in the Employee Handbook and all members can read our policy here:

<https://www.ashrae.org/about/governance/ashrae-discrimination-and-harassment-policy>

All instances of harassment must immediately be reported in writing to ASHRAE's Executive Vice President.

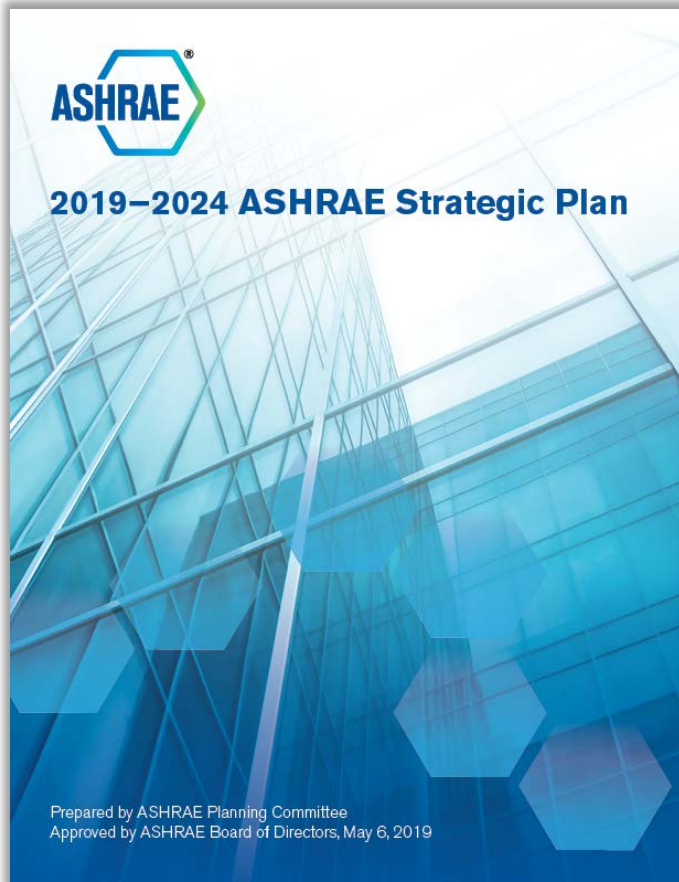
Any member found to have violated this policy will be subject to disciplinary action, up to and including expulsion from membership in accordance with the Code of Ethics Enforcement Procedures and ASHRAE's Bylaws.

ASHRAE is committed to educating members to eliminate all instances of sexual harassment. The Society will soon deploy an online training program to Society volunteers to help educate and protect all members, and to sustain the professional environment members deserve and expect.

This training will be a requirement prior to serving on certain standing committee and/or leadership position.

Please contact hr@ashrae.org to arrange to take the training before assuming a leadership position.

2019-2024 ASHRAE Strategic Plan



Mission

To serve humanity by advancing the arts and sciences of heating, ventilation, air conditioning, refrigeration and their allied fields.

Vision

A healthy and sustainable built environment for all.

Strategic Plan Resources available ashrae.org/strategicplan

- Full **2019–2024 Strategic Plan** in PDF format
- Quick and Simple **Strategic Plan At-a-Glance** in PDF format
- **Strategic Plan Presentations**
 - 2019–2024 ASHRAE Strategic Plan Overview PPT
 - Recordings of *Kansas City Seminar 27: The ASHRAE 2019-2024 Strategic Plan: What and Why* in MP4 format

ASHRAE Vision 2030 and Beyond: Buildings of the Future

The *ASHRAE Vision 2030 And Beyond – Buildings of the Future Presidential Ad Hoc Committee* is being established to position ASHRAE and its members to lead the evolution of buildings during this period of accelerated change.

- Will build and expand upon the ASHRAE report released in June of 2007 *ASHRAE Vision 2020: Producing Net Zero Energy Buildings*.
- Launched jointly by 2019-20 ASHRAE President Darryl Boyce and 2019-20 ASHRAE President-Elect Chuck Gullett.
- Charged with defining how buildings of the future will be designed and built, what future buildings will look like, and how they will be operated.
- The Ad Hoc Committee should provide an interim report during the Chicago Winter Conference in January 2021 and a final report during the June 2021 Annual Meeting in Phoenix.



Government Affairs

The mission of ASHRAE's Government Affairs office is to establish ASHRAE as a leading source for expertise in the built environment and a resource for policy-makers in the development of legislation and regulations affecting the public, the HVAC&R community and the engineering profession.

Activities include:

- Coordination of **Semi-Annual Senior Leadership Meetings** in Washington, DC.
 - Government agencies, elected officials, aligned organizations
- **Government Outreach Days** planning and support
 - Connecting ASHRAE volunteer members with their elected officials and policy makers
- **Congressional Briefings & Testimony + Regulatory Meetings/Hearings/Comments**
 - FEMA-DRRA Guidance
 - U.S. Senate Committee on Environmental and Public Works – HFC Phasedown Legislation
 - Congressional Clean Energy Expo and Policy Forum
 - U.S. House Committee on Energy and Commerce – Climate Legislation
- **Letters** related to **GAC Public Policy Priorities**
 - Workforce development, resiliency and disaster recovery, infrastructure, DOE/EERE, Energy STAR and energy tax extenders



ashrae.org/government-affairs



ASHRAE Epidemic Task Force

The primary role of the task force is to maintain communication with members, industry partners, building owners, facility operators, government agencies and the general public.

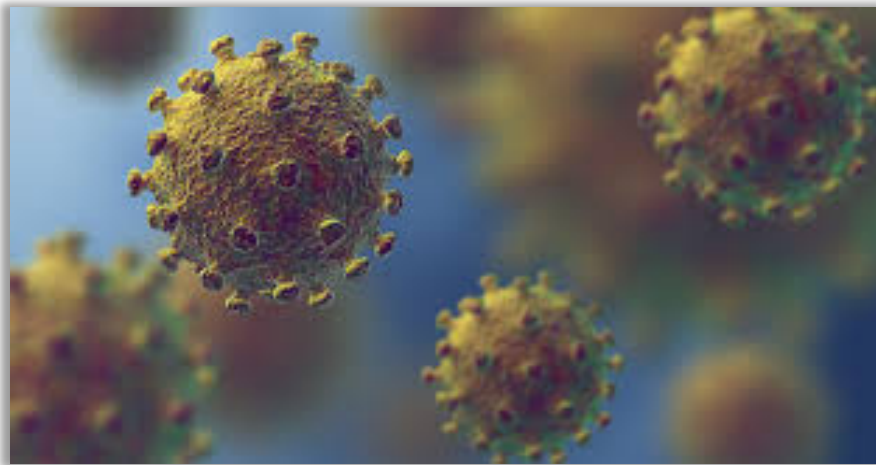
- Respond to the current COVID-19 pandemic
 - ✓ Immediate – guidance for immediate implementation (focus on healthcare capacity and emergency operations of other buildings)
 - ✓ Near-term - guidance to prepare for a possible second wave
- Develop resources to mitigate the effects of future epidemics
- Leverage ASHRAE resources to maximize responsiveness

Technical inquiries emailed to
COVID-19@ashrae.org
5-10 technical inquiries/day answered by
Task Force members

ASHRAE Epidemic Task Force

The ASHRAE Epidemic Task Force has been established to help deploy ASHRAE's technical resources to address the challenges of the current pandemic and future epidemics as it relates to the effects of heating, ventilation, and air-conditioning systems on disease transmission in healthcare facilities, the workplace, home, public and recreational environments. The task force will also provide recommendations for setting up temporary field hospitals in convention centers, arenas and indoor stadia to deal with surges.

The Epidemic Task Force's Media Presence



- Close to **20** media interviews
- More than **225,000** visitors to **ashrae.org/COVID19**
- More than **100** media placements
- Over **556,474,545** media impressions*

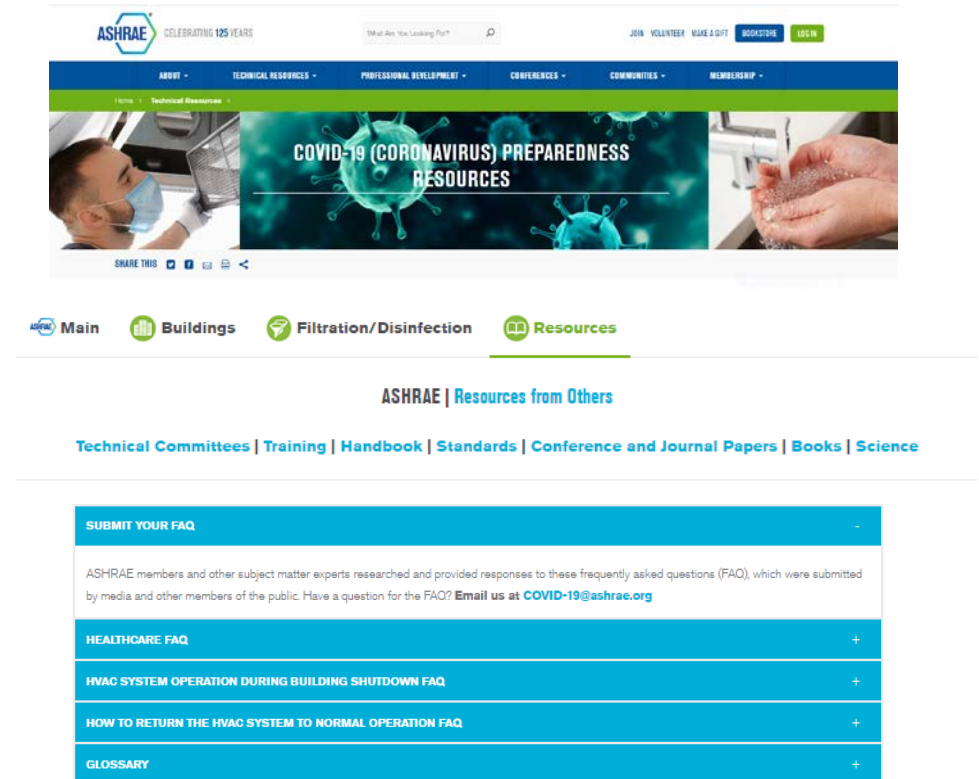
**Total number of times a piece of media content is viewed; total exposure*

ashrae.org/COVID19

COVID-19 Preparedness Resources

- Buildings and Schools Reopening Guidance
- FAQs
- Free ASHRAE Resources
 - ✓ ASHRAE training
 - ✓ Handbooks
 - ✓ Standards
 - ✓ Research papers
 - ✓ Seminars
 - ✓ Press coverage

ASHRAE BOD approved Statements, Position Document on
Infectious Aerosols
Environmental Health Committee's Emerging Issue Brief
Pandemic COVID-19 & Airborne Transmission



ashrae.org/COVID19

ASHRAE New Global HQ



- Renovation kick-off Jan. 10, 2020
- Construction is on schedule
- Showcases a net-zero-energy ready building
- Demonstrates the latest HVAC&R equipment and technology
- Move expected by October 2020

180 Technology Parkway
Peachtree Corners, GA



Design team members were chosen based on an RFP, competitive bids and committee interviews.

The design team includes: **McLennan Design, Houser Walker Architecture and Integral Group.**

Project Management: **Darden Company** (*formerly known as Collins Project Management*)

Construction Manager at Risk: **Skanska**

Commissioning Agent: **Epsten Group**



For more information, visit:
ashrae.org/newhq



New HQ Building Campaign

THANK YOU!

Campaign to Date: May 2020

Total Raised: \$10.5M+

- All Cash and Pledges: \$6,471,700
- Gifts of Equipment & Services: \$4,043,088 (List Value)

Breakdown:

- Largest Gift: \$5,000,000 – NIBE
- ASHRAE Foundation: \$300,000
- Members: \$173,475
- Corporate Donors: 28 have participated!
- **\$3,000,000+ Still to Go!**
- Support of this Critical Project is Still Needed from Members and Industry Partners



**180 Technology Parkway
Peachtree Corners, GA**

**For more information, visit: ashrae.org/newhq
To donate, visit: ashrae.org/buildingcampaign**

New HQ Building Campaign



180 Technology Parkway
Peachtree Corners, GA

ASHRAE Members Rock!

- **ASHRAE Volunteers** have played an integral role:
 - Development Committee, Building Ad-Hoc Committee, Technical Advisory Subcommittee
- **Key Leadership** who have visited prospects with staff:
 - Darryl Boyce, Chuck Gulledge, Tom Phoenix, Dennis Knight, Ginger Scoggins, Don Brandt, Tim McGinn, Dennis Wessel, and Jeff Littleton

THANK YOU!

For more information, visit: ashrae.org/newhq
To donate, visit: ashrae.org/buildingcampaign

ASHRAE Resources

ASHRAE Technology Portal	Your one-stop location for ASHRAE papers, articles, reports, Handbook PDFs, and seminar recordings.	ashrae.org/technology-portal
Online Standards Database	Allows access to public review drafts for standards, guidelines, and addenda to submit comments, to do online balloting, and to submit proposals to standards and guidelines.	ashrae.org/publicreviews
Zero Energy Advanced Energy Design Guides	For offices and K-12 schools are available for free download. Multifamily AEDG available Summer 2020.	ashrae.org/freeaedg
Science and Technology For the Built Environment	Provides free online access to ASHRAE's archival research publication offering comprehensive reporting of original research.	ashrae.org/technical-resources/science-and-technology-for-the-built-environment
ASHRAE Technical Apps	Deliver mobile design, calculation, and analysis tools to the palm of your hand.	ashrae.org/technical-resources/technical-apps
ASHRAE's Free Resources	Offer downloads of a variety of well-known resources to everyone.	ashrae.org/technical-resources/free-resources

Selected Recent Publications

- Standards 62.1-2019, 62.2-2019, Standard 90.4-2019, and Standard 147-2019
- Guideline 41-2020, *Design, Installation and Commissioning of Variable Refrigerant Flow (VRF) Systems*
- *Smart Grid Application Guide: Integrating Facilities with the Electric Grid*
- *ASHRAE Position Document on Infectious Aerosols*
- *High-Performance Buildings Simplified*
- *Air-Conditioning System Design Manual*, 3rd ed.
- 125th Anniversary: *Proclaiming the Truth*, 2nd ed.; *Adventures in Heat & Cold*
- *Damp Buildings, Human Health, and HVAC Design* (MTG report)
- *ASHRAE Position Document on Energy Efficiency in Buildings*
- Guideline 12-2020, *Minimizing the Risk of Legionellosis Associated with Building Water Systems*



ashrae.org/bookstore



Upcoming Publications

Spring 2020

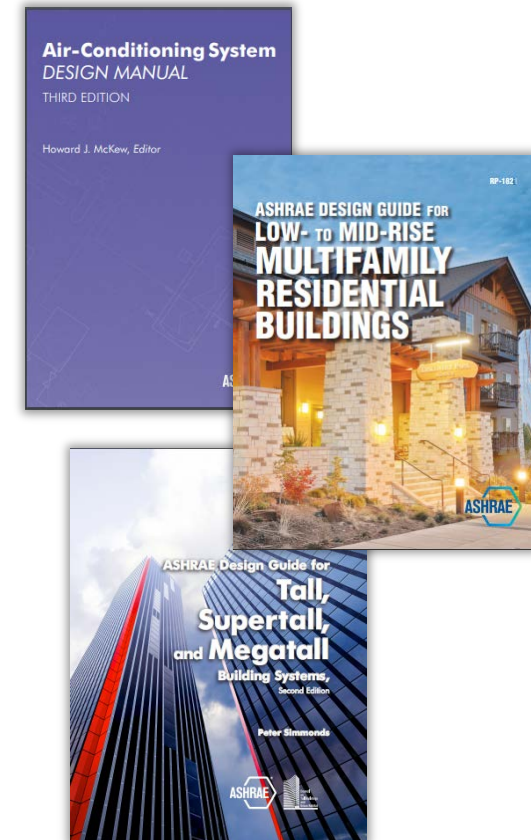
- *ASHRAE Design Guide for Low- to Mid-Rise Multifamily Residential Buildings*
- *ASHRAE Design Guide for Tall, Supertall, and Megatall Building Systems*, 2nd ed.

Summer 2020

- *20th Century Air Conditioning*
- *HVAC Fast Facts I-P*
- *Advanced Energy Design Guide for Multifamily Buildings: Achieving Zero Energy*
- Spanish translation: *ASHRAE Design Guide for DOAS*
- *A Practitioner's Guide to Engineering Management*

Fall 2020

- *Designing for Operational Excellence*
- *Duct Systems Design Guide*
- *ASHRAE Guide for Hazardous Spaces*
- *Design Guide for Combustion Turbine Inlet Air Cooling Systems*, 2nd ed.
- *ASHRAE/REHVA Guidebook Towards Zero Energy Hospital Buildings*
- *ASHRAE Design Guide for Natural Ventilation*



ASHRAE Learning Institute (ALI)

New & Updated Courses offered in the 2020 Online Course Series

- Air-to-Air Energy Recovery Applications: Best Practices
- Designing and Operating High-Performing Healthcare HVAC Systems
- Designing for Cold Climates
- Guideline 36: Best in Class HVAC Control Sequences
- Laboratory Exhaust Stacks: Safe and Energy-Efficient Design
- Principles of Building Commissioning: ASHRAE Guideline 0 and Standard 202
- Reducing Infectious Disease Transmission with UVGI (*1 hr*)
- Save 40% by Complying with Standard 90.1-2019
- V in HVAC – What, Why, Where, How, and How Much

ashrae.org/education

ASHRAE Certification

NEW! Digital Badging

- Embedded metadata uniquely linked to certificants
- Shareable in electronic media, including LinkedIn
- Over 7,000 badge views

NEW! Certified HVAC Designer (CHD) Study Guide Launching July 2020

COMING SOON! Remotely Proctored Examination

- Conveniently sit for an exam from your home or office
- Online proctoring is as secure as physical test centers, and the quality of the exam remains the same

More details will be made available in July 2020



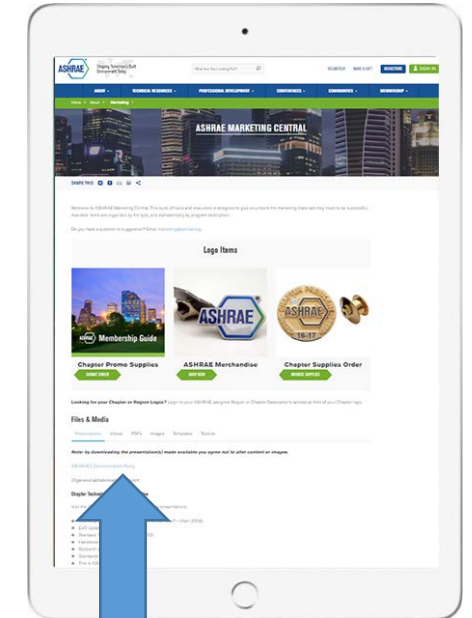
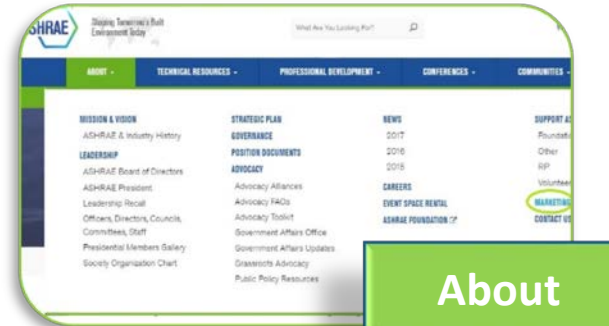
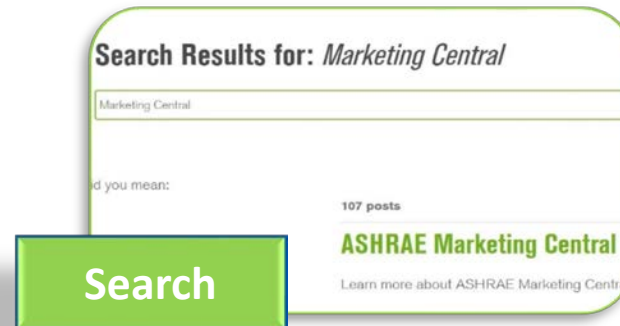
ashrae.org/certification

Marketing Central

Resources for Society-related marketing materials

- PowerPoint Presentations
- Videos
- PDFs
- Images
- Templates
- Toolkits
- Websites & Forms
- News & Events
- Grassroots
- Going to a show? Order a pull-up banner or table top sign with your Chapter logo!

How to find Marketing Central:



Promotional
freebies!

ashrae.org/marketing

ASHRAE 365

Over **19,000** active downloads!



- ASHRAE Events & Topical Conferences
- Professional Development Resources
- Volunteer and Member Resources

Download it free today!

ashrae.org/365



Over **9,000** views for both Tech Hours combined!

Tech Hour introduces the latest technical content presented by some of ASHRAE's brightest minds. Tech Hour videos are one hour and conveniently available in **ASHRAE 365** or on **ashrae.org**.

- Participants may be eligible to receive one PDH
- New videos published quarterly
 - ✓ Tech Hour #1: **Optimize Occupant Health, Building Energy Performance and Revenue through Indoor-Air Hydration**
 - ✓ Tech Hour #2 : **Where Have All the Ethics Gone?**
 - ✓ Tech Hour #3 : TBD Summer 2020

ashrae.org/techhour



Virtual Conference Feedback

Members and committees are encouraged to share Virtual Conference feedback with their ExO.



What was good?
What could have been better?

Questions?

Thank You!



ashrae.org

ASHRAE
CELEBRATING
125
YEARS



Distr.: General
28 March 2019
Original: English



**United Nations
Environment Assembly of the
United Nations Environment
Programme**

**United Nations Environment Assembly of the
United Nations Environment Programme
Fourth session
Nairobi, 11–15 March 2019**

**Resolution adopted by the United Nations Environment
Assembly on 15 March 2019**

**4/2. Promoting sustainable practices and innovative solutions for curbing food
loss and waste**

The United Nations Environment Assembly,

Appreciating the focus of its fourth session on innovative solutions for environmental challenges and sustainable consumption and production,

Deeply concerned that approximately one third of the food produced annually in the world for human consumption, equivalent to some 1.3 billion tonnes and representing an approximate value of 990 billion United States dollars, is lost or wasted, while 821 million people suffer from undernourishment,¹

Recognizing the international community's priorities of sustainably achieving food security and nutrition and ending hunger,

Recognizing also that producing food that is subsequently lost or wasted requires significant resources, including water, land, energy, labour and capital, frequently employs inputs such as fertilizers and pesticides, and results in greenhouse gas emissions,

Recalling its resolution 2/9 on prevention, reduction and reuse of food waste, which promoted a reduction in food loss and waste across the whole supply chain,

Recalling also that on 25 September 2015 world leaders adopted General Assembly resolution 70/1, the outcome document of the United Nations summit for the adoption of the post-2015 development agenda, entitled "Transforming our world: the 2030 Agenda for Sustainable Development",

Recognizing that in developing countries food losses occur mainly, but not exclusively, at early stages of the food value chain,

Recognizing also that food losses during harvest and in storage translate into lost income for many small farmers and into higher prices for many poor consumers,

¹ Food and Agriculture Organization of the United Nations, International Fund for Agriculture and Development, United Nations Children's Fund, World Food Programme and World Health Organization, *The State of Food Security and Nutrition in the World 2018: Building Climate Resilience for Food Security and Nutrition* (Rome, 2018).

Noting the scarcity of specific research and/or data related to food loss and waste, including the impact of poor or limited infrastructure and diverse climatic conditions, including high ambient temperatures and high relative humidity,

Recognizing the Sustainable Food Systems Programme of the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, an inclusive initiative to accelerate the shift towards more sustainable food systems,

Recalling the 2030 Agenda for Sustainable Development and the efforts of Member States to halve per capita food waste at the retail and consumer levels globally by 2030 and to reduce food losses along the production and supply chains, including post-harvest losses, by the same date,

Recognizing the negative impact of food loss and waste on a number of goals of the 2030 Agenda for Sustainable Development,

Recognizing also that there are challenges associated with the selection of sustainable cooling technologies, including by small and medium-sized farmers and producers,

Noting the roles and opportunities of relevant government institutions, including ministries of the environment, and of international organizations, technology providers and end-users, in contributing to the introduction of innovation and concepts fostering sustainable practices and technologies that can curb food loss and waste,

Acknowledging the progress made by certain Member States in implementing innovative solutions and technologies and engaging local constituents to reduce food loss and waste,

Recalling that the ministerial declaration² of the 2018 high-level political forum on sustainable development called upon all stakeholders to adopt a sustainable food systems approach and to develop effective strategies and innovations to reduce food losses and waste,

1. *Invites* Member States, taking into account different national circumstances, within the scope of available resources, and working with relevant stakeholders, to provide the necessary enabling environment to:

(a) Support measures to address issues related to food loss and waste at all stages of the supply chain from producer to end user, including handling, storage, packaging and transport; and work towards sustainable consumption and production, including through collaboration with relevant stakeholders;

(b) Develop and share best practice regarding integrated, energy-efficient and safe cold chain solutions that bring value to farmers and producers, and introduce innovative post-harvest technologies that are consistent with international commitments regarding sustainable cooling technologies and logistics and transport of food products that can extend the shelf life of sensitive products;

(c) Develop and share best practice regarding food preservation innovations to enhance the cooling and preservation of food products during the manufacturing, packaging, transportation and handling processes in such a way as to minimize the effect of diverse environmental conditions, such as high ambient temperatures, on the life of food products, taking into account energy-efficiency and safety considerations;

(d) Encourage and share best practice regarding, as feasible, sustainable cooling technologies suitable for deployment in a wide variety of environmental conditions, including in high-ambient-temperature countries, and in all elements of the supply chain, including farmers, producers, and small and medium-sized enterprises;

(e) Promote applied research on the impact of climate conditions on production, storage and transport, which leads to food loss and waste in a wide variety of environmental conditions, including in high-ambient-temperature countries; on innovative solutions to avoid losses and minimize the impact identified in the production chain; and on industry engagement to introduce appropriate energy-efficient refrigeration and other cold-chain solutions for farmers, producers and small and medium-sized enterprises, including in post-harvest and processing facilities and transport;

(f) Establish national strategies for reducing food loss and waste in line with Sustainable Development Goal 12, target 12.3;

² E/HLS/2018/1.

2. *Urges* Member States to establish mechanisms for measuring food loss and waste, including data management, monitoring and verification;
3. *Invites* Member States to use or repurpose excess food production, using sustainable practices and innovative technologies;
4. *Also invites* Member States to take appropriate measures to reduce food loss and waste, including through adequate policy measures, education and awareness-raising;
5. *Recommends* that Member States promote a broad-based dialogue between the public and private spheres, across the whole value chain and including all stakeholders, to collaborate on reasonable means of further reducing food loss and waste, bearing in mind that such loss and waste should not be moved from one part of the food chain to another, and the importance of including consumers in the process;
6. *Encourages* Member States, in collaboration with relevant stakeholders, to prioritize actions that prevent and reduce food loss and waste along the food supply chain that have the greatest environmental benefits, in line with the guidance issued by the United Nations Environment Programme and the Food and Agriculture Organization of the United Nations on prevention of loss and waste, food recovery, and redistribution of safe and nutritious food to people;³
7. *Requests* the Executive Director of the United Nations Environment Programme, within the scope of the Programme's programme of work and budget and the Sustainable Food Systems Programme of the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, and in cooperation with the Food and Agriculture Organization of the United Nations and other relevant partners, to:
 - (a) Provide technical support to assist Member States in implementing the present resolution;
 - (b) Foster regional and global cooperation and facilitate the exchange of experience and knowledge, research and best practice between Member States and other food-system stakeholders;
 - (c) Continue to participate in ongoing international initiatives to support the transfer of innovative solutions and practices that can curb food loss and waste;
8. *Also requests* the Executive Director to report to the United Nations Environment Assembly at its fifth session on progress made in implementing relevant provisions of the present resolution;
9. *Further requests* the Executive Director, within the mandate, programme of work and budget and available resources of the United Nations Environment Programme, to promote food loss and waste reduction and support countries, especially developing countries, upon their request, in exploring opportunities to collaborate with United Nations organizations and international financial institutions in line with their existing mandates and budgets.

³ United Nations Environment Programme and Food and Agriculture Organization of the United Nations, *Prevention and Reduction of Food and Drink Waste in Businesses and Households* (2014). Available at <https://www.unenvironment.org/thinkeatsave/resources/toolkits-guidance/prevention-and-reduction-food-and-drink-waste-businesses-and-households>.

UN ENVIRONMENT - ASHRAE

ACTIVITIES AND PRODUCTS



Since 2007, ASHRAE has engaged with UN Environment OzonAction in a partnership leading to tools and products that fit within programs of Article-5 countries of the Montreal Protocol.

In 2019, ASHRAE and UNEP signed a new MOU.



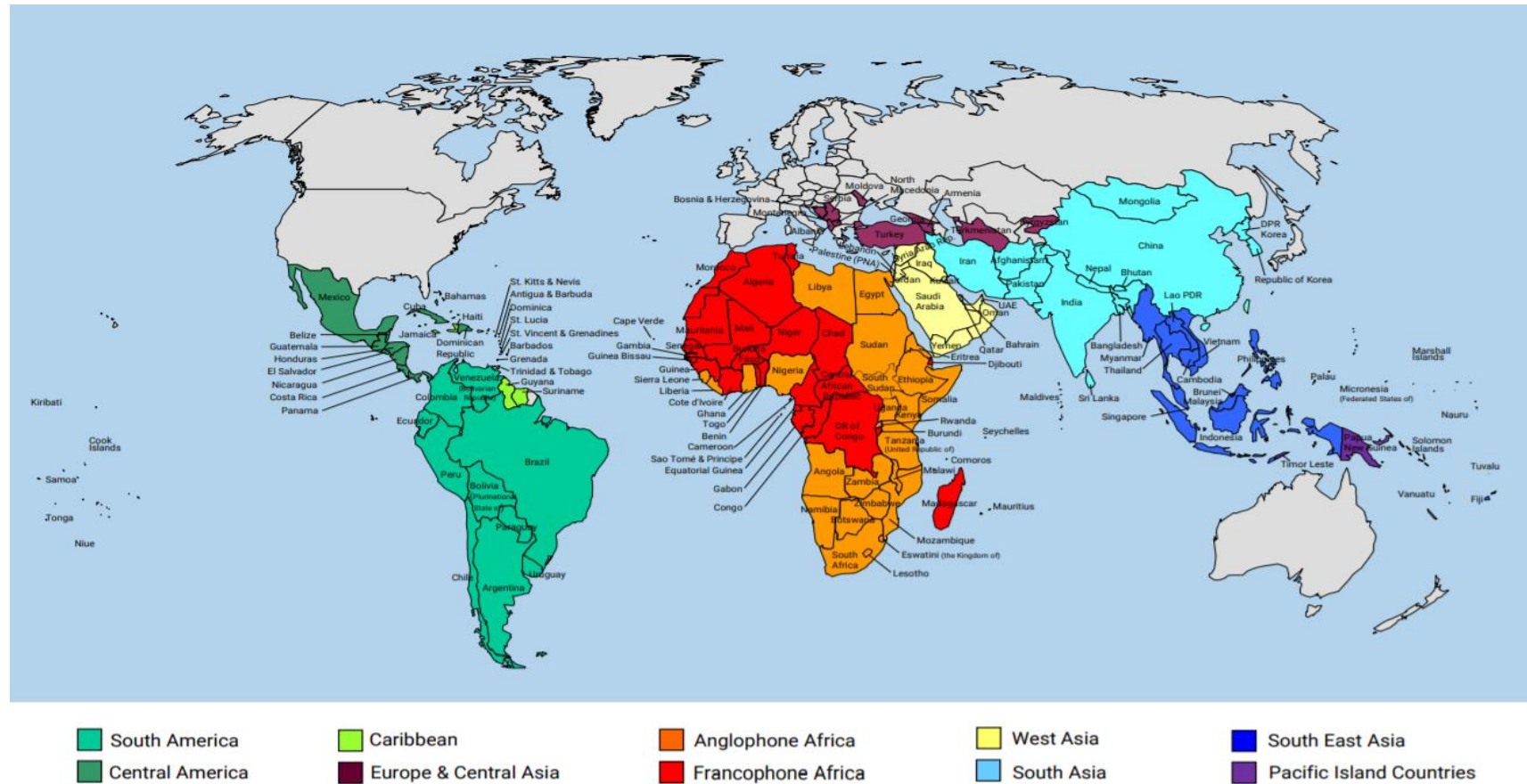
ASHRAE-UN Environment Work Plan 2019 and 2020

Refrigerant Management for Developing Economies

A biennium workplan is always developed to strategies the service lines that both entities offer based on needs and emerging issues



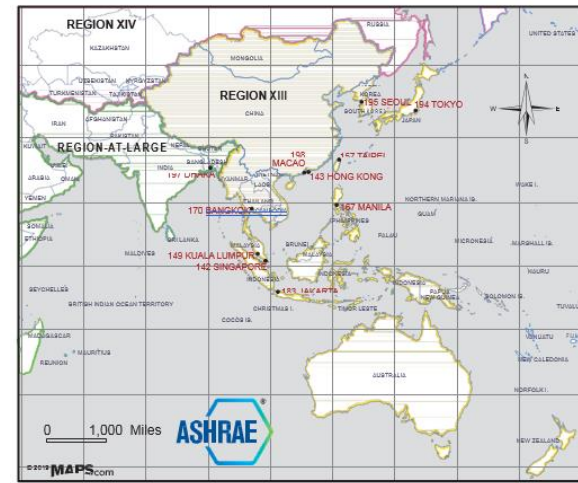
Members of the Regional Networks of Ozone Officers



Note: This map is for illustrative purposes only and is not an official United Nations cartographic document. The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.



30 Chapters Middle East, South
Asia, Africa



13 Chapters East Asia



15 Chapters/Sections Mexico,
Central, South America

ASHRAE Chapters in Developing Countries

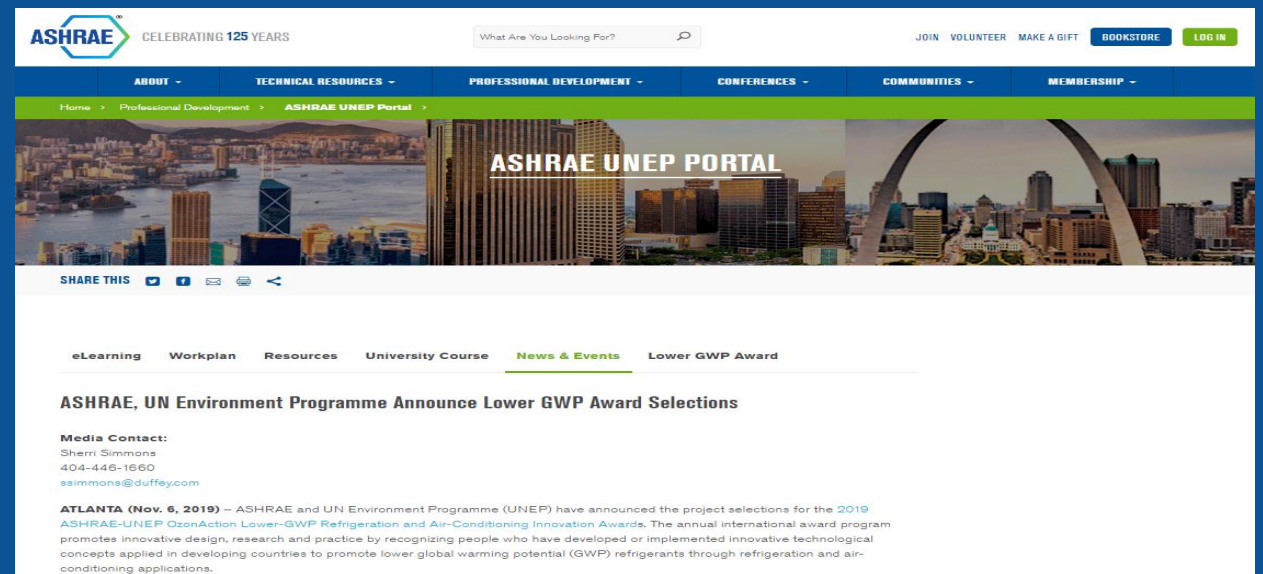
The ASHRAE- UNEP Portal

[www.ashrae.org/ashrae-
UN Environment-portal](http://www.ashrae.org/ashrae-UN%20Environment-portal)

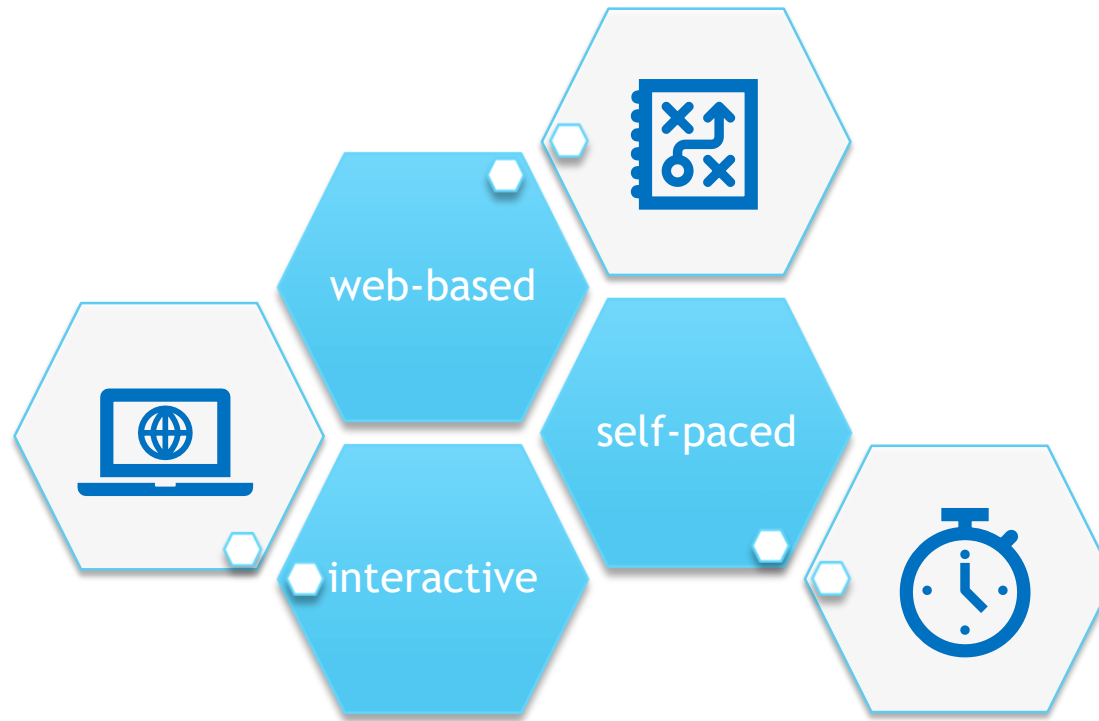
Launched September 2019

Users can access free content such as:

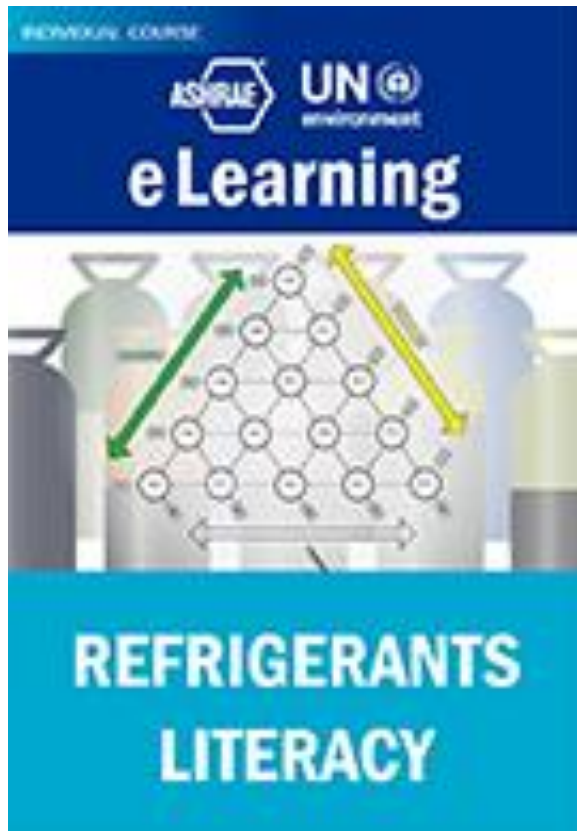
- eLearning courses
- University course
- Lower GWP Awards
- The current ASHRAE and UN Environment OzonAction Workplan
- News and Events
- Other ASHRAE and UN Environment resources



ASHRAE - UN Environment eLearning Courses



Refrigerants Literacy



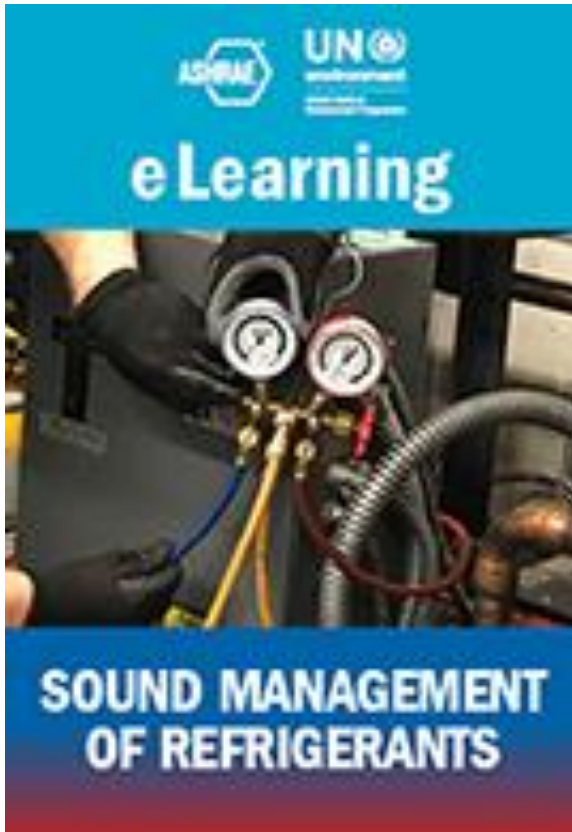
This course offers basic understanding about refrigerants types, policies, classifications and management practices. It is aimed at non-specialists in the field, such as facility managers, policy makers, and other individuals who are involved in refrigerant issues from a non-technical perspective. It also can serve as an introduction to refrigerant basics for those new to the industry. 4.5 PDH

The course is offered in:

- ✓ English (released April 2017)
- ✓ Spanish (released February 2019)
- ✓ French (released November 2019)

Other languages under consideration

Sound Management of Refrigerants



Reviews best practices for key environmental issues, ASHRAE standards, and refrigerant terminology for air-conditioning and refrigeration specialists. Topics covered include principles of refrigerant recovery, recycling, and reclaiming; Lubricants, their properties and applications, including compatibility issues with various refrigerants. The course embraces safe handling, service, and installation of equipment utilizing modern refrigerants. It introduces refrigerant management programs, certification schemes and relevant policies and regulations. 6.5 PDH

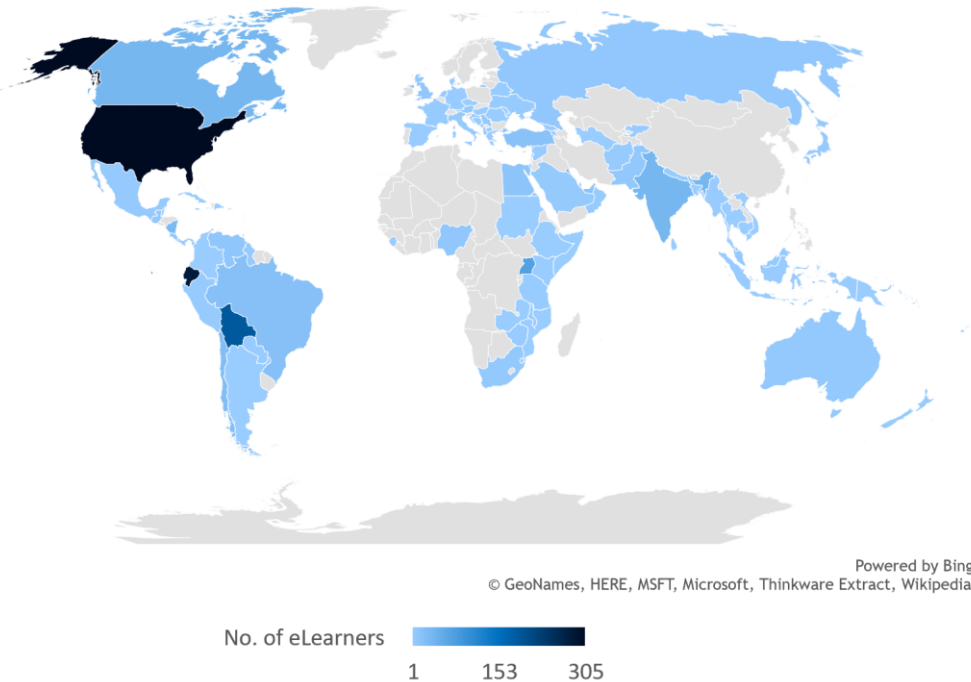
The course is offered in:

- ✓ English (released April 2017)

Other languages under consideration

All eLearning Courses Combined

No. of eLearners Across all Courses



- ▶ **1,598** registered eLearners across all courses so far
- ▶ eLearners registered in **109** countries

Countries with at Least 1 Registered eLearner Across all Courses



[eLearning](#)[Fact Sheets](#)[University Course](#)[News & Events](#)[Workplan](#)[Lower GWP Award](#)

Free Refrigerant Management for Future Engineers Course

ASHRAE has been chosen to distribute a university level course developed by UN Environment on Refrigerant Management for engineering students.

There is no cost to access the course and use the course materials. Instructors are provided with lecture notes, activity sheets, and course presentations.

Over the last two decades

UN Environment has been involved in training programs offered to field engineers and service technicians on refrigeration good practices including emissions reduction with a focus on hands-on practices.

This new course is first of its kind by UN Environment to offer comprehensive scientific information at the academic level. Future engineers will be offered the skills required to manage refrigerants soundly, as well as, technical and policy aspects associated with the refrigeration and air-conditioning industry.

Course Outline



MODULE 1 - 4 WEEKS

REFRIGERATION & AIR CONDITIONING INDUSTRY, EVOLUTION OF REFRIGERANTS & ENVIRONMENTAL IMPACTS



MODULE 2 - 3.5 WEEKS

ALTERNATIVE REFRIGERANTS FOR DIFFERENT SECTORS & LUBRICANTS



MODULE 3 - 3 WEEKS

CONTAINMENT OF REFRIGERANTS, SERVICE & MAINTENANCE OF AIR CONDITIONING & REFRIGERATION SYSTEMS



MODULE 4 - 2 WEEKS

SAFE USE & HANDLING OF REFRIGERANTS




MODULE 5 - 2 WEEKS


RELATED STANDARDS AND CODES OF SYSTEMS AND SUBSTANCES

SAMPLE TEACHING GUIDE


Below table represent suggested sample teaching guide for offering the course over full semester of around 14 academic weeks. Universities and colleges are encouraged to use this model for the first time of introduction while the course is flexible to be adjusted given local conditions and academic needs by each institute.




MODULE	Guide	WEEKS			
		W1	W2	W3	W4
MODULE 1 - 4 WEEKS REFRIGERATION & AIR CONDITIONING INDUSTRY, EVOLUTION OF REFRIGERANTS AND ENVIRONMENT IMPACT	Topics	1 – 4(a)	4(b) – 4(g)	5 - 9	10 - 11
	Full Week	Y	Y	Y	Y
	Activities	Y	Y	Y	Y
	Exam	N/A			




		W5	W6	W7	W8
MODULE 2 - 3.5 WEEKS ALTERNATIVE REFRIGERANTS & LUBRICANTS	Topics	1 - 2	3 - 5	6 - 10	11 – 12
	Full Week	Y	Y	Y	½ W
	Activities	Y	Y	Y	Y
	Exam	Exam-1 at W5 on previously covered materials			



		W8/W9	W9/W10	W10/11
MODULE 3 - 3 WEEKS CONTAINMENT OF REFRIGERANTS	Topics	1 – 4	5	6 - 7
	Full Week	½ W + ½ W	½ W + ½ W	½ W + ½ W
	Activities	Y	Y	Y
	Exam	Exam-2 at W9 on Materials since Exam-1		



		W12/W13	W13
MODULE 4 - 1.5 WEEKS SAFE USE & HANDLING OF REFRIGERANTS	Topics	1 - 5	6 - 7
	Full Week	½ W + ½ W	½ W
	Activities	Y	Y
	Exam	Exam-3 at W13 on Materials since Exam-2	

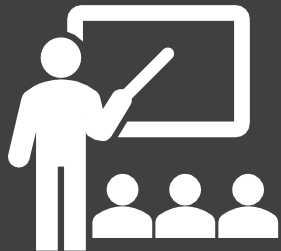


		W13	W14
MODULE 5 - 2 WEEKS RELATED STANDARDS AND CODES OF SYSTEMS AND SUBSTANCES	Topics	1 - 3	4 - 5
	Full Week	Y	Y
	Activities	Y	Y
	Exam	N/A	

W15
FINAL EXAM Comprehensive



Country	No. universities
Bolivia	1
Brazil	4
Canada	6
Egypt	2
Honduras	1
India	8
Indonesia	1
Lebanon	1
Malaysia	1
Nigeria	1
Pakistan	3
Peru	1
Philippines	4
Republic of Singapore	2
Serbia	1
Trinidad And Tobago	1
Turkey	1
UAE	2
USA	17
Venezuela	1
Total	59



- 59 universities have downloaded the course material for teaching purposes
- The course has been downloaded in 20 countries

2019 ASHRAE - UN
ENVIRONMENT
LOWER GWP
REFRIGERATION AND
AIR-CONDITIONING
INNOVATION AWARD



WHAT ARE THE LOWER GWP AWARDS?



The annual awards are a joint venture between ASHRAE and UN Environment



The awards promote innovative design, research and practice by recognizing people who have developed or implemented innovative technological concepts



Entries can be made in two categories, residential applications, and commercial/industrial applications

PANEL OF JUDGES:

Judges



Nesreene Ghaddar (Lebanon)



Steve Gill (UK)



Roberto Peixoto (Brazil)



James Wolf (USA)

Co-Chairs



James S. Curlin (UNEP)



Sheila J. Hayter (ASHRAE)

Residential Applications Category

1. HFC-161 Application Technology Development for Replacing HCFC-22 in High Cooling Capacity Household Air Conditioners in **China**
2. Low Charge Ammonia Vapor Compression Refrigeration System for Residential Air-Conditioning in **India**

Commercial/Industrial Applications Category

1. The Crocodile Project CO2 Trans-critical Refrigeration System for a Hot-and-Humid Region implemented in **Thailand**
2. Packaged Chillers with Integrated Air Handling Units Using HFC-32 and HC-290 in **Saudi Arabia**
3. Low Charge Propane Chiller for a Supermarket Commercial Refrigeration System implemented in **Brazil**

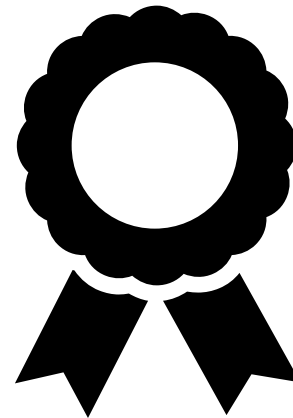
2019 SELECTED ENTRIES: RESIDENTIAL APPLICATIONS



HOW DO I ENTER THE 2020 AWARDS

- The application process will be announced soon. To receive updates about the awards, please email ashraeunep@ashrae.org and request to be added to our mailing list.
- To find out more about the about the awards including entry criteria, please visit the link below for more information:

www.ashrae.org/professional-development/ashrae-unep-portal



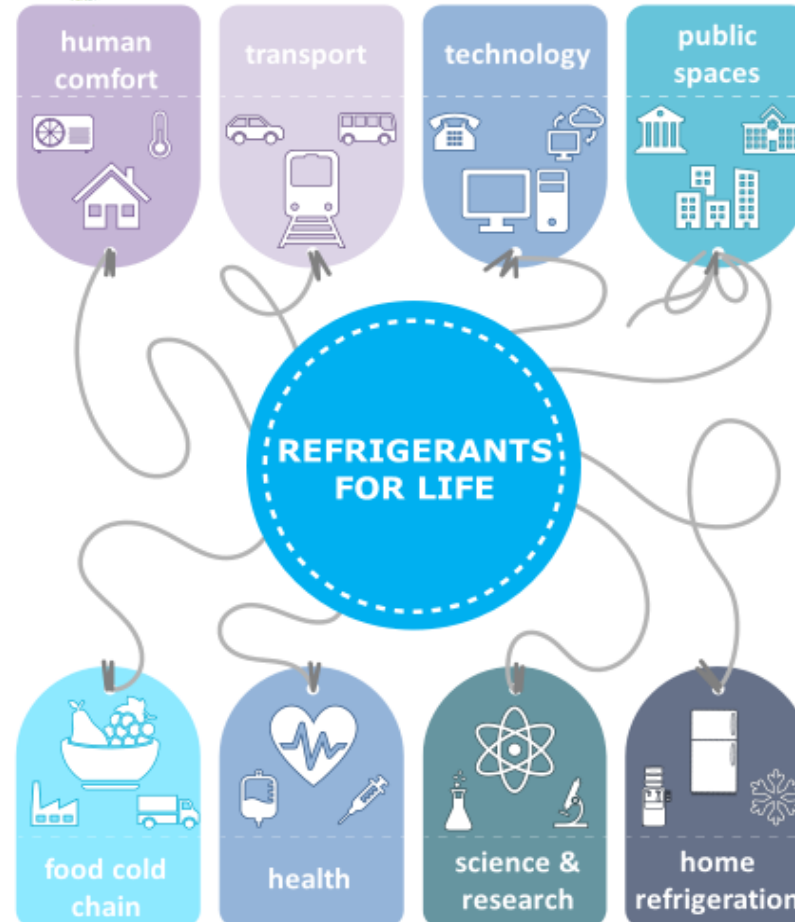
WORLD REFRIGERATION DAY

26 JUNE
EVERY YEAR



World Refrigeration Day - 26 June 2019

#Refrigerants4Life



¹IIR, "29th Informatory Note on Refrigeration Technologies: The Role of Refrigeration," 2015. ²UN Environment, IIR, "Cold Chain Technology Brief: Commercial, Professional, and Domestic Refrigeration" 2018. ³UN Environment, "Refrigeration, Air-Conditioning, and Heat Pumps Technical Options Committee: 2018 Assessment Report," 2018.



Context

- Domestic refrigerators use 65% less energy than 15 years ago¹.
- 4 million refrigerated trucks & 600 million m³ of refrigerated warehouses help preserve 400 million tonnes of food each year².
- 2+ billion domestic refrigerators & freezers (with 170 million produced annually) consuming 4% of global energy³.
- 5.6 billion air-conditioners in use by 2050, tripling the sector's energy demand³.



Environmental Issues and Safety

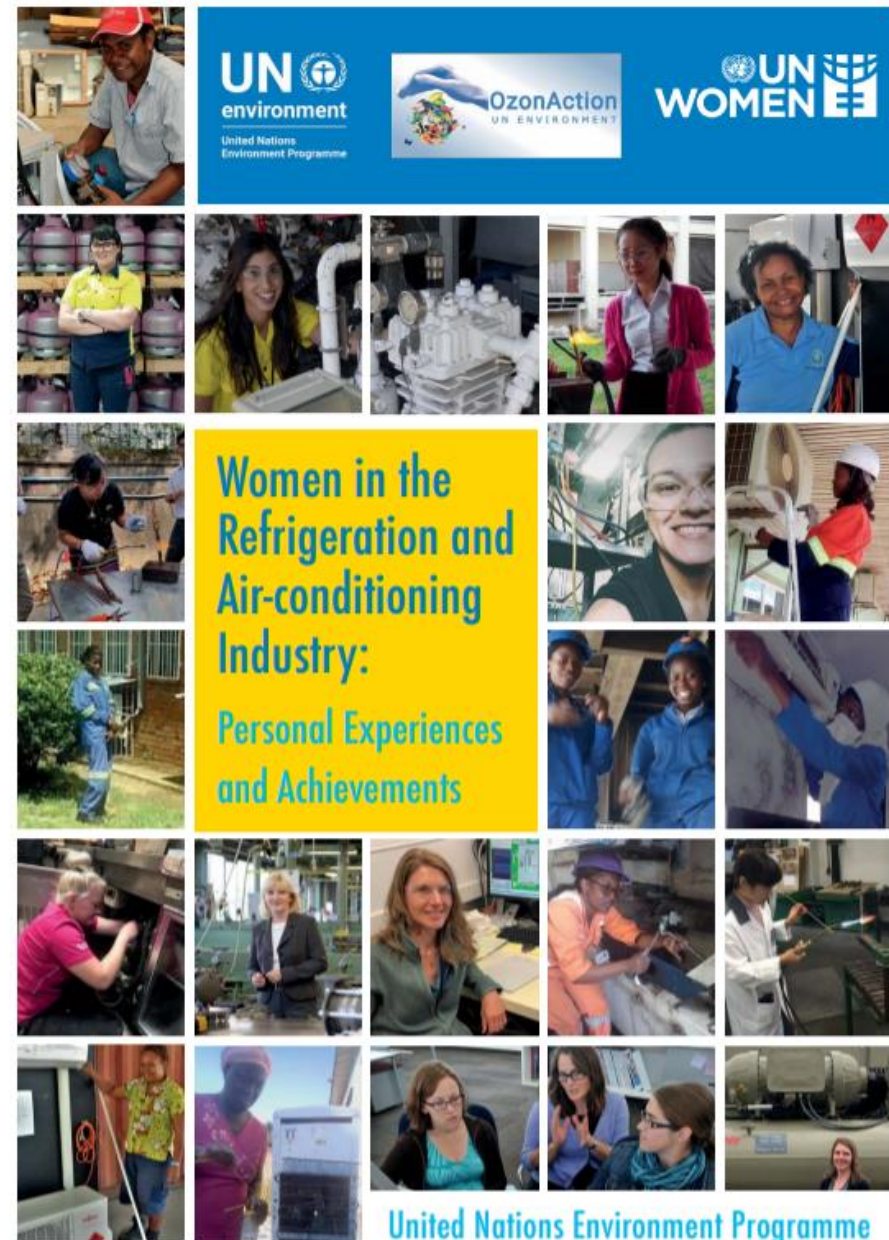
- Most commercially available refrigerants contribute to global warming and/or ozone depletion if released.
- Newer energy efficient equipment can save owners money and reduce greenhouse gas emissions.
- Alternative refrigerants are available but some have flammability, high-pressure or toxicity that require proper management.
- Efficient operation and management of cold chain applications curbs food loss and enhances food security.



What Action is Needed

- Careful refrigerant selection, system design, and management of operation can reduce refrigerant emissions and save energy costs.
- Selecting lower global warming potential refrigerants for new systems, where feasible, and promote relevant research.
- Promoting recovery, reuse, reclamation of refrigerants and prohibiting release into the atmosphere.
- Using certified companies and individuals to ensure good practice and servicing, and safe use of flammable refrigerants.

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THANK YOU

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