



Shaping Tomorrow's  
Built Environment Today

**MINUTES**

**RESEARCH ADMINISTRATION COMMITTEE**

**MARRIOTT MARQUIS HOTEL  
CHICAGO, ILLINOIS**

**JANUARY 20<sup>th</sup> & JANUARY 24<sup>th</sup>, 2024**

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**JANUARY 20<sup>th</sup> & JANUARY 24<sup>th</sup>, 2024**

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ADJOURNED

**PRINCIPAL MOTIONS  
RESEARCH ADMINISTRATION COMMITTEE  
JANUARY 20<sup>th</sup> & JANUARY 24<sup>th</sup>, 2024**

NO.	PAGE	MOTION
1	2	Draft minutes of the RAC fall 23 meeting be approved as written.
2	2	<u>1948-RTAR</u> , <i>Effects of conditioning test methods on flat sheet media properties compared to field contaminants</i> – TC 2.4 (Particulate Air Contaminants and Particulate Contaminant Removal Equipment), is <u>accepted with comments</u> .
3	3	<u>1951-RTAR</u> , <i>Development of Material Moisture Tolerance Criteria and Evaluation Methodology for ASHRAE Standard 160 to Control Structural Property Degradation of Common Sheathing Materials</i> – TC 4.4 (Building Materials and Building Envelope Performance), is <u>accepted with comments</u> .
4	3	<u>1965-RTAR</u> , <i>Addition of Web Service Capabilities to “data.ashrae.org” Website to Foster Innovation in the Industry</i> – TC 1.5 (Computer Applications), is <u>rejected</u> .
5	3	<u>1966-RTAR</u> , <i>Functional Performance Test Development for ASHRAE Guideline 36</i> – TC 1.4 (Control Theory and Application), is <u>accepted with comments</u> .
6	4	<u>1968-RTAR</u> , <i>Optimize outside-air supply for passengers in a light-rail/subway car environment</i> – TC 9.3 (Transportation Air Conditioning), is <u>returned</u> .
7	4	<u>1969-RTAR</u> , <i>Reversing valve loss and leakage models for cold climate heat pumps</i> – TC 8.8 (Refrigerant System Controls and Accessories), is <u>accepted with comments</u> .
8	4	<u>1882-WS</u> , <i>Procedure for Estimating Occupied Space Sound Levels in the Application of UFAD Air Terminals and Air Outlets</i> – TC 2.6 (Sound and Vibration; Co-sponsored by: TC 5.3, (Room Air Distribution), is <u>returned</u>
9	4	<u>1913-WS</u> , <i>Study of the Corrosion Impact on Information Technology Equipment in Data Centers Located in Coastal Regions with High Sea Salt Concentration</i> – TC 9.9, (Mission Critical Facilities, Data Centers, Technology Spaces and Electronic Equipment); co-sponsored by TC 2.3, (Gaseous Air Contaminants and Gas Contaminant Removal Equipment) & TC 2.4, (Particulate Air Contaminants and Particulate Contaminant Removal Equipment), is <u>conditionally accepted with comments</u> .
10	5	<u>1925-WS</u> , <i>Development of view clarity metrics for fenestration systems</i> – TC 4.5 (Fenestration), is <u>returned</u> .
11	5	<u>1947-WS</u> , <i>Climate change driven extreme temperature effects for efficiency and resilience map of heat pump technology</i> – TC 2.5 (Global Climate Change; co-sponsored by TC 4.2, (Climatic Information) & TC 2.8, (Building Environmental Impacts and Sustainability), is conditionally <u>accepted with comments</u>
12	5	<u>1964-WS</u> , <i>Optimizing Heating System Performance in Warmup and Setback Modes</i> – TC 1.4 (Control Theory and Application; co-sponsored by: 7.5, (Smart Building Systems), is <u>accepted</u>
13	5	RAC approved a motion that the following IRG pre-proposals be invited to submit full IRG proposals; #002 & #006.

14	5	Apoorv Khanuja be awarded the 2023-24 Homer Addams Award.
15	5	Riley Barta be awarded the 2023-2024 New Investigator Award.
16	6	1797-TRP, Assessment of the A/B toxicity classification used in Standard 34, be awarded to Gradient, for a period of 17 months at a total cost to ASHRAE of \$175,300.
17	6	1864-TRP Assessment of the A/B toxicity classification used in Standard 34, be awarded to Mazzetti, Inc., for a period of 13 months at a total cost to ASHRAE of \$70,000.
18	7	1928-TRP Assessment of the A/B toxicity classification used in Standard 34, be awarded to LMS Technologies, for a period of 24 months at a total cost to ASHRAE of \$179,000.
19	7	1929-TRP Evaluation of building life cycle analysis tools incorporating embodied carbon, be awarded to Montana State University, for a period of 24 months at a total cost to ASHRAE of \$93,712.
20	7	1934-TRP A Survey Study on the Development and Application of Data-Driven Model Predictive Control in Buildings, be awarded to University of Kansas, for a period of 12 months at a total cost to ASHRAE of \$42,003.

**RECURRING ACTION ITEMS  
(EACH MEETING)**

<b><u>Responsibility</u></b>	<b><u>Summary of Action</u></b>
Chair	Report to Technology Council on RAC's MBO Status.
Research Liaisons	Remind all TC chairs and research subcommittee chairs in section that a draft of all Work Statement and RTARs, and all later versions should be sent to their Research Liaison for review before information is passed on to the Manager of Research.
RPS (Primary) RAS (Secondary)	Review RTARs
RAS (Primary) RPS (Secondary)	Review Work Statements
RAS (Primary) RPS (Secondary)	Review TRPs and URPs
RPS (Primary) upon (Secondary)	Review and revise the Society's Research Implementation Plan based accepted RTARs.
Subcommittee Chairs	Report Status of assigned MBOs.
Staff	Distribute copies of Technology Council's Action Items and Motions affecting RAC.
BOD ExO	Report to the RAC Chair BOD's Actions and Motions affecting RAC.
Staff	Forward URPs to RAS Chair to help identify a champion for the URP on RAC based on members background and experience. The RAC URP Champion will either help select a cognizant TC to review the URP or return the URP with a recommendation that it not be reviewed further as a possible ASHRAE research project.

**RECURRING ACTION ITEMS  
(FALL MEETING)**

<b><u>Responsibility</u></b>	<b><u>Summary of Action</u></b>
RAS	Initial Plan for Research Breakfast Workshop for Winter Meeting

RLs	Review “Service to ASHRAE Research Award” nominations submitted by TC chairs and select the best nomination for RAC consideration.
MORTS	Prepare semi-annual report to RAC by December 15.

**RECURRING ACTION ITEMS**  
**(WINTER MEETING)**

<b><u>Responsibility</u></b>	<b><u>Summary of Action</u></b>
RPS	Review New Investigator Award Nominations
RPS	Review Homer Addams Award Nominations
RPS	Review Innovative Research Grant (IRG) Pre-Proposals
MORTS	Prepare semi-annual report to RAC by May 15.

**RECURRING ACTION ITEMS**  
**(SPRING MEETING)**

<b><u>Responsibility</u></b>	<b><u>Summary of Action</u></b>
RPS	Plan workshop for new RAC members at the Annual meeting.
RPS	Review Grant-In-Aid Applications

**RECURRING ACTION ITEMS**  
**(ANNUAL MEETING)**

<b><u>Responsibility</u></b>	<b><u>Summary of Action</u></b>
Chair	Invite new RAC members to meeting and any training sessions at meeting.
Incoming Chair	Finalize MBOs and roster assignments. Set date for fall meeting.
RAS	Review Invited Innovative Research Grant (IRG) Full-Proposals

## LIST OF ATTACHMENTS

Attachment 1:	TRP-1797
Attachment 2:	TRP-1864
Attachment 3:	TRP-1928
Attachment 4:	TRP-1929
Attachment 5:	TRP-1934



Shaping Tomorrow's  
Built Environment Today

## MINUTES

### RESEARCH ADMINISTRATION COMMITTEE JANUARY 20<sup>th</sup> & JANUARY 24<sup>th</sup>, 2024

#### MEMBERS PRESENT:

William Murphy, *Chair*  
Natascha Milesi Ferretti, *Vice-Chair*  
Stefan Elbel, *RAS Chair*  
Jin Wen, *Chair RPS*  
Srinivas Katipamula, *RL Section 1.0*  
Christopher Gray, *RL Section 2.0*  
Zheng O'Neill, *RL Section 3.0*  
Dennis Landsberg, *RL Section 4.0*  
Douglas Scott, *RL Section 5.0*  
Matthew Mullen, *RL Section 6.0*  
James Bogart, *Section 7.0*  
Carl Huber, *RL Section 8.0*  
Roland Charneux, *RL Section 9.0*  
WenBin Ng, *RL Section 10.0*  
Xudong Wang, *Consultant*  
Hywel Davies, *Consultant*  
Drury Crawley, *BOD Ex-Officio*

#### GUESTS:

Andy Manos  
Julie Timberman  
Haley Goslinga  
Melvin Garrett

#### ASHRAE STAFF:

Donna Daniel, RESADMIN

#### MEMBER ABSENT:

#### 1. CALL TO ORDER

Chair Murphy called the meeting of the committee to order at 8:00 AM.

#### 2. ASHRAE CODE OF ETHICS - <https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics>

#### 3. ROLL CALL AND INTRODUCTIONS

#### 4. REVIEW OF AGENDA

#### 5. APPROVAL OF 2023 VIRTUAL FALL MINUTES

It was moved and seconded that,

- (1) The draft minutes of the RAC fall 2023 meetings be approved as written.

**MOTION #1 PASSED:** 13-0-0-1, CNV



## **6. CHAIR'S REPORT – MURPHY**

- Disposition of Motions from Last Meeting or Letter Ballots – None

RAC approved the following 7 Research Projects for Bid solicitation at their RAC 2023 fall meeting:

- **TRP-1797**, Assessment of the A/B Toxicity Classification Used in Standard 34; Responsible Committee: TC 3.01 (Refrigerants and Secondary Coolants); Co-Sponsors: None; Estimated Duration: 18 months; Estimated Cost to ASHRAE: \$190,000.
- **TRP-1864** - Investigating the applicability of Standard 62.1's Ventilation Rate Procedure for Healthcare Rooms; Responsible Committee: SSPC 170 (Ventilation of Health Care Facilities); Co-Sponsors: TC 9.06 Healthcare Facilities & SSPC 62.1 (Ventilation for Acceptable Indoor Air Quality); Estimated Duration: 15 months; Estimated Cost to ASHRAE: \$70,000.
- **TRP-1889** - Graywater use in healthcare facilities- determining risk and appropriate design responses; Responsible Committee: TC 9.06 (Health Care Facilities); Co-Sponsors: None; Estimated Duration: 12 months; Estimated Cost to ASHRAE: \$50,000.
- **TRP-1926** - Update of U-factors, Solar Heat Gain Coefficients and Visible Transmittances of Standard Fenestration Units made from Representative Fenestration Frame and Glazing Systems in the Fenestration Chapter of the Handbook of Fundamentals; Responsible Committee: TC 4.05 (Fenestration); Co-Sponsors: None; Estimated Duration: 18 months; Estimated Cost to ASHRAE: \$100,000.
- **TRP-1928** - Improving efficiency test methods to measure air cleaner performance against airborne particulate contaminants in a recirculating system; Responsible Committee: TC 2.09 (Ultraviolet Air & Surface Treatment); Co-Sponsors: TC 2.03, (Gaseous Air Contaminants and Gas Contaminant Removal Equipment), TC 2.04 (Particulate Air Contaminant and Particulate Contaminant Removal Equipment); TC 9.06, (Health Care Facilities) & EHC, (Environmental Health Committee); Estimated Duration: 24 months; Estimated Cost to ASHRAE: \$199,000.
- **TRP-1929** - Evaluation of building life cycle analysis tools incorporating embodied carbon; Responsible Committee: TC 2.08 (Building Environmental Impacts and Sustainability); Co-Sponsors: None; Estimated Duration: 24 months; Estimated Cost to ASHRAE: \$146,000.
- **TRP-1934** - A Survey Study on the Development and Application of Data-Driven Model Predictive Control in Buildings; Responsible Committee: TC 7.05 (Smart Building Systems); Co-Sponsors: None; Estimated Duration: 12 months; Estimated Cost to ASHRAE: \$100,000.

### New & On-going Action Items Assigned by Tech. Council

- a) Better support Research Promotion in raising funds for ASHRAE research program.
- b) MBO Status Report – Review with action items

**7. ASHRAE LEADERHSIP PRESENTATION - CRAWLEY**

Drury Crawley, BOD Ex-officio presented the ASHRAE Leadership presentation attached.  
Attachment #1



7 - 2024 Chicago  
WC ASHRAE Leaders

**8. DISCUSSION ITEMS**

A.\* Strategic Plan

(note items the committee would like to share with the Planning Committee and BOD for consideration)



8A - FOR REVIEW \_  
2024 Winter Confer

**9. ACTION ITEMS AND MBO REVIEW**

None

Action #	Responsibility	Summary of Action	Status
1	Elbel	Develop a research promotion slide presentation to summarize ASHRAE benefit to research promotion.	NEW

**10. COMMITTEE GOVERNING DOCUMENTS DISCUSSION**



10A - ROB.pdf

**11. RTAR REVIEW**

RAC reviewed six RTARS during the winter meeting. Four were accepted with comments, one was returned, and one was rejected.

It is moved and seconded that,

- (2) 1948-RTAR, Effects of conditioning test methods on flat sheet media properties compared to field contaminants– TC 2.4 (Particulate Air Contaminants and Particulate Contaminant Removal Equipment), is accepted with comments.

**MOTION #2 PASSED:** 12-0-0-1, CNV

It is moved and seconded that,

- (3) 1951-RTAR, Development of Material Moisture Tolerance Criteria and Evaluation Methodology for ASHRAE Standard 160 to Control Structural Property Degradation of Common Sheathing Materials – TC 4.4 (Building Materials and Building Envelope Performance), is accepted with comments.

**MOTION #3 PASSED:** 13-0-0-1, CNV

It is moved and seconded that,

- (4) 1965-RTAR, Addition of Web Service Capabilities to “data.ashrae.org” Website to Foster Innovation in the Industry – TC 1.5 (Computer Applications), is rejected.

**MOTION #4 PASSED RPS:** 5-0-0-1, CNV

It is moved and seconded that,

- (5) 1966-RTAR, Functional Performance Test Development for ASHRAE Guideline 36 – TC 1.4 (Control Theory and Application), is accepted with comments.

**MOTION #5 PASSED:** 13-0-0-1, CNV

It is moved and seconded that,

- (6) 1968-RTAR, Optimize outside-air supply for passengers in a light-rail/subway car environment– TC 9.3 (Transportation Air Conditioning), is returned.

**MOTION #6 PASSED RPS:** 5-0-0-1, CNV

It is moved and seconded that,

- (7) 1969-RTAR, Reversing valve loss and leakage models for cold climate heat pumps – TC 8.8 (Refrigerant System Controls and Accessories), is accepted with comments.

**MOTION #7 PASSED:** 13-0-0-1, CNV

## **12. WORK STATEMENT REVIEW**

Work Statement Review (5 new & revised WSs submitted for this meeting)

It is moved and seconded that,

- (8) 1882-WS, Procedure for Estimating Occupied Space Sound Levels in the Application of UFAD Air Terminals and Air Outlets – TC 2.6 (Sound and Vibration; Co-sponsored by: TC 5.3, (Room Air Distribution), is returned.

**MOTION #7 PASSED RAS:** 5-0-0-1, CNV

It is moved and seconded that,

- (9) 1913-WS, Study of the Corrosion Impact on Information Technology Equipment in Data Centers Located in Coastal Regions with High Sea Salt Concentration – TC 9.9, (Mission Critical Facilities, Data Centers, Technology Spaces and Electronic Equipment); co-sponsored by TC 2.3, (Gaseous Air Contaminants and Gas Contaminant Removal Equipment) & TC 2.4, (Particulate Air Contaminants and Particulate Contaminant Removal Equipment), is conditionally accepted with comments.

**MOTION #7 PASSED:** 13-0-0-1, CNV

It is moved and seconded that,

- (10) 1925-WS, *Development of view clarity metrics for fenestration systems* – TC 4.5 (Fenestration), is returned.

**MOTION #7 PASSED RAS:** 5-0-0-1, CNV

It is moved and seconded that,

- (11) 1947-WS, *Climate change driven extreme temperature effects for efficiency and resilience map of heat pump technology* – TC 2.5 (Global Climate Change; co-sponsored by TC 4.2, (Climatic Information) & TC 2.8, (Building Environmental Impacts and Sustainability), is conditionally accepted with comments.

**MOTION #7 PASSED:** 13-0-0-1, CNV

It is moved and seconded that,

- (12) 1964-WS, *Optimizing Heating System Performance in Warmup and Setback Modes* – TC 1.4 (Control Theory and Application; co-sponsored by: 7.5, (Smart Building Systems), is accepted.

**MOTION #7 PASSED:** 13-0-0-1, CNV

### **13. INNOVATIVE RESEARCH GRANT PRE-PROPOSALS**

It is moved and seconded that,

- (13) RAC approved a motion that the following IRG pre-proposals be invited to submit full IRG proposals; #002 & #006.

**MOTION # PASSED:** 13-0-0-1, CNV

### **14. HOMER ADAMS & NEW INVESTIGATOR AWARDS**

It is moved and seconded that,

- (14) Apoorv Khanuja be awarded the 2023-24 Homer Addams Award.

**MOTION # PASSED:** 11-0-1-1, CNV

It is moved and seconded that,

- (15) Riley Barta be awarded the 2023-2024 New Investigator Award.

**MOTION # PASSED:** 11-0-2,1, CNV

### **15. CARRY-OVER TRPS. FUNDED EXTENSIONS & GRANT REQUESTS**

None

### **16. RESEARCH SUBCOMMITTEE CHAIR'S BREAKFAST**

Proposed Announcements

- A. Service to ASHRAE Research Award recipient this year – NONE

- B. Submission date for Service to ASHRAE Research Award Sep. 1st
- C. Importance of obtaining full TC votes on approvals of submitted RTARs and WSs for both sponsoring and co-sponsoring TCs.
- D. WS based on conditionally approved RTAR must acknowledge how conditions were cleared.
- E. Be sure to include Milestones in WSs submitted to RAC.
- F. PES Training video
- G. Additional Announcements (TBD)

RL Reminders for TCs

## **17. TRPs TO POTENTIALLY BID SPRING 2024**

1873-TRP-R, Upper-Air Ultraviolet Germicidal Irradiation (UVGI) for Tall Spaces, sponsored by TC 2.9 Ultraviolet Air and Surface Treatment co-sponsored by: TC 9.6 Healthcare Facilities

1910-TRP-R, Evaluation of Standard 103 Transient Components and Thermostat Cycle Times on the Resulting AFUE, sponsored by, TC 6.03, Residential and Light Commercial Forced Air Heating and Cooling Systems

1915-TRP, "Refrigerated Warehouse Doorway Infiltration Air Energy Reduction, sponsored by TC 10.02 Refrigeration Applications

1918-TRP, The Verification of openings, the limitations of openings, air distribution and humidity conditions in Naturally Ventilated spaces to compliment Section 6.4 of ASHRAE Standard 62.1, sponsored by, SSPC 62.1, Ventilation and Acceptable Indoor Air Quality

## **18. CONSULTANTS REPORT**

- A. AHRI = Xudong Wang
- B. CIBSE – Hywel Davies

## **19. EXECUTIVE SESSION** **TENTATIVE RESEARCH PROJECTS**

It is moved and seconded that,

- (16) **1797-TRP**, Assessment of the A/B toxicity classification used in Standard 34, be awarded to Gradient, for a period of 17 months at a total cost to ASHRAE of \$175,300. (**Attachment #1**)

**MOTION # PASSED:** 12-0-0-1 CNV

It is moved and seconded that,

- (17) **1864-TRP** Assessment of the A/B toxicity classification used in Standard 34, be awarded to Mazzetti, Inc., for a period of 13 months at a total cost to ASHRAE of \$70,000. (**Attachment #2**)

**MOTION # PASSED:** 12-0-0-1 CNV

It is moved and seconded that,

- (18) **1928-TRP** Assessment of the A/B toxicity classification used in Standard 34, be awarded to LMS Technologies, for a period of 24 months at a total cost to ASHRAE of \$179,000. (**Attachment #3**)

**MOTION # PASSED:** 12-0-0-1 CNV

It is moved and seconded that,

- (19) **1929-TRP** Evaluation of building life cycle analysis tools incorporating embodied carbon, be awarded to Montana State University, for a period of 24 months at a total cost to ASHRAE of \$93,712. (**Attachment #4**)

**MOTION # PASSED:** 10-1-1-1 CNV

It is moved and seconded that,

- (20) **1934-TRP** A Survey Study on the Development and Application of Data-Driven Model Predictive Control in Buildings, be awarded to University of Kansas, for a period of 12 months at a total cost to ASHRAE of \$42,003. (**Attachment #5**)

**MOTION # PASSED:** 10-1-1-1 CNV

**20. RESEARCH LIAISON SECTION REPORTS**

- a) RL Reminders for Chicago (Each RL send written update to staff after meeting)

**21. UNFINISHED BUSINESS**

- a) Need for a follow-up conference call to select TRPs to bid spring 2024.

**22. NEW BUSINESS**

None

**23. REVIEW ACTION ITEMS**

**ADJOURNED**

RAC adjourned at 11:00 AM