

*These draft minutes have not been approved and are not the official, approved record until approved by this committee.*

**ASHRAE TC 4.3**  
**Ventilation Requirements & Infiltration**  
**Draft Minutes**  
**Fall 2023 Interim Meeting (Virtual)**

**Monday September 18, 2023, 1.5 hours, starting at 08:30 AM Pacific (US/Can) / 11:30 AM Eastern (US/Can) / 9:00 PM India**

Substitute link: Teams

**1. Call to order**

**McNulty, 11:36 ET**

**2. Review Scope**

*TC 4.3 is concerned with ventilation requirements and the analysis of infiltration, airflow around buildings, exhaust, and the re-entry of exhaust, including their interactions with indoor air quality and energy calculations for buildings and HVAC system design and operation performance and energy consumption. <https://tc0403.ashraetcs.org/>*

**3. ASHRAE Code of Ethics Commitments**

**McNulty**

**Code of Ethics Commitment:** *In this and all other ASHRAE meetings, we will act with honesty, fairness, courtesy, competence, inclusiveness and respect for others, which exemplify our core values of excellence, commitment, integrity, collaboration, volunteerism and diversity, and we shall avoid all real or perceived conflicts of interests. <https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics>*

**4. Introductions (10')**

**All**

**a. Determination of a quorum**

**Parker**

**VOTING MEMBERS FOR THIS MEETING (Need (4) or  $\frac{1}{2}+1$  for a Quorum)-No Quorum**

	Name	Position	Company	Roll Off (June 30)	Present?
1	Meghan McNulty	Chair	Servidyne	2026	Y
2	Isaac Simpson	Vice Chair	DMG North	2024	
3	Iain Walker	Member	Lawrence Berkeley Natl Lab	2024	
4	Anthony Abate	Member	Clean Air Group	2025	Y
5	Duncan Philips	Member	RWDI	2025	Y
6	Marianne Touchie	Member	University of Toronto	2025	
<b>Non-Voting Officers</b>					
	Nitin Naik	Programs	Dewpoint		<u>Y</u>
	Jason Urso	Membership	Tighe & Bond		
	Ryan Parker	Secretary/ Co-webmaster	RWDI		<u>Y</u>
	Neetha Vasan	Handbook	RWDI		<u>Y</u>
	Jordan Clark	Research	Ohio State University		<u>Y</u>

Steven Emmerich	Standards	NIST		<u>Y</u>
Bryan Morris	Co-Webmaster	Sellen		
Hossam Abdelkader	Honors & Awards	Delta for Construction and Manufacturing (DCM)		<u>Y</u>

b. Round of introductions

All

## 5. Agenda additions

All

- **Proposed MTG on IAQ sensors with an eye toward Standards integration – contact Jordan Clark [clark.1217@osu.edu](mailto:clark.1217@osu.edu) if interested in helping with proposal, to complete by mid-Dec**
- **Public Review for G44P**

## 6. Approval of minutes from 2023 Annual Meeting

McNulty **No Quorum, pushed to winter**

## 7. Chair's Report (5')

McNulty

### a. Chair's Goals

- Welcome! Getting to know TC 4.3:
  - Dinner at Winter Meeting
  - Poll for specialties/interests – Jason (membership), Bryan (webmaster), Tony Abate, Martin Stangl
- Interim meetings between Annual & Winter Conferences
- Access to Basecamp – request to be added: [email\\_ryan.parker@rwdi.com](mailto:email_ryan.parker@rwdi.com)
- Website & FAQ updates – **out of date, let Meghan know if you'd like to add to it**

### b. Announcements

- [ASHRAE Simplified Rules of Order](#)
- Review TC Scope, Continue/Merge/Dissolve – by Winter Meeting

## 8. Membership/Roster (5')

McNulty/Urso

- Regular attendance is expected, active participation encouraged.
  - Attendance record corrections
- Guests, consider joining as a Provisional Corresponding Member (PCM). This is the only way to officially join TC 4.3: [https://eweb.ashrae.org/eweb/TS\\_ProvisionalSignup.html](https://eweb.ashrae.org/eweb/TS_ProvisionalSignup.html)

## 9. Subcommittee reports

### a. Programs (15')

Naik

- Previous Programs – Tampa Annual Conference - none
- Current Programs – 3 submissions planned for Chicago

1. Health Implications of Contaminant Transportation in Residential Buildings, seminar, Cara Lozinsky and Nuria Casquero-Modrego – No update yet
2. Insights of Residential Kitchen Ventilation, conference paper session, Kishor Khankari – Approved
3. Evaluating Natural Ventilation – Mason, Berquist, Philips – pushed to Indianapolis

iii. Future Programs / New Ideas – “3 Strikes” rule- if idea has been on docket for three meetings with no forward movement, will be removed

iii.

racks for Indianapolis: <https://ashraem.confex.com/ashraem/s24/cfp.cgi>

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City	Title	Type	Chair/Speakers
Chicago	Health Implications of Contaminant Transportation in Residential Buildings	Seminar	Co-Chairs and speakers Núria Casquero-Modrego & Cara Lozinsky; Benjamin Jones; Jacob Bueno de Mesquita
Chicago	Insights of Residential Kitchen Ventilation	Paper Session	Kishor Khankari, Iain Walker, Randy Cooper
Chicago	Evaluating Natural Ventilation	Seminar	Matt Mason (Chair): Justin Berquist, James Lo, Duncan Philips, Will Lim
Chicago	Where’s My Air Been (External exhaust flow – may need clearer title)	Seminar	Greg Gross / Martin Stangl / Ryan Parker
<del>Chicago</del> Indianapolis	Burning Questions Around Wildfires and Ventilation/IAQ	Seminar	Isaac Simpson / Steve Emmerich. TC 7.3 co-sponsor, possibly GPC44P co-sponsor (will be published by then) <u>Duncan has practical info</u> <u>Sissi is about to</u>
Chicago (Resubmit)	TC4.10: Modeling airflow around buildings and the impact on indoor conditions driving toward increasing building resiliency		TC4.10 – is co-sponsoring and it was submitted. Rejected for Tampa, resubmitting for Chicago.
	“How To” for 62.1 or 62.2	Workshop	[when new version / substantial change]
	Standard 241 Updates		Steve Emmerich / Iain Walker / Matt Mason
<u>Indianapolis</u>	<u>OSHA IAQ Technical Manual Update</u>		<u>Mathew Meyer</u> <u>New manual will be published by next summer.</u> <u>Radon will be added to the update</u>

iv. Deadlines & Tracks for Chicago 2024 Winter Conference  
**Winter Chicago – January 20-24, 2024**

Conference Chair : Suzanne LeViseur, (sleviseur@haddadeng.com)

- o **Fundamentals and Applications**
  - o Craig Bradshaw – craig.bradshaw@okstate.edu
- o **HVAC&R Systems & Equipment**
  - o Ng Yong Kong – nyk@nyk.com.my
- o **Refrigeration & Refrigerants**
  - o Atilla Bivikoglu – abiyik@gazi.edu.tr
- o **Decarbonization and Climate Change**
  - o Som S Shrestha – shresthass@ornl.gov
- o **Hydronic Systems**
  - o Joe Chow – joe.ashrae@gmail.com
- o **Ventilation, Indoor Air Quality and Air Distribution Systems**
  - o Ahmed Abdel-Salam – ahmed.abdel-salam@usask.ca
- o **Comfort, Indoor Environmental Quality and Energy Efficiency**
  - o Kristen Cetin – cetinkri@msu.edu
- o **HVAC&R Controls**
  - o Alekhya Kaianathbhatta – alekhya\_k@rogers.com
- o **Project Delivery Methods**
  - o Ehab Mamdouh Abu Taleb – ehab.mamdouh@ipecc-eg.net

Wednesday, August 2, 2023 | Debate, Panel, Seminar, Forum, Workshop, and Debate Proposals Due

Monday, October 16, 2023 | Full Conference Papers Due; Request for Conference Paper Sessions Due

Wednesday, November 8, 2023 | Conference Paper Accept/Revise/Reject Notifications

Friday, November 24, 2023 | Revised Conference Papers Due

Wednesday, December 6, 2023 | Conference Paper Final Accept/Reject Notifications

v. **Deadlines & Tracks for Indianapolis 2025 Annual Conference**  
<https://www.ashrae.org/conferences/2024-annual-conference-indianapolis/2024-annual-conference-technical-program>

- **Wednesday, November 22, 2023** | CP Abstracts, and Paper Session Requests Due
- **Wednesday, December 13, 2023** | Conference Paper Abstract Accept/Reject Notifications
- **Friday, January 5, 2024** | Website Opens for Extended Abstracts and Seminar, Workshop, Forum, Debate and Panel Proposals
- **Monday, February 26, 2024** | Debate, Panel, Seminar, Forum, Workshop, and Debate Proposals Due
- **Friday, March 15, 2024** | Extended Abstract Paper Due
- **Friday, March 15, 2024** | Full Conference Papers Due; Request for Conference Paper Sessions Due
- **Monday, April 1, 2024** | Conference Paper Accept/Revise/Reject Notifications
- **Monday, April 1, 2024** | Extended Abstract Accept/Reject Notifications
- **Wednesday, April 10, 2024** | Revised Conference Papers Due
- **Friday, April 12, 2024** | Debate, Panel, Seminar, Forum, Workshop Scheduling Notifications
- **Wednesday, April 24, 2024** | Conference Paper Final Accept/Reject Notifications

**b. Research (20')**

**Clark**

i. **Active Research Projects (RP)**

1. RP1835: Characterization of Induced Flow Fans

ii. Work Statements (WS)

1. (1950-RTAR), "Effect of residential exhaust terminations on jet mechanics and resulting required intake separation"

iii. Research Topic Acceptance Request (RTAR)

1. Updating garage ventilation rates for current populations of vehicles (electric cars) \*2 meetings

2. ERVs and Pressurization – Phillips

3. Ventilation Effectiveness – Godbout

Now on V3. 4.10 is co-sponsor. Ongoing discussion with 5.3. There is interest in co-funding from industry partners.

Brian Rock suggested that TC5.3 be the primary sponsor, and that the study should be experimental and not just CFD.

SSPC 129 developing a method of test for modeling ventilation effectiveness and the project should use the end method.

Proposed to change focus to be experiments extended with CFD.

3.

tempting to submit for December 15 deadline.

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4. TC 5.11 co-sponsorship: minimum humidity- returned with suggestions to TC 5.11

5. PTAR (Publication): Guide for successful simulation of outdoor airflow around the built environment \*2 meetings

iv. On Hold / Inactive

v. New Ideas

Name	Champions	Status/Actions
RTAR/PTAR Combo: Infiltration vs. Pressurization impact with ERVs	Phillips and Wray to write PTAR	Sub Committee: "Developing guidance for ventilation design related to high buildings and pressurization." Possible PTAR instead? **2 meetings
Enhance the current Stack Height Reduction Factor Methodology for Plume Dispersion Calculations for 1- 2.5 x screen height	Carter/Parker	**2 meetings Idea from Parker, will consider writing
Potential work following ETF transition	McNulty	Sample survey of existing building vent performance i.e. BASE study Crowd-sourced database? CO2 or CO levels
Adjustment of rates for density of air w/ altitude-do emissions change with altitude? How much do resulting rates change? Include perception changes	Phillips- framework, Taylor review	Phillips to provide framework and Taylor to review

Better ventilation effectiveness values for heating. Provide additional guidance or simplified equation.	Frank Godbout	Godbout to write RTAR, has white paper. Clark to send RTAR writing guide
Submitted via email: Exploring the Impact of IAQ on Human Physiological Signals	Joonho Choi	Choi to write RTAR

vi. Deadlines

--- 5'-10' Break (est. 9:15 am Pacific / 12:15 pm Eastern / 9:45 pm India) ---

c. Handbook (10')

Vasan

i. Chapter Status

Volume	Chapter	Lead	Status
2025 Fundamentals	Chapter 16 Ventilation and Infiltration	Marianne Touchie, Cara Lozinsky, Justin Berquist	<u>New draft circulated to TC and posted on Basecamp. Feedback Requested by January 15, 2024.</u>
2025 Fundamentals	Chapter 24 Airflow Around Buildings	Ted Stathopoulos	Feedback <u>on current chapter</u> requested by <u>Sept-January 15, 2024</u>
2027 Applications	Chapter <del>46</del> <sup>55</sup> Building Air Intake and Exhaust Design	Ryan Parker	<u>2023 version is To be published in June</u> <del>published</del>

ii. Revision information

1. Access files, for revision, via <https://authoring.ashrae.org/>
2. **Chapter reviews:** If you have colleagues who are practicing in or otherwise interested in any of our topics, please ask them to review our as-published chapters. They can submit their reviews via [http://xp20.ashrae.org/secure/handbook/chapter\\_review/](http://xp20.ashrae.org/secure/handbook/chapter_review/)
3. Website for our revisers: <https://www.ashrae.org/technical-resources/ashraehandbook/ashrae-handbook-central>

iii. Deadlines

~~iii.~~ January 15, 2024 for Chapters 16 and 24 of the Fundamentals Handbook ↓

d. **Standards (5')**

Emmerich

- i. 62.1 Ventilation and Acceptable Indoor Air Quality
- ii. 62.2 Ventilation and Acceptable IAQ in Low-Rise Res Bldgs
- iii. 161 Air Quality Within Commercial Aircraft
- iv. Other Standards of interest
  1. 241 Control of Infectious Aerosols — On continuous maintenance
  2. 90.1 Energy
  3. 170 Ventilation of Healthcare Facilities

e. **Website/Basecamp (5')**

Parker/Morris

- i. Website & FAQ updates

f. **Honors & Awards (5')**

Abdelkader

- i. December 1 deadline [hossam.kader@deltadcm.com](mailto:hossam.kader@deltadcm.com)

3 nominees planned for December

~~i.~~ lease update bio and send to Hossam for cross-referencing with possible awards. P

**10. Old Business (5')**

- i. Terminology issue: RP-1833 conflicting definitions (Rock)

~~i.~~ rian Rock has draft of comments for TC4.3 to submit to TC 1.6 that is close to ready to be circulated to the full committee. B

- ii. Figure of “Type H Exhaust Stack Drain” in Ch 46, Fig 2.

**11. New Business (5')**

- Proposed MTG on IAQ sensors – Jordan Clark

Standardize placement and guidance of IAQ sensors. Jordan reached out to relevant TCs and received positive feedback, he plans to prepare an MTG request mid-December at the latest.

- Public Review for ASHRAE Guideline 44P – Protecting building occupants from wildfire smoke  
Go to ASHRAE online comment database – [osr.ashrae.org](https://osr.ashrae.org)  
Can sign up for a weekly email update on what is available for public review.

**11.**










































**12. Next Meeting**

- a. Subcommittee meetings prior to Winter Conference
- b. 2024 Winter Conference: January 20-24, Chicago, IL  
<https://www.ashrae.org/conferences/2024-winter-conference-chicago>  
Full TC meeting 5p-7p Central Time (US/Can) on Monday January 22, Research SC 1 hour before. Hybrid meetings. Group dinner to follow TC meeting.
- c. ASHRAE Annual and Winter Conference dates

Future Winter Conferences	Future AHR Expos	Future Annual Conferences
Jan. 20-24, 2024 – Chicago, IL	Jan. 22-24, 2024 – Chicago, IL	June 22-26, 2024 – Indianapolis, IN
Feb. 8-12, 2025 – Orlando, FL	Feb. 10-12, 2025 – Orlando, FL	June 21-25, 2025 – Phoenix, AZ
Jan. 31-Feb. 4, 2026 – Las Vegas, NV	Feb. 2-4, 2026 – Las Vegas, NV	June 27-July 1, 2026 – Austin, TX
	<a href="#">AHR Mexico</a> <i>Sep. 19-21, 2023 – Mexico City</i>	

**13. Adjourn – Duncan motioned**



	<b>Ryan Parker</b>		<b>Hossam Abdelka... (Guest)</b> Meeting guest	
	<b>+19*****00</b>		<b>Justin Berquist (External)</b> External	
	<b>Austin Estes (External)</b> External		<b>Meghan McNulty (External)</b> Organizer External	
	<b>Brian Rock (Guest)</b> Meeting guest		<b>Meyer, Matthew R. - OSHA</b> External	
	<b>Cara Lozinsky (External)</b> External		<b>Neetha Vasan</b>	
	<b>Clark, Jordan</b> External		<b>Nitin Naik</b> External	
	<b>Darryl DeAngelis (External)</b> External		<b>Paul Grahovac (Guest)</b> Meeting guest	
	<b>DeGraw, Jason</b> External		<b>Robert Baker (Guest)</b> Meeting guest	
	<b>Duncan Phillips</b>		<b>Sissi Liu (Guest)</b> Meeting guest	
	<b>Ed Light, CIH (Guest)</b> Meeting guest		<b>Steve Ehrman (External)</b> External	
	<b>Emmerich, Steve... (Fed)</b> External		<b>Tony Abate (External)</b> External	
	<b>Frank Godbout (Guest)</b> Meeting guest		<b>Vaughn Terpak</b> External	
	<b>Fresconi, Luke (External)</b> External		<b>Vincent Tang</b>	
	<b>Hoch, Pete (External)</b> External		<b>Whitelaw, Jeff G.</b> External	