



Shaping Tomorrow's
Built Environment Today

MINUTES

REF-CPCC
February 9, 2025
Hilton Orlando
Orlando, FL

MEMBERS PRESENT:

Doug Scott, *Chair*
Don Brandt, *Vice-Chair*
Andrew Beall
Charles Hon
Dustin Lilya
Cesar Lim
Bruce Lindsay
Apichit Lumlertpongpana
Bruce Nelson
Heather Schopplein, *BOD Ex-O*
Gratiela Maria Tarlea
Xudong Wang
Davide Ziviani

MEMBERS NOT PRESENT:

Roddam Anish Simha
Harshal Surange
Wade Conlan, *Coordinating Officer*

ASHRAE STAFF:

Donna Daniel
Steve Hammerling
Amber Thomas

GUESTS:

Yosr Auouche
Steven Elbel
Brian Fricke
Stephen Gill
Brian Hafendorfer
Trevor Jones
Nitin Karwa
Steve Kujak
Taylor Lund
Tais Mitchell
Samuel Yana Motta
Stan Naboney
Kashif Nawak
Michael Peterson
Eric Ramon
Andrea Russell
Mike Saunders
Gary Schrift
Larry Smith
Danielle Wright
Shitong Zha

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MOTIONS

No.	Motion	Status
1	That draft minutes from the Fall virtual meeting (October 7 th , 2024) be approved	PASSED
2	that REF-CPCC approve the primary changes, including reduction to two permanent committees (Communications and Planning) and to proceed with completion before the Annual Meeting.	PASSED

ACTION ITEMS – 2025 Winter Meeting

No.	Responsibility	Action Item	Status
1	Staff	send Kujak information on the ASHRAE PD process	
2	Awards Subcommittee	The subcommittee agreed to craft specific changes to award procedures for next meeting	
3	REF-CPCC	Members were asked to review and provide feedback on Trends in Refrigeration Report	
4	Staff	Staff was asked to connect with Marketing staff who can help with graphics and presentation on Trends in Refrigeration Report	
5	Scott	Reach out to Karen Washington to make her aware that REF-CPCC members can help participate or identify experts on specific topics for press inquiries as requested	
6	Brandt & Schopplein	Explore Refrigeration Cocktail Party with YEA for Las Vegas meeting	

ACTION ITEMS – 2024 Fall Meeting

No.	Owner	Action	Status
1	ASHRAE Staff, Chair	Develop minutes	Complete
2	ASHRAE Staff	Consolidate basecamp documents and update member list	Complete
3	Chair	Distribute Committee Organizational PPT	Complete
4	REF-CPCC	Give feedback according to Committee Organizational PPT	Complete

LIST OF ATTACHMENTS

No.	Attachment
A	Planning Committee presentation
B	IIAR presentation
C	IIR presentation
D	2024-25 MBOs
E	Committee Organization presentation
F	Cold Chain subcommittee minutes
G	Awards subcommittee presentation
H	Trends in Refrigeration
I	Special Projects / CEBD
J	BOD Ex-O PEAC Presentation

LIST OF ACRONYMS

AI	Action Item	IIAR	International Institute of All-Natural Refrigeration
ASHRAE	American Society of Heating, Refrigerating and Air-conditioning Engineers	IIR	International Institute of Refrigeration
BOD	Board of Directors	MBO	Management by Objectives
CEBD	Center of Excellence for Building Decarbonization	MOU	Memorandum of Understanding
CNV	Chair Not Voting	PD	Position Document
CTTC	Chapter Technology Transfer Committee	REF-CPCC	Refrigeration Technology Committee for Comfort, Process, and Cold Chain
DL	Distinguished Lecturer	TC	Technical Committee
DRSC	Document Review SubCommittee	UNEP	United Nations Environment Programme
Ex-O	Ex-Officio	WRD	World Refrigeration Day
GCCA	Global Cold Chain Alliance	YEA	Young Engineers in ASHRAE
HVAC	Heating, Ventilation, Air Conditioning		

1. CALL TO ORDER

Chair Doug Scott called the meeting to order at approximately 8:00 AM EST.

2. WELCOME

A. Housekeeping and reminders

None

B. Introduction

Members and guests in attendance introduced themselves.

C. Announcements

Please refer to agenda for anticipated reports and discussion. There is no virtual component to this meeting, it is face to face only.

3. ASHRAE VALUE STATEMENT

In 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. Our culture is one of inclusiveness, acknowledging the inherent value and dignity of each individual. We celebrate diverse and inclusive communities, understanding that doing so fuels better, more creative and more thoughtful ideas, solutions and strategies for the Society and the communities our Society serves. We respect and welcome all.

[Code of Ethics](#)

[Core Values](#)

[Diversity Statement](#)

4. QUORUM DETERMINATION

Quorum was confirmed with 12 of 14 voting members attending. One non-voting member and three ASHRAE staff were present as well.

5. REVIEW OF AGENDA

No changes were suggested to the meeting agenda sent ahead of meeting.

6. MINUTES

(1) It was moved (Lilya) and seconded (Beall) draft minutes from the Fall virtual meeting (October 7th, 2024) be approved.

MOTION 1 VOTE: 11-0-0 CNV - PASSED

7. ACTION ITEM REVIEW

Action Items for this meeting would be tracked and listed in minutes.

8. LIAISON REPORTS

A. Planning Committee - Samir Traboulsi

Traboulsi gave a presentation (**Attachment A**) from the Planning Committee. The Planning Committee is tasked to develop and maintain ASHRAE long range and strategic planning activities. ASHRAE committees and TCs are asked to align their goals and MBOs to align with the ASHRAE Strategic Plan. REF-CPCC and members are asked to reach out to offer input.

B. GCCA – Ade Awujoola (Liaison from ASHRAE to GCCA)

No formal report on GCCA activities was issued.

C. IIAR – Gary Schrift

IIAR President Gary Schrift gave a presentation (**Attachment B**). Their stated vision is to ‘create a better world through safe and sustainable use of natural refrigerants. Their stated mission is ‘to provide advocacy, education, and standards for the benefit of the global community in the safe and sustainable design, installation and operation of natural refrigerant systems’.

IIAR has an MOU with ASHRAE. There are a number of areas where ASHRAE and IIAR are working on including research, position documents, cross-promotion, conferences, standards and codes.

D. IIR – Yosr Allouche

Allouche gave a presentation (**Attachment C**).

There was discussion about Allouche being a non-voting member of REF-CPCC as IIR representative. Schopplein would review. Official members to REF require Presidential appointments and provide transportation funding. ASHRAE has formal official liaison with outside orgs, at Society level, which could be pursued if there is not an IIR liaison.

E. CTTC (Brandt)

No formal report was presented. Members were asked to let Brandt know if interested in participating in CTTC issues.

F. UNEP

No formal report, but the following activities were highlighted in the Cold Chain subcommittee meeting notes:

- Toolkit to Assess RAC Plant Sustainability: To achieve energy-efficient, safe, and environmentally sustainable performance, RAC plants must meet key parameters in eight dimensions of practice plus the use of appropriate tools and servicing techniques. To enable plant managers and service technicians to assess their progress, ASHRAE and UNEP OzonAction have developed Best Practices Checklists describing the mindset needed for each dimension of practice, objective, required actions, measures of success, and additional resources. The checklists are supported by guidance sheets providing instructions on the steps to be taken. UNEP and ASHRAE will launch this in early 2025. Feedback from the committee would be excellent. I will keep you advised.
- RAC Capacity in Africa – UNEP is assessing the availability of guidelines, training materials, other resources in Africa for safe handling and energy efficient operation of RAC plants. Any resources the committee could provide (contact points) would be

helpful.

G. Others

No other reports were given

9. **CHAIR'S REPORT – Scott**

A. Review Committee Roster

The following terms expire June 30, 2025:

- Mr. Douglas Scott
- Mr. Apichit Lumlerpongpana
- Mr. Roddam Anish Simha
- Mr. Xudong Wang

New members are important, planning for next year and who will be coming up on the committee. Nominations can be made at

www.ashrae.org/communities/committees/committee-nominations.

B. SY 24-25 MBOs – Review

An update on committee MBOs (**Attachment D**) would be reported to Operations Subcommittee of Tech Council on Tuesday morning.

Regarding MBO #6, YEA is looking for someone to cosponsor their happy hour, so maybe YEA and REF-CPCC can do a joint event for Winter meetings.

C. Proposed subcommittee recognition

At Orlando, REF-CPCC reviewed changes in its committee organization (**Attachment E**) and operations, intended to increase outcomes and effectiveness for both ASHRAE and committee members and liaisons. Increased emphasis will be placed on coordination with US and global organizations, greater strategic focus, and active outbound refrigeration-related communications.

(2) It was moved (Lilya) and seconded (Brandt) that REF-CPCC approve the primary changes, including reduction to two permanent committees (Communications and Planning) and to proceed with completion before the Annual Meeting.

MOTION 2 VOTE: 11-0-0 CNV - PASSED

D. Discussion of Cold Chain Position Document

Committee volunteers were obtained to prepare a new Cold Chain Position Document proposal, to be chaired by Steve Kuyak. Bruce Nelson and Stan Nabozny agreed to help. Staff would send Kujak information on the ASHRAE PD process (**Action Item #1**).

E. UNEP/GTIC requests

There will be some incoming requests, REF-CPCC to stay tuned.

F. ASHRAE Guide for Sustainable Refrigerated Facilities and Refrigeration Systems (2nd edition)

REF-CPCC agreed to be the cognizant committee for changes to the “ASHRAE Guide for Sustainable Refrigerated Facilities and Refrigeration Systems” and work with Special Publications on an update.

This book was initially published in 2018. It's a great technical resource, a comprehensive publication, but ASHRAE has not sold a lot. Scott spoke with ASHRAE Publications and they are thinking of turn it into a tradable training classroom series. IIR is interested in collaborating with this, a multiweek class all online where money could be made on this. They will give this more attention after Annual Meeting with REF-CPCC as the cognizant committee.

This may also be a good topic for a great DL presentation, a 45 minute presentation for chapters.

G. World Refrigeration Day Promotion (WRD)

Gill reported on World Refrigeration Day, held every June 26th. The aim is to speak to the outside world, nearly 300 association around the world that support WRD including ASHRAE. ASHRAE has helped promote in the past, usually within a theme. This year's theme is skills and training. Gill asked all to help promote WRD.

10. REF Subcommittee Reports:

A. Cold Chain – Chair: Surange – Members: Nelson, Apichit, Davide, Hon

Harshal was absent but minutes from Dec. 17th meeting are included as **Attachment F**.

B. Awards – Chair: Lumlertpongpana – Members: Lim, Castro, Yatim

Lumlertpongpana submitted a presentation (**Attachment G**). There was discussion about returning the scope of the Milton Garland award to its original purpose to help get more entries.

This subcommittee can develop a specific proposal with a markup of current procedures at a future meeting. There were suggestions to simplify current application process to help make it easier to apply.

The subcommittee agreed to craft specific changes to award procedures for next meeting (**Action Item #2**).

C. HVAC – Chair: Brandt – Members: Omar, Kujak

No report from this subcommittee.

D. H in Refrigeration – Brandt

A TC is looking at developing a guide for industrial heat pumps. Does ASHRAE need a TC dedicated to this topic? Nawaz noted he'd be interested in this effort.

E. Trends in Refrigeration Report (new) - Beall

Beall presented a draft “Trends in Refrigeration” Report (**Attachment H**), intended to be a brief and graphical in nature. Progress was reviewed with discussion of ASHRAE resources to assist with formatting and presentation. Members were asked to review and provide feedback (**Action Item #3**). Aim is to eventually post to ASHRAE website. Staff

was asked to connect with Marketing staff who can help with graphics and presentation (**Action Item #4**).

F. Refrigerants and their Responsible Use position document - Lilya

The second draft of the *Refrigerants and their Responsible Use* Position Document revision was reviewed by Dustin Lilya. The PD Committee will review and begin weekly meetings in early March. The expectation is to have a final draft to DRSC in advance of the Phoenix Annual Meeting. The PD expires June 28, 2025.

G. TC Coordination - Hon

No report

11. Report and needs from committee for Special Projects/CEBD – Bruce Nelson

A presentation is included with these minutes as **Attachment I**. REF-CPCC is supporting the Special Projects committee with two CEBD projects:

- “Refrigerant Emissions Management, Tracking and Compliance”
- “Decarbonization Strategies for Supermarket Industry Archetypes”

Nelson is the liaison between REF and CEBD. Two of the fifteen projects are of interest to this committee. Nelson invited REF-CPCC members to participate on the working groups for these projects. Currently Nelson is on the working group for the supermarket project. Tarlea is on the working group for the refrigerant leakage project.

12. Refrigeration Communications

Journal Articles

Bruce Lindsay is working to develop a Journal article related to an application on a cruise ship that involved cooling the fuel to a low temperature. He went on a tour and got access and got agreement from owners to develop article.

Programs

REF-CPCC sponsored a forum in Orlando on “Use of New A2L Refrigerants in Cold Storage Applications”.

Lindsay is developing a webinar on industrial refrigeration in South America May 27th and seeking co-sponsorship and translation of this into Spanish and Portuguese. REF-CPCC noted an interest in co-sponsoring. Please contact if interested.

Other

Lilya noted we got a request from ASHRAE Media Relations to do a media interview. Scott noted REF-CPCC can serve as a resource for future refrigeration related media requests as well. Scott would reach out to Karen Washington to make her aware that REF-CPCC members can help participate or identify experts on specific topics as requested (**Action Item #5**).

13. Discussion: R in ASHRAE Cocktail Party for Winter 2026 (MBO 6)

Schopplein noted YEA may be looking for someone to partner with to organize an event for Winter Meetings. Brandt and Schopplein would explore issue with YEA for Las Vegas

meeting (**Action Item #6**).

14. Discussion: Refrigeration Gaps Needs and Gaps Survey (MBO 9)

REF-CPCC discussed an idea for a survey of members to identify refrigeration gaps and needs. This would occur every five years and could require funding. Schopplein suggested developing 3-4 questions from REF-CPCC to include in existing member survey as opposed to a new survey. Could target

15. BOD/Tech Council Reports

A. BOD EX-Officio – Schopplein

Schopplein presented the No formal report was given but the PEAC presentation is included as **Attachment J**.

Highlights for REF-CPCC include:

- New ASHRAE tagline adds global focus: Shaping Tomorrow's Global Built Environment Today
- New ASHRAE Strategic Plan to be announced at 2025 Annual Conference – www.ashrae.org/strategicplan
- Share your expertise with Government Officials through SMEs for GOEs program (email govaffairs@ashrae.org) if interested.
- 2024 versions of ASHRAE Standard 15, 15.2 and 34 published
- Nominations for appointed standing committees due Feb. 14th.

B. Coordinating Officer – Conlan

No report from CO

16. NEXT MEETING

- A. Subcommittee meetings – Hold virtual meetings ahead of main REF-CPCC meeting
- B. 2025 Spring Virtual Meeting – Staff will poll for best meeting date and time
- C. 2025 Annual Meeting – Phoenix, AZ June 22, 2025

17. ADJOURNMENT

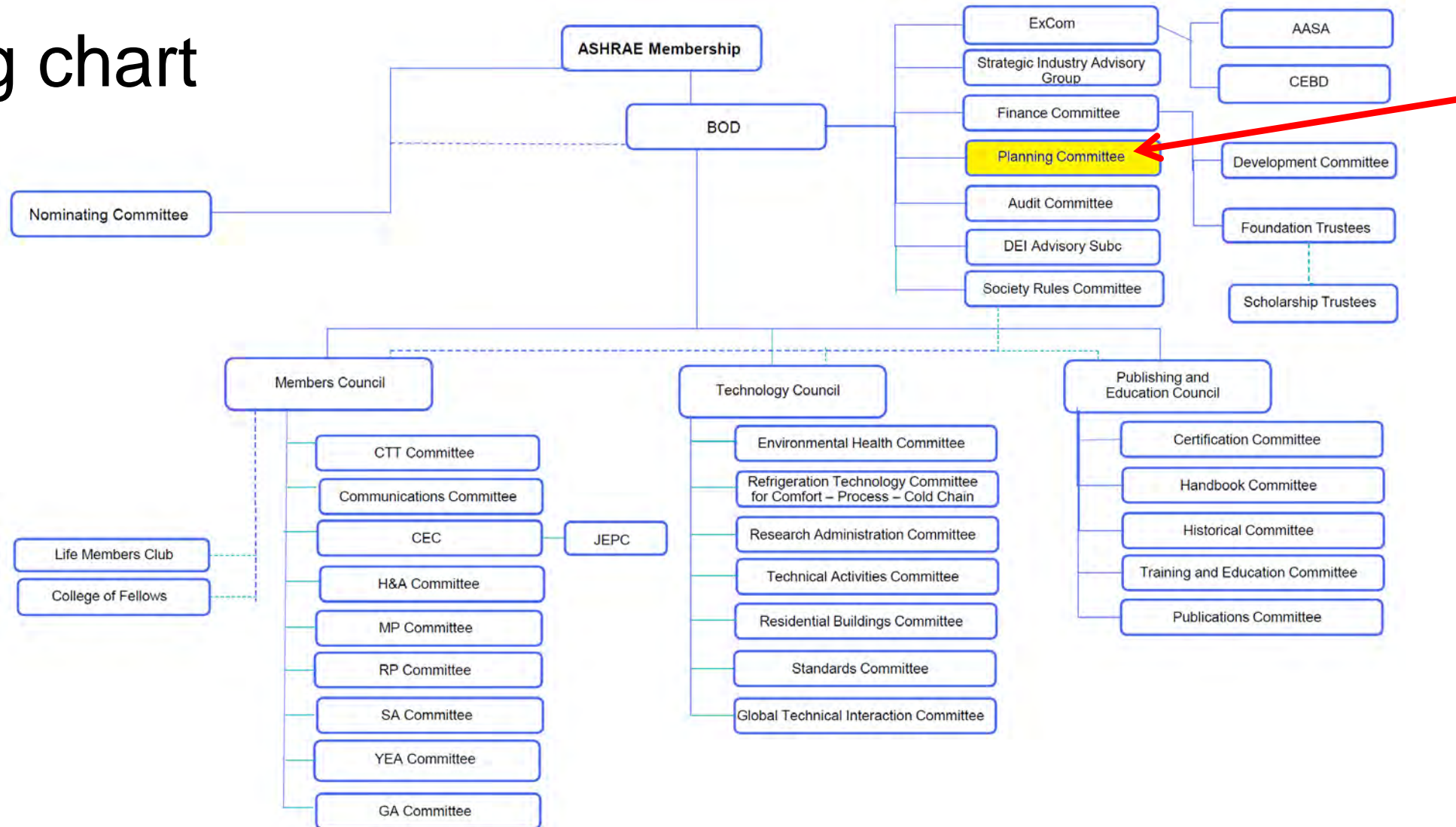
Meeting was adjourned at 11:50 AM EST.



Planning Committee (PLC)

Who is the Planning Committee?

- Org chart



What does the Planning Committee do?

- Role

- The role of the Planning Committee (PLC) is to assist the Board of Directors (BOD) and the **organization** in the development of strategic thinking for the future.
- The PLC uses an approved method of **soliciting continuous strategic planning from the councils and committees** for use in advising the Board of Directors on ideas which may be considered for changes to the strategic goals and directions of the Society.
- On a regular basis the PLC:
 - Reports on Findings & Recommendations
 - Provides Gap Analysis on Strategic directions & goals of committees

What does the Planning Committee do?

• Subcommittees

Innovation and Implementation Subcommittee:

- Oversee Strategic Plan implementation
- Teams with ASHRAE Councils and Committees to ensure each develops appropriate timelines for implementation, metrics to measure success, and a method to measure progress related to the strategic plan
- Develops methodology to identify gaps and overlaps in implementing the Strategic Plan
- Solicits creative ideas from the membership, makes strategic assessments, identifies strategies, develops and recommends new initiatives to the PLC to adopt as strategic goals
- Makes recommendations for next year, three (3) year, five (5) year, ten (10) year, and twenty (20) year goals.

What does the Planning Committee do?

Validation and Documentation Subcommittee (is responsible for):

- Receiving, reviewing, and quantifying each Council and Committee's MBOs.
- Receiving the Continuous Strategic Planning (CSP) input from the committees and councils and presenting them to the full PLC for consideration by the Board of Directors at the Fall BOD meeting.
- Updating the survey, reviewing the responses, and compiling summary information and potential actionable items from the annual Membership Survey.
- Utilizing the metrics and Key Performance Indicators (KPIs) to evaluate the success and progress of the Strategic Plan and presenting them for the full PLC Annual Meeting.

What does the Planning Committee do?

• Strategic Plan

The Planning Committee (PLC) is responsible for ASHRAE's long-range and strategic planning activities on a continuing basis. The PLC role is to assist the Board of Directors (BOD) and the organization to think strategically in planning for the future.



Healthy, Sustainable and Resilient Communities

Providing a healthy, productive and resilient indoor environment, while minimizing greenhouse gas emissions, is critical to today's built environment. Further, global stakeholders' leveraging of ASHRAE's standards and technical resources presents an opportunity for ASHRAE to solidify global leadership in supporting healthy, sustainable and resilient communities. ASHRAE prioritizes timely identification of industry trends, expedient content development, and forges key partnerships to advocate and collaborate with industry.



Empowered Workforce

The development of a skilled, competent, and solutions-oriented workforce is critical to addressing the challenges facing the built environment and the HVAC&R industry, today and in the future. ASHRAE continues to provide educational and professional development resources. Our members and industry partners need these tools to implement key initiatives such as decarbonization, resiliency, and indoor environmental quality goals and policies. ASHRAE, with the support of our chapters and regions, partners with key industry stakeholders in tackling the unique workforce challenges facing the industry globally.



Organizational Agility

ASHRAE's ability to serve communities, the industry, the current and future workforce, and provide value to its volunteer members, is dependent on forward-looking products, services, and solutions. ASHRAE will use emerging technologies to support the development of resources and knowledge flow between ASHRAE's chapters, regions, technical bodies, and the industry, harnessing organizational and operational efficiencies.



Emerging Technologies

In today's rapidly evolving landscape, emerging technologies are revolutionizing the built environment and HVAC&R industry, expanding numerous career opportunities. By combining technological advancements such as AI with human creativity, both seasoned professionals and new talent can collaborate to drive industry-wide progress. Advanced automation and AI-enabled systems propel energy efficiency and smart buildings, enhance comfort and IEQ, improve operations and maintenance, and deliver holistic and sustainable solutions for industry professionals. ASHRAE engages in a thoughtful process to evaluate and prioritize opportunities to leverage new technologies.

How does the Planning Committee affect you?

- The Planning Committee (PLC) helps ASHRAE Committee and TC's design their goals and MBO's to align with the ASHRAE Strategic Plan.

How can the Planning Committee help you?

- Members of the Planning Committee (PLC) are available to help discuss anything related to ASHRAE's Strategic Plan, or even regarding your MBO's (and how they align with the Strategic Plan)
- Members of PLC are available to carry your suggestions / inputs back to PLC.



Contact Information

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Safe and Sustainable use of Natural Refrigerants

Gary Schrift – President

Our Vision

To create a better world
through the safe and
sustainable use of natural
refrigerants

Our Mission

To provide advocacy, education, and
standards for the benefit of the global
community in the safe and sustainable
design, installation and operation of
natural refrigerant systems



**standards,
education,
advocacy**

SAFE AND SUSTAINABLE USE OF
NATURAL REFRIGERANTS



International Institute of All-Natural Refrigeration

Who Are We?



Member-based Technical Society

Our members represent diverse areas of the refrigeration Industry

4,100+ Members including:

- ☐ Designers
- ☐ Manufacturers
- ☐ Contractors
- ☐ End users
- ☐ Scientists
- ☐ Academics
- ☐ Students
- ☐ Consultants



SAFE AND SUSTAINABLE USE OF NATURAL REFRIGERANTS



Education

- **Online Training – Free to Members**
 - All Ammonia Refrigeration Training Series I, II, & III
 - Select two Academy of Natural Refrigerants courses each year
- **Online Monthly Webinars – Free to Members**
- **Recorded Conference Educational Sessions – Free to Members**

IIAR Membership



Norms & Standards

- **IIAR Suite of Standards – Free to Members**
 - All Nine Ammonia standards
 - The IIAR CO2 Standard
 - Prior Versions
 - English & Spanish Versions
- **Individual & Group Members**
 - Individual - \$1000
 - Group Company:
 - \$2000 for five (5) Members
 - \$400 / member
 - \$100 / member after 25 members

Certificate courses



- ANSI/ILAR 2 ** Available in Spanish*
- ANSI/ILAR 4 ** Available in Spanish*
- ANSI/ILAR 6 ** Available in Spanish*
- ANSI/ILAR 7 ** Available in Spanish*
- ANSI/ILAR 9 ** Available in Spanish*
- Estimating Accidental Refrigerant Releases
- Process Safety Management & Risk Management Program Guidelines
- Planning and Performing an Effective Process Hazard Analysis
- Ammonia Refrigeration Management (ARM) Program

education &
certificate programs update



IIAR's Annual Conference – Largest International Conference devoted entirely to the use and application of Natural Refrigerants



Allied Organizations



ASHRAE – IIAR MOU



- **2014 IIAR-ASHRAE MOU**
 - Needs Updated
 - IIAR has a New MOU Template
- **Working Together**
 - ASHRAE 1915-TRP, Refrigerated Facilities Doorway Infiltration Air Energy Reduction Research Project – **IIAR Offer to CoFund**
 - Many members of ASHRAE serve on IIAR boards & committees & vice-versa
 - IAR members involved in updates to the ASHRAE Position Document on Refrigerants and Their Responsible Use



IIR – IIAR MOU

- **2024 IIAR-IIR MOU**
 - IIAR signed first ever MOU in 2024
- **Working Together**
 - Sharing information with our respective members - Announce each other's events
 - Collaborate on conferences & expos devoted to Natural Refrigerants
 - Preliminary Study on a joint conference & expo in fall 2027.



INSTITUT INTERNATIONAL DU FROID
INTERNATIONAL INSTITUTE OF REFRIGERATION





NRF

**NATURAL
REFRIGERATION
FOUNDATION**

Our Mission

To Promote the safe and
sustainable use of natural
refrigerants through
Research, Education
Program Development and
Scholarships

education
research

SAFE AND SUSTAINABLE USE OF
NATURAL REFRIGERANTS





Recently Completed Projects

- ☐ Condensation Induced Hydraulic Shock
- ☐ Optimizing Velocity in Wet Suction Risers
- ☐ Dispersion of Ammonia in Cold Rooms
- ☐ Dispersion of Ammonia in Atmosphere
- ☐ Insulation Installation Guideline
- ☐ Estimating Mass of Refrigerant Releases

Current Project

- ☐ Investigation of the development of dry ice in CO₂ relief piping – University of California, Berkeley

IIAR Suite of Standards

for **Closed-Circuit Ammonia Refrigeration Systems**



IIAR 1 – 2022 Definitions and Terminology Used in IIAR Standards

IIAR 2 – 2020 Safe Design

IIAR 3 – 2022 Ammonia Refrigeration Valves

IIAR 4 – 2020 Installation

IIAR 5 – 2019 Start-up

IIAR 6 – 2019 Inspection, Testing, and Maintenance

IIAR 7 – 2019 Developing Operating Procedures

IIAR 8 – 2020 Decommissioning

IIAR 9 – 2024 Minimum System Safety Requirements for Existing Systems

IIAR Standard for **Closed-Circuit CO₂ Refrigeration Systems**

IIAR CO₂ – 2021 Safety Standard for Carbon Dioxide Refrigeration Systems





standards,
education,
advocacy

SAFE AND SUSTAINABLE USE OF
NATURAL REFRIGERANTS



BSR/IIAR HC-202x

In Development

Safety Standard for Closed-Circuit Refrigeration
Systems Utilizing Hydrocarbon Refrigerant

Like CO2 Standard, it includes design, installation, startup,
testing, and maintenance, over 300 pages

Being written for applications of systems that are not listed,
typically larger in size, can be custom built or a packaged
design

Typically applied to industrial facilities but could be applied
to occupancies where the system provides indirect
cooling/heating & the refrigeration equipment is placed in a
machinery room or outdoors



standards,
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advocacy

SAFE AND SUSTAINABLE USE OF
NATURAL REFRIGERANTS

Industry Codes:

- ✓ International codes and industry standards such as IMC, IFC, UMC, NFPA-1 Fire Code, require the use of ANSI / IIAR standards as the basis of regulation for Ammonia Refrigeration! ASHRAE 15 includes a reference to IIAR standards for ammonia refrigeration design.

2024 IFC

IIAR 2, 6, 7, 8, 9, CO₂

2024 IMC

IIAR 2, 3, 4, 5, 6 and CO₂

2024 NFPA 1 Fire Code

IIAR 2, 6, 7, 8

2023 NFPA 70 NEC

IIAR 2

2024 UMC

IIAR 2, 3, 4, 5, 6, and CO₂

2025 ASHRAE WINTER CONFERENCE
FEBRUARY 8-12, 2025 | ORLANDO, FLORIDA



INSTITUT INTERNATIONAL DU FROID
INTERNATIONAL INSTITUTE OF REFRIGERATION

2025 IIR INSIGHTS

Dr. Yosr ALLOUCHE

Director General of the IIR (Since October 2024)

INTERNATIONAL INSTITUTE OF REFRIGERATION

Tribute to Reinhard Radermacher an Esteemed IIR Honorary Member



- **President of IIR Commission B2 – Refrigerating Equipment** from 2000 to 2003.
- **Member of IIR Commission B1 Thermodynamics & Transfer Processes** from 1996 to 1999.
- An Honorary Lifetime Member of the organisation.
- Over 600 publications, numerous patents, and a host of academic awards, including the prestigious **IIR Gustav Lorentzen Medal** in **2015** at the IIR International Congress of Refrigeration in Yokohama.

Photo Credit: Center for Environmental Energy Engineering (CEEE)

INTERNATIONAL INSTITUTE OF REFRIGERATION

ADVANCING REFRIGERATION SCIENCE & TECHNOLOGY FOR A SUSTAINABLE FUTURE

INSTITUT INTERNATIONAL DU FROID
INTERNATIONAL INSTITUTE OF REFRIGERATION

ABOUT IIR

Mission

- IIR is an intergovernmental organisation fostering collaboration and enhancing knowledge on all aspects of refrigeration and heat pumps technologies and their applications to contribute to a sustainable future for all.

Vision

- Sustainable refrigeration and heat pumps for all.

Goal 1



Be the leading independent and authoritative voice supporting countries on issues and opportunities.

Goal 2



Be the world leading platform to provide and exchange expertise and knowledge.

Goal 3



Be the first choice for partnerships and collaborations.



59 Member Countries

386 Worldwide Experts

111,791 FRIDOC References

INTERNATIONAL INSTITUTE OF REFRIGERATION



Our Commissions: A unique Bank of Refrigeration Experts worldwide

IIR Scientific and Technical Council 2024-2028

President: **Gérald Cavalier**



Section A

Section B

Section C

Section D

Section E

Ales Srnka



Cryogenics and
liquefied gases

**Steffen
Grohmann**

**Peng
Zhang**

Cryophysics
cryoengineering

Liquefaction
& separation
of gases

Eckhard Groll



Thermodynamics,
equipment and
systems

**Lorenzo
Cremaschi**

**Ji Hwan
JEONG**

Thermodynamics
& transfer
processes

Refrigeratin
g equipment

Judith Evans



Biology and
food
technology

**Alain
Le Bail**

Cryobiology,
cryomedicine &
health products

Food science
&
engineering

Richard Lawton



Storage and
transport

**Armin
Hafner**



Refrigerated
storage

**Silvia
Minetto**



Refrigerated
transport

Xianting Li



Air conditioning, heat
pumps and energy
recovery

**Yunting
Ge**

Air conditioning

**Graeme
Maidment**

Heat pumps
& energy
recovery



IIFIIR.ORG



The Refrigeration Science Hub



DOMESTIC HEAT PUMPS USING HYDROCARBONS

Current status and market overview in Europe

November 2024 58th IIR Technical Brief on refrigeration Technologies



Technical brief



INSTITUT INTERNATIONAL DU FROID
INTERNATIONAL INSTITUTE OF REFRIGERATION



COOLING TECHNOLOGIES FOR SUSTAINABLE DATA CENTRES

January 2025 59th IIR Technical Brief on Refrigeration Technologies



Technical brief



INSTITUT INTERNATIONAL DU FROID
INTERNATIONAL INSTITUTE OF REFRIGERATION

OUR KEY INITIATIVES



IIR CONFERENCES

Nine flagship conferences with global experts and cutting-edge technical content in refrigeration.



FRIDOC

The world's largest and most detailed database focused on refrigeration information.



TECHNICAL BRIEF

Expert insights on key refrigeration topics from IIR Commission members.



IIR PROJECTS

Partnering in key projects to advance refrigeration knowledge and sustainability globally.

INTERNATIONAL INSTITUTE OF REFRIGERATION



Partnership and Engagement with UN initiatives

IIR at MOP 36 and COP 29:

- Official side events at MOP 36, COP 29
- Statements at high level segments



Engagement
Initiatives

INTERNATIONAL INSTITUTE OF REFRIGERATION



Partnership and Engagement with UN initiatives

IIR member of the Steering Committee of the UNEP Cool Coalition Initiative



INSTITUT INTERNATIONAL DU FROID
INTERNATIONAL INSTITUTE OF REFRIGERATION



Global Cooling Pledge:

2050: Cut cooling related emissions by 68%.
2030: enhance energy efficiency by 50%

IIR taking Presidency of INWIC in 2025



IIR-Cool Coalition Working Group CREED

Goal 1: Showcase existing efforts and lessons learned from current emissions modelling

Goal 2: Create a momentum of collective actions toward the refrigeration sector emissions

INTERNATIONAL INSTITUTE OF REFRIGERATION



Partnership and Engagement with International Organisations

- IEA

- IIR involved in IEA-HPT executive committee meeting.
- IIR took active part of the IEA workshop: “The importance of heat pump data for policymaking: Insights from the IEA” promoting the domestic HP technical brief.



- World bank

- IIR was invited by the WB to take part of the national consultation of the “Alleviating Heat Stress by Enhancing the Production of Affordable Cooling Devices (AHEAD) Program.”
- A \$700M WB programme in India





World Bank Projects

Background to the project

The World Bank Group is engaged in supporting Bangladesh's agriculture sector to develop the cold chain for meat and dairy products. The ongoing World Bank lending operation entitled Livestock & Dairy Development Project (LDDP) helps smallholder farmers and agro-entrepreneurs improve livestock production levels, access to markets and quality enhancement, all of which will improve integration into more efficient private sector-led value chains. The work described in this brochure summarizes the needs for cooling in the meat and dairy value chains in Bangladesh. It advises the public and policy makers on technically and financially feasible cooling solutions that would help promote the adoption of efficient and more climate-friendly cold chains.

Why cool food?

The quality of food deteriorates from the point of harvest/laughter. Refrigeration enables food to be stored for longer periods significantly extending its storage life to ensure nutritional quality and food safety. Enabling farmers to be able to store food for longer periods potentially allows them to sell products at better prices, improve their income and standard of living.

Current meat and milk cold chains in Bangladesh

Most farms in Bangladesh are small. Both the meat and dairy sectors are dominated by the informal value chain. The product is usually sold to consumers within a few hours of production. The need for cooling of these perishable food items is often not valued by either the producers, traders or consumers.



Meat

Modern and safe slaughter-houses are virtually non-existent and most, if not all, animals are slaughtered under primitive circumstances on roadsides or in inadequate and unhygienic conditions at wet market facilities. Currently, chilled meat is sold primarily to users who appreciate the benefits of chilling (high class hotels and restaurants).



Milk

The majority of farmers typically have up to 5 cows each producing less than 5 litres of milk a day per cow. Currently most individual farmers do not produce sufficient milk for them to be a benefit from cooling. Milk production in the formal market is dominated by a small number of companies. These companies work with groups of farmers and bring the milk to central collection points before being transported for further processing.



Current good practice



A few meat processing and poultry industries have emerged over the last decade such as Bangal Meat, Bashundhara Group, CP Chicken, and Kazi Farms. This has been in response to the increase in demand for hygienically slaughtered meat and the rise of international food chains. Currently these industries process and supply less than 1% of the total meat production. Bangal Meats has contractual agreements with 1,000-2,000 small farmers (1-2 cows). Through the

Contact Details

For further details on the work carried out please contact Dr Yous Aliouche, International Institute of Refrigeration (IIR) y.aliouche@iir.org

This brochure was developed by the following project partners as a technical assistance activity to the World Bank on the "Livestock and Dairy Development Project in Bangladesh (LDDP P161246)" -



For more information please see: Development Projects: Livestock and Dairy Development Project - P161246 (worldbank.org)

Webinar series
Cool Insights: Mastering Design and Operation of Walk-In Cold Rooms in Off Grid Regions

Tuesday 11th June - 15:00 (CEST)
Estimating Cooling Demand and Electrical Power Demand of Walk-In Cold Rooms

Bas Hatterschold
Manager, Performance
University & Research

Giovanni Corbelli
Professor
Thermodynamics and
Refrigeration
University of Udine

Jeremy Tall
Senior Sales Product
Director
Tall Consulting

Victor Torres
Founder
Solar Cooling
Engineering

WALK-IN COLD ROOMS, A PRACTITIONER'S TECHNICAL GUIDE

Design and Operation of Walk-In Cold Rooms for Precooling and Storage of Fresh Produce in Hot Climates, in Off-Grid and Unreliable Grid Situations

OVERVIEW

DECEMBER 2023

EU Commission Projects

The project will provide tools and methods to contribute to the EU Farm to Fork strategy to achieve climate neutral food businesses by 2050

- Propose strategies to decarbonise the food chain
- Integrate and manage the food chain of the future
- Demonstrate new technologies
- Develop innovative food chain systemic approaches and solutions

Contact project coordinator:
Kriszta Horváth / kriszta.widell@iirnet.no
Project period: 2021 - 2023 / www.enough-emissions.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 101056588

INTERNATIONAL INSTITUTE OF REFRIGERATION



R&D, EU and International Projects



Aims to improve quality of life of populations through better treatment & working conditions in rural and remote health facilities in Africa



Better Healthcare

Clean Energy Technologies

Clean Water Facilities

Clean Cooling Solutions

SophiA Solar Cooling Container

- PV-Power systems
- Storage at -70°C
- Storage at -30°C
- Storage at +5°C
- Thermal energy storages
- Machinery room
- Emergency lithium batteries

• Ultra-low temperature storage of sensitive medication at -70°C
• Low temperature storage of blood plasma at -30°C
• Cooling of medicines and food at +5°C



SophiA Solar Water Container

- PV-Power systems
- Storage tank for drinking water
- Deionised water storage tank
- PySteamCube
- Buffer tank for UF treatment
- Ultrafiltration (UF) tank
- Capacitive deionisation (CDI) modules

• Safe, clean drinking water and deionised water for medical purposes
• Hot water and steam production for hospital thermal requirements
• Emergency electricity supply for surgical and intensive care units



PVmedPort System

Self-powered medical stations



4 rural hospitals in remote regions as demo sites in
Burkina Faso, Cameroon, Malawi, Uganda



application: as - Project coordinator: Michael Kaufeld
General requests: Olaf Bräuer - o.br@iir-ia.de, Michael Kaufeld - m.kaufeld@iir-ia.de



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101019719



- Inauguration of SophiA Container in Leo hospital (water treatment and refrigeration system), solar-powered cold room using CO₂ for vaccine storage at -70°C.





2024 Conferences

IIR Conferences

14th	IIR Conference on Phase-Change Materials and Slurries for Refrigeration and Air Conditioning (PCM)	PCM	Paris	France
11th	Int. Conference on Compressors and Refrigerants	Compr	Slovak Rep.	Bratislava
8th	IIR Conference on Sustainability and the Cold Chain	ICCC	Japan	Tokyo
10th	Int. Conference on Magnetic Refrigeration at Room Temperature	Thermag	China	Baotou
16th	IIR Gustav Lorentzen Conference	GL	USA	College Park

IIR Cosponsored Conferences

12 th	Ibero-American Congress of Refrigeration Science and Technology	CYTEF	Spain	Elche
27 th	International Compressor Engineering Conference at Purdue	Purdue	USA	Purdue University
20th	International Refrigeration and Air Conditioning Conference at Purdue	Purdue	USA	Purdue University
8th	International High-Performance & Green Buildings Conference at Purdue	Purdue	USA	Purdue University
	China Heat Pump Conference	Shenzhen	China	Chinese Association of Refrigeration





2025 IIR Conferences

IIR EVENT

18th IIR Conference on Cryogenics

April 07, 2025 - April 11,
2025

Early bird registration opens on 1 January 2025! Held every two years, the 18th IIR Conference on Cryogenics will bring together researchers and professionals to explore the latest...

[Find out more](#)



18th IIR Conference on Cryogenics
Cryogenics 2025
PRAGUE - CZECH REPUBLIC
APRIL 7-11

IIR EVENT

7th IIR Conference on Thermophysical Properties and Transfer Processes of Refrigerants

June 15, 2025 - June 18, 2025
College Park, United States

Abstract submission extended to 31 January! The 7th conference in this series will cover a wide scope of research on thermophysical...



[Find out more](#)

IIR EVENT

1st IIR International Conference on Refrigeration Adapting to Rising Temperatures

August 10, 2025 - August 13, 2025
Manchester, United Kingdom

Only a few days left to submit your articles! The International Institute of Refrigeration is proud to announce that the first IIR International Conference on Refrigeration Adapting to Rising...



1st IIR International Conference on
Refrigeration Adapting to Rising Temperatures
Adaptation 2025
MANCHESTER - UK
AUGUST 10-13

[Find out more](#)





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Join us!



Description	Metric	Presidential Init. #	SP Init #	SP Goal #	Completion %	Financial Assist Req'd?	Comments/Activities supporting MBO
(how do we determine success?)					%		
1. Refrigerants and their Reponsible Use Position Document					25%	NONE	A. Identify a lead REF - CPCC member and review team to update report: <i>done</i> B. Develop a draft revision of position document: <i>target 1Q25</i> C. Complete for submission to DRSC: <i>target May 25</i> A second draft will be reviewed by the PD committee over the next 4-5 weeks, followed by changes as appropriate, then distributed to interested parties to solicit comments. The PD committee will review and make final changes with the aim of finalizing in the spring before requesting formal approval.
2. Committee organization changes for improved outcomes			3		20%	NONE	A. Evaluate and define priorities in line with ROB and committee structure (e.g. term); evaluate essential committees and activities, deal with the "big issues" B. Determine how non-voting members, liaisons and other contributors can be involved more effectively, in standing and/or ad hoc efforts (formal and practical aspects) C. Develop process to communicate to Regional and Chapter refrigeration chairs on REF-CPCC activities D. Prepare changes to ROB/MOP if and as required REF-CPCC approved the proposed new standing subcommittees in ORL. Details will be finalized for formal consideration to update Reference Manual.
3. Promotion of Awards (ongoing)				2,3	20%	NONE	A. Awards committee activity C. Promote communications of refrigeration-related awards via ASHRAE newsletter B. Milt Garland submissions by May 1st REF-CPCC discussed ideas to help get more Milt Garland award submissions in ORL
4. Promote and support World Refrigeration Day (ongoing)					50%	NONE	A. Contact WRD Committee in January 2025: Done B. Offer support: Done C. Consider specific focus or activity by REF-CPCC
5. Work with partnership organizations (ongoing)			1,2	1	20%	NONE	A. Create list of organizations and contacts (already involved such as IJAR, IIR and prospective such as IoR, NASRC) B. Along with MBO #2, clarify liaison methods and means of involvement, and how it has value for these organizations C. Review budget impacts and discuss priority recommendations for paid liaisons travel (e.g. GCCA, others) D. Consider if a co-sponsored refrigeration-related event (e.g. conference) could be unique, useful, generate revenue, membership or benefit for ASHRAE (2025-2026)
6. Consider and potentially establish an "R in ASHRAE Cocktail Party" for Winter meetings					0%	YES	A. Discuss nature, benefit, promotion, cost, justification B. If desired, establish subcommittee and determine if feasible for 2025, or more likely target 2026 Discussed partnering with YEA. Aim for Winter Meeting but it was recognized that scheduling for Annual Meeting would be easier with lighter schedule.
7. Provide support for Special Projects Committee CEBD refrigeration-related projects					20%	YES	A. Provide liaison to Special Projects: Bruce Nelson B. Identified projects are "Refrigerant Emission Management, Tracking and Compliance", and "Decarbonization Strategies for Supermarket Industry Archtypes" C. REF-CPCC responsibility is reasonably well defined and project work is beginning, additional contributors likely needed Bruce Nelson continues to liaise with CEBD. There are two projects in the works from CEBD that can use REF-CPCC support.
8. Global Trends in Refrigeration Technology					10%	NONE	A. Lead: Andrew Beall (replaces: Bi-Annual Refrigeration Technology Report) B. Attractive 4 page (11x17), focused, visual C. Audience: ASHRAE members as well as aligning with strategic recommendations to leadership Text developed. Action to work with staff to help finalize final document.
9. Develop and implement refrigeration needs and gaps survey for ASHRAE membership (typ 5 year cycle)					0%	YES	A. Develop survey in alignment with MBO #2 to identify the big issues and member needs, helping provide direction for REF-CPCC and recommendations to ASHRAE B. Address budget justifications, send survey by 3-4Q25, scope input from prior chairs, e.g. Rajan R.



REF-CPCC: COMMITTEE ORGANIZATION WINTER MEETING FEBRUARY 9, 2025

OBJECTIVES

Adjust subcommittees to:

- Meet expectations defined for REF-CPCC in Rules of the Board
- Provide flexibility: use standing committees and ad-hoc committees
- Suitable for the member structure and terms of REF-CPCC (not a TC)

Seek vote at this meeting for two new main standing committees

Finalize and vote at Annual meeting

PROPOSED NEW STANDING COMMITTEES

Communications:

- Coordinate responses to inbound requests
- Communications with other organizations, liaisons, ASHRAE committees, chapters
- Focus on active website use, message activity, cadence of information

Planning:

- Information gathering and abstraction (one effort being 3-5-year global member survey)
- Annual recommendations to ASHRAE strategic planning (per ROB)
- Develop and/or support refrigeration-related meetings and events

OTHER COMMITTEES AND PROPOSED CHANGES

Refrigeration Technology Report	Replaced with Trends in Refrigeration (annual, focused)
Awards	Discontinue and put in Communications Committee
HVAC	Discontinue
Program / Research	Discontinue, identify gaps and needs in Planning Committee and make recommendations but leave programs and research to TCs
Cold Chain / R in ASHRAE	Cold Chain is important but uncertain as to exact purpose as a separate Committee, beyond what could be done in Communications and Planning
H in Refrigeration	Ad hoc Committee to determine how REF-CPCC should address applied heat pumping
Broader topics to consider, for example?	Sustainability, digitalization, food security, resilience, conference(s), specific to refrigeration

Chair – Harshal Surange

Subcommittee Participants :

Attended : Harshal Surange, Bruce Nelson, Apichit Ipana, Ziviani Davide, Charles Hon

Could not attend : Dustin Lilya, Anish Simha

Agenda:

1. Meeting called to order : The meeting was called to order by the chair Harshal
2. Round of introductions we held for the participants
3. Discussion on the key requirements from this sub-committee : A brief update on the discussion between the Ref-CPCC chair Doug Scott and Cold Chain Subcommittee Chair Harshal Surange was given to the attendees. Harshal informed that Doug was of the opinion that the Cold Chain sub-committee could be done away with considering the nature of the sub-committee and the overall structure and requirement of Ref-CPCC. However, Harshal informed that since ASHRAE is now a global society and the considerations of the developing nations should also be taken into account, the sub-committee had an important role to play. To explain further, he mentioned that basic understanding of packhouses itself was very low in those countries where the food loss at farm level is of high proportions (close to 30% ~ 40%). This is mainly due to lack of facilities as well as lack of awareness amongst stake holders. The cold chain subcommittee can do a significant role in creating recommendations for improvement in cold chain for the developing world. Doug agreed and asked for having a virtual meeting for this committee with the subcommittee consisting of voting members of Ref-CPCC.
4. Brainstorming on new ideas for subcommittee activities
 - a. Trainings

The members discussed about various ideas related to training in cold chain. There was a discussion on focusing towards Complete Cold Chain training and to check whether such a training was already available in the market.

Focus on Indian market – what's the current state of affairs in Indian market. Bruce felt that India should be considered as a reference point. The condition in India would be similar to that of nearby developing nations and the biggest need was also in India

It was discussed to try and use the members of the subcommittee to create something for the country in terms of training and such similar goals. Application of environmentally friendly cold chain techniques is the need of the hour.

There was a discussion for creation of a conference concept in India (or the newly formed ASHRAE Region XV which includes India, Bangladesh and Sri Lanka).

As an offshoot to this discussion, the following was discussed : It was informed that in Sept 2025 – IEC – International Standards for Safety of Equipment has its annual meetings on all the safety standards in India – It can be considered to try and use this event for any such proposed event. This could be as a marketing platform for the event or to coordinate around this event so that many probably speakers and decision makers may be in India around that time.

It was also indicated that UNEP / UNIDO offices in Thailand can be approached for funding or other support.

- b. DLs – Harshal informed that he is a trainer at the ASHRAE global training center at Dubai and the training can be utilised in the developing countries.
- c. Packhouse handbook – there was a discussion on whether a packhouse handbook can be created or used as reference. Harshal pointed out that there is one created by UNEP and is in process of getting released.

As a part of the packhouse handbook, Post harvest cooling was suggested to be considered including hydro cooling / forced air cooling / vacuum cooling etc for Root / Leafy / other types of veggies. There is a lot of data available at UC Davis website, it was informed. Further data was also available in the ASHRAE Refrigeration Handbook

- d. Updation of the ASHRAE's Guide for Sustainable Refrigerated Facilities and Refrigeration Systems

It was suggested that 'Post harvest' as a chapter with key inputs can be added to the guide book in its update. Such a request can be made upto March 15 which is the deadline for proposal submission through the PTAR route

- 5. Discussion on PD on Sustainable Cold Chain
IIR has a position document on carbon footprint & decarbonisation – it is more than 3 years old. It was discussed that we can have an IIR / ASHRAE combined note or position document
- 6. Update from Other organisations (UNEP update). Steve Comstock (UNEP rep) sent the following information which was given to the sub-committee members (excerpts of his email as given below) :

There are two initiatives underway at UNEP :

Toolkit to Assess RAC Plant Sustainability: To achieve energy-efficient, safe, and environmentally sustainable performance, RAC plants must meet key parameters in eight dimensions of practice plus the use of appropriate tools and servicing techniques. To enable plant managers and service technicians to assess their progress, ASHRAE and UNEP OzonAction have developed Best Practices Checklists describing the mindset needed for each dimension of practice, objective, required actions, measures of success, and additional resources. The checklists are supported by guidance sheets providing instructions on the steps to be taken. UNEP and ASHRAE will launch this in early 2025. Feedback from the committee would be excellent. I will keep you advised.

RAC Capacity in Africa – UNEP is assessing the availability of guidelines, training materials, other resources in Africa for safe handling and energy efficient operation of RAC plants. Any resources the committee could provide (contact points) would be helpful.

- 7. Anything to look forward to at AHR Expo ?
Copeland / Danfoss do have showcases, which can be visited. App of AHR can be downloaded for more inputs
- 8. Any other points
It was suggested to find out the various major shows in Region XV. One that Harshal informed about is Refcold which is in Sept 2025.
- 9. Adjournment of meeting - The meeting was adjourned with Harshal thanking everyone for their presence in the meeting and all that they do for ASHRAE.



REF-CPCC Report on Awards

Presenter : Dr. Apichit L.pongpana

Date : February 9, 2025

Location : Orlando Winter Conference

REF-CPCC Awards Sub-committee team

- | | |
|----------------------------|---------------------------|
| 1) Dr. Apichit L.pongpana. | 2) Mr. Cesar Lim. |
| 3) Mr. JoJo Castro. | 4) Mr. Ardiyansyah Yatim. |



สวัสดี
Sawasdee

Topics of Discussion

1. Should we consider reverting the Milton W. Garland Award to its original purpose?
2. If agreed, approve the proposed budget and draft the motion.
3. Redefine the award submission criteria.
4. Simplify the award criteria to encourage more project submissions.
5. How to promote the award and the judging committee ratio?
6. Website Improvement.
7. To enhance refrigeration activities, could we separate the refrigeration chairs from CTTC activities by reinstating the RVC Refrigeration?

(See details in the following slide)

“Bring the Milton W. Garland Awards back to it original purpose”

Award	Entry Deadlines	Description
Donald A. Siller	Sept 30 th	Outstanding Refrigeration Chair
Milton W. Garland Award	April 1 st for the region May 1 st for society	A <u>non-comfort</u> cooling refrigeration application which highlights innovation and/or new technologies

Milton W. Garland Commemorative Comfort – Process – Cold Chain Award for Project Excellence

Mr. Garland was known as “Mr. Refrigeration” for his work in the refrigeration systems for gold mines in South Africa and the ice cream factories in Philadelphia. In 1998, Mr. Garland was honored as the nation’s oldest worker. He was inducted into the ASHRAE Hall of Fame in 2003.



Milton W. Garland Commemorative Refrigeration Award for Project Excellence



Original Purpose

The Milton W. Garland Commemorative Refrigeration Award recognizes a **non-comfort** cooling refrigeration application which highlights innovation and/or new technologies.

From 2021
to Present

Current Purpose

Comfort - Process - Cold Chain Award for Project Excellence

- ▶ In 2021 the Milton W. Garland Commemorative Refrigeration Award was merged with the **Comfort** Cooling Award to create this new award.
- ▶ This award recognizes the designer and owner of a Comfort - Process - Cold Chain application that highlights innovation and/or new technologies.

Valued Comments

► Gathered the valued comments from myself and those experienced members on improving the current Award;

1. Mr. Doug Scott
2. Mr. Cesar Lim
3. Mr. Jojo Castro
4. Mr. Ardiyansyah Yatim

And I summarized all the ideas into the following slides

"So now, REF-CPCC only has the Milton W. Garland Award to promote!" *By Mr. JoJo Castro*

Comment on the Awards

What happened?

- ▶ No improvement in submissions despite the award name change.
- ▶ No declared awardees.

Comment on the Award

What needs to be done?

Ref. to the comments from Chairman 'Doug Scott'

- ▶ "We need to come to grips with the scope of the award. Changing from just refrigeration to virtually everything has not improved the submissions".
- ▶ "I don't see the need to separate Process and Cold Chain. I don't see the value of Comfort Cooling (certainly someone else can do that)".

Comments on the Awards

Mr. D Scott's & Mr. J Castro comment

- ▶ Remove *comfort cooling* from the Milton W. Garland Award
- ▶ Retain *Process & Cold Chain*
- ▶ Retain *Project Excellence*

Comment on the Awards



Can we agree?

- ▶ Milton W. Garland
- ▶ Award on Process & Cold Chain
Project Excellence Award only

Award Submission Criteria

Award Submission Criteria should be adjusted to cover the following areas:

- ▶ Sustainable & Decarbonization
- ▶ Energy Efficiency and Savings
- ▶ Innovation in Application
- ▶ Technology & Equipment Availability
- ▶ Simple and Easy Operation
- ▶ Short Learning Curve

Awards Judging & Evaluating?

Recommend to adjust the Judger members ratio to improve the judging and evaluation effectiveness of the awards as suggestion below.

- ▶ 2 x designated member from REF-CPCC
- ▶ 1 x refrigeration practitioner from ASHRAE member
- ▶ 1 x ASHRAE equipment engineer/designer

Method of Promoting the Awards

Suggestions

- ▶ Involve all REF RVC and Chapter Chairs
- ▶ Conduct 2 online RVC meetings and 1 onsite RVC meeting.
- ▶ Hold 3 trickle-down meetings between RVC REF Chairs and REF Chapter Chairs.
- ▶ Broadcast promotions together with CTTC.
- ▶ Regularly promote via Society Newsletter, other industry publications and social media channels.
- ▶ Emphasize the current incentives for participation, such as opportunities for winners to present their projects or additional rewards.

Simplify Award Criteria to Encourage Submission

"Grant the awards not too complex & can encourage members to submit"

We can simplify Awards Current criteria to encourage submissions by

1. Allocate staff or a Chair for quick responses, follow-ups, and to answer questions if anything is unclear. Allow for immediate re-submission if necessary.
2. Grant more minor awards in addition to the Milton W. Garland Award, such as Certificates or Letters of Appreciation, even for good ideas or concepts submitted.
3. Eligibility of submission: innovation/invention on wider aspect of refrigeration system/applications (e.g. technology, performance, energy saving, emissions reduction, cost saving, availability, easy operation and maintenance etc.)
4. Innovation is not Invention! (Clarification is needed)

See Next Slide for further explanation

Innovation is Not Invention!

Judger Members should not rely solely on their own experience, as what may be new for some countries or regions might already exist in others.

Innovations can include applying existing technologies to new refrigeration projects or upgrading existing projects (e.g., DOAS, Cross Air Curtain, TC-CO₂, etc.).

(My personal opinion only)

Qualify as Innovation?



New
Innovation!

Heat Rejection
Through Natural
Wind Cycle
(Land & Sea Breeze)

“Fanless
Evaporative
Condenser”

Heat Rejection
Without a Single
Fan!





**Conventional
Evaporative Condenser**



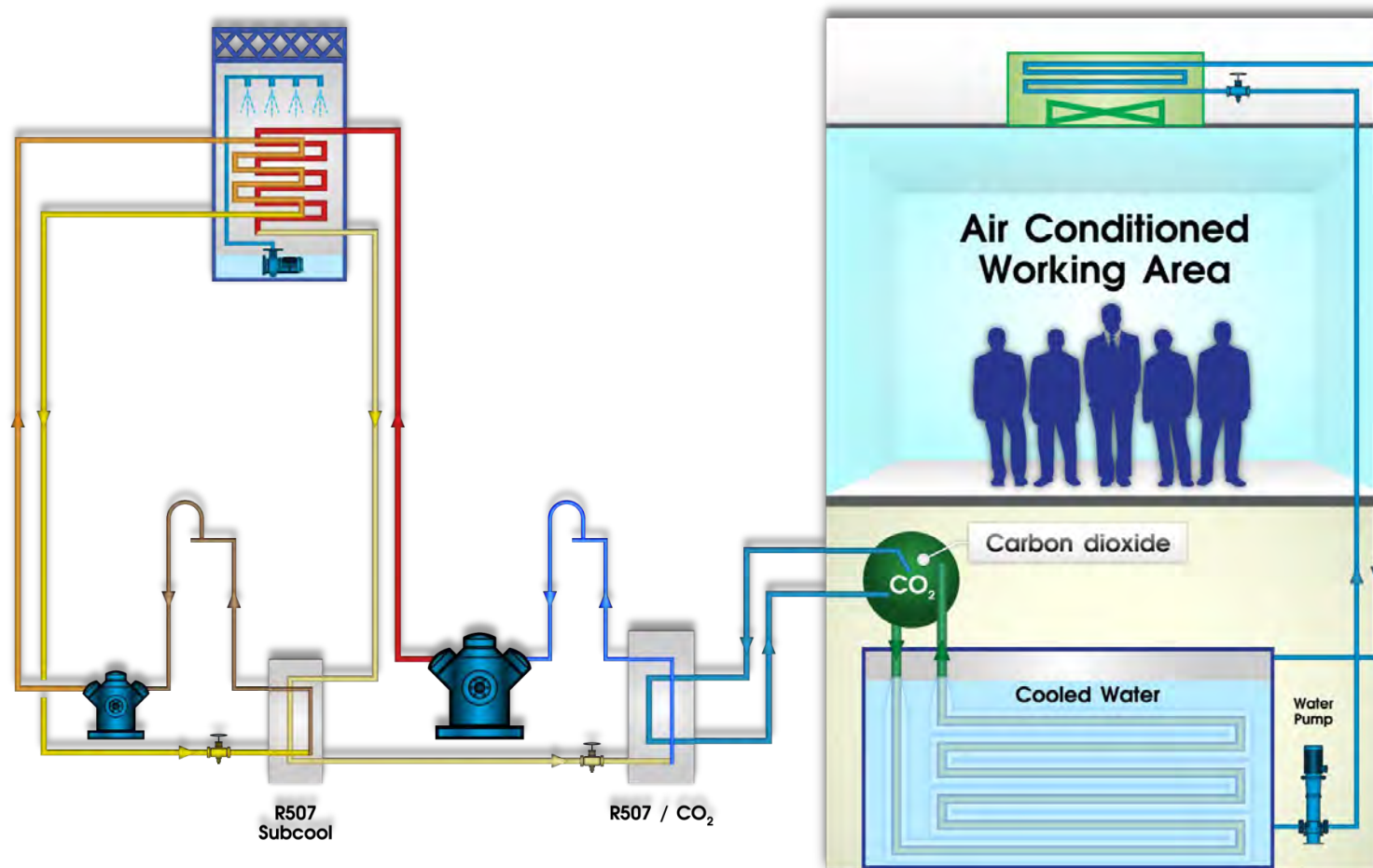
**Fanless
Evaporative Condenser**

[Click to Video](#)

CO₂ As Brine for “CO₂ Thermal Ice Storage”

Qualify as innovation?

Comfort (Room Temp., A/C) or Non-Comfort (low Evap. Temp., Refrigeration)





Website Improvement

- Need REF-CPCC volunteer to handle and must coordinate with staff
- Unanimously chosen: ?
- Ensure the website is including the engaging content such as videos, testimonials, and case studies from past winners to showcase the impact of the award and inspire potential participants.
- Regular Updates: Keep the website updated with the latest news, announcements, and deadlines related to the award.
- Consider adding a FAQ section to address common questions.

Refrigeration Web-Page Improvement

The current Refrigeration website is primarily focused on refrigerants, but it lacks comprehensive information on cold storage facility design, function, and operation.

Additionally, it does not address the economic impact and contribution of the cold chain.

This gap in content may contribute to the lukewarm attitude of members and potential non-members in the refrigeration industry.

Other organizations, such as the **Global Cold Chain Association (GCCA)**, cover these topics extensively, highlighting the need for ASHRAE to expand its focus to better serve the industry.

For Your Information

Cold Chain Value Proportion

LOCATION	COLD CHAIN VALUE (US\$)	CAGR* (%)
NORTH AMERICA	127.6 B	17.0
LATIN AMERICA	24.64 B	18.9
INDIA	20.31 B	9.72
SOUTHEAST ASIA	15.23 B	8.8

* COMPOUND ANNUAL GROWTH RATE

- *The cold chain industry is a big market with professionals outside ASHRAE. Don't you think it is time we give it importance?*

REF-CPCC does not even have a Certification Program!



**You're ASHRAE-Certified.
Now Get the Recognition You've Earned.**



BUT THAT IS FOR ANOTHER DISCUSSION

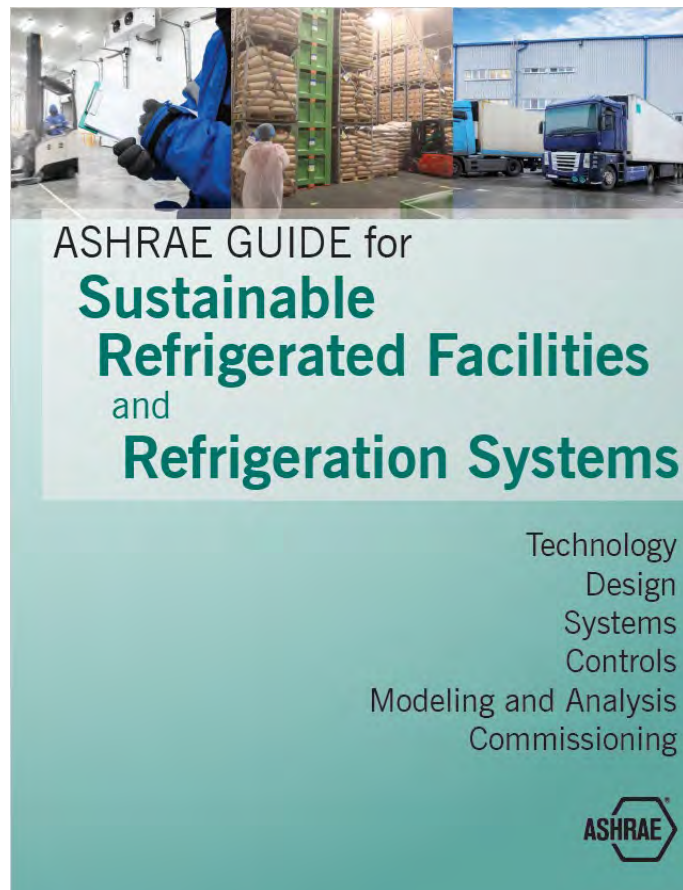
Additional Suggestion

- ▶ Reinstall the **Refrigeration Chair (RVC)** at Regional level to strengthen the “R” in ASH**R**AE

Reason for Raising up the Topic

- Weak focus and direction on refrigeration (ASHRAE is weaker than IIR and others).
- Lack of volunteer and responsible personnel.
- No one is overseeing market trends.
- Recently, the focus on refrigeration should not only be on the micro scale (e.g., refrigerant fluid) but also on the macro scale, encompassing the entire process and application.
- The Handbook (**some parts**) is outdated with old data/technology, making it less useful as a reference for users.
- Balance the ratio of the refrigeration committee(REF-CPCC) (e.g., 25% manufacturers, 25% designers/consultants, 25% researchers/professors & 25% contractors) to better focus on overall refrigeration areas.

Reinstate the Refrigeration Chair (RVC) at Regional level to strengthen the “R” in ASHRAE



- ▶ Separate Regional Refrigeration Chair(RVC) out from CCTC to be dedicate focus only Refrigeration at RVC level
- ▶ Let RVC monthly Planning a Chapter refrigeration activities
- ▶ Nominate and Schedule a DL or other speaker with a refrigeration focused theme from Refrigeration standing committee
- ▶ Use Technical Committees (TC 10 - Refrigeration Systems) for programs topics and news, Publish in New Letter.
- ▶ Promote ASHRAE refrigeration awards

Budgeting



- ▶ 50% of the Refrigeration RVC to attend in person at the winter and Annual meeting and 50% are online meeting together with all Chapters chairs and interest members
- ▶ Budget for RVC travelling expenses is 25,000 US\$
- ▶ Budget for CRC meeting's travelling expenses is 10,000 US\$
- ▶ Budget for Refrigeration DL for 4 Trip per year is 10,000 US\$
- ▶ Budget for 3 awarders per year to attend winter meeting 10,000 US\$
- ▶ Staff Time: US\$ 5,000 US\$
- ▶ Total Budget for refrigeration activities 60,000 US\$ /annum.

End of Presentation



Thanks you
ขอบคุณค่ะ
Kob Khun Ka

Presenter : Dr. Apichit L.pongpana

Trends in Refrigeration

Refrigeration Trends in Europe	Refrigeration Trends in North America
<p>Natural Refrigerants:</p> <ul style="list-style-type: none">Propane<ul style="list-style-type: none">Water-cooled chillersAHU applicationsHeat PumpsVRF applicationsPropane must meet the European Safety Standard EN378 <p>(Need to discuss efficiency of above equipment?)</p> <ul style="list-style-type: none">CO₂<ul style="list-style-type: none">Water cooled chillersAHU applicationsHeat pump applicationsVRF applicationsBoth Transcritical and Subcritical applicationsMust meet European Safety Standard EN37829,000 installations as of 2020 <p>Synthetic Refrigerants:</p> <ul style="list-style-type: none">A2L Refrigerants<ul style="list-style-type: none">Very few exhibitors at Chillventa regarding A2L refrigerants, does not appear to have much application in Europe <p>Energy Efficiency</p> <ul style="list-style-type: none">At Chillventa there was a focus on the following:<ul style="list-style-type: none">System Efficiency through better controls, demand defrost, speed controlsBetter glass for casesNight curtains for casesMore efficient fan bladesUtilizing heat recovery for heat pumps <p>Note: all the below information is from Bruce Nelson and Tom Wolgamot from their experience at Chillventa</p>	<p>Natural Refrigerants:</p> <ul style="list-style-type: none">Propane<ul style="list-style-type: none">2 Primary manufacturers in the USCharge amounts are still small making open cases and large supermarket footprints difficult to useMust meet IECC construction codes and Fire CodesCO₂<ul style="list-style-type: none">Both Transcritical and Subcritical applicationsWater and air cooled chillersSupermarket refrigeration systemsHeat pump applications650 installations in US as of 2020340 installations in Canada as of 2020 <p>Synthetic Refrigerants:</p> <ul style="list-style-type: none">A2L Refrigerants<ul style="list-style-type: none">Mainly HVAC applications such as air handlers and rooftop unitsOnly one known installation of A2L in Supermarket refrigeration

Refrigeration Trends in Asia and Southeast Asia	Refrigeration Trends in South America, Australia and New Zealand
<p>Phillipines:</p> <ul style="list-style-type: none">• R- 717 (Ammonia) This has been used in Cold Storage, Food & Beverage Processing Plants since the early 1900's. Ammonia Low Charge Water / Glycol Package Chiller are locally manufactured and is being used Since 2002• R-744 (CO2) This had been used here mainly some NH3 Cos Cascade and last October 2022 we have our first Co2 Transcritical System but didn't progress due to cost and its not energy efficient in a Tropical Ambient Temperature.• R-290 (Propane) This is being used for Upright and Chest Freezer here since 2020. And we have installed an R-290 Split Air Conditioning units as a showcase in the TESDA Cold Chain Innovation - Hub Training Center.• R-600a (Isobutane) This has been used for Refrigerators & Beverage Coolers since 2015 here. There are two local Appliance Manufacturers here that are producing this.• R-514a Trane is using this in lieu of the R-123 its a proprietary refrigerant developed by Chemours for Trane Exclusive use. It is cheaper than R-1233zd.• R-1233zd is the Replacement refrigerant (R-123) for the new Daikin, Carrier, York & Mitsubishi Chillers. It has been marketed here since 2022.• R-1234ze is the Refrigerant for New Chillers here. All manufacturers are selling it instead of R-134a• R-449a is available for drop-in for R-404a & R-507 but only a few users are doing this due to the high price of the refrigerant.• R-454b is a drop in for R-410a and the refrigerant is available here but a few takes due to the price of the refrigerant.• R-454c only one project here is using this due to the price of the Refrigerant.	

Refrigeration Regulations			
UNEP Initiative	Asia/Australia/New Zealand	EUROPE	NORTH AMERICA
Purpose: Assist Article 5 Countries to achieve compliance with their obligations under the MEA.	Phillipines: EU Regulations, UNEP	EU:	Canada: Federal Halocarbon Regulations Information https://www.canada.ca/en/environment-climate-change/services/air-pollution/issues/ozone-layer/measures-protect/federal-halocarbon-regulations-information.html
Status: 119 Countries that are in the stages of either (1) Institutional Strengthening Project Implementation; (2) HCFC Phase out Management Plan; (3) Enabling Activities Projects to full fill their obligations on HFC phase-down.	Australia:	UK:	United States: Environmental Protection Agency (EPA) American Innovation and Manufacturing Act 2023 final rule https://www.epa.gov/system/files/documents/2023-10/technology-transitions-final-rule-fact-sheet-2023.pdf State Specific Regulations: California (California Air Resource Board, CARB) https://ww2.arb.ca.gov/
Additional Information: https://www.unep.org	New Zealand:		Maine 2040 ban of the sale of PFAS Refrigerants ad PFAS-Containing HVAC&R Equipment Maine to Ban Sale of PFAS Refrigerants in 2040 New York (Refrigerant Regulation, Part 494) https://dec.ny.gov/regulatory/regulations Washington (Chapter 173-443 WAC Hydrofluorocarbons) https://ecology.wa.gov/

ASHRAE CEBD 2024/25 Special Projects



REF-CPCC Liaison update
Sunday 9 Feb, 2025

CEBD has developed list of 15 x Special Projects

REF-CPCC has engaged in 2 of the 15 special projects:

1. Refrigerant Leakage Rate Data Collection

This project focuses on collecting more current refrigerant leakage data for North American installed HVACR equipment to serve two main uses: 1) provide a current, consistent, peer-reviewed data set, agnostic of manufacturer specific data, for ASHRAE standards to reference as part of their whole-life carbon calculations for annual leakage rate assumptions, and 2) Provide current data on most common leakage points for equipment to help direct future R&D around design, installation, or maintenance changes which could reduce future refrigerant leakage rates.

2. Decarbonization Strategies for Supermarket Industry Archetypes

The supermarket building needs air-conditioning, dehumidification, heating of air and water, potable and sanitary water, and significant refrigeration for food and beverage. Designers and engineers have to meet competing goals while designing grocery stores – reduce energy and overall emissions (both direct and indirect) and enable a store design that increases sales and customer satisfaction. There are very few resources that integrate all the different needs of supermarkets in order to design a sustainable holistic building that can help meet the supermarket's decarbonization goals. This project will begin by identifying and establishing a working group of experts who will focus on decarbonization specifically for the supermarket industry. The task of the working group will be on-going, reviewing existing ASHRAE and industry content on decarbonization from a supermarket building design point of view, and identifying the needs of future guideline documents that can help the practitioners.

Project funding and management

In response to my question about how the projects will be funded and managed, I was told the following:

- The funding process for the CEBD is different.
- CEBD will request funds for both projects in Orlando.
- The CEBD reports to the Board Executive Committee.
- If we are approved at ExCom on Saturday, they will present the motion of the Board at their Sunday afternoon meeting.
- TechC Special Projects should involve interested TCs.

Note: CEBD champions for these two projects are Stet Sanborn, and Rajan Rajendran.



Shaping Tomorrow's Built
Environment Today

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2025 ASHRAE WINTER CONFERENCE

ORLANDO, FEB 8-12 | AHR EXPO, FEB 10-12

LEADERSHIP PRESENTATION



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.

Value Statement

In 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. Our culture is one of inclusiveness, acknowledging the inherent value and dignity of each individual. We celebrate diverse and inclusive communities, understanding that doing so fuels better, more creative and more thoughtful ideas, solutions and strategies for the Society and the communities our Society serves. We respect and welcome all.

Harassment and Discrimination

ASHRAE strictly prohibits and does not tolerate discrimination against members or applicants for membership because of such individual’s race, color, religion, age, sex, sexual orientation, national origin, physical or mental disability, pregnancy, genetic information, veteran status, uniformed service member status, or any other category protected under applicable law.

Commercialism

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.



MARKETING CENTRAL

ASHRAE has a **NEW TAGLINE!** Shaping Tomorrow's **Global** Built Environment Today.



Shaping Tomorrow's Global
Built Environment Today

Download Now at [Marketing Central](#)

Download

2025-28 Strategic Plan Available for Committees and Councils



A preview of the new Strategic Plan is available for committees, councils and chapters to reference while planning for the upcoming Society year.



The complete 2025-28 Strategic Plan will be announced at the 2025 ASHRAE Annual Conference.

Download the Strategic Plan at
ashrae.org/strategicplan

Download



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GOVERNMENT OUTREACH



Get Involved!

136 Government Outreach
Events during the 23-24 SY

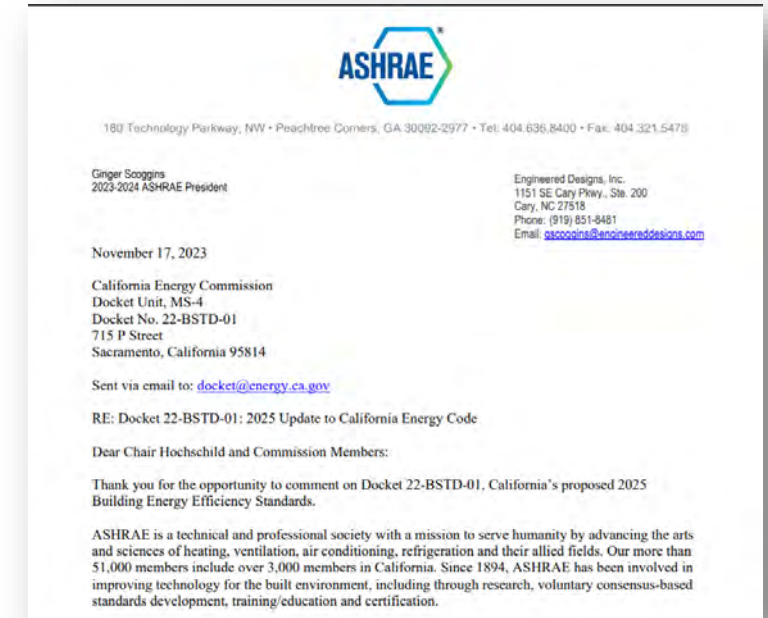
GOVERNMENT AFFAIRS UPDATE



BI-WEEKLY NEWSLETTER

Sign up for the Government
Affairs Update
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LETTERS & TESTIMONY



Share your Expertise with Government Officials through the new SMEs for GOEs Program



Policymakers and elected officials need your expertise to make better decisions as they craft legislation and regulations impacting HVAC&R and the built environment.

The Government Affairs Committee (GAC) has developed a new program to identify Subject Matter Experts (SMEs) who can effectively communicate with non-technical audiences such as government officials

BE THE SOURCE of technical expertise for these decisions!



Sign up online or email GovAffairs@ashrae.org

Society Year ending June 30, 2024



\$2.7M Research Promotion Campaign
(Research, YEA, ALI, Scholarships, General)



\$1.5M Raised for Endowments



\$232,100 Awarded through
52 Scholarships



\$1.9M Raised for Research



\$57,600 Raised by College
of Fellows and Life Members Club



\$1.18M Given by ASHRAE
Regions, Chapters and Sections

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



- Developed Project Summaries for eight (8) CEBD projects
- New eLearning Course on Grid Interactive Buildings
- Publication of Guides:
 - ✓ Grid Interactive Buildings for Decarbonization Design
 - ✓ Decarbonizing Hospital Buildings
 - ✓ TM65 Addendum for North America with CIBSE
 - ✓ Building Decarbonization Retrofits for Commercial & Multifamily Buildings
 - ✓ Decarbonizing Building Thermal Systems: A Guide for Applying Heat Pumps & Beyond with NREL
 - ✓ *Whole Life Carbon Guide for Building Systems: In Process*
 - ✓ *Guide to Strategic Decarbonization Planning with USGBC: In Process*

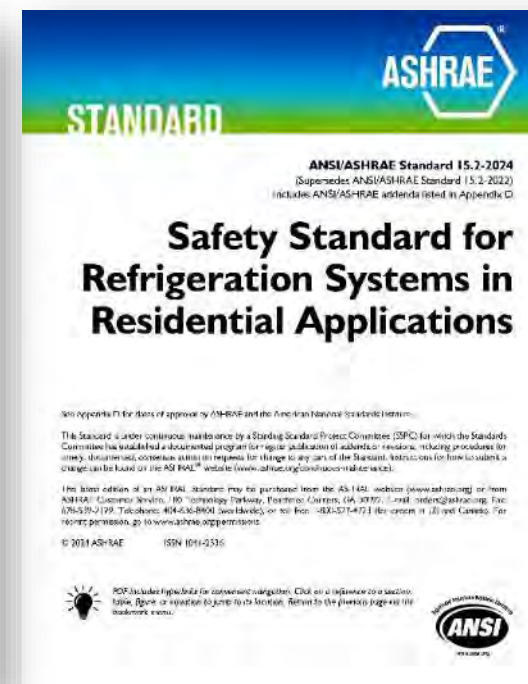
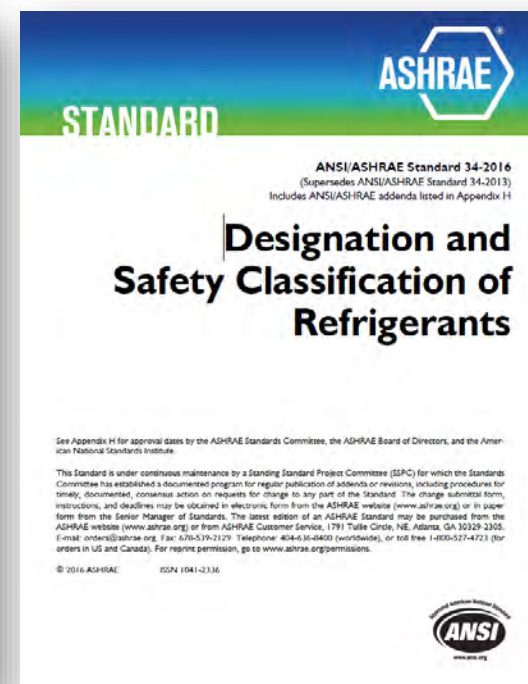


Standards

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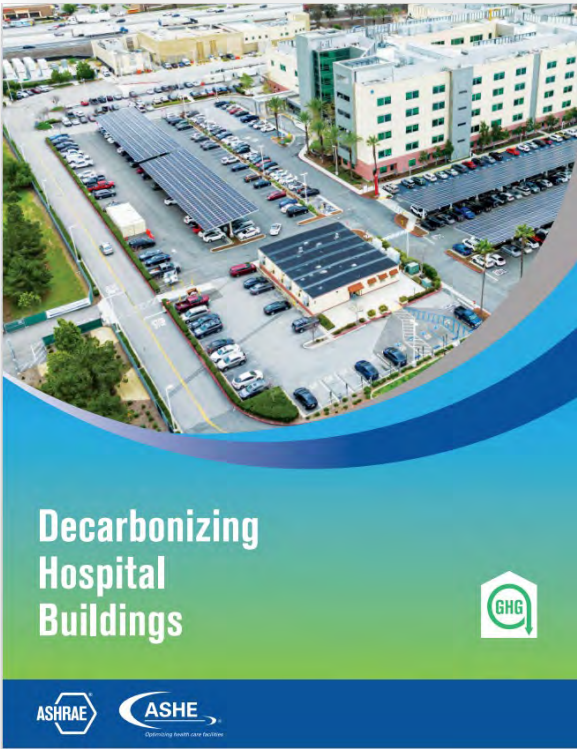
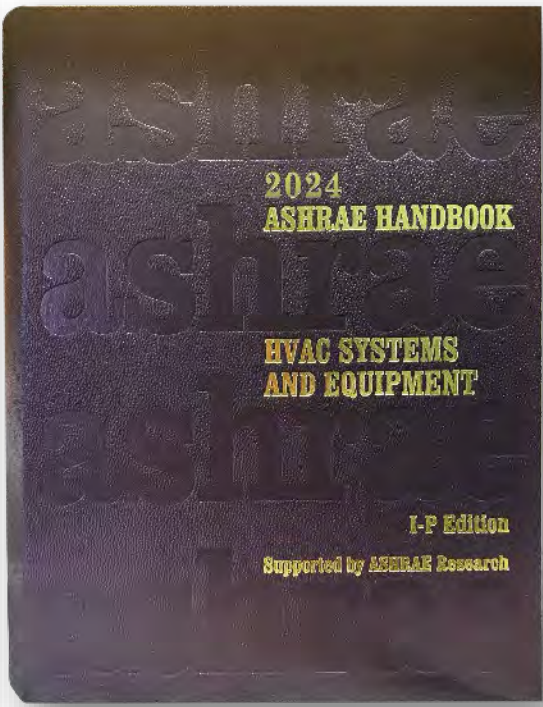
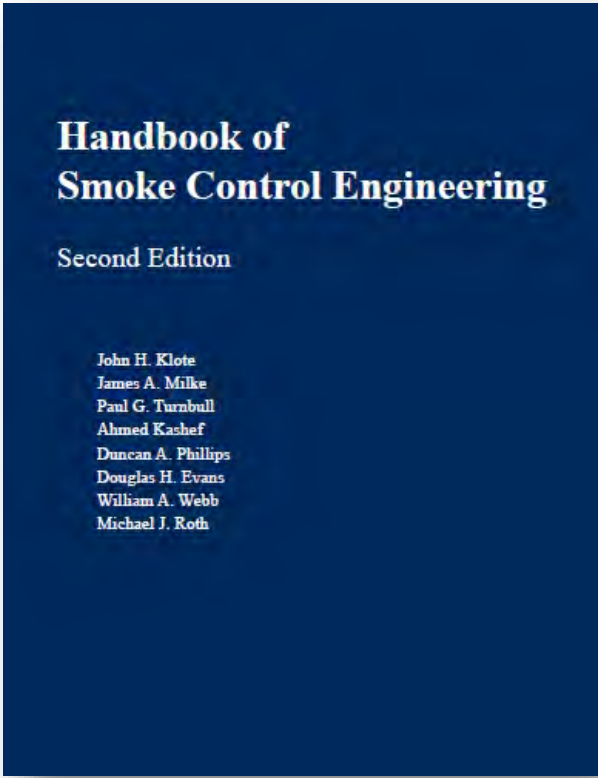
Building Energy Modeling

Updated Early! Refrigeration Safety Standards



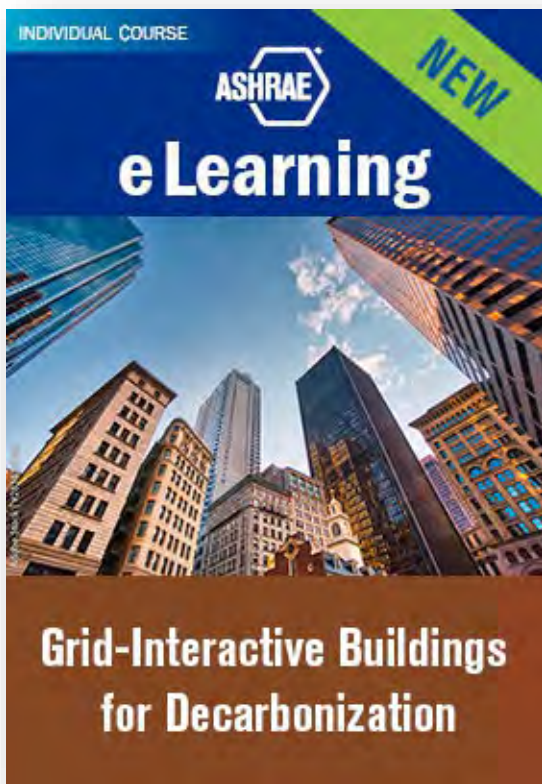


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eLearning

New Course



ASHRAE Learning Institute

New Training in Orlando

Ultra-Low-Energy Buildings
and Microgrids:

Tools for Resilience and
Decarbonization

February 10 | 2:45 PM



Solar Energy Systems Design, Applications,
and Real-World Best Strategies

February 11 | 9 AM

Certification

New Certification



Record Application Total in SY 2024

2025 Conferences

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Qatar, Doha, April 23-24, 2025

Third International Conference on Energy and Indoor Environment for Hot Climates



Denver, August 13-15, 2025

2025 ASHRAE Conference for Integrated Design, Construction & Operations



Montreal, September 24-26, 2025

IEQ 2025 Conference
Co-Organized by ASHRAE and AIVC



Chicago, October 22-24, 2025

2025 ASHRAE Building Decarbonization Conference



Clearwater Beach, FL, December 8-11, 2025

Buildings XVI Conference



**2025 ASHRAE
Annual Conference**

Phoenix, AZ, June 21-25, 2025

Registration opens in Spring 2025. See you in Phoenix!

**Meet and Greet with Dennis Knight at the
ASHRAE Booth (3201)
Monday at 3:00 PM**



**M. Dennis Knight, P.E., BEMP, Fellow ASHRAE
2024-25 ASHRAE President**

**Stop by the ASHRAE Booth 3201 and
Bookstore 455 while at the AHR Expo.**

Your paid conference badge provides entry to the show.

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lanyard while visiting the ASHRAE booth!



New ASHRAE Region XV



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Director and Regional Chair: **Bassel Anbari**



Director and Regional Chair: **Richie Mittal**



Committees and Student Scholarships

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Find Committees and Nominate Yourself or Others

FEB
2025

February 14: Nominations for appointed committees are due.

JUN
2025

June: Speak with your committee ExO/CO if your current appointment/elected position ends to be nominated for another.

SEP
2025

September: Nominations for elected positions are due. (Publications & Education Council, Tech Council, RAC, TAC, Standards, Handbook, Nominating)

Communities > Student Zone > Scholarships

44 Society Scholarships Available for 2025-2026 SY

Each year the ASHRAE Foundation awards scholarships of up to **\$12,500 USD** each to qualified students.



Spread the word to students and encourage them to apply.



Consider donating to help support the scholarship program.

Membership

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Have you selected your Annual Membership Benefit?

Benefits are selected during the join & renewal process. If you haven't done so, login and select from benefit options available.

eLearning Course  150+ to choose from	ASHRAE Standard or Guideline  100+ to choose from	ASHRAE Handbook  PDF version of the most recent	Handbook Online  4 most recent	ASHRAE Certification Exam Study Guide  3 to choose from
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New, Full Dues Paying Members Automatically Get:

1 Free Registration  to Winter or Annual Conference	&	12 Months FREE  Handbook Online
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HONORS & AWARDS

The following award nominations have a May 1 deadline:

Fellow | Honorary Member | ASHRAE Hall of Fame | F. Paul Anderson Award

ASHRAE Pioneers of the Industry | Award for Distinguished Public Service



Media Inquiries



**Asked to make a statement
on behalf of ASHRAE?**

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

Thank you!
Questions or Comments?

[ashrae.org](https://www.ashrae.org)