



1791 Tullie Circle, N.E./Atlanta, GA 30329
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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. 4.1 DATE 02/13/2021

TC/TG/MTG/TRG TITLE Load Calculation Data & Procedures

DATE OF MEETING 01/19/2021 LOCATION Virtual, Zoom

MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	EX-OFFICIO MEMBERS AND ADDITIONAL ATTENDANCE
Jungjuan (Dove) Feng	2020	Steven Bruning	2018	Rolando Legarreta (Secretary)
Larry Sun	2020			Jose Chavez (PCM)
Rachel Spitler	2018			Gabriel Garza (PCM)
James Pegues	2017			Sai Vivek Hyderboi (PCM)
Glenn Friedman	2019			Ardeshir Moftakhari (PCM)
Som Shrestha	2019			Amanda Smith (PCM)
Jeffrey Spitler	2020			Jonathan Woolley (PCM)
Robert Doeffinger	2019			Christian Bach (CM)
Brian Rock	2020			Charles Barnaby (CM)
				Alireza Behfar (CM)
				Akshay Bhargava (CM)
				Benjamin Brannon (CM)
				Liam Buckley (CM)
				Jason DeGraw (CM)
				Suzanne LeViseur (CM)
				James Lowry (CM)
				Elyse Malherek (CM)
				Mini Malhotra (CM)
				Danielle Monfet (CM)
				Bryan Morris (CM)
				Vrunda Patel (CM)
				Stephen Roth (CM)
				Laura Southard (CM)
				Christopher Wilkins (CM)
				James Bennett (SH)
				Natascha Milesi Ferretti (Research)

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

TAC Section Head:	SHx@ashrae.net Where x is the section number
All Committee Liaisons As Shown On TC/TG/MTG/TRG Rosters (Research, Standards, ALI, etc.)	See ASHRAE email alias list for needed addresses.
Mike Vaughn, Manager Of Research & Technical Services	MORTS@ashrae.net



ASHRAE Technical Committee 4.1

Agenda for - TC4.1 Load Calculation Data & Procedures

Virtual Meeting

January 19, 2021

TC4.1 Load Calculation Data and Procedures

Tuesday, 1:30 PM to 3:30 PM EST

Virtual

1. Call to Order by Chair – Jingjuan (Dove) Feng
 - Order called at 12:35 PM.

2. Roll Call by Rachel Spitler – 9 of 10 members present.
 - JingJuan Feng, Chair – Voting X
 - Brian Rock – Voting X
 - Glenn Friedman – Voting X
 - James Pegues –Voting X
 - Jeffrey Spitler – Voting X
 - Larry Sun – Voting X
 - Rachel Spitler, Secretary – Voting X
 - Robert Doeffinger – Voting X
 - Som Shrestha –Voting X
 - Rolando Legarreta, Vice-Chair – Non-voting X

3. Introduction of Visitors by Jingjuan Feng
 - James Bennett Section Head Liaison
 - Natasha Milesi Ferreti Research Liaison

4. Approval and/or Corrections to 2020 Summer Meeting Minutes presented by Jingjuan (Dove) Feng
 - Correction: Item #9, should be Chapter 17 and Chapter 18, not Chapter 1 and Chapter 18.
 - June 2020 Meeting Minutes – Brian Rock moved to approve meeting minutes. Jim Pegues seconded the motion. June 2020 Meeting Minutes approved with the listed corrections above 7-0-2-1 (Chair not voting).

5. Liaison Comments
 - Section Head – James Bennett – Present.
 - Reminder that the roster update is due next week; it should be sent to Section Head when complete.
 - The activity form is due to Section Head after main meeting.
 - There is an emphasis on publications currently due to loss of conference revenue.
 - The FG evaluation workbook is available in a new form. This is an annual exercise, the data version of Manual of Procedures (MOP) for functional TCs and current embodiment of the current reorganization discussion. There is no requirement for voting approval by the TC.
 - As part of the revitalization/reorganization strategic plan, TC needs to develop a vision statement. There is no deadline, but the TC should vote on this and send to TAC for official approval.
 - James Bennett also conveyed appreciation of the YEA involvement in the TC.

Chapter Technology Transfer - Christopher Adams – Not Present.

TC 4.1 Web Site: <https://tc0401.ashraetcs.org/>



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Research Liaison – Natascha Milesi Ferretti – Present.

- WS 1923 is the cosponsored 2025 Handbook project and has been conditionally accepted. RAC will be working with authors to address comments.
- Research funds have been greatly restricted with the loss of funding from the cancelled Expo. There is funding for current projects, and a hopper of approved research waiting for funding. A decision will be made in March to determine if there are funds for additional projects that were otherwise approved.
- Research subcommittee chairs meeting is Feb 9. Som has meeting invite.

Handbook Liaison – Bass Abushakra – Not Present.

Staff Liaison – Steve Hammerling – Not Present.

TAC Chairman – Dustin Meredith – Not Present.

6. Research Subcommittee Report Som Shrestha, PhD

Reference attached Research Subcommittee Report.

- **1729-RP: Experimental Verification of Cooling Load Calcs for Radiant Systems**
This project is complete.
- **WS-1857 Review “Improved simplified methodology for describing and calculating heat conduction between buildings and the ground”**
This WS had previously been submitted but had been returned by RAC with comments back from RAC. It was resubmitted in December and has been conditionally approved.
- **New RTAR co-sponsorship: Prepare climatic design conditions for the 2025 ASHRAE Handbook–Fundamentals and ASHRAE Standard 169 (Responsible TC: TC 4.2)**
This RTAR has been submitted to RAC. RAC should be informed if a delay of a year would cause trouble handbook meeting deadlines; this would be TC 4.2’s responsibility.
- **New RTAR co-sponsorship: Formalizing thermal comfort calculations for children (Responsible TC: TC 2.1)**
- **1778-RP: Heat and Moisture Loads from Commercial Dish room Appliances and Equipment**
Project is completed and report is submitted.
- **1816 RP: Reporting Energy Use and Heat Gain from Imaging Equipment**
- **1847 RP: Updating Climate Design information for 2021 ASHRAE Handbook, Standard 169, and the Handbook of Smoke Control Engineering**
This project is in the final stages and should finish the end of March. There will be a website repository for the climatic information, coordinating with ASHRAE.
- **WS-1850 on "Evaluation of ASHRAE's Design Day Procedure Against Recorded Weather Data"**
This WS has not been funded; the committee voted to put it out for rebid.
- **New RTAR on refrigeration heat gain development**
- **New RTAR for Residential Load Calculations**
Chip Barnaby had previously contacted the Residential Steering Committee to see if they had an interest in research to update Chapter 17, but received no response. He will reach out again to see if he can get a response.

7. Programs Subcommittee Report Rachel Spittler

Reference attached Programs Subcommittee Report.

- **Seminar 45: Demystifying Thermal Load Calculations for HVAC&R Engineers** (Winter 2021 Virtual Conference)

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- Phoenix is currently planned to be in-person. Subcommittee recommended not submitting any programs due to not having any pressing topics and due to some recent problems experienced with ASHRAE's virtual conference system. There is also concern that Phoenix will go virtual too.
 - Per Danielle Monfet, TC 2.2 may be interested in having us cosponsor a session. Rachel to reach out to the TC 2.2 Program chair to discuss.
8. Standards Subcommittee Report Glenn Friedman
ANSI/ASHRAE Standard 203-2018 (reaffirmed)
Final Vote (11/04/2020): 10-0-0-0-CV.
9. Handbook Subcommittee Report Jim Pegues
Reference attached Handbook Subcommittee Report.
- **Residential Chap 17** Chip Barnaby
Final Vote (08/14/2020): 10-0-0-0-CV.
 - **Non-Residential Chap 18** Jim Pegues
Final Vote (07/16/2020): 7-0-1-1-CV.
 - The Handbook chapters were approved at the last meeting and are now at the end of the development cycle. Final chapter proofs will come in February and the new Handbook will come out May or June. The June meeting will start the next cycle.
 - Jim to arrange a Zoom call in February for discussion of how to handle radiant and cooling loads in Chapter 18. This has the potential to generate research.
10. ASHRAE Website for TC4.1 Jim Pegues
 - The website is up-to-date. June 2020 meeting minutes will go up after corrections have been made.
11. Old Business Jingjuan (Dove) Feng
 - **SDL course review**
ASHRAE will reach out if they need reviewers for the course review.
12. New Business Jingjuan (Dove) Feng
 - No new business.
13. Adjournment Jingjuan (Dove) Feng
 - Meeting adjourned at 2:03 PM.



ASHRAE Technical Committee 4.1

Meetings

TC 4.1 Load Calculation Data and Procedures

Tuesday, January 19, 2020 1:30pm-
3:30pm Virtual

TC 4.1 Handbook Subcommittee

Tuesday, January 12, 2020 11:00am-
1:00pm Virtual

TC 4.1 Research Subcommittee

Tuesday, January 12, 2020 11:00am-
1:00pm Virtual

TC 4.1 Programs & Standards Subcommittees

Tuesday, January 12, 2020 11:00am-1:00pm Virtual

Programs

Seminar 45: Demystifying Thermal Load Calculations for HVAC&R Engineers

Officers and voting members for 2020/2021:

JingJuan Feng, PhD PE	Chair	Voting
Rolando Legarreta, PE	Vice Chair	Non-Voting
Rachel Spitler	Secretary/ Programs Subcommittee Chair	Voting
James Pegues	Webmaster/Handbook Subcommittee Chair/BIM Liaison	Voting
Glenn Friedman, PE	Standards Subcommittee Chair	Voting
Som Shrestha, PhD	Research Subcommittee Chair	Voting
Steven Bruning, PE		Voting
Jeffrey Spitler, PhD		Voting
Robert Doeffinger		Voting
Brian Rock		Voting



ASHRAE Technical Committee 4.1

TC 4.1 Main Committee Meeting Research Subcommittee - Agenda

Virtual Meeting
January 19, 2021

Research Subcommittee Chair: Dr. Som Shrestha shresthass@ornl.gov

Research Liaison for Section 4:

Natascha Milesi-Ferretti rl4@ashrae.net

Section 4 Research Subcommittee Chairs meeting is on 2/9 Tuesday at 8:00 am

1. RP 1729: Experimental Verification of Cooling Load Calculations for Spaces with Non-Uniform Temperature Radiant Surfaces.
Sponsoring Committees: TC 4.1 and TC 5.3 (Room Air Distribution)
PMS Chair: Glenn Friedman
PMS members: Chris Wilkins, Som Shrestha, Dove Feng, and John Bade
PI: Atila Novoselac, Contractor: University of Texas, Austin
TC approved to recommend extending the contract date to October 31, 2020, to implement the modified HBM into the ASHRAE's load calculations toolkit. James Pegues will arrange a meeting to discuss using outcome of this project in handbook

2. RP 1778: Heat and Moisture Load from Commercial Dish room Appliances and Equipment.
Sponsoring Committees: TC 5.10 (Kitchen Ventilation) and TC 4.1.
TC 4.1 liaison on the PMS: Rolando Legarreta
PI: Richard Swierczyna, Contractor: Frontier Energy, Inc.
The contractor submitted a draft report before the 2020 winter conference. A 6-months no-cost extension was approved. The new contract expiration date is July 31, 2020
Project completed

3. RP 1816: Reporting the Energy Use and Heat Gain from Imaging Equipment.
Sponsoring Committees TC 9.06 (Healthcare Facilities), TC 4.1, and 4.7 (Energy Calculations)
TC 4.1 liaison on the PMS: Glenn Friedman
PI: Walt Vernon, Contractor: Mazzetti
 - The contract was finalized on October 29, 2019
 - The first portion of the tasks have been completed
 - The second portion includes on-site testing. MRI test sites are Massachusetts, Tennessee, and California. The hospitals are Massachusetts General Hospital, University of California San Francisco Medical Center, and St. Thomas Hospital (Tennessee).
 - No progress as access to hospitals is restricted due to COVID-19



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4. RP 1847: Updating climate design information for the 2021 ASHRAE Handbook, Standards 169, and the Handbook of Smoke Control Engineering.
Sponsoring Committees: TC 4.02 (Climatic Information), 4.1, and 5.6 (Fire and Smoke Control)
TC 4.1 liaison on the PMS: James Pegues
PI: Michael Roth, Contractor: Klimaat
 - The contract was finalized on January 30, 2019. Work start date April 1, 2019
 - The contractor is well on track
 - WS of a new project started
 - Project ends in March 2021
 - Data will be available in a web site rather than the traditional method of using DVDs

5. WS 1850: Evaluation of ASHRAE Design Day Procedure against recorded weather data.
Sponsoring Committees: TC 4.02 (Climatic Information), TC 4.1, and TC 5.6 (Radiant Heating and Cooling).
TC 4.1 liaison on the PMS: Glenn Friedman
 - ASHRAE called for Bid in Apr 2020
 - 6/16/2020: PES for 1850-TRP made a recommendation for a contractor to TC 4.2, and TC 4.2 voted unanimously to recommend a contractor to RAC
 - Scheduled Project Start Date: September 1, 2020, or later

6. WS 1857: Improved simplified methodology for describing and calculating heat conduction between buildings and the ground. This project's results will affect the following Handbook Chapters, Special Publications, etc.: Handbook of Fundamentals, Chapters 17, 18, and 19. Standard 90.1
Sponsoring Committees: TC 4.7 (Energy Calculations), TC 4.1, and TC 4.4 ()
TC 4.1 liaison: Glenn Friedman
TC 4.7 revised work statement and resubmitted to RAC in Dec 2020. RAC conditionally approved the WS.

7. WS1923 "Prepare Climatic Design Conditions for the 2025 ASHRAE Handbook - Fundamentals and ASHRAE Standard 162"
Sponsoring Committees: TC 4.02 (Climatic Information) and TC 4.1
TC 4.1 liaison: James Pegues
RAC conditionally approved the WS.

8. Chip Barnaby will followup with Residential Building Committee to seek their support to update the residential building chapter

TC 4.1 Programs
Virtual, Friday, June 12, 2020

Rachel Spitler rspitler@cyntergy.com, Programs Chair

PROGRAMS

1. **Report By:** Rachel Spitler rspitler@cyntergy.com, Chair.

2. **Current Program:**

- a. Seminar 45: “**Demystifying Thermal Load Calculations for New HVAC&R Engineers**”.
Track: HVAC&R Fundamentals and Applications
Abstract: Load calculations are one of the first tasks young engineers are assigned, but they can be intimidating to tackle. This seminar seeks to provide a clear foundation in load calculations for those new to the industry. Topics covered in this seminar include the history of and science supporting load calculations, helpful resources and tips to remember, as well as how to manage uncertainties and common pitfalls to avoid.
Speakers: Brian Rock, Ph.D., P.E., Fellow ASHRAE, The University of Kansas, Lawrence, KS – “**Introduction to HVAC Heating and Cooling Loads’ Calculations**”
Vrunda Patel, Jacobs, Dallas, TX – “**Resources & Guidelines for Load Calculations**”
Cindy Cogil, P.E., Member, SmithGroup, Chicago, IL – “**Avoiding Pitfalls and Managing Uncertainties: Tips for Better Loads**”
- b. Cosponsoring Seminars 58 “**How Will Climate Change Affect Standards, Guidelines, and the Way We Design? Part 1: Why Climate Change May Affect the Design of Buildings and Their Systems**”, 59 “**How Will Climate Change Affect Standards, Guidelines, and the Way We Design? Part 2: Application to Loads Calculations and Design Conditions**”, and 60 “**How Will Climate Change Affect Standards, Guidelines and the Way We Design? Part 3 Decarbonization by Smart Grid and Adaptation to Northern Warming**”.

3. **Future Program:**

- a. Submission deadline is Monday, February 22nd, 2021 for the 2021 Summer Conference (Phoenix, AZ). The meeting itself is June 26-30, 2021.
i. Committee recommends not submitting a program to Phoenix, under the assumption that it will likely be a virtual conference as well.
- b. The 2022 Winter conference is scheduled for January 29 – February 2, 2022 in Las Vegas, NV.
- c. Future Program Ideas
i. Comparison of Load Calculation Software using New ASHRAE HQ Building
ii. Seminar including, Workflow of Process for Cooling and Heating Load Calculations (Forum or Seminar) & Energy Calculations, Energy vs. Load Processes, Sample Comparisons of Loads results from different Energy softwares (Sun/Landreth, Roth?) [TC 4.7]
iii. Ventilation and Infiltration
iv. Load Calculations for Dehumidification & Load Calculations and Equipment Selections for Water Cooled [Peak Load vs. Water Cooled] & Load

TC 4.1 Programs
Virtual, Friday, June 12, 2020

Calculations and Sizing for Evaporative Cooling [Essentially, moisture ties it together]

- v. How Load Calculations Interact with Other ASHRAE Chapters
[Communicate with other TCs for this]
- Weather
 - Infiltration
 - Building skin color [Som – TC 4.4]
 - Ventilation [Som to help connect]
 - Fenestration, dynamic windows [Som to help connect]
-

TC 4.1 Programs
Virtual, Friday, June 12, 2020

PROGRAM TRACKS for Phoenix:

Track 1: HVAC&R Fundamentals and Applications Track Chair: Sonya Pouncy
Email: sonyapouncy@gmail.com

Track 2: HVAC&R Systems and Equipment Track Chair: Rupesh Iyengar
Email: rupesh_iyengar@yahoo.com

Track 3: Research Summit Track Chair: Kristen Cetin
Email: cetinkri@msu.edu

Track 4: Professional Development Track Chair: Marites Calad
Email: mcalad@norman-wright.com

Track 5: Design, Control, and Operation of Critical Environments Track Chair: Raul
Simonetti
Email: raul.simonetti@carel.com

Track 6: HVAC&R for Indoor Plants and Animals Track Chair: Ryan MacGillivray
Email: ryan.macgillivray@dwel.com

Track 7: Future Proofing - Renewable, Regenerative, and Resilient Track Chair:
Andy Cochrane
Email: acochrane@industrialairinc.com

Track 8: Hot, Hot, Hot Track Chair: Nohad Boudani
Email: nohadb@inco.com.lb

Track 9: Mini-Track (to be announced). Track Chair: To be announced.



ASHRAE Technical Committee 4.1

TC 4.1 Handbook Subcommittee - Report

January 19, 2021

Handbook Subcommittee Chair: james.f.pegues@carrier.com
rev1

Meeting Notes:

1. Status Report

a. Chapter 17 – Residential Cooling and Heating Load Calculations

Publication approved by TC 4.1 vote on August 15

Handbook liaison approved chapter on August 26

Chapter draft submitted for publication on August 26

b. Chapter 18 – Nonresidential Cooling and Heating Load Calculations

Publication approved by TC 4.1 vote on July 16

Handbook liaison approved chapter on July 19.

Chapter draft submitted for publication on July 20.

c. Next Steps

Publication proof will be sent back to us for final review during February.

Chapters will be published in 2021 Handbook – Fundamentals in May/June timeframe

Update cycle for 2025 Handbook Fundamentals will start at Summer meeting.