ASHRAE TC 6.9 – Thermal Storage
Main Committee Meeting Minutes
ASHRAE Winter Conference – Las Vegas, Nevada
Hybrid Meeting (In-Person and Virtual)
Date: February 2, 2026, 2:30 – 5:30 PST

Attendees

Attendance was recorded via in-person sign-in sheets and the virtual meeting platform.

In Person

Stan Nabozny
Bruce Lindsay
Mark MacCracken
Geoff Bares
Mike Filler
Frank Morrison
Brent Kovash
Rick Heiden
Amy Van Asselt
Farzin Rad
Brian Boyce
Blair Hawn
John Suster
Laura Collazo Caballero
Min Che
Casey Troxler
Hayes Zirnhelt
Jimmy Tancabel
Ryan McMahon
Aurora Furlan
Jared Williams
Erin Bladen
Sofia Paramo Martinez
Reda Djebhan
Hiroei Mikami
Rich Kooy
Cameron Leith
Charles Colson
Jorge Felipe Castellon
Vassa Guillermo Lisandro

Beth Hontz
Petros Paloumas
Lucas Roy
Kunal Bansal
Ana Amaral
Vaughn Engler
Eric Nelson
Wayne Borrowman
Shuang Cui
John Dunlap
Saron Sultan
Hamid Ikram
Andrew Fix
Irvin Rodriguez
Matt Schnepf
Matthew Muldo
Lingnan Lin
Tiany Yang
Laura Whelan
Claire Drew
Oliver Buechse
Steve Harrison
Ivan Thomas

Attendees online:

Ryan, Bill
Henry Becker
Patrick MacCormac
John Andrepont
Jimmy Tancabel (UMD)
Huylo, Michael
David Boone
Tianyu Yang
Sara Sultan Aqib
Lucas Roy
Robert Bean
Charles Dorgan
Victor Braciszewski
John Sustar
Robert Bean
Dr. Rana Veer Singh

Preliminaries

The meeting was called to order by Stan Nabozny (Secretary, TC 6.9), acting on behalf of the committee leadership. Stan noted that due to recent U.S. Department of Energy restrictions, national laboratory staff were unable to attend the ASHRAE Winter Conference, either in person or virtually. As a result, several subcommittee chairs and liaisons were not present, and written updates would be used where applicable.

The TC 6.9 Purpose Statement was read, reaffirming the committee's scope covering thermal energy storage technologies. The ASHRAE Code of Ethics Commitment was read.

Meeting housekeeping items were reviewed, including audio controls for virtual participants and attendance tracking.

Introductions were then conducted for in-person attendees followed by virtual participants.

Stan confirmed that a quorum of voting members was present – 6 of 8 members.

Establishment of Quorum

Voting members present:

Members Present	**Role**	
Stan Nabozny	Secretary	**VM**
Ivan Thomas		**VM**
Farzin Rad		**VM**
Geoff Bares		**VM**
Mike Filler		**VM**
Sandra Boetcher		**VM**

Voting members not present:

- Emishaw Iffa
- Jason Woods

A quorum is established with 6 out of 8 voting members present.

Approval of Prior Meeting Minutes

Stan Nabozny requested comments or corrections to the minutes from the previous TC 6.9 meeting held in Phoenix, Arizona. No comments or corrections were raised.

A motion to approve the prior meeting minutes was made by Bruce Lindsay and seconded by John Dunlap. The motion passed unanimously with no objections or abstentions.

Chairs Breakfast Summary

- Stan Nabozny summarized key announcements from the TC/TG/TRG Chairs Breakfast. He noted that presentation materials from the breakfast would be posted to Basecamp for reference.
- Stan announced that beginning after the 2026 Winter Conference, ASHRAE will no longer provide in-person meeting rooms for subcommittees. Subcommittee work will continue in a virtual format, while TC-level meetings will remain in person.
- Stan introduced a Research Committee questionnaire intended to gather feedback on increasing technical committee participation in ASHRAE research activities. He explained that the Research Advisory Panel (RAP) typically funds approximately $2–3 million annually across 40–50 active research projects, with additional funding mechanisms available for special projects.
- Conference statistics were reviewed. Stan reported that 175 session proposals were submitted for the Las Vegas Winter Conference, of which 85 were accepted. Despite the absence of DOE and NREL participants, only three sessions were cancelled.
- Stan reiterated that Basecamp remains the primary communication and document repository for TC 6.9 and requested that members not yet enrolled provide their contact information.

Liaison Reports

TC 6.2 (District Energy) Liaison Report – Summary

Geoff Bares, Chair of TC 6.2 – District Energy, provided an update highlighting several areas of relevance to TC 6.9.

On the standards front, Geoff reported that TC 6.2 is actively developing a new district energy standard, SPC 245. The standard is still in an early phase and currently consists of a skeleton framework, but it explicitly includes a section on thermal energy storage. Geoff noted significant cross-pollination between TC 6.2 and TC 6.9, with shared membership helping ensure appropriate technical representation as the standard develops.

Regarding publications, Geoff noted that the District Heating Design Guide is outdated and that TC 6.2 is initiating the process to update it through the E-CAR (Electronic Change Authorization Request) process, similar to how funded publication updates are handled. He also noted that portions of the District Cooling Design Guide are stale. In parallel, the Center for Excellence in Building Decarbonization has begun discussing a district cooling decarbonization guide. As a result, TC 6.2 has discussed the possibility of merging these efforts into a single, comprehensive District Energy Design Guide, which would prominently feature thermal energy storage. Geoff stated that TC 6.9 would be kept informed as this effort progresses.

On the research front, Geoff reported that a co-sponsored research work statement on district cooling distribution (with TC 6.9) has received review comments. TC 6.2 is addressing those comments and plans to resubmit the work statement to RAC in March. If approved, the project would proceed into active research.

Finally, Geoff noted that TC 6.2 has preemptively approved support for TC 6.9 programming activities. He referenced ongoing coordination with Bruce Lindsay, as well as discussions with Austin Energy and The University of Texas at Austin regarding potential conference presentations and a technical tour at the Austin meeting. Geoff noted that a TC 6.2 member serves on the Austin conference organizing committee and is exploring the possibility of making the tour an official ASHRAE conference tour, rather than an informal or "pop-up" tour.

IDEA – John Andrepont

The International District Energy Association (IDEA) is an industry association of over 500 organizations and ~3,000 members. The membership includes: District Energy Utilities; Physical Plant and Utilities Personnel from University, Medical, and other District Energy Facilities; Equipment Manufacturer/Suppliers; Service Providers to the Industry; other District Heating & Cooling Associations; plus Government, Student, and other Personal members.

IDEA publishes a quarterly magazine, entitled *District Energy*.

IDEA has two major conferences each year (one focused on campus District Energy systems and one focused on commercial thermal utility District Energy systems), as well as smaller workshops on subjects such as marketing and thermal distribution, plus occasional regionally-focused or technology-focused conferences. Each major conference also focuses on integrating Combined Heat & Power (CHP) and Thermal Energy Storage (TES) with District Energy.

Upcoming IDEA conferences include:

- 39th Annual Campus Energy Conference, Workshops & Trade ShowFebruary 17-20, 2026 – National Harbor, MD (Washington, DC area)
- 117th Annual Conference, Workshops & Trade Show June 23-26, 2026 – Ottawa, Ontario, Canada
- 40th Annual Campus Energy Conference, Workshops & Trade Show February 16-19, 2027 – San Diego, CA
- 118th Annual Conference, Workshops & Trade Show summer, 2026 – dates and location to be determined
- 41st Annual Campus Energy Conference, Workshops & Trade Show February 21-24, 2028 – Aurora, CO

For further information on IDEA, contact:

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Robert Bean asked whether TC 6.9 currently maintains liaisons with TC 6.5 or TC 7.4. Stan Nabozny responded that no formal liaisons are currently assigned. Robert Bean expressed interest in serving as a liaison, particularly with respect to radiant systems and concrete used as thermal storage. Stan welcomed the offer and indicated follow-up would occur prior to the next meeting.

STD 90.1 – Amy Van Asselt

Amy Van Asselt provided an update on her work with SSPC 90.1 over the past year, focused on revisions to the energy credit framework within the standard.
Amy reported that two related addenda were developed and published:

- Addendum CA, which establishes the updated energy credit framework, was originally published in July and subsequently updated in December. This addendum formalizes the revised structure for energy credits within Standard 90.1.
- A second addendum specific to thermal energy storage expanded the energy credit framework to explicitly include heating thermal energy storage, in addition to cooling applications.

Amy explained that, as a result, the energy credit system has been significantly expanded and revamped, with applicability to both heating and cooling thermal energy storage technologies.
She noted that this work connects directly to current efforts led by Frank Morrison, who is seeking input from TC 6.9 to further expand how thermal energy storage is incorporated into Standard 90.1. Amy referenced related conference programming, including recent sessions on thermal energy storage and ice-to-heat technologies, where questions were raised about how thermal energy storage could be further integrated into Standard 90.1 in future cycles.
Amy concluded by noting that publication of the thermal energy storage addendum was challenging for a period but confirmed that it has now been officially published.

TC 6.9 wants to thank to Amy Van Asselt for her contributions as Liaison to STD 90.1. Your attention to detail and support of TC 6.9 is greatly appreciated.

Congratulations to Sandra Boetcher who volunteered to roll on as TC 6.9 Liaison to STD 90.1.

Frank Morrison informed the committee that he serves on SSPC 90.1, specifically the Thermal Storage Working Group, which is beginning work on the 2028 edition of the standard. He stated that the working group is seeking to improve and expand the requirements for thermal energy storage within Standard 90.1.
Frank requested volunteers from TC 6.9 to:

- Participate in the Thermal Storage Working Group,
- Provide technical input on thermal energy storage applications and performance

Stan Nabozny mentioned that there was an active request looking for volunteers and at the end of the week he would forward them on to Frank. The volunteers are:

- **Souvik Roy, PhD**
- **Dr. Rana Veer Singh**
- **Victor Braciszewski**
- **Ben Simon**
- **Hayes Zirnhelt**

Training and Education / TC 2.5 Liaison
John Nix was not present; no report provided

LEED v5 – Ian LaHiff was not present

Standards

John Dunlap led discussion on standards-related activities. He noted that SPC 150 has been completed and published.

Discussion continued regarding SPC 233, including challenges related to participation and leadership continuity, exacerbated by DOE travel restrictions. Stan Nabozny stated that he would follow up directly with SPC 233 leadership to determine next steps and assess committee continuity.

Technical subcommittee TSC C440.1 is planning to release this March / April for public review the draft CSA / ANSI C440.1 "Performance Standard and Test Protocols for Building Thermal Energy Storage Systems - Part 1: Thermal Storage Devices with Electrical Input and Thermal Output". We will inform ASHRAE TC 6.9 when the draft goes public to get feedback from the TC 6.9 membership

There will be shortly a CSA TC 444 call for participation to form a new CSA technical subcommittee TSC C440.2 to start the development of CSA / ANSI C440.2 "Performance Standard and Test Protocols for Building Thermal Energy Storage Systems - Part 2: Thermal Storage Devices with thermal Input and Thermal Output"; which include thermal storage heat pump integrated equipment.

The TES Standards Committee published the second edition of TES-1, Safety Standard for Thermal Energy Storage Systems: Molten Salt in December 2023. The Committee last met on January 26, 2026 and is finalizing the revisions for the next edition, which is scheduled for publication in 2026.

The TES-2 Committee is a subordinate committee that reports directly to the TES Standards Committee and is working on developing the second standard in the TES series for phase change TES systems. They meet every 4-6 weeks to work on the initial draft of the standard.

Programs

Bruce Lindsay, Programs Subcommittee Chair, provided a detailed update on TC 6.9 conference programming.

2026 Winter Conference, Las Vegas (January 30 – February 4, 2026)

The committee reviewed conference programming activities for the 2026 Winter Conference in Las Vegas. It was reported that three technical sessions were submitted to the Conference and Exposition Committee (CEC). Of these submissions, two sessions were approved and one session was not accepted.

One approved session, titled "Decarbonizing Buildings in Cold Climates without Electric Resistance Heating—Use Ice Instead!", was scheduled for Monday, February 2 at 8:00 AM PST. Presentations in this session included:

- Rick Heiden (Trane), presenting on a surface-source heat pump (SSHP) project in La Crosse, Wisconsin;
- Gina Severad, JBB, a presentation on retrofitting an existing ice storage system for heating at 55 Water Street (presenter to be confirmed);
- Blair Hawn (IMEG), presenting on a hybrid ground-source heat pump (GSHP) and surface-source heat pump system installed in a Michigan laboratory facility.

The second approved session, titled "Utilizing Low-Grade Hot Water for Space Heating—New Advances", was scheduled for Sunday, February 1 at 11:00 AM PST. Presentations in this session included:

- John Suster (Trane), discussing a thermal branch connector application;
- Gina Severad, JBB, presenting on the 55 Water Street project;
- Andrew Jenkins (Trane), presenting on cascaded heat pump systems.

The committee also discussed a previously proposed session titled "Thermal Storage in Orlando", noting that further review would be needed to determine whether the session should be resubmitted with revised presenters.

In addition, the committee identified other conference sessions that, while not sponsored by TC 6.9, may be of interest due to their relevance to thermal energy storage. These included sessions on demand flexibility control strategies and the impact of the evaporative cooling moratorium, both scheduled for Monday, February 2 at 8:00 AM PST.

A last-minute abstract was submitted for consideration as an AHR Public Session. Proposed topics included:

- An update on federal tax credit changes under the "One Big Beautiful Bill," noting that thermal energy storage and ground-source heat pumps remain unaffected through 2033;

- Discussion of the evaporative cooling moratorium in Southern Nevada, including incentives such as 50% tax credits for ice storage systems and a 50% rebate for replacing water-cooled chillers.

It was noted that the submission was made very late in the process, but the committee agreed it was worth submitting despite the timing.

2026 Summer Conference, Austin (June 26 – July 1, 2026)

The committee discussed preliminary planning for the 2026 Summer Conference in Austin, noting that potential sessions were reviewed during the January 21 virtual meeting.

A proposed session focused on thermal energy storage in Texas was discussed. Potential topics and presenters for this session included:

- The University of Texas at Austin, highlighting a 66,000-ton chilled water storage system;
- Austin Energy, presenting on its thermal energy storage rebate program and district cooling systems;
- Possible case studies involving Austin Independent School District and the Houston Medical Center.
  It was noted that this session could be co-sponsored with TC 9.7 (Educational Facilities).

A second proposed session, titled "New Entrants in the Thermal Energy Storage Market," was also discussed. Potential participants included:

- Carrier, invited to present on a new residential heat pump with a dedicated battery, though no response had been received at the time of the meeting;
- Rebound Technology, presenting on ice slurry thermal storage;
- Nostromo Energy, presenting on small ice storage containers designed for improved volumetric efficiency;
- Thermal Energy HQ, presenting on thermal storage systems for domestic hot water in apartment buildings.

A third proposed session was discussed, with committee members invited to contact the Programs Subcommittee with suggestions.

The committee agreed that session proposals would be prioritized during the TC 6.9 full committee meeting on February 2, with a target date to submit finalized sessions to CEC by February 28.

2027 Winter Conference, Chicago (January 23 – 27, 2027)

Initial discussion took place regarding potential topics for the 2027 Winter Conference in Chicago. Identified candidate topics included:

- A surface-source heat pump application at the University of Michigan Innovation Center in Detroit, involving Affiliated Engineers;
- A thermal energy storage installation at a Walmart distribution center in Costa Rica, which received a Region XII Technology Award.

Multiple participants emphasized the importance of including data center and industrial refrigeration applications in future programming.

Utility Conference Working Group

Stan Nabozny reminded the committee that a sub-working group under the Programs Subcommittee was formed to develop technical abstracts for external conferences and audiences outside of ASHRAE, with a particular focus on utility and load-management organizations.

Stan reported that the working group completed its first external abstract, which was submitted to and presented at PLMA (Peak Load Management Alliance). The abstract was developed to introduce utility audiences to the full range of thermal energy storage applications, recognizing that most utility stakeholders are familiar only with ice storage in large commercial buildings and have limited awareness of other TES technologies, despite the technology having been deployed for more than 30 years.

The PLMA abstract included perspectives from multiple thermal energy storage applications, including:

- Industrial thermal storage using solar and producing steam
- Ice storage in large commercial buildings,
- Small commercial and residential heat based thermal storage systems,
- Refrigeration-based thermal energy storage.

Stan stated that this effort represents the first coordinated effort of such a diverse panel of TES providers for utilities.

Stan then identified the members of the Utility Conference Working Group:

- Bruce Lindsay
- Brett Kovash
- Jim Koontz
- Brian Boyce (Energy Solutions)
- Kyle Gusenkab (NREL)

- Ben Simon

Stan noted that the completed abstract will be reused and adapted for additional external conferences, and that the working group plans to meet again to develop a second abstract. The group's goal is to produce approximately two external abstracts per year, which can then be repeated across multiple utility-focused conferences and forums to improve awareness of thermal energy storage and its diverse value propositions.

Handbook

The Handbook Subcommittee discussion was conducted by Stan with notes provided by Navin Kumar who could not attend due to DOE restrictions.

Schedule and Key Deadlines

Stan reaffirmed the primary ASHRAE deadline of March 29, 2027, by which a reviewed and finalized draft must be submitted to the ASHRAE Handbook Liaison Officer.

Several internal milestones were outlined to support this deadline. The committee intends to complete a draft suitable for TC 6.9 review and formal voting at the ASHRAE Annual Conference in Austin, Texas. To support this, a working group is currently forming to develop the handbook content and prepare recommendations for committee action at the Austin meeting. Following the Austin Conference, the working group will focus on finalizing the submission for delivery to ASHRAE in March 2027.

It was emphasized that this effort represents a significant workload and should not be considered a minor or routine update.

Stan noted that Navin's continued ability to serve as subcommittee chair depends on Department of Energy travel and participation restrictions. Navin is asking the DOE whether he can continue to lead the handbook effort.

New Handbook Content and Contributors

Stan reviewed proposed new handbook content and confirmed that the following submissions are already completed:

- Brent Kovash is developing content related to Electric Thermal Energy Storage, with his submission already in progress.
- Stan Nabozny has submitted content related to Thermal Energy Storage for Refrigeration.

Farzin (GTI) was noted as having previously expressed interest in contributing to Geothermal Energy Storage content; however, it was clarified that this contribution would be deferred to a future handbook cycle.

Stan also clarified that a separate handbook chapter under TC 6.8, focused on Applied Pumps and Heat Recovery Systems, includes references to thermal storage but requires updating in the next cycle.

Review Support and Volunteers

Stan discussed Navin's request for two additional advisors to support the review effort and work with the subcommittee chair.

- **Brian Boyce, Rick Heiden, Mike Filler** and **Jimmy Tancabel** volunteered to assist with review of the handbook material. Thank you!

Research

TC 6.9–Led Research Activities

Jason Wood's notes on TC 6.9 research activities were reviewed by Stan during the meeting.

It was reported that TC 6.9 currently has no active TC-led research projects.

The committee reviewed a potential Research Topic Acceptance Request (RTAR) focused on analyzing the potential for thermal energy storage (TES) in data centers. The primary research question discussed was:

"In what scenarios are TES systems economically favorable for inclusion in data center applications?"

The points of contact for this effort are Chuck Booten (NREL), a Corresponding Member of TC 6.9, and Jason Woods (NREL). It was noted that this RTAR would likely request co-sponsorship from TC 9.9 (Mission Critical Facilities, Data Centers, Technology Spaces and Electronic Equipment).

The committee was asked whether there were any objections to coordinating with TC 9.9 on this effort. No objections were raised, and general agreement was expressed that coordination with TC 9.9 would be appropriate given the application space.

A discussion followed regarding the pros and cons of pursuing this RTAR. It was noted that data center technology is evolving extremely rapidly, potentially outpacing the pace of the ASHRAE research approval and execution process. Concern was expressed that a traditional RTAR scope may become outdated by the time the research is awarded.

It was further noted that an RTAR is not a special project, and that typical RTAR funding levels (on the order of $80,000 to $100,000) may limit the depth and usefulness of the research for such a complex and fast-moving topic. As a result, the committee discussed whether this topic might be better suited as a special project rather than a standard RTAR.

No decision was made at this time, and the discussion was intended to provide feedback to Jason Woods for further consideration.

Co-Sponsored Research and Work Statements

The committee reviewed the status of co-sponsored research work statements involving TC 6.9.

For TC 6.8 – Work Statement 1953, titled "*Evaluation of Ground-Source Heat Pumps Integrated with Diurnal Thermal Energy Storage for Residential and Commercial Buildings,*" it was reported that:

- TC 6.9 voted to co-sponsor the project in March 2025;
- TC 6.8 submitted the work statement to the Research Administration Committee (RAC) and received review comments;
- TC 6.8 has not yet responded to RAC's comments, though updates are reportedly in progress.

It was noted that inquiries were made during the meeting to TC 6.8 representatives, and that coordination is ongoing between Matt Mitchell and Xiaobing Liu (National Laboratories) to address the outstanding comments. The committee noted that this project is close to moving forward, pending resolution of the remaining comments.

For TC 6.2 – Work Statement 1960, titled "*Operating Cost, Energy, and Carbon Saving Benefits of Pre-Cooling in District Energy Systems,*" it was reported that:

- TC 6.9 voted to approve co-sponsorship in June 2025;
- TC 6.2 submitted the work statement to RAC and received review comments;
- One outstanding comment remains, requiring coordination and documentation from the proposed pilot site.

It was reported that TC 6.2 is actively addressing RAC's comments, with the intent to submit a revised work statement in March, allowing the project to move forward for approval and bidding in the spring. Jamie Fine (WJS Energy) remains the point of contact for this effort.

Other Research Concepts and Forward-Looking Topics

The committee discussed additional research ideas previously identified, noting limited updates at this time.
Behnam Sadri proposed a complementary research direction focused on low-temperature thermal storage for gas-driven heat pump systems, emphasizing opportunities for peak natural gas demand reduction and cross-fuel system optimization. This will be passed onto Jason Woods and the research subcommittee.

A potential opportunity was identified to co-sponsor work with the refrigeration technical committee following development of a position statement on the decarbonization of the cold chain. It was noted that position statements typically precede standards or research efforts. If approved, this could open the door for collaboration from a thermal energy storage perspective with the refrigeration committee.

Other topics discussed previously but without new developments included:

- Thermal energy storage in equipment (TC 8.11);
- Active recharging of geothermal systems;
- Testing of phase-change materials, related to SPC 233.

No formal actions were taken on these topics during the meeting.

Solicitation of Additional Research Ideas

The committee invited members to propose additional future RTAR ideas or research concepts. Members were encouraged to share suggestions, which would be captured and forwarded to Jason Woods as part of the meeting follow-up.

Behnam Sadri (Enbridge Gas) proposed a potential research topic on low-temperature thermal storage materials compatible with gas-driven heat pump systems. He agreed to submit a written summary for consideration by the Research Subcommittee.

No additional research topics were raised during the meeting.

Old Business

Stor4Build Update from Kyle Gluesenkamp post meeting

The consortium continues operating with research at four national labs - ORNL, NLR (formerly NREL), LBNL, and PNNL. The consortium has six committees: two steering councils that are meeting regularly, and four task groups. The committees are run by volunteers from industry and academia, with support from the national labs. An annual

meeting wasn't held in 2025 and newsletters are on hold. For more information see the website.

Section 48E Tax Credit Update

Mike Filler provided an update on Section 48E clean electricity investment tax credits as they relate to thermal energy storage.

Mike reported that, since the last update provided approximately six months earlier, there have been no major changes to Section 48E incentives affecting thermal energy storage. He noted that the "One Big Beautiful Bill", which was enacted on July 3 of the previous year, did not introduce any adverse changes to the tax treatment of thermal energy storage. In contrast to other technologies, the legislation preserved the existing investment tax credit structure for thermal energy storage, including credit levels in the 30%–40%–50% range, depending on project qualifications.

Mike explained that while the legislation introduced new provisions related to foreign entities of concern, implementation of those rules has been delayed, in part due to government shutdowns and administrative delays at the U.S. Treasury Department. He stated that these requirements are not expected to materially impact most thermal energy storage projects, as TES systems are generally sourced with domestically manufactured components. He noted that the foreign entity restrictions are expected to have a greater impact on technologies such as solar panels, which also qualify for Section 48 incentives.

The committee emphasized that the preservation of favorable tax treatment for thermal energy storage represents significant positive news, particularly given that incentives for solar and wind were reduced under the same legislation. It was noted that thermal energy storage was explicitly identified as a beneficial technology and maintained within the incentive framework. Members discussed that this information is not widely understood and that increased outreach and education would be valuable.

The discussion concluded with acknowledgment that these incentives create strong tailwinds for thermal energy storage deployment through approximately 2031, and that the committee should continue to communicate these benefits to stakeholders.

Tax Credits to be included in the Handbook

The committee discussed whether to include a limited discussion of federal tax incentives in the ASHRAE Handbook, specifically within the Economic Drivers section, following prior discussion in the Handbook Subcommittee.

It was noted that Section 48E federal tax credits represent a significant economic driver for thermal energy storage deployment in the United States and can materially affect system design decisions. The committee discussed recent changes in IRS interpretation related to eligibility, particularly the distinction between dedicated thermal storage equipment and dual-use HVAC equipment, where only incremental costs may qualify for

the tax credit. It was noted that this distinction has important implications for system design and should be clearly understood early in project development.

The committee discussed concerns regarding:

- Eligibility and interpretation risk, which can change over time;
- The need to avoid dated or overly prescriptive tax guidance in a handbook updated on a multi-year cycle;
- The importance of clearly stating that engineers are not tax advisors and that projects should engage qualified tax professionals.

Multiple members expressed support for including a brief, high-level statement acknowledging the existence of major federal incentives, without attempting to provide detailed tax calculations or compliance guidance. The consensus view was that the handbook should:

- Include a short, general discussion of incentives as an economic driver;
- Avoid jurisdiction-specific prescriptions where possible;
- Reference external sources for up-to-date tax and incentive information;
- Emphasize that eligibility and valuation must be confirmed with tax advisors.

Examples were discussed as a possible explanatory tool, but it was agreed that any such examples should remain illustrative only and not constitute guidance.

After discussion, the Chair asked whether there was consensus to include a brief incentives statement in the Economic Drivers section of the Handbook. The committee agreed that this approach appropriately balanced usefulness with risk of obsolescence.

Motion and Action

A motion was made and seconded to add a brief, high-level discussion of federal tax incentives (including Section 48E) to the Economic Drivers section of the ASHRAE Handbook, with appropriate disclaimers and references.

- **Motion:** Passed unanimously by voting members present (6–0).
- **Opposed:** None
- **Abstentions:** None

Action:
The Handbook Subcommittee will draft a high level brief contribution for inclusion in the Economic Drivers section, emphasizing:

- The material impact of incentives on TES economics,
- The need for early coordination with tax advisors,
- References to external sources for current eligibility and requirements.

- Mike Filler volunteered to lead this effort as he is also in the handbook subcommittee

Timing: Draft to be prepared in advance of the Austin Annual Conference for TC 6.9 review and vote.

DTG (Decarbonization Task Force) – Bruce Lindsay – ASHRAE Building Decarbonization Conference (Chicago)
It was reported that TC 6.9 participated in the ASHRAE Building Decarbonization Conference in Chicago through the Center of Excellence on Building Decarbonization. The committee contributed a three-part panel presentation that addressed:

- Thermal energy storage in Cold Storage Warehouses
- Electrified transport refrigeration units (E-TRUs), including a 51-foot refrigerated trailer equipped with solar generation and onboard thermal storage,
- Carbon credits and carbon accounting considerations.

The session was described as very well attended, with the room full and the presentation noted as one of the stronger sessions at the conference. The audience was described as broad and multidisciplinary, including architects, government representatives, accountants, and other non-traditional ASHRAE stakeholders. The committee noted that this conference provided valuable exposure to audiences that do not typically engage with thermal energy storage through technical committee activities.

Proposed US-EU Battery Project from USTR - Steve Hammerling has sent review comments to ANSI and has requested further information and documents to be passed along to the TC to further review for interest in engagement.

New Business

Peak Load Management Alliance (PLMA) – Stan Nabozny

The committee briefly revisited the Peak Load Management Alliance (PLMA) conference, where TC 6.9 organized a panel featuring four companies represented on the committee. The panel was designed to introduce utilities to the industrial, commercial, and refrigeration applications of thermal energy storage.

It was reported that, prior to the session, the utility audience was polled on ten potential Industrial load-management strategies and asked to rank their desire to learn more. The audience ranked heat based and cold based TES 1 and 2 as their top interests.

This result was noted as particularly significant, given that many participants initially indicated little or no understanding of thermal energy storage technologies. The outcome reinforced the value of targeted education for utility audiences. There is interest in repeating this panel format at additional utility-focused conferences.

Thanks were extended to **Mike Filler**, **Paul Steffes and Jim Koontz** for their contributions to a successful session.

Association of Energy Services Professionals (AESP) – Bruce Lindsey

The committee discussed engagement with the Association of Energy Services Professionals (AESP) as an important avenue for advancing thermal energy storage adoption. It was noted that, while utilities often set program objectives, energy service professionals and contractors are typically responsible for implementation and therefore play a critical role in technology adoption.

The discussion highlighted that much of the current AESP focus has been on demand response, residential load control, and smart thermostat programs, with limited awareness of thermal energy storage solutions. It was noted that many professionals in this space are relatively new to the industry and may have limited exposure to thermal energy storage, despite the technology having been deployed for decades.

It was reported that upcoming AESP conferences are planned for Indianapolis (February) and Toronto (summer). Bruce Lindsay was thanked for his presentation efforts at AESP events, which were described as well received.

The committee discussed the potential value of establishing formal liaison relationships with organizations such as PLMA and AESP to strengthen ongoing collaboration and information exchange.

Membership Committee Discussion

The committee discussed the idea of forming a TC 6.9 Membership Subcommittee, with a specific focus on strengthening connections to utilities and external organizations and improving engagement with prospective members.

It was suggested that a membership subcommittee could take responsibility for outreach to utilities, research organizations, and related industry groups, helping to network TC 6.9 more effectively with external stakeholders. It was noted that several committee members already have strong utility connections and could assist with introductions if such a committee were formed.

The discussion emphasized the importance of encouraging greater participation, including:

- Attendance at TC 6.9 meetings (in person or virtual),
- Engagement in subcommittee work,
- Progression from corresponding or provisional membership to more active roles within the committee.

Several members shared perspectives on current engagement challenges. It was observed that utilities have historically had varying levels of participation at ASHRAE meetings, with organizations such as EEI and EPRI identified as potential stakeholders for future engagement. The refrigeration committee was cited as an example of effective use of liaison participation, including remote and in-person presentations at winter meetings.

Based on the discussion, no action was taken, and the idea of forming a membership committee was tabled for future consideration. The chair noted that the topic could be revisited if interest increases or if engagement challenges persist.

Honors and Awards – Mike Filler

Mike Filler led the Honors and Awards portion of the meeting and formally volunteered to assume responsibility for the TC 6.9 Honors and Awards Subcommittee, transitioning this role from Blake Ellis. The committee acknowledged and thanked Mike for taking on this responsibility.

Society Awards and Recognition

Mike began with several reminders and recognitions related to ASHRAE Society awards. He asked by show of hands whether any members present were recipients of the Exceptional Service Award or the Distinguished Service Award, and thanked those individuals for their service.

Mike briefly explained the ASHRAE service award point system, noting that:

- The Distinguished Service Award typically requires approximately 15 service points.
- The Exceptional Service Award typically requires approximately 45 service points.
- Members may self-nominate, and individuals who have served on multiple ASHRAE committees may already qualify.

Members were encouraged to review their service history and consider nomination if eligible.

Mike also asked whether any ASHRAE Fellows were present and thanked them for their leadership and contributions to the Society. He specifically recognized that Kenneth M. Fulk had recently been elevated to ASHRAE Fellow and noted that Ken has been highly engaged with TC 6.9 activities. The committee congratulated Ken on this achievement.

Additional reminders were provided regarding the importance of keeping ASHRAE bios updated for awards and recognition consideration. Mike highlighted the George Hightower Award, which recognizes sustained technical committee service and technical activity, noting that nominations emphasize documented contributions within the most recent four-year period. While TC 6.9 has submitted nominations in the past,

Mike encouraged members with recent technical committee leadership and activity to consider future nominations.

TC 6.9 Thermal Energy Storage Hall of Fame

Mike then transitioned to the TC 6.9 Thermal Energy Storage Hall of Fame and announced the results of the most recent nomination and selection process. He acknowledged Bruce Lindsay for his significant role in coordinating and distributing the nominations.

Mike explained that the inductees were selected based on sustained and impactful contributions to thermal energy storage, technical leadership, service to ASHRAE, and long-standing commitment to TC 6.9.

On behalf of the committee, Mike congratulated the following new TC 6.9 Hall of Fame inductees:

- Doug Reindl
- Kenneth Fulk
- Mark MacCracken (present)
- Bruce Lindsay (present)
- Brian Silvetti
- Geoff Bares (present)

Each inductee was recognized individually, with those present invited to stand and briefly comment.

Mark MacCracken shared remarks noting that he first became a voting member of TC 6.9 in 1989, served as committee chair from 1996 to 2000, and expressed appreciation for the recognition and long-term professional relationships formed through the committee.

Bruce Lindsay shared that he joined TC 6.9 in 1991, described his involvement as both fulfilling and enjoyable, and noted the value of long-standing professional friendships and opportunities to recognize colleagues through ASHRAE honors, including Fellow nominations.

Geoff Bares noted that he considered himself a relatively short-tenured member compared to many of the other inductees, estimating approximately 18 years of involvement with the committee. He remarked that his professional background was somewhat unique among the group, having progressed from a chilled-water system designer and owner-operator to a thermal energy storage system owner-operator. Geoff expressed appreciation for the recognition, stated that he has greatly enjoyed his time participating in TC 6.9, and shared his hope of remaining involved with the committee for years to come.

Although Brian Silvetti was not present, it was noted that he had worked for many years with CALMAC, with Mark MacCracken briefly highlighting Brian's long tenure and contributions to thermal energy storage and the industry.

The committee congratulated all inductees and expressed appreciation for their lasting contributions to TC 6.9, ASHRAE, and the advancement of thermal energy storage.

Adjournment

There being no further business, the meeting was adjourned at approximately 5:37 PM.