DRAFT AGENDA
ASHRAE TC 4.7 ENERGY CALCULATIONS – MAIN MEETING
WINTER 2022 VIRTUAL LAS VEGAS CONFERENCE
TUE. FEB 1, 2022, 3:30 PM – 5:30 PM PST

Motions:

Action Items:

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Call to Order and Introduction of Members (5 min, Muehleisen)

- Ralph Muehleisen, Chair
- Neal Kruis, Vice-Chair
- Hojin Kim, Secretary
- Brian Ball, Simulation and Component Models Subcommittee Chair
- Jeff Haberl, Honors, Awards, and History Subcommittee Chair
- Ron Judkoff, Multi-scale Building Modeling Subcommittee Chair
- Brian Kastl, Program Subcommittee Chair
- Jeannie Kim, Webmaster
- Tim McDowell, Research Subcommittee Chair
- Joel Neymark, Standards Subcommittee Chair
- John Pruett, Handbook Subcommittee Chair
- Amanda Smith, Data-driven Modeling Subcommittee Chair

Attendance form

TBD put in zoom chat

Reciting of Code of Ethics Commitment (2 min, Muehleisen)

Commitment to 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 interest.

Call of Voting Members (5 min, Kruis)

Present ?	Last	First	Term Ends	Company	Email
	Miller	Clayton	2025	Nat. U. of Singapore	clayton@nus.edu.sg
	Crawley	Dru	2024	Bently	dru.crawley@bentley.com
	Haberl	Jeff	2024	Texas A&M	jhaberl@tamu.edu
	Judkoff	Ron	2024	NREL	ron.judkoff@nrel.gov
	Kim	Hyojin	2022	NJIT	hyojin.kim@njit.edu
	Kruis	Neal	2024	Big Ladder	neal.kruis@bigladdersoftware.com
	Muehleisen	Ralph	2022	Argonne	rmuehleisen@anl.gov
	Rao	Sagar	2023	AEI	sagar.rao@outlook.com
	Wang	Liping	2025	U. of Wyoming	

Accept agenda & approve minutes of 2021 Annual meeting (2 min, Muehleisen)

Vote: X-X-X

Review TC 4.7 Scope (5 min, Muehleisen)

- **Title**: TC 4.7 Energy Calculations
- **Scope:** TC 4.7 identifies, evaluates, develops, and recommends procedures for calculating energy performance of the built environment.

We updated this 2 years ago to be consistent with some of the changes of our sister committees. Does anyone see any needed changes?

Chair willing to entertain a motion to vote to maintain current Title and Scope and revisit again in Toronto

Membership (8 min, Muehleisen)

- Changes in TC 4.7 Leadership
    - Hyojin Kim is replacing Alamelu Brooks as Secretary and VC in waiting. After Annual meeting in June, Neal Kruis to take over as Chair and Hyojin to take over as VC, so we will need a new Secretary

      Thank you for your service Alamelu !!!

    - Clayton Miller is replacing Malcom Cook as non-quorum voting member.

      Thank you for your service Malcom !!!

    - Brian Ball is replacing Edwin Lee as Chair of Simulation and Component Modeling (SCM) subcommittee.

      Thank you for your service Edwin !!!

    - Jeannie Kim is replacing Joshua New as Webmaster.

      Thank you for your *long* time service Joshua

- We are actively looking for a new person to take over as Secretary starting in July. By agreeing to become Secretary you are agreeing, in principle, for a 6 year job moving from Secretary (2 years) to Vice Chair (2 years) to Chair (2 years). The idea of the succession is to improve continuity. But, the expectation is that you will be available and active in helping lead the TC over the next several years and are expected to attend both the Annual and Winter meetings when they go back to being in person.

  The role of the Secretary is to be the primary minute taker in various committee meetings (subcommittees, executive meetings, main TC meetings) and final minute assembler (which means making as many of the subcommittee meetings as possible), work with the vice-chair in reviewing the roster and work with chair and vice-chair in planning committee activities, recruiting new member and new leadership, and generally help provide input to the various subcommittees

  Anyone who has been reasonably active in the committee and has interest in a longer term role in TC leadership should contact Ralph, Neal, or Hyojin to express their interest.

- Voting Members: (Currently at 9)

    - The following people rolled off as VM: Joel Neymark and John Pruett. They should be off for a year before rejoining as VM if they wish to be considered again.

      Thank you Joel and John for your service as VM and let Neal know next year if you want to be considered again !!!

    - Liping Wang was added as a VM. Thanks for stepping up Liping !!!

    - We are now at only 9 VM with 1 (RM) to roll off if we renew Hyojin through 2028, so we should add at least 1 VM and could add 2 or 3 (3 preferred). You cannot be considered if someone at your company is already a VM.

- Roster changes of PCM to CM were submitted on time to ASHRAE before the Annual Meeting in June but it seems that yet again, they didn't all take (i.e. change of Anthony Fontanini to Amanda Smith). Please contact Muehleisen if you had thought you should be converted and were not or were supposed.

- Reminder that we have moved from the onebuilding.org listserve to Basecamp as per ASHRAE's request that TCs start doing all business through Basecamp. We announced the transition 2 years ago and last year kept official announcements through both. We have moved to Basecamp now full time.
  Anyone who wants to be added please contact TC 4.7 executive committee (Ralph, Neal, Alamelu) or VM or anyone currently in the TC 4.7 Basecamp.Any current member of the Basecamp project can add a new member. You do not need to be a listed member of TC 4.7 (CM, PCM, etc) to join the Basecamp group.

Announcements/Liaisons (20 min, Muehleisen)

- Vance Payne (Section 4 Liaison)
- Natascha Milesi-Ferretti (Research Liaison)
- Bass Abushakra (Handbook Liaison)

- All FG are being asked to develop a "Vision" and a set of "Measureable Objectives" (MOBs). I'll need to clarify how/why the Title, Purpose, Scope, isn't clear enough.

  Note: Ralph was going to create an ad hoc committee to start developing a Vision and MOB but put that off given online meeting burnout with Covid. Will revisit this in spring.

Subcommittee Reports (60 min, Various)

- Honors, Awards, and History — Haberl
- Web Site (*https://tc0407.ashraetcs.org/*) — Kim
- Handbook — Pruett

  Note: John Pruett was due to step down as Handbook SC Chair but because of the screwups at ASHRAE for HOF 2021 he wants to stay on through the next revision to help ensure it goes correctly. Thank you John!

- Program — Kastl
- Research — McDowell
- Standards — Neymark
- Multiscale Building Energy Modeling — Judkoff
- Simulation and Component Models — Ball
- Data-Driven Modeling (DDM) — Smith

Related Activities Reports (10 min, Various)

- 90.1
- TC 4.1
- TC 4.2
- TC 4.4
- TC 7.6
- MTGs
- IBPSA-USA
- IBPSA-World
- Others

New business (Muehleisen)

Adjourn (Muehleisen)

Upcoming Meetings

- June 25-29, 2022 – Toronto, ON
- Feb. 4-8, 2023 – Atlanta, GA
- June 24-28, 2023 – Tampa, FL
- Jan. 20-24, 2024 – Chicago, IL

- June 22-26, 2024 – Indianapolis, IN
- Feb. 8-12, 2025 – Orlando, FL
- June 21-25, 2025 – Phoenix, AZ

Appendix A: Resources

- ASHRAE's Research Proposal Process:
  - https://www.ashrae.org/file%20library/technical%20resources/research/ashrae-research-flowchart-r6.pdf
- 4.7 Committee Home Page:
  - http://tc0407.ashraetcs.org/
- 4.7 BaseCamp Page:
  - https://3.basecamp.com/3106353/projects/8174587

Appendix B: 2022 Winter (Las Vegas) Program Tracks

1. **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, improvements to existing systems and equipment and the proper application and operation of systems and equipment.
2. **Fundamentals and Applications:** Fundamentals are the foundation for understanding applications in engineering. Key components of ASHRAE fundamentals include thermodynamics, psychometrics, 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.
3. **Refrigerants and Refrigeration:** Refrigeration systems generate and use cold for a range of processes, from food preparation and conservation, to vaccine preservation, to long-term protection of fragile ancient inks of historic documents and others. Differences in technologies and equipment, performances, refrigerants, etc., may hide synergies from which both industrial and commercial systems might benefit, also, but not only, from the points of view of reducing direct and indirect GHG emissions.
4. **Buildings at 360°:** Buildings use a large share of a country's final energy, in particular for heating, cooling and various services. Papers and presentations explaining methods, equipment, systems and solutions to satisfy occupants' needs, to guarantee buildings' performances and resilience, and to save resources (energy, water, etc.) will fit this track.
5. **Energy System Integration:** Energy is the omnipresent reality of our daily lives (e.g., electricity for appliances and equipment, heat and cold for industrial processes and commercial purposes). Once used, part of the input the energy is wasted as heat/cold or as exhaust byproducts, thus contributing to the pollution of soil, water and air. The integration of various energy sources/grids with buildings, processes and transportation allows to better exploit the available energy (renewables, in particular) while reducing the said waste through a circular approach to energy usage. Papers on renewables, fossil fuels, grid integration, aggregation, demand-side flexibility, smart devices, IoT, synthetic hydrogen and synthetic fuels, CCUS, electrification would fit this track..
6. **Environmental Health and IEQ in the International Arena:** We spend a large part of our days indoors to live, work, practice gym, etc. Indoor environment is essential for our comfort, well-being, health, productivity, but is often treated and regulated differently in various parts of the world due to local conditions, circumstances, history, traditions. Presentations that explain local norms and trends are welcome to increase the knowledge on such an important topic, with an eye also on energy usage.
7. **HVAC for Industrial and Commercial Purposes - Challenges and Opportunities:** How to guarantee a set point within the required tolerances in a large industrial facility? How to increase the overall energy efficiency of a commercial facility through HVAC systems? What are the lessons that can be learnt from in terms of equipment, installation, commissioning, etc. and that can be transferred to other types of facilities; and vice versa? This is the track where such topics can find suitable space.

Appendix C: 2022 Annual (Toronto) Program Tracks

The 2022 ASHRAE Annual Conference technical program is comprised of eight tracks, selected to represent areas of focus common among ASHRAE membership.

Track	Description
1	**Fundamentals and Applications: Fundamentals and Applications:** Fundamentals are the foundation for understanding applications in engineering. Key components of ASHRAE fundamentals include thermodynamics, psychometrics, 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. **Track Chair:** Erik D Sanchez esanchez@prmech.com
2	**HVAC&R Systems and Equipment**: **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, improvements to existing systems and equipment and the proper application and operation of systems and equipment. **Track Chair:** Marites Calad mcalad@norman-wright.com
3	**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 9th 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*. **Track Chair:** Brian Fronk brian.fronk@oregonstate.eduEnvironment
4	**Connected Buildings, Connected Communities:** As buildings become smarter, and as sensor systems, internet connectivity and data collection become more ubiquitous, there are substantial opportunities to improve the performance and efficiency of buildings. Similarly, as renewable energy resources, including wind and solar energy and energy storage, becoming increasingly common, buildings can be used as electric grid assets, to strategically support energy efficiency and demand flexibility. To accomplish this requires many stakeholders, coordinated efforts and a diversity of buildings and buildings systems components and controls. **Track Chair:** Ahmed Abdel Salam ahmed.abdel-salam@usask.ca
5	**Cold Climate Building System Design, Operation and Resilience:** The design, construction and operation of buildings in cold climate regions which experience extreme winter conditions require specific considerations for the building envelope and HVAC&R systems and resulting thermal and hygrothermal performance. Resilience in the face of extreme temperature shifts, and in some cases remoteness and permafrost, should be considered to ensure building maintain interior design conditions. This track covers efforts and topics specifically focused on buildings, building systems and equipment in cold, arctic and subarctic climates. **Track Chair:** Davide Ziviani dziviani@purdue.edu
6	**IAQ, Energy Use, Comfort and Health of Sustainable Buildings:** Indoor environmental quality, energy use and efficiency and occupant comfort and health are

	all priorities buildings must balance. Sustainability priorities in buildings continue to increase, requiring careful consideration of how to achieve sustainability goals without sacrificing other building functions and owner/operator priorities. This track covers each of these topics, and how they interact and impact one another. **Track Chair:** Rafi Karim rkarim@aeieng.com
7	**Professional Development and Education:** As members of a professional organization, we not only participate for the great value of technical exchange, but also the interpersonal exchange. We recognize that the single greatest strength of our organization is its membership. This track is designed to allow those professionals and educators an opportunity to develop and share knowledge in the areas of presentation skills, leadership, team-building, understanding various business operations, lean collaboration strategies, interpersonal skills, etc., and an opportunity for educators to share knowledge in the teaching and education of current and future generations of professionals. Submissions to this track may lend themselves to interactive session types such as workshops, panels and forums. **Track Chair:** Maggie Moninski maggie.moninski@gmail.com
8	**Buildings in the Aftermath of COVID-19:** The pandemic has had significant impacts on how buildings are used, and the priorities associated with building operations to ensure a healthy environment for occupants. More people are working remotely; commercial building interior design and functionality and occupant use of these buildings, ventilation and system needs and building owner, operator and occupant priorities have been impacted. This track covers these topics as our buildings transition to design and operation in the aftermath of the pandemic. **Track Chair:** Andy Cochrane acochrane@industrialairinc.com