

# MEETING NOTES - ASHRAE 2024/25 CEBD ASHRAE Annual Conference

June 22<sup>nd</sup>, 2025, 8-10AM MST

Location: Sheraton Phoenix Downtown, 340 North 3rd Street, Phoenix, AZ 85004

Meeting Room: Valley of the Sun E (Level 2)

[Meeting Link](#)

1. Call to Order – Kent – 8:01AM
2. ASHRAE Values Statement - Kent
  - a. [ASHRAE Values 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.*
3. Review of Agenda –Kent
4. Sign-in sheets (Rajan, Ghina, Ivan Rydkin, Tom Parker, Dove Feng, Patrick Villaume, Laura Brandt, Peter Luttik, Tristan Grant, Eric Berg)
5. Welcome new members –Kent
6. Introductions
7. CEBD 2024/2025 Annual Recap – Kent
  - Mission driven
  - Working closely with other groups to meet ASHRAE goals.
  - Key focus areas and coordinating with ASHRAE standards.
  - Overview of guides completed and in the works.
  - Training Overview (ALI and eLearning) – Building Decarbonization Retrofits – Evolving to Decarbonization.
  - Decarb conferences – all have been sold out.
  - Making the business case for decarb
  - Overview of member survey and decarb game results – guiding information for CEBD
  - Overview of CEBD presentation to be used as webinar – working with MemC to get these to the membership.
  - Standards overview (90.1, 90.2, 100, 189.1, 211, 228, 240P, 242P, 244P, other carbon-related standards).
  - Overview of Outreach and Collaboration – website, social media (road to Zero), videos, coordinate with GAC, GAP, Decarb member survey)
  - Overview of support from TechC in rolling out projects.
8. ASHRAE BD Project Updates
  - a. Streamlined, Flexible International Building Code Framework – Clay
    - COP28 – Ginger shared ASHRAE commitment to Net Zero Emissions.
    - Coordination with TechC and GTIC. GAP conf in Athens kicked things off. 26% of countries have national building code requirements.
  - b. Review of framework (70% draft) presentation. Upfront building codes needs assessment then measures assessment with different types of stakeholders. Code design requirements and approaches (prescriptive and outcomes-based), assessment of the country/jurisdiction capabilities, stakeholder assessment (to have the right people involved). IEA commitment to

## MEETING NOTES - ASHRAE 2024/25 CEBD ASHRAE Annual Conference

June 22<sup>nd</sup>, 2025, 8-10AM MST

Location: Sheraton Phoenix Downtown, 340 North 3rd Street, Phoenix, AZ 85004

Meeting Room: Valley of the Sun E (Level 2)

[Meeting Link](#)

publish (Nov timeframe). The draft working group has been assembled and is open to additional participants. Local support and champions, along with key government and industry representatives, are essential. Pilot country being selected.

- c. Decarb Strategies for Supermarket Industry Archetypes – Rajan (BruceN)
  - Supermarket Decarbonization Guide Working Group: The Supermarket Decarbonization Guide WG has been formed with 16 members and meets monthly. A draft outline for the guide is complete and being final edited based on inputs from CEBD members. A work statement for the RFP is also in progress. Targeting the months of July through December for all the work, with the goal of 75% completion of the guide by December. Will look for contractors that are experts in decarbonization, especially in supermarket space.
- d. Decarb Framework for AI Data Centers – Bing
  - Presented at Orlando. NEMA participating partner. Defining the scope of work and defining the collaboration framework. The current scope is a live webpage.
- e. WS #1977-SP Update HVAC Equipment Service Life Data – Blake (MarkF)
  - In process for RFP and looking at initiating project by Sept/Nov
- f. WS #1988-SP Whole Life Carbon Gap Analysis – Ghina/Carrie (LisaN)
  - In process for RFP.
- g. Refrigerant Emissions Management, Tracking, and Compliance – Stet (BruceN)
  - Three parts (peer review of existing data, creating a framework, including looking at leakage data of type and service life, was originally going to align with Energy Star, but pivoting to other data options).
- h. Standardizing WLC Calculations for Building Systems – Ghina (CoreyM)
  - Review copy is floating to the TC's and on target to get out to bid in Aug RFP cycle.
- i. Whole Building/MEP Benchmarking Data Research – Ghina (HeatherS/TinaB)
  - Work statement to be part of Aug RFP cycle.
- j. Residential Retrofits: A Summary of Existing Resources – Carrie (DevinA)
  - Two-page summary in process and working group meeting in PHX.

### 9. Liaison Updates

- a. ASHRAE Councils
  - TechC – Costas – Implemented a new process. Bi-weekly mtgs throughout 2024-2025. Reached out to TCs, subject matter experts. Collab between champs and CEBD has worked well and continues to look for ways to improve. Oversight for implementation and review of deliverables – we can move at a different pace. Not replacing the TC/RAC process, just taking a different approach.
  - PubEdC – Jeremy – Will be serving for another year to help achieve goals. Collaborating with PubEd group to make these products happen more smoothly.
  - MembC – Bill – a bit more downstream for the distribution of CEBD efforts. Chapter presentations of CEBD topics will be shared. Participated in the Member survey to provide feedback. Adeeba is going to take over and look for her to engage.
- b. MEP 2040 – Kayleigh – Stet provided an update. The most significant lift was the resource for the MEP Embodied Carbon Beginners' Guide. Encouraged all to download (free). MEP 2040 has been posting to prepare for implementing up to 40 projects. Meeting weekly. Complementary documents with CEBD. It is currently all North America-based, but the process is universal.

**MEETING NOTES - ASHRAE 2024/25 CEBD  
ASHRAE Annual Conference**

June 22<sup>nd</sup>, 2025, 8-10AM MST

Location: Sheraton Phoenix Downtown, 340 North 3rd Street, Phoenix, AZ 85004

Meeting Room: Valley of the Sun E (Level 2)

[Meeting Link](#)

- c. AHRI – Jaime – in process of establishing EDP and PCR. Develop guidelines. The initial scope will be Res and Commercial.
    - Question from Josh – how is this going to mesh with 244P? A: will be referencing.
10. Standard 240P Public Review from June 6 through July 21, 2025 – urged everyone to review and submit documents. Thanks to Stephanie for chairing.
11. 2025 ASHRAE Decarb Conference Chicago, IL - [October 22-24, 2025](#) – Luke/Carrie – urged all to attend, register, and participate in survey. Four different tracks – posted on website – scaling debar, innovator’s showcase, beyond decarb, blueprints for change. Decarb is embodied carbon, operational carbon, WLC, Scope 1,2,3 and this will be indicated for each meeting as to which aspect will be addressed.
12. TM65 Update – proceeding with a Brazil TM65. Country blueprint (scalable and replicable)
13. 2025/2026 CEBD Strategy Update –Blake – Overview of CEBD primary responsibilities and how we have been fulfilling. TFBBD to CEBD standing committee – this year has been a shift to a more strategic focus. 320 days of CEBD. 12 breakout sessions, 24 ideas – prioritized into 5 initiatives.
  - a. Develop engineering guidance to accompany the ASHRAE/USGBC/NYSERDA strategic decarb guide.
  - b. Business case development and market transformation.
  - c. Strategic Vision and long-term planning.
  - d. Member and industry engagement and knowledge transfer
  - e. AI Integration and innovation
    - Will be sending these out to councils and committees
14. Closing Comments - Kent
15. Recognize Outgoing Members –Kent/Blake - Kent outgoing and all the efforts. It started in May 2022 with original session.
16. Open Session for Guest Comments
  - a. Walt – BOD to approve IFHE MOU – international decarb of healthcare
  - b. Mick – Chuck found a way to help make this happen and this group has had such an impact on the mission. Thank you, well done!
17. Adjourn – 9:55 A.M.

# Center of Excellence for Building Decarbonization

2025 Phoenix Annual Meeting



# Agenda

- 1. Call to Order**
- 2. ASHRAE Values Statement–Kent**
- 3. Review of Agenda –Kent**
- 4. Sign-in sheets**
- 5. Welcome new members –Kent**
- 6. Introductions**
- 7. CEBD 2024/2025 Annual Recap –Kent**
- 8. ASHRAE BD Project Updates**
  - a) Streamlined, Flexible Intl Building Code Framework –Clay
  - b) Decarb Strategies for Supermarket Industry Archetypes –Rajan
  - c) Decarb Framework for AI Data Centers –Bing
  - d) Update HVAC Equipment Service Life Data –Blake
  - e) Whole Life Carbon Gap Analysis –Ghina/Carrie
  - f) Refrigerant Emissions Management, Tracking, & Compliance –Stet
  - g) Standardizing WLC Calcs for Building Systems –Ghina
  - h) Whole Building/MEP Benchmarking Data Research –Ghina
  - i) Residential Retrofits: A Summary of Existing Resources –Carrie
- 9. Liaison Reports**
  - a) TechC –Costas
  - b) PubEdC –Jeremy
  - c) MembC –Bill
  - d) MEP 2040 –Kayleigh
  - e) AHRI –Jaime
- 10. Standard 240P Public Review**
- 11. 2025 ASHRAE Decarb Conference –Luke/Carrie**
- 12. TM65 Update –Luke**
- 13. 2025/2026 CEBD Strategy Update –Blake**
- 14. Closing Comments –Kent**
- 15. Recognize Outgoing Members –Kent/Blake**
- 16. Open Session for Guest Comments**
- 17. Next Meeting**
- 18. Adjourn**

# ASHRAE Values 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 - <https://www.ashrae.org/about/governance/code-of-ethics>

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

Diversity Statement - <https://www.ashrae.org/about/diversity-equity-and-inclusion-dei>

Artificial Intelligence Policy - <https://www.ashrae.org/about/governance>

**Welcome New Members**

**Kent Peterson**

# Welcome CEBD New Members

Amanda Webb, VM

Mark Lessans, VM

Chuck Gulledge, VM

Parag Cameron-Rastogi, VM

Ashish Rakheja, Coordinating Officer

Corey Metzger, TechC Liaison

Adeeba Mehboob, MemberC Liaison

# Introductions

Scan next slide or use QR code  
sheets in room to register  
attending

# Sign-in Sheet



# CEBD Annual Recap

Kent Peterson

# ASHRAE's position...

*Eliminating GHG emissions from the built environment is essential to address climate change*



# Our goals...

## 2030

**the global built environment must halve its 2015 GHG emissions**

- All new buildings must be NZE
- Widespread EE retrofits of existing assets
- New construction embodied carbon must be reduced by at least 40%

## 2050

**all new and existing assets must be net zero GHG emissions across the whole life cycle**



**STANDARDS**

**EDUCATION**

**KNOWLEDGE  
RESOURCE  
HUB**



**TECHNICAL  
TOOLS**

**POSITION  
DOCUMENT**

# **Four Key Focus Areas**

# June 2025 CEBD Update - Guides



**Building Decarbonization  
Retrofits for Commercial  
and Multifamily Buildings**



**Whole-Life  
Carbon Guide  
for Building Systems**



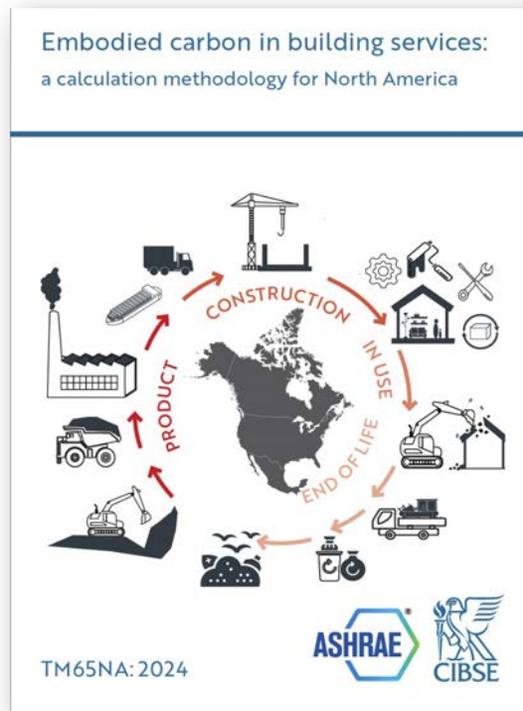
**Guide to Strategic  
Decarbonization  
Planning**



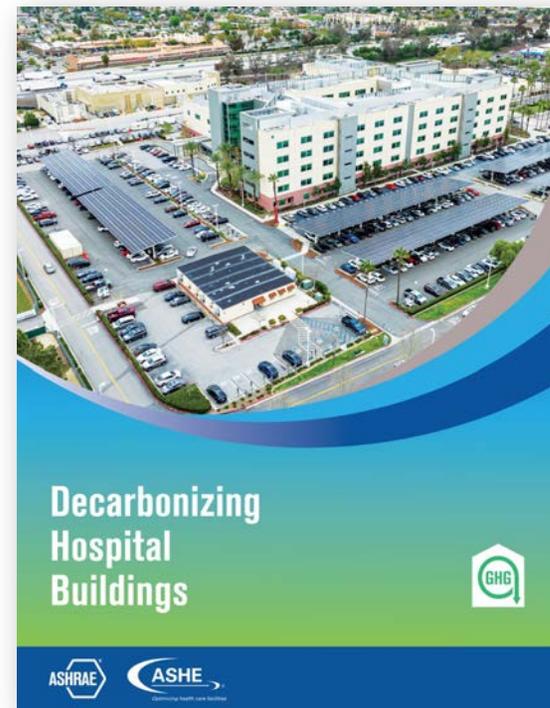
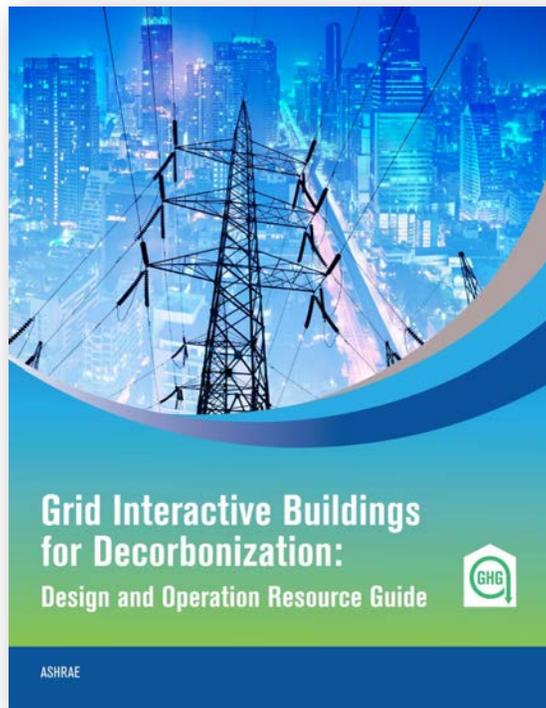
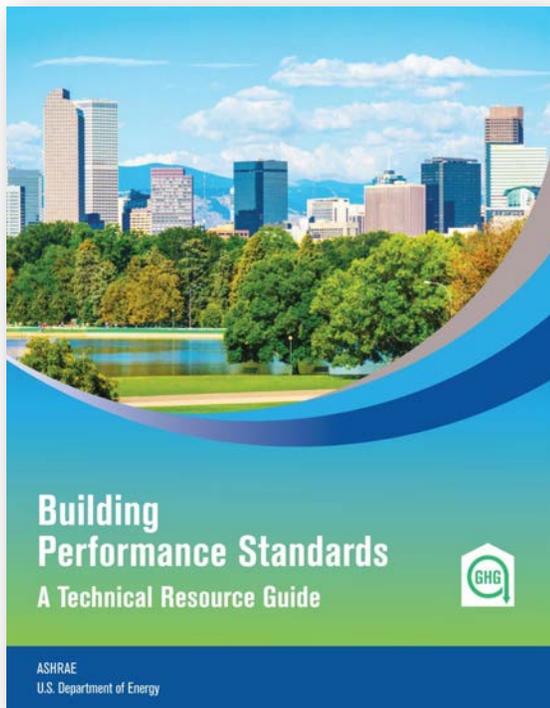
SUPPORTED BY

**NYSERDA**  
New York State Energy Research  
and Development Authority

# June 2025 CEBD Update - Guides



# June 2025 CEBD Update - Guides



# June 2025 CEBD Update - Training

Decarbonization 101 -45 minutes

Enhance the Existing 3-hour ALI courses

Decarbonizing Hospital Buildings 3-hour course (*final review*)

Grid Interactive Buildings for Decarbonization 3-hour course (*completed*)

Heat Pump Application and Operation 3-hour course (*completed*)

Building Decarbonization Retrofits for Commercial and Multifamily Buildings 3-hour course (*starting*)

Building Decarbonization Audit full-day PDS

Building Decarbonization Design Professional Certification

# June 2025 CEBD Update - Training

Assist in Developing ASHRAE Building Decarbonization Conferences

Building Decarbonization Game -45 minutes

Decarbonization Retrofits -45 minutes

Cold Climate Decarbonization Design -45 minutes

Beneficial Electrification for Building Decarbonization -45 minutes

How to Apply Whole Life Decarbonization Strategies to New Buildings -45 minutes

# June 2025 CEBD Update - Standards

ASHRAE Standard 90.1 Energy Standard for Buildings Except Low-Rise Residential Buildings

ASHRAE Standard 90.2 Energy Efficient Design of Low-Rise Residential Buildings

ASHRAE Standard 100 Energy and Emissions Building Performance Standard for Existing Buildings

ASHRAE Standard 189.1 International Green Construction Code

ASHRAE Standard 211 Commercial Building Energy Audits

ASHRAE Standard 228 Standard Method of Evaluating Zero Net Energy and Zero Net Carbon Building Performance

ASHRAE/ICC Standard 240P Quantification of Life Cycle Greenhouse Gas Emissions of Buildings

ASHRAE Standard 242P Standard Method for Calculation of Building Operational Greenhouse Gas Emissions

ASHRAE Standard 244P Sustainability Assessment for Mechanical, Electrical, and Plumbing Products

Expediting other carbon-related standards

# June 2025 CEBD Update - Outreach

## Outreach & Collaboration

Website development [ashrae.org/decarb](https://ashrae.org/decarb)

Social media 90-180s videos - Join us on the road to ZERO

Pivot in branding & marketing

Website videos

Coordination with GAC on decarbonization-related PPIBs and White House interaction

Creation of the ASHRAE Global Advisory Panel

ASHRAE Building Decarbonization Member Survey

# ASHRAE Building Decarb Project Updates

# Project: Flexible International Building Codes Framework

**Summary:** *Develop a flexible building code framework for emerging economies to streamline national/subnational building code design, development, implementation and adoption including supporting tools, policies and training.*

## Goals & Objectives

- Develop a flexible building codes framework, needs assessment tool and facilitation guide for use in collaborative workshops with key national/sub-national stakeholders in emerging economies.
- Support pilot national/subnational partners in developing recommendations for building code development, implementation, training, tools and supporting policies.

## Key Partners

- ICC
- IEA
- SE4ALL
- UNEP/GlobalABC
- World Bank Group
- WRI
- ASHRAE international members

## Why ASHRAE

- Aligns with ASHRAE's goal of supporting energy-efficient and sustainable building design, development and operations.

## Decarbonization Impact

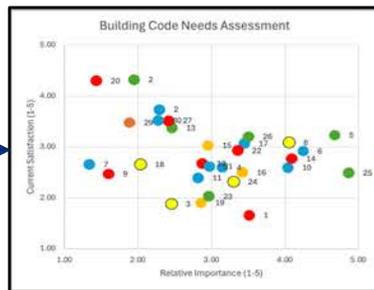
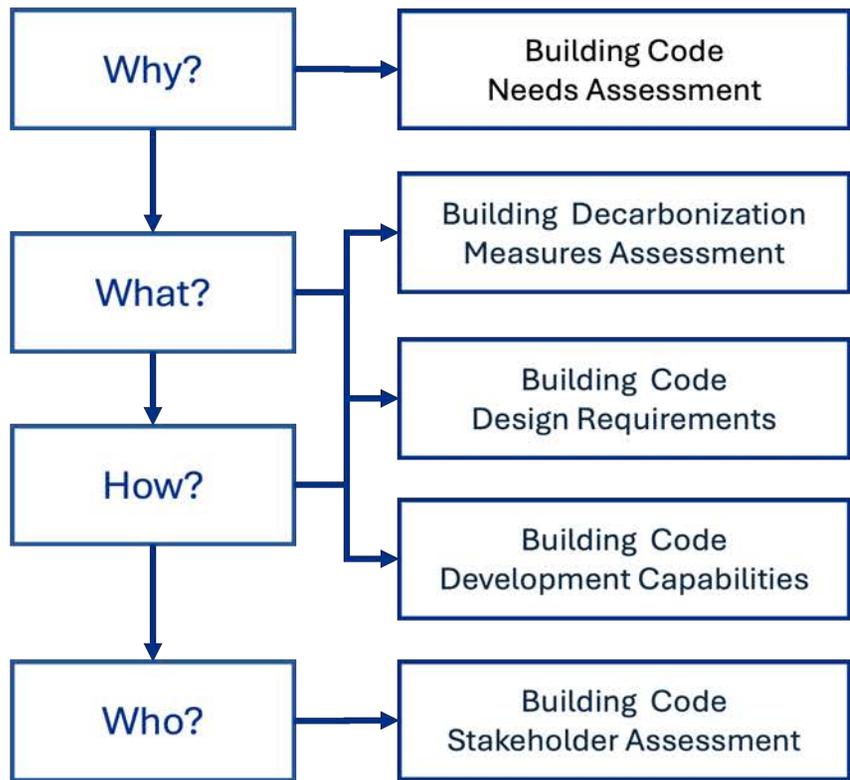
- Enables the integration of energy efficiency, low-carbon technologies, and GHG reduction strategies.
- Builds code development and compliance capabilities and helps define policy frameworks for low-carbon building design and development.

### Project Champions:

Clay Nesler & Ghina Annan (CEBD)

Kashif Nawaz & Jyotirmay Mathur (Tech Council)

# Project: Flexible International Building Codes Framework



	Stakeholder Assessment	Building Code Design Requirements	Building Code Development Capabilities	Building Code Stakeholder Assessment
1	High	High	High	High
2	High	High	High	High
3	High	High	High	High
4	High	High	High	High
5	High	High	High	High
6	High	High	High	High
7	High	High	High	High
8	High	High	High	High
9	High	High	High	High
10	High	High	High	High
11	High	High	High	High
12	High	High	High	High
13	High	High	High	High
14	High	High	High	High
15	High	High	High	High
16	High	High	High	High
17	High	High	High	High
18	High	High	High	High
19	High	High	High	High
20	High	High	High	High
21	High	High	High	High
22	High	High	High	High
23	High	High	High	High
24	High	High	High	High
25	High	High	High	High

1 Reduce building operational greenhouse gas emissions	6 Decrease water consumption and demand	11 Reduce building annual energy costs	16 Assure high levels of stakeholder engagement	21 Maintain building occupant comfort, health and safety
2 Reduce embodied carbon in building materials and equipment	7 Protect and enhance natural systems and habitats	12 Increase building sector employment	17 Accurately predict the impact of implemented policies	22 Reduce building lifecycle costs
3 Reduce fossil fuel use in buildings for heating	8 Decrease transportation-related emissions	13 Assure cost effectiveness of building-related policies	18 Assure that policy impacts align with public commitments	23 Increase building asset value
4 Increase use of zero carbon renewable energy	9 Reduce waste from building construction and renovation	14 Reduce policy development and implementation costs	19 Assure high levels of compliance for implemented policies	24 Maintain compliance with government regulations
5 Increase facility resilience to climate change impacts	10 Decrease requirements for additional energy system capacity	15 Reduce policy training and compliance costs	20 Increase effectiveness of policy compliance design tools	25 Support sustainability goals and commitments

## Project Status

- Draft presentation deliverable complete
- Recruit draft review working group
- Select pilot country and engage partners
- Plan and execute pilot workshop
- Support local code development efforts

## Project Champions:

Clay Nesler & Ghina Annan (CEBD)  
Kashif Nawaz & Jyotirmay Mathur (Tech Council)

# Project: Decarbonization Strategies for Supermarket Industry Archetypes

**Summary:** Supermarkets operate 24/7 and require air conditioning, heating, refrigeration, lighting, and ventilation, making them high-energy consumers. This project aims to develop decarbonization strategies tailored for supermarkets by integrating design, operations, and sustainability principles to reduce energy use and emissions while maintaining food safety and customer comfort.

## Goals & Objectives

- Form a working group with industry experts, ASHRAE members, and stakeholders (*Complete*).
- Identify decarbonization strategies specific to supermarkets, including HVAC, refrigeration, lighting, and operations (*Draft Complete*).
- Assess existing ASHRAE guidelines and determine their applicability to supermarkets (*Ongoing*).
- Develop a supermarket-focused decarbonization design guide using ASHRAE's standards (*Target July-Dec '25*).

## Key Partners

- ASHRAE TCs & CEBD Supermarket Industry Stakeholders (designers, facility managers, operations teams)
- US DOE & EPA
- AEDG for Grocery Stores & Sustainability Experts

## Why ASHRAE

- This project aligns with ASHRAE's mission to support low-carbon, energy-efficient commercial spaces.

## Decarbonization Impact

- Reduces HVAC and refrigeration-related emissions, which are significant contributors to supermarket carbon footprints.
- Supports corporate sustainability goals (e.g., zero-carbon roadmaps from major retailers like Walmart and Kroger).
- Helps supermarkets meet Scope 1, 2, and 3 carbon reduction targets.

### Project Champions:

Rajan Rajendran (CEBD)  
Bruce Nelson (Tech Council)

# Project: AI Data Center Framework for Efficiency, Resilience and Performance

## Goal

Enable the sustainable growth of AI infrastructure through energy-efficient, resilient data centers that reduce GHG emissions, alleviate power grid stress, and improve operational performance.

## Objectives

- **Deliver a scalable framework** for the efficient **design, commissioning, retrofit, and operation** of AI data centers
- **Reduce energy consumption and emissions** through adoption of **advanced technologies and best practices**
- **Support grid reliability and resilience** by promoting **load flexibility** and **grid-interactive operations**

### Project Champions:

Bing Liu (CEBD) | Thomas Loxley (ASHRAE) | Michael Erbesfeld (NEMA)

# Proposed Framework Development Approach

- **COMPREHENSIVE:** The framework will address all aspects of energy source, energy use, and water use in data center facilities, including electricity generation and opportunities for waste heat re-use.
- **FLEXIBLE:** The framework will recommend most effective solutions based on facility climate zone and load density.
- **TECHNICAL LEADERSHIP:** ASHRAE/NEMA/PNNL will convene a working group with SMEs and develop the Framework
  - PNNL provides technical leadership and R&D capabilities
  - ASHRAE members lead on recommendations on HVAC and water system technologies
  - NEMA members lead on recommendations for electrical equipment technologies and safety.

## *Project Champions:*

Bing Liu (CEBD) | Thomas Loxley (ASHRAE) | Michael Erbesfeld (NEMA)

# Proposed Framework for AI Data Center

**1 Introduction & Purpose**

**2 Planning & Siting**

**3 Integrated Design Principles**

**4 Energy & Thermal Efficiency**

**5 Grid-Interactive and Resilient Design**

**6 Commissioning & Performance Validation**

**7 Operations and Maintenance**

**8 Retrofit & Modernization Strategies**

**9 Case Studies and Benchmarking**

**10 Tools, Standards, and Resources**

## ***Project Champions:***

Bing Liu (CEBD) | Thomas Loxley (ASHRAE) | Michael Erbesfeld (NEMA)

# Invitation-ONLY Workshop to Collect Industry Feedback

## ASHRAE/NEMA/PNNL AI Data Center Working Meeting ASHRAE 2025 Annual Conference

Sunday, June 22, 2025

1:00 pm - 3:00 pm (MST)

Sheraton Phoenix Downtown, Laveen B (Level 2)

### AGENDA

TIME	TOPIC
<b>1:00 – 1:10 pm</b>	Welcome and introductions (10 mins)
<b>1:10 – 1:40 pm</b>	Presentation: Framework project overview (30 mins)
<b>1:40 – 2:50 pm</b>	Guided discussion (70 mins) Using an interactive survey tool, we will collect and share feedback in real time on the following topic areas: <ul style="list-style-type: none"><li>• Framework Scope and Approach</li><li>• Data Center Power/Energy Systems</li><li>• Data Center Facility Electrical Systems</li><li>• Data Center Facility Mechanical Systems</li><li>• Data Center Siting</li><li>• Data Center Performance Metrics</li><li>• "Futureproofing" Data Centers</li><li>• Data Center Innovation</li></ul>
<b>2:50 - 3:00 pm</b>	Next steps (10 mins)

# Project: Expand & Update HVAC Equipment Service Life Data

**Summary:** *The goal of this research is to expand and upgrade the existing Equipment Service Life Estimate Table in the ASHRAE Applications Handbook, which is currently based on data from as far back as 1978. This update will provide critical data and information needed for reliable life-cycle analyses across the industry. This research is critical to the efforts around decarbonization of buildings, as well as for planning for capital renewal of systems and equipment.*

**Update:** *WS#1977-SP is out to bid until 7/18/25*

**Responsible TCs:** *TC 2.8 and TC 7.3*

**Proposal Evaluation Committee:** *Kevin Cross, Natalie MacDonald, Lisa Ng, Josh Gremmel, Jim Sweeny*

**Project Champions:**

Blake Ellis & Kent Peterson (CEBD)

Mark Fly (Tech Council)

# Project: Whole-Life Carbon Gap Analysis

**Summary:** *For all new and existing buildings to achieve significant carbon reduction by 2030 and net-zero carbon emissions by 2050, a comprehensive approach to whole-life carbon (WLC) assessment is essential. This project will identify the gaps in the standards, guidelines, datasets, and tools that would enable WLC across a building's entire lifecycle. The results of this project will provide specific, financially substantiated, and prioritized recommendations on what and how ASHRAE expertise can best be used to help close some gaps or facilitate future work in this area, with a long-term goal of robust WLC analyses.*

**Update:** *WS#1988-SP is out to bid until 7/18/25*

**Responsible TCs:** *TC 2.8, TC 4.4, TC 4.7, TC 6.7, and TC 7.6*

**Proposal Evaluation Committee:** *L Ng, G Annan, C Brown, C Balaras, B Chodankar, R Jogineedi, V Delisle, S Traboulsi, D Colliver, T Phoenix*

**Project Champions:**

Ghina Annan & Carrie Brown (CEBD)

Lisa Ng (Tech Council)

# Project: CEBD Whole - Life Carbon Gap Analysis

**Summary:** *This project aims to analyze gaps in whole-life carbon accounting methodologies, datasets, and tools. By understanding current industry challenges, the study will identify missing elements and recommend improvements to support better decision-making in building decarbonization strategies.*

## Goals & Objectives

- Review and assess existing whole-life carbon assessment frameworks.
- Identify critical gaps in datasets, tools, and methodologies.
- Engage with industry stakeholders to align best practices for whole-life carbon tracking.
- identify how ASHRAE expertise is best suited to help close gaps directly or to help facilitate work in this area with a long-term goal of robust WLC analyses.

## Key Partners

- ASHRAE CEBD
- Global Carbon Accounting Organizations
- Life Cycle Assessment (LCA) Experts
- Building Performance Evaluation Associations

## Why ASHRAE

- ASHRAE is leading efforts in building decarbonization and sustainability assessments.
- This project aligns with ASHRAE's Position Document on Building Decarbonization goals.

## Decarbonization Impact

- Improves accuracy of carbon tracking across the building lifecycle.
- Enhances data-driven decision-making for building sustainability.
- Encourages policy alignment with global decarbonization targets.

### Project Champions:

Carrie Brown and Ghina Annan (CEBD)

Lisa Ng (Tech Council)

# Project: Whole Life Carbon Calculation Guide for Building Systems

**Summary:** *This project focuses on the whole life carbon impact of Mechanical, Electrical, and Plumbing (MEP) systems, which can contribute up to 50% of a building's total embodied carbon footprint. The goal is to develop a standardized methodology to calculate, report, and reduce carbon emissions associated with MEP systems throughout their lifecycle.*

## Goals & Objectives

- Develop a comprehensive framework for calculating whole life carbon of MEP systems, covering design, procurement, operation, and end-of-life phases.
- Establish standard benchmarks and best practices for tracking MEP system carbon emissions.
- Create protocols for collecting & validating embodied carbon data from Environmental Product Declarations (EPDs), supplier reports, and industry sources.

## Key Partners

- ASHRAE CEBD
- RICS
- ICC/ASHRAE 240P Standard
- MEP Industry Suppliers & Consultants
- Canada NRC (National Research Council) for Pilot Study Collaboration

## Why ASHRAE

- ASHRAE leads building decarbonization globally, making it the ideal organization to standardize MEP carbon calculations.
- Existing ASHRAE documents emphasize MEP emissions tracking.
- Aligns with ASHRAE's climate action targets for reducing embodied carbon in buildings.

## Decarbonization Impact

- Supports carbon neutrality by 2050 by establishing clear reduction targets for MEP systems.
- Helps engineers, architects, and policymakers make informed decisions about low-carbon materials & equipment.
- Encourages the adoption of best practices for emissions reduction across the building lifecycle.

### Project Champions:

Ghina Annan (CEBD)

Corey Metzger (Tech Council)

# Project: Whole Building MEP Benchmarking Data Research

**Summary:** *This project focuses on benchmarking the whole life carbon impact of Mechanical, Electrical, and Plumbing (MEP) systems across various commercial building typologies (e.g., offices, schools, hospitals, warehouses, retail). The goal is to develop a standardized methodology for assessing, reporting, and reducing MEP-related carbon emissions, supporting industry-wide decarbonization strategies.*

## Goals & Objectives

- Develop a standardized benchmarking framework for whole life carbon assessment of MEP systems.
- Collect & validate embodied carbon data from (EPDs), supplier reports, and manufacturers.
- Assess operational carbon contributions of MEP systems over their lifespan.
- Establish performance benchmarks for different building types.

## Key Partners

- ASHRAE CEBD
- RICS
- MEP2040 Initiative
- Carbon Leadership Forum
- CIBSE

## Why ASHRAE

- ASHRAE is the leading organization in HVAC and building systems sustainability.
- Aligns with ASHRAE's Building Decarbonization goals for 2030 and 2050.
- Provides a science-based approach to benchmarking MEP system emissions for global adoption.

## Decarbonization Impact

- Supports the MEP2040 commitment for reducing MEP system carbon emissions.
- Provides clear carbon reduction targets for different MEP components.
- Helps engineers, designers, and building owners optimize MEP system selection for sustainability.

### Project Champions:

Ghina Annan (CEBD)

Heather Schopplein and Tina Brueckner (Tech Council)

# Project: Residential Retrofits – A Summary of Existing Resources

**Summary:** Residential retrofits are a critical component of achieving decarbonization goals. This project aims to compile well-referenced resources on residential decarbonization retrofits, making them easily accessible for ASHRAE members. The focus is on energy efficiency, electrification, and resilience in residential buildings.

## Goals & Objectives

- Compile well-vetted resources on residential decarbonization retrofits
- Ensure ASHRAE members have easy access to information on residential retrofit strategies.

## Key Partners

- Residential Buildings Committee
- 90.2

## Why ASHRAE

- Residential retrofits will play a critical role in meeting decarbonization goals.
- The project aligns with ASHRAE's commitment to net-zero buildings by 2050.

## Decarbonization Impact

- Supports GHG emissions reduction by improving retrofit adoption & awareness.
- Helps local policymakers & engineers promote net-zero residential construction.
- Provides clear guidelines for integrating electrification, energy efficiency, and resilience into homes.

### Project Champions:

Carrie Brown and Clay Nesler (CEBD)

Devin Abellon (Tech Council)

# Project: Refrigerant Emissions Management, Tracking and Compliance

**Summary:** *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.*

## Goals & Objectives

- Establish a short “Missing Data” Research project to verify and identify holes in existing data sets
- Create a voluntary anonymized collection of historical leakage data
- Rank reported leakage source occurrences from highest to lowest for each type of equipment

## Key Partners

- CBRE, JLL, Large Portfolio Operators
- Better Buildings Design and Construction Allies
- AHRI
- ASHRAE TCs & CEBD

## Why ASHRAE

- The project aligns with ASHRAE’s commitment to net-zero buildings by 2050.
- ASHRAE members have Global insights into regulatory requirements

## Decarbonization Impact

- Reported refrigerant leakage rates range from less than 1% annual leakage to as much as 25% annual leakage depending on equipment type, age, with several references suggesting a range of 7-12%. With GWP of refrigerants also have a huge range, the data tracking project will help identify longitudinal impacts of refrigerant leakage.

### Project Champions:

Stet Sanborn (CEBD)

Bruce Nelson (Tech Council)

# Liaison Reports

# TechC Update

## Costas Balaras

# Summary of Tech Council Activities

9 Members

11 Liaisons from 7 Standing Committees  
(EHC, GTIC, RAC, RBC, REF, STDS, TAC)

## Special Projects 2024-25

- Implemented a new process in collaboration with CEBD – New project-topic opportunities
- Bi-weekly meetings throughout SY 2024-2025
- ASHRAE deep dive: Match with interested TCs-Members-Subject matter experts, Set-up Working Groups, Prepare Work Statements - RFPs .... *Continue with Review EFP bids, Oversight of work progress, Review deliverable*
- Assign Champions/*Co-Champions* for each assigned project; Collaborate with CEBD Champions; *Established biweekly champion check-in meetings for updates*
- Develop a process outline for future use; *Look for ways to improve*



*Close collaboration of TechC SP & CEBD project Champions,  
Several TCs & interest members, Subject matter experts*



# Summary of Tech Council Activities

11 Liaisons from 7 Standing Committees  
(EHC, GTIC, RAC, RBC, REF, STDS, TAC)

## Members (SY 2024-25):

- Costas Balaras, Chair 24-25
  - Devin Abellon (TechC V.C.)
  - Dru Crawley (Past Stds)
  - **Corey Metzger (DRC) Chair 25-26**
  - Heather Schopplein (DRC)
  - Kevin Mercer (TAC Chair)
  - Doug Fick (StdC Chair)
  - Richie Mittal (DRC)
  - Mark Fly (At-Large)
- Staff Liaison: Derrick Nesfield, Manager Special Projects



## Liaisons (SY 2024-25):

- **TAC** – Ongun Kazanci (MTG), Kashif Nawaz (Section 8), Kyle Gluesenkam (Section 4), Tina Brueckner (Section 3)
- **Standards** – Justin Prosser, Paolo Tronville, Margaret Mathison
- **GTIC** – Jyotirmay Mathur
- **RAC** – Srinivas Katipamula
- **RBC** – Philip Fairey
- **REF-CPCC** – Bruce Nelson
- **EHC** – Lisa Ng

# PubEdC Update

Jeremy Smith

# MembersC Update

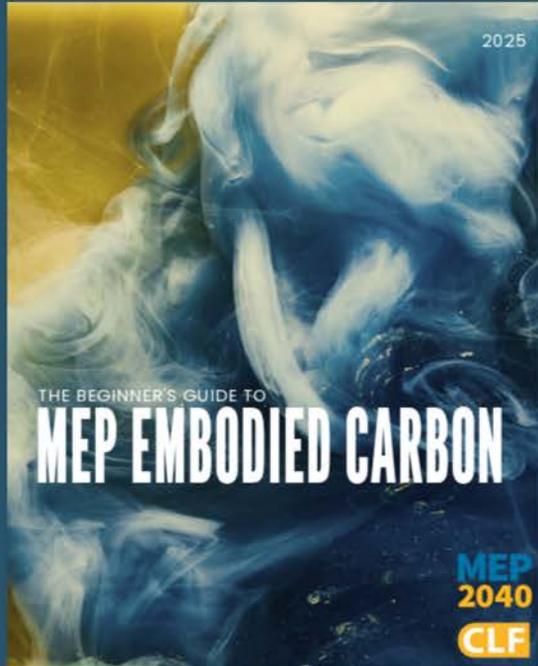
Bill McQuade

# MEP 2040 Update

## Kayleigh Houde

# MEP 2040

## The Beginner's Guide to MEP Embodied Carbon



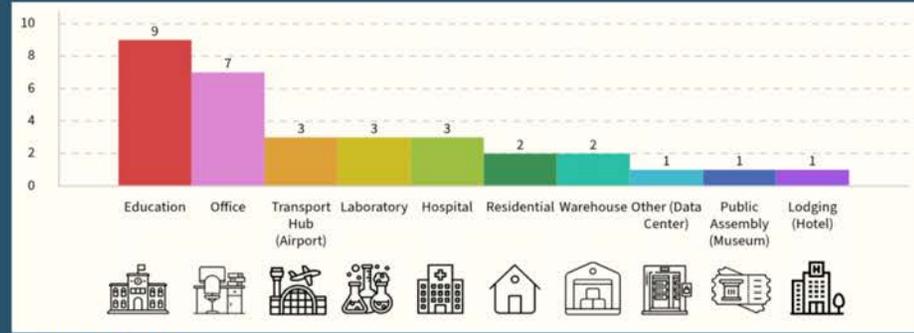
Planned Release Date:  
April 22, 2025

## MEP Whole Life Carbon Pilot

# 32

## Pilot Projects

Launched: February 5, 2025



# MEP 2040

+



MEP 2040 now operates  
under the fiscal sponsorship  
of Architecture 2030

## ASHRAE CEBD Strategic Project Alignment:

- Refrigerant Emissions Tracking
- Update HVAC Equipment Service Life
- MEP Benchmarking Data Research

## ECHO Project

ECHO v1 Reporting Schema  
September 2024

**AHRI**  
**Decarbonization Update**  
**Jaime Yeh**

# AHRI Activities

- Establishing program for Environmental Product Declarations (EPD) and Product Category Rules (PCR) for HVACR & Water Heating Equipment.
  - Board of Directors approved plan to become ISO 14025 Program Operator.
  - EPD Committee now forming.
  - PCR Development to kick off end of 2025 / early 2026.
    - Initial product categories: Unitary AC/HP, Water Heaters, Air Handling and Distribution.
- AHRI Guideline R, *Calculation of Scope 3 Category 11 Emissions*, under development by Decarbonization Standards Technical Committee.
  - Initial products to be included: Residential & Commercial AC/HP, Furnaces.

**Second ISC Publication Public  
Review Draft**

**BSR/ASHRAE/ICC Standard 240P**

## **Quantification of Life Cycle Greenhouse Gas Emissions**

Second ISC Public Review (June 2025)

This draft has been recommended for public review by the responsible project committee. To submit a comment on this proposed standard, go to the ASHRAE website at [www.ashrae.org/standards-research-technology/public-review-drafts](http://www.ashrae.org/standards-research-technology/public-review-drafts) and access the online comment database. The draft is subject to modification until it is approved for publication by ASHRAE, ICC, and ANSI. The current edition of any standard may be purchased from the ASHRAE Online Store at [www.ashrae.org/bookstore](http://www.ashrae.org/bookstore) or by calling 404-636-8400 or 1-800-727-4723 (for orders in the U.S. or Canada).

The appearance of any technical data or editorial material in this public review document does not constitute endorsement, warranty, or guaranty by ASHRAE of any product, service, process, procedure, or design, and ASHRAE expressly disclaims such.

© 2025 ASHRAE. This draft is covered under ASHRAE copyright. Permission to reproduce or redistribute all or any part of this document must be obtained from the ASHRAE Manager of Standards, 180 Technology Pkwy NW, Peachtree Corners, GA 30092. Phone: 404-636-8400, Ext. 1125. Fax: 404-321-5478. E-mail: [standards.section@ashrae.org](mailto:standards.section@ashrae.org).

ASHRAE, 180 Technology Pkwy NW, Peachtree Corners, GA 30092



# Standard 240P

## Second ISC Publication Public Review

### June 6 – July 21

<https://www.ashrae.org/technical-resources/standards-and-guidelines/public-review-drafts>

**2025 ASHRAE  
Decarbonization  
Conference  
Luke & Carrie**



*MARK YOUR  
CALENDARS*

*Registration  
is open!*

# 2025 ASHRAE Building Decarbonization Conference

October 22-24, 2025 | Chicago, IL



## 2025 ASHRAE Building Decarbonization Conference Registration Confirmation

External

Inbox x

**meetings@ashrae.org**

to me ▾

1:09 PM (7 minutes ago)



Thank you for registering for the 2025 ASHRAE Building Decarbonization Conference, October 22-24, 2025 in Chicago, IL. The technical program will be held at the Westin Chicago River North located at 320 North Dearborn Street, Chicago, IL 60654. The conference begins Wednesday, morning, October 22nd and concludes Friday afternoon, October 24th. A Welcome Reception will be held Tuesday evening October 21st and a Networking Reception Thursday evening October 23rd at the conference hotel.

In-person Conference registration includes the following:

On-site Access to Technical Program from October 22-24, 2025.

- Interactive Conference App: ASHRAE 365.
- Welcome Reception on Tuesday evening, October 21, 2025.
- Networking Reception on Thursday evening, October 23, 2025.
- Light Breakfast, Lunch and Coffee Breaks Wednesday, October 22 and Thursday, October 23.
- Light Breakfast and Coffee Breaks on Friday, October 24.
- 12-month access to ALL recordings of conference sessions including Keynote Presentations.

On-demand (Virtual) Conference registration includes the following:

- Interactive Conference App: ASHRAE 365.
- 12-month access to ALL recordings of conference sessions including Keynote Presentations.

**[Please complete this short survey](#) to help us calculate the carbon footprint of the 2025 ASHRAE Building Decarbonization Conference.**

Hotel reservations can be made at the conference hotel the **Westin Chicago River North**. ASHRAE has a block of rooms available at the negotiated group rate of **\$309 + tax per night**. To make reservations at the group rate, click this link: <https://book.passkey.com/gt/220491621?gtid=7fe42d8e6663611894b4bd6826244150>



## Attendee Questionnaire for ASHRAE Building Decarbonization Conference

### 1. Carbon Footprint:

#### 1. Attendee Travel

Where are you traveling from (city/country)?

What modes of transportation are being used (e.g., plane, train, car, bus)?

What is the estimated travel distance in each mode of transportation including return (provide total travel distance for the entire conference)?

If flying, are you flying economy, business, or first class?

How far is your hotel from the venue and what mode of



# Technical Program

## *Four Tracks*

- **Scaling Decarbonization:** Transitioning from Bespoke Solutions to Broad Implementation
- **Innovators' Showcase:** Success Stories and Cutting-Edge Tech (Best Practices, Case Studies, and Evolving Technologies)
- **Beyond Decarbonization:** Flattening Utility Demand, Considering Resilience, and More
- **Blueprints for Change:** Policies, Standards, and Programs

*Embodied Carbon  
Operational Carbon  
Whole Life Carbon  
Scope 1, 2, and 3*

<https://www.ashrae.org/conferences/topical-conferences/2025-ashrae-building-decarbonization-conference>



# TM 65 Update

Luke Leung

## Embodied carbon in building services: a calculation methodology for North America



TM65NA: 2024



## Embodied carbon in building services: a calculation methodology for **Brazil**



TM65NA: 202X(?)



# 2025/2026 CEBD Strategy Update

**Blake Ellis**

# SY 2025-2026 CEBD Strategic Planning

Strategic Planning Session in Chicago - May 16-17, 2025



# CEBD Primary Responsibilities

- ***Strategy.*** Provide strategic direction for ASHRAE building decarbonization activities and work with the Planning Committee to incorporate appropriate goals into the Society strategic plan.
- ***Thought Leadership.*** Monitor future issues and trends and publicize ASHRAE's decarbonization work globally to establish ASHRAE's leadership position, in partnership with Marketing.



# CEBD Primary Responsibilities

- ***Collaboration.*** Coordinate joint initiatives, events, and projects with other U.S. and international organizations whose work is complementary to ASHRAE's building decarbonization activities.
- ***Public Advocacy.*** Work with Government Affairs to provide reliable technical information on decarbonization to policymakers, media, and the public.



# Shift in Focus

**Task Force for  
Building  
Decarbonization**

(more operational)



**Center of Excellence  
for Building  
Decarbonization**

(more strategic)



# SY 2025-26 CEBD Strategic Planning

**5**

**24**

**320**

**12**



# SY 2025-26 CEBD Strategic Planning

**5**

**24**

**12**

**320 Days**



# SY 2025-26 CEBD Strategic Planning

**24**

**5**

**320 Days**

**12 Breakout  
Sessions**



**24** Ideas

**5**

**320** Days

**12** Breakout  
Sessions

# SY 2025-26 CEBD Strategic Planning

24 Ideas

**5** Initiatives

320 Days

12 Breakout  
Sessions



# Strategic Initiative #1

## Engineering Guidance & Technical Implementation

- **Top Priority:** *Develop engineering guidance to accompany the ASHRAE/USGBC/NYSERDA Strategic Decarbonization Planning Guide*
- **Strategic Actions**
  - Develop comprehensive engineering guidance that complements existing strategic planning resources
  - Focus on practical methodologies, calculations, and implementation steps
  - Ensure guidance addresses real-world constraints faced by practitioners
  - Coordinate with Special Projects to determine appropriate technical homes for tools within the ASHRAE structure
  - Review EN 15978 modules that the guide addresses, and identify practical considerations for equipment replacement (refrigerants & embodied carbon)
  - Consider pivoting away from printed text format to a modular playbook



# Strategic Initiative #2

## Business Case Development & Market Transformation

- **Top Priority:** *Business case for optimized (high-performance) buildings*
- **Strategic Actions**
  - Develop robust business case frameworks that demonstrate the financial value of decarbonization and related building performance improvements
  - Create tools that balance environmental goals with economic realities
  - Consider incremental progress valuable stepping stones instead of compromises
  - Connect decarbonization investments to operational benefits and risk mitigation



# Strategic Initiative #3

## Strategic Vision & Long-Term Planning

- **Top Priority:** *Create a 2050 Building Decarbonization Roadmap*
- **Strategic Actions**
  - Develop a comprehensive 2050 roadmap that provides clear milestones & pathways
  - Define interim targets for 2030 and 2040 that build toward ultimate goals
  - Highlight the role of key ASHRAE Standards (240, 242)
  - Ensure the roadmap aligns with ASHRAE's broader strategic planning
  - Coordinate roadmap development with ASHRAE leadership and planning committees



# Strategic Initiative #4

## Member and Industry Engagement & Knowledge Transfer

- **Top Priority:** *Enhanced engagement and education programs*
- **Strategic Actions**
  - Create a multi-channel communication strategy targeting different member and industry segments
  - Launch "Decarb Mixer" program at Society meetings for direct member engagement
  - Develop Building Performance Improvement Workshop materials (workshop-in-a-box) with national and local partners for practical professional education and skills development
  - Equip Chapter GAC representatives with tools for state/provincial and local (including countries outside North America) advocacy



# Strategic Initiative #5

## AI Integration & Innovation

- **Strategic Actions**

- Develop AI-empowered products that capitalize on ASHRAE's knowledge base
- Create AI tools that help harmonize standards and provide integrated guidance
- Demonstrate AI tools that help develop building codes aligned with global standards and are responsive to local needs and capabilities
- Test AI applications for knowledge synthesis and member support
- Balance innovation with the protection of intellectual property



# Closing Comments

Kent Peterson

# Recognize Outgoing Members

Kent Peterson

# Recognize Outgoing CEBD Members

Clay Nesler, VM

Bing Liu, VM

Luke Leung, VM

Bill McQuade, MembC Liaison

Costas Balaras, TechC Liaison



May 2022 TFBD  
Strategic Planning  
Chicago

May 2025 CEBD Strategic Planning  
Chicago



**Thanks to our volunteers and staff!**

Comments  
to CEBD

Open Session