MEETING NOTES
ASHRAE 2025/26 CEBD

SY 2025-2026 CEBD Meeting
Sunday, February 1st, 2026, 8:00 AM to 10:00 AM PST
In-Person Location**: Caesars Palace, Octavius 20 (PS)**
ASHRAE Winter Conference 2026, Las Vegas, NV

Webex Meeting Link: https://ashrae.webex.com/ashrae/j.php?MTID=m97385bd7d1eee4d637e965b99ae491f4

1. Call to Order – Blake – Quorum met.

2. ASHRAE Values Statement - Blake

   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.ashraehttps://www.ashrae.org/about/governance*

3. Review of Agenda – Blake

4. CEBD Introductions and sign-in sheets
   - 89 attendees (in-person and online)

5. CEBD Update – Blake
   - BlakeE provided an overview of CEBD scope, purpose, and activities leading up to the conference.

6. CEBD Led Activities
   a. Flexible International Building Codes – Clay
      - ClayN presented updates on the flexible international building codes project and the Building Codes Assessment Tool (BCAT) resources.
      - AmrS shared Kenya workshop outcomes, stakeholder comments, and consensus. The focus group is now moving forward with next steps and additional dialogue needed for a broader, more inclusive code.
      - GhinaA shared results of a meeting with key Lebanese stakeholders, including the Lebanese Green Building Council (LGBC) and the Order of Engineers and Architects (OEA). The meeting identified regionally important focus areas, such as electricity and water delivery/sanitation. A policy team will address the identified priorities and form focus groups with expanded stakeholders.
      - Workshop tools are available on ASHRAE website at https://www.ashrae.org/about/cebd-technical-resources#guides
   b. Residential Retrofits Guidance – Carrie
      - The 2-page resource summary is being reviewed and will have a 3-page blog resource (Clay) available – no date for final publication.
   c. AI Data Center Framework – Bing *(Blake)*
      - BlakeE shared progress and key topics of the resource to date and announced authors/partners meeting at the conference (including PNNL, NEMA, and ASHRAE Staff). The online resource is expected to be published in May 2026.
   d. Grocery Store Decarbonization Guide – Rajan *(Blake)*
      - BlakeE shared that the consultant, Effecterra, and supermarkets project monitoring subcommittee (PMS) have been meeting regularly. This is a guide for both new and existing

grocery stores. The working title of this guide is "A Practical Guide to Whole Life Carbon Design and Operational Strategies for New and Existing Retail Grocery Buildings" with an anticipated guide publication in June 2026.

7. Liaison Updates
   a. Member's Council – Adeeba – Adeeba
      - AdeebaM shared success in Council coordination and engagement to strengthen communication pathways, as well as decarb topic efforts for Chapter Technology Transfer (CTC), Four presentations on the CEBD pages (link) for Chapter use, Distinguished Lecturer (DL) topics/speakers, Tech Hour decarb speakers, coordination with Conferences and Expositions Committee (CEC) for decarb content at annual/winter conferences, and coordination with Government Affairs Committee (GAC) and the Global Technical Interaction Committee (GTIC) .

   b. Publication & Education Council – Jeremy
      - JeremyS shared completed and future decarb courses, successes in CEBD coordination with Council engagement, as well as regular CEBD meetings with the Training and Education Committee (TEC) and PubEd/Training/Professional Development Staff.
      - A call for recommendations for future courses was made (email decarb@ashrae.org suggestions). Further, ASHRAE is seeking proposals from qualified individuals to develop and deliver a custom instructor-led ASHRAE Learning Institute (ALI) course focused on whole life decarbonization strategies for new building design. The RFP is posted on the ASHRAE homepage (scroll down to the blue box on the left) and on the ASHRAE professional development page.

   c. Technology Council - Corey
      1. Harmonization of ASHRAE Standards
         - Decarbonization topics complete and should have full analysis completed in June 2026.
      2. #1977-SP Update HVAC Equipment Service Life Data
         - Awarded and in implementation phase with Michigan State University.
         - Estimated completion is the 2027 Annual Conference.
      3. #1988-SP Whole Life Carbon Gap Analysis
         - Awarded and in implementation phase with Evoke.
         - Estimated completion is the 2027 Annual Conference.
      4. #2025-SP Whole Building/MEP Benchmarking Data Research
         - Estimated award in 1Q 2026.
      5. #2026-SP Standardizing WLC Calculations for Building Systems
         - Estimated award in 1Q 2026.
      6. #2027-SP Refrigerant Emissions Management, Tracking, and Compliance
         - Estimated award in 1Q 2026.
   d. MEP 2040 – Ghina
      - GhinaA provided an overview of the MEP 2040 targets, working group descriptions, and available resources (link). An MEP Whole Life Carbon (WLC) pilot kicked off in February based on the MEP 2040 Beginner's Guide to MEP Embodied Carbon (4K+ downloads). Interested parties may sign-up to participated in the pilot (link) as well as to register for quarterly meeting updates. The next meeting will be held Feb 12, 2026, 11AM EST. StetS shared that the 27 design firms participating in MEP 2040 have been well coordinated and made the effort go smoothly. For more information about joining, connect with Manufacturer/EPD Engagement & Advocacy Chair, Josh Jcobs (Josh@wapsustainability.com).
   e. AHRI – Jaime
      - JaimeY shared an update on the Air Conditioning, Heating, and Refrigeration Institute Certified Environmental Product Declaration (EPD) program (AHRI ACE) General Program Instructions

(GPI) draft is published and interested parties are invited to review the draft and provide their feedback by February 16, 2026 using the official comment form (link). The EPDs and Product Category Rules (PCRs) will be based on Life Cycle Assessment (LCA) methodology and related International Organization for Standardization (ISO) standards. The LCA data is still being collected for phase one of EPD development.

8. ASHRAE Decarbonization Conferences – Luke
   - This next ASHRAE topical conference on decarbonization is September 23-25th, 2026 in Seattle and is predicted to have substantial student representation. Topic sections have been added in the ASHRAE 365 application (available in the App Store and Google Play here).
   - CarrieB (for GingerS) shared an invitation to submit abstracts (Deadline is Feb 27th and acceptance notification will go out in March 2026).

9. CEBD Strategic Initiative Development – Blake
   - BlakeE shared an overview of the strategic initiative process and timeline overview (some past projects that were not priorities in previous year have been included). Each initiative group will develop abstracts, presentations, and prioritization results. The top six (6) project ideas (including a Decarb Roadmap and Phase 2 of last year's Gap Analysis project) will be presented to other councils, TAC, etc. Feedback from this conference will help inform priorities. As next steps, the final project ideas will be reprioritized based on all feedback in Spring and will go through the ASHRAE proposal cycle.
   - Call for feedback (email decarb@ashrae.org with comments not shared in meeting). The initiative groups each shared slides on their projects, as follows:

     a. Initiative #1 – Stet
     b. Initiative #2 – Jeremy/Jamie
     c. Initiative #3 – Mark
     d. Initiative #4 – Adeeba
     e. Initiative #5 – Parag & Chuck

10. Closing Comments – Blake

11. Open Session for Guest Comments

    - MEP 2040 committee: 105 manufacturers offering EPDs. List available here at https://www.mep2040.org/manufacturers-epds.
    - Sarah M: Next year's theme to focus on operational guidance for non-technical users, building owners and operators; advisory panel has been formed. Biggest feedback is to identify what is ASHRAE doing, and what is ASHRAE ***NOT*** doing – key feedback was that we are not providing technical information that non-technical users can understand and make a huge difference on how guidance is implemented. Collaborations are being formed, including IFMA, BOMA, and others.
    - Ian: There is confusion surrounding mandates and ASHRAE Standards. Did a survey of guides and shoes to use the ASHRAE Decarbonization Guide for Strategic Planning
    - (with NYSERDA and USGBC) because of the clarity of the recommended modeling, roadmap, and language. Working group formed to help align jurisdictions/governments, building owners and professionals.
    - PaulR: Center for the Built Environment, UC Berkley. Developing a new public, open-source webtool (link) to support building decarbonization projects using measured (or simulated) heating and cooling load data (hourly timeseries), allows the user to select from different equipment scenarios and emissions scenarios, and generates emissions estimates. Also, collaborating with Turner Construction on a paper for electrification summarizing actual cost data from over 200 electrification designs (draft here). Seeking ASHRAE feedback. Will connect with the corresponding CEBD initiative group.

- Walt V: Part of the group at International Federation of Healthcare Engineering (IFHE) dedicated to the decarbonization of healthcare. Announced a "Cut the Carbs" challenge awards program (link). Walt is interested in expanding some of the CEBD efforts beyond the USA. Also, the National Academy of Medicine (NAM) seeking volunteer engineers to support pro bono measuring, benchmarking, and reporting in the healthcare sector – especially for smaller and rural clients. Contact Walt if interested. Health sector participants can also take part in the https://nam.edu/product/health-sector-climate-action-survey/.
- Walt also expressed "0 by 50" and 2030 urgency - understanding current progress/roadblocks. BlakeE also stated we are following the roadmap and confirmed urgency because 2030 is only 47 months away. Also stated that the ASHRAE Position Documents are under revision.
- TC6.5/RBC member wants Project 6 advanced (possible to push forward sooner); Local chapters produce newsletters - encourages a stronger global-to-local communication strategy delivered in a relatable and understandable format. BlakeE agreed and said we are strategizing ways to use the existing ASHRAE structure, such as through Members Council and adding decarbonization chairs to Councils/Committees, to meet needs.
- Tasha: Research comparing LCA targets in China vs USA; Seeking Chinese contacts.
- JacobC, Government Affairs Staff: Mixed state-level legislative trends—some enhancing, some rolling back decarb programs and references to ASHRAE standards.
- LukeL: Council for Tall Buildings and Urban Habitat (Council of Vertical Urbanism – CVU) is conducting research on urban high-rise vs low-rise building lifespans and carbon impacts; needs global south expertise.
- Tristan (NBI and 90.2/90.1 consultant): Public health-oriented policy analysis tool for code adoption.
- Mark (90.4): Offering expertise on business cases (specifically his experience with financial services/FDIC banking) initiative and electrification economics; several in the industry are altering policies to capture ROI based on emission prevention/corporate responsibility and sustainability. Encourages CEBD SI #2 to be pursued. PatrickV also wanted to share his expertise for this SI.
- IvanR, Chair of SSPC 147, SPC 244: Refrigerant recycling data shows we are way below average (at 10%); suggestions for incentives, codes, standards; request support for TC 3.1 seminar.
- Green Code Council: Encourages alignment with WLC/LCA guidelines and pursuing Initiatives 2 & 3.
- Bill (Greece example, met with Mayor): Demonstrated significant impact of ASHRAE engagement on municipal decarb actions, commitments, and utilizing ASHRAE standards.
- Overall: Market transformation remains slow (15% progress vs 50% goal).

12. Next CEBD Meeting
    - Thurs, Feb 12, 2026 at 9AM EST (Virtual)

13. Adjourn

For Presentation visit the ASHRAE 365 App and/or see following Attachment.

Center of Excellence for Building Decarbonization

2026 Las Vegas Winter Meeting

ASHRAE Values Statement

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Agenda

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2. ASHRAE Values Statement – Blake
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   a) Flexible International Building Codes – Clay
   b) Residential Retrofits Guidance – Carrie
   c) AI Data Center Framework – Bing
   d) Grocery Store Decarbonization Guide – Rajan *(Blake)*
7. Liaison Updates
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   b) Publication & Education Council - Jeremy
   c) Technology Council - Corey
      1. Harmonization of ASHRAE Standards
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   d) MEP 2040 – Ghina
   e) AHRI – Jaime
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12. Next CEBD Meeting

    Thursday, February 12th, 2026 at 9-10 AM EST
13. Adjourn

Introductions

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

Sign-in Sheet

CEBD Update

Blake Ellis

ASHRAE's position…

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

Our goals…

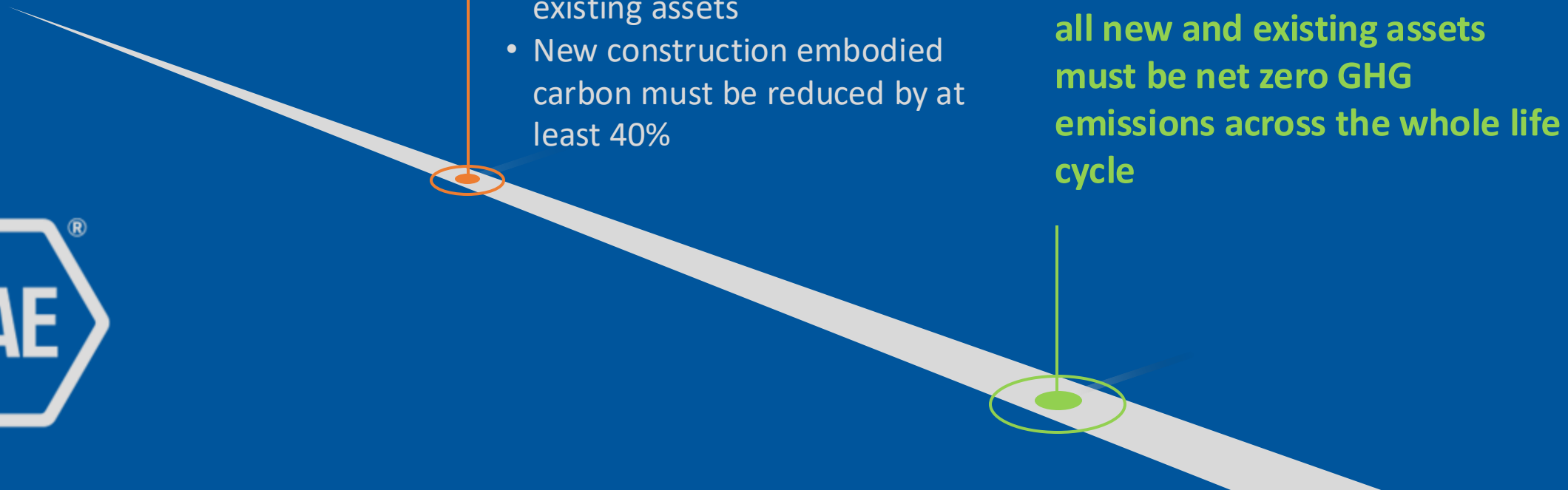
2030

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

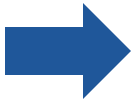
all new and existing assets must be net zero GHG emissions across the whole life cycle



ASHRAE®

Shift in Focus

Task Force for Building Decarbonization



Center of Excellence for Building Decarbonization

(more operational)

(more strategic)

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.

Four Key Focus Areas

Center for Excellence in Building Decarbonization (CEBD)

See more at:
http://ashrae.org/decarb

- **Streamlined, Flexible International Building Code Framework**
  - ✓ Framework completed & rolled out at 2025 Decarb Conf
  - ✓ First country session held in Kenya (Brazil & India are planned)
  - ✓ Developed Building Code Strategy Game for Chapters
- **Research, standards & guide projects moving forward**
  - ✓ AI Data Center Framework
  - ✓ Decarb Strategies for Supermarket Industry Archetypes Guide
  - ✓ Update HVAC Equipment Service Life Data
  - ✓ Whole Life Carbon Gap Analysis
  - ✓ Whole Building/MEP Benchmarking Data Research
  - ✓ Whole Life Carbon Calculation Guide for Building Systems
  - ✓ Refrigerant Emissions Management, Tracking, and Compliance
- **Training content expanded (Guides & Online Training)**
- **Five strategic initiatives w/draft actions presented in Las Vegas**

CEBD Led Activities

Flexible International Building Code Framework

Clay Nesler

Project: Flexible International Building Code Framework

Summary: *Developed a flexible building code framework for emerging economies to streamline national/subnational building code and policy assessment, development, implementation, education and training.*

Goals & Objectives

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

Key Partners

- C40 Cities
- ICC
- IFC
- World Bank Group
- World Green Building Council
- World Resources Institute
- International ASHRAE chapters

Why ASHRAE

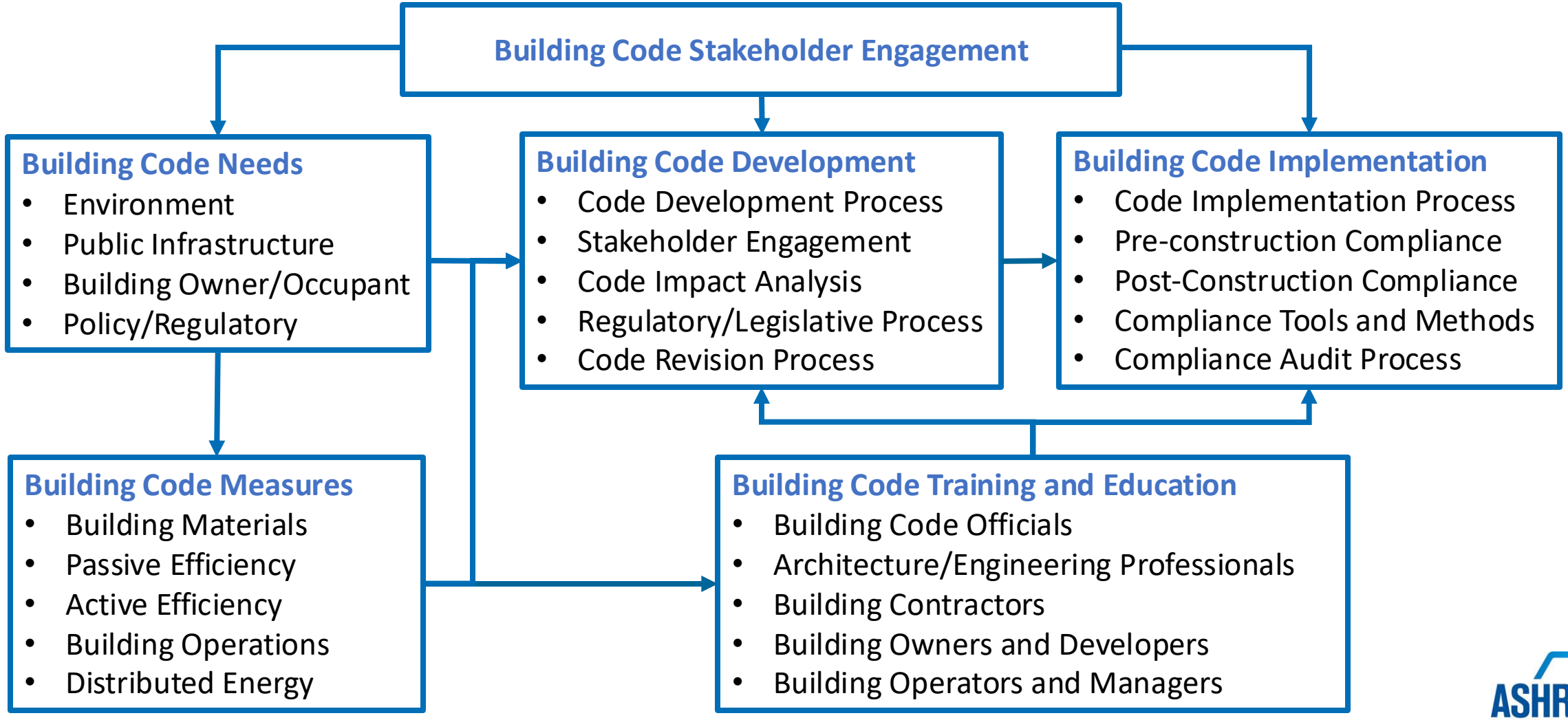
- Aligns with ASHRAE's goal of supporting energy-efficient and sustainable building design, development and operations.

Progress and Next Steps

- Chicago Decarb Conf session
- Kenya pilot workshop
- Lebanon pilot workshop
- Building Code Assessment Tool (BCAT) released on CEBD site
- Building Code Strategy Game (BCSG) released on CEBD site
- New workshops planned for The Philippines, India, Brazil
- Develop AI resource for streamlined workshop preparation, building code development and education.

Project Champions:
Clay Nesler & Ghina Annan (CEBD)
Amr Suliman (ASHRAE UK Chapter)

Flexible International Building Code Framework



Flexible International Building Code Assessment Tool (BCAT)

Needs Assessment

Environmental	Public Infrastructure	Owner/Occupant	Policy/Regulatory
N1 - Reduce building operational greenhouse gas emissions	N6 - Decrease water consumption and demand	N11 - Maintain building occupant comfort, health and safety	N16 - Align building policies with public goals and commitments
N2 - Reduce embodied carbon in building materials and equipment	N7 - Protect and enhance natural systems and habitats	N12 - Increase building owner and tenant affordability	N17 - Assure high levels of stakeholder engagement in policy development and implementation
N3 - Reduce fossil fuel use in buildings for heating	N8 - Decrease transportation-related emissions	N13 - Increase building asset value	N18 - Reduce the cost/complexity of policy development and implementation
N4 - Increase use of zero carbon renewable energy	N9 - Reduce waste from building construction and renovation	N14 - Support sustainability goals and commitments	N19 - Accurately estimate the costs and benefits of proposed building policies and regulations
N5 - Increase facility resilience to climate change impacts	N10 - Decrease electrical grid capacity requirements	N15 - Maintain compliance with government regulations	N20 - Assure high levels of compliance for building policies and regulations

Policies and Code Capabilities Assessment

Government Leadership	Supporting Policies	Code Development Capabilities	Code Implementation Capabilities	Code Training and Education
P1 - National NDCs and Climate Action Plans	P6 - Building Energy Benchmarking	C1 - Code Development Process Management	C6 - Code Implementation Process Management	C11 - Building Code Officials
P2 - State/Local Climate Action Plans	P7 - Building Audits and Retro-commissioning Requirements	C2 - Stakeholder Engagement Process	C7 - Pre-construction Compliance Process	C12 - Architecture and Engineering Professionals
P3 - Building Code Enabling Policy and Legislation	P8 - Building Performance Standards	C3 - Code and Policy Impact Analysis	C8 - Post-construction Compliance Process	C13 - Building Contractors
P4 - Government Procurement Policy	P9 - Building Equipment and Appliance Standards	C4 - Regulatory/Legislative Process Management	C9 - Code Compliance Tools and Methods	C14 - Building Owners and Developers
P5 - Government Demonstration Projects	P10 - Government Incentives and Financial Models	C5 - Code Revision Process Management	C10 - Code Compliance Audit Process	C15 - Building Operators and Managers

Measures Assessment

Building Materials	Passive Efficiency	Active Efficiency	Building Operations	Distributed Energy
M1: Building Material Reuse	M6 - Building Thermal Envelope	M11 - High-Efficiency Space Cooling	M16 - High-Efficiency Lighting	M21 - Energy Metering and Monitoring
M2 - Construction Material Waste Reduction	M7 - Building Fenestration	M12 - High-Efficiency Space and Water Heating	M17 - Lighting Control and Plug-load Management	M22 - On-site Renewable Energy
M3 - Local/Indigeonous Construction Materials	M8 - Building Shading	M13 - Electric Heat Pump Space and Water Heating	M18 - Water Conservation	M23 - Battery Electric Storage
M4 - Low-Carbon Building Materials	M9 - Building Surface Reflectivity	M14 - Thermal Energy Storage and Recovery	M19 - Indoor Air Quality Management	M24 - Managed Electric Vehicle Charging
M5 - Low-GWP Refrigerants	M10 - Natural Ventilation and Thermal Management	M15 - Building Management and Control Systems	M20- Building Retro-Commissioning	M25: Demand Flexibility and Resiliency

Stakeholder Assessment

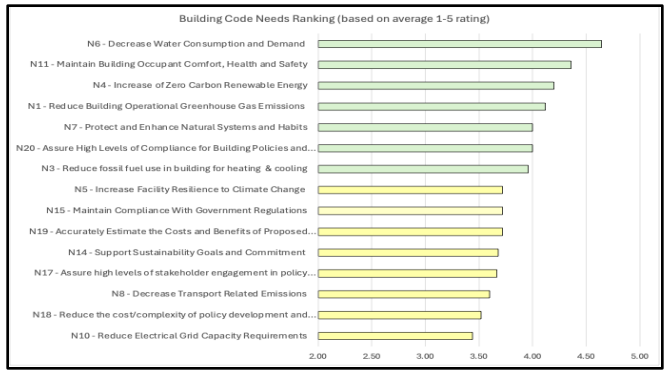
National Government	State/Local Government	Design/Construction	System Providers	Building Owners/Managers	Other Stakeholders
S1 - Policy Makers and Legislators	S6 - Urban and Infrastructure Planning	S11 - Architects and Designers	S16 - Building Material Providers	S21 - Residential Housing Developers	S26 - Energy and Sustainability Managers
S2 - Government Regulators	S7 - Economic Development	S12 - Green and Sustainable Building Consultants	S17 - Building Interior Systems Providers	S22 - Residential Homeowner and Renter Associations	S27 - Non-Governmental and International Organizations
S3 - Energy, Environment and Natural Resources	S8 - Workforce Development	S13 - Mechanical and Electrical Engineers	S18 - Mechanical and Electrical Systems Providers	S23 - Commercial Real Estate Developers	S28 - Public/Private Financial Institutions
S4 - Housing and Urban Development	S9 - Buildings and Construction Regulations	S14 - Mechanical and Electrical Contractors	S19 - Building Appliance and Equipment Suppliers	S24 - Commercial Building Owners and Managers	S29 - Energy and Water Utilities
S5 - Finance and Administration	S10 - Buildings Regulatory Compliance	S15 - Renewable Energy Contractors	S20 - Renewable Energy Technology Suppliers	S25 - Facility Management and Building Operators	S30 - Research and Academic Institutions

Flexible International Building Code Assessment Tool (BCAT)

Participant Scoring Sheet

ASHRAE Building Codes Assessment Tool Needs Assessment - Section One		Step 1 Importance Rating (X)					Step 2	Step 3
		Not at all Important	Somewhat Important	Important	Very Important	Extremely Important	Top 7 Priority Selections (X)	Group Consensus Matches (X)
Environmental Needs								
N1	Reduce building operational greenhouse gas emissions							
N2	Reduce embodied carbon in building materials and equipment							
N3	Reduce fossil fuel use in buildings for heating							
N4	Increase use of zero carbon renewable energy							
N5	Increase facility resilience to climate change impacts							
Public Infrastructure Needs								
N6	Decrease water consumption and demand							
N7	Protect and enhance natural systems and habitats							
N8	Decrease transportation-related emissions							
N9	Reduce waste from building construction and renovation							
N10	Decrease electrical grid capacity requirements							
Building Owner and Occupant Needs								
N11	Maintain building occupant comfort, health and safety							
N12	Increase building owner and tenant affordability							
N13	Increase building asset value							
N14	Support sustainability goals and commitments							
N15	Maintain compliance with government regulations							
Policy and Regulatory Needs								
N16	Align building policies with public goals and commitments							
N17	Assure high levels of stakeholder engagement in policy development and implementation							
N18	Reduce the cost/complexity of policy development and implementation							
N19	Accurately estimate the costs and benefits of proposed building policies and regulations							
N20	Assure high levels of compliance for building policies and regulations							
	Participant Role: National Government ( ), State/Local Government ( ), Buildings Owners/Managers ( ), Buildings Industry ( ), Research/Academia ( ), International Organizations/Non-Profit ( ), Financial Sector ( )							**Total Score**

Workshop Rating (1-5 Scale)



Consensus Prioritization

Workshop/Global Priorities (# votes)

International Consensus Results

Environmental	Public Infrastructure	Owner/Occupant	Policy/Regulatory
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Highest Priority	Medium Priority		

Strategy Game

Needs + Measures + Policy/Code Capabilities + Stakeholders

Kenya Workshop – *Amr Suliman*

1. **Participating Stakeholders :**

- National Government
- Local (State) Government,
- Private Sector Organisations (Local business and consultants) and academia
- International Organisations such as: World Bank, Green Building Council and World Resource Institute.
- Building users (occupiers)

2. **Aim:**

- Develop a Kenyan Green building energy code, to promote a 'sustainable' built environment.
- Kenya aims to be a leader for sustainable practices in Africa.

Note: 90% of Kenya's energy sources are renewable (e.g. Geothermal, hydro and wind). So building decarbonisation is not an imminent challenge.

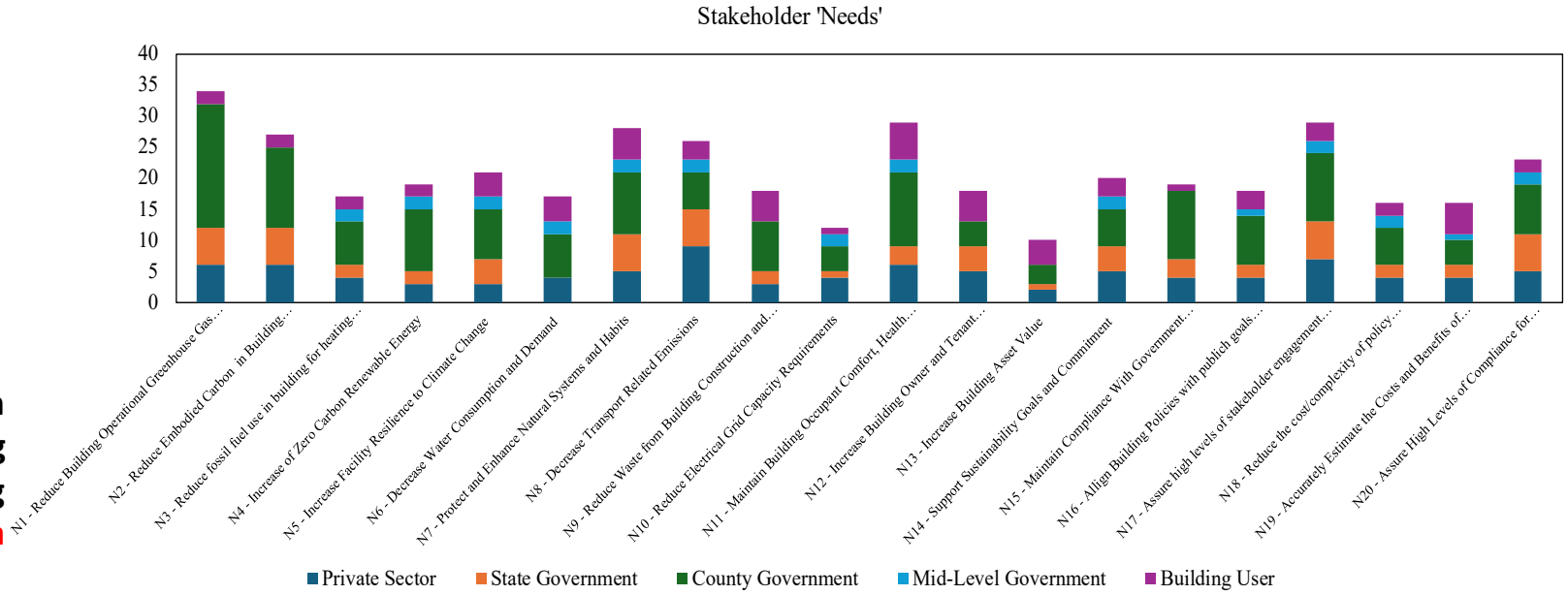
Kenya Workshop – Results and Key Findings

1. Insights:

- Reduction in Greenhouse Gases was the main need highlighted by stakeholders.
- Increase in building value and reduce electrical grid capacity were the least important needs.
- Both state and county governments agreed on the two main needs, however the remaining three were different for each.
- **The Building Owner/User Priority needs focused on aspects which directly affect them. Such as providing a safe and comfortable space and cost of building operations. The low energy aspect did not seem a priority.**
- The exercise highlights how a coordination effort is required to ensure the code includes or considers the main requirement for the key stakeholders.

2. Next Steps

- Kenya is currently developing a draft green building code (national).
- It has been agreed that more dialogue is needed between stakeholders and end users to identify how it addresses social and economic needs to increase user uptake.



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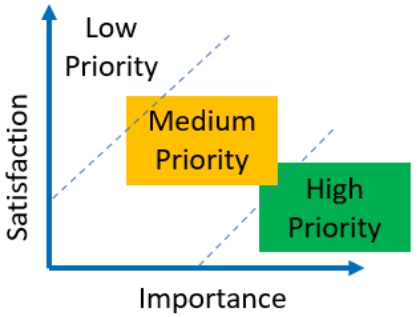
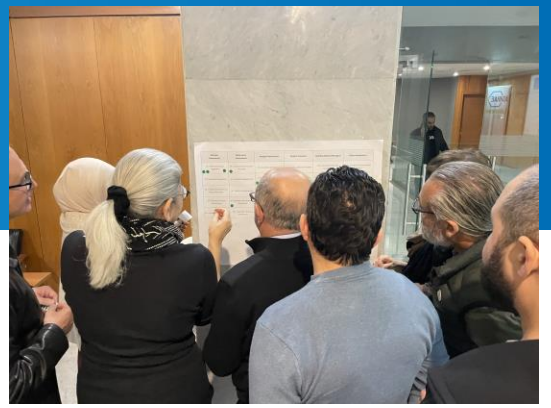
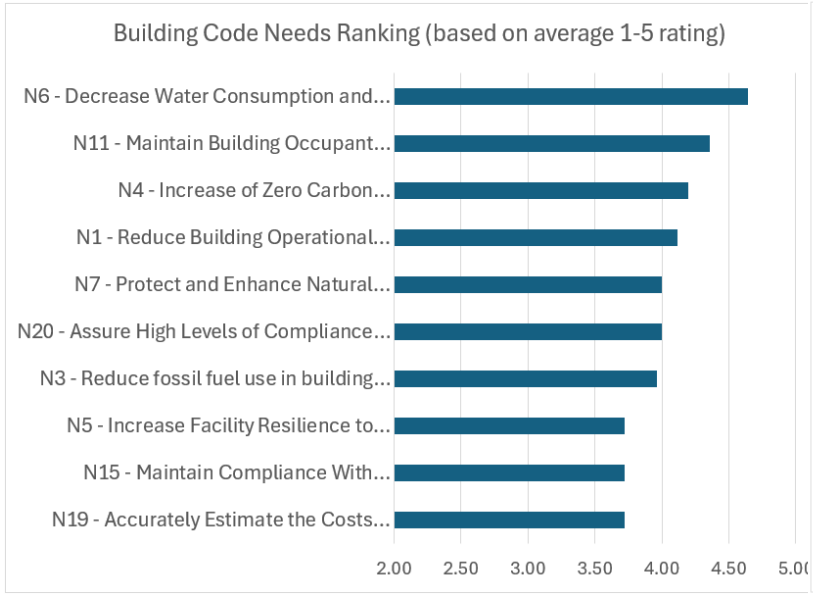
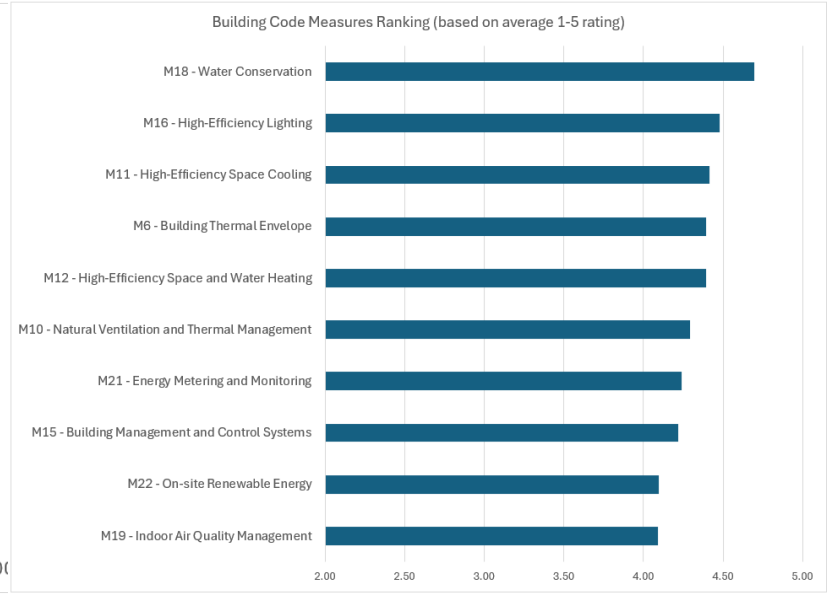


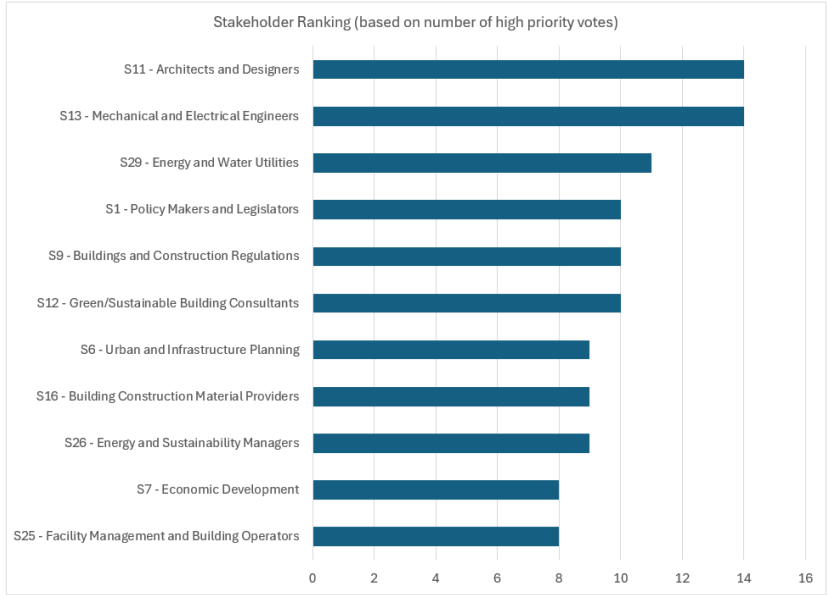
Lebanon Workshop – *Ghina Annan*



- **Participating Organizations :**
  - ASHRAE Lebanese Chapter, Lebanon Green Building Council, Order of Engineers & Architects
- **Lessons Learned**
  - **Outage-ready design:** Passive cooling + strong envelope.
  - **Water efficiency:** Elevate efficiency requirements and programs.
  - **Implement via doers:** Architects, M&E engineers, utilities.
  - **Sequence carbon:** Prioritize ops needs; phase embodied-carbon
- **Next Steps**
  - Develop a report that documents the mean-importance method, integrate Lebanon into the international consensus (equal regional weighting), and circulate the draft to stakeholders







Residential Retrofits

Carrie Brown

Residential Retrofits

- 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.

- Two deliverables:
  - 2-page summary of residential decarbonization retrofits with key resources
    - Coordinating with the Residential Buildings Committee
  - 3-page blog about a real house: "Four Good DEEDs for Residential Building Decarbonization" by Clay Nesler

AI Data Center Framework

Bing Liu *(Blake)*

AI Data Center Framework

Generative AI data centers require substantial computational power and cooling systems to maintain operating temperatures, contributing massive load growth to the power grid, especially as the demand for AI models and services grows. Based on this challenge, we conducted an industry survey that revealed the need for collaboration, clear direction, standardization, ongoing engagement, knowledge sharing and education. In response, we are creating an energy efficiency and resilience framework for AI Data Centers with the following objectives:

Deliver a scalable framework for the efficient **design, commissioning, retrofit, and operation** of AI data centers

Enhance energy and water efficiency through adoption of **advanced technologies and best practices**

Support grid reliability and resilience by promoting **load flexibility** and **grid-interactive operations**

What is Framework?

- **HIGH LEVEL:** Covers big picture thinking and planning approaches.
- **HIGH IMPACT:** Direct designers to the highest impact questions and opportunities. Provide practical best practices.
- **ONLINE & AGILE:** Readily available, open access, easy to update.
- **INTEGRATED:** Connect users to practical, reliable resources from ASHRAE, NEMA, and others for additional guidance.
- **CROSS-CUTTING:** Encourage ”big-picture” thinking and integrated design approaches.

Topic Areas

Check out our Landing Page (coming soon)

SHARE THIS

The AI Data Center Energy Performance Framework presents the guiding principles for building and operating energy efficient AI data centers. With chapters covering all stages of planning, design, construction, operation, and retrofit, this framework guides AI data center development toward optimized and energy-efficient performance.

Setting the standard for efficiency, resilience, and performance in data center design, construction, and operation, this framework covers all aspects of energy sourcing, energy use, and water use in data center facilities. The framework will recommend most effective solutions across a variety of facility climate zones and load densities.

The following topic areas are covered in the framework

Tools, Standards, and Resources

Authors Working Group

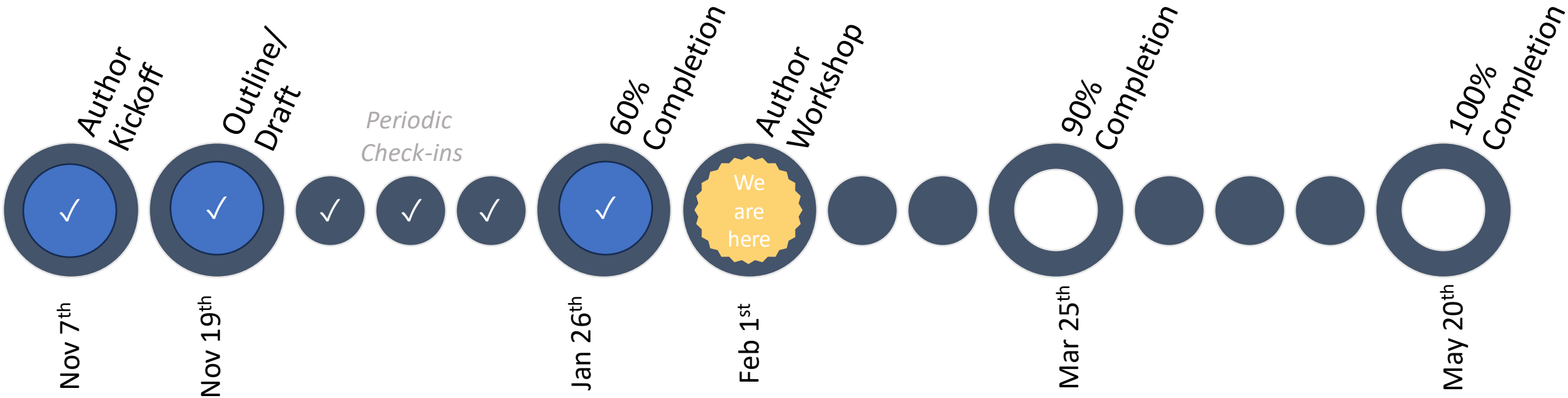
PROJECT LEADERSHIP

	PNNL
Technical Leadership R&D	*Bing Liu* *Kieren McCord*
HVAC & Water Systems	*Thomas Loxley* *Leigh Lain Walker* *Heather West*
Electrical Equipment & Safety	*Michael Erbesfeld*

AUTHORS

ABB	IBM	ORNL	Siemens
Kody Pataky	*Joe Prisco*	*Kashif Nawaz*	*Brian Deckard* *Bernardo Fernandes* *Holt Bradshaw*
Eaton	**JMGE**	**PNNL**	**Stulz**
Joshua Buzzell *Luiz Huet de Bacellar* *Peter De Bock*	*John Gross*	*Srinivas Katipamula*	*David Cummins* *Meadows*
Edison Electric	**Nortek**	**Shneider Electric**	**Truist**
Steven Rosenstock	*Mukul Anand*	*David McGlocklin* *Tony Landry* *Wayne Stoppelmoor*	*Marcus Hassen*

Progress – On Track



Next Steps and How to Get Involved

Next Steps:
This afternoon (Feb 1), we are hosting an author's workshop with in-person feedback on current drafts. Feedback will be incorporated for timely completion of project milestones.

How to get involved:

- We are looking for **case studies and data** that could help illustrate any of the concepts in the framework
- When the website goes live, there will be a feedback form (stay tuned)

Grocery Store Decarbonization Guide

Rajan Rajendran *(Blake)*

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.
- Identify decarbonization strategies specific to supermarkets, including HVAC, refrigeration, lighting, and operations.
- Assess existing ASHRAE guidelines and determine their applicability to supermarkets.
- Develop a supermarket-focused decarbonization design guide using ASHRAE's standards.

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.

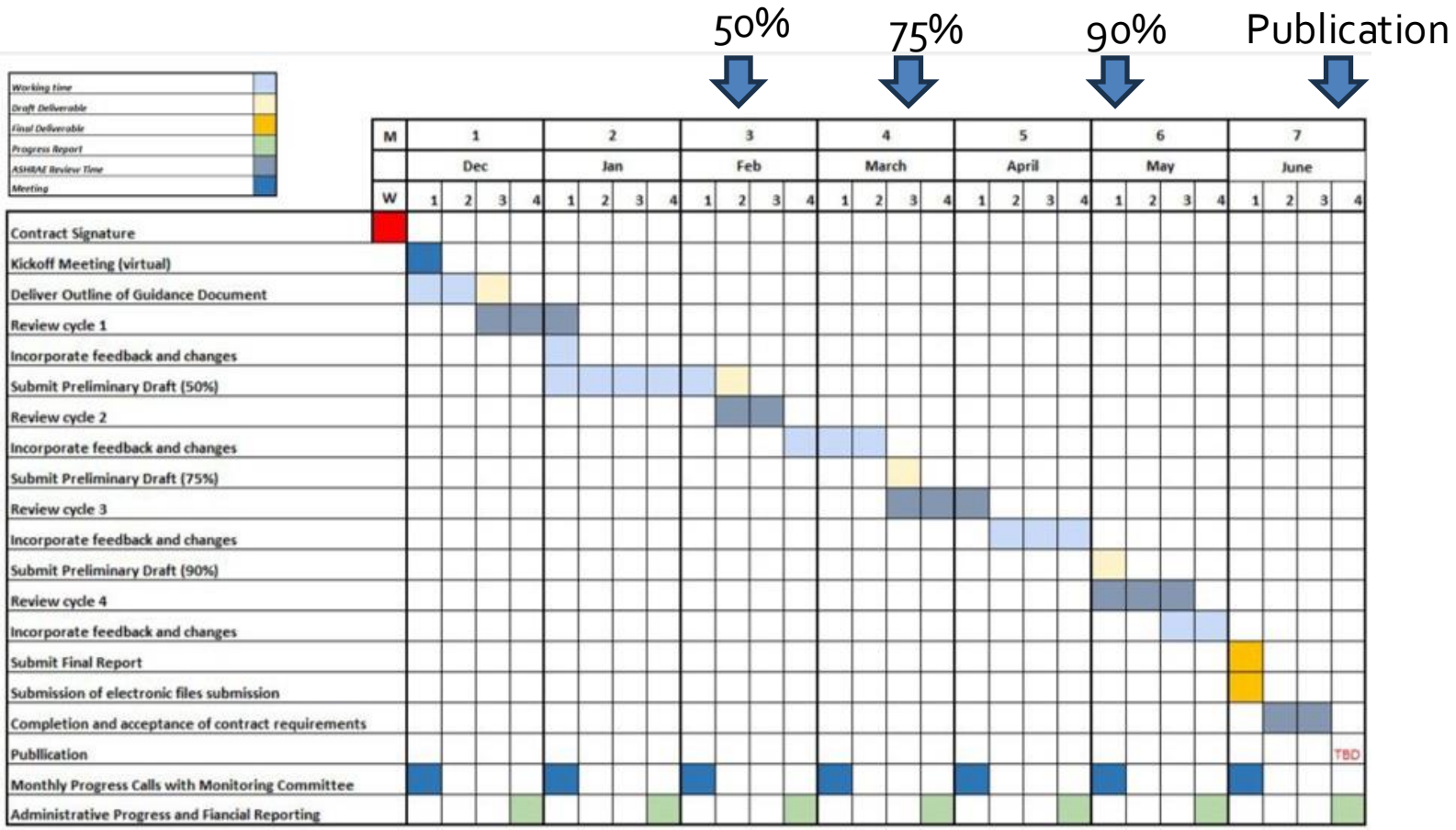
Decarbonization Impact

- 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)

Decarbonizing Grocery Stores

A Practical Guide to Whole Life Carbon Design and Operational Strategies for New and Existing Retail Grocery Buildings



- Vendor selected for developing the gude – Effecterra
- **Working Group for guide development:** Rajan Rajendran, Bruce Nelson, Danielle Wright, Doug Scott, Jun Yang, KCKolstad, Michael Dellecave, Mike Saunders, Nicole Colantonio, Peter Reist, ScottMartin, Denis Hagler, Taise Mitchell, Vishal Sharma, Sarp Hamamcioglu, LeighLain Walker, Paul Anderson, André Patenaude
- **Project Management Subcommittee:** Rajan R, Doug Scott, Bruce Nelson, Scott Martin. Vishal Sharma, Tais Mitchell

Liaison Updates

Members Council Activities

Adeeba Mehboob

Members Council Activities

- General
  - Strengthen Communication Pathways between CEBD and Standing Committees.
  - Capitalize on PAOE points- raising decarb & CEBD activity awareness
- Honors & Awards
  - Discussed the Eunice Foote Decarbonization Award (criteria update & ownership)
- CEC
  - Coordination of Decarb content at topical and annual/winter conferences
- Government Affairs
  - Leverage and strengthen GTICs linkage with GAC and CEBD
- Chapter Technology Transfer
  - Added Decarbonization topic on the DL Website
  - Requested Decarbonization focused DL Speakers
  - Tech Hour Decarb Speaker
    - **SY 2025-26 : Luke Leung – "Whole Life Carbon Decarbonization Strategies for New Buildings."**
    - SY 2026-27 : Tech hour topic focusing on existing buildings and retrocommissioning
    - A sequence of Decarb topics for a minimum of one each year for the next few years. (global audience)
  - Decarbonization Related Chapter Presentations
    - Four Decarbonization Presentations on the CEBD Website for Chapter Use
    - Building Code Strategy Game *(coming soon)*

Members Council Activities

- Student Activities
  - "Applied Engineering Challenge" ideas
  - Add decarb credit criteria across all Student Design Competition categories
  - Separate decarbonization content for K–12 vs. higher education
  - Considering recognition/awards for advancing ASHRAE decarbonization goals
  - Encourage student-created decarbonization resources/materials
  - Investing methods to connect students with decarbonization professionals
  - Student shadowing of decarbonization professionals at the decarbonization conference
- Young Engineers in ASHRAE
  - Sponsor a YEA member annually to attend the Decarb conference.
  - Offer YEA scholarships for Decarb courses and Decarb certification.
  - Extend YEA's informal conference shadowing program to include shadowing a CEBD member.
    - **Blake Ellis and Parag at Winter Conference**
  - Develop beginner/YEA-focused decarb training materials and create a decarb conference track for beginners and young professionals.
  - Support a YEA mentorship program pairing YEA members with decarbonization professionals

ASHRAE

PubEd Council Activities

Jeremy Smith

PubEd Council Activities

- PEC oversees Certification, Handbook, Historical, Professional Development, and Publications.
- The following are highlights of the strong work by ASHRAE staff and volunteers to further the decarbonization message, there are many more to be sure!
- Instituted regular, recurring meetings between TEC and CEBD to facilitate better communication and coordination.

PubEd Council Activities

Education – Training

- Training Courses (3-hour)
  - Grid Interactive Buildings for Decarbonization: Design and Operation Resource Guide - **COMPLETE**
  - Decarbonizing Hospital Buildings – **Additional re in progress.**
  - Decarbonizing Building Thermal Systems: Applying Heat Pumps and Beyond – **Finalizing latest revisions**
  - Building Decarbonization Retrofits for Commercial and Multifamily Buildings – **Not yet started**

PubEd Council Activities

Education – Training

- Vegas Courses
  - New Decarbonization Tactics: Making Buildings Grid-Interactive
  - Ultra-Low-Energy Buildings and Microgrids: Tools for Resilience and Decarbonization
- Future Courses
  - Whole Life Decarbonization Strategies in New Buildings Design (6-hours)
  - Certified Decarbonization Professional (CDP) Exam Prep (multi-day)
  - Heat Pump Application and Operation
  - Building Decarbonization Audits

PubEd Council Activities

Certifications

- Release of the Certification Study Guide: Certified Decarbonization Professional (CDP)
- Candidate Guidebook Downloads rose 31% from SY 2023-24 to SY 2024-2025
- CDP Applicants was flat from SY 2023-24 to SY 2024-2025
- 107 Examinees passed the CDP in SY 2024-2025

Tech Council Activities

Corey Metzger

Harmonizing ASHRAE Standards

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/USGBC/IES Standard 189.1 Design of High-Performance Green Buildings*
- ☑ *ASHRAE Standard 211 Commercial Building Energy Audits*
- ☑ *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*

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: *Project 1977-SP is underway*
Responsible TCs: *TC 2.8 and TC 7.3*
Expected Completion: *ASHRAE 2027 Winter Conference*

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: *Project 1988-SP is underway*

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

Expected Completion: *ASHRAE 2027 Winter Conference*

Project Champions:
Ghina Annan & Carrie Brown (CEBD)
Lisa Ng (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.*

Update: *Bids have been received for Project 2025-SP and are under review*

Expected Completion: *ASHRAE 2027 Annual Conference*

Project Champions:
Ghina Annan (CEBD)
Heather Schopplein and Tina Brueckner (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.*

Update: *Bids have been received for Project 2026-SP and are under review*

Expected Completion: *ASHRAE 2027 Annual Conference*

Project Champions:
Ghina Annan (CEBD)
Corey Metzger (Tech Council)

Project: Refrigerant Leakage Rate Emissions Tracking

Summary: *This project focuses on collecting more current refrigerant leakage data for North American installed HVAC Requipment 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.*

Update: *Bids have been received for Project 2027-SP and are under review*

Expected Completion: *ASHRAE 2027 Annual Conference*

Project Champions:
Stet Sanborn (CEBD)
Bruce Nelson (Tech Council)

AHRI Liaison Update

Jaime Yeh

AHRI Certified EPD (ACE) Program

Environmental Product Declarations program for HVACR and water heating equipment

- Demand for EPDs is increasing, but few Product Category Rules exist today
    - Risk of inaccurate claims, widely varying assumptions, lack of consistency
- Centralized effort to standardize EPDs for the HVACR and water heating industry
    - Ensure consistency, fair competition and a level playing field
    - Align with existing standards and guidelines
    - Specialized scope to focus on the complexities of these products

AHRI CERTIFIED
ENVIRONMENTAL
PRODUCT DECLARATION
www.ahridirectory.org

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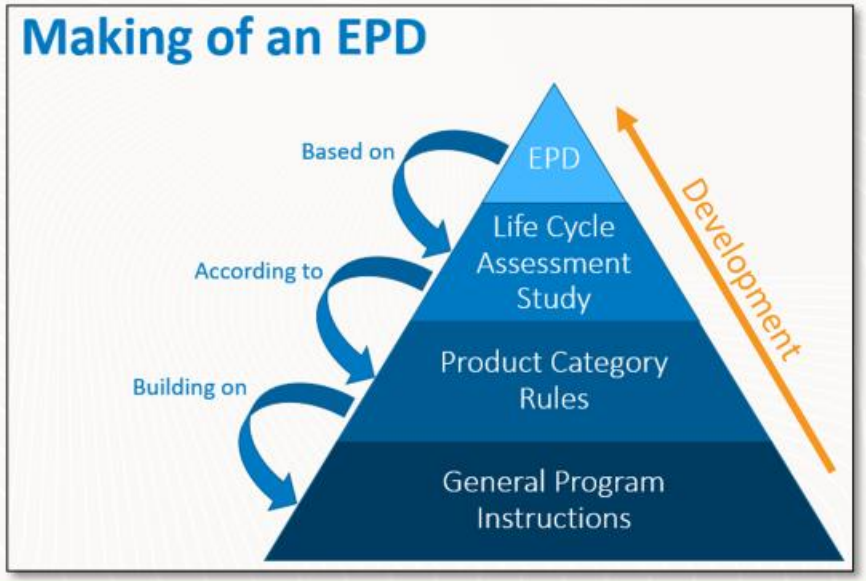
Current Work

- **General Program Instructions (GPI)**
  - Open for public comment through February 16
- **Preliminary PCR work underway**
  - Collecting relevant LCA data to support phase 1 PCRs

Phase 1 Product Categories

Part A (General)
Unitary Air-Conditioning and Heat Pump Equipment
Air Handling and Distribution Equipment
Water Heaters



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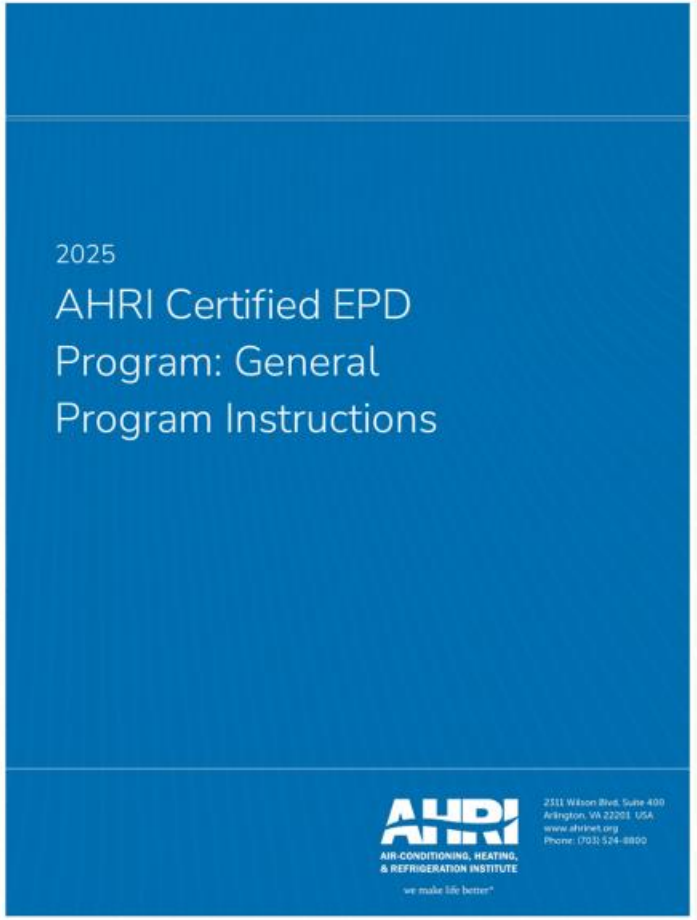
General Program Instructions (GPI)

Policies and procedures governing the operation of the EPD program

The GPI includes:

- The governance system of the program
- Procedures to develop an EPD
- General rules governing all product types
- EPD verification requirements
- PCR development and maintenance procedures
- Procedures for feedback and dispute resolution



GPI Draft and Comment form are available at:
www.ahrinet.org/ahri-certified-epd-program-ace

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Next Steps

- Finalize and Publish GPI
- Establish PCR Committees → Begin development of PCRs
- Develop phase 1 EPDs, starting with Part A and pilot product category
- Future work: develop PCRs for additional product categories

Phase 2 Product Categories (Preliminary)
Furnaces
Components - Compressors, Fans and Motors, Pumps
Variable Refrigerant Flow Multi-Split Air Conditioning and Heat Pump Equipment
Chillers and Heat Pump Water-Heating Packages
Commercial and Industrial Refrigeration

Phase 3 Product Categories (Preliminary)
Direct Expansion Dedicated Outdoor Air Systems
Geothermal and Water Source Heat Pumps
Datacom Cooling
Boilers
Components - Ventilation and Heat Transfer
Transport Refrigeration

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Getting Involved

- Participate in the GPI Public Review – Open through February 16th
- Join a PCR Committee when call for members is issued
- Join our mailing list to stay informed of opportunities
- Visit our website to learn more
- AHR Expo Seminar – Monday 1:30 – 2:30 p.m.

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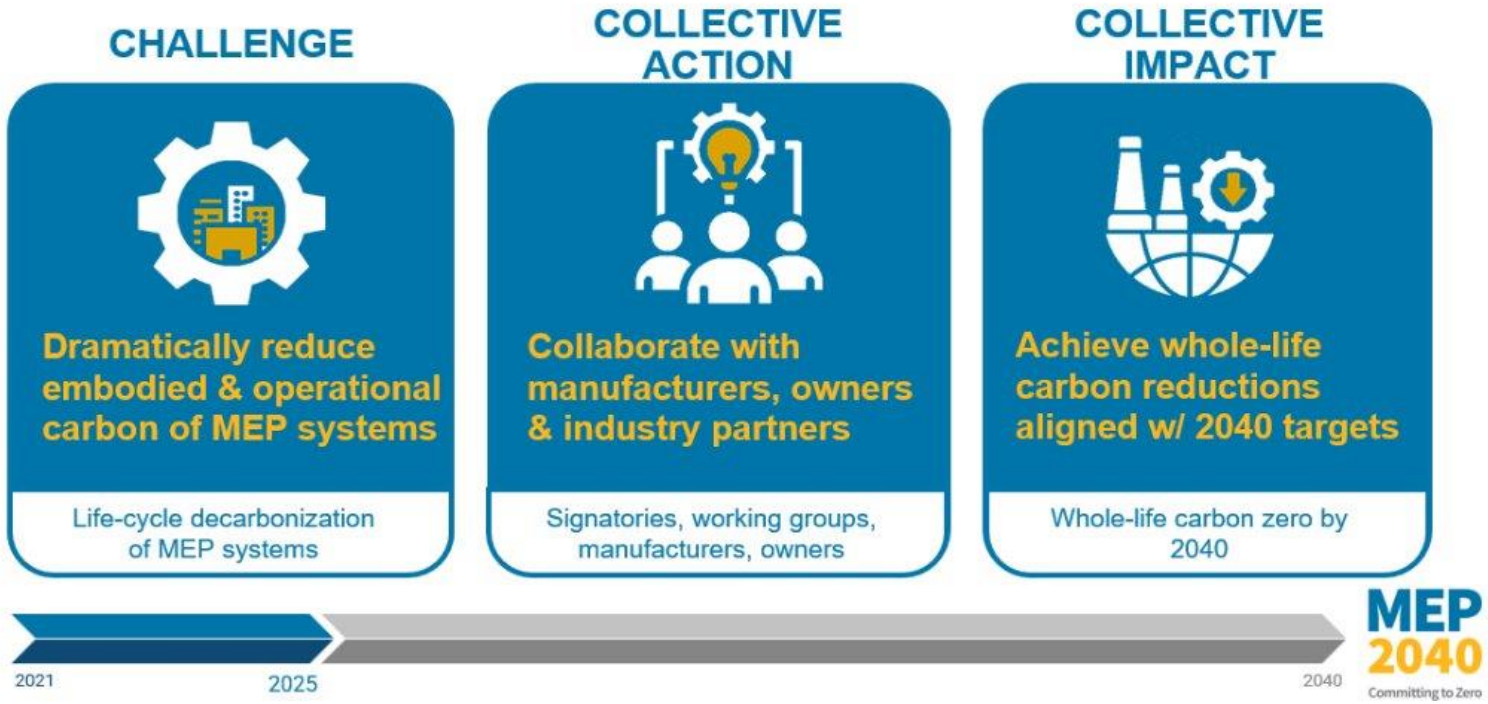
MEP 2040 Liaison Update

Ghina Annon

MEP 2040

Committing to Zero

A movement to **radically reduce total carbon emissions** from building systems through *collective action*.



Working Groups

Manufacturer / EPD Engagement & Advocacy

Engages manufacturers to expand product transparency and advance EPD availability while advocating for embodied-carbon informed codes, standards, and procurement practices.

Data Analysis & Reporting

Develops and refines methods, tools, and frameworks to measure, analyze, and report embodied and whole-life carbon impacts of MEP systems

Industry Education

Creates and curates educational resources, programming, and guidance to build MEP carbon reduction literacy and capability across practitioners, manufacturers, and partner organizations.

Engagement & Communications

Drives clear, consistent messaging across the MEP2040 network and engages signatories, partners, and the broader industry through outreach, communications, and community-building efforts.

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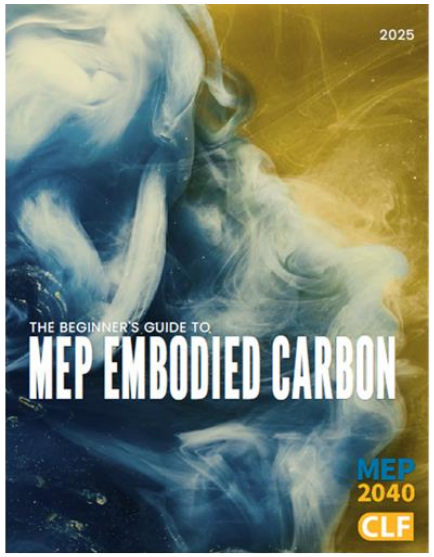
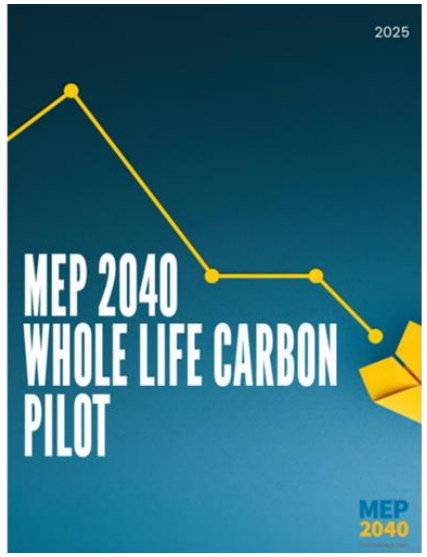
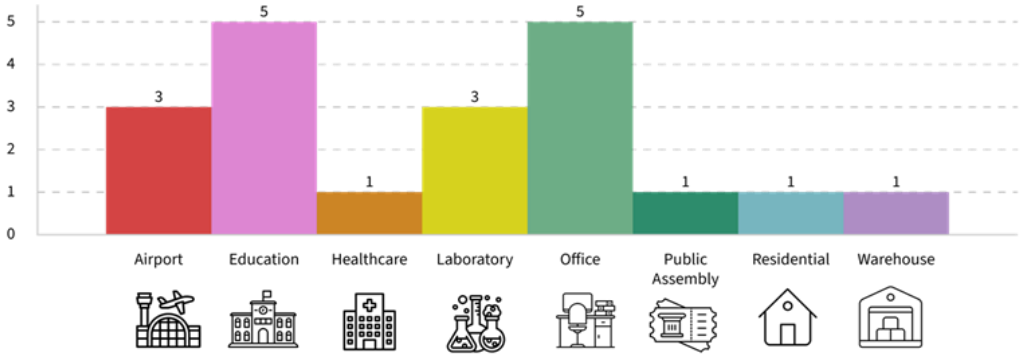


Guide - Maintenance



v1 Pilot - Gap Analysis and Findings



- ✓ 1443 Guide Downloads
- ✓ 20 Pilot Projects Completed
- ✓ 27 Participating Firms
- ✓ 54 Overall DAR Participants

	FOCUS AREAS	MAJOR TASKS	DELIVERABLES
1	**Lead Curation of Quarterly Forums**	a) Standard Forum Planning Process	• Forum Planning Process • Long Range Forum Schedule
		b) Pilot Standard Process	• 2025-Q4 Forum Artifacts • 2025-Q4 Forum Evaluation
		c) Update/Validate/Finalize Process	• 2026-Q1 Forum Artifacts • 2026-Q1 Forum Evaluation
2	**Develop MEP 2040 Roadshow and Educational Materials**	a) Education Needs Assessment	• Defined Audiences for MEP2040 Content • Content Gaps Assessment • Content Development Strategy
		b) Materials Repository Development	• IE Content Repository • Organizing Framework • Repository Governance
		c) Content Development	• MEP Roadshow Content • Additional IE Content
3	**Establish and Maintain Channel for MEP Resources**	a) Resource Channel Improvement	• Resources Inventory • Existing Channel(s) Assessment • Improved Resource Sharing Channel(s)
		b) Resource Channel Maintenance	• Resources Repository Governance • Resources Repository Maintenance Plan

MEP2040 Resources

Spec Language Templates
https://www.mep2040.org/manufacturers-epds

Refrigerant Impact Calculator
https://www.mep2040.org/data-analysis-and-reporting

Refrigerant and EPD template letters for manufacturers
https://www.mep2040.org/calls-to-action-templates

The Beginner's Guide to MEP Embodied Carbon
https://www.mep2040.org/guide

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ASHRAE Decarbonization Conferences

Luke Leung

2025 Decarbonization Conference
Reaction from the People

HPAC Engineering
@HPACEng

DECARBONIZING UNDETERRED: Despite shifts in DC, ASHRAE's Building Decarbonization Conference this week drew 400+ to Chicago. Below, Brendan Owens of @HKSArchitects spoke on his recent experience as Chief Sustainability Officer at DOD. @grundfos @uponor @eatoncorp @johnsoncontrols

Illinois Green Alliance
6,921 followers

It was a fantastic conversation!

Like · 1 | Reply

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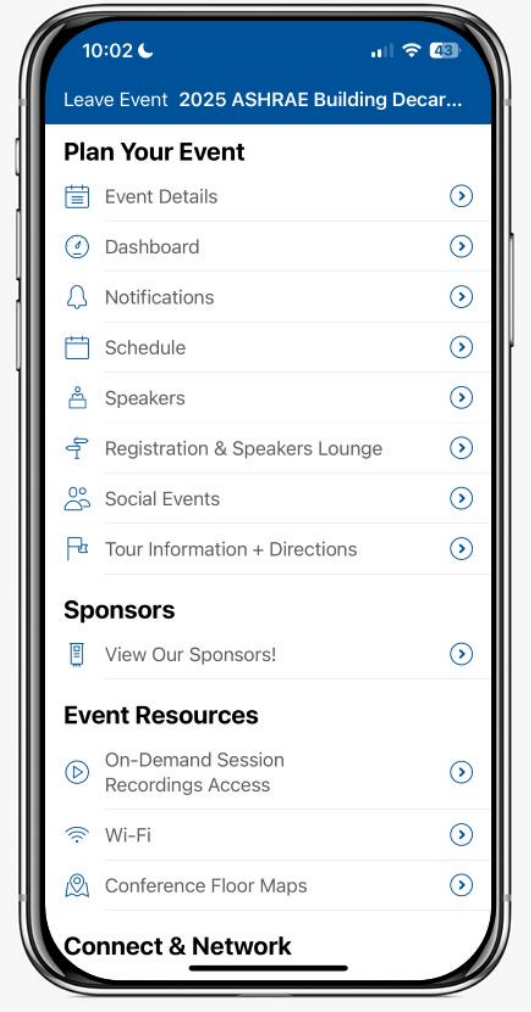
2025 Decarbonization Conference
A New Generation of Leaders

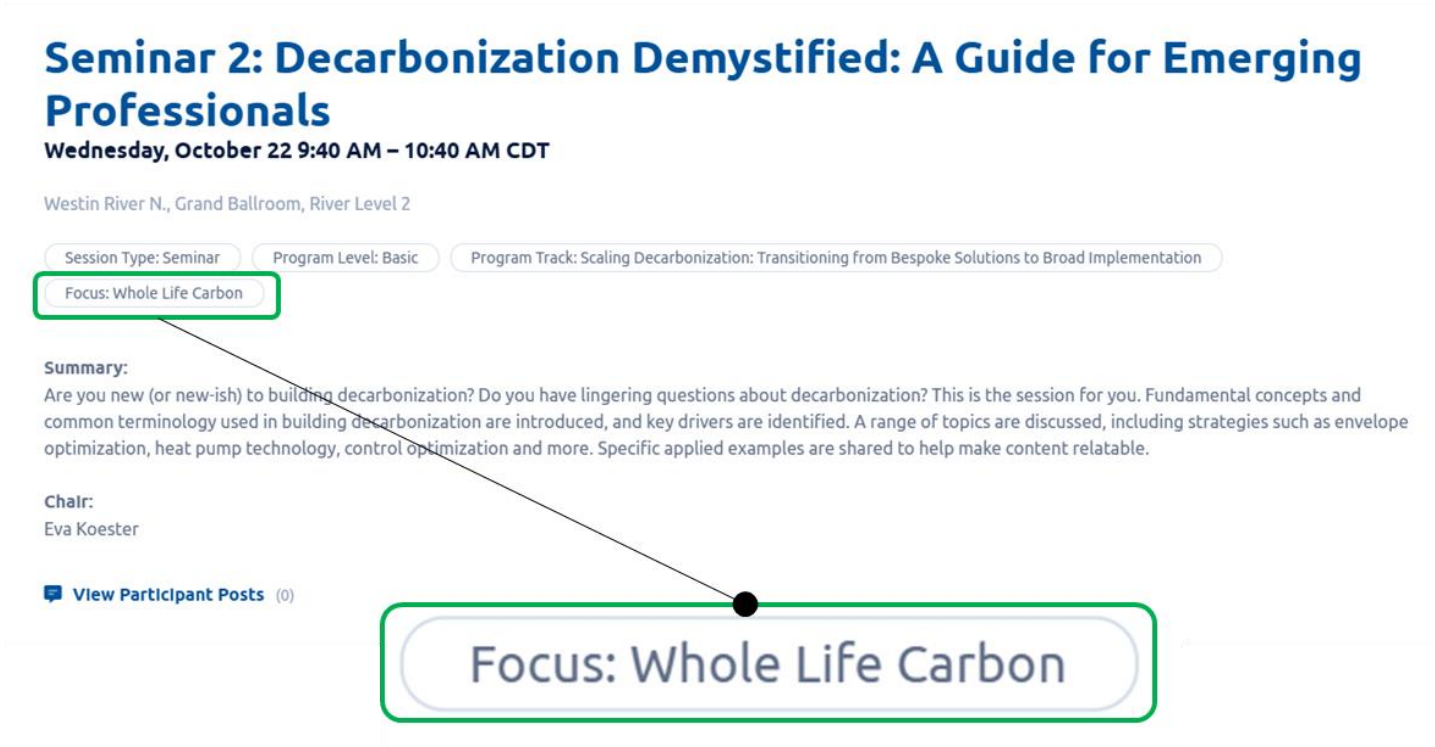
Travel Grant:
13 Students
5 Emerging Professionals

Thank you:
ASHRAE Foundation
ASHRAE Illinois Chapter
ASHRAE New York City Chapter

Most Students Registered!

2025 Decarbonization Conference
Carbon Type in ASHRAE 365 App

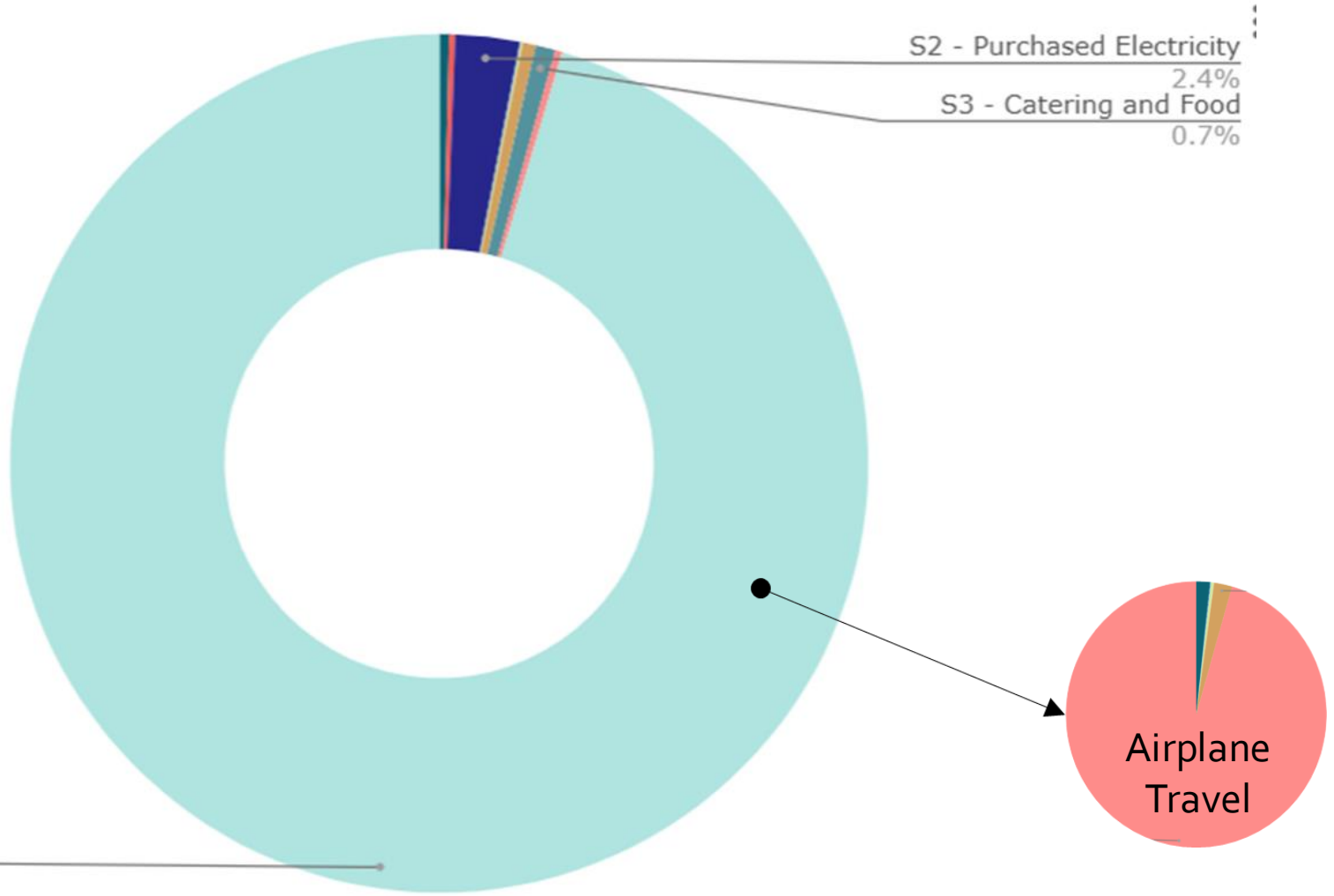




2025 Decarbonization Conference
Walking the Talk on Decarbonization

214 Tons of CO_2e

0.54 CO_2e/Person



2025 Decarbonization Conference Committee

Volunteers:

- Carrie Brown, Vice-Chair
- Bing Liu
- Chris Gray
- Kelly Westby
- Amanda Webb
- Nancy Kohout
- Fiona Martin
- Lawrence Kotewa
- Benjamin Skelton
- Katie Kaluzny
- Craig Bradshaw
- Luke Leung, Chair

ASHRAE Staffs:

Staci Loeffler

Christopher Preyor

Ragan McHan

Tony Giometti

MARK YOUR CALENDARS!

Call for Proposals for Selected Topic of Interests

https://ashrae.org/conferences/topical-conferences/2026-ashrae-building-decarbonization-conference

Submit proposals for panel or seminar sessions (60 or 90 min):

- **Panel: 3-4 industry experts and one moderator**
- **Seminar: 2-4 speakers and session chair**

Deadline: Feb. 27th, 2026

Questions:

Ask Ginger Scoggins or Carrie Brown

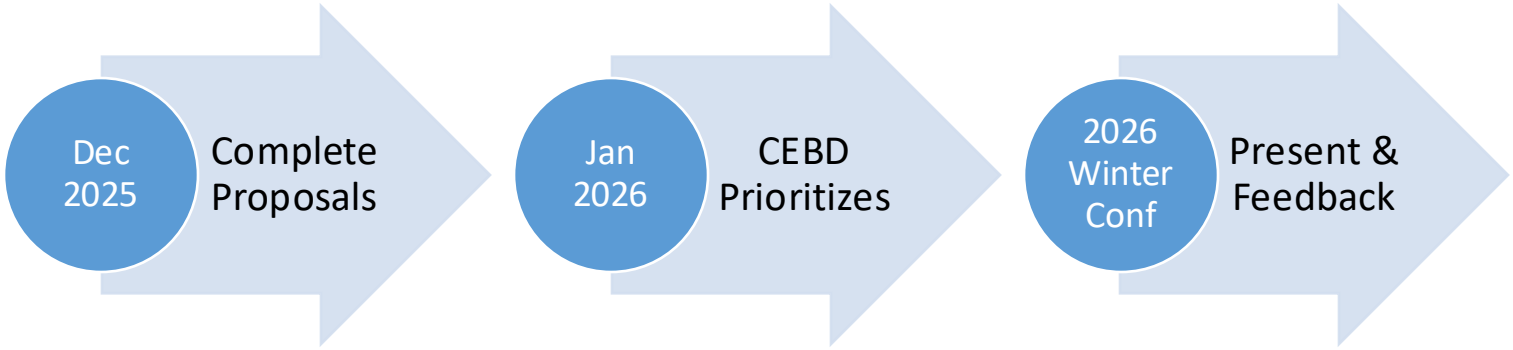
CEBD Strategic Initiative Development

Blake Ellis

CEBD Strategic Initiatives

1. 2025 Strategic Planning – May 2025
2. Developed Five Strategic Themes
   a) Engineering Guidance & Technical Implementation
   b) Business Case Development & Market Transformation
   c) Strategic Vision & Long-Term Planning
   d) Member Engagement & Knowledge Transfer
   e) AI Integration & Innovation
3. Proposal Development Phase (July – December 2025)
   a) Team of three people per theme
   b) Each team presented twice to the CEBD to gather feedback

Strategic Theme Development Timeline



~0-3 per group

<u>Needs:</u>

- Title
- Identify Group
- 100-word abstract
- Cost

Present each proposal at January CEBD Meeting

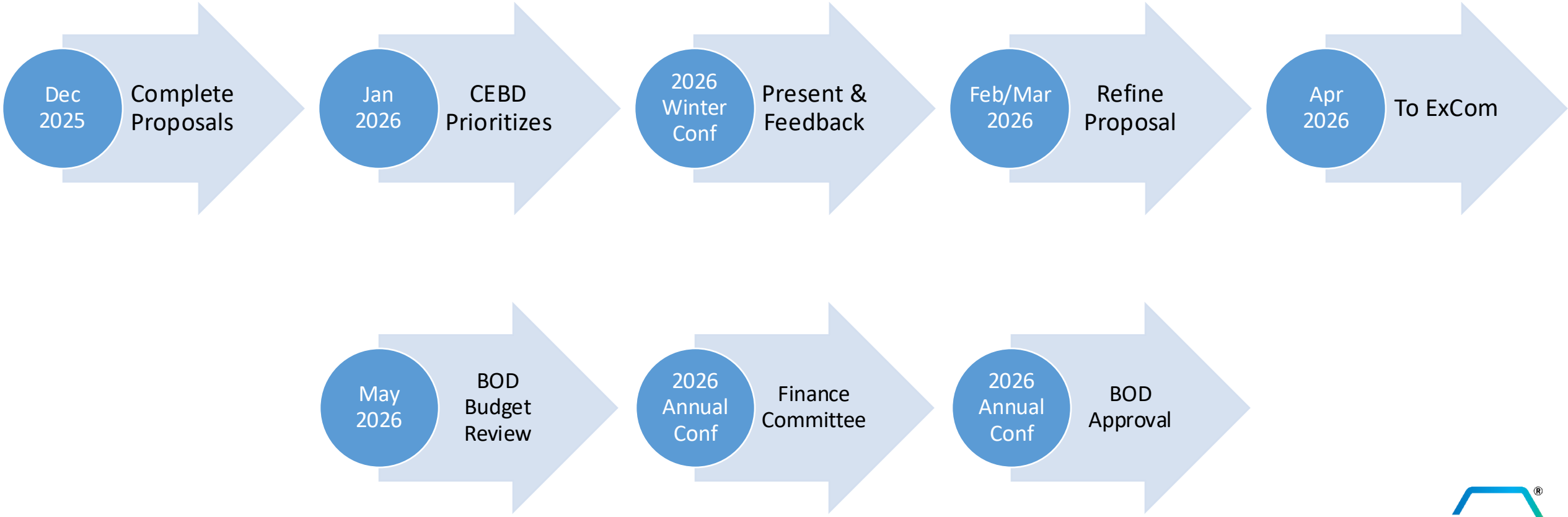
<u>Voting:</u>

After meeting

Present <u>prioritized list:</u>

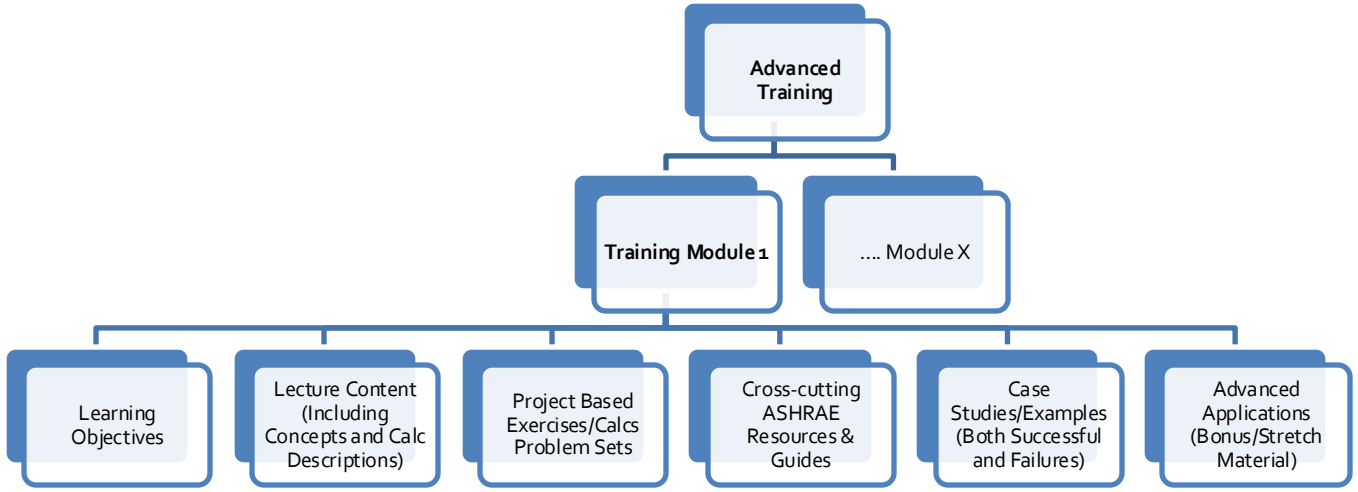
- Sat ExCom
- Sun CEBD
- Tue MemC
- Tue PubEdC
- Wed TechC
- Others?

Strategic Theme Development Timeline



Strategic Initiative #1
Engineering Guidance & Technical Implementation

- **Group Members:** ***Corey Metzger, Stet Sanborn, Amanda Webb***
- **Proposal:** ***Interactive training for ASHRAE's Decarbonizing Building Thermal Systems guide***



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Strategic Initiative #2
Business Case Development & Market Transformation

- **Group Members:** ***Ginger Scoggins, Jeremy Smith, Jamie Yeh***
- **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
- **Challenges**
  - US Political Climate/Negative Public Perception
  - Traditionally, ASHRAE is more focused on technical issues than financial & business case development
  - Grid Infrastructure Challenges
  - Negative response to Cities & States with mandates forcing Owners to do things they don't want to do

Strategic Initiative #2
Business Case Development & Market Transformation

- **Request**
  - We need more ideas decarb@ashrae.org
  - What would help you in educating/motivating your clients to use lower carbon strategies.
  - What comes to mind for you: Case studies, specific training/workshops, Journal articles, resources/tools?
- **Next Steps**
  - Narrow in on a target audience
  - Focus on 1-2 projects/efforts

Strategic Initiative #3
Strategic Vision & Long-Term Planning

- **Group Members:** ***Carrie Brown, Mark Lessans, Luke Leung***
- **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
- **Proposal: 2050 Decarbonization Roadmap**

  A framework with mid-term (2030, 2040) KPIs for building operational and embodied carbon that aligns with a trajectory for net zero by 2040. The roadmap creates a structured pathway for practitioners to assess the alignment of a project to this trajectory, which can adjust to allow for variations in building type, location, and application. Development will highlight the role of key Standards such as 240 and 242, align with ASHRAE's broader strategic plans, and leverage relevant decarbonization frameworks from other global organizations.

Strategic Initiative #4
Member and Industry Engagement & Knowledge Transfer

- **Group Members:** ***Kayleigh Houde, Adeeba Mehboob, Rajan Rajendran***
- **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
- **Proposals**
  - CEBD Knowledge Hub and Toolkit
  - CEBD Decarbonization Messaging & Media
  - CEBD Chapter Engagement & Ambassador Program
  - Strengthen Committee to Committee Collaboration
  - International Decarbonization Summit

Strategic Initiative #4 : Proposals
CEBD Knowledge Hub and Toolkit

- **What**
  - AI-enabled hub plus modular, AI-ready decarbonization resources and toolkits.
- **Why**
  - Members and chapters struggle to find/apply CEBD guidance; content is fragmented and hard to reuse locally.
- **Scope**
  - “Choose your path” (student/practitioner/certification/climate-system); roadmaps, standards navigation, policy context, case studies; chapter-ready toolkits (workshop kits, slides, guides, modules); basic feedback/impact capture.
- **Impact**
  - Faster adoption of ASHRAE guidance, more consistent chapter delivery, measurable usage and outcomes across regions.

Strategic Initiative #4 : Proposals
Decarbonization Messaging & Media

- **What**
  - Structured communications framework and content program for CEBD decarbonization work.
- **Why**
  - Technical work isn’t reaching the all the right audiences in usable form; awareness isn’t converting into action.
- **Scope**
  - Audience Mapping, Editorial cadence; campaigns (myth-busters, Q&A, data drops); formats (infographics, short videos, checklists); amplification via chapters and partners; dashboards for performance tracking.
- **Impact**
  - Clearer, consistent messaging; increased engagement and uptake of CEBD tools, training, and chapter programming

Strategic Initiative #4 : Proposals
CEBD Member Engagement & Ambassador Program

- **What**
  - Trained CEBD ambassadors + standardized chapter-ready programming and playbooks.
- **Why**
  - Chapters need repeatable formats and materials; CEBD needs a structured local delivery and feedback loop.
- **Scope**
  - Ambassador assignment/training; toolkits for talks/workshops; Society Decarb Mixer; chapter-to-CEBD feedback capture (barriers, wins, needs).
- **Impact**
  - More locally relevant chapter activity, higher member engagement, continuous improvement of CEBD resources based on field feedback.

Strategic Initiative #4 : Proposals
Strengthen Committee-to-Committee Collaboration

- **What**
  - Structured coordination across technical committees, standards committees, and related groups on decarbonization topics.
- **Why**
  - Cross-committee dependencies/silos can create duplication, inconsistent terminology, and slow delivery of aligned guidance.
- **Scope**
  - Regional/climate tracks; policy/technology/implementation sessions; outputs packaged into replicable tools/templates and case packets; integration into hub, media, and chapter programs.
- **Impact**
  - Faster, more aligned decarbonization products and outputs; reduced duplication; clearer, more consistent guidance for members, industry, and chapters.

Strategic Initiative #4 : Proposals
International Decarbonization Summit

- **What**
  - Recurring global convening focused on practical building decarbonization.
- **Why**
  - Need a global venue to share implementation lessons across climates/regions and build partnerships that drive adoption.
- **Scope**
  - Regional/climate tracks; policy/technology/implementation sessions; outputs packaged into replicable tools/templates and case packets; integration into hub, media, and chapter programs.
- **Impact**
  - Accelerated global decarbonization adoption through shared lessons, replicable materials, and partnerships extending beyond the event.

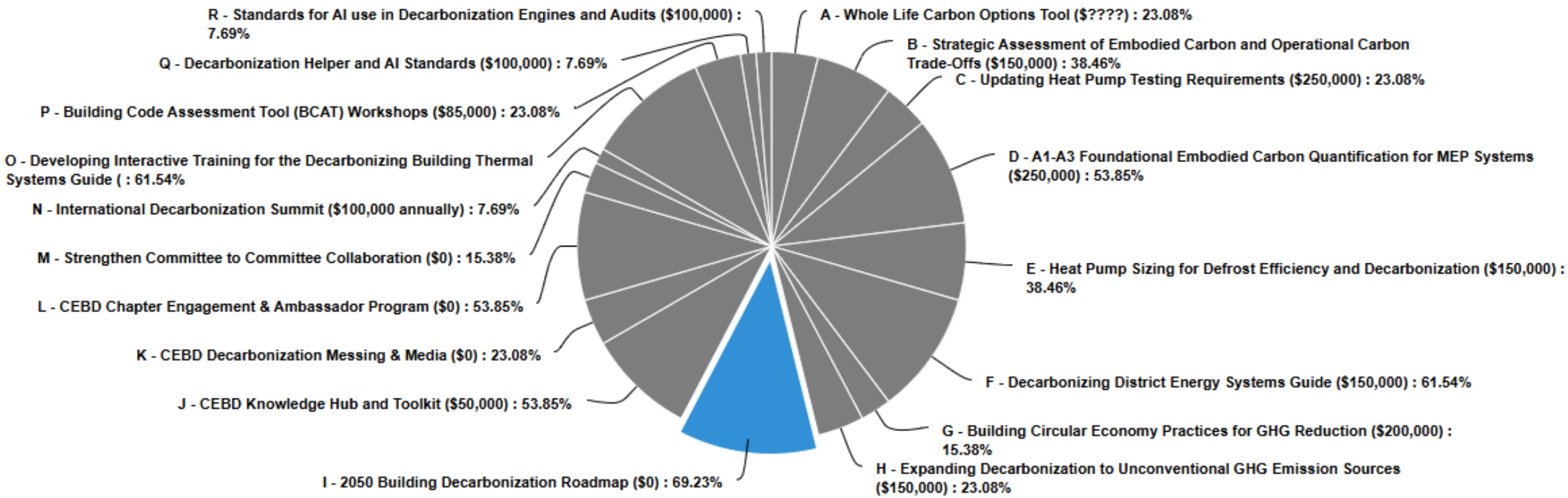
Strategic Initiative #5
AI Integration & Innovation

Group Members: *Ghina Annan, Parag Cameron-Rastogi, Chuck Gulledge*

- **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
- **Proposed Projects**
  - A "Decarb Helper" encoding ASHRAE knowledge materials in AI tool
  - Standards for "AI-driven" decarb planning – review of industry practice, coordination with Std 211, etc.

Project	What	Why	Scope	Impact

CEBD Survey


R - Standards for AI use in Decarbonization Engines and Audits ($100,000) : 7.69%
A - Whole Life Carbon Options Tool ($????) : 23.08%
Q - Decarbonization Helper and AI Standards ($100,000) : 7.69%
B - Strategic Assessment of Embodied Carbon and Operational Carbon Trade-Offs ($150,000) : 38.46%
C - Updating Heat Pump Testing Requirements ($250,000) : 23.08%
P - Building Code Assessment Tool (BCAT) Workshops ($85,000) : 23.08%
O - Developing Interactive Training for the Decarbonizing Building Thermal Systems Guide (: 61.54%
D - A1-A3 Foundational Embodied Carbon Quantification for MEP Systems ($250,000) : 53.85%
N - International Decarbonization Summit ($100,000 annually) : 7.69%
M - Strengthen Committee to Committee Collaboration ($0) : 15.38%
E - Heat Pump Sizing for Defrost Efficiency and Decarbonization ($150,000) : 38.46%
L - CEBD Chapter Engagement & Ambassador Program ($0) : 53.85%
K - CEBD Decarbonization Messing & Media ($0) : 23.08%
F - Decarbonizing District Energy Systems Guide ($150,000) : 61.54%
J - CEBD Knowledge Hub and Toolkit ($50,000) : 53.85%
G - Building Circular Economy Practices for GHG Reduction ($200,000) : 15.38%
H - Expanding Decarbonization to Unconventional GHG Emission Sources ($150,000) : 23.08%
I - 2050 Building Decarbonization Roadmap ($0) : 69.23%

DRAFT Prioritized List of Proposals

1. 2050 Building Decarbonization Roadmap ($0)
2. Decarbonizing District Energy Systems Guide ($150,000)
3. Developing Interactive Training for the Decarbonizing Building Thermal Systems Guide ($80,000)
4. A1-A3 Foundational Embodied Carbon Quantification for MEP Systems ($250,000)
5. CEBD Knowledge Hub and Toolkit ($200,000)
6. CEBD Chapter Engagement & Ambassador Program ($0)
7. Strategic Assessment of Embodied Carbon and Operational Carbon Trade-Offs ($150,000)
8. Heat Pump Sizing for Defrost Efficiency and Decarbonization ($150,000)
9. Whole Life Carbon Options Tool ($TBD)
10. Updating Heat Pump Testing Requirements ($250,000)
11. Expanding Decarbonization to Unconventional GHG Emission Sources ($150,000)
12. CEBD Decarbonization Messing & Media ($0)
13. Building Code Assessment Tool (BCAT) Workshops ($85,000)
14. Building Circular Economy Practices for GHG Reduction ($200,000)
15. Strengthen Committee to Committee Collaboration ($0)
16. International Decarbonization Summit ($100,000 annually)
17. Decarbonization Helper and AI Standards ($100,000)
18. Standards for AI use in Decarbonization Engines and Audits ($100,000)

Entire List of Proposals

Title	Source	Budget	Abstract
Whole-Life Carbon Options Tool	SY24-25	???	For all new and existing buildings to achieve significant carbon reductions by 2030 and net-zero carbon emissions by 2050, a comprehensive approach to whole-life carbon assessment is essential. ASHRAE 240 “Quantification of Life Cycle Greenhouse Gas Emissions of Buildings” will provide a methodology to quantify the embodied and operational GHG emissions associated with buildings and their sites. Additionally, EnergyPlus and other software can calculate operational energy or carbon, and other software can calculate embodied carbon independently in silos. This project, a potential collaboration between ASHRAE and other relevant organizations, including DOE and EPA, aims to develop the Whole-Life Carbon Tool to provide a robust framework for evaluating and optimizing operational and embodied carbon throughout a building's lifecycle.
Strategic Assessment of Embodied and Operational Carbon Trade-Offs	SY24-25	$150,000	Embodied carbon (EC) and operational carbon (OC) are pivotal in building emissions. Addressing the gap in understanding their trade-offs, this study explores EC/OC dynamics in construction. Employing a one-page analysis and utilizing proper tools, it optimizes carbon emissions throughout a building's lifecycle. Utilizing advanced lifecycle assessment tools and parametric modeling, the study analyzes design parameters' influence on EC/OC emissions. The project outcome anticipates additional insights for stakeholders, aiding in informed decision-making for carbon mitigation and operational efficiency.
Updating Heat Pump Testing Requirements	SY24-25	$250,000	Performance testing of heat pumps is crucial for assessing their efficiency and reliability in real-world applications. As technology evolves and environmental considerations intensify, there's a growing need to update existing testing requirements. By incorporating advancements in heat pump technology and considering factors like ambient temperature variations and defrost cycles, updated testing standards can provide more accurate performance evaluations. This update contributes to ensuring consumer confidence, promoting energy efficiency, and advancing renewable energy adoption. With the participation of reputable testing institutions and adherence to international standards, such updates aim to enhance the credibility and relevance of heat pump performance testing in the ever-changing energy landscape.

Entire List of Proposals

Title	Source	Budget	Abstract
A1-A3 Foundational Embodied Carbon Quantification for MEP Systems	SY24-25	$250,000	Upfront carbon emissions, include all greenhouse gases released during the initial stages of a building's lifecycle (Modules A1-A5), encompassing raw material extraction, transportation, manufacturing, and construction processes. These emissions must be addressed to achieve significant carbon reductions. They can account for a significant portion of a building's total carbon footprint, with estimates ranging from 30% to as high as 50% depending on the building type and construction methods. The project focuses on accurately quantifying and mitigating these emissions. This is crucial as mechanical, electrical, and plumbing (MEP) systems are complex, with numerous components and assemblies contributing differently to the overall carbon footprint. Currently, the availability of Environmental Product Declarations (EPDs) for MEP components is limited, creating significant data uncertainties in carbon assessments. By leveraging machine learning, this project aims to provide precise quantification methods and actionable insights to close these data gaps.
Heat Pump Sizing Guide: Enhanced for Defrost Efficiency and Decarbonization	SY24-25	$150,000	In the context of Industry 4.0, heat pump technologies are advancing swiftly, necessitating updates to sizing guides and tools to ensure peak performance. This update will incorporate sophisticated algorithms that efficiently manage defrost cycles and support decarbonization efforts. Anticipated improvements from this initiative include heightened reliability and resilience, lower energy usage, and greater environmental sustainability. Utilizing cloud-based data collection and the latest heat pump innovations, this project aims to simplify the complexities faced by HVAC professionals in applying modern heat pump solutions.
Decarbonizing District Energy Systems Guide	SY24-25	$150,000	This project will create a new ASHRAE Decarbonization Design Guide focused on District Energy Systems. District energy systems served 15% of the worldwide heating needs in 2020 and this is expected to grow to 20% by 2030. District energy started in 1887 and the 1st, 2nd, and 3rd generation district energy systems provide their heating through the burning of fossil fuels. Newer 4th and 5th generation systems provide opportunities for low or no carbon solutions. This guide will address both the latest generation of district energy systems along with conversion options for older district systems.

Entire List of Proposals

Title	Source	Budget	Abstract
Building Circular Economy Practices for GHG Reduction	SY24-25	$200,000	This project focuses on building circular economy practices. Key metrics include waste reduction, resource efficiency, and carbon footprint. This work is concerned with both existing and new buildings, as it advances the efficient use of resources, minimizes waste, and reduces greenhouse gas (GHG) emissions. For existing buildings, it involves retrofitting and optimizing systems to enhance GHG emission reduction. For new buildings, it includes designing with circular principles from the start, such as using renewable materials and planning for future adaptability. Currently, research around circular economy in the building sector is fragmented and lacks comprehensive data, especially regarding its impact on GHG emissions. This project aims to fill this gap, providing actionable insights to advance building decarbonization efforts.
Expanding Decarbonization to Unconventional GHG Emission Sources	SY24-25	$150,000	GHG emissions are a critical concern, particularly in healthcare facilities, where operating theatres are intensive sources. These theatres consume three to six times more energy than hospitals at large, mainly due to anaesthetic gases and HVAC demands. The surgical carbon footprint is approximately 9.7 million tonnes of CO2e annually. This project aims to broaden the GHG inventory by incorporating a whole life carbon approach, which includes medical gases, sterilization chemicals, and other underrepresented domains. The project aims to compile a comprehensive list of these "other" sources to facilitate a more holistic understanding of GHG impacts.
2050 Building Decarbonization Roadmap	Initiative #3	$0	A long-term framework that sets performance indicators and milestones (2030, 2040, and 2050) to guide the global built environment toward net zero whole-life carbon by 2050. The roadmap provides a structured pathway for aligning standards, policies, technologies, and resources worldwide, integrating strategies for business case, operational efficiency, whole life carbon, electrification, indoor environmental quality (IEQ), artificial intelligence (AI), resilience, equity, and circular economy principles in coordination with other major global organizations.

Entire List of Proposals

Title	Source	Budget	Abstract
CEBD Knowledge Hub and Toolkit	Initiative #4	$200,000	ASHRAE's CEBD Knowledge Hub & Toolkit will deliver an AI-enabled platform paired with modular, ready-to-use decarbonization resources. Users enter via "choose your path" journeys—student foundations, practitioner quick-start, certification prep, and climate-zone/system routes—then receive tailored roadmaps, standards navigation, policy translation by location, and matched case studies. The toolkit provides "workshop-in-a-box" materials: building performance improvement workshop content, customizable slide decks, panel guides, and training modules. Auto-generated project packets, localization prompts, and a simple action-tracking scorecard support consistent delivery, reuse, and measurable outcomes across regions, building types, and maturity levels.
CEBD Decarbonization Messaging & Media	Initiative #4	$0	The CEBD Decarbonization Messaging & Media will convert technical decarbonization work into consistent, audience-specific communications that scale reach and adoption. A simple editorial cadence will drive themed campaigns (e.g., myth-busters, expert Q&A, data drops), member spotlights, and practical explainers for stakeholders. Content will be packaged for LinkedIn and other channels, then amplified through cross-promotion with strategic partners (e.g., USGBC, AIA, DOE) and chapter networks. Standard templates, infographics, short videos, and checklists will ensure clarity and repeatability. Performance dashboards will track engagement, audience growth, and downstream actions to continuously improve messaging and impact.
CEBD Chapter Engagement & Ambassador Program	Initiative #4	$0	The CEBD Chapter Engagement & Ambassador Program will operationalize local decarbonization engagement through trained CEBD ambassadors and repeatable chapter programming. Ambassadors will share CEBD updates at meetings, facilitate locally relevant workshops, and act as liaisons between chapters and CEBD. A "Decarb Mixer" playbook will provide a lightweight, high-engagement format at Society and chapter events to connect members, surface barriers, and spark collaboration. Standardized materials—talk tracks, slides, facilitation guides, and hands-on activities—will enable rapid adoption and consistent quality. A feedback loop will capture lessons learned, local policy signals, and success stories to refine resources and scale what works.

Entire List of Proposals

Title	Source	Budget	Abstract
Strengthen Committee to Committee Collaboration	Initiative #4	$0	Committee & Standards Collaboration will align ASHRAE technical committees, standards committees, and related groups around coordinated decarbonization priorities. The project will identify where cross-committee dependencies exist—methods, metrics, guidance, and emerging technologies—then form focused task groups with defined scopes, schedules, and outputs. Regular roundtables will accelerate issue resolution, reduce duplicated effort, and ensure consistent messaging across standards, guidelines, and educational content. Deliverables may include coordinated workplans, shared reference materials, harmonized terminology, and clear pathways for chapter adoption. Progress reporting will track milestones, integration points, and decision needs to maintain momentum and transparency.
International Decarbonization Summit	Initiative #4	$100,000 (annually)	The International Decarbonization Summit will convene global practitioners, policymakers, researchers, and industry leaders to advance practical building decarbonization. Programming will highlight regional pathways, policy impacts, technology trends, and real-world implementation lessons, with dedicated tracks for emerging economies and diverse climates. The Summit will generate actionable outputs—session recordings, curated toolkits, case-study packets, and partner commitments—feeding directly into CEBD channels and the Knowledge Hub. Structured networking will connect chapters and organizations to enable cross-border collaboration and replication. Success will be measured through participation diversity, partner engagement, published resources, and the number of follow-on projects initiated or accelerated after the event.
Developing interactive training for ASHRAE's Decarbonizing Building Thermal Systems guide	Initiative #1	$80,000	ASHRAE's Decarbonizing Building Thermal Systems guide, provides information on heat pump design for decarbonization but stops short of providing instruction. To help ASHRAE members put the information in this guide into action, a training course needs to be developed that provides a deeper dive into the calculation methodologies and decision-making processes introduced in the guide. The goal of this project is to develop and deliver an interactive course to accompany ASHRAE's Decarbonizing Building Thermal Systems guide. This course is intended to be highly interactive, and should be designed and delivered so that it can reach as wide an audience as possible.

Entire List of Proposals

Title	Source	Budget	Abstract
Building Code Assessment tool (BCAT Tool)		$85,000	Workshops play a critical role in advancing the effective implementation of new tools and frameworks by fostering collaboration, knowledge transfer, and capacity building. They provide structured environments where diverse stakeholders researchers, practitioners, policymakers, and industry leaders can engage in hands-on training, share best practices, and adapt methodologies to local contexts. International workshops are particularly valuable as they promote standardization across regions, ensure cultural and technical relevance, and accelerate the global adoption of innovative solutions. By bridging gaps between theory and practice, workshops empower participants to apply tools such as the Building Carbon Assessment Tool (BCAT) with confidence, thereby strengthening collective efforts toward decarbonization, resilience, and sustainable development. Estimated cost: Ten (10) 2-day International workshops @ $3,500/facilitator for travel and workshop expenses @ $5,000 per two-day workshop
Decarbonization Helper	Initiative #5	$100,000	This project would develop an AI-enabled framework to help building professionals navigate ASHRAE resources on decarbonization. The project would aim to use in-house ASHRAE knowledge assets (standards, guidelines, etc.) with an AI engine/tool/model to create a practical “Decarbonization Helper” (ASHRAE Decarb GPT). This would guide engineers, designers, and facility operators through ASHRAE resources for low carbon strategies, allowing for faster searches tailored to building type, climate zone, operational constraints, and other project-specific considerations. The project would dovetail with ongoing internal work on how to make ASHRAE resources ready for AI tools and models. It is imperative that any tools developed by ASHRAE are vetted by staff, the cognizant committees, and other experts for accuracy and usefulness. The budget and time would provide an opportunity to use “decarbonization” as a test for such tools by appointing a specialist contractor to coordinate testing, feedback, etc.
Standards for AI use in Decarbonisation engines and audits	Initiative #5	$100,000	Software for the built environment is beginning to experiment with AI tools, like many other industries. ASHRAE should take the lead in working with industry players to develop an initial, foundational set of Standards or Guidelines for the responsible use of AI in decarbonization audits and consultancy. These efforts will be critical in ensuring that emerging AI tools are transparent, reliable, safe, and interoperable with ASHRAE’s existing standards ecosystem and beneficial for the built environment. This is not a project for ASHRAE to create a decarbonization audit or advice tool. Neither is this project meant to explicitly state that AI and desk-audits should be recognized on par with specialist on-site audits. Rather, this project will aim to provide resources to collect industry best practices on the use of AI, explore guardrails, and other considerations in the manner of ASHRAE standards.

Strategic Theme Development Timeline

~0-3 per group

<u>Needs:</u>

- Title
- Identify Group
- 100-word abstract
- Cost

Present each proposal at January CEBD Meeting

<u>Voting:</u>

After meeting

Present <u>prioritized list:</u>

- Sat ExCom
- Sun CEBD
- Tue MemC
- Tue PubEdC
- Wed TechC
- Others?

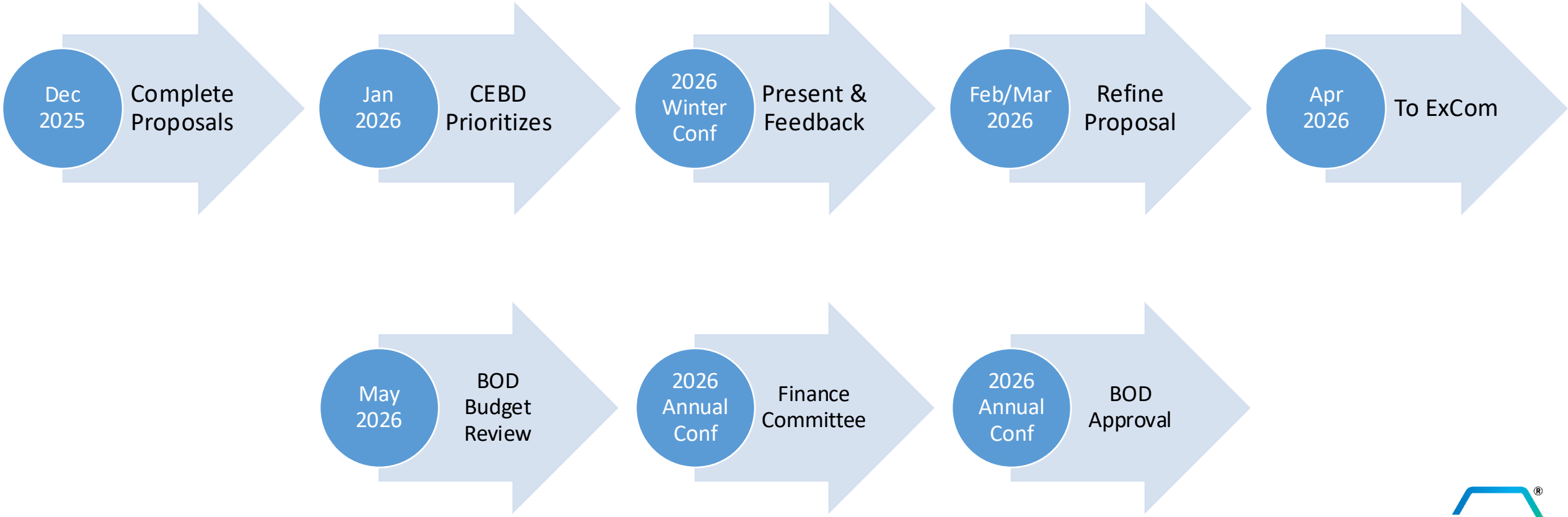
Use feedback to refine proposals

Re-prioritize

Vote on recommended action

Send to ExCom

Strategic Theme Development Timeline



Closing Comments

Blake Ellis


Thanks to our volunteers and staff!

Comments to CEBD

Open Session

Next CEBD Meeting
Thursday, February 12th, 2026 at 9-10 AM EST

Adjourn