



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

DRAFT

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 March 22, 2022

TC/TG/MTG/TRG TITLE Laboratory Systems

DATE OF MEETING February 1, 2022 LOCATION Las Vegas

VOTING MEMBERS PRESENT	YEAR APPTD	MEMBERS ABSENT	YEAR APPTD	CORRESPONDING MEMBERS AND ADDITIONAL ATTENDANCE
Guy Perreault	2020	Mary Foutz	2019	Roland Charneux – (CM)
Robert Weidner	2021	John Castelvechi	2020	Traci Hanegan – (CM)
Brad Cochran	2020	Brent Fullerton	2018	Doug Ross – (CM)
Christine Reinders-Caron	2019	Lloyd Le	2019	Duncan Phillips – (CM)
John Varley	2020	Martin Stangl	2019	Gordon Sharp – (CM)
Eric Ballachey	2019			Matt Gaedtke – (Guest)
Kelley Cramm	2021			Keith Hammelman - Guest
Ken Crooks	2021			George Isherwood – (CM)
Jacob Edmondson	2018			Dave Rausch – (CM)
Glenn Friedman	2020			Ben Fuller – (Guest)
Kishor Khankari	2020			Chris Kirchner – (CM)
Wei Sun	2021			Tom Smith – (CM)
				Scott MacMurray (CM)
				Ryan Parker (CM)
				Jason Atkisson (CM)
				Walter George (Guest)
				Otto Van Geet (Guest)
				Hoy Bohannan (CM)
				Kurt Monteiro (CM)
				Stephen Schoonbaert – (PCM)
				Matthew Lusardi (PCM)

				Michael Amstadt (CM)
				Gregory Marcus Gross (CM)
				Justin Garner (CM)
				Jim Coogan (CM)
				Victor Cincola (CM)
				Brendan Dingman (CM)
				Ken Kuntz (CM)
				Mark Malkin (CM)
				John Neubauer (CM)
				Victor Neuman (CM)
				Gaylon Richardson (CM)
				Ryan Soo (CM)
				Amanda Kirkeby (Guest)
				Duncan Green (PCM)
				Eddie Xue (Guest)
				Ian Li (Guest)
				Walker Jones (Guest)
				Ali Salim Shiraz (Guest)
				William Lin (Guest)
				Christine Benga (Guest)
				Jesse Fisher (Guest)
				Jordan Beardy-Singh (Guest)
				Deni Scar Sobek (Guest)

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

Note: These draft minutes have not been approved and not the official, approved record until approved by the TC.

CALL TO ORDER

Guy Perreault called the meeting to order at 3:30 PM PST.

TITLE, PURPOSE, SCOPE for TC9.10

Our purpose is focused on laboratories. Guy gave a brief description of the purpose of the committee.

SELF INTRODUCTIONS

Committee members and guests introduced themselves.

WEBSITE

Jim Coogan reported that the website needs some updating. He asked all members to take a look at the website and let him know what needs updating.

MEMBERSHIP

Brad Cochran circulated the roster for committee members to note their attendance. Twelve of 17 voting members are present, so we have quorum.

MEETING MINUTES

Brad moved and Wei Sun seconded to approve the meeting minutes from the last two meetings. The minutes were approved unanimously.

SECTION HEAD REPORT

Brad Cochran, Section Head for Section 9 gave his report. He stressed the importance of submitting the TC Activity Form. News from TAC: Recommend holding virtual meetings in between conferences, especially subcommittee meetings. This is particularly important for Program Subcommittee. This is ASHRAE's first hybrid meeting, and it has not gone well. Lots of problems with inconsistent equipment between rooms. Most TC meeting rooms do not have projectors. TAC is recommending that each TC appoint an AV Tech and TAC will provide training.

There are three new functional groups: MTG RES-Resilience, Task force on Building Decarbonization and TG -ASD – Task Group on Air and Surface Decontamination. TAC recommends we assign a liaison to the Task Force on Decarbonization. Gordon Sharp agreed to be the liaison. Rob is on TG-ASD. They intend to develop a test standard for electronic air cleaners. TC9.8 has changed their name from "Large Building Air Conditioning Systems" to "Special Building Air Conditioning Systems".

TAC is attempting to shift to a "Leader Servant" model to support TCs. If you want to send questions or feedback to TAC send them to asktac@ashrae.net.

ASHRAE STUDENT DESIGN COMPETITION

Rachel Romero was not present. Jason Atkisson agreed to help with this effort.

PROGRAM SUBCOMMITTEE REPORT

See attached report.

RESEARCH SUBCOMMITTEE REPORT

See attached report.

LAB CLASSIFICATION SUBCOMMITTEE

Danny was not present. Guy gave the report. See attached report.

STANDARD 110

Tom reported that they are working on updating sections of the standard. Major effort is finding a replacement for SF6 so it can be incorporated. Additional testing and research will be needed to finalize this.

DESIGN GUIDE

See attached report.

ASHRAE JOURNAL

The Journal ran an article last year on a Technology Award for a low energy lab titled "Innovations Helps Labs to Achieve Low Energy Use". Roland asked the committee to think about articles they could write for the Journal.

ALI COURSES

Laboratory Design Course – The Basics and Beyond – John Varley - The course was held on Sunday in person for the first time in two years. There was 30+ attendees. May want to consider a course just on BSLs. John is getting to a point where he would like to have someone take over for him. He will teach in Atlanta but would like the committee to consider finding a replacement.

Stack Design Class – Brad has been giving this quarterly (virtually). It was held in person on Monday and had approx. 20 attendees.

Controls Class is being developed. John is working on it, but it is not quite finished.

LIAISON REPORTS

TC 1.4 - Guideline 36 continues to expand. No knowledge of lab controls being included in this standard.

TC2.2 - Dave Rausch said the TC is active.

TC 4.3 – Ryan Parker said they had a discussion on transmissibility and how ventilation effectiveness affects this. Need some research.

TC5.1 - Guy reported for Brent. TC5.1 is co-sponsoring the induced fan flow project. They are also leading an RP on belt driven fan efficiency.

TC5.3 – Kishor reported that the TC wishes to step up their recommendations in the pandemic.

TC7.6 – Christine said this TC is shifting focus to decarbonization.

TC7.9 – Mike Amstadt reported that not much related to labs is happening on the committee.

TC9.2 – No liaison. Eric B reported that the Industrial Ventilation Conference is running just before our conference in Toronto at the same venue as ASHRAE. Newest revision of IEE1635 will be issued sometime this year.

TC9.6 – Traci Hanegan reported that there are ongoing Covid and infection control discussions. Lots of discussion with the MTG on ACR regarding rates and ventilation effectiveness. NIOSH is doing research to develop stickers that change colors if the UVC dose is adequate. Focus is on in-room HEPA filter units.

TC9.7 – Keith reported that they have been focused on working with the Epidemic Task Force so they have not done much around labs. They are doing some work on research for 3-D printers and room air filtration units.

TC9.11 – Roland reported they are working on energy efficiency of cleanrooms, ventilation effectiveness and demand control ventilation.

MTG ACR – Jim Coogan reported there are a couple of research projects – literature search on how ACR originated. This is almost finished. Second project just being initiated is research on how ACR affects ventilation effectiveness. Committee members have also done some individual unfunded research on their own. Not sure what to do with this yet. Developing a white paper on ACR.

62.12 Ventilation for IAQ – No report

90.1 – Jason reported not a lot of activity related to labs. Fan power limitations are being reduced about 10% across the board.

ETF – Brad reported they are winding down. Work will be distributed to appropriate TCs. Toronto will likely be the last meeting for the ETF.

SMACNA – No report

NFPA 45 – Ken Crooks reported initial comment period has closed. There will be another round after that.

NSF – No report

ISPE – No report

AIHA/ASSE Z9.5 (ASSE is now ASSP and is cognizant, AIHA is no longer affiliated – Jim Coogan reported they have just about wrapped up the public comment period and the revision will be out in a couple of years.

I2SL – Gordon reported that there have been major changes in the organization. Phil Wirdzek passed away. Gordon is now president of I2SL and it is taking a lot of his time. Conference will be in Pittsburg this year. Had a conference in Atlanta in September. Attendance was down. Some Best Practice Guides have been issued. Will be doing some webinars. Gordon's email address is President@I2SL.org. Forming some new chapters in the LA area. Will be looking at doing a lab decarbonization certification program. Would like assistance if committee members would like to help.

NEW BUSINESS

Kishor asked if it would make sense for TC9.10 to have a subcommittee on decarbonization. Gordon asked if the committee would work with I2SL since they are moving forward with a certification program.

Kishor noted that the ASHRAE Board of Directors has a Task Force on Decarbonization that is very active.

Gaylon said the AABC is revising their standards and will be adding the EPA lab standards. They will also be creating a standard for laboratory testing. Gaylon thinks the industry needs a standard, especially related to fume hood testing.

ADJOURN

It was moved and seconded to adjourn at 5:30 PM PST

**ASHRAE TC 9.10 Laboratory Systems
Program Sub Committee
Wednesday January 26, 2022 10:30 – 11:30AM PT
Meeting Minutes**

Program Sub Committee Meeting, Las Vegas Winter Meeting 2022

Attendees:

Christine Reinders	Rachel Romero	Otto Van Geet
Ken Kuntz	Brendan Burley	Robert Weidner
Jim Coogan	Greg Gross	Roland Charneux
Tom Smith	Amanda Kirkeby	Ryan Parker
Brad Cochran	Cam Klein	Wade Conlan
Guy Perreault	Jake Edmonson	
Kishor Khankari	Ken Crooks	

Programs

Sponsored Program:

(Withdrawn) – To be submitted to Toronto by Rachel Romero

Seminar 5: Critical Ventilation in Critical Facilities: Demand Control Ventilation

Chair: Christine Reinders

Co-Sponsored Programs:

Forum 3: Should Have Seen That Coming! Climate Impacts on Cleanrooms, Labs, Hospitals and other Critical Environment Operations

Chair: Mitchell Swann

Tuesday, February 1 9:45 AM – 10:45 AM PST

Caesars Palace Las Vegas, (P), Neopolitan III/IV

Seminar 39: Transmission of Aerosols in Dental Treatment Rooms

Chair: Amit Bansali

Wednesday, February 2 9:45 AM – 10:45 AM PST

Caesars Palace Las Vegas, (E), Augustus III/IV

Forum 1: - Will High ACH Reduce the Spread of Airborne Contaminants

Chair: Jim Coogan

Caesars Palace Las Vegas, (P), Neopolitan III/IV

Future Programs Discussion

Toronto:

Sponsor:

1. Critical Ventilation in Critical Facilities: Demand Control Ventilation - Rachel to resubmit
2. Panel on Z9.5 standard update will be published – Jim Coogan Chair
3. Forum – Decarbonization in Labs – Rachel submitted

Co-Sponsor:

1. **MTG ACH** – Defining and estimating ventilation effectiveness – Kishor, Tom & Phil

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Atlanta:

Sponsor:

1. Safety Objectives & Operations & Effectiveness – By Safety topics or Job titles – Jim Coogan
 - a. Safety – EH&S
 - b. Engineering – Design Engineer
 - c. Operations - Facilities Operator
2. Forum on the energy savings you think you are getting but you are not – Tom Smith
 - a. Exhaust Fan Flo, Energy Savings vs Fume Hood Flow & VAV sensitivity expectations, sensitivity
3. Unfamiliar Hazards - 3D Printing, Nano Science, Robert Weidner (w/Environmental Health & Safety)
4. Demand Control Ventilation – Sub Committee out of Research
5. Airflow control performance – Jim Coogan
6. Decarbonization – Effect on labs – Seminar following Toronto Forum – Kishor & Rachel

Co-Sponsor:

Atlanta – BPI – Robert Weidner perhaps co-sponsor

Future ASHRAE Conferences

June 25-29, 2022 – Toronto, ON - Technical Chair – Kristen Cetin

June 22-24, 2022 Toronto, Canada – Topical Conference

Ventilation 2022: 13th International Industrial Ventilation Conference for Contaminant Control

February 4-8, 2023 – Atlanta, GA – Technical Chair – Gary Debes

June 24 – 28, 2023 – Tampa, FL – Technical Chair – Bert Phillips

Topical Conference – Ventilation 2022 – Presentation Proposals Due February 11, 2022

Toronto Annual Conference Deadlines 2022 – June 25 – 29, 2022

Thursday, February 17, 2022: Extended Abstract Paper Due

Thursday, February 17, 2022: Program (Seminar, Forum, Workshop, Debate and Panel) Proposals Due

Friday, February 18, 2022: Conference and Technical Paper Final Accept/Reject Notifications

Friday, March 18, 2022: Extended Abstracts Accept/Reject Notifications

Friday, April 01, 2022: Debate, Panel, Seminar, Forum, Workshop Accept/Reject Notifications

Speaker Resources

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

https://www.ashrae.org/File%20Library/Conferences/Speaker%20Resources/SpeakersManual_0718.pdf

Toronto Tracks & Track Chairs June 2022

1. **Fundamentals and Applications:**
Track Chair: Erik D Sanchez esanchez@prmech.com
2. **HVAC&R Systems and Equipment:**
Track Chair: Marites Calad mcalad@norman-wright.com
3. **Research Summit:**
Track Chair: Brian Fronk brian.fronk@oregonstate.edu
4. **Connected Buildings, Connected Communities:**
Track Chair: Ahmed Abdel Salam ahmed.abdel-salam@usask.ca
5. **Cold Climate Building System Design, Operation and Resilience:**

**ASHRAE TC 9.10 Laboratory Systems
Program Sub Committee
Wednesday January 26, 2022 10:30 – 11:30AM PT
Meeting Minutes**

Track Chair: Davide Ziviani dziviani@purdue.edu

6. IAQ, Energy Use, Comfort and Health of Sustainable Buildings:

Track Chair: Rafi Karim rkarim@aeieng.com

7. Professional Development and Education:

Track Chair: Maggie Moninski maggie.moninski@gmail.com

8. Buildings in the Aftermath of COVID-19:

Track Chair:

Atlanta Tracks & Track Chairs February 2023

- 1. Fundamentals and Applications:** Anoop Peediyakkan
- 2. HVAC&R Systems and Equipment:** Billy Austin
- 3. Refrigeration & Refrigerants:** Brian Fronk
- 4. Grid Resilience & Thermal Storage:** Nohad Boudani
- 5. Pathways to Zero Energy Emissions & Decarbonization:** Som Shrestha
- 6. Multifamily & Residential Buildings:** Lina Maged Hashem
- 7. Building Simulation & Virtual Design in Construction:** Suzanne LeViseur
- 8. Operations & Maintenance:** Alekhya Kaianathbhatta
- 9. Mini Track – Innovative responses to supply chain challenges**

DRAFT - Atlanta Winter Conference Deadlines

Tuesday April 5, 2022 – Conference Paper Abstracts, Technical Papers, and Paper Session Requests Due

Tuesday April 26, 2022 – Conference Paper Abstract Accept/Reject Notifications

Monday July 25, 2022 – Conference Papers Due – Submitted for Review

Tuesday August 9, 2022 – Debate, Panel, Seminar, Forum, Workshop Proposals Due

Monday August 15, 2022 – Conference Paper Abstract Accept / Revise / Reject Notifications

Monday August 29, 2022 – Revised Conference Papers, Technical Papers Due

Friday September 23, 2022 – Conference Paper Accept / Reject Notifications

Monday October 10, 2022 – Debate, Panel, Seminar, Forum Workshop Accept / Reject Notifications

ASHRAE 9.10 Research Subcommittee Meeting Agenda & Current Work Status

Winter Meeting – 1-26-22 (17 Attendees)

Research Projects:

RP 1780 (Test Method to develop a Methodology to Evaluate Cross Contamination of Gaseous Contaminants within Total Energy Recovery Wheels) – Roland C.

1. Project RP 1780 was awarded to University of Saskatchewan.
2. The PMS: Bob W. (Chair), Roland C. (WS Author), Nick Agopian, Brendon Burley, Hoy Bohannon
3. We have had several meetings with U of S.
 - a. Due to the loss of a researcher, issues with Covid-19 pandemic, getting a new researcher the project schedule has been extended to May 1, 2022. To date the work has included the following:
 - b. Literature Review – Complete; PMS asked for test condition parameters on literature research to compare to with the 1780 research.
 - c. Test Facility Operational (except for gas analyzer) Initial Tests are now on-going.
4. U of S Project status presented on Jan 26, 2022. Presentation to be shared.

Work Statements:

WS 1835 (Characterizing the Performance of Entrained Flow Stacks) – Brad C. (CPP)

1. More detail was to be provided into the work statement for rebid.
2. Submitted an updated work statement in August 2020
3. Waiting for research \$\$\$ to go out to bid.
4. Reviewed at Winter Meeting.

Research topics in progress, initiated or under consideration:

1. ***RTAR to “Survey of sources of contamination in existing labs” Roland C. and Tom Smith (Still on hold but getting to the point of moving forward).*** More info available. Difficult to define this research but on-going risk assessments on-going will provide additional insight in characterizing contaminants; learning more to a point that an RTAR can be moved forward. More to be learned and how much do sources emit. Provide guidance on how to deal with the sources of emissions. 9.11 Study – Define Air co (7 Years Old); Smart Labs – Compilation of Data; 3-Flo’s Database. What does the risk assessment findings translate to ventilation effectiveness.
2. RP 1833 on Air Change Rates: MTG committee encompassing several TC’s looking into the why’s and where’s of Air Change Rates – Literature research on-going as first phase. ***Report was accepted PI – AEI – Roger Lautz & Clemson University; Papers and session are anticipated soon.***
3. 9.7 Higher Education – working on RTAR looking for TC9.10 to Co-sponsor specifically research for “Labs being used in higher education”. ***Bob W. to check with Keith Hammelman who is the liaison.***
4. 1573 Follow-up Research Project to address additional scope not addressed in SF-6 Replacement Study (Bob Weidner and Tom Smith to develop RTAR post SF6 Research). ***New generator required so waiting to see if RTAR is needed. ASHRAE 110 running tests with alternative generators; plume generation methods with lots of promise.***
5. 3D Printing, Laser Issues – emerging issues brief, parallel studies on-going at AIH. Kishor involved. 62, 9.10, Industrial Ventilation; Environmental Health. ***No ownership of this to date; Would 9.7 be interested in taking***

on. Health consequences unknown. (nano particles and chemicals). Industrial Ventilation 30th Edition does not address 3D printing and laser printing. Elliott Horner – UL colleagues did presentations. There is a UL test standard, 2904, for assessing particle and chemical emissions. UL teamed with Georgia Inst. of Tech for a 2-year study. **Health & Safety Groups - No update!**

6. Demand Control Ventilation in labs to reduce air flow rates; how is this verified? Sensors installed improperly, never properly tested or maintained. Tom Smith AHIA Z 9.5 will include modulation and response to occupancy with other sensing (CO₂, particles, chemical, etc.) Test Methodology not available at this time. Mechanism of challenge. TC 9.11 has a RP on-going that may help. Sensor location is important based on room airflow conditions (or duct averaging). Ventilation effectiveness. Sensor response. Kishor, Bob to assist. Kishor to pull 9.11 WS; **Willing to help: Gordon Sharp, Wei Sun (9.11 RP Lead – 3D and Tracer Gas studies); Kishor would be key to this moving forward. No update! Test Procedure would be useful! 9.11 Project was a success and Wei Sun is interested in doing one for labs. Kishor recommends subcommittee - need a leader! Hot topic – Rachel Romero to help organize the subcommittee; Bob W. to assist.**
7. Ventilation effectiveness – I2SL research on-going; Potential collaboration; Multiple research projects needed. What is VE for Labs? Define VE and assessment. Need volunteers – 5.3 Air Distribution; 9.7 Healthcare; Price Manufacturing representative; Guiding principles for good ventilation. Focus on labs. Test Procedure would be useful! Ventilation Effectiveness Outcomes and Validation. **No update!**
8. Using Analytics and to integrate to help better operate buildings. Need a lead! How much is it being used in HVAC market and lab market? Used more significantly in Industrial. What is the research angle to be addressed? Check with Cx Group – TC 7.9.; NREL (Rachel); I2SL has Best Practice Guide on this subject; U of Cal, Irvine has done research; Smart Labs. **No update!**
9. **Work Statement 1936 (Kishor, Jim C. Roland) Air change rates vs. effectiveness of ventilation. Room geometry, obstructions to airflow; source generation. A stepping stone to future research; looking for a co-fund source.**

ASHRAE TC 9.10 Laboratory Classification Subcommittee

Meeting Minutes – Version - Draft

Virtual Meeting (MS Teams) - 2022/01/18

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

Attendees

Name	Company	Present	Absent
Danny Sanchez, P.Eng., PMP, Chair	Bureau Veritas	X	
Guy Perreault	Evap-Tech MTC Inc.	X	
Tom Smith	Exposure Control Technologies, Inc.	X	
Adam Bare, PE	Newcomb & Boyd, LLP	X	
Walker C. Jones	Newcomb & Boyd, LLP	X	
Jim Coogan	Siemens		X
Roland Charneux, PE, HFDP, ASHRAE Fellow	Pageau & Morel		X
Gary Goodson, PE	Exposure Control Technologies, Inc.	X	
Ken Kretchman	North Carolina State University	X	
Henry Hays	USDA Agricultural Research Service		X
Nathan Ho, PE	P2S Engineering, Inc.		X
Debbie Decker	University of California, Davis	X	
Ellen Sweet	Cornell University	X	
Rebecca Lally, CIH	Southern California Edison		X
Peter Slinn	Natural Resources Canada		X
Elizabeth Kolacki, PE	Cornell University		X
Ralph Stuart, CIH	Keene State College		X

Action Items

Updates to previous action items noted in red

MEETING/CONFERENCE CALL DATE			
#	ACTION	RESPONSIBILITY	STATUS
1.3	New contact info for Peter Slinn	Tom S.	Opened
1.4	Tentative next revision target for late 2023 May need to align with other key publications	Danny S.	Opened
2.1	Las Vegas Conference – all welcomed to participate	Guy P.	Info only
2.2	TC 9.10 RP-1780 Progress VM, Research , Program, and Lab Classification Jan. 26 8:30 AM–12:45 PM PST	Guy P.	Info only
2.3	Need to re-organize the LVDL Table 3 into: Design Attributes & Operational Parameters	Tom S.	Opened Deadline: TBD
2.4	Proposed classification will be later discussed by this Sub-Committee	Tom S.	Opened
2.5	Need for the latest version of the LVDL in MS Word	Adam B.	Completed
2.6	Confirm with ASHRAE if there is a more recent one	Danny S.	Opened
2.7	Sub-Committee agreed to begin working on Table 3 by discussing improvements on each point	All	Opened

Approval of minutes from last meeting

- Tom S. / Guy P. 2022/01/18 11:07 am MST

Old business

- Welcome and introduction of Walker C. Jones as new member

Minutes submitted by: Danny Sanchez, 2022/01/23

Minutes approved on: [Date]

ASHRAE TC 9.10 Laboratory Classification Subcommittee

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Open discussion and feedback

- Overview of previous meeting (2021/12/01)
- Convenience of setting up a share point type file sharing system for modifications to the LVDL document.
- Other proposed focal areas for this revision cycle:
 - Revise Purpose and scope
 - Practical usage of the LVDL Doc
 - Marketing/PR strategy
 - Adding actual case studies
 - Add an expanded description to each LVDL Table 2
- General discussion around adding a cost dimension to Figure 2
- General discussion about document feedback
- Need to appoint a Lecturer

Next Meeting

- Wednesday, January 26 8:30 AM – 12:45 PM PST
- Vegas Conf.: TC 9.10 RP-1780 Progress VM, Research , Program, and Lab Classification

Adjournment

- 2022/01/18 12:01 pm MST

TC 9.10 Laboratory Systems

Design Guide Subcommittee Meeting, Thursday January 27th

Meeting Timeslot 10:30am to 11:30am Pacific

Minutes

Attendees: Guy Perrault, Amanda Kirkeby, Brad Cochran, Dan Fraiser, Greg Gross, Glenn Friedman, Henry Hays, Jason Atkisson, Jordan, Jim Coogan, Ken Crooks, Otto Van Geet, Rachel Romero, Robert Weidner, Roland Charneux, Ryan Parker, Tom Smith, Kishor Khankari

-Review goal of sub-committee

Complete revision 3 of the Design Guide

Edit and revise a few chapters at a time until complete

Add content as necessary

-Reminder of Design Guide Process and Basecamp

- *Location: TC 9.10 basecamp, Docs & Files, Subcommittees, Design Guide*
- *Current unedited chapter versions are in "Version 2"*
If you don't see it, it's being edited, look in version 3
- *Latest edited versions are in "Version 3"*
Chapter leads will post current chapter edits (Version 3)
Note color codes; Red-currently being edited
Yellow – Edits complete and under review
Green- Edits completed
- *Deadlines – After the chapter lead has agreement from the team on edits, they will post the chapter in the Version 3 folder and "turn the color yellow for under review" and announce to the TC at the following meeting that it is ready for review. If no items are brought up by the meeting after that, the chapter will be completed and turned green.*
- *Chapter leads or SC chair will post the final chapter edits to the ASHRAE Authoring Portal*
- *SC chair will post Agenda and notes from meetings on Basecamp site*

New Business – Chapter Report-Outs (5-10 min each)

Chapter Lead Report Outs / Group Discussion: (List of chapter leads & team at bottom of agenda)

-Chapter 4: Laboratory Planning, Brooks Stout

No report

-Chapter 8: Air Treatment, Bob Weidner

Will start working on

-Chapter 9: Exhaust Stack Design, Brad Cochran

Working on and approximately halfway through

-Chapter 12 Airflow Patterns and Testing Procedures, Wei Sun

Chapter is near complete. Waiting final review.

Change title of chapter to better reflect content?

-Chapter 17: CFD Modeling of Laboratory Ventilation, Kishor Khankari

Working on should have edited version in a few weeks

-Chapter 18: Sustainable Design, Rachel Romero

Chapter has been reviewed and ready for green

Resiliency topic put in lab planning chapter 4
checklist review for alignment with other chapters (add further discussion)
move up in guide after chapter 4
verify alignment with Z9.5
Tom Smith to call meeting to review content with team to finalize

- Chapter 20 (new): Ventilation Effectiveness, Kishor Khankari
currently being worked on,
Verify alignment with chapter 12.
Should this chapter immediately follow chapter 12?

Review remaining chapters to be edited and obtain volunteers

- Chapter 7, Process Cooling, Jason Atkisson chapter lead
- Smart Guide, Rachel Romero help review

-Additional chapters or Smart Guide content for editing?

Ideas for additional content (running list):

- O&M chapter harmonized with other ASHRAE publications
- How design guide applies to Z9.5 and where it applies – adding to chapter 9
- Additional Chapter: Lab Classification-How to use, free download (add to smart guide)
- How to specify a lab – incorporate into chapters 3 & 4
- Air Cleaners – adding to chapter 8
- How to develop the basis of design

Chapter Team List

Item shaded in gray are “complete”

Chapter	Title	Chapter Lead	Edit/Review Team
1	Introduction	Bob Weidner	
2	Background	Bob Weidner	
3	Design Process	Chris Kirchner	John Castelvechi, Wade Conlan, Doug Ross
4	Laboratory Planning	Brooks Stout	Brooks Stout, Harris Sheinman, Danny Sanchez
18	Sustainable Design	Rachel Romero	Brooks Stout, Chris Kirchner, Tao Zhang, Roland Charneux
5	Exhaust Hoods	Kurt Rindoks	Larry Meisenzhal, John Castelvechi, Brooks Stout, Ken Kuntz, Tom Smith
6	Primary Air Systems		Bob Weidner, Brendon Burley, Charles Murphy, Wei Sun
7	Process Cooling	Jason Atkisson	Brooks Stout, Charles Murphy
8	Air Treatment	Bob Weidner	Rami Alkahlil, Charles Murphy

9	Exhaust Stack Design	Brad Cochran	Ken Kuntz, Glenn Friedman, Martin Stangl
10	Energy Recovery		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 Testing Procedures	Wei Sun	Tom Smith, Salil Sansare, Dan Fraiser, Jim Coogan
20-NEW	Ventilation Effectiveness	Kishor Khankari	Salil Sansare
13	O&M for Ventilation and Exhaust systems		Carol Donovan, Tom Smith, Harris Sheinman
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
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
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