



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

**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. TC 9.10 DATE December 10, 2023

TC/TG/MTG/TRG TITLE Laboratory Systems

DATE OF MEETING June 27, 2023 LOCATION Tampa

VOTING MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	CORRESPONDING MEMBERS AND ADDITIONAL ATTENDANCE (INCLUDING VIRTUAL ATTENDEES)
Robert Weidner	2022	Mary Foutz	2019	Roland Charneux (CM)
Christine Reinders-Caron	2019	Chris Kirchner	2022	Traci Hanegan (CM)
John Varley	2020	Ken Crooks	2021	John Castelveccchi (CM)
Kelley Cramm	2022	Al Hartman	2022	Duncan Phillips (CM)
Glenn Friedman	2020			Gordon Sharp (CM)
Kishor Khankari	2020			Tom Smith (CM)
Wei Sun	2021			Scott MacMurray (CM)
Martin Stangl	2019			Ryan Parker (CM)
Rachel Romero	2022			Pierre Luc Baril (PCM) (Virtual)
Charlie Henck	2022			Kurt Monteiro (CM)
Lloyd Le (Virtual)	2019			Greg Gross (CM) (Virtual)
				Justin Garner (CM)
				Jim Coogan (CM)
				Brendan Dingman (CM) (Virtual)
				Ken Kuntz (CM) (Virtual)
				Duncan Green (PCM) (Virtual)
				Rachel Dorothy (Guest)
				Anne Juran (PCM)
				Danny Sanchez (CM) (Virtual)
				Mike Carl (PCM)
				Eric Ballachey (CM)

				Brendon Burley (CM)
				Wade Conlan (CM) (Virtual)
				Joy Cox (Guest) (Virtual)
				Dr. Ali Salim Shirazi (PCM)
				Jacob Edmonson (CM)
				Brent Fullerton (CM)
				Alfredo Oliveira (Guest) (Virtual)
				Pavel Likhonin (CM)
				Scott MacMurray (CM) (Virtual)
				Mark Malkin (CM) (Virtual)
				Kurt Monteiro (CM)
				Gaylon Richardson (CM)
				Ryan Soo (CM)
				Mark Richards (Guest)
				Deanti von Worden (Guest)
				Matthew McLaurin (Guest)
				Guy Perreault (CM)
				Jordon Clark (Guest)
				Ken Shifflett (Guest)
				Jeremy Miller (Guest)
				M Farood Saeed (Guest)
				Tanna Tennyson (Guest) (Virtual)
				Luke Fresconi (Guest) (Virtual)
				Danica Ratnapradipa (Guest) (Virtual)
				Brooks Stout (Guest) (Virtual)
				Wenhong Xue (Guest) (Virtual)

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

TAC Section Head: Brad Cochran	SH9@ashrae.net
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
--	------------------

Final minutes were approved by the TC at the 2024 Winter Conference in Chicago.

## **CALL TO ORDER**

Bob Weidner called the meeting to order at 3:05 PM EST.

## **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.*

(Code of Ethics: <https://www.ashrae.org/about/governance/code-of-ethics>)

(Core Values: <https://www.ashrae.org/about/ashrae-s-core-values>)

## **TITLE, PURPOSE, SCOPE for TC9.10**

Bob W. read our Title, Purpose, and Scope:

*TC 9.10 is concerned with HVAC components for laboratory systems and their use therein. These components include but are not limited to air intakes, supply air conditioning systems, air distribution methods, laboratory fume hoods, biological safety cabinets, exhaust systems and exhaust discharge. The technical committee will address the unique requirements of all types of laboratories. These laboratories include but are not limited to nuclear, pharmaceutical/medical, general chemistry, and teaching. Additional TC 9.10 concerns are; (1) the reduction of energy usage in laboratory systems, (2) the monitoring of government regulations affecting laboratory operation.*

## **SELF INTRODUCTIONS**

Those in the room introduced themselves.

## **MEMBERSHIP**

Took roll call for voting members. Eleven of 15 voting members are present. Quorum achieved.

## **MEETING MINUTES**

It was moved and seconded to approve the meeting minutes from the last meeting. The minutes were approved unanimously.

## **ANNOUNCEMENTS**

Gordon received the Exceptional Service Award. The group gave him a round of applause.

## **SECTION HEAD REPORT**

Brad Cochran, Head for Section 9 gave his report. For new YEA members, if you attend your first conference, you get a free registration. For new non-YEA members, you get a free registration for your first conference in the first two years of your membership.

Electronic roster process is being updated, hopefully by Chicago. Will be using TC 9.9 as the test case. TAC implemented a balance requirement for voting membership on a TC. Brad tracks this manually. ASHRAE would like an official way to track this. They are asking members to be sure their bio record is up to date on members' affiliation and discipline.

ASHRAE has formed a new standing committee; Global Technical Interaction Committee (GTIC). Looking at integrating with ISO standards on certain topics. If anyone would like to see a topic considered, please reach out to Brad.

The Applications volume of the handbook has grown significantly in size. The Handbook Committee is asking TCs to review their chapters and remove superfluous information. If it can't be reduced, the committee may split Applications into two volumes.

ASHRAE is pushing members to use the on-line version of the handbook. This means only the current version is available. ASHRAE is looking at how they can keep the historic versions of the handbook available for reference.

TC 9.12 is looking at creating a Tall Buildings track for the Chicago meeting. If anyone would like to present on the unique challenges of tall lab buildings, reach out to the TC.

The updated roster was issued by ASHRAE so Brad asked that members review the roster for accuracy.

You can contact Brad at:

[SH9@ashrae.net](mailto:SH9@ashrae.net)

[AsktaC@ashrae.net](mailto:AsktaC@ashrae.net)

### **PROGRAM SUBCOMMITTEE REPORT**

Rachel Romero provided a report. TC 9.10 is sponsoring a seminar that will be presented tomorrow. Please consider attending. Program committee met last week. They had plenty of ideas for Chicago but none moved forward. The subcommittee is looking for someone to agree to chair programs. It involves filling out some basic information and submitting it then reminding speakers to submit their abstracts.

Mark Richards agreed to chair a seminar on Title 24 Changes .

Christine agreed to chair a forum on Data Communications in Critical Environments.

Kurt Monterio agreed to chair a Seminar on Office to Lab Conversions.

Justin Garner agreed to be a speaker for a seminar on Terminal Unit Testing.

Ryan Soo agreed to chair. Static Pressure Optimization in VAV Laboratories

See attached report for more information.

### **RESEARCH SUBCOMMITTEE REPORT**

Bob W gave a report:

1835 TRP Characterizing the performance of induced flow stacks. Brad gave a report. The Contractor is The Ohio State University. We have been meeting bi-weekly. The site has been approved. Fan selections have been approved. We are waiting for contractor pricing prior to moving forward.

SPC 129 – Measuring Air-Change Effectiveness - Kishor reported that the RTAR has been approved and the research has industry support.

There is another RTAR that TC4.03 intends to submit having to do with overhead heating. Jordan Clark stated that there are 4 other TCs involved in this.

Subcommittee meetings were held virtually prior to the meeting. Everyone is free to join these meetings. They are listed in the ASHRAE 365 app.

See attached report.

### **LAB CLASSIFICATION SUBCOMMITTEE**

Danny Sanchez gave a report. Making good progress on the Lab Classification document. They have been meeting monthly. They are trying to make it more user-friendly.

See attached report.

### **STANDARD 110**

Tom Smith gave a report. They have independently evaluated each section of the standard. They are working extensively on the tracer gas section to incorporate an alternative tracer gas and a new ejector. Will be having

multiple parties run tests to compare to the previous standard results. Hope to have the final standard approved in 2026. Hope to have the draft ready for public review in January 2025.

#### **SPC 129 – Measuring Air Change Effectiveness**

Tom Smith reported that they have met several times. It looks like the standard has a lot of potential applications. Considering using 3 different methods of evaluation, research, field test, and CFD test. Still have a lot of work to do. Looking for additional committee members who represent producers.

#### **DESIGN GUIDE**

Ann Juran is the chair of this subcommittee. Almost finished revising the table of contents. Should be finished in a couple of months and will present to the full committee for review. Still have a deadline of March of 2025. See attached report.

#### **HANDBOOK SUBCOMMITTEE**

Mark Malkin has agreed to chair this subcommittee.

#### **ASHRAE JOURNAL**

Roland Charneux reported that the Journal ran an article in the September, 2022 issue on a Technology Award: Odor Avoidance Primary IAQ Concern for Lab Design.

#### **WEBSITE**

Jim Coogan reported he has posted minutes but hasn't done much else. Bob agreed to work with Jim to remove old content and add updated content.

#### **RP 1780**

Bob shared a video which summarized the results of this research project. The results show significant cross-contamination across energy recovery wheels. Discussion ensued regarding the risks of using wheels in a laboratory application.

Rachel Romero moved to approve the RP 1780. Guy seconded. The motion passed (10,0,2)

#### **ALI COURSES**

Laboratory Design Course – The Basics and Beyond – John Varley reported there was no class at this meeting. If there is a class in Chicago, it will be John's last class. He has options on replacement instructors.

Laboratory Exhaust Course – Safe and Energy Efficient Design – Brad said it was not presented at this conference.

Laboratory Controls Course – John C reported there is no movement on this.

#### **LIAISON REPORTS**

TC 1.4 Control Theory and Application – Jim Coogan: No report

TC2.2 Plant and Animal Environment- Henry was not present. Anne attended but nothing to report

TC 4.3 Ryan – Ventilation Effectiveness RTAR. PTAR Duncan is working on this.

TC5.1 Fans - Brent Fullerton reported that the DOE fan regulation is moving forward. It was published in the Federal Register in May. It establishes a test procedure for fans and blowers to determine the fan energy index.

TC5.3 Room Air Distribution–Kishor stated he has nothing to report.

TC7.6 Building Energy Performance – Christine reported working on decarbonization. They are working on aligning the TCs work with the Decarbonization Task Force efforts. Have proposed a new standard for “A Common Data Collection Format for Commercial Building Energy Audits”.

TC7.9 Building Commissioning –Justin Garner said he has nothing to report.

TC9.2 Industrial Air Conditioning and Ventilation. Scott MacMurray said he was at the meeting but has nothing to report. He will take over as liaison to this committee.

TC9.6 Healthcare Facilities – Traci Hanegan said in the infectious diseases subcommittee forum someone with the EPA reported they did some research on HEPA room units and BPI and UV. They found very little difference when the BPI and UV unit were running and when they weren't. In-room HEPAs were making a difference. Traci will post the report on Basecamp

TC9.7 Educational Facilities – Keith Hammelman was not present. No report.

TC9.11 Clean Spaces – Roland Charneux reported subcommittee on energy efficiency met at this meeting.

MTG ACR –Jim Coogan said the MTG has finished a research project on the scientific basis on ACR. Analyzed a lot of literature but found very little science behind it. Work statement in progress for ventilation performance. Working on a white paper on air change rates and on programs for future meetings.

62.1 Ventilation for Acceptable IAQ – Brendon Burley is the chair and was not present. No report

90.1 – Jason Atkisson was not in attendance. NO report

Epidemic Task Force – Brad Cochran reported that ASHRAE received public comment on Standard 241P: Control of Infectious Aerosols

SMACNA – No report

NFPA 45 – No report.

NSF – Frank Spevak – No report

ISPE – No report.

ASTM Z9.5 – Jim Coogan stated they are working on formulating a plan to revise the standard on a three to five year rotation. See attached report.

AIHA Lab Health & Safety – Tom Smith reported that they are working on an article on evaluating fume hood airflow monitoring devices. Two articles due on a 3-step approach to insuring fume hood proper performance.

I2SL – Gordon reported. I2LS has a conference coming up in October. Recently hosted a virtual conference. Labs2Zero program is making progress. The goal is to accelerate the decarbonization of laboratories. Now have a large number of labs in the database. Similar to EnergyStar program to set a baseline for laboratories. Refer to attached report.

Title 24 – Brad reported there are some significant changes coming when the 2025 standard comes out.

Kishor gave a presentation on his work on Analysis of Demand Controlled Ventilation using Computational Fluid Dynamics

Tom Smith gave a presentation on his ongoing research on fume hood testing and a replacement for SF 6. He has done additional research on the minimum flow for VAV fume hoods.

The committee discussed the difficulty with the hybrid meeting. The virtual attendees found it very frustrating. They had trouble hearing people who were speaking.

**NEW BUSINESS**

None

**ADJOURN**

It was moved and seconded to adjourn at 6:08 PM EST

**ASHRAE TC 9.10 Laboratory Systems  
Program Sub Committee  
Monday June 19, 1:00-2:00 PM EDT  
Meeting Minutes**

**Program Sub Committee Meeting, Tampa Annual Meeting 2023**

**Minutes:**

**Attendees:** Jim Coogan, Bob Weidner, Christine Reinders, Pierre Luc Baril, Jake Edmonson, Roland Charneaux, Martin Stangl, John Castevecchia, Ryan Soo, Danika Ratnapradipa, Tanna Tennyson, Brad Cochran, Mike Carl

**1. Review of Roles:**

Programs Chair:

- Maintain a list of program ideas
- Solicit program chairs and speakers
- Solicit reviewers for Conference Papers
- Assist in submitting programs online
  - Go to Track Chair or ASHRAE staff for assistance
- Serve as the liaison between your TC and CEC
- You are not responsible for presenting all of your TC's programs!

Session Chair:

- Develop a detailed **program abstract** and identify speakers (contact Track Chair with questions)
- Upload the required information on the session and speakers to the Conference website
- Preview speaker presentations to check that they meet the ASHRAE Conference Presentation Policy (found at [https://www.ashrae.org/file%20library/conferences/speaker%20resources/conference-presentation-policy\\_final\\_2019.07.10.pdf](https://www.ashrae.org/file%20library/conferences/speaker%20resources/conference-presentation-policy_final_2019.07.10.pdf))
- Make sure speaker presentations are uploaded prior to the Conference
- Coordinate presentations to minimize overlap and make sure the timing is correct
- Introduce and monitor session at the Conference
- Assist authors in identifying learning objectives & completing Q&A

**2. Sponsored Program in Tampa:**

**Seminar 65:** Proving Control Performance for Critical Ventilation

- Chair : Jim Coogan
- Wednesday, June 28 9:45-10:45am

**3. Future ASHRAE Conferences**

January 20-24, 2024 – Chicago, IL – Technical Chair – Suzanne LeViseur  
Indianapolis – Technical Chair – Brian Fronk

**Speaker Resources**

<https://www.ashrae.org/conferences/speaker-resources>

[https://www.ashrae.org//File%20Library/Conferences/Speaker%20Resources/SpeakersManual\\_0718](https://www.ashrae.org//File%20Library/Conferences/Speaker%20Resources/SpeakersManual_0718).

[pdf](#)

**a. Chicago Winter 2024 Conference Deadlines**

- June 14, 2023: Website Opens for Program Proposals
- June 28, 2023: Conference Paper Abstracts Due
- July 19, 2023: Conference Paper Abstract Accept/Reject Notifications
- August 2, 2023: Program Proposals Due
- October 16, 2023: Conference Papers Due
- November 8, 2023: Conference Paper Accept / Revise / Reject Notifications

**b. Chicago Tracks & Track Chairs Winter 2024**

- HVAC&R Systems and Equipment – Ng Yong Kong
- Fundamentals and Applications – Craig Bradshaw
- Refrigeration and Refrigerants – Atilla Biyikoglu
- Decarbonization and Climate Change – Som Shrestha
- Hydronic System Design -- Joe Chow
- Ventilation, IAQ, and Air Distribution Systems -- Ahmed H Abdel Salam
- Comfort, Indoor Air Quality, and Energy Efficiency – Kristen Cetin
- HVAC&R Controls - how to make it all work -- Alekhya Kaianathbhatta
- Design, Bid, Build and Design Build -- Ehab Mamdouh Abu Taleb

**c. Suggested formats:**

- **Panel Discussion:** can feature a broad range of subjects and explore different perspectives on industry related topics. This session format includes a panel of 3-4 speakers each addressing a facet of the session topic, followed by an interactive discussion lead by the session chair.
- **Debates:** highlight hot-button issues commonly faced by our membership. Industry experts, either on teams or as individuals, argue opposing sides of an issue, concluding with position summaries and audience feedback.
- **Forums:** The sessions are “off-the-record” discussed held to promote a free exchange of ideas. Reporting of forums is limited to allow individuals to speak confidentially without concern of criticism. There are no papers attached to forum

**d. Indianapolis Track and Chairs Summer 2024**

**e. Proposed Programs:**

**Ideas shared by Ryan:**

Title 24 Changes 2025 – Seminar – Jim Coogan & Brad Cochran

Data Communications in Critical Environments – Forum?

Office to Lab Conversions – Jake Edmondson

Dealing with Fires in Fumehoods

Battery Fires

Terminal unit testing– Jake Edmondson

What Standards Cover, what results mean, what is not covered?

collaborate with other committees

Should this be a wider discussion about testing? – Jim Coogan

Static Pressure Optimization in Lab VAVs

Testing, Optimization, Controls – combine with energy optimization idea

Artificial AI in critical environments

**Ideas carried forward:**

Panel on Z9.5 – Standard updates

Use of ventilation effectiveness test to evaluate portable air cleaners – Tom Smith

IAQ Track – Seminar

3 presentations (Challenging Filtration, air tracer testing, ventilation effectiveness. Filter location, airflow patterns, space characteristics).

Safety Objectives and Operations – By Safety Topics or Job Titles

EH&S – Safety

Design Engineer

Facilities Operator – Operations

Forum on energy savings expectations – Control sensitivity

Combine with Static pressure optimization in Lab VAVs

1780RP Cross Contamination on energy recovery wheels – present results – Bob W

Look into other TC Co-sponsors from RP (9.6)

Seminar on BPI Air Cleaning Post COVID – collaborate with SSPC 185.5

Separate seminar on air cleaners? Or combine – Tom Smith & Bob

Demand Control Ventilation in Labs to reduce air flow rates – May not be Chicago

Gordon Sharp, Tom Smith, Kishor? Jim Coogan?

University Case Studies – University of Chicago, Northwestern, Northeastern – Ken

I2SL Chicago Chapter? Local Projects?

John Varley? U of I

Unfamiliar Hazards – 3D printing, Nano Sciences, (EH&S, UL Group) – Northwestern Medical School building (I2SL Chicago)

Jake Edmondson – 3D Printing

## **ASHRAE 9.10 Research Subcommittee Summer 2023 Meeting Minutes (6/19/23)**

**Virtual Meeting Attendees:** Bob Weidner – Research Chair, Tom Smith, Brad Cochran, Jason Atkisson, Pierre Luc Baril, Stephan Sandelin, Mike Carl, Ryan Parker, Ryan Soo, Martin Stangl, Tanna Tennyson, Kurt Monteiro, Danika R, Jake Edmondson, Roland, Lloyd Lee, John C.

- 1. 1780-RP Research Project (Test Method to develop a Methodology to Evaluate Cross Contamination of Gaseous Contaminants within Total Energy Recovery Wheels) - University of Saskatchewan – Easwaran Krishnan**
  - a. Status of Research Project
    - i. PMS voted 5-0 to approve on with a few minor edits.
    - ii. TC 9.10 Vote at Tuesday 6/27/23 Main Meeting. RHW to move for vote to approve
    - iii. Copy of Final Report & Presentation will be made available upon 9.10 Approval.
- 2. 1835-TRP Update-1835-TRP (Characterizing the Performance of Entrained Flow Stacks) – Brad C. (CPP)**
  - a. Project was awarded to Ohio State University
  - b. Brad update – Project has been moving along with monthly meetings; Last Meeting: 4 out of 5 exhaust fans were approved to move forward with for the test bench.
- 3. Research Projects under consideration**
  - a. RTAR: “Survey of sources of contamination in existing labs” Roland C. and Tom Smith. RTAR draft is written; awaiting review from Tom Smith.
  - b. Ventilation Effectiveness for Labs** – Variety of Groups doing this work - I2SL, ASHRAE MTG ACR, SP 129; Kishor – RTAR is approved; research has some industry support; **Work Statement in process and close to completion.**
  - c. Using AI to help better operate buildings – **Future research – Jim Coogan to provide input.**
  - d. Potential research needed following forthcoming Program Initiatives:**
    - i. Demand Control Ventilation in labs to reduce air flow rates – Forum or Seminar; Kishor ready to present – Need 2 more speakers – Gordon Sharp? Overview of DCV – Tom Smith; What is it, How does it work? Avoid commercialism. Tom follow up! Paul Fusson, Amanda, Rachel – potential chair: Chicago or Indianapolis?
    - ii. Hourly data on lab plug loads needed; are metrics available? Database follow up from Labs21 may be helpful – Future Program – Lab2Zero?
    - iii. Carbon Emissions within labs
- 4. Review of pertinent on-going research outside 9.10**
  - a. RP 1833 – Air Change Rates – Research is Complete; Future program should come out of this. Sets basis for future research.
  - b. Work Statement 1936 – Air Change Rates vs. Effectiveness – In development – co-funded by Price; MTG ACR;
  - c. 3D Printing Hazardous Issues (nano particles, chemicals, fumes, etc.) – TC 9.7 discussing; Roland to follow up and also Jason Atkisson – Protocol for investigation for contaminant emission could be used for 3D.
- 5. New Research Topics for consideration:**
  - a. Tom Smith – AIHA – Hazardous emissions in Vivariums; nuisance odors, air changes – historic design practices; advances in technology. ALAC criteria – 10AC without protective environment. Should be more research.
  - b. Ventilation effectiveness research needed. Jason Atkisson

# ASHRAE TC 9.10 Laboratory Classification Subcommittee

## Meeting Minutes – Version – **DRAFT**

Virtual Meeting (MS Teams) - 2023/06/20 - 11:00am MST

These draft minutes are not the official minutes until approved by this committee.

### Attendees

Name	Name	Name
Bob Weidner	Jake Edmonson	Lloyd Le
Guy Perreault	Dan Diehl	Duane Keenan
Danny Sanchez	John Castevecchia	Danny McGrail
Tom Smith	Danika Ratnapradipa	Shelby Bicknell
Roland Charneux	Jason Atkisson	
Jim Coogan	Tanna Tennyson	
Pierre-Luc Baril	Brad Cochran	
Walker C. Jones	Wade Conlan	
Ellen Gordon	Ryan Parker	

### Old business

Updates to previous action items noted in red

#	ACTION	RESPONSIBILITY	STATUS
1.4	Tentative next revision target for <del>late-2023</del> (revised to 2025) May need to align with other key publications	Danny S.	Opened
3.1	Contact ASHRAE Distinguished Lecturer Program	Guy P.	Opened
4.2	Need to develop white paper/webinar series as part of LVDL PR campaign (in parallel with the ASHRAE Distinguished Lecturer Program)	TBD	Opened
7.5	Pre-public document review by AIHA and ACS	Danny S.	Opened
7.6	Document format needs attention (landscape vs portrait table orientation)	All	Opened
7.7	Revision of purpose and scope section	Jim C.	<b>Completed</b>
8.1	Draft definitions for Lab components	Tom S.	Delayed until doc re-org. is finished

### Action Items

#	ACTION	RESPONSIBILITY	STATUS
9.1	Report to Summer Conference	Danny S.	<b>Completed</b>
9.2	Subcommittee will aim to have doc draft ready by 2024 Summer Conference	All	Opened
9.3	Subcommittee will aim to have doc finished by 2025	All	Opened

### Open discussion and feedback

- Discussion about new Purpose & Scope section
- Discussion around Reference Section

### Adjournment

- 2023/06/20 11:45 am MST

### Next Meeting

- August 25th 11:00am MST

Minutes submitted by: Danny Sanchez, 2023/08/20

Minutes approved on: **[Date]**

## TC 9.10 Laboratory Design Guide Subcommittee

Meeting Minutes

20 June 2023

Virtual (via WebEx)

### Attendees:

Brad Cochran  
Bob Weidner  
Guy Perreault  
Danica R  
Guy Perreault  
Jake Edmondson

Jason Atkisson  
John Castelveccchi  
Martin Stangl  
Nathan Ho  
Pierre Luc Baril  
Roland Charneux

Ryan Parker  
Shelby Bicknell  
Tanya Tennyson  
Tom Smith  
Wade Conlan  
Anne Juran

### Discussion:

1. Table of Contents (TOC) Committee has been working for several months
  - a. Used the OPR as a guide for the flow
  - b. General reorganization – many chapters are renumbered
  - c. A few chapters have been broken apart with portions moved to other chapters
  - d. We thought we were done at our last meeting but then realized that portions of the Sustainable Design chapter needed to be integrated into other chapters
  - e. Guessing we're about 2 months from providing TOC for review to the rest of the committee
2. ASHRAE's Authoring Portal
  - a. Microsoft 365 cloud
  - b. TOC committee has been working here
  - c. All committee members will soon be added
  - d. Allows for more collaboration
3. Goal is to complete the Guide by March 2025.
4. We had time so we reviewed some of the changes and that prompted some limited comments and discussion.

**Chapter status (out of date based on updated TOC, but keeping in minutes so we don't lose the info to pull from in the future)**

Ch	Title	Chapter Lead	Edit/Review Team	Notes
TOC		Anne Juran	Tom Smith, Guy Perreault, Chris Kirchner, Doug Ross, Bob Weidner	-There are many comments in the document -Need a wholistic review of the entire document – chapter to chapter is lacking continuity -form committee to focus on outline & possibly reorganize & remove

				duplication / conflicts and check references
1	Introduction	Bob Weidner		Wait for end
2	Background	Bob Weidner		Wait for end
3	Design Process	Chris Kirchner	John Castelvechi, Wade Conlan, Doug Ross	
4	Laboratory Planning	Brooks Stout	Harris Sheinman, Danny Sanchez	-Needs more work – will review in the next month -incorporate / reference lab classification?
5	Exhaust Hoods	Kurt Rindoks	Larry Meisenzhal, John Castelvechi, Brooks Stout, Ken Kuntz, Tom Smith	
6	Primary Air Systems	Brendan Dingman	Bob Weidner, Brendon Burley, Charles Murphy, Wei Sun, Pierre Luc Baril, Chris Kirchner, Nathan Ho	-Need someone to take the lead – ask Tuesday
7	Process Cooling	Jason Atkisson	Brooks Stout, Charles Murphy, Nathan Ho	-Halfway done -Finished by summer mtg
8	Air Treatment	Bob Weidner	Rami Alkahlil, Charles Murphy	-Done by end of March
9	Exhaust Stack Design	Brad Cochran	Ken Kuntz, Glenn Friedman, Martin Stangl, Nathan Ho	-(need to reach out to Brad for an update)
10	Energy Recovery	Roland Charneux	Bob Weidner, Brendon Burley, Chris Kirchner, Glenn Friedman, Charles Murphy	
11	Controls	John Castelvechi	Guy Perrault, John Garrett Neubauer, Brendon Burley, Brad Cochran, Doug Ross, Ken Kuntz, Jim Coogan, Wei Sun	
12	Airflow Patterns and Pressurization	Wei Sun	Tom Smith, Salil Sansare, Dan Frasier, Jim Coogan	-Need subcommittee to figure out what's appropriate
13	O&M for Ventilation and Exhaust systems	Stefan Zandelin	Carol Donovan, Tom Smith, Harris Sheinman, Guy Perreault, Stefan Zandelin, Danny Sanchez	-Stefan will go through it first and then hold a subcommittee mtg

14	Laboratory Commissioning Process	Daniel Frasier	Carol Donovan, John Garrett Neubauer, Tom Smith, Wade Conlan, Glenn Friedman, Harris Sheinman, Mike Amstadt	
15	HVAC System Economics	Rajendera Kapoor	Tao Zhang	-Need to ask for help at the general meeting
16	Microbiological and Biomedical Laboratories	Daniel Frasier	Carol Donovan, Rami Alkahlil, Harris Sheinman, Wei Sun	
17	CFD Modeling of Laboratory Ventilation	Kishor Khankari	Brad Cochran, Chris Kirchner, Mike Carl	-Working on it
18	Sustainable Design	Rachel Romero	Brooks Stout, Chris Kirchner, Tao Zhang, Roland Charneux	-Has been reviewed -Should be closer to beginning of the guide? -TOC committee can assess location
19	????			-Seems like there won't be a Chapter 19 – TOC committee will assess
20	Ventilation Effectiveness	Kishor Khankari	Salil Sansare	-May be part of Chapter 17???
21	Testing	Tom Smith		-Covered in Cx & O&M – probably won't need to be a separate chapter
SG	Smart Guide	Christine Reinders	Rachel Romero	
NEW	Lab Classification – How to use Guide (placed in smart guide)	Danny Sanchez	Adam Bare	
Add to 5	Exposure Control Devices	Tom Smith	Salil Sansare, Harris Sheinman	-Done but needs to be incorporated into Chapter 5
Color code:	Completed	Ready for Review	Edits underway	Unknown

**ASHRAE JOURNAL Report to TC-9.10, June 2023**

September 2022

**Technology Award: Odor Avoidance Primary IAQ Concern For Lab Design**

Shana Scheiber, P.E.; Rick Flock, P.E.

## Kelley Cramm

---

**From:** Coogan, Jim <jim.coogan@siemens.com>  
**Sent:** Tuesday, June 27, 2023 4:25 PM  
**To:** Kelley Cramm; Weidner, Robert H.  
**Subject:** liaison reports

[EXTERNAL EMAIL]

TC 1.4 – nothing to report

### MTG ACR

- RP1833 is finished. Report has been approved. ASHRAE is processing the final documents. Literature Review for Evidence of the Basis for Specified Air Change Rates (ACR) for Cleanrooms, Laboratories, laboratory animal facilities, and health care facilities with medium to high ACR
- Work Statement being developed. Evaluating the relationship of air change rate (ACR) and ventilation performance in laboratories, clean rooms, and industrial spaces
- Committee is writing a white paper on the air change concept and its use.

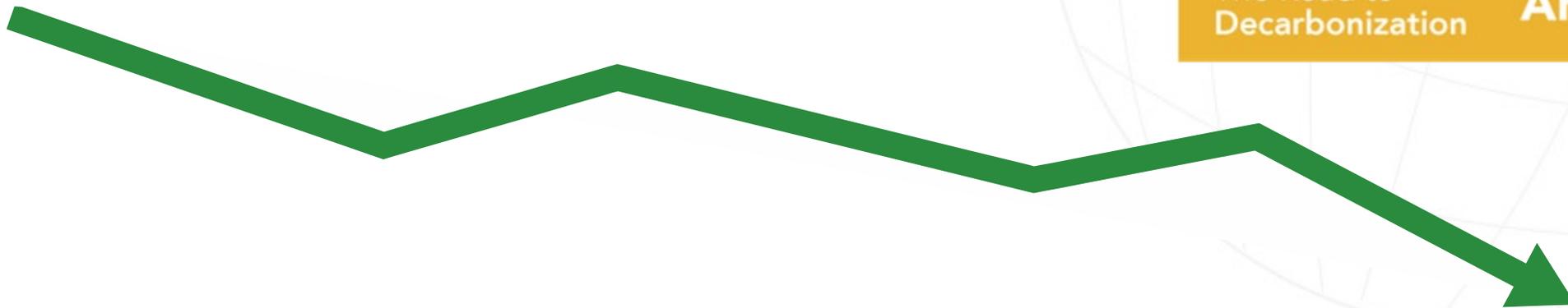
### ASTM/ANSI Z9.5 Laboratory Ventilation

Looking into possibility of starting a “short-turn” revision, with the purpose of activating a new generation of committee members.

Thanks,  
JimC

# Labs2Zero

Decarbonizing the  
World's Laboratories

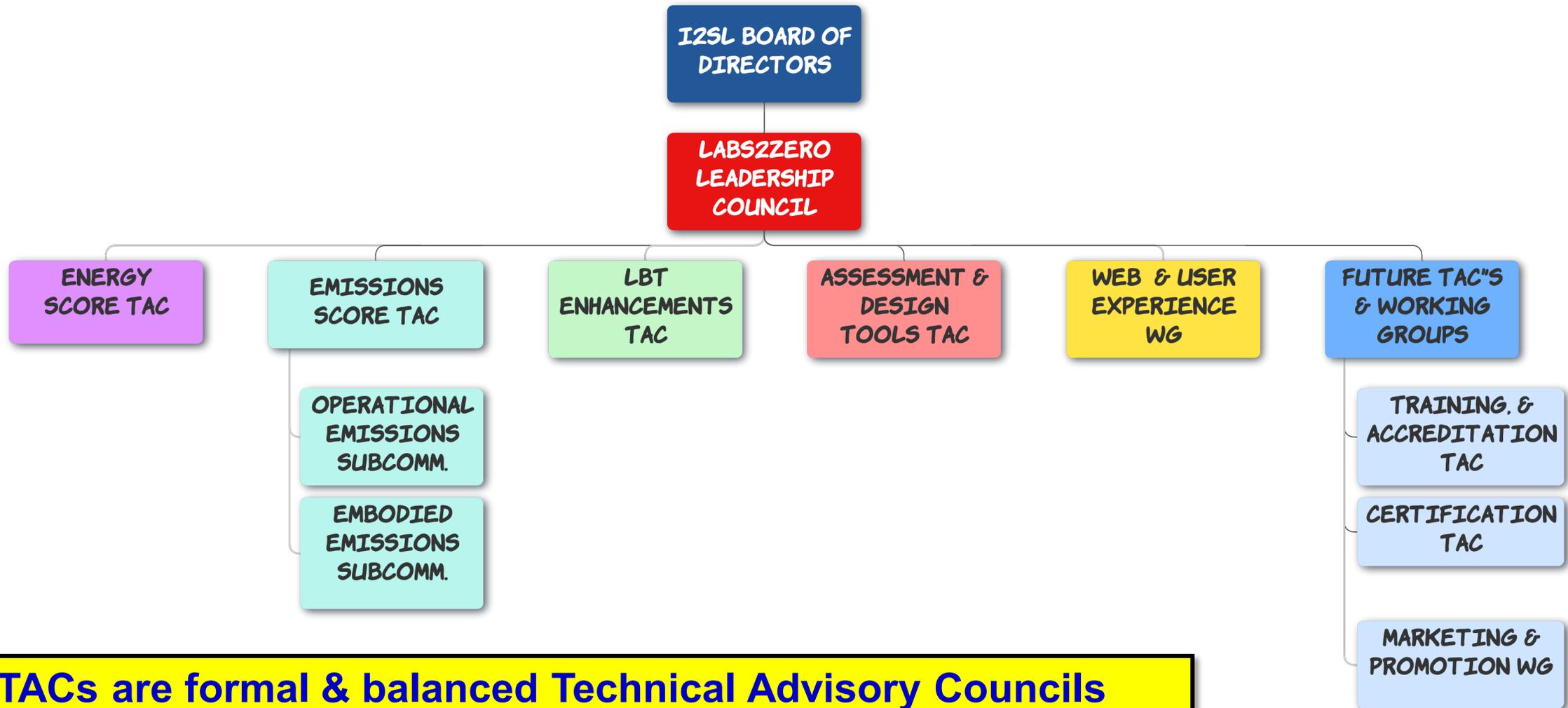


# Labs2Zero Elements & Structure:



**The Labs2Zero Program has six related program elements**

# Labs2Zero Program Organization Chart



- **TACs are formal & balanced Technical Advisory Councils**
- **ERG staffing to run groups, administer**
- **Paid technical consultants & authors as needed**

# LBT Enhancement TAC Core Group Members



<b>#</b>	<b><u>Name</u></b>	<b><u>Title</u></b>	<b><u>Organization/Affiliation</u></b>
1	Alison Farmer	Associate Director, Global Eng.	Vertex
2	Allen Doyle	Safety and Sustainability Specialist	3Flow
3	Desmond Greene	Managing Dir., Decarbonization	WB Engineers + Consultants
4	George Karidis	Vice President, Design Director	SmithGroup
5	Jacob Werner	Sr Project Architect	Ellenzweig
6	Jim Ormond	Director - ESG	LGC
7	Joe Ross	Senior Principal	tk1sc
8	John Alberico	Principal - Health & Ed.	RWDI
9	Josh Kace	Program Manager - Bldg EE & Decarb	LBNL
10	Kevin Belusa	President	Airgenuity, Inc.
11	Kimberly Reddin	Assoc. Principal, Dir. of Sustainability	Flad
12	Marcus Hazelwood	Project Manager	WB Engineers + Consultants
13	Quentin Gilly	Asst. Dir., Sustainability & Energy Mgmt	Harvard
14	Thomas Vu	Project Engineer	Affiliated Engineers, Inc.

# Energy Score TAC Core Group Members



#	Name	Title	Organization/Affiliation
1	Alison Farmer	Associate Director, Global Eng.	Vertex
2	Anthony Michetti	Director of Sustainability	Cell Signaling Technology
3	Arlen Li	Planning Principal	HGA
4	Dan Diehl	President	Aircuity
5	David A Golden	Project Manager, Capital Projects	UC Berkeley
6	James Donson	Energy Engineer	NREL
7	Jeff Wegner	Fellow, Energy + Sustainability	CRB
8	Josh Kace	Program Manager - Bldg EE & Decarb	LBNL
9	Kashyap Desai	Chief, Mech. Eng. & IBI	Laboratories Canada (SPIB, P
10	Kevin Shea	Principal - Science and Technology	Integral Group
11	Kristen Brozowski	Senior Sustainability Engineer	Buro Happold
12	Mike Dymarski	Retired Chief Admin Ofc - Chem Dpt	Retired, University of Toronto
13	Otto VanGeet	Principal Engineer	NREL
14	Paul Mathew	Retired Staff Scientist	On Sabbatical, formerly LBNL
15	Rebekah Gandy	Sciences Practice Area Leader- S Centr	Gensler
16	Richard A. Malmstrom	Assistant VP - Sustainability	Alexandria Real Estate Equitie
17	Robert Thompson	Mechanical Engineer	SmithGroup
18	Sam Huber	Manager of Design and Construction	Eurofins
19	Sarah Grady	Project Developer, Critical Env.	Siemens

# Emissions Score TAC Core Group Members



#	Name	Title	
1	Alicia Pandimos Maure	Sr. VP	Cannon Design
2	Alison Farmer	Associate Director, Global Eng.	Vertex
3	Anthony Michetti	Director of Sustainability	Cell Signaling Technology
4	Conor McGuire	Director of Sustainability	Columbia Construction
5	Dan Diehl	President	Aircuity
6	Deirdre Carter	Energy and Sustainability Mgr	Lawrence Berkeley Nat'l Lab
7	Dirk von Below	Project Manager	Flad Architects
8	Elisabeth Girgis	Mgr, Science & Sustainability Advice	Public Services and Procurement
9	Irmak Turan	Senior Associate	Thornton Tomasetti
10	Jacob Werner	Sr Project Architect	Ellenzweig
11	Jenifer Ballew	Sustainability Project Planner	City of Cambridge
12	Jesce Walz	Carbon + Circularity Research Lead	Perkins&Will
13	Joey Shea	Manager, Mission Activation - Key Acco	Interface
14	John P. McDonald	Principal	SmithGroup
15	Josh Kace	Program Manager - Bldg EE & Decarb	LBNL
16	Landry Watson	Executive Director - Sustainability	Alexandria Real Estate
17	Laura Carmona	Sustainability and Safety specialist II	HHMI
18	Melanie Silver	Sr. Building Scientist, Sr. Associate	Payette
19	Penny Avery	Air Quality Compliance Prog. Lead	Sandia National Laboratories
20	Shane Day	Project Manager	Affiliated Engineers, Inc.

# Assessment & Design Tools TAC Group Members To Date



#	Name	Title	Organization/Affiliation	Organization Type - Primary	Organization Type - Secondary
1	Alison Farmer	Associate Director, Global Eng.	Vertex	User	Pharmaceutical
2	Anthony Michetti	Director of Sustainability	Cell Signaling Technology	User	Life Sciences
3	Ari Greenberg	Sr. Associate, HVAC & Sust. Design	BR+A Consulting Engineers	Designer/Consultant	MEP Engineering Consulting Firm
4	Brad Cochran	Sr. Principal	CPP	Designer/Consultant	Specialty Engineering
5	Brooks Stout	Principal	Buro Happold	Designer/Consultant	MEP Engineering Consulting Firm
6	Chad House	Head, Life Science Americas	Siemens	Product/Service Provider	HVAC & Controls
7	Dan Doyle	Chairman	Grumman Butkus Associates	Designer/Consultant	MEP Engineering Consulting Firm
8	Devin Kleiner	Assoc. Principal, Sr Proj. Architect	Perkins&Will	Designer/Consultant	Architecture
9	Don Posson	VP, Corp Dir of Engineering	SmithGroup	Designer/Consultant	Architecture
10	Dru Larson	Sr Systems Energy Engineer	Mayo Clinic	User	Research Hospital
11	Eleanor Riley	Science & Policy Sector Staff	Laboratories Canada (SPIB, PSPC)	User	Government - Non-US
12	Greg Smithmeyer	ME and Mech. Dept Facilitator	Affiliated Engineers, Inc.	Designer/Consultant	MEP Engineering Consulting Firm
13	Jake Williams	Director - UK Sust. & Bldg Physics	Buro Happold	Designer/Consultant	MEP Engineering Consulting Firm
14	James Connelly	CEO	My Green Lab	Non-Profit	Lab Sustainability
15	John Swift	Principal, US S&T Leader	Buro Happold	Designer/Consultant	MEP Engineering Consulting Firm
16	Jon Flynn	Exec. Dir.- Facilities Services	Alexandria Real Estate	User	Lab REIT
17	Mark Stewart	Dir. of Park Operations	McMaster Innovation Park	User	Research and Innovation Park
18	Matt Tefft	Dynamic Air Corp.	Principal Sales Engineer	Product/Service Provider	HVAC Product Representative
19	Matthew W Severson	Preconstruction	ACCO Engineered Systems	Construction	Mechanical Contractor
20	Maura Kohl	Cushman + Wakefield - Senior Manager	LEED AP	Construction	Real Estate Management
21	Russell Knudson	Sr Building Performance Engineer	HGA Architects and Engineers	Designer/Consultant	Architecture & Engineering
22	Sean Convery	Mechanical Engineering Principal	Cator, Ruma & Associates	Designer/Consultant	MEP Engineering Consulting Firm
23	Skye Smith	Senior Project Manager	Kirksey Architecture	Designer/Consultant	Architecture
24	Solomon Degu	Assistant Director of Engineering	University of California San Francisco	User	University & College
25	Suzanne Belmont	Energy and Sustainability Manager	National Renewable Energy Lab	User	Government
26	Todd Gottshall	Engineering Manager	Western Allied Mechanical	Construction	Mechanical Contractor
27	Tom McGee	Vice President of Operations	Konvekta	Product/Service Provider	Energy Recovery Systems
28	Tom Smith	President	3Flow	Designer/Consultant	EH&S Consultant
29	Vladimir Lazov	Manager MEP Buildings	Sustainable Labs Canada/WSP	Designer/Consultant	Architecture
30	Walt King	Director, Northeast	Aircuity	Construction	Design-Build Retrofit
31	Yvon Lachance	Past President (SLCan), Principal (YLA)	SLCan & YLA Architecture	Designer/Consultant	Architecture
32	Zachary Heaps	Project Designer	Flad Architects	Designer/Consultant	Architecture

## ● The Labs2Zero Mission:

- ✓ Accelerate decarbonizing the world's labs with needed metrics, analysis services, training, and recognition

## ● Volunteers needed to help staff TACs & working groups

- ✓ I2SL is looking for more volunteers & paid contractors for Labs2Zero
- ✓ Online application form: <https://www.i2sl.org/labs2zero/volunteer.html>

## ● Sponsors & financial support needed for Labs2Zero:

- ✓ Looking for additional Founding Sponsors

Interested in supporting Labs2Zero? Please contact Gordon Sharp, [President@I2SL.org](mailto:President@I2SL.org) or Kathleen Brady, [Kathleen.Brady@erg.com](mailto:Kathleen.Brady@erg.com)

