



1791 Tullie Circle, N.E./Atlanta, GA 30329
404-636-8400

DRAFT

TC/TG/MTG/TRG MINUTES COVER SHEET

(Minutes of all Meetings are to be distributed to all persons listed below within 60 days following the meeting.)

~~TC/TG/MTG/TRG~~ No. 6.1 DATE February 7, 2023

TC/TG/MTG/TRG TITLE Hydronic and Steam Equipment and Systems

DATE OF MEETING February 7, 2023 LOCATION Atlanta, GA (Hybrid)

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Bob Walker	2022	Niels Bidstrup	Non-Q	
Jessica Mangler	2019			
Jennifer Leach	2019			
Frank Myers	2021			
Ted Duffy	2022			
Viral Dharaiya	2019			
Rex Scare	2022			

DISTRIBUTION: All Members of TC/TG/MTG/TRG plus the following:

TAC Section Head:	Doug Reindl
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters (Research, Standards, ALI, etc.)	Chapter Tech. Transfer – Elizabeth M. Zakelj Research – Stefan Elbel 2024 HB Systems – Derek Crowe (Chs 11, 28, 32, 36, 44, 46); Satish Iyengar (Chs 13, 14, 15); Ahmed Medhat (Chs 47 and new ChW Plant) 2021 HB Fundamentals – Stephanie Mages Standards – Craig Wray Staff – Steven Hammerling

Mike Vaughn, Manager Of Research & Technical Services	MORTS@ashrae.net
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Note: These draft minutes have not been approved and not the official, approved record until approved by the TC.

1. Call to Order:

Chair Walker called the meeting to order at 1:04 pm. Chair Walker welcomed all in attendance and self-introductions were made. Attendance was gathered through the sign-in sheet and the chat window. A roll call of voting members was conducted, and a quorum was present with 8 of 8 voting members.

Technical Committee 6.1 is concerned with all aspects of hydronic and steam systems. This includes the application of boilers, chillers, terminal units, and all accessories and controls making up the total system as well as the design of the integrated system. In addition to comfort applications of both heating and cooling, snow melting systems are included. Cooperation with other TCs is recognized in areas such as control, noise and vibration, refrigeration, pumps and hydronic and service water piping.

Chair Walker read the ASHRAE Code of Ethics, *“In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, integrity and respect for others, and we shall avoid all real or perceived conflicts of interests.”* (See full Code of Ethics at www.ashrae.org/about-ashrae/ashrae-code-of-ethics)

2. Setting of the Agenda:

The Chair passed out an updated Agenda. Motion by Jessica second by Ted. 7-0-1-CNV There were no objections to the Agenda.

3. Approval of Atlanta Meeting Minutes:

Motion by Jen, second by Ted to approve the past meeting minutes. Motion passed 7-0-1-CNV

4. Recognition of Liaisons:

- Doug Reindl, TAC Section Head
 - i. ASHRAE starting a new strategic plan and looking for ideas. Give ideas to Chair Bob Walker.
 - ii. Task Force currently on Decarbonization being worked on.
- Scott Fisher, Handbook
 - Changing editing back to

5. Chair's Report

Chair Walker summarized the key items from Section 6 Breakfast.

- FGs that have been formed since Winter Meeting:
 - TG2.IAQMD (Indoor Air Quality Monitoring Devices)
- Open Mic Policy

Technical Activities Committee (TAC) Open Mike Policy

Purpose: Allow the ASHRAE membership to have a voice to express their concerns and offer improvements.

When: TAC traditionally meets during in-person conferences the Saturday before the summer and winter conferences and the Wednesday at the conclusion of the conference. Likewise, during a virtual conference, the TAC meetings are conducted prior to the start and after the conclusion of the conference.

You need to check the conference schedule for the correct date/time of the meetings.

TAC also conducts virtual meetings between the formal conferences. If you want "open mike" time just send your request using ASKTAC@ASHRAE.net.

How: It would be appreciated if you would send a written request to ASKTAC@ASHRAE.net with the topic, however, this is not required.

It is the prerogative of the chair to advise how much time is available and when you can be heard. A 3-minute time limit is preferred. It would be preferable to be present at the beginning of the meeting so that you may be heard and not have to wait a prolong period of time.

Please make sure you make your presence is recognized by the chair upon your arrival.

○ When in doubt email: ASKTAC.ASHRAE.net

- ASHRAE is meeting next in Tampa FL, USA, June 24-28, 2023. Seminar and Forum proposals are due by Monday, February 27, 2023. Please visit the following site to submit your proposal: For more information, go to: www.ashrae.org/conferences/2023-annual-conference-tampa/2023-annual-technical-program.
- 2022-2023 Hightower Award Nominations by Friday, September 1st There were multiple nominations for last year's award. Thanks to all TCs that nominated! All that did not win are encouraged to resubmit. TAC wishes to encourage TCs to make nominations for the 2022-2023 *George B. Hightower Technical Achievement Award*. Nominations are due to Section Heads by September 1, 2023 or sooner. The award recognizes outstanding technical leadership and contributions on a TC/TG/TRG during the past four years, excluding research and standards activities. Please go to the Technical Committee page of the ASHRAE website at the following link under the "Procedures, Forms..." heading: www.ashrae.org/tcs.
- CEC's Standing Request for Future Society Meeting Program Track Suggestions The Conferences and Expositions Committee (CEC) oversees ASHRAE's annual and winter conferences and other specialty conferences and expositions globally. The CEC
- CEC Always Seeks TC Volunteers willing to Support Content Development and Quality Control for Society Technical Program at Society Meetings
- The Professional Development Committee (PDC) is seeking ideas for new ASHRAE Learning Institute (ALI) courses.
- ASHRAE Certification Committee seeking ideas from TCs for possible professional certification programs
- OTHER UPCOMING WORKSHOPS, CONFERENCES AND EVENTS

- ASHRAE and SCANVAC – HVAC Cold Climate Conference 2023. March 6-8, 2023. Anchorage AK. www.ashrae.org/2023HVACColdClimate
- Developing Economies Conference 2023. May 11-12, 2023. Mumbai, India. www.ashrae.org/developingecon2023
- 14th IEA Heat Pump Conference – Resilient and Efficient. May 15-18, 2023. Chicago IL. www.hpc2023.org
- ASHRAE Annual Meeting – June 24-28, 2023. Tampa, FL - www.ashrae.org/tampa
- 2023 ASHRAE Building Performance Analysis Conference. September 11-13, 2023. Austin, Texas. www.ashrae.org/2023BPAC
- 2023 Decarbonization Conference for the Built Environment. October 25-27, 2023. Renaissance Arlington Capital View. Washington D.C. Metro Area - www.ashrae.org/2023builtenvironment
- Eighth International Conference on Energy Research and Development. November 28-30, 2023. Kuwait University City, Kuwait. Co-organized by ASHRAE and Kuwait University. www.ashrae.org/icerd8

6. Sub-Committee Reports

- Programs: Jennifer Leach (Chair).
 - i. Met on Sunday, February 5th.
 - ii. Two programs in Atlanta.
 - iii. Discussed program submissions for Tampa and Chicago.
 - iv. See attached sub-committee report for more details.
 - v. CEC has requested reviewers for papers.
- Research: Ted Duffy (Chair).
 - i. Met on Sunday, February 5th.
 - ii. SC Training breakfast held after sub-committee meeting, so no updates at sub-committee meeting. Will include topics from breakfast in meeting minutes.
 - iii. See sub-committee report for details of all topics discussed during sub-committee meeting and chair breakfast.
 - iv. Frank Myers commented TC6.6 is looking at an RTAR for copper fitting pressure drops. Ted has provided TC6.6 with the RTAR currently being worked on by TC6.1
- Handbook: Viral Dharaiya (Chair).
 - i. Met on Monday, February 6th
 - ii. Subcommittee meeting minutes attached.
 - iii. Viral thanked all lead authors for their hard work.
 - iv. Motion to approve Chapter 11 – Steam Systems. Approved 7-0-1-CNV
 - v. Motion to approve Chapter 28 – Unit Ventilators, Unit Heaters and Makeup Air Units. Approved 6-0-2-CNV
- Chilled Water Plant: Steve Tredinnick (Chair)

- i. Have started editing the chapter on the authoring portal
- ii. Current hiccup is that I wanted to add more detail to a calculation I conducted using YORKCALC. I do not currently have the software and have requested it. All JCI personnel are at ASHRAE so wont get until next week at the earliest.
- iii. Next step is to reference as much content as possible that is in the current handbooks, but just need a place to consolidate the information.
- iv. Always looking for volunteers on the chapter
 - (a) Mick Schwedler has volunteered

- Membership: Jessica Mangler (Vice - Chair).

- i. If interested in being a Corresponding member, go online to update your profile.

- Standards: Frank Myers (Chair).

- i. Standard 90.1
 - (1) Over the next 12 months, addenda will be added to include zero-carbon best practices (Life time carbon).
 - (2) Energy efficiency will be evaluated and updated as needed.
 - (3) Active steam system(building heat only) working group. Lead is Andy Fouse.
- ii. Standard 155P
 - (1) Had 10 comments from review cycle. All were editorial.
 - (2) Standard has been verified by two testing groups.
 - (3) Looking to be voted out of SPC by summer.

- Taskforce for Building Decarbonization: Jason Atkisson (Liaison)

- New ASHRAE website for decarbonization
 - ASHRAE.org/decarb
- Complete notes from TFBD meeting attached.

7. Liaison Reports from other TC's and Organizations.

- 6.2 District Energy Jessica Mangler
 - No Report
- 6.5 Radiant Heating and Cooling (nobody)
- 6.6 Service Water Heating Frank Myers
 - RTAR on copper fittings. Discussed during research.
- 6.7 Solar and Other Renewable Energy (nobody)
- 6.8 Geothermal Heat Pump and Energy Recovery Applications (nobody)
- 6.10 Fuels and Combustion (nobody)
- Residential Building Committee (nobody)
- Hydronic Industry Alliance (nobody)

8. Old Business:

- i.

9. New Business:

- Test Method for Pressure Independent Control Valves and Balancing Valves

- i. Request from SPC to give TC6.1 opinion of how to proceed. New Standard or continue with SPC208 or no standard needed?
 - ii. Feedback from committee requested on whether a standard is needed or if a standard already exists.
 - iii. Europe has a standard, but will it work for North America?
 - iv. TC would need a minimum of 5 volunteers and a chair to move forward. If interested, contact Bob Walker or Viral Dharaiya.
- Work Statement 1812
 - i. TC decided to not co-sponsor WS1812
 - ii. Motion by Ted, 2nd by Frank. Voted 7-0-1 CNV

10. Meeting Adjournment:

- Adjourned at 2:34.

Submitted by,
Rex Scare
TC 6.1 Secretary

Attached: sign-in, subcommittee minutes

TC 6.1 Programs Sub-committee

Date: 2/5/2023

Location: Omni Center Atlanta, Oak (Lobby-South)

Attendees:

Jen Leach (Programs Chair)

FULL COMMITTEE MEETING

- **TC 6.1 Hydronic and Steam Equipment and Systems**
Tuesday, Feb 5, 2023 1:00 PM – 3:00 PM PST
Sheraton, Governor General Suite (2)

SPONSORED PROGRAMS IN ATLANTA

- **Seminar 28: Back to Basics With Hydronics: The OG of HVAC Systems (Livestream)**
Monday, Feb 6, 9:45 AM – 10:45 AM
GWCC A410

CO-SPONSORED PROGRAMS IN ATLANTA

- **Seminar 55: Decarbonizing Buildings Through the Use of Green Hydrogen: Technical Challenges**
Wednesday, Feb 8, 8:00 AM – 9:30 AM
GWCC A404
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PLANNING FOR THE ANNUAL CONFERENCE, TAMPA

Program Submission

Jan 6, Website Open for Programs

Feb 27, Submissions

Apr 14, Notifications

- HVAC&R Systems and Equipment
 - HVAC&R Systems and Equipment are constantly evolving to address the changing requirements of the built environment. Papers and programs in this track focus on the development of new systems and equipment, novel applications of existing systems and equipment, improvements to existing systems and equipment and the proper application and operation of systems and equipment.
- Fundamentals & Applications
 - Fundamentals are the foundation for understanding applications in engineering. Key components of ASHRAE fundamentals include thermodynamics, psychrometrics, heat transfer, fluid and mass flow. This track provides opportunities for papers and presentations of varying levels across a large topic base. Concepts, design elements and shared experiences for theoretical and applied concepts of HVAC&R design are included.
- Research Summit

- Active research, and the exchange of those research findings, are critical to the development of our HVAC&R industry and built environment. The 2023 Annual Research Summit invites researchers to share those results, including ASHRAE-sponsored research and research of interest to the ASHRAE community. Researchers are invited to present papers, extended abstracts, seminars, forums or participate in panel discussions. The Research Summit includes a partnership with ASHRAE's archival journal, Science and Technology for the Built Environment.
- Pathways to Net-Zero and Decarbonization
 - Decarbonization is urgently needed to slow climate change that is affecting the wellbeing of our planet. Whether it is new construction, renovation or routine maintenance, ASHRAE and its members are leading in the advancement of carbon neutral, net zero energy and decarbonization strategies in building and HVAC&R design. This track highlights: case studies and research that expand on the simple to the complex methods being developed to reduce carbon impact on the global environment; tools and resources to make zero energy design and operation more easily achievable; innovative and state-of-art technologies and strategies to achieve zero energy communities and campuses; policies and regulations, codes and standards, and utility programs for adoption and scale up of net zero (or net-positive) energy building and community initiatives.
- Future-proofing the Built Environment
 - In the face of climate change and weather extremes (hotter, colder, wetter, drier, wilder winds, wildfires, seawater rise, etc.) and energy supply disruptions and shortages, methods of designing, constructing and operating buildings and HVAC&R systems for resilience and sustainability are paramount to long-term success. This track invites papers, abstracts, seminars and forums that highlight innovative technologies and strategies that reimagine our relationship with the built environment now and into the future, including advancements in: grid resilience; thermal storage systems; demand response; HVAC systems, equipment and design strategies for extreme climates and weather (e.g., outdoor and passive cooling, water scarcity); appropriate responses to energy supply disruptions; and how all the above are tied to resilience and energy conservation efforts. Connected Buildings, Connected Communities
- Building Automation and Controls Systems
 - As sensor systems, internet connectivity, building management software and data collection become more sophisticated and ubiquitous, there are substantial opportunities to make buildings and HVAC system and equipment “smarter”, with improved security, performance, efficiency and maintenance, and better utilization of renewable energy resources, including wind and solar energy and energy storage. Submissions in this track may include IoT, cyber security, fault detection and diagnosis, big data analytics and applications, smart building, grid-enabled equipment and appliances, and HVAC design and operation for load flexibility, time-of-day practices, utility programs, etc.
- Professional Development and Education
 - We participate in ASHRAE functions for the great value of technical exchange, and also for valuable interpersonal connections and exchanges. This track is designed to provide opportunities to develop and share knowledge in the areas of presentation skills, leadership, teambuilding, understanding various business operations, interpersonal skills, etc., and an opportunity for educators to share knowledge in the teaching and education of current and future generations of professionals. It also provides a venue for presentations on the importance of ethics and benefits of diversity, equity and inclusion (DEI) in our professional and personal development. In addition to seminars, submissions to this track may lend themselves to interactive session types such as workshops, panels and forums.

CURRENT PROGRAM IDEAS

1. “How Hydronic Systems Help You Decarbonize” Pave a pathway, other Section 6 committees
 - a. Chair: Jen/Jason
 - b. Speakers: Mick Schwedler, Jessica, AEI Person

- c. Description: Differences between traditional and modern hydronic systems.

FUTURE PROGRAM IDEAS

2. "Case Studies for the Paradigm Shift"
 - a. Chair:
 - b. Speakers:
3. Reach out to Frank about STD 155P.
4. "Is Decarbonization the Latest Fad"
5. "Controls Consideration of Variable Primary Pumping" Guideline 36
 - a. Chair:
 - b. Speakers: TC 1.4, Steve Taylor
6. "Demystifying Large Speed Motors" (Chicago)
 - a. What's all this noise about?
 - b. Is it the motor?
7. "Steam System Design" (Chicago)

Tuesday, February 7, 2023 - Program Chair Training

Conference Papers – Current applications or procedures, as well as research in progress.

Extended Abstracts – 3 pages

Seminars and Workshops – PDH's, require learning objectives, AIA

Panel, Forum, Debate – Forums are "off the record", not in the virtual conference

Programs are slotted AFTER papers.

No online presenting

Sign up to be Paper Session Chair online

Handbook	Year Released	Chapters #	Chapter Title	Lead Author Info for Revisions			Use Authoring Portal
				Name	Email	Contact Info	
HVAC Systems & Equipment	2024	11	Steam Systems	Rex Scare	rexs@armstronginternational.com		Approved in TC 6.1 Main, 7/0/1 on 2/7/2023
HVAC Systems & Equipment	2024	13	Hydronic Heating and Cooling	Mark Hegberg	mhegberg@outlook.com		
				Rick Heiden	rheiden@trane.com	608-461-0689	
				Sarah Hilden	Sarah Hilden (would like to review, add as provisional corresponding member)		Add Sarah for review with Mark
				Jennifer Leach	pennst8jen@yahoo.com		
HVAC Systems & Equipment	2024	14	Condenser Water Systems	Steve Tredinnick	stredinnick@burnsmcd.com	608-287-4753	Not present
				Mick Schwedler			Add Mick for review
HVAC Systems & Equipment	2024	28	Unit Ventilators, Unit Heaters, and Makeup Air Units	Scott Fisher	sfishbmi@gmail.com	309-838-4748	Approved in TC 6.1 Main, 6/0/2 on 2/7/23
HVAC Systems & Equipment	2024	32	Boilers	Ted Duffy	tduffy@laars.com		Patrick will connect with Jason and work on it.
				Patrick Villaume	patrick.villaume@spx.com		
				Jason Atkisson			
HVAC Systems & Equipment	2024	36	Hydronic Heat-Distributing Units and Radiators	Mark Hegberg	mhegberg@outlook.com		Mark will review it.
				Rick Heiden	rheiden@trane.com	608-461-0689	
HVAC Systems & Equipment	2024	44	Centrifugal Pumps	David Lee	dlee@armstrongfluidtechnology.com	416-797-4290	David working on it.
				Stan Kutin	Stan.Kutin@xylem.com ; stan.kutin@xylem.com	847-257-9841	
HVAC Systems & Equipment	2024	46	Pipes, Tubes, and Fittings				
HVAC Systems & Equipment	2024	46	Valves	Robert (Bob) Walker	robert.walker@us.belimo.com	586-945-1198	Mark to provide comments. TC 1.4 on Controls?
				Viral Dharaiya	viral.dharaiya@haysfluidcontrols.com	704-860-3160	
				Mark Hegberg	mhegberg@outlook.com		
HVAC Systems & Equipment	2024	47	Heat Exchangers	Stan Kutin	Stan.Kutin@xylem.com ; stan.kutin@xylem.com	847-257-9841	Added Patrick & Jason for review.
				Patrick Villaume	patrick.villaume@spx.com		
				Jason Atkisson			
HVAC Systems & Equipment	2024	New (99)	Chilled Water Plant Design	Steve Tredinnick	stredinnick@burnsmcd.com	608-287-4753	Will reach out to Steve. It needs to go in HVAC Applications book, we can put it online. Next revision is 2027. Add Mick Schwedler at Trane volunteered to help Steve.
				Rick Heiden	rheiden@trane.com	608-461-0689	
Fundamentals	2025	22	Pipe Sizing	Jennifer Leach	pennst8jen@yahoo.com		
				Viral Dharaiya	viral.dharaiya@haysfluidcontrols.com	704-860-3160	

TC 6.1 HB Subcommittee
2/6/2023

Name	Affiliation	EMAIL	Member	Y/N
Viral Dharaiga	Hays Fluid controls	viral.dharaiga@haysfluidcontrols.com	Y	N
Scott Fisher	State Farm - Retiree	sfishbmi@gmail.com	Y	N
Sarah Hilden	Trane	sarahhilden@trane.com	X	N
Steve Wortmann	VICTAULIC	steve.wortmann@victaulic.com	Y	N
Jeff Farley	TD Industries, Inc	jeff.farley@tdindustries.com	Y	N
Lynndy Ruddle	Affiliated Engineers	lruddle@aeieng.com	N	Y
Jessica Mangler	Affiliated Engineers	jmangler@aeieng.com	Y	N
DAVID LEE	ARMSTRONG FLUID TECHNOLOGY	dlee@armstrongfluidtechnology.com	Y	N
BOB WALKER	BELIMO	robert.walker@us.belimo.com	Y	N
MICK SCHWEDLER	TRANE	mschwedler@trane.com	N	N
JASON ATKISSON	AFFILIATED ENGINEERS	jatkisson@aeieng.com	N	N
MARC HEGBERG	H/A.	mhegberg@coblock.com	N	N
PATRICK VILVAUME	PATERSON-KELLEY	PATRICK.VILVAUME@SPX.COM	Y	Y
Rex Scare	Armstrong International	Rexscareintl.com	Y	N

TC 6.1 Research 2/5 Meeting Notes

- Attendance sheet attached
- Old Business - can't be discussed due to the Research Chair's breakfast occurring on Monday morning. Discussion of potentially moving the Research subcommittee time to ensure information can be properly communicated.
- Copper Fittings RTAR - Mark Hegberg wants to continue moving forward. Initial feedback from Section 6 Research chair was they were concerned it may have overlap with RP-1808, but that project concerned leak tightness of refrigerant fittings as opposed to the RTAR addressing K factors for pressure losses in copper.
- WS 1812 Detection and Diagnosis of Circulating Fluid Leakage from Hydronic Systems - Zachary Siefker represented this work statement sponsored by TC 7.5 and cosponsored by TC 6.8 originally with a focus on geothermal systems and RAC asked them if it made sense to include TC 6.1 as part of a broader focus on hydronic systems. Jason Atkinson and Mark Hegberg volunteered to review it and provide feedback by the Amin committee meeting.
- No new research projects proposed.

Research Chair's breakfast 2/6 Notes

- RAC is spending money again, and is encouraging us to submit projects. However, nothing has changed with the backlog of funding previous projects we have been involved in.
- RP 1196 still won't die. TC 6.1 has previously agreed to remove it from our list. Section 6 Research chair asked us to provide a disposition form that will hopefully finally accomplish that.
- WS 1812 TC 6.8 voted to not cosponsor this work statement.

Deadlines

- March 15 RAC Spring Meeting for April consideration
- May 15 RAC annual meeting for Jim consideration
- Aug 15 RAC Fall meeting consideration in Sep/Oct
- December 15 RAC Winter meeting consideration in January



Project: _____
 Subject: _____
 Date: _____

Job No: _____
 Page: _____
 By: _____

TC Co.1 RESEARCH / PROGRAMS /			MEMBER?	YES
NAME	AFFILIATION	EMAIL		
JEN LEACH	BR+A	fernstejen@ yahoodom	Y	N
DAVID LEE	ARMSTRONG	dlee@armstrongfluid technology.com	Y	N
Rex Seare	Armstrong Intl	Rexse@armstrong international.com	Y	N
BOB WALKER	BEUMO	robert.walker@ us-beumo.com	Y	N
JESSICA MANGLER	AEI	jmangler@aeieng. com	Y	N
Lynndy Ruddell	AEI	lruddell@aeieng.com	N	Y
Sarah Hilden	Trane	sarah.hilden@ trane.com	Y	N
Ted Duffy	LAARS	ted.duffy@gmail.com	Y	Y
JASON ATKISSON	Affiliated Engineers	jackisson@aeieng.com	Y	N
STEVE WORMANN	ULTAULIC	steve.wormann@ victaulic.com	X	N
MARK HEEBERG	ME!	mheeberv @outlook.com	Y	N
Zachary Siefker	A.O. Smith	Zachary.siefker @gmail.com	N	Y
Joseph Rendell	ORNL	Rendell3D@ornl.gov	N	N
Gang Wang	University of Miami	g.wang@miami. edu	N	N
PAUL CLANNVILLE	GTI Energy	pclannville@gti.energy	N	N
Scott Fisher	State Farm Retired	Sfishbom@gmail.com	Y	N

TC 6.1 Liaison Report – Task for Building Decarbonization (TFBD)

The TFBD meeting was on Sunday, February 5th and I attended as TC 6.1's liaison.

1. TFBD Objectives
 - a. Expedite the delivery of technical resources that help design engineers deliver and operate low-carbon buildings
 - b. Coordinate joint building decarbonization initiatives with other organizations deemed beneficial to ASHRAE's building decarbonization work
 - c. Project and publicize ASHRAE's decarbonization work globally to establish ASHRAE's leadership positions, in partnership with the Society marketing team
 - d. Facilitate and oversee the work of Task Force subcommittees to ensure decarbonization goals are accomplished within the established timeframes
 - e. Coordinate Task Force work with ASHRAE councils
 - f. Coordinate with and assist with the Planning Committee
 - g. Provide a comprehensive plan for integrating building decarbonization activities into the ASHRAE structure
2. Products & Services Update:
 - a. ASHRAE/ DOE Collaboration efforts
 - i. Framework for GHG Emission Reduction Planning: Building Portfolios
 - ii. GHG Emissions Reduction Audit: A Checklist for Owners
 - b. ASHRAE Standard 211 - Standard for Commercial Building Audits
 - i. Draft Informative Annex H - includes emissions/carbon
 - c. Updates for the Decarb Website
 - i. New Building Performance Standard is now available
 - d. A certification for a Building Decarbonization Professional is in the works.
 - e. Multiple courses have been released / are in progress.
 - i. Decarb 100 Series
 1. Intro Whole Life Carbon
 2. Steps to Decarb Deeper Dive
 3. Intro to Cold Climate Decarb
 4. Intro to Efficient Electrification
 - ii. Decarb Guide Training 200 Series
 1. BPS
 2. Decarbonizing
 - iii. Full Day courses
3. Operational Subcommittee
 - a. 7 guides to be developed
 - b. 6 Working Groups (WG)
 - i. BPS: A Technical Resource Guide
 1. **Available NOW**
 - ii. Grid Interactive Buildings for Decarbonization: Design and Operation Resource Guide
 1. Planned completion: September 2023
 2. Contractor developed guide
 - iii. Whole Life Carbon Guide for Building Systems
 1. WG is writing the guide
 2. Planned completion: June 2023
 3. Looking for members to assist

- iv. TM65 for North America
 - 1. TM65 was written by CIBSE
 - 2. WG is writing the guide
 - 3. Will be published by CIBSE
- v. Decarbonizing Hospital Building
 - 1. Contractor developed guide
 - 2. Developed in conjunction with ASHE
 - 3. Planned completion: March 2024
- vi. Building Decarbonization for Retrofits for Commercial and Multi-Family Buildings
 - 1. Contractor developed guide
 - 2. Planned completion: May 2024
- vii. Heat Pump Application, Design, and Operation Guide
 - 1. Contractor developed guide
 - 2. Planned completion: May 2024
- 4. Collaboration with ULI on Heat Pump Myth-Buster
 - a. Urban Land Institute (ULI) - cross-disciplinary real estate and land use experts
 - b. TFBD to work with ULI for an 8-10 page "Implementing Heat Pumps in Commercial Real Estate: A Myth-Buster"
- 5. Updating the ASHRAE Terminology database with terms being used in Decarbonization
 - a. About 15 definitions were added
- 6. GAC Building Electrification PPIB
 - a. Balanced engineering-based public policy issue brief
 - b. Approved at this meeting
- 7. Embodied Carbon in Building Systems
 - a. ICC and ASHRAE will collaborate to develop a Whole Life Carbon Approach Standard
 - i. Requires more data on calculating embodied carbon
 - b. Product Category Rules (PCR) do not exist for most HVAC systems and components
 - c. Environmental Product Declarations (EPD): IRA includes \$250M to improve this
- 8. Standards:
 - a. Standard 211 - Commercial Building Energy Audit Standard
 - i. Developing an Informative Appendix to add carbon audit
 - ii. Planning to reconvene Standard 211 to incorporate both energy and GHG reduction audit
 - b. Standard 240P
 - i. New ASHRAE/ICC Standard
 - ii. Evaluating GHG Emissions in building design, construction and operation
 - iii. Reviewed and edited the seed document to expedite standard development
- 9. Building Industry Collaboration
 - a. Currently includes:
 - i. AIA, ASHRAE, BOMA, IFMA, ULI, USGBC
 - ii. All have local chapters in major cities nationally/globally
 - b. Interest from DOE and EPA was strong
 - c. Organizations span the building value chain
 - d. Group is meeting monthly
 - e. Identified existing buildings as the largest challenge
 - f. Potential areas of focus:
 - i. Workforce education and training
 - ii. Next generation workforce recruiting
 - iii. Support for local government program

