Publishing and Education Council (PEC)

Tuesday, February 11, 2025
Hilton Orlando - Orlando FL

Minutes

Voting Members	Position	Guests
Chandra Sekhar	Chair	Spencer Morasch
Ken Fulk	Vice Chair	Patrick Ryan
John Constantinide	Director/ExO HBC	Carrie Brown
Jonathan Smith	Director/ExO Cert & Hist	Pat Marks
Blake Ellis	Director/ExO Pubs	Sami Zheng
Doug Cochrane	Director/ExO TEC	Billy Austin
Kimberly Cowman	Past Certification	Patrick Ryan
Megan Tosh	Past Handbook/Publications Chair	Aaron Besseling
Adeeba S W Mehboob	Past Publications	Mitchell Goss
Jeremy T Smith	Past TEC	Moli H Kennedy
Suz Ann M Arroyo	Certification Chair	Kellie Huff
Joseph L Furman (absent)	Handbook Chair	Cindy Michaels
Norman Grusnick (absent)	Historical Chair	Tim Kline
Vinay Ananthachar	Publications Chair	Karen Murray
Kimberly Pierson (absent)	TEC Chair	David Soltis
		Greg Martin
Non-Voting Members	**Position**	Tony Giometti
Badri Patel	Certification Vice Chair	
Stephanie Mages	Handbook Vice Chair	
Akinbowale Soluade (absent)	Historical Vice Chair	
Kurt Monteiro	Publications Vice Chair	
Tim Ashby (absent)	TEC Vice Chair-Operations	
Ashley N Weekly	TEC Vice Chair-Planning	
Mark Owen	Staff PEC Liaison	

Additional Distribution: Jeff Littleton, Executive Vice President, Candace Denton, ASHRAE Staff Directors, Publications & Education Managers

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Action Items
Meeting of February 11, 2025

No.	Responsible	Action Item
1	Staff	Post approved June 25, 2025, Indianapolis Annual Meeting minutes to the PEC page of the ASHRAE website and update the PEC Basecamp. **Complete.**
2	Staff	Include PEC approved Publications Committee ROB on the PEC Report to BOD to the BOD to approve. **Complete.**
3	Staff	Post all detailed Roundtable reports to the PEC Basecamp. **Complete**.

Motions
Meeting of February 11, 2025

No.	Motion
1	Approved the draft minutes as distributed for meeting of June 25, 2025, Indianapolis, Annual Meeting. **Approved 9-0-0, CNV**
2	Approved changes to the Publications Committee ROB reflecting changes to the ROB on feedback from PEC as well as guidance from the Society Rules Committee. **Approved 9-0-0, CNV**
3	Approved changes to the Publications Committee MOP reflecting changes to Section 1 that add the conditions the committee is subject to, which have been removed from the committee's ROB. **Approved 9-0-0, CNV**

1. Call to Order

Mr. Sekhar called the meeting to order at 8:06 a.m.

2. ASHRAE Value Statement

Mr. Sekhar reviewed the ASHRAE Value Statement with the council members.

In 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 shall avoid all real or perceived conflicts of interest. Our culture is one of inclusiveness, acknowledging the inherent value and dignity of each individual. We celebrate diverse and inclusive communities, understanding that doing so fuels better, more creative and more thoughtful ideas, solutions and strategies for the Society and the communities our Society serves. We respect and welcome all.

Code of Ethics - https://www.ashrae.org/about/governance/code-of-ethics
Core Values - https://www.ashrae.org/about/ashrae-s-core-values
Diversity Statement - https://www.ashrae.org/about/diversity-equity-and-inclusion-dei

3. Self-introductions

Members and guests introduced themselves. Council, Subcommittees and Committees Rosters are posted to the PEC Basecamp account for review.

Subcommittee and Committee Rosters have been posted to the PEC Basecamp account for review.

4. Review of Agenda

Mr. Sekhar reviewed the agenda with the council for any additions.

5. Previous Meeting Minutes Review for Approval

The Draft Minutes have been posted to the PEC Basecamp account for review.

It was moved and seconded:

(1) Approved the draft minutes as distributed for the meeting of June 25, 2025, Indianapolis, Annual Meeting.

MOTION (1) Approved 9-0-0, CNV

An action item was assigned to staff to post approved minutes to the PEC page of the ASHRAE website and update the PEC Basecamp. **(ACTION ITEM 1)** *Complete.*

6. Review of Motions from the last PEC Meeting in Indianapolis

Mr. Owen reviewed PEC motions from June 25, 2025, Indianapolis Annual Meeting.

No.	Page	Motion
1	4	Approved the draft minutes as distributed for the January 23, 2024, Chicago Winter Meeting. Approved 10-0-0 CNV
2	7	Approved creating a unified learning platform to support ASHRAE eLearning, instructor-led training, and self-directed learning offerings and enhance the user experience for ASHRAE members and the wider public, funded by the General Reserve Fund. Approved 10-0-0 CNV
3	10	Approved referring the following motion to the Memberships Model Ad Hoc Committee: *Keep Handbook Online a member benefit option. Do not convert it to a universal member benefit. Keep the status quo.* Approved 10-0-0 CNV
4	11	Approve referring the following motion to the Memberships Model Ad Hoc Committee: *Recommend that Handbook Online is identified as the default Member Benefit option so that members will receive a Handbook Online subscription if no Member Benefit option is selected upon membership renewal.* Approved 10-0-0 CNV
5	11	Approved and recommended BOD approve changes to the Publications Committee's section of the ASHRAE Rules of the Board (ROB) Attachment G of the Planning Subcommittee Report to PEC. Changes reflect the need to include mention of the annual Journal Paper Award and to include another missing member task (communicating with the TC leadership), as well as a minor editorial change to the listing of Special Publications. Approved 10-0-0 CNV

7. Review of Action Items from last PEC Meeting in Indianapolis

Mr. Owen reviewed PEC Action Items from the of June 25, 2025, Indianapolis Annual Meeting.

No.	Responsible	Action Item
1	Staff	Post approved January 23, 2024, Chicago Winter Meeting minutes to the PEC page of the ASHRAE website and update the PEC Basecamp. Complete.

2	Staff	Add the ASHRAE Global Training volunteer oversight committee (AGT) to the PEC Subcommittee and Committee Structure chart and post to Basecamp and include in the PEC Reference Manual. Complete.

8. Review of PEC MBOs

Mr. Sekhar reviewed the PEC MBOs with the council members shown in Attachment A.

9. Subcommittee Reports

Explanatory Note: Handbook Committee (HBC), Historical Committee and Publications Committee reports to PEC Products Subcommittee. Certification Committee and Training & Education Committee (TEC) report to PEC Professional Development Subcommittee. PEC Products and Professional Development Subcommittees report to PEC Fiscal and Planning Subcommittees. All reports are posted to the PEC Basecamp account for council review.

9.1 Fiscal (Attachments B)

(Fiscal Motions for PEC consideration from all PEC Subcommittees and Standing Committees)

Mr. Sekhar gave the PEC Fiscal Subcommittee Report.

Fiscal Subcommittee had no motions to bring forward to PEC. The subcommittee reviewed the latest PEC Dashboard from December 2024 shown in *Attachment A of the Fiscal Subcommittee Report to PEC*.

Mr. Sekhar reported the Products Subcommittee Report which includes the Handbook Committee Report, the Historical Committee Report, the Publications Committee Report and the Research Journal Subcommittee Report are included as *Attachment B* to the Fiscal Subcommittee Report. And the Professional Development Subcommittee Report is attached as *Attachment C* to the Fiscal Subcommittee Report. This report included the Certification and Training and Education Committee (TEC) reports.

9.2 Planning (Attachments C)

(Planning Motions for PEC consideration from all PEC Subcommittees and Standing Committees)

Mr. Fulk gave the PEC Fiscal Subcommittee Report.

(2) Publications Committee recommends that PEC Products Subcommittee approve the changes to the committee's ROB as shown below:

2.419 PUBLICATIONS COMMITTEE

2.419.001 SCOPE AND PURPOSE

This committee identifies the technical information needs of the HVAC&R industry not met through the ASHRAE Handbook series, ASHRAE's research journal, standards, guidelines, or user's manuals and oversees editorial policies and delivery of products to the marketplace. This committee also determines the best paper published in the volume year of *ASHRAE Journal* preceding the ASHRAE Winter Conference.

This committee shall report to the Publishing and Education Council.

2.419.002 MEMBERSHIP

2.419.002.1 Composition

The members of this committee are as follows:

A. Twelve (12) voting members, including a chair and a vice chair. (16-06-29-20)
B. Non-voting members include a Board ex officio member and coordinating officer.

2.419.002.2 Qualifications

A. All members of the committee shall hold the grade of Associate Member or higher in the Society.
B. Members should have an awareness of the current technical information needs of various segments of the HVAC&R industry.
C. Membership should include broad representation from the HVAC&R industry including the academic, design, construction, facility operations and manufacturing communities.
D. At least three members should have recent experience with the production or writing of technical publications or periodicals.

2.419.002.3 Term of Service

The term of service for the chair and vice chair is intended to be one (1) year. The term of service for other voting members is intended to be three (3) years.

2.419.003 OPERATION

2.419.003.1 General Requirements

~~A.~~ This committee shall oversee the editorial policies of ASHRAE's Special Publications, *ASHRAE Transactions* and other conference proceedings, *ASHRAE Journal*, and ASHRAE's electronic newsletters.
~~The committee shall be subject to these conditions:~~
~~2. The data recommended for publication shall tend toward the professional education of the individual engineer;~~
~~3. Such data shall be free from commercial bias;~~

2.419.004 STRATEGIC PLAN (09-06-21-12C)

This committee shall develop procedures for recommending updates to the strategic plan on a continuous basis. As a minimum the committee shall submit a report to the council prior to the Annual Meeting. The report includes the current status of each activity which supports the fulfillment of the committee's assignments under the strategic plan. The committee shall report to the council all recommendations for changes to the strategic plan as provided by the committee's constituents prior to the Annual Meeting.

Background: This attachment reflects changes to the ROB based off of feedback from this Council as well as guidance from the Society Rules Committee.

Fiscal Impact: None.

Note: PEC Products Subcommittee reviewed the motion and forwarded to PEC Planning Subcommittee without changes or comments. PEC Planning Subcommittee reviewed the motion and forwarded to PEC for approval.

MOTION (2) Approved 9-0-0, CNV

An action Item was assigned to staff to include the Publications ROB change on the PEC Report to the BOD for BOD approval. **(ACTION ITEM 2)** *Complete.*

(3) Publications Committee recommends that PEC Products Subcommittee approve the Changes to the committee's MOP as shown below:

1. GENERAL RESPONSIBILITIES

1.1. The Publications Committee identifies the technical information needs of the HVAC&R industry not met through the ASHRAE Handbook series, ASHRAE's research journal, standards, guidelines, or user's manuals and oversees editorial policies and delivery of products to the marketplace. This includes the editorial policies of *ASHRAE Journal*, ASHRAE's electronic newsletters, *ASHRAE Transactions* and other conference proceedings, and ASHRAE Special Publications, which are technical publications in print format, such as non-series books (including books resulting from ASHRAE Research Projects, PTARs, and Special Projects), books in the Advanced Energy Design Guide series and the ASHRAE Datacom Series, charts, and tools, as well as all technical publications in machine-readable format, such as audio and visual presentations, software, databases, apps, and online resources.

1.2. The committee shall be subject to these conditions:

1.2.1. The data recommended for publication shall tend toward the professional education of the individual;

1.2.2. Such data shall be free from commercial bias;

~~1.1.1.~~1.2.3. Such data shall tend to advance for the public benefit the arts and sciences relating to heating, refrigeration, air conditioning, and ventilation and the allied arts and sciences.

Background: This attachment reflects changes to Section 1 of the Publications Committee MOP that add the conditions the committee is subject to, which have been removed from the committee's ROB.

Fiscal Impact: None.

Note: PEC Products Subcommittee reviewed the motion and forwarded to PEC Planning Subcommittee without changes or comments. PEC Planning Subcommittee reviewed the motion and forwarded to PEC for approval.

MOTION (3) Approved 9-0-0, CNV

10. Liaisons with Other Groups

10.1 Planning Committee (PLC) (Attachments D)

Planning Committee Liaison Ms. Huff showed PEC members a presentation concerning the Planning Committee initiatives in conjunction with the new strategic plan.

11. Items Referred to PEC from Other Groups

Mr. Owen reported there were no items referred to PEC from other groups.

12. Old Business

12.1 Roundtable Executive Summary (Attachments E)

Mr. Sekhar discussed with the PEC members the BOD Executive Summary for the CRC roundtables. Committee chairs are reminded to look through the document for any projects or comments that should be considered by their committees.

An action item was signed to staff to post all the detailed Roundtable reports to the PEC Basecamp from the BOD Basecamp for PEC members to review. **(ACTION ITEM 3)** *Complete.*

13. New Business

13.1 2025-28 Strategic Plan (Attachments F)

PEC members reviewed the new ASHRAE Strategic Plan & Initiatives.

14. Adjourn

Mr. Sekhar adjourned the meeting at 11:31 a.m.

Attachments:

A Updated PEC MBOs 2024-2025

B PEC Fiscal Subcommittee Report to PEC

- A PEC Dashboard – December 2025
- B PEC Products Subcommittee Report
  - A Handbook Committee (HBC) Report
    - *A ASHRAE Handbook analysis*
    - *B HBC MBOs 2024-2025*
  - B Historical Committee Report
    - *A Historical Committee MBOs 2024-2025*
    - *B Site Review: ASHRAE Library and Archives*
  - C Publications Committee Report
    - *A Changes to Publications Committee ROB*
    - *B Changes to Publications Committee MOP*
    - *C Publications Committee MBOs 2024-2025*
  - D Research Journal Subcommittee Report
    - *A Publisher's Report*
    - *B Editor's Report*
- C PEC Professional Development Subcommittee Report
  - A Certification Committee
    - *A Certification Committee MBOs 2024-2025*
  - B Training and Education Committee (TEC)
    - *A TEC MBOs 2024-2025*

C PEC Planning Subcommittee Report to PEC

- A Changes to Publications Committee ROB
- B Changes to Publications Committee MOP
- C Handbook Committee (HBC) Report
  - A ASHRAE Handbook analysis
  - B HBC MBOs 2024-2025
- D Historical Committee Report
  - A Historical Committee MBOs 2024-2025
  - B Site Review: ASHRAE Library and Archives
- E Publications Committee Report
  - A Changes to Publications Committee ROB
  - B Changes to Publications Committee MOP
  - C Publications Committee MBOs 2024-2025
- F Research Journal Subcommittee Report
  - A Publisher's Report
  - B Editor's Report
- G ASHRAE Roundtables Review and Findings
  - A Appendix A. Abbreviated Roundtable Highlights
  - B Appendix B. 2022-2023 Roundtable Summary
  - C Industry Roundtables 2024 Critical Issues Summary & recommendations for Councils

D Planning Committee Presentation

E 2025-28 Strategic Plan Presentation

F PEC Report to BOD - February 12, 2025

- A Changes to Publications Committee ROB

G PEC Information Item Report

- A Certification Committee
  - A Certification Committee MBOs 2024-2025
- B Training and Education Committee (TEC)
  - A TEC MBOs 2024-2025
- C Handbook Committee (HBC) Report
  - A ASHRAE Handbook analysis
  - B HBC MBOs 2024-2025
- D Historical Committee Report
  - A Historical Committee MBOs 2024-2025
  - B Site Review: ASHRAE Library and Archives
- E Publications Committee Report
  - A Changes to Publications Committee ROB
  - B Changes to Publications Committee MOP
  - C Publications Committee MBOs 2024-2025
- F Research Journal Subcommittee Report
  - A Publisher's Report
  - B Editor's Report

MBO Submission to Planning **DATE:** 7/1/2024 **Attachment A - PEC Minutes Orlando February 11 2025**

Council: Publishing and Education **Chair:** Chandra Sekhar

Committee: **Vice-chair:** Ken Fulk

#	Description	Metric	Initiative #	Goal #	Completion % /Date	Financial Assist Req'd?	MBO Comments	Strategic Plan Tally												Committees					Subcommitte				Other		
								Initiative #				Goal 1		Goal 2			Goal 3			Certification	Handbook	Historical	Publications	TEC	Products	Prof Deve	Planning	Fiscal	PEC V Chair	PEC Chair	Staff
		(how do we determine success?)						1	2	3	4	a	b	a	b	c	a	b	c												
1	Develop an strategy for using artificial intelligence (AI).	Completion of strategy development	1,2	1b, 2c	6/30/2025	No	Ongoing	x	x				x			x				x	x	x	x	x	x	x	x	x	x	x
2	Develop at least one AI-empowered product.	Completion and launch of product	1,2	1b, 2c	6/30/2025	Yes	Ongoing	x	x				x			x				x	x	x	x	x	x	x		x	x	x
3	Translate high-demand products and services into languages other than English.	Completion of at least one translation of a high-demand product or service	4	1b, 2a	6/30/2025	TBD	Ongoing				x		x	x						x	x		x	x	x	x		x	x	x
4	Review and assign input from Industry Roundtables to PEC committees.	Receive reports from each of the CRC roundtables; brainstorm at PEC meeting to prioritize suggestions; make recommendations to the PEC and PEC standing Committees new products and services that align with ASHRAE's strategic initiatives.	4	1a, 2b	6/30/2025	TBD	Pending consolidated Roundtables report				x	x			x					x	x	x	x	x	x	x	x	x	x	x
5	Coordinate with the Strategic Planning Subcommittee of Planning Committee (PLC).	Receive guidance from Planning Committee on new Strategic Plan. Use information to guide development of new products and services.	1,2,3,4	1a, 1b, 3b	6/30/2025	TBD	Ongoing	x	x	x	x	x	x					x		x	x	x	x	x	x	x	x	x	x	x
6	Coordinate with the new Global Technical Interaction Committee (GTIC).	Receive feedback and reports from the GTIC and prioritize action items. Use information to guide development of new products and services.	4	1a, 1b, 2a, 2b	6/30/2025	TBD	Ongoing				x	x	x	x	x					x	x	x	x	x	x	x	x	x	x	x
								3	3	1	4	3	5	2	2	2	0	1	0											

PEC - Fiscal Subcommittee Report to PEC

Tuesday, February 11, 2025

Hilton Orlando – Orlando, FL

Motions

None.

Information Items

1. PEC Dashboard – December 2025 (**Attachment A**)

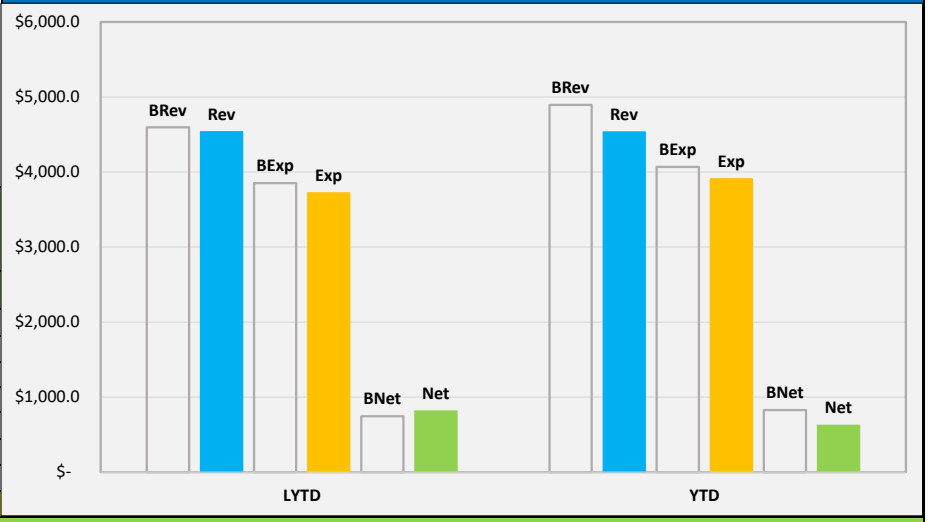
2. Products Subcommittee (**Attachment B**)
   - Handbook Committee (HBC)
   - Historical Committee
   - Publications Committee
   - Research Journal Subcommittee

3. Professional Development Subcommittee (**Attachment C**)
   - Certification Committee
   - Training and Education Committee (TEC)

Pub/Ed DASHBOARD

end Dec 2024

Pub/Ed Council TOTAL

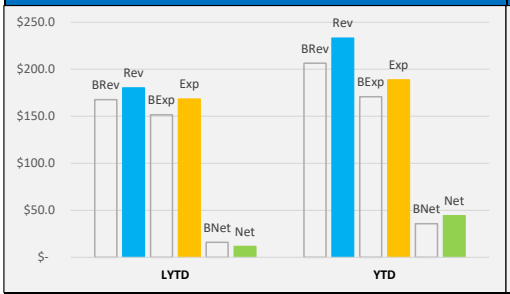


Item	LYTD	YTD	Diff v LY
BRev	$ 4,595.4	$ 4,895.5	7%
Rev	$ 4,537.8	$ 4,535.6	0%
BExp	$ 3,850.7	$ 4,067.7	6%
Exp	$ 3,722.1	$ 3,910.3	5%
BNet	$ 744.7	$ 827.8	$ 83.1
Net	$ 815.7	$ 625.3	$ (190.4)
Margin	18.0%	13.8%	-4.2%

NOTES:

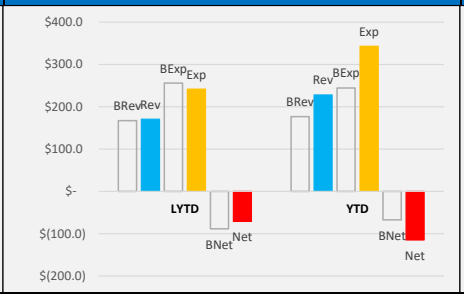
BRev = Budgeted revenue; **Rev** = Actual revenue; **BExp** = Budgeted expense before OH&BOD; **Exp** = Actual expense before OH&BOD; **BNet** = Budgeted net; **Net** = Actual net; **LYTD** = last fiscal year to date; **YTD** = current fiscal year to date; **Diff** = Difference between LYTD and YTD, either percentage or dollars. Data source = Financial statements (roll-ups for PEC, Certification, Handbook, Journal, Special Pubs, and Professional Development). Values = US$ x1000.

Certification



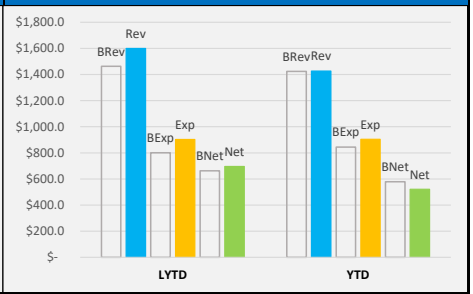
Item	LYTD	YTD	Diff v LY
BRev	$ 167.6	$ 206.5	23%
Rev	$ 180.2	$ 233.2	29%
BExp	$ 151.6	$ 170.7	13%
Exp	$ 168.5	$ 188.8	12%
BNet	$ 16.0	$ 35.8	$ 19.8
Net	$ 11.7	$ 44.4	$ 32.7
Margin	6.5%	19.0%	12.5%

Handbook



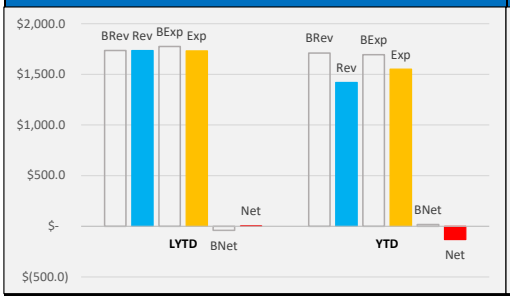
Item	LYTD	YTD	Diff v LY
BRev	$ 167.1	$ 176.8	6%
Rev	$ 170.7	$ 228.2	34%
BExp	$ 255.8	$ 244.3	-4%
Exp	$ 241.8	$ 343.2	42%
BNet	$ (88.7)	$ (67.5)	$ 21.2
Net	$ (71.1)	$ (115.0)	$ (43.9)
Margin	-41.7%	-50.4%	-8.7%

Special Pubs



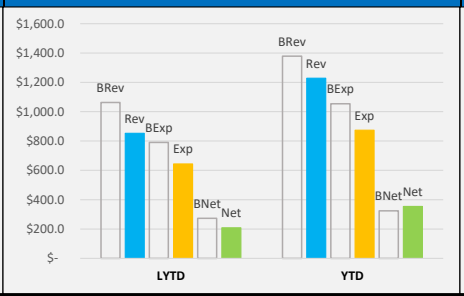
Item	LYTD	YTD	Diff v LY
BRev	$ 1,463.2	$ 1,423.3	-3%
Rev	$ 1,599.1	$ 1,426.5	-11%
BExp	$ 801.0	$ 844.6	5%
Exp	$ 902.5	$ 904.7	0%
BNet	$ 662.2	$ 578.7	$ (83.5)
Net	$ 696.6	$ 521.8	$ (174.8)
Margin	43.6%	36.6%	-7.0%

AJ-HPB/Advertising



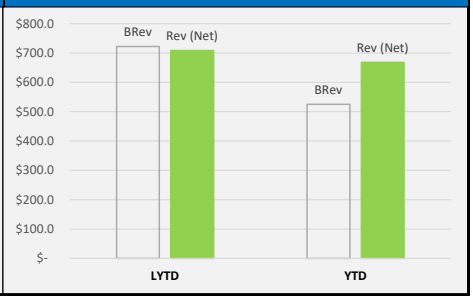
Item	LYTD	YTD	Diff v LY
BRev	$ 1,734.5	$ 1,710.5	-1%
Rev	$ 1,734.8	$ 1,419.4	-18%
BExp	$ 1,774.1	$ 1,693.7	-5%
Exp	$ 1,731.7	$ 1,550.7	-10%
BNet	$ (39.6)	$ 16.8	$ 56.4
Net	$ 3.1	$ (131.3)	$ (134.4)
Margin	0.2%	-9.3%	-9.4%

ALI/eLearning



Item	LYTD	YTD	Diff v LY
BRev	$ 1,063.2	$ 1,378.6	30%
Rev	$ 852.9	$ 1,228.3	44%
BExp	$ 790.1	$ 1,054.5	33%
Exp	$ 644.3	$ 874.1	36%
BNet	$ 273.1	$ 324.1	$ 51.0
Net	$ 208.6	$ 354.2	$ 145.6
Margin	24.5%	28.8%	4.4%

Royalties



Item	LYTD	YTD	Diff v LY
BRev	$ 722.3	$ 525.0	-27%
Rev (Net)	$ 708.8	$ 668.1	-6%

(No direct expenses, no margin; Rev = Net. Royalty revenue is included in the totals for the other business areas; broken out here for information.)

PEC Products Subcommittee Report to PEC Fiscal Subcommittee

Monday, February 10, 2025

3:00pm – 4:30pm

Hilton Orlando – Orlando, FL

Room - Lake Louise A (Lobby level)

Attendance: Members - Adeeba S W Mehboob – chair; Jeremy T Smith (absent); Joseph L Furman; Stephanie Mages; Norman Grusnick; Akinbowale Soluade (absent); Megan Tosh; Kurt Monteiro; John Constantinide (absent); Jonathan Smith (absent); Blake Ellis

Guests - Heather Kenned; Cindy Micheals; Chandra Sekhar; Patrick Ryan

Motions

None.

Information Items

1. Handbook Committee (HBC) Report to PEC Products Subcommittee was given by Mr. Furman. (Attachment A)

    1.1 HBC will begin implementing the volume restructuring plan developed by the PEC Ad Hoc Subcommittee on Handbook Volume Rebalancing with the 2028 *HVAC Systems and Equipment* volume.

2. Historical Committee Report to PEC Products Subcommittee was given by Mr. Grusnick. (Attachment B)

    2.1 Mr. Comstock visited ASHRAE Headquarters to survey and take photos of the library and library archives and provided a report to the committee with some suggestions for possible creation of an ASHRAE Heritage Center shown in *Attachment B of the Historical Committee Report to PEC Products Subcommittee.*

    2.2 Historical Committee approved a nomination for the Lou Flagg Historical Award and submitted it to the ASHRAE Honors and Awards Committee. *(Historical Committee Approved 4-0-0, CV)*

3. Publications Committee Report to PEC Products Subcommittee was given by Mr. Tosh. (Attachment C)

3.1 Publications Committee has developed a spreadsheet for the TCs that lists all the ASHRAE book titles that each TC is responsible for. It was introduced to TC leadership by the Publications Committee chair at the TC/TG/MTG Chairs' Breakfast on Sunday morning. The goal of this spreadsheet is to improve communication between

3.2 Publications Committee and the TCs regarding older ASHRAE publications that need to be reviewed for relevance *(Shown as MBO #3 in Attachment C of Publications Committee Report to the PEC Products Subcommittee)*

4. Research Journal Subcommittee Report to PEC Products Subcommittee was given by Mr. Ellis. (Attachment D)

Respectfully submitted,

Adeeba S W Mehboob
PEC Products Subcommittee Chair
February 10, 2025
JH

Handbook Committee Report to PEC, Products Subcommittee
Sunday, February 9, 2025

Major Passed Motion

1. **HBC moved, seconded, and approved to begin implementing the volume restructuring plan developed by the PEC Ad Hoc Subcommittee on Handbook Volume Rebalancing with the 2028 *HVAC Systems and Equipment* volume.**

   Background: Volume growth over the years has led to Handbook volumes ranging from less that 800 pages to nearly 1500. This causes drastic changes in staff workloads, subcontractor time, shipping, and usability by members. PEC's ad hoc subcommittee, led by John Constantinide, developed a protocol to relocate chapters to make volumes more evenly sized, and to rename the Refrigeration volume "Refrigeration and Building Operations" (name is tentative at this point).

   Implementing this change (Attachment A, spreadsheet) in 2028 will give HBC time to communicate with the affected TCs, gather feedback, and allow time for adjustments in TC revision schedules.

   Motion was passed unanimously by VV, CNV.

   Fiscal Impact: None to slight positive impact. More equal volume sizes will level out expenditures for shipping of print products and developmental costs for PDF and Handbook Online products, also making budget forecasts more accurate.

Information Items

1. A new chapter on exergy in sustainable building environments was considered and discussed with TC 7.43, but no conclusion was reached. A conference call will be held soon after the Orlando meeting for more in-depth discussion.

2. See *Attachment B* for MBOs for 2024-2025.

Respectfully submitted,

Joseph Furman, HBC Chair

JF [mhek]

ASHRAE HANDBOOK analysis			4312 total page count	4979	
			Target average	1245	
Handbook 2028 HVAC SYSTEMS AND EQUIPMENT			1075	170	**pages under average**
AIR CONDITIONING AND HEATING SYSTEMS		Pg count	383	**Added:**	128 pages
	Chapter	Title		**Remove**	0 pages
	S1	HVAC Systems Analysis and Selection	10		
	S2	Decentralized Cooling and Heating	12		
	S3	Central Cooling and Heating Plants	12		
	S4	Air Handling and Distribution	20		
	S5	In-Room Terminal Systems	16		
	S6	Radiant Heating and Cooling	21		
	S7	Combined Heat and Power Systems	56		
	S8	Combustion Inlet Turbine Cooling	9		
	S9	Applied Heat Pump and Heat Recovery Systems	26		
	S10	Small-Forced Air Heating and Cooling Systems	13		
	S11	Steam Systems	16		
	S12	District Heating and Cooling	48		
	S13	Hydronic Heating and Cooling	26		
	S14	Condenser Water Systems	4		
	S15	Medium- and High-Temperature Water Heating	8		
	S16	Infrared Radiant Heating	8		
	S17	Ultraviolet Lamp Systems	10		
	S18	Variable Refrigerant Flow	15		
From A	A54	Fire and Smoke Control	27		
From A	A59	Indoor Air Modeling	26		
AIR HANDLING EUIPMENT AND COMPONENTS			237		
	S19	Duct Construction	15		
	S20	Room Air Distribution Equipment	16		
	S21	Fans	16		
	S22	Humidifiers	18		
	S23	Air-Cooling and Dehumidifying Coils	17		
	S24	Desiccant Dehumidification and Pressure Drying Eq	14		
	S25	Mechanical Dehumidification and Related Compone	11		
	S26	Air-to-Air Energy Recovery Equipment	38		
	S27	Air-Heating Coils	5		
	S28	Unit Ventilators, Unit Heaters, and Makeup Air Units	10		
	S29	Air Cleaners for Particulate Contaminants	14		
	S30	Industrial Gas Cleaning and Air Pollution Control	30		
From F	F21	Duct Design	33		
HEATING EQUIPMENT AND COMPONENTS			157		
	S31	Automatic Fuel-Burning Systems	23		
	S32	Boilers	8		
	S33	Furnaces	10		
	S34	Residential In-Space Heating Equipment	7		
	S35	Chimney, Vent, and Fireplace Systems	36		
	S36	Hydronic Heat-Distribution Units and Radiators	6		
	S37	Solar Energy Equipment	25		
From A	A58	Room Air Distribution	42		

COOLING EQUIPMENT AND COMPONENTS			126
S38	Compressors	44	
S39	Condensers	21	
S40	Cooling Towers	26	
S41	Evaporative Air-Cooling Equipment	12	
S42	Liquid Coolers	7	
S43	Liquid -Chilling Systesm	16	

GENERAL COMPONENTS			60
S44	Centrifugal Pumps	18	
S45	Motors, Motor Controls, and Variable-Frequency Dri	21	
S46	Valves	15	
S47	Heat Exchangers	6	

PACKAGED UNITARY, AND SPLIT-SYSTEMS EQUIPMENT			23
S48	Unitary Air Conditioners and Heat Pumps	15	
S49	Room Air Conditioners and Packaged Terminal Air (	8	

GENERAL			89
S50	Thermal Storage	41	
S51	Dedicated Outdoor Air Systems	7	
S52	Codes and Standards	29	
S	Appendix	2	
S	Comment Page	10	

Handbook 2025 FUNDAMENTALS			1082
PRINCIPLES		Pg count	189
Chapter	Title		
F1	Pschrometrics	33	
F2	Thermodynamics & Refrigeration	21	
F3	Fluid Flow	15	
F4	Heat Transfer	36	
F5	Two-Phase Flow	26	
F6	Mass Transfer	15	
F7	Fundamentals of Control	22	
F8	Sound and Vibration	21	

INDOOR ENVIRONMENTAL QUALITY			119
F9	Thermal Comfort	33	
F10	Indoor Environmental Health	30	
F11	Air Contaminants	25	
F12	Odors	8	
F13	Indoor Environmental Modeling	23	

LOAD AND ENERGY CALCULATIONS			314
F14	Climatic Design Conditions 20 & 30	50	

163 **pages under average**

Added: 92 pages

Removed: 123 pages

F15	Fenestration	68	
F16	Ventilation and Infiltration	41	
F17	Residential Cooling and Heating Load Calculations	16	
F18	Nonresidential Cooling and Heating Load Calculatio	67	
F19	Energy Estimating and Modeling Methods	72	

Note: moved section from Applications

ENERGY-RELATED APPLICATION			92
From A A35	Ground-Source Heat Pumps and Geotherm	53	
From A A36	Solar Energy	39	

HVAC DESIGN			88
F20	Space Air Diffusion	4	
to S F21	Duct Design		
F22	Pipe Design	41	
F23	Insulation for Mechanical Systems	24	
F24	Airflow Around Buildings	19	

BUILDING ENEVELOPE			53
F25	Heat, Air, and Moisture Control in Building Assembli	18	
F26	Heat, Air, and Moisture Control in Building Assembli	23	
F27	Heat, Air, and Moisture Control in Building Assembli	12	

MATERIALS			45
F28	Combustion and Fuels	21	
to R F29	Refrigerants		
to R F30	Theromdynamics Properties of Refrigerants		
F31	Physical Properties of Secondary Coolants (Brine)	14	
F32	Sorbents and Desiccants	6	
F33	Physical Properties of Materials	4	

GENERAL			147
F34	Energy Resources	11	
F35	Sustainability	13	
F36	Global Climate Change	25	
F37	Moisture Management in Buildings	14	
F38	Measurements and Instruments	42	
F39	Abbreviations and Symbols	11	
F40	Units and Conversions	2	
F41	Codes and Standards	29	
F	Appendix	6	35
F	Composite Index	29	

Note: Volume may need to be renamed to address the expanded scope

Handbook 2026 REFRIGERATION (Part 1) and BUILDINGS OPERAT	pg count	1806	561 **pages over average**

Added: 360 pages
Removed: 0 pages

R38	Fruit Juice Concentrates and Chilled Juice Products	8	
R39	Beverages	12	
R40	Processed, Precooked, and Prepared Foods	7	
R41	Bakery Products	7	
R42	Chocolates, Candies,Huts, Dried Fruits, and Dried V	8	

INDUSTRIAL APPLICATIONS			34
R43	Ice Manufacture	6	
R44	Ice Rinks	13	
R45	Concrete Dams and subsurface Soils	6	
R46	Refrigeration in the Chemical Industry	9	

LOW-TEMPERATURE APPLICATIONS			323
R47	Cryogenics	32	
R48	Ultralow-Temperature Refrigeration	12	
R49	Biomedical Applications of Cryogenics Refrigeration	9	

Note: Relocated entire section from Applications

PART 2: BUILDING OPERATIONS AND MANAGEMENT			**270**	
From A A37	Energy Use and Management	23		
From A A38	Owning and Operating Cost	15		
From A A39	Testing, Adjusting, and Balancing	44		implement in 2028
From A A40	Operations and Maintenance Management	14		Maybe Built Environment instead of BOM?
From A A41	Computer Applications	11		And Building Operations?
From A A42	Building Energy and Water Monitoring	17		
From A A43	Supervisory Control Strategies and Optimiz	50		9.13 Space HB subcom chair will be John C.
From A A44	HVAC Commissioning	15		Proposed new chapter to be online only
From A A48	Design and Application of Controls	23		
From A A49	Noise and Vibration Control	58		

GENERAL			41
R50	Terminology of Refrigeration	12	
R51	Codes and Standards	29	

R	Appendix	2	41
R	Composite Index	39	

Handbook 2023 HVAC APPLICATION			1016	229	**pages under average**
COMFORT APPLICATIONS			211	**Added:**	0 pages
A1	Residential Space Conditioning	11		**Removed:**	457 pages
A2	Retail Facilities	9			
A3	Commercial and Public Buildings	14			
A4	Tall Buildings	21			
A5	Places of Assembly	7			
A6	Indoor Swimming Pools	9			
A7	Hospitality	9			
A8	Educational Facilities	40			

A9	Health Care Facilities	29
A10	Justice Facilities	9
A11	Automobilies	19
A12	Mass Transit	10
A13	Aircraft	19
A14	Ships	5

INDUSTRIAL APPLICATIONS		372
A15	Industrial Air Conditioning	12
A16	Enclosed Vehicular Facilities	44
A17	Laboratories	24
A18	Engine Test Facilities	5
A19	Clean Spaces	35
A20	Data Centers and Telecommunication Facilities	31
A21	Printing Plants	5
A22	Textile Processing Plants	7
A23	Fire and EMT Stations and Training Academies	4
A24	Museums, Galleries, Archives, and Libraries	47
A25	Environmental Control for Animals and Plants	30
A26	Drying and Storing Selected Farm Crops	12
A27	Air Conditioning of Wood and Paper Products	4
A28	Power Plants	13
A29	Nuclear Facilities	14
A30	Mine Ventilation and Air Conditioning	14
A31	Industrial Drying	7
A32	Ventilation of the Industrial Environment	8
A33	Industrial Local Exhaust Systems	10
A34	Kitchen Ventilation	46

Note: moved section to Fundamentals

ENERGY-RELATED APPLICATION		
To F	A35	Ground-Source Heat Pumps and Geothermal Energy
To F	A36	Solar Energy

Note: Relocated entire section to Applications

BUILDING OPERATIONS AND MANAGEMENT		
To R	A37	Energy Use and Management
To R	A38	Owning and Operating Cost
To R	A39	Testing, Adjusting, and Balancing
To R	A40	Operations and Maintenance Management
To R	A41	Computer Applications
To R	A42	Building Energy and Water Monitoring
To R	A43	Supervisory Control Strategies and Optimization
To R	A44	HVAC Commissioning

GENERAL APPLICATIONS		394
A45	Building Envelopes	14
A46	Building Air Intake and Exhaust Design	14
A47	Air Cleaners for Gaseous Contaminants	25
To R	A48 Design and Applications of Controls	

MBO Submission to Planning Council: PEC | Date: 1/10/2025 | Chair: Joe Furman

Committee: Handbook Committee | Vice Chair: Stephanie Magas

#	Description	Metric (how do we determine success?)	Initiative #	Goal #	Comp % / Date	Financial Assist Req'd?	MBO Comments	Strategic Plan Tally: Initiative # 1	2	3	4	Goal a	Goal b	Goal 2 a	Goal 2 b	Goal 2 c	Goal 3 a	Goal 3 b	Goal 3 c	Note
1	Create process to escalate TC notice of pending/overdue delivery related chapter documents for the Handbook. Notice directed to TAC leadership.	Meet with TAC leadership. Co-Author and issue internal guidance document.			6/30/2025	No	Responsibility of TC Volume Chapter revisions seems to lie with the HBC in the current structure. TAC should be accountable for the content and updates/revisions. This will highlight any shortfalls so they will be remedied.													
2	Consider Handbook volumes as a whole: balance out volume sizes.	All four volumes are of roughly equal size and workload. Currently, the Refrigeration volume is about 800 pages and lightly updated; the Applications volume is over 1500 pages and is heavily updated.	3	1b	Completed	No	Assigned task to a PEC ad-hoc subcommittee, which will be stood up by 1/24/2024. Recommendation from the ad-hoc subcommittee will be made to PEC NLT 6/22/204.			x			x							Completed by ad hoc committee's recommendations to PEC
3	Review number of Chapters that are the responsibility of one TC	No TC is overloaded with more chapters than its membership can maintain.	3	1b	ongoing	No	Will even out burden on TCs; better response from individual overwhelmed TCs.			x			x							Ongoing
4	Encourage TCs to develop extra features (spreadsheets, sidebar discussions, video, etc.) for Handbook Online.	Increase in number of Handbook Online extra features.	3, 4	1b, 2c	ongoing	No	Suggest to TCs that they use their YEA members.			x	x		x			x				Vance Payne might know people at NIST who did something similar
5	Review and improve ARG for clarity and conciseness (this includes the chapter submittal form).	Updates to be made.	3	1b	ongoing	No				x			x							Ongoing
6	Review and improve MOP for clarity and conciseness.	Updates to be made.	3	1b	Target 6/24	No				x			x							Functional has an action item to update MOP to new template and move stuff that doesn't fit into Reference Manual (target for approval is January 2025)

MBO Submission to Planning Date 1/10/2025

Council: PEC Chair Joe Furman

Committee: Handbook Committee Vice Chair Stephanie Magas

#	Description	Metric	Initiative #	Goal #	Comp % / Date	Financial Assist Req'd?	MBO Comments	Strategic Plan Tally												
								Initiative #				Goal		Goal 2			Goal 3			
		(how do we determine success?)						1	2	3	4	a	b	a	b	c	a	b	c	Note
7	Author and develop how-to videos and other job aids for HBC liaisons, TC handbook subcommeittee chairs, and other stakeholders.	Author and post videos	3	1b	Target 6/24	No	Beta videos tested at June 2023 meeting; revisions in progress based on that trial.			x			x							Ongoing
8	Review single topic/multi TC Chapters responsibility to one TC.		3	1b	Target 6/24	No	Will help to avoid potential conflicting revisions from multiple TCs, and simplify chapter submittal process. May require guidance issued in reference manual for HBC use when conflicts arise			x			x								Chapter needs one cognizant authority (target December 2024)
9	Develop calendar-based activity prompts job aid for HBC leadership to use in managing the HBC.	Author and issue internal guidance document	3	1b	Target 6/24	No				x			x								Ongoing; HS will pass on progress from Scott F.
10	Work with staff to update Handbook Central.	Updates to be made.	3	1b	Target 6/24	No	Streamlining the public web page and making the chapter approval checklist available to TCs without having to sign into the Authoring Portal (e.g., for those with no planned changes for a cycle).			x			x								Ongoing
11	Update Reference Manual and post on Basecamp.	Updates to be made.	3	1b	Target 6/24	No	A vintage reference manual (ca. 2016) was found and is in the process of being updated for modern use.			x			x								Ongoing (target 1/25)
12	Work with TC Leadership to engage TC's when HC Liasions cannot contact respective TC Liasions	Author and issue internal guidance document	JLF		Target 12/24	No	Responsibility of TC Volume Chapter revisions seems to lie with the HBC in the current structure. TAC should be accountable for the content and updates/revisions														Ongoing
13																				
14																				
15																				
								3	1	11	2	2	11	2	1	2	2	1	1	

Historical Committee Report to PEC Products Subcommittee

Meeting of Monday, February 10, 2025
8:00 AM - 9:30 AM
Orlando Hilton - Orlando, FL

Motions

None.

Information Items

1. Historical Committee approved a motion and assigned an action item to staff to communicate with the necessary ASHRAE staff to track Gold Ribbon recipients. Gold ribbon awards are a requirement criterion for the Lou Flagg Historical award and the committee needs this information to vote on the award. *(Historical Committee Approved 4-0-0, CV)*

2. Historical Committee reviewed the committee's 2024-2025 MBOs. (Attachment A)

3. Mr. Pollard reported to Historical Committee that there has been increased activity on the Engineering and Technology History Website (ETHW) wiki.

4. Mr. Comstock visited ASHRAE Headquarters to survey and take photos of the library and library archives and provided a report to the committee with some suggestions for possible creation of an ASHRAE Heritage Center. (Attachment B)

5. Historical Committee is planning the next Leadership Interview for June 2025 Annual ASHRAE Conference in Pheonix. Staff reminded members that the process for these interviews is for the committee members to choose the individual to interview, develop the questions and conduct the interview. The filming of the interview will be done with assistance from the Marketing Department and their plenary vendor. Staff was assigned to confirm who will be responsible for the editing of Leadership interview recordings if needed.

6. Historical Committee appointed Mr. Nagengast, Mr. Feiner and Mr. Comstock to ad hoc to report in detail the on the future needs for the library and historical archives.

7. Historical Committee approved a nomination for the Lou Flagg Historical Award and submitted it to the ASHRAE Honors and Awards Committee. *(Historical Committee Approved 4-0-0, CV)*

8. Mr. Haberl reported that six historical papers have been published in ASHRAE's research journal, *Science and Technology for the Built Environment* (STBE):

   - Ahn, J., Haberl, J. 2025. "Origins of Whole-building Energy Simulation Programs Used for High Performance Commercial Buildings: Contributions of the 1968 and 1971 ASHRAE Algorithms for Weighting factor-based Hourly Heating and Cooling Load Calculations", Science and Technology for the Built Environment, accepted for publication (January).

   - Ahn, J., Haberl, J. 2025. "Origins of Whole-building Energy Simulation Programs Used for High Performance Commercial Buildings: Contributions of the 1975 ASHRAE Algorithms for Heat Balance-based Hourly Heating and Cooling Load Calculations", Science and Technology for the Built Environment, accepted for publication (January).

   - Ahn, J., Haberl, J. 2023. "Origins of Whole-building Energy Simulation Programs Used for High Performance Commercial Buildings: Contributions of the NATEOUS, SHEP, TACS, CP-26, and RESPTK programs", Science and Technology in the Built Environment, (March).

   - Oh, S., Haberl, J. 2016. "Origins of the Methods for Simulation of Building Energy Simulation: Part I: Whole Building Energy Use", Science and Technology for the Built Environment, Volume 22, Issue 1, pp.118-137, ESL-PA-16-01-02 (January).

   - Oh, S., Haberl, J. 2016. "Origins of the Methods for Simulation of Building Energy Simulation: Part II: Lighting and Daylighting Simulation", Science and Technology for the Built Environment, Volume 22, Issue 1, pp. 107-117, ESL-PA-16-01-03 (January).

   - Oh, S., Haberl, J. 2016. "Origins of the Methods for Simulation of Building Energy Simulation: Part III: Solar Thermal, PV and Passive Solar Simulation", Science and Technology for the Built Environment, Volume 22, Issue 1, pp. 87-106, ESL-PA-16-01-04 (January)

9. Historical Committee is considered developing an historical physical display for viewing in future conference bookstore. Having a physical presence at the ASHRAE Registration area will allow a merging of historical info with new younger members.

Respectfully submitted,

Norman Grusnick
February 9, 2025

MBO - Submission to Planning

last update: 2024-07/15

Council: Publications & Education
Committee: Historical

Chair: Norman Grusnick
Vice-chair: Olu Soluade

MBO #	Description	Metric	Initiative #	Goal #	Completion % /Date	Financial Assist Req'd?	MBO Comments	Strategic Plan Tally											
								Initiative #				Goal 1		Goal 2			Goal 3		
		(how do we determine success?)						1	2	3	4	a	b	a	b	c	a	b	c
1	Establish and maintain a continuous line of communication between Society Historical Committee and Regional+Chapter Historians	Electronic communication to be by Committee Chair on a quarterly basis, with input from committee members.	4	2a, 2c	Ongoing **50% complete**	No	propose Historical Committee newsletters to be issued in Nov,April				X			X		X			
2	Develop PAOE Recommended Changes for Next Year 2025-2026	To get ahead of the PAOE Committee Cycle with proposal for the following year's (Society Year 2024-2025), Historical PAOE subcommittee needs to work with the PAOE subcommittee of Members Council during the Fall to Submit recommendations.	4	2a	Ongoing due before Feb 1	No	review PAOE items and forward comments				x			X					
3	Encourage younger members of ASHRAE (specifically SA & YEA) to have interest in history related activities of the Society	reference PAOE H14=For each Membership Promotion, YEA, or Student Activities event planned with a representative from the chapter Historical Committee to add a historical context to the event	4	2a	Ongoing	No					X			X					
4	Identify volunteers to act as committee liaison to other Society Committees	Collaborating with other committees to support ASHRAE's mission by providing a historical context to educate and inspire members.	4	2a, 2c	Ongoing **25%**	No	**Historical Committee Liason:** Membership TBD **Young Engineers in ASHRAE** = TBD **Student Activities** = TBD				X			X		X			
5	Foster collaboration with other international societies to improve our historical research and support history related activities of the Society	1) Continue work to have ASHRAE membership in the IEEE History Center - Engineering & Technology History Wiki (ETHW) [web site: https://ethw.org]. 2) Grow support in the Life Members Club to fundraise & create an endowment fund that would provide ongoing financial support to sustain membership in the IEEE History Center. 3) Continue work on collaboration. HC has links with similar groups in CIBSE and AiCARR - opportunity to pursue to work w/similar committees in CEN, Intl Institute of Ammonia Refrigeration (IIAR), Intl Institute of Refrigeration (IIR), & Global Cold Chain Alliance (GCCA).	4	2b	Ongoing **ETHW complete Now Forward Items**	YES Annual fee	Budget has been approved for IEEE Wiki by PEC contigent on due diligince. Awaiting signature on agreement - **COMPLETED** **ETHW.org agreement signed,** **2024 payment completed,** **ASHRAE logo added to web site**				X				X				

6	Digitize, Sort and Archive historical items including old archived Journals and Transactions	Proposed to have some storage items at HQ identified	4	1b, 2c, 3c	Ongoing	Yes*	*require funds to purchase storage racking at HQ for storage of items *may require funds and persons to scan and index items **Plan trip to HQ to assess what we have**				x		x			X			X
7	Leadership Recall to be arrange at Winter and Summer Conference	Arrange two Presidential interviews. Review other potential interviewees	4	1b, 2c	Ongoing	Yes*	*used to have access to videogropher to video interviews at conferences, however no longer at present due to covid $ cuts. In discussion with ASHRAE Journal Podcast to use resources for interviews **Review if Podcast Team can provided then interviews**				X		x			X			
8	To increase committee visibility work with staff To have a historical display at in registration area at winter and annual meetings	First measure of success will be comments from members and what they have seen	4	1b, 2c	Will be ongoing displays	TBD	Display of past photos, blueprints artifacts will allow new members to See some of the origins of HVACR industry				x		X			x			
9	Ecourage Digital history displays at CRC Add to future PAOE value	Feedback from historians	4	1a, 2a	Ongoing	NO													
10																			
11																			
								0	**0**	**0**	**7**	**0**	**2**	**2**	**1**	**4**	**0**	**0**	**1**
								Initiative #				**Goal 1**		**Goal 2**			**Goal 3**		
								1	**2**	**3**	**4**	**a**	**b**	**a**	**b**	**c**	**a**	**b**	**c**

Site Review: ASHRAE Library and Archives: Initial Step in Creating an ASHRAE Heritage Center

September 10. 2024

Executive Summary

ASHRAE possesses the most extensive collection of HVACR literature in the world. It can be a world-class resource for members and those who research the development of technologies related to controlling temperature, humidity, and air quality. Having such a resource can increase the public's awareness of ASHRAE and promote the contributions ASHRAE members have made to improving the quality of life.

The transfer of items from the Iron Mountain storage facility to ASHRAE Headquarters now locates all historically significant items in a single facility that be accessed by members, staff, and researchers. A three-step process can enhance the value of this incredible and now expanded resource:

1) Review by the Historical Committee of items currently designated as being holdings of the library or archives. This will include the removal of items that do not meet the standards of historical significance, eliminating excess inventory, and assigning items to appropriate spaces: ASHRAE Library, ASHRAE Archives and Collections, and what is proposed as ASHRAE Library Annex. The umbrella term for these spaces is proposed to be the ASHRAE Heritage Center. (Note: current naming rights to rooms in the proposed center would need to be considered and resolved.)
2) Collaboration by the Historical Committee and staff to revise guidelines for the solicitation, acceptance, securing, and maintenance of the proposed Heritage Center.
3) Historical Committee development of a plan that promotes access to ASHRAE Heritage Center by members – remotely and onsite, supports the article publication and presentations which explain the evolution of HVACR technology, and contributes ASHRAE literature to the IEEE Engineering and Technology History Wiki.

General Comments

The protocols previously in place for Library and Archive maintenance must be updated to reflect current product availability and then reinstated. Currently, holdings are in 3 storage spaces and a Library room and an Archive room. The distinctions of what should be in the

library and what should be in an archive need to be articulated and items assigned accordingly.

Once definitions are in place, the items currently held can be reviewed and the number of items retained will be diminished. This is not to suggest that physical copies are not needed for works held in digital form, but over the years multiple copies of publications have been added to the library from donations or excess inventory. For example, no more than 3 physical copies are needed and in some cases 2 copies are sufficient.

Once this review is completed with the updated definitions, items can be assigned to either the ASHRAE Library, ASHRAE Archives, or in a space proposed as the Library Annex. The Library Annex can serve both as a retention location for spare copies of ASHRAE works and as a working space that can be used by members, staff, and researchers.

Steps in Process:

1) Review/Revise existing policy for acquisition, retention, and maintenance of ASHRAE Heritage Center, the umbrella term for the ASHRAE Library, Archives, and Collections. The policy needs to include a definition of each room's purpose, criteria for item inclusion, and access rules.

2) Remove items that do not meet the criteria for inclusion. This eliminates excess items and items that do not meet the threshold of historical significance. This step will remove clutter and unnecessary items.

3) Place retained holdings in assigned locations (Library, Archives and Collections, Library Annex) to match holdings with available space and identify needs for shelving, cabinets, and other furniture needs for the use and storage of holdings.

4) Prepare a plan to supplement physical holdings with their digitized format and make access to digital editions available in the Library Annex as a working space for members and researchers.

5) Implement policies for acquisition, retention, maintenance, and access, establishing clear staff and Historical Committee guidance contact points.

6) Promote holdings in and the benefits of the Heritage Center including the use of the rooms by researchers, promotion of how the holdings can be accessed,

commissioning articles for ASHRAE publications using the holdings, creation of displays that illustrate the historical development of the HVAC&R history, establish a robust web presence which extends access to the holdings, and execute plan for ASHRAE contributions to the IEEE Engineering and Technology History Wiki.

General Observations on the Current Overall Status of Heritage Policy

1) All items are now housed at ASHRAE Headquarters. They are situated in five locations:
    a. Library
    b. Archives
    c. Storage items (excess Library)
    d. Storage Items (excess archives)
    e. Storage Items (transferred from Iron Mountain)
2) I addition, there are the Centennial Items display cases, the display of the household refrigerator, the NY theater heating control panel display, and Hall of Fame Plague.
3) Whether all items are cataloged needs to be determined.
4) Policies need reinstatement (after former policies are reviewed).
5) Excess copies need to be removed, and non-historically significant items need to be removed.
6) There needs to be a clear definition of purpose for each of space. The term "ASHRAE Heritage Center" is an umbrella term that encompasses all the spaces holding ASHRAE-preserved literature, visual images and artifacts.
7) The distinction between what is in the "Archives" and what is in the "ASHRAE Library" and what is retained as "Back-Up" has been blurred. Items need reassignment based on reviewed distinctions.
8) Under a new plan, it is proposed the spaces in the ASHRAE Heritage Center be designated "ASHRAE Library," "ASHRAE Archive and Collections," and "Library Annex."
9) Based on the policy, all items should be designated for assignment in one of these spaces.
10) The previous policy was to keep three copies of each ASHRAE publication or product. This was to allow one for access and two for spares (to protect against loss or damage). The current policy is to accept as many as 6. This has resulted in excess backup.

11) In recent years, all ASHRAE publications have been accessible in digital form. This can be incorporated into a revised policy by:
    a. Ensuring visitors to the library can access digital collections.
    b. For any physical copy available in digital form only two physical copies need to be retained.
    c. For older ASHRAE publications for which no digital edition exists, three physical copies should be retained.

Observations on Space Currently Designated as "Library"

1) Generally, ASHRAE publications are maintained in the ASHRAE Library.
2) The space includes approximately 7 rows, each row with 4 shelving units and each unit with 5 shelves, and 2 rows of 3 shelving units each with 5 shelves. Total shelving is approximately 470 linear feet.
3) The shelved contents include:
    a. Lou Flagg Historical Award Paper Copies (Histories of ASHRAE Chapters and Localized People and Technology Applications)
    b. ASHRAE Special Publications since inception
    c. ASHRAE proceedings
    d. ASHRAE Journal (Bound and Unbound copies)
    e. ASHRAE Insights (Bound and Unbound copies)
    f. HVACR Publications from Commercial Publishers
    g. HPAC Magazine
    h. ASRE Data Books, ASHVE Guides
    i. ASHRAE Handbooks
    j. ASHRAE Standards (Current and Superseded)
    k. ASHRAE Transactions
4) Two bookcases store ASHRAE produced CDs
5) Two bookcases display Rare HVACR Books including the Meckler Collection.
6) One file cabinet with additional Lou Flagg Historical Award Paper Copies

Figure 1Library shelving with ASHRAE Special Publications.

Figure 2 Rare Book Collection in Library.

Figure 3 Unbound ASHRAE Journals in Library.

Figure 4 ASHRAE Handbooks and Standards in Library.

Observations on Space Currently Designated as "Archives"

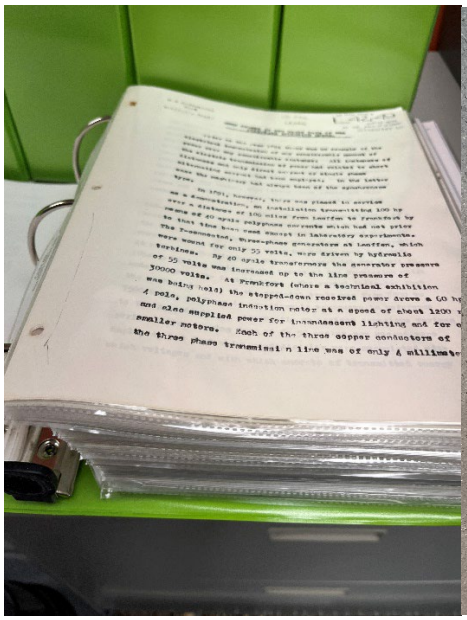
1) Generally, ASHRAE records of historical significance are currently in the archives along with the Al Newton collection, various ASHRAE publications, and trade magazines "Ice and Refrigeration" and "Metal Worker."
2) The space includes approximately 4 rows of shelving, each with 4 shelving units and each unit having 5 shelves. There are 2 lateral file cabinets with 2 drawers each and 2 vertical files with 4 drawers each.
3) The contents include:
    a. ASHRAE Special Publications
    b. Ice and Refrigeration

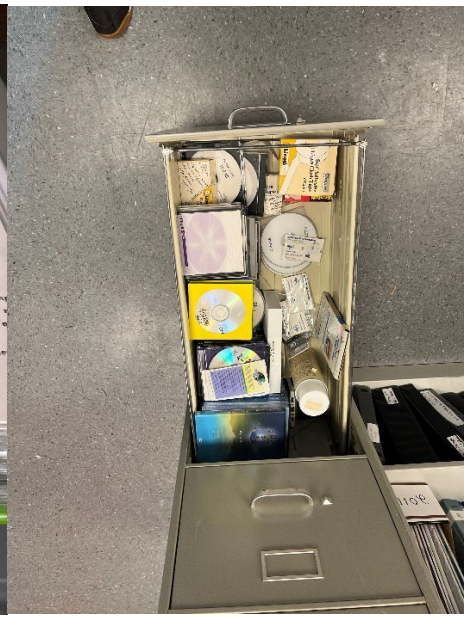
c. Metal Worker
d. Comstock paper files for important events 1974 through 2018.
e. Comstock miscellaneous photos and videos from Society events.
f. Files/records/projects submitted by members who believed they had historical significance.
g. Unbound copies of ASHRAE Journals
h. Books from 1930s to 1960s of potential historical significance
i. Membership files of prominent members – either past presidents or significant contributors to technology development
j. Meeting programs
k. Chapter Histories (unknown if Lou Flag Award Histories)
l. Nagengast green binders with Heat and Cold Files
m. Nagengast grey binders with Heat and Cold files
n. Nagangast First Century of AC files
o. Comstock files of ASHRAE annual reports and Society documentation
p. Comstock files of articles published about history of HVACR in general media, ASHRAE publications, and trade publications.





Boggs Retirement
2007 Winter Meeting
Dallas
Headquarters Relocation
Headquarters Dedication
Headquarters
'78 - Standard 90






ASHRAE - TIME LINE

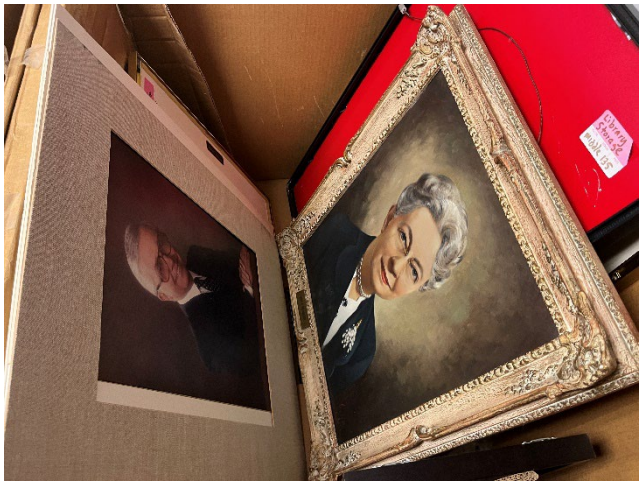
Observations on "Storage Space 1" (Basement level)

1) These are items that are on hold for assignment after submission to ASHRAE.
2) What is in the space is a rolling library cart with several manufacturers' catalogs, unbound copies of Refrigerating Engineering, Plumbing Journal, Heating and Ventilating magazine, HPAC magazine, and ASHVE Guide.
3) Items here should be designated for Library or Archives, with duplicate items (if determined needed) placed in the proposed Library Annex space. Some items may not be historically significant (such as manufacturers' catalogs – other than retaining examples).

Observations on "Storage Space 2" (Basement level)

1) What is in this space are 16 +/- boxes and several poster shipping containers.
2) Contents are:

a. The traveling ASHRAE history displays (mounted photographs) shipped to chapters during the Centennial celebration.
b. Photographs previously were displayed at HQ including meeting banquets from the 1920s, early ASHRAE summer meeting group photos, and portraits of AT Boggs, former ASHRAE Executive Vice President, and Mary Engle Pennington ("The Ice Woman").
c. Inventory of selected ASHRAE Special Publications.
d. Files from the Technology Department which appear to be intermingled with Historical holdings.
e. HPAC magazine
f. ASHRAE Journal unbound copies
g. ASHRAE Handbooks
h. ASHRAE Transactions



Observations on "Storage Space 3" (Basement level)

1) What is in this space are 22 +/- boxes. These are items retrieved from Iron Mountain.
2) Contents are:
    a. Frank Faust collection of early RAC literature including solar applications.
    b. American Artisan magazine
    c. HPAC magazine
    d. Domestic Engineering
    e. ASHRAE Transactions

Display Areas

ASHRAE has these display areas of Historical Items:

- Three display cases of gifted items to ASHRAE in observation of ASHRAE's Centennial Celebration in 1995 in the lower level lobby.

- Wall mounted steam heating gages retrieved from a 42nd Street vaudeville theater in New York City in the lower level lobby.
- Also in this area are framed certificates from the ASHRAE Centennial and also selected photos of past Society meetings.
- Early residential refrigeration unit manufactured by the Domelre Company in the basement level.
- Hall of Fame plaque outside of the library on lower level (but without corresponding descriptions of inductee achievements and selection).

Immediate Steps to Be Taken:

1) Historical Committee/Staff review/revise existing policy for acquisition, retention, and maintenance of items in the library, archives, and storage.
2) Historical Committee representatives meet on-site to work with staff to:
   a. Remove inventory that is in excess of what the policy allows.
   b. Remove items that do not meet the criteria of historical significance as defined in the policy.
   c. Determine if retained items should be placed in the library, archives, or annex.

3) Catalogue items not currently cataloged (or reassigned) and ensure procedures are in place to catalog items added in the future.
4) Flesh out concept of ASHRAE Heritage Center and determine space, furniture needs for its components: ASHRAE Library, ASHRAE Archives and Collections, ASHRAE Library Annex.
5) Begin work on a plan to promote the benefits of the Heritage Center including the use of the rooms by researchers, promotion of how the holdings can be accessed, commissioning articles for ASHRAE publications using the holdings, creation of displays that illustrate the historical development of the HVAC&R history, establish a robust web presence which extends access to the holdings, and execute a plan for ASHRAE contributions to the IEEE Engineering and Technology History Wiki.

Steve Comstock
September 10, 2024

Attachment E

Shaping Tomorrow's Global Built Environment Today

Publications Committee Report to the Products Subcommittee of the Publishing and Education Council

Monday, February 10, 2025, 8:00-9:30 a.m.

Action Items

1. Publications Committee recommends that PEC Products Subcommittee approve the changes to the committee's ROB as shown in **Attachment A**. This attachment reflects changes to the ROB based off of feedback from this Council as well as guidance from the Society Rules Committee.

Vote

2. Publications Committee recommends that PEC Products Subcommittee approve the changes to the committee's MOP as shown in **Attachment B**. This attachment reflects changes to Section 1 of the Publications Committee MOP that add the conditions the committee is subject to, which have been removed from the committee's ROB.

Vote

Information Items

Major Motions Passed:

1. Publications Committee voted to select the winner for the 2024 Journal Paper Award, the title and authors of which have been forwarded to the Honors and Awards Committee for award presentation at the 2025 ASHRAE Annual Conference.
2. Publications Committee voted to approve the final version of a Lessons Learned document that will be posted online and available to authors of book projects; this document was authored by an ASHRAE member experienced with preparing book projects for ASHRAE who wanted to provide guidance to other authors.
3. Publications Committee voted to approve the final version of a new Special Pubs Project Proposal Template, which is more aligned with the Publication Topic Acceptance Request (PTAR) proposal template and will replace the existing online Publication Request Form.

Other:

1. After discussion with RAC leadership, Publications Committee has developed a spreadsheet for the TCs that lists all the ASHRAE book titles that each TC is responsible for. This spreadsheet will be housed on the TC Basecamp page and available to all TCs. It was introduced to TC leadership by the Publications Committee chair at the TC/TG/MTG Chairs' Breakfast on Sunday morning. The goal of this spreadsheet is to improve communication between Publications Committee and the TCs regarding older ASHRAE publications that need to be reviewed for relevance (see Publications Committee MBO #3 in **Attachment C**).

2. Updates on the Publications Committee MBOs for the 2024-2025 Society year are included in **Attachment C**.

Respectfully submitted,
Megan Tosh, Chair
Publications Committee
8 February 2025

Attachment A

Changes to Publications Committee ROB

2.419 PUBLICATIONS COMMITTEE

2.419.001 SCOPE AND PURPOSE

This committee identifies the technical information needs of the HVAC&R industry not met through the ASHRAE Handbook series, ASHRAE's research journal, standards, guidelines, or user's manuals and oversees editorial policies and delivery of products to the marketplace. This committee also determines the best paper published in the volume year of *ASHRAE Journal* preceding the ASHRAE Winter Conference.

This committee shall report to the Publishing and Education Council.

2.419.002 MEMBERSHIP

2.419.002.1 Composition

The members of this committee are as follows:

A. Twelve (12) voting members, including a chair and a vice chair. (16-06-29-20)
B. Non-voting members include a Board ex officio member and coordinating officer.

2.419.002.2 Qualifications

A. All members of the committee shall hold the grade of Associate Member or higher in the Society.
B. Members should have an awareness of the current technical information needs of various segments of the HVAC&R industry.
C. Membership should include broad representation from the HVAC&R industry including the academic, design, construction, facility operations and manufacturing communities.
D. At least three members should have recent experience with the production or writing of technical publications or periodicals.

2.419.002.3 Term of Service

The term of service for the chair and vice chair is intended to be one (1) year. The term of service for other voting members is intended to be three (3) years.

2.419.003 OPERATION

2.419.003.1 General Requirements

~~A.~~ This committee shall oversee the editorial policies of ASHRAE's Special Publications, *ASHRAE Transactions* and other conference proceedings, *ASHRAE Journal*, and ASHRAE's electronic newsletters.
~~The committee shall be subject to these conditions:~~
~~2. The data recommended for publication shall tend toward the professional education of the individual engineer;~~
~~3. Such data shall be free from commercial bias;~~

~~4.~~1. ~~Such data shall tend to advance for the public benefit the arts and sciences relating to heating, refrigeration, air conditioning, and ventilation and the allied arts and sciences.~~
~~(67-06-25-08/82-06-30-25/86-06-22-18M)~~

B. ~~ASHRAE~~ This committee shall oversee ~~produce~~ Special Publications that shall be defined as ~~all~~ technical publications produced by ASHRAE in print and machine-readable format ~~in print format~~ (except for the ASHRAE Handbook series; standards, guidelines, and user's manuals; and ASHRAE's research journal, ~~and ASHRAE's~~ magazines, and newsletters), ~~such as~~including books ~~(including books resulting from ASHRAE Research Projects and Special Projects)~~, charts, ~~and~~ tools, ~~as well as all technical publications in machine-readable format, such as~~ audio and visual presentations, software, databases, apps, and online resources. ~~These special publications may be generated from proposals submitted directly to Publications Committee or from accepted Publication Topic Acceptance Requests (PTARs), which Publications Committee reviews before providing recommendations to Research Administration Committee (RAC) for the final vote regarding funding. This committee shall also communicate with the cognizant TCs of existing ASHRAE publications to help staff determine whether older publications are up-to-date as is, need to be revised, or need to be removed from sale.~~

~~C. The objective of *ASHRAE Transactions* shall be to serve as the archival publication of unsolicited research papers and Society-sponsored research and discussions in HVAC&R technical areas presented at the ASHRAE Annual and Winter Conferences as well as of Society business such as council and committee membership and award recognition. The objective of proceedings of ASHRAE-sponsored conferences and ASHRAE-cosponsored conferences shall be to serve as the archival publications of the unsolicited research papers presented at these conferences.~~

C. This committee shall advise about the magazine~~The objective of~~ *ASHRAE Journal*, which shall ~~be to~~ lead in the communication of heating, ventilating, air-conditioning and refrigeration information to and from the profession, industry, and related interests~~.~~ (ROB 520-144-007) and which shall include e~~.~~ Editorial and advertising content ~~of *ASHRAE Journal* shall be~~ directed toward the professional education of persons engaged in industries related to heating, ventilating, air conditioning, and refrigeration (86-06-22-18L).

D. This committee shall determine the annual winner of the Journal Paper Award.

~~E. The objective of ASHRAE's electronic newsletters shall be to communicate news to various audiences. *Insights*, distributed to members only, includes news of members, chapters, regions, Society committees, and International Associates. (ROB 520-144-007; 86-06-22-18L) *ASHRAE Journal Newsletter*, distributed to members only, connects news of industry trends with articles from *ASHRAE Journal*'s archive of peer-reviewed content. *ASHRAE HVAC&R Industry News* curates the latest trends and announcements from the industry to a large readership of members and non-members. *HPB Newsletter* combines online HPB articles and *ASHRAE Journal* articles with links to external articles related to energy efficiency, resiliency and sustainability for a diverse audience of ASHRAE engineers, architects, facilities managers and building owners.~~

2.419.004 STRATEGIC PLAN (09-06-21-12C)

This committee shall develop procedures for recommending updates to the strategic plan on a continuous basis. As a minimum the committee shall submit a report to the council prior to the Annual Meeting. The report includes the current status of each activity which supports the fulfillment of the committee's assignments under the strategic plan. The committee shall report to the council all recommendations for changes to the strategic plan as provided by the committee's constituents prior to the Annual Meeting.

Attachment B

Changes to Publications Committee MOP

1. GENERAL RESPONSIBILITIES

1.1. The Publications Committee identifies the technical information needs of the HVAC&R industry not met through the ASHRAE Handbook series, ASHRAE's research journal, standards, guidelines, or user's manuals and oversees editorial policies and delivery of products to the marketplace. This includes the editorial policies of *ASHRAE Journal*, ASHRAE's electronic newsletters, *ASHRAE Transactions* and other conference proceedings, and ASHRAE Special Publications, which are technical publications in print format, such as non-series books (including books resulting from ASHRAE Research Projects, PTARs, and Special Projects), books in the Advanced Energy Design Guide series and the ASHRAE Datacom Series, charts, and tools, as well as all technical publications in machine-readable format, such as audio and visual presentations, software, databases, apps, and online resources.

1.2. The committee shall be subject to these conditions:

1.2.1. The data recommended for publication shall tend toward the professional education of the individual;

1.2.2. Such data shall be free from commercial bias;

~~1.1.1.~~1.2.3. Such data shall tend to advance for the public benefit the arts and sciences relating to heating, refrigeration, air conditioning, and ventilation and the allied arts and sciences.

Attachment C

Publications Committee MBOs for Society Year 2024-2025

Chair: Megan Tosh **Date:** 8 February 2025

MBO #	Description	Metric	Initiative #	Goal #	Completion % /Date	Financial Assist Req'd?	MBO Comments
1	Create a process for the Publications Committee to compile information on market needs for publications and communicate that information to potential authors	Update the Reference Manual to describe the process for committee operations	3	1b, 2b, 3a	There is an outline for how to proceed; next we will put the plans into action. Completion expected at 2025 Annual Meeting	N	Publications Committee receives input on market needs from other committees and organizations, as well as through its own internal evaluations.
2	Integrate ASHRAE publications with other ASHRAE product offerings.	Compile a report on product opportunities and identify market gaps	4	1a, 1b, 2c	There is an outline for how to proceed; next we will put the plans into action. Completion expected at 2025 Annual Meeting	N	Liaise with Training & Education, Certifications, and others to ensure existing publications are fully leveraged and to identify new product opportunities.
3	Develop a streamlined communication process with technical committees that support publication	50% response rate from TC chairs by 2025 Annual Conference	3	3b	Completed (see #1 under "Other" above)	N	Publications Committee to set up a working group meeting with members of TAC to develop a method of communication with TC chairs so publications that have been developed by TCs are adequately maintained and managed.

Attachment F

Research Journal Subcommittee of PEC
Report to Products Subcommittee
Meeting of Monday, February 10, 2025
8:00am – 9:30am Eastern

Attendance: Blake Ellis-Chair, Jeffrey Siegel, Tim Dwyer (absent), Jeffrey Spitler-*STBE* Editor, Mark Owen-Staff Liaison, Stephanie Loeh- Taylor & Francis Mary Bolton- Staff - Associate Editor, Special Publications

Motions:
None

Information Items:

1. Mr. Owen reviewed the financial statements with the subcommittee.

2. The Publisher's Report from Taylor & Francis was reviewed and attached as Attachment A which included:
    - Production
        - Number of articles published by year
            - Includes breakdown of pay to read, hybrid read & publish, and hybrid open access along with total percentage of open access
        - Content flow and article count
            - 18 articles in backlog
        - Production schedule
            - 10 issues expected in 2025, similar to 2024
        - Speed of article publication
            - Speed of publication is consistent year over year
    - Global Reach & Usage
        - Circulation
            - Staying flat
        - Most downloaded articles
            - All of the top articles are open access
            - Total number of downloads is 113,000, up 2% from last year
        - Top ten institutions and download numbers
        - Comparison of past five years' numbers of article downloads
        - Comparison of past five years' numbers of articles usage by source
        - Article downloads usage by country & region
    - Citation Analysis

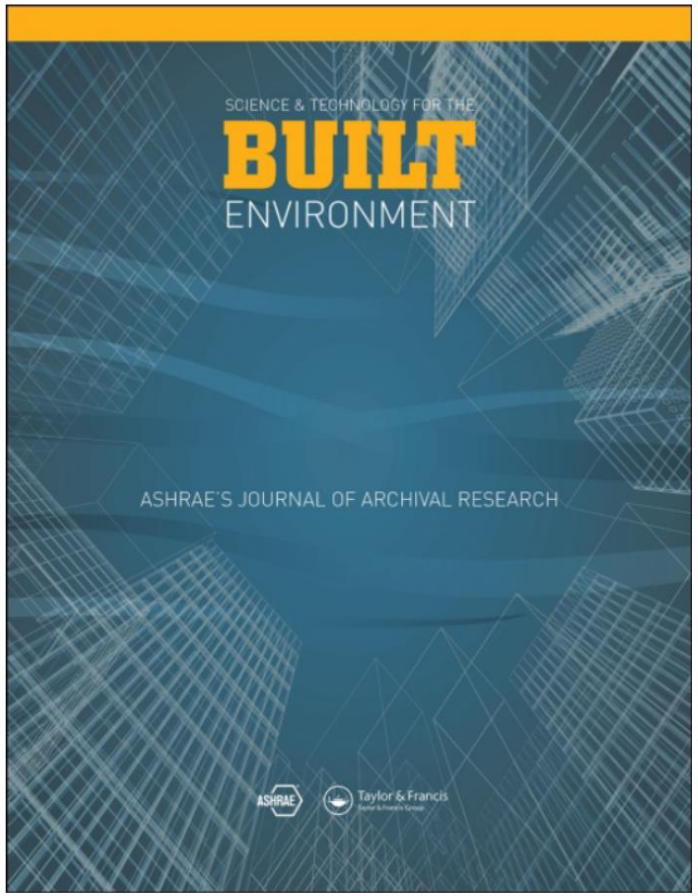
    - Impact Factor citation metrics
    - Scopus citation metrics
    - Top cited articles published online in the past two years and year-to-date
    - Citing sources & regions
- Altemetric Analysis
    - Top Altmetric scored in the past year
    - Overview & source breakdown of Altmetric attention in past year
- Author Survey
    - Author overall satisfaction
    - Author satisfaction with refereeing process
- General
    - Open Research update at Taylor & Francis
    - Development initiatives

3. Dr. Spitler gave the Editor's Report shown in Attachment B which included:
    - A comparison of STBE Impact Factor over ten years (through 2023)
    - A comparison of STBE submissions from 2018 through 2024 (fairly consistent)
    - As of January 29, 2025:
        - 320 submissions started
        - 313 submitted
        - 287 completed checklists
        - 257 have first decision (30 submitted towards the end of the year still in review)
        - 152 desk rejections by JDS (Common reasons: out of scope, case studies, poor English, lack of technical rigor.)
        - 54 rejections on recommendation of Associate Editors, before or after reviews
        - 52 papers still in review
        - 29 accepted
        - Accepted: 10%; Rejected 72%; Still in review, 18%
    - List of 2024 Special Issues and Topical Sections
        - Ground-source Heat Pump Systems (5 papers, Issue 3)
        - BPAC/Simbuild 2022 (7 papers, Issue 4)
        - Buildings XV Conference (10 papers, Issue 7)
        - Combined Issue (ASHRAE Conf. Research Papers - 2023 (7 submissions, 3 rejected) and Decarbonization conference in Athens (3 submissions, 2 rejected)
        - List of Future Special Issues and Topical Sections
    - ASHRAE Conference Research Papers from 2024
        - Buildings XVI Conference
        - Clima 2025
        - Ground-source Heat Pump Systems
    - There were no formal complaints, but two informal complaints concerning possible AI generated reviews.
    - There are four associated editors that have expiring terms. Mr. Spitler will develop a list replacement for the subcommittee to approve.
    - An update of activities of the STBE Social Media Editor, Zhihong Pang of Louisiana State University.
    - Mr. Spitler plans on a Reinhard Radermacher (former STBE editor) editorial obituary.
    - Mr. Spitler continues moving towards format-free submission.
    - Mr. Spitler continues to recruit special issues based on conferences.
    - Mr. Spitler will ask the Editorial Board to help identify non-conference-based topical issues.

4. In New Business, Mr. Siegel suggested that a number of institutions are requiring open access for articles to be published by their faculty and should STBE be making that more of an available option. Mr. Ellis took the Action item to set up a meeting of the subcommittee to discuss the topic and come up with any suggestions prior to the 2025 Annual Conference. **(Action Item 1)**

Taylor & Francis

Attachment A
PEC Research Journal Subcommittee
Report to PEC Products Subcommittee
Meeting of February 3, 2025
Orlando Winter Conference 2025



SCIENCE AND TECHNOLOGY FOR THE BUILT ENVIRONMENT

Confidential Publishing Report

Last Updated: January 2025

Highlights

Top Performing Articles (last 12 months)

Top Downloaded Article

Article Title	No. of Downloads
A review of the current status and development of 5GDHC and characterization of a novel shared energ...	1,103

Top Cited Article

Article Title	No. of Citations
Comparative analysis of the static and dynamic dehumidification performance of metal-organic framewo...	11

Top Altmetric Score

Title	Altmetric Attention Score
Strategies to minimize SARS-CoV-2 transmission in classroom settings: combined impacts of ventilation and mask effective filtration efficiency	382

Highlights

112K	79	13	1.7	4.3
2024 Downloads	2024 Volume Year Publications	2024 Volume Year OA Publications	2023 Impact Factor	2023 CiteScore

(Blank)	(Blank)	26	Q3	Q2
2024 Acceptance Rate (%)	Median Days Sub. to 1st Decision	Median Days Accept. to Online Pub	2023 Impact Factor Best Quartile	2023 CiteScore Best Quartile

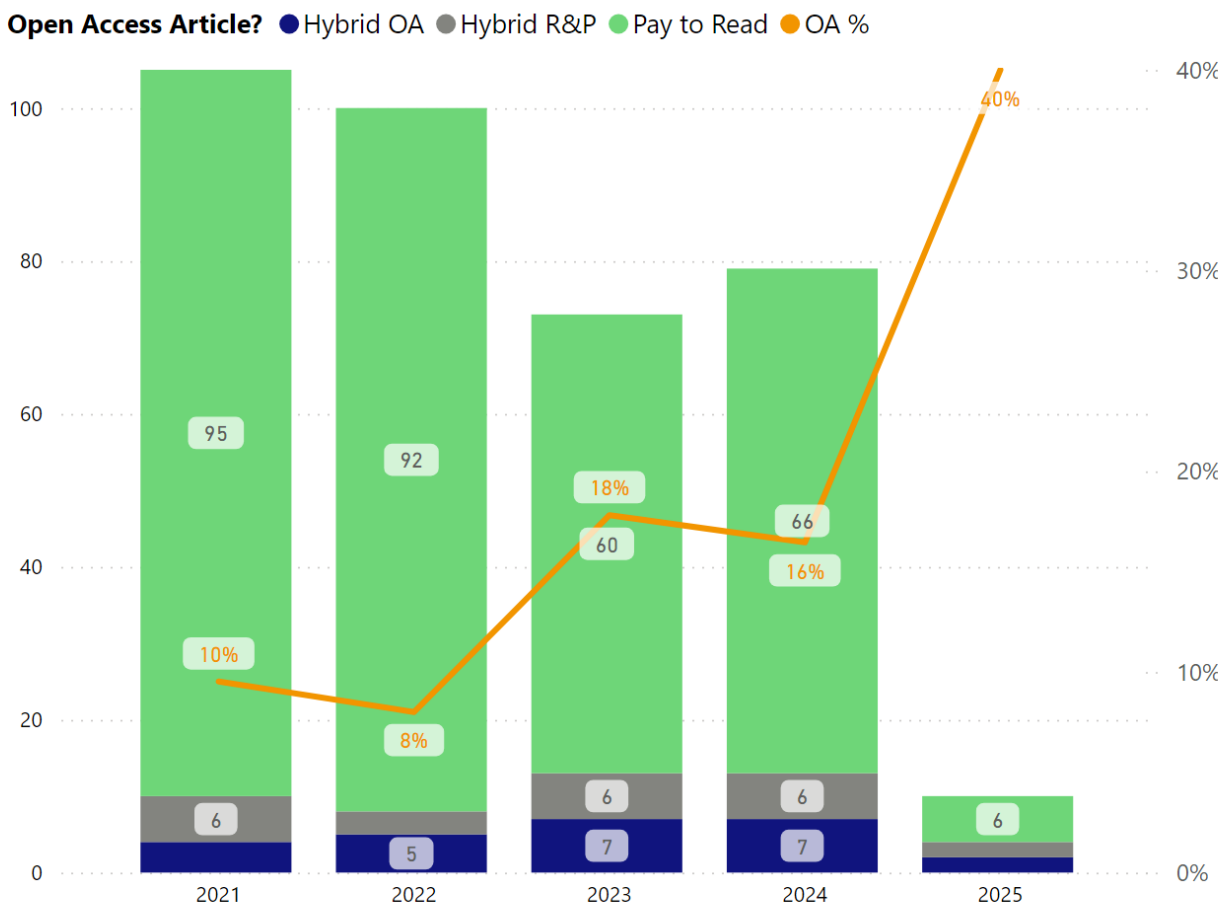
Production

Published Content

Number of Documents by Article Type (last full year and current year)

Article Type	Count
Research Article	86
Editorial	3
Total	**89**

Number of Articles Published by Volume Year - with OA Type Split



Content Flow and Article Count

Manuscript Type	Number of Manuscripts	Number of Typeset Pages
Research Article	18	295

Current Year

Volume Year	Volume #	Min Budget Research Articles	Actual Research Article	# of Online Issues	# of Print Issues
2025	31	105	10	10	2

The current backlog contains enough articles for the next 0.96 issues.

The oldest article not yet assigned to an issue was received in Production on 08 July 2024.

Production Schedule (Volume Years 2024 and 2025)

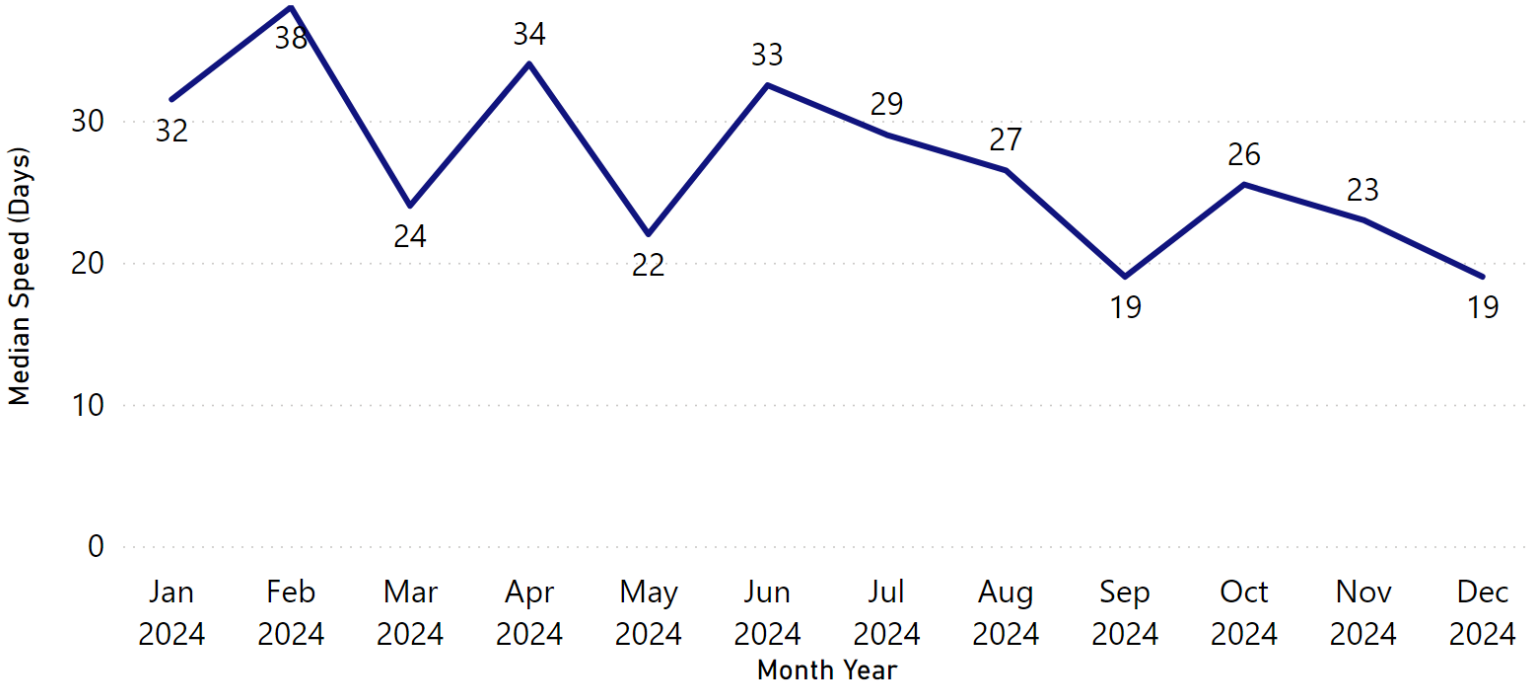
Online Issues

Issue Number	2024	2025
01	30 January 2024	30 December 2024
02	20 February 2024	30 January 2025
03	31 March 2024	28 February 2025
04	31 March 2024	01 April 2025
05	07 May 2024	02 May 2025
06	05 July 2024	01 July 2025
07	13 August 2024	01 August 2025
08	23 August 2024	02 September 2025
09	18 September 2024	01 October 2025
10	04 November 2024	30 October 2025

Print Issues

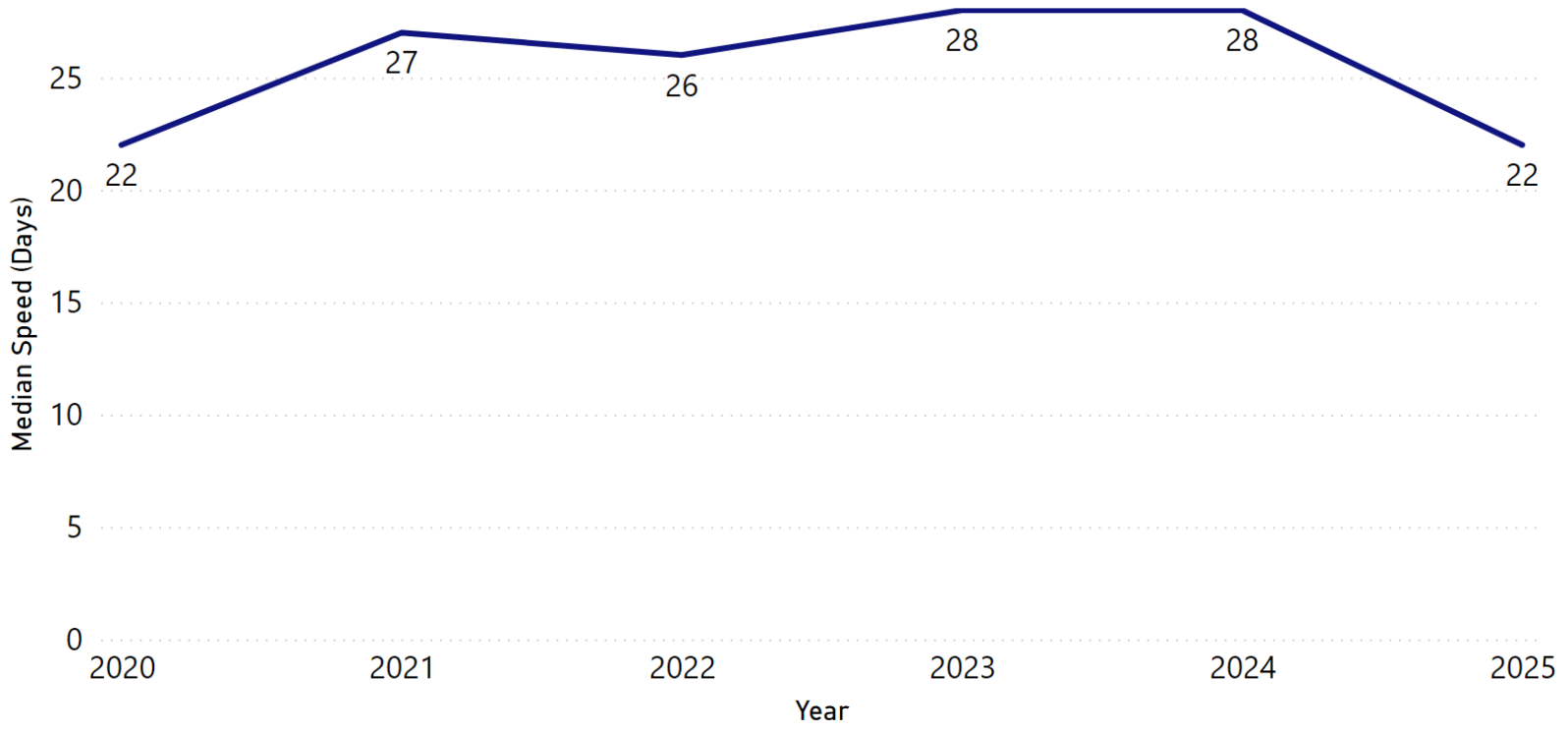
Issue Number	2024	2025
01-05	07 June 2024	22 May 2025
06-10	02 December 2024	20 November 2025

Average Speed of Article Publication (last 12 months)*



* median days from entered into Central Article Tracking System (CATS) to online publication.

Average Speed of Article Publication*



* median days from entered into Central Article Tracking System (CATS) to online publication.

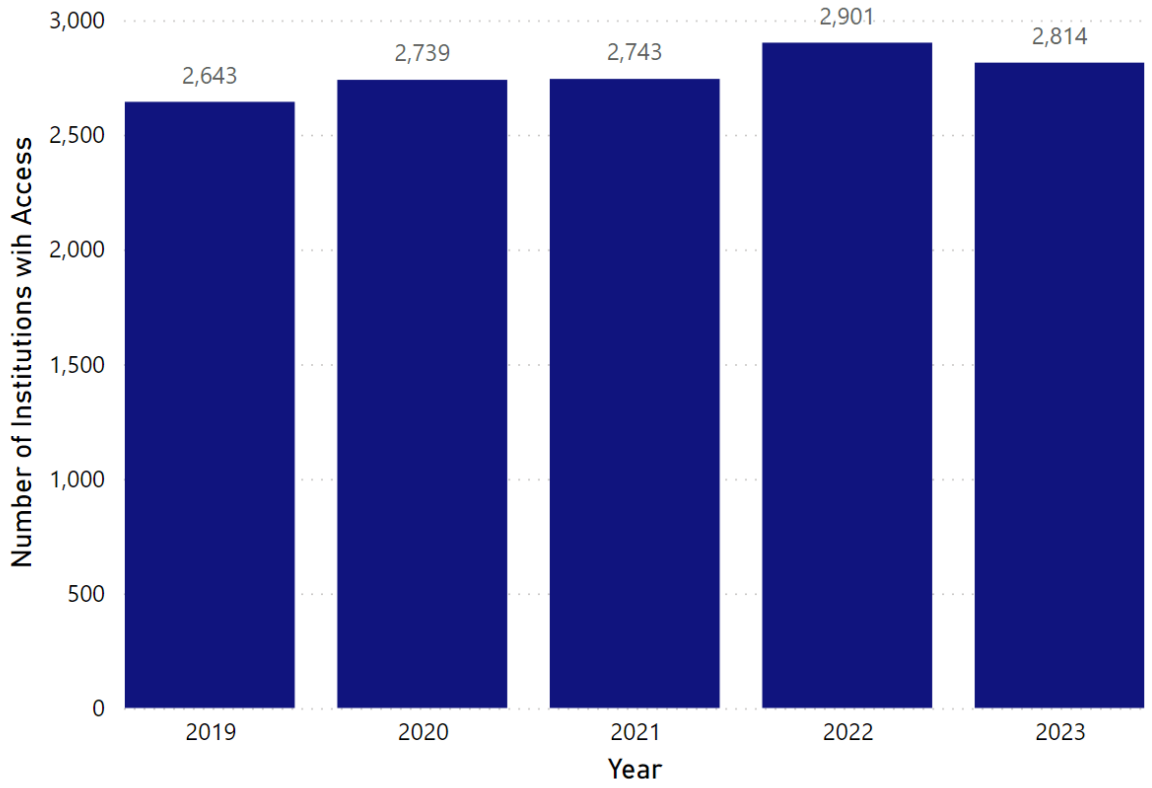
Global Reach & Usage

Global Reach - Circulation

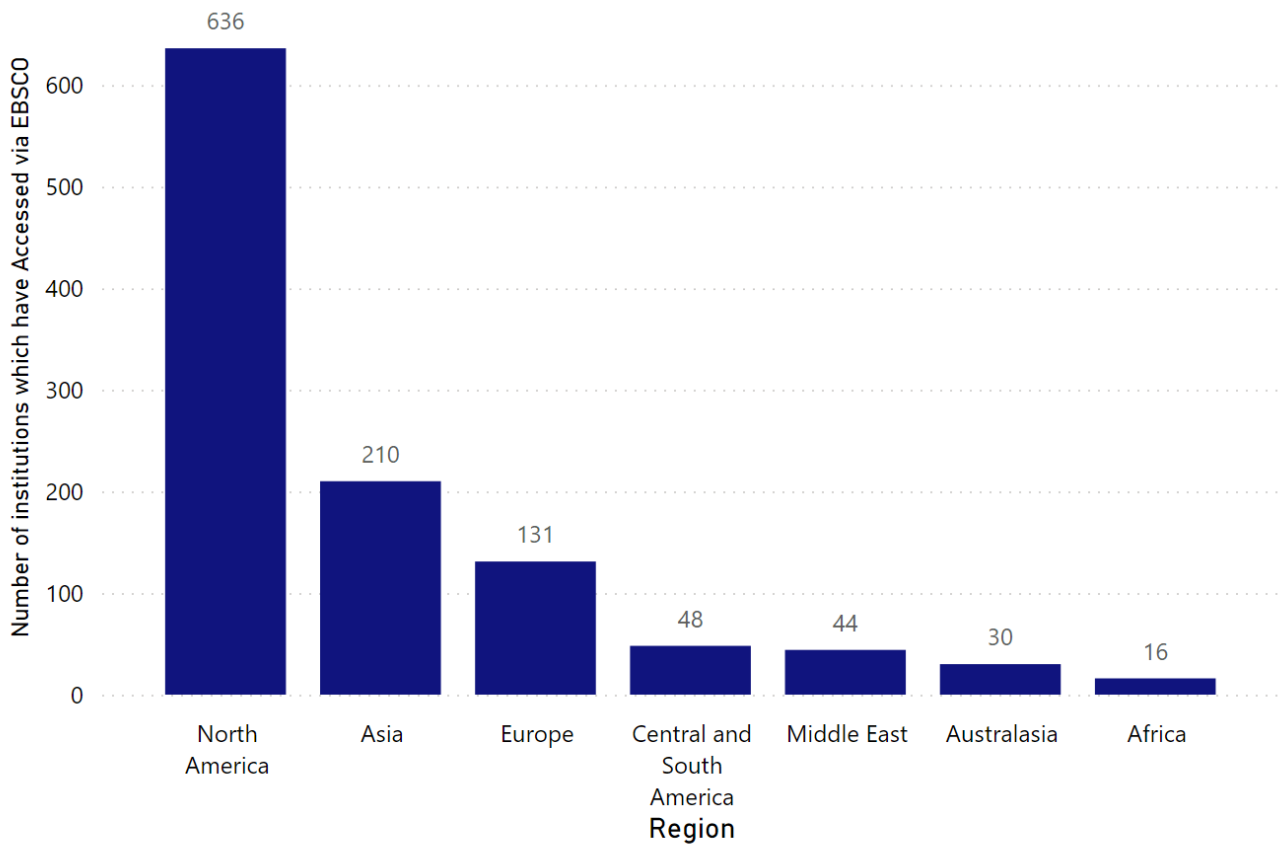
Collection Year	Subject Collection
2019	Mathematics & Statistics; Engineering, Computing & Technology
2020	Engineering, Computing & Technology
2021	Engineering, Computing & Technology
2022	Engineering, Computing & Technology
2023	Engineering, Computing & Technology

Collection Year	Library Package
2019	ST Library
2020	ST Library
2021	ST Library
2022	ST Library
2023	ST Library

Number of Institutions with access via Sales Deal, Subject and Non-Sales Deal subscriptions



EBSCO Coverage 2023 by Region



Most Downloaded Articles in the Past 12 Months (from Past Three Years)

Latest Update Date

Data is updated monthly and goes up to the end of:

December 2024

Article Title	First Author	Volume and Issue	Open Access?	Number of Downloads
A review of the current status and development of 5GDHC and characterization of a novel shared energ...	Jonas Lindhe	Volume 28 Issue 5	Yes	1,103
Model-based data center cooling controls comparative co-design	Milica Grahovac	2022 Building Performance Analysis Conference and ...	Yes	1,040
Data analysis and interpretable machine learning for HVAC predictive control: A case-study based imp...	Jianqiao Mao	IAQ 2020: Indoor Environmental Quality Performance...	Yes	862
Research on the effect of the refrigerant charge in a variable capacity heat pump	Ignacio Ortega	Volume 30 Issue 6	Yes	816
The borehole thermal energy storage at Emmaboda, Sweden: First distributed temperature measurements	Randi Kalskin Ramstad	Volume 29 Issue 2	Yes	768
Empirical analysis of the prevalence of HVAC faults in commercial buildings	Eliot Crowe	Volume 29 Issue 10	Yes	756
High efficiency 3-D printed microchannel polymer heat exchangers for air conditioning applications	Erfan Rasouli	Volume 28 Issue 3	Yes	736
Multi-scenario Extreme Weather Simulator application to heat waves: Ko'olauloa community resilience ...	Daniel L Villa	2022 Building Performance Analysis Conference and ...	Yes	721
Developing and testing low-cost air cleaners for safer spaces during wildfires	Brett Stinson	Volume 30 Issue 9	Yes	554
Quantifying leaks from Schrader valves in air conditioning systems	Theresa Pistochini	Volume 30 Issue 9	Yes	553

Additional timeframes available on: PR Dashboard (atypon.com)

Top Institutions by Downloads (Past 12 Months)

Latest Update Date

Data is updated monthly and goes up to the end of:

December 2024

Institution Name	Total No of Downloads
Zhejiang University	1,701
Xian Jiaotong University	1,440
Hong Kong Polytechnic University	1,287
Texas A & M University System	1,104
Machine Science Info Institute	1,062
Tsinghua University	1,056
Seoul National University	982
Carleton University	837
Purdue University	799
Shanghai Jiaotong University	794

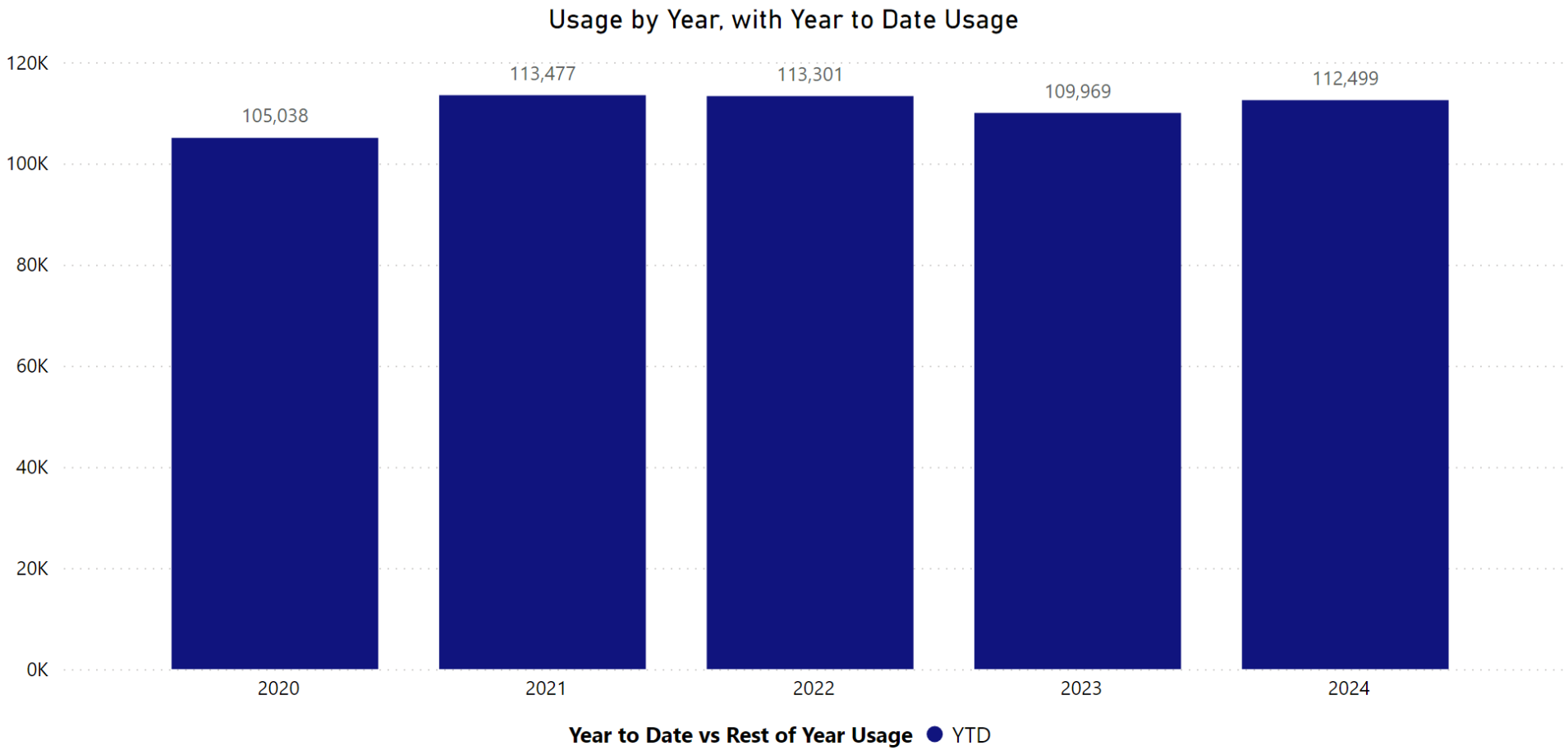
Note: Consortia have been removed from this table.

Article Downloads - Taylor & Francis Online (TFO) Usage

Latest Update Date

Data is updated monthly and goes up to the end of:

December 2024



2%

% Change Usage TY v LY

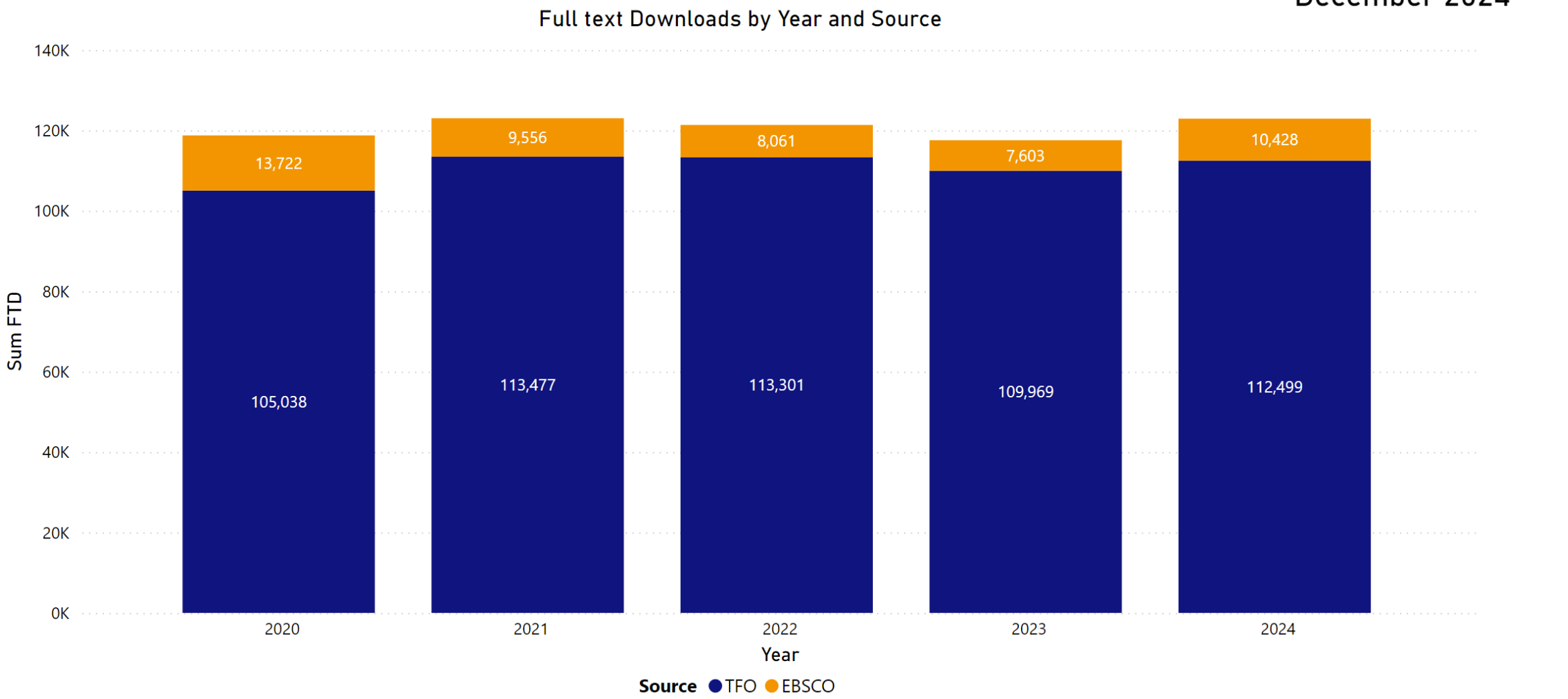
Article Downloads - Usage by Source

Please note that PMC and EBSCO usage data may not be updated until mid-month.

Latest Update Date

Data is updated monthly and goes up to the end of:

December 2024



Article Downloads - Usage by Country & Region

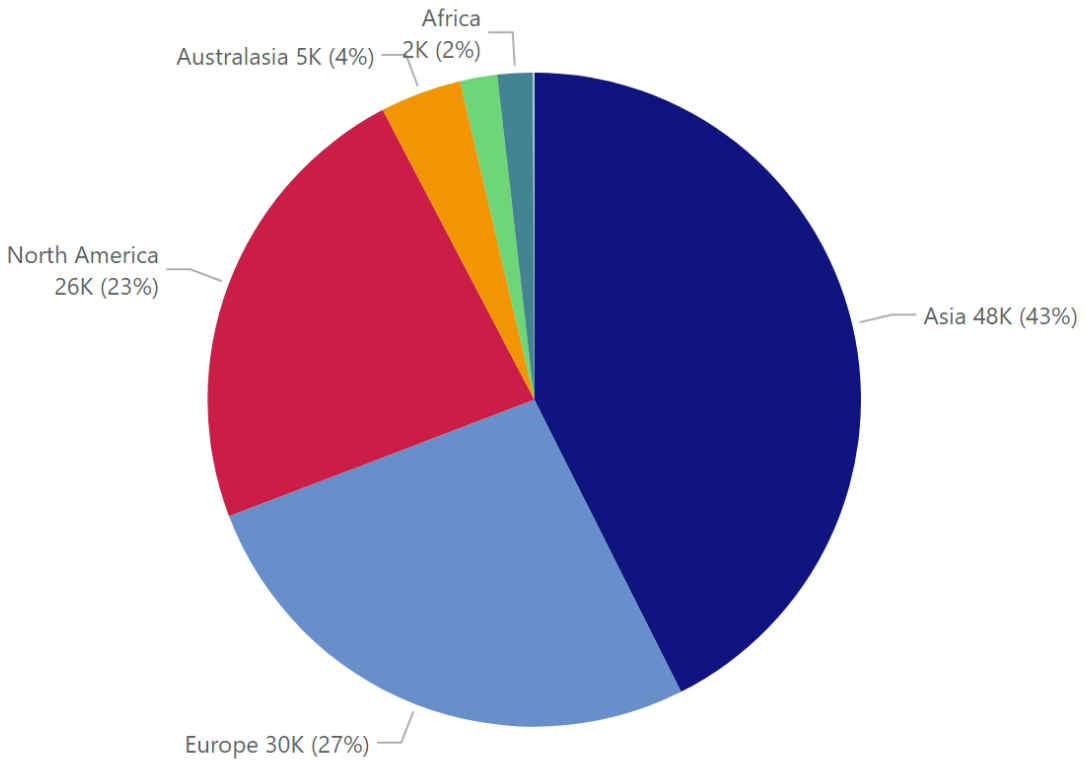
Latest Update Date

Data is updated monthly and goes up to the end of:

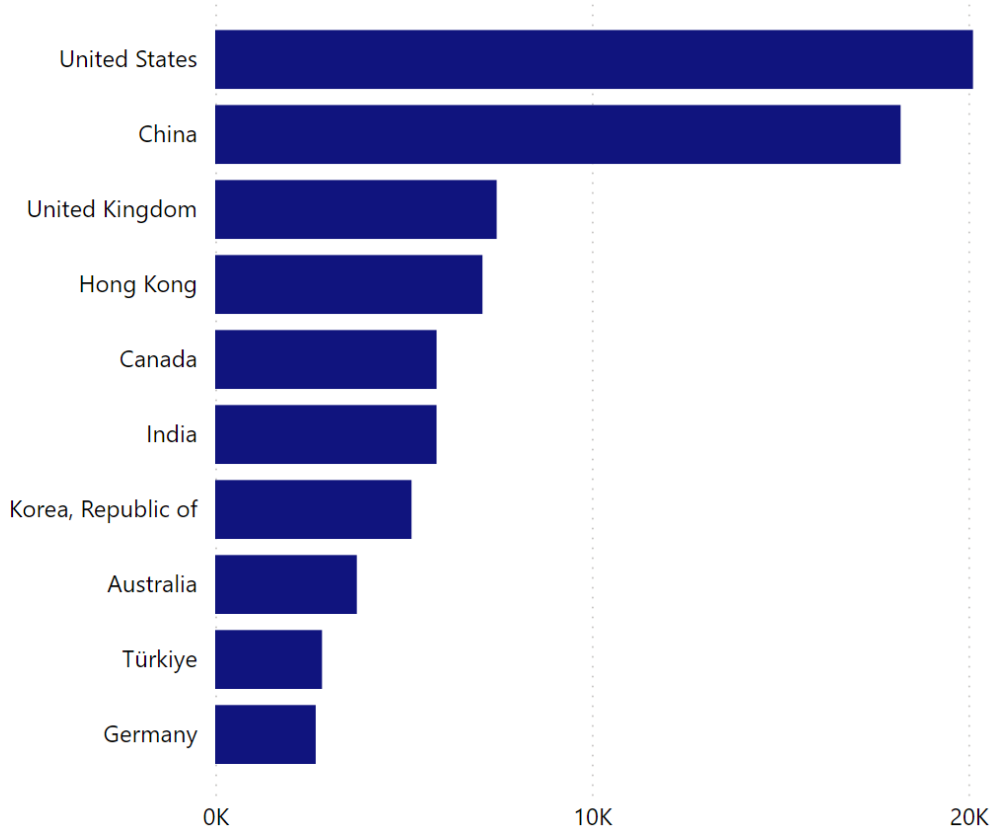
December 2024

Usage shown is for the last full year, plus the current year.

Full Text Downloads by Region



Full Text Downloads by Country

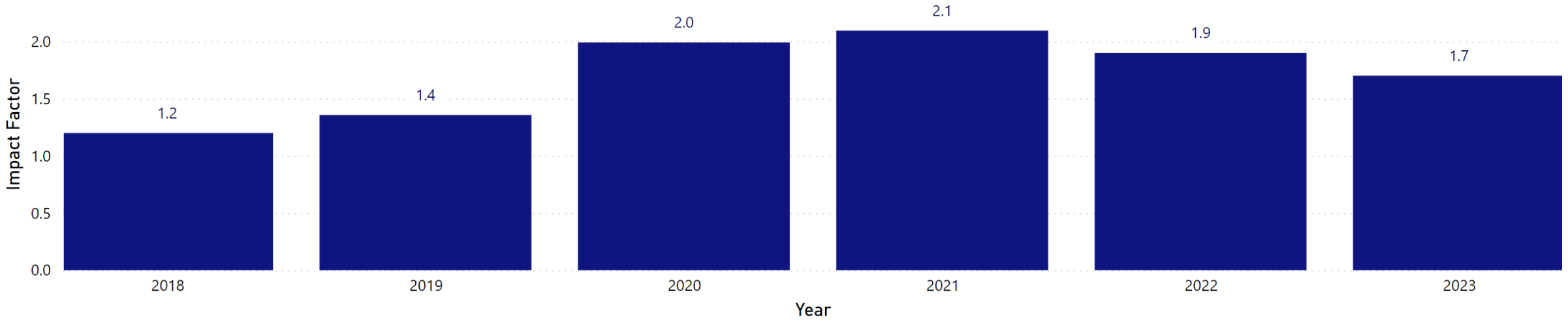


Citation Analysis

Citation Metrics (Impact Factor)

Year	Impact Factor	Impact Factor Rank	5 Year IF	Article Influence	Eigenfactor
2018	1.2	(42/63 CONSTRUCTION & BUILDING TECHNOLOGY - SCIE, 43/60 THERMODYNAMICS - SCIE, 90/129 ENGINEERING, MECHANICAL - SCIE)	1.3	0.324	0.00134
2019	1.4	42 / 63 CONSTRUCTION & BUILDING TECHNOLOGY - SCIE, 47 / 61 THERMODYNAMICS - SCIE, 96 / 130 ENGINEERING, MECHANICAL - SCIE	1.5	0.354	0.00183
2020	2.0	39 / 62 THERMODYNAMICS - SCIE, 41 / 66 CONSTRUCTION & BUILDING TECHNOLOGY - SCIE, 78 / 135 ENGINEERING, MECHANICAL - SCIE	1.8	0.418	0.00218
2021	2.1	39 / 63 THERMODYNAMICS - SCIE, 47 / 68 CONSTRUCTION & BUILDING TECHNOLOGY - SCIE, 78 / 137 ENGINEERING, MECHANICAL - SCIE	2.1	0.416	0.00215
2022	1.9	45 / 68 CONSTRUCTION & BUILDING TECHNOLOGY - SCIE, 46 / 63 THERMODYNAMICS - SCIE, 92 / 136 ENGINEERING, MECHANICAL - SCIE	1.9	0.360	0.00200
2023	1.7	45/78 THERMODYNAMICS, 51/92 CONSTRUCTION & BUILDING TECHNOLOGY, 107/183 ENGINEERING, MECHANICAL	1.9	0.341	0.00100

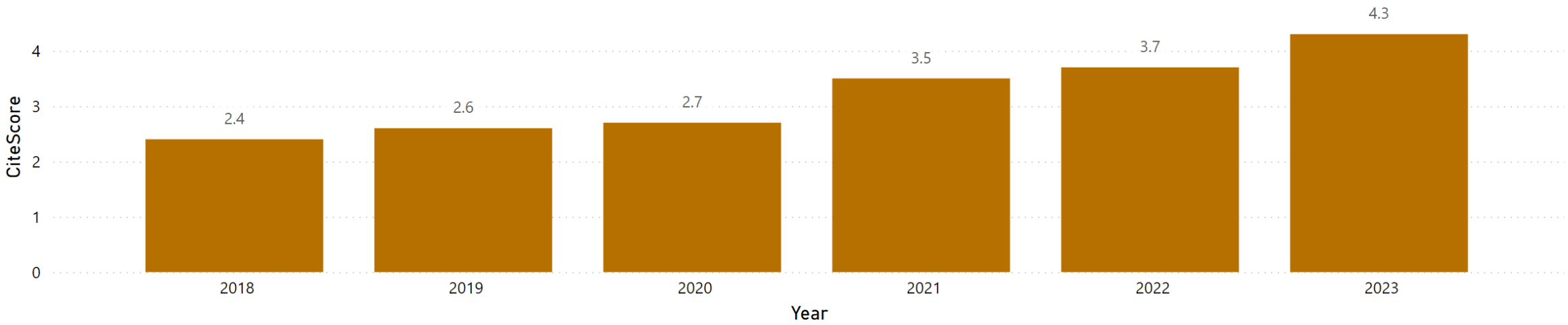
Impact Factor by Year



Citation Metrics (Scopus)

Year	CiteScore	CiteScore Rank	SNIP	SJR
2018	2.4	27 / 83 Fluid Flow and Transfer Processes, 56 / 124 Environmental Engineering, 63 / 176 Building and Construction	0.77	0.597
2019	2.6	32 / 83 Fluid Flow and Transfer Processes, 61 / 132 Environmental Engineering, 62 / 174 Building and Construction	0.83	0.594
2020	2.7	39 / 83 Fluid Flow and Transfer Processes, 70 / 185 Building and Construction, 70 / 146 Environmental Engineering	0.92	0.510
2021	3.5	38 / 87 Fluid Flow and Transfer Processes, 73 / 173 Environmental Engineering, 79 / 211 Building and Construction	0.81	0.493
2022	3.7	40 / 92 Fluid Flow and Transfer Processes, 72 / 200 Building and Construction, 85 / 184 Environmental Engineering	0.71	0.471
2023	4.3	37 / 96 Fluid Flow and Transfer Processes, 74 / 223 Building and Construction, 89 / 197 Environmental Engineering	0.70	0.461

CiteScore by Year



Top Cited Articles (Published Online in the Past 2 Years + YTD)

4.7%

% Self-Citations

Article Title	Author Name	Published Online Year	Number of Citations	Altmetric Score
Comparative analysis of the static and dynamic dehumidification performance of metal-organic framewo...	Win-Jet Luo	2023	11	
Experimental comparison of R290 and R600a and prediction of performance with machine learning algori...	Oguzhan Pektezel	2023	7	
A simulation-based approach for evaluating indoor environmental quality at the early design stage	Arefeh Sadat Fathi	2023	6	
Development of a crankshaft driven single long NiTi tube compressive elastocaloric cooler	Siyuan Cheng	2023	6	
How to ensure occupant comfort and satisfaction through deep building retrofit? Lessons from a Danis...	Lucile Sarran	2023	6	
Within- and cross-domain effects of environmental factors on students' perception in educational bui...	Francesca Cappelletti	2023	6	
All-air vs. radiant cooling systems: Analysis of design and operation factors that impact building c...	Atila Novoselac	2023	5	
Multi-objective optimization design of energy efficiency for office building window systems based on...	Qiao Ning	2023	5	
Relating air quality and other factors to comfort and health related symptoms reported by passengers...	Robert A. Lordo	2023	5	
Origins of whole-building energy simulations for high-performance commercial buildings: Contribution...	Jounghwan Ahn	2023	3	
Origins of whole-building energy simulations for high-performance commercial buildings: Contribution...	Jounghwan Ahn	2025	2	

Data is collected from Dimensions

Citing Sources & Regions

Published online in the past 2 years + YTD data, citations from any time

Citing Journal	Citing Articles - Sources
Science and Technology for the Built Environment	19
Energy and Buildings	16
Building and Environment	14
Journal of Building Engineering	9
Applied Thermal Engineering	5
Energy	5
Sustainability	5
Energies	4
Buildings	3
International Journal of Refrigeration	3
Applied Energy	2
Journal of Building Physics	2
Journal of Educational Technology and Learning Creativity	2
SSRN Electronic Journal	2

Country name	Citing Articles - Countries
China	50
United States	44
Canada	24
Italy	13
India	12
Türkiye	10
France	6
United Kingdom	6
Malaysia	5
Netherlands	5
Singapore	5
Hungary	4
Saudi Arabia	4
Spain	4

Data is collected from Dimensions

Altmetric Analysis

Altmetric Analysis – Top Altmetric Scores (Past Year)

Badge	Altmetric Attention Score	Article Title	Publication Date
	382	Strategies to minimize SARS-CoV-2 transmission in classroom settings: combined impacts of ventilation and mask effective filtration efficiency	July 2021
	195	Associations of bedroom temperature and ventilation with sleep quality	May 2020
	129	IAQ and energy implications of high efficiency filters in residential buildings: A review (RP-1649)	January 2019
	111	Airborne transmission of SARS-CoV-2 in indoor environments: A comprehensive review	September 2021
	83	Energy and ventilation performance analysis for CO2-based demand-controlled ventilation in multiple-zone VAV systems with fan-powered terminal units (ASHRAE RP-1819)	October 2020
	19	The Effects of Outdoor Air Supply Rate and Supply Air Filter Condition in Classrooms on the Performance of Schoolwork by Children (RP-1257)	February 2011
	8	Experimental and numerical study on the thermal plumes of a standing and lying human in an operating room	August 2021
	6	Review of Liquid Desiccant Technology for HVAC Applications	February 2011
	6	Optimization of HVAC Control System Strategy Using Two-Objective Genetic Algorithm	February 2011
	6	Agglomeration Control of Ice Particles in Ice-Water Slurry System Using Surfactant Additives	February 2011

Overview and Source Breakdown of Altmetric Attention (Past Year)

Total Mentions	Outputs with Mentions	Research Outputs
1210	32	32
Total mentions for research outputs in this report.	Total number of research outputs in this report that have Altmetric mentions	Total number of research outputs in this report, including those without mentions

ATTENTION SOURCE BREAKDOWN

The number of mentions from each source that Altmetric has tracked for the research output in this report

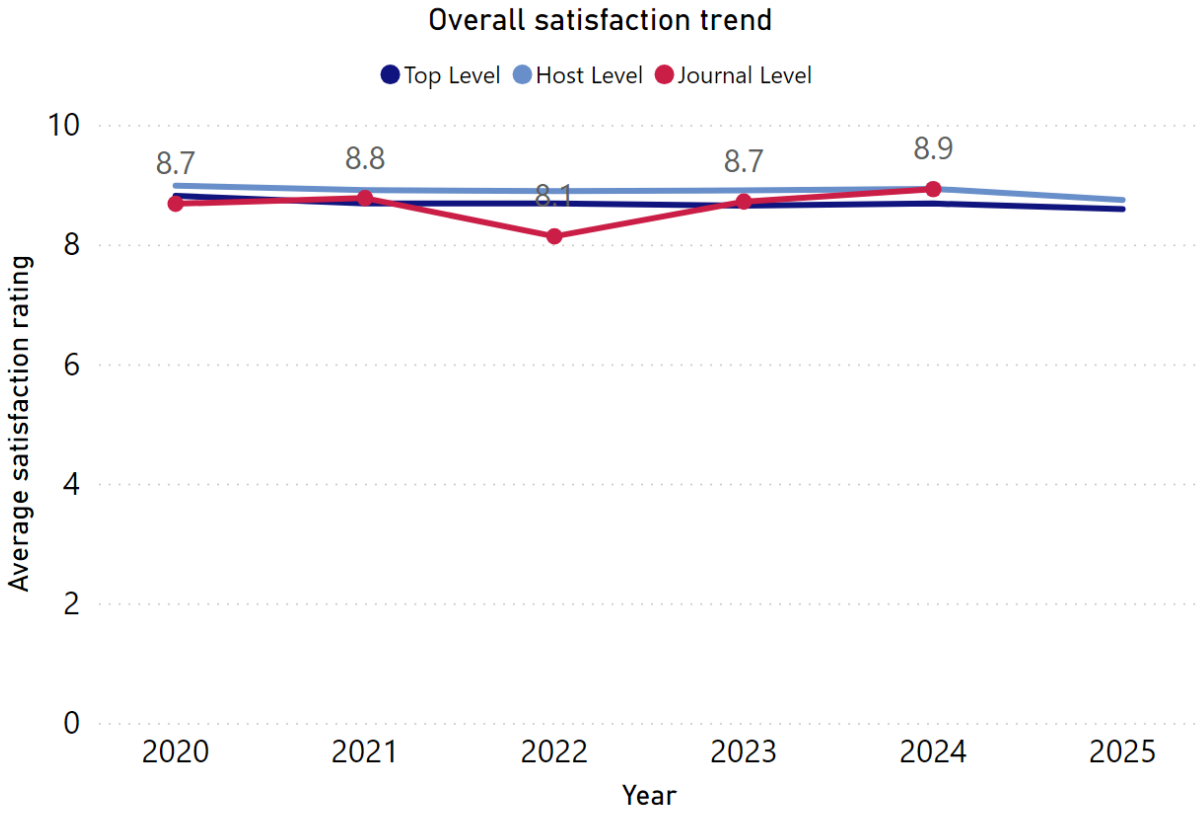
53	3	1021	0
News mentions	Blog mentions	X mentions	Facebook mentions

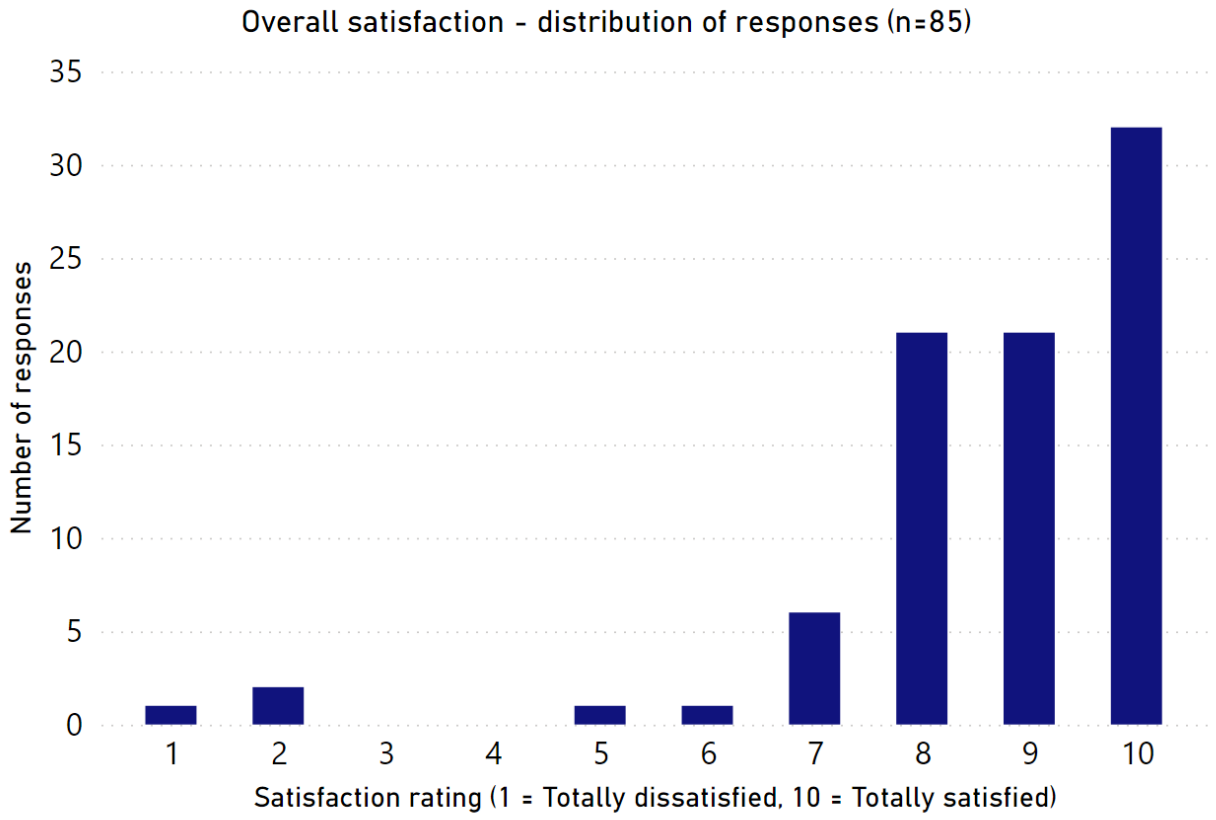
First Altmetric Shareable Link

https://www.altmetric.com/explorer/report/269fecca-3cf3-409d-956b-56161e477766

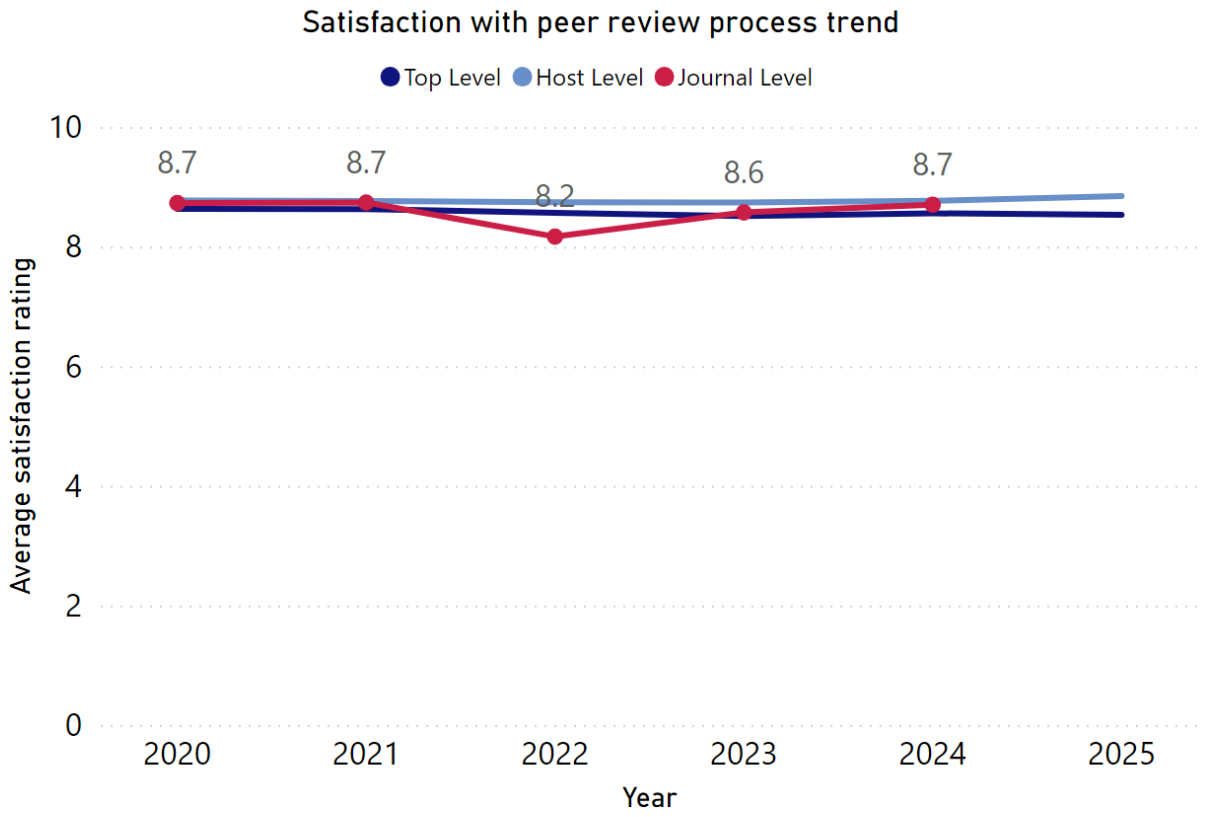
Author Survey

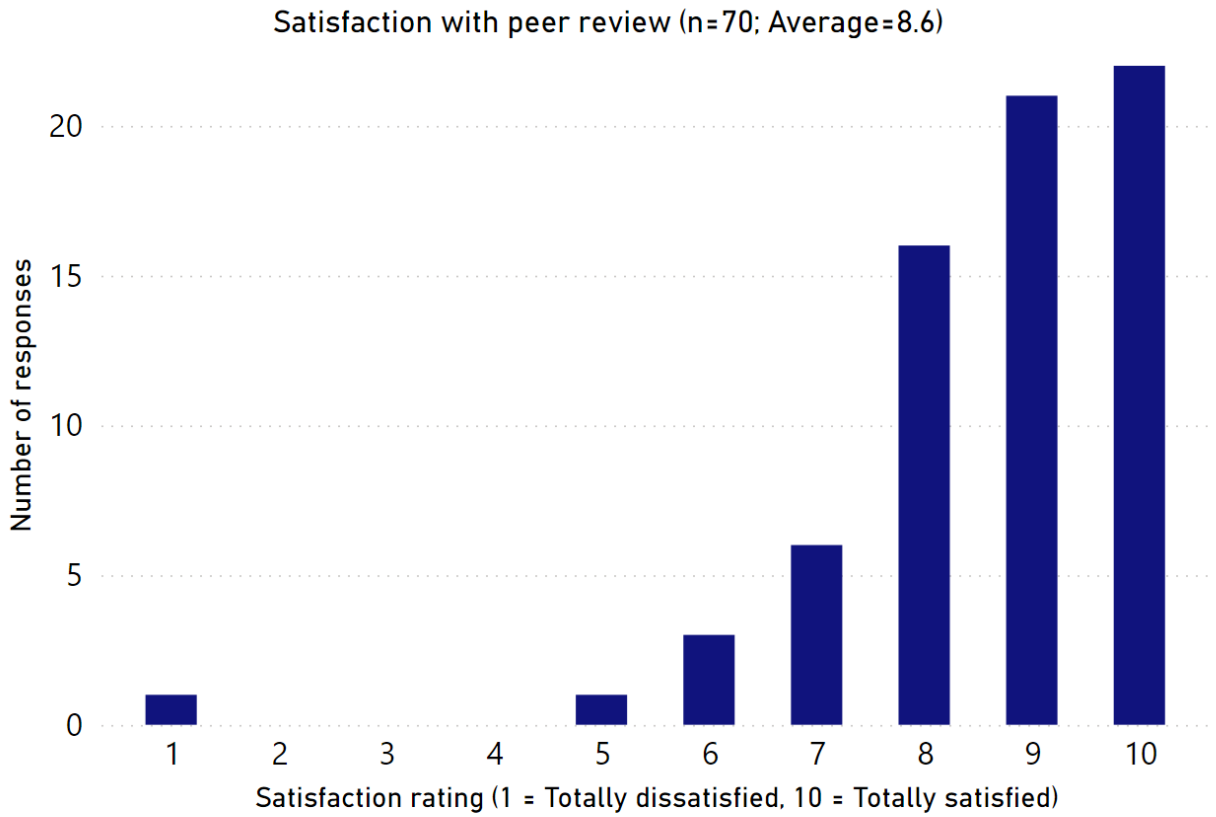
Author Survey - Overall Satisfaction





Author Survey - Satisfaction with Refereeing Process





Resources

EDITOR RESOURCES
Supporting Taylor & Francis journal editors

http://editorresources.taylorandfrancisgroup.com/

AUTHOR SERVICES
Supporting Taylor & Francis authors

http://authorservices.taylorandfrancis.com

LIBRARIAN RESOURCES
Taylor & Francis supporting librarians

https://librarianresources.taylorandfrancis.com/

PUBLISHING PARTNERSHIP PROGRAM

PPP Existing Partners sign up JRSPH223 - Formstack

Sign up for updates, tips and talking points from **Author Services**, **Editor Resources** and Librarian Resources websites straight to your inbox:

https://authorservices.taylorandfrancis.com/category/insights/

@tandfonline
@tandfnewsroom

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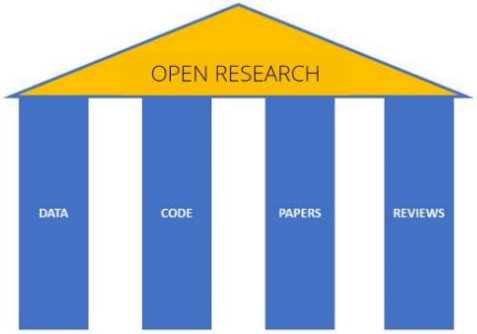
Open Research at Taylor & Francis

• **Open Research** (sometimes called 'open scholarship' or 'open science') is an umbrella term focusing on making research **transparent** and **reproducible**. It describes the movement to make all the outputs of scholarly activity available for others to read and build upon, improving trust in research. In addition to Gold Open Access licensing options and sharing of early versions (preprints), open research provides routes for researchers to make all outputs of research open and accessible, from the peer review comments to the data and code.



• Journals can take an active role in facilitating Open Research practices. Find out more about the initiatives Taylor & Francis offers:

- Data Sharing Policies
- Open Science Badges
- Registered Reports
- Methods
- Data Notes
- Preprints

•If you are interested in hearing more about Open Research, please contact us **here.**

Development Initiatives

We need research from around the world to address global challenges. We remain committed, therefore, to supporting emerging region researchers on their publishing journeys.

For more information on the Taylor & Francis development initiatives, please visit:

- **http://taylorandfrancis.com/about/corporate-responsibility/development-initiatives**
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We'd love to hear what you think!
If you have any feedback or suggestions for improvement, please fill out the below questionnaire using the following link or scan the QR code:

https://www.surveymonkey.co.uk/r/TTJG7TP

Journal Contacts

Contact Points for Queries and Support

Editorial Queries & Support

Your Editorial contact is your main point of contact for general journal or editorial queries, support and requests.

Portfolio Manager: Stephanie.Loeh@taylorandfrancis.com

Production Queries & Support

For queries and requests regarding papers that have been accepted in peer review and transferred to production, or papers which have been published, please direct these to the email address above.

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Peer Review Queries & Support

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Attachment B
PEC Research Journal Subcommittee
Report to PEC Products Subcommittee
Meeting of February 3, 2025
Orlando Winter Conference 2025

Science and Technology for the Built Environment

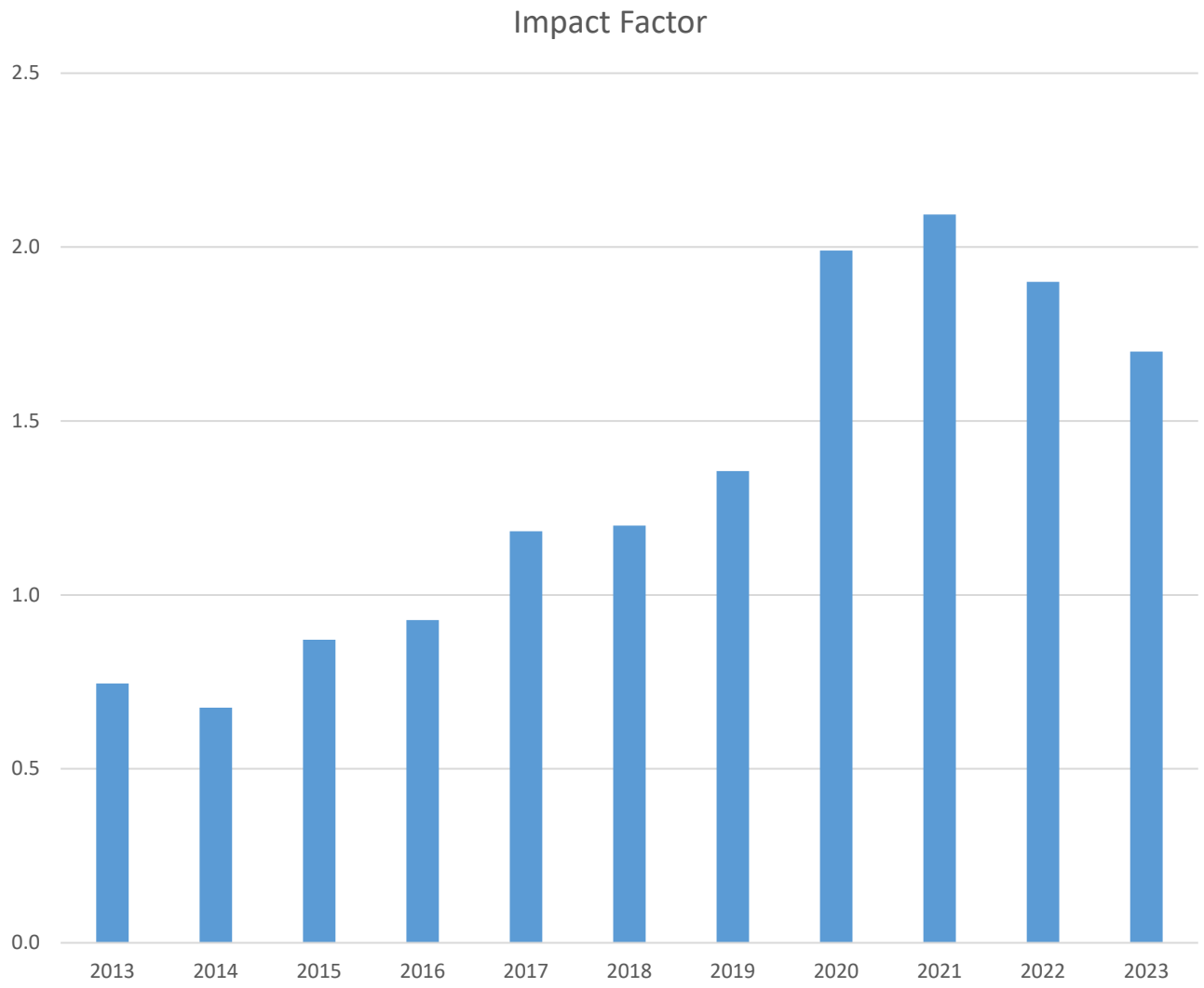
Jeffrey D. Spitler

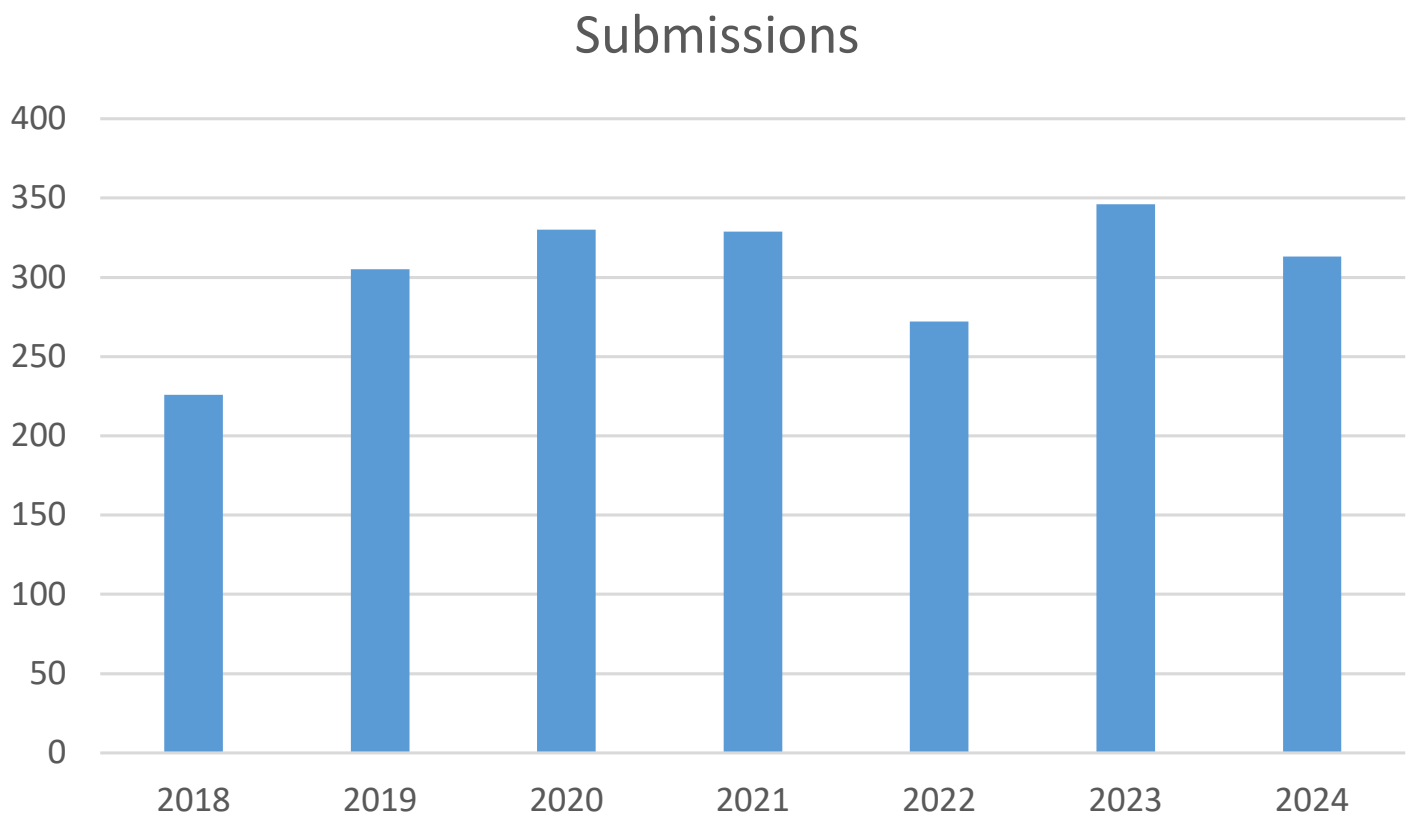
February 3, 2025

Numbers in red from January 2024

Journal metrics

	Usage		Citation metrics	Speed/acceptance
113K	• **110K** annual downloads/views	1.9	• **1.7 (2023)** Impact Factor	• **34** days avg. from acceptance to online publication
		1.9	• **1.9 (2023)** 5 year IF	*29 days*
		3.7	• **4.3 (2023)** CiteScore (Scopus)	
		Q2	• **Q2** CiteScore Best Quartile	
		0.706	• **0.702 (2023)** SNIP	
		0.471	• **0.461 (2023)** SJR	


Impact Factor
2.5
2.0
1.5
1.0
0.5
0.0
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023


Submissions
400
350
300
250
200
150
100
50
0
2018
2019
2020
2021
2022
2023
2024

2024 (as of January 29, 2025)

- 320 submissions started
- 313 submitted
- 287 completed checklist
- 257 have first decision (30 submitted towards the end of the year still in review)
- 152 desk rejections by JDS
  - Common reasons: out of scope, case studies, poor English, lack of technical rigor.
- 54 rejections on recommendation of AE, before or after reviews
- 52 papers still in review
- 29 accepted
- Accepted: 10%; Rejected 72%; Still in review, 18%

Special Issues & Topical Sections

- 2024 Special Issues and Topical Sections
  - Ground-source Heat Pump Systems (5 papers, Issue 3)
  - BPAC/Simbuild 2022 (7 papers, Issue 4)
  - Buildings XV Conference(10 papers, Issue 7)
  - Combined:
    - ASHRAE Conf. Research Papers - 2023 (7 submissions, 3 rejected)
    - Decarbonization conference in Athens (3 submissions, 2 rejected)
- Future Special Issues and Topical Sections
  - ASHRAE Conference Research Papers from 2024
  - Buildings XVI Conference
  - Clima 2025
  - Ground-source Heat Pump Systems

Misconduct allegations

- No formal complaints.
- Two informal complaints that reviews appear to have been AI-generated.
- One incident of user-suggested ill-qualified reviewers.

Associate Editors

- 4 Associate Editors have terms expiring (highlighted)
- Still have one slot for the right candidate.
- Current roster:

Name	Department	Institution	Country	Term expires
Jie Cai	School of Aerospace and Mechanical Engineering	University of Oklahoma	USA	6/30/2026
Kristen Cetin	Department of Civil and Environmental Engineering	Michigan State University	USA	6/30/2026
Richard De Dear	Faculty of Architecture	The University of Sydney	Australia	6/30/2027
Brian Fronk	Department of Mechanical Engineering	Pennsylvania State University	USA	6/30/2026
Saqib Javed	Building Services Division	Lund University	Sweden	6/30/2026
Yong Chan Kim	Department of Mechanical Engineering	Korea University	South Korea	6/30/2025
Clayton Miller	Department of the Built Environment	National University of Singapore	Singapore	6/30/2026
Liam O'Brien	Department of Civil and Environmental Engineering	Carleton University	Canada	6/30/2026
Zheng O'Neill	Mike Walker '66 Department of Mechanical Eng.	Texas A&M University	USA	6/30/2025
Rajan Rawal	Faculty of Technology	CEPT University	India	6/30/2026
Jørn Toftum	Department of Civil Engineering	Technical University of Denmark	Denmark	6/30/2025
Shengwei Wang	Department of Building Services Engineering	The Hong Kong Polytechnic University	Hong Kong	6/30/2026
Bin Yang	School of Energy and Safety Engineering	Tianjin Chengjian University	China	6/30/2026
John Zhai	Dept. of Civil, Environmental, and Architectural Eng.	University of Colorado-Boulder	USA	6/30/2026
Jianshun "Jensen"	Department of Civil and Environmental Engineering	Syracuse University	USA	6/30/2025
Claudio Zilio	Department of Management and Engineering	University of Padova	Italy	6/30/2026

Reviewer Board

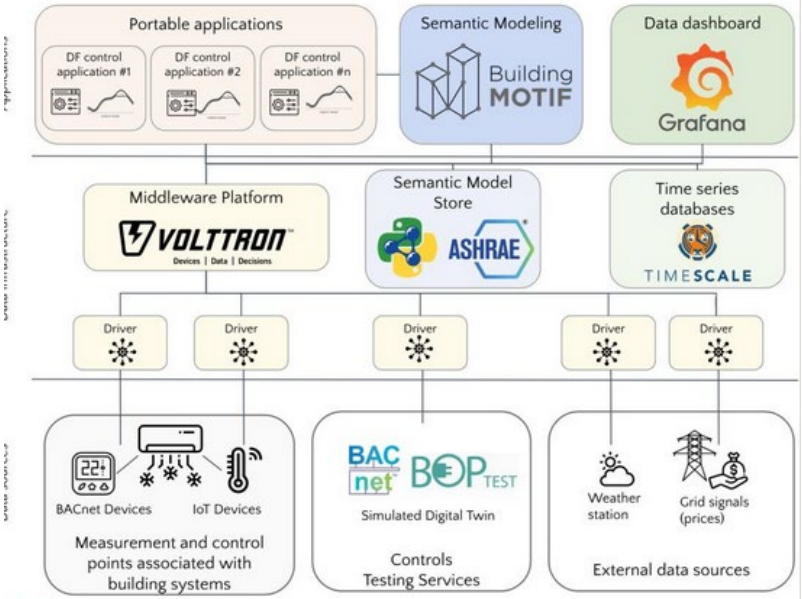
- Concept:
  - Recruit members from junior and mid-level faculty, recent PhD graduates.
  - Commitment to review ~4 papers per year in a timely fashion (2 weeks or less).
- Status (June 2024):
  - 45 members; 3 nominated for Associate Editor
  - Since Jan. 2022, on average:
    - 4.5 invitations
    - 3.4 acceptances

Social Media

- Added Social Media Editor
  Zhihong Pang of Louisiana State U.

Science and Technology for the Built Environment ✓ Following
420 followers
1w •

New research published in Science and Technology for the Built Environment (#STBE) introduces a groundbreaking open-source platform for grid-interactive efficient buildings (#GEBs). ...more

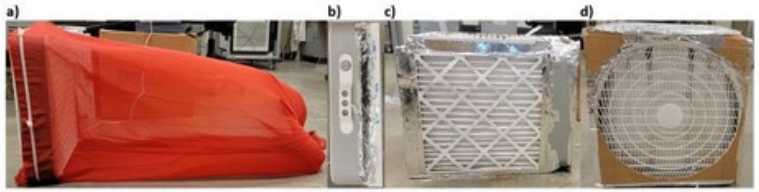


You and 65 others 3 comments · 5 reposts

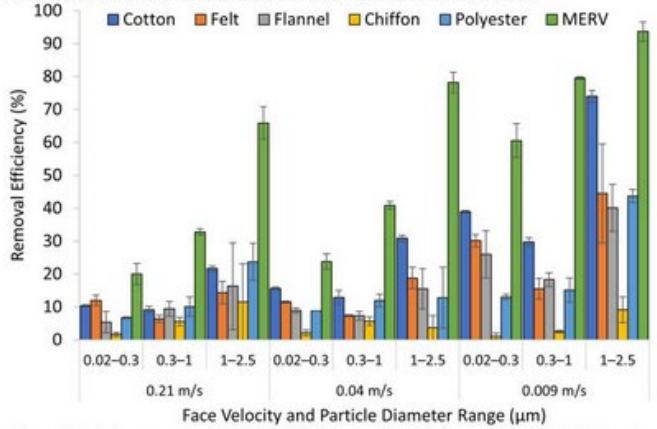
Like Comment Repost Send

Science and Technology for the Built Environment
421 followers
4d • Edited •

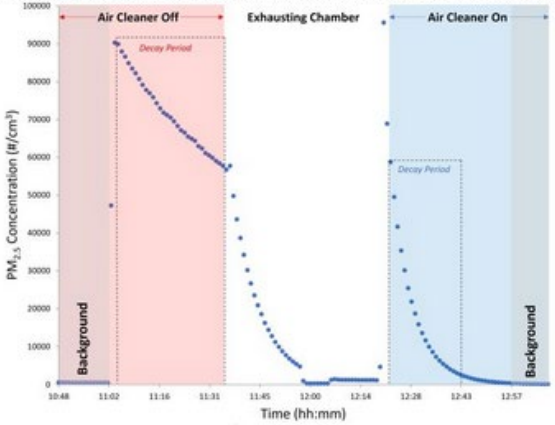
New research published in Science and Technology for the Built Environment (#STBE) presents a timely solution for #AffordableAirCleaning during #wildfire event: ...more



Images of the low-cost air cleaner with a (a) chiffon fabric filter, (b) single MERV 13 filter, (c) cube of MERV 13 filters (modified Corsi-Rosenthal box), and (d) cardboard shroud affixed to the box fan's outlet side.



Average (± range/2) single-pass removal efficiencies (%) determined at three face velocities (0.21, 0.04, and 0.009 m/s) for each of the five fabrics and MERV 13 filter in 0.02–0.3, 0.3–1, and 1–2.5 µm diameter particle size bins.



$PM_{2.5}$ concentration (#/cm³) vs. time for trial 2 of the double fabric chamber experiment.

William Bahnfleth and 51 others 3 comments · 4 reposts

Logistical Problems (LaTeX)

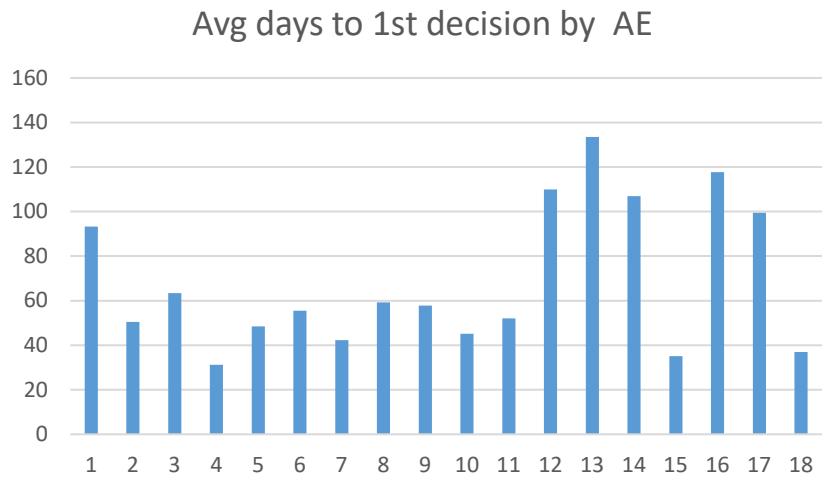
- LaTeX submissions remain problematic.
- Mark Owen sent Stephanie agreement on Feb. 1, 2024 – Stephanie may have a date today.
- We have a partial work-around for LaTeX submissions.

Logistical problems (low backlog)

- Backlog is improved, but still low:
- January 2023: 5 papers in backlog.
- June 2023: 6 papers in backlog.
- December 2023, after filling 2024.01 lineup:
  - 20 papers total.
- August 2024, after allocating 20 papers to 2024.06 and 2024.07:
  - 12 papers total.
- January 2024, after allocating 15 papers to 2025.01, 02:
  - 18 papers

Logistical problems (general)

- Several AEs were slow for different reasons.
  - Average days to 1st decision: 31
  - Excluding desk rejections: 63
- Obtaining timely, high-quality reviews remains challenging. (Even with the reviewer board!)
- AI…?



General Plans

- Reinhard Radermacher obituary-editorial.
- Continue with moving towards format-free submission.
- Continue to recruit special issues based on conferences.
- Will ask the Editorial Board to help identify non-conference-based topical issues.

PEC Professional Development Subcommittee Report to PEC Planning and Fiscal Subcommittees

Monday, February 10, 2025
3:00pm – 4:30pm
Hilton Orlando – Orlando, FL
Room - Lake Louise A & B (Lobby level)

Motions for Fiscal Subcommittee

None.

Motions for Planning Subcommittee

None.

Information Items

1. Certification Committee Report to Professional Development Subcommittee (Attachment A)

2. Training and Education Committee (TEC) Report to Professional Development Subcommittee (Attachment B)

Respectfully submitted,

Kimberly Cowman
PEC Professional Development Subcommittee Chair
February 10, 2025

Attachment A

Certification Committee Report
to Professional Development Subcommittee of PEC
Meeting of February 10, 2025

Motions

None.

Information Items:

1. **Certification Applications** [MBO #2]

Through December 31, 2024, 256 certification applications have been processed, which is keeping pace with the 262 applications processed during the same time period in SY 2024, which was a record year for certification applications.

2. **Management System Review** [MBO #10]

An ANSI National Accreditation Board (ANAB) requirement, the Certification Committee completed its annual Management System Review, with resulting decisions and actions related to the improvement of the Management System and Certification Services related to the fulfillment of the ISO/IEC 17024 accreditation standard.

3. **CDP vs. HBDP Value Proposition** [MBO #2]

The Certification Committee will appoint a panel of SMEs from among the CDP and HBDP Exam Subcommittees, as well as the population of CDPs, in order to clarify and differentiate the respective value propositions for these two certifications.

4. **Reaccreditation** [MBO #10]

Every 5 years accredited certification programs must reapply for accreditation. On December 9, 2024, ASHRAE submitted its reapplication application to the ANSI National Accreditation Board (ANAB). ANAB's evaluation of ASHRAE's application will take place this winter-spring.

5. **Certification Exam Administration** [MBO #19]

The Certification Committee will pursue an onsite exam administration at the 2026 Winter Conference to take place at the AHR Expo, leveraging complimentary ALI courses and marketing in order to maximize registrants.

6. **Certification Application Process** [MBO #2]

The Certification Committee will finetune existing certification application process language and exam preparation guidance (assistance solicited by Monterrey Chapter).

7. **Certification Committee 2024-2025 MBOs shown in Attachment A**

Respectfully submitted,
Suz Ann Arroyo, Certification Committee Chair
February 10, 2025

MBO Submission to Planning

Council: Publishing & Education **Chair:** Suz Ann Arroyo

Committee: Certification **Vice-cha** Badri Patel

#	Description	Metric (how do we determine success?)	Initiative #	Goal #	Completion % /Date	Financial Assist Req'd?	MBO Comments	Strategic Plan Tally										
								Initiative #				Goal 1		Goal 2			Goal 3		
								1	2	3	4	a	b	a	b	c	a	b	c
1	Attain 80% recertification rate for the 2024 renewal class.	If 80% attained	4	2	3/31/2025	No	In progress. 79% recertification rate attained in 2021 and 2022. 76% = average for certification programs with 3-year renewal periods.				x					x			
2	Grow the number of certification applications by 10% over the 2023-24 total of 694, to a total of 763 applications	If 763 applications attained	4	3	6/30/2025	No	256 applications processed through 12/31, versus 262 in SY 2024.				x						x		
3	Achieve 400 sales and selection as renewing full Member benefit of BCxP Study Guide.	If uptake of 400 achieved	4	3	6/30/2025	No	Through 12/31, uptake of 181.				x						x		
4	Achieve 350 sales and selection as renewing full Member benefit of BEMP Study Guide.	If uptake of 350 achieved	4	3	6/30/2025	No	Through 12/31, uptake of 157.				x						x		
5	Achieve 500 sales and selection as renewing full Member benefit of CHD Study Guide.	If uptake of 500 achieved	4	3	6/30/2025	No	Through 12/31, uptake of 237.				x						x		
6	Achieve 300 sales and selection as renewing full Member benefit of CDP Study Guide.	If uptake of 300 achieved	4	3	6/30/2025	No	CDP Study Guide still in production.				x						x		
7	Leverage grass roots channels for enhanced communication.	If grass roots channels leveraged.	4	2	6/30/2025	No	Certification to present at 2/7 CTTC meeting in Orlando.				x			x					
8	Collaborate with YEA Committee and Staff to identify and pursue opportunities to position ASHRAE Certification as career development goal.	If opportunities are identified and pursued to position ASHRAE Certification as a career development goal for YEA Members.	1	1	6/30/2025	No	Per YEA staff and volunteer leaders, "YEA Connections" e-newsletter, YEA social media, and YEA webinar are possible opportunities.	x				x							
9	Cross-promote certification and online, instructor-led training (fall and spring) for each certification program on	If cross promotion takes place.	3	1	6/30/2025	No	Completed for fall 2024 instructor-led ALI courses.			x		x							
10	Manage certification programs against the ANSI/ISO/IEC 17024 accreditation standard.	If ASHRAE maintains its accreditation.	4	2	6/30/2025	Budgeted	Year 1 Reapplication application submitted to ANSI on 12/9/2024. (Note:previous due date was Feb. 1)				x				x				
11	Conduct BEMP, HBDP, and HFDP exam development against JTA updates and launch new exam forms.	If exam development takes place and new exam forms are launched.	4	2	6/30/2025	Budgeted	BEMP and HBDP exam development is underway.				x			x					
12	Recruit 2025-28 class of Exam Subcommittee members.	If the 2025-28 class of Exam Subcommittee members is recruited.	4	2	6/30/2025	No	To take place in spring, 2025.				x			x					

Council: Publishing & Education **Chair:** Suz Ann Arroyo

Committee: Certification **Vice-cha** Badri Patel

#	Description	Metric (how do we determine success?)	Initiative #	Goal #	Completion % /Date	Financial Assist Req'd?	MBO Comments	Strategic Plan Tally										
								Initiative #				Goal 1		Goal 2			Goal 3		
								1	2	3	4	a	b	a	b	c	a	b	c
13	Pursue opportunities to strengthen the Security of Examination Materials (ANSI 7.4) procedure for Item Development.	If the Security of Examination Materials (ANSI 7.4) procedure for Item Development is strengthened	3	3	6/30/2025	No				x							x		
14	Monitor and report on developments in the security of remote proctoring.	If developments in the security of remote proctoring are reported to the Certification Committee	3	3	9/30/2024	No	COMPLETED. To be conducted annually in September. Staff attended annual ANSI National Accreditation Board (ANAB) Client Day meeting on September 24, 2024. Developments: 70-80% of Certification bodies now use remote proctoring. The use of remote proctoring is increasing, even though the number of non-conformities has not decreased. There is a 60-70% incidence of NCRs during annual surveillance reviews which result from remote proctoring security failures.			x								x		
15	Monitor the effectiveness of certification programs and recommend and implement any steps to improve program effectiveness.	If the effectiveness of certification programs is monitored and any recommended steps to improve program effectiveness are implemented	4	3	6/30/2025	No	Task Force meeting held on Jan. 27.				x							x		
16	Evaluate the certification and recertification application fee schedule and recommend any possible updates in the 2025 Winter Conference meeting.	If this evaluation takes place.	4	3	1/31/2025	No	Fees increased approximately 25% 7/1/2024.				x							x		
17	Conduct strategic planning every two years at Annual Conference.	If ongoing strategic planning is conducted.	3	3	6/30/2025	No	Next strategic planning to be held in June, 2026.			x								x		
18	PEC MBO #3: Develop new products & services aligned with Strategic Plan initiatives 1 & 2 (ETF & TFBD).	If CDP certification and CDP Study Guide are developed.	1	1	6/30/2025	No	SY 2023-24 JTA for HFDP supported ETF efforts. CDP certification launched by 6/30/2024, supporting TFBD efforts.	x				x								
19	Organize exam administration at Winter Conference.	If there are 10 exam candidates.	4	2	1/31/2025	No	COMPLETED. With only 2 applications received, this exam administration was cancelled.	5	1	5	#	5	1	5	2	2	#	1	1
20	Determine need and demand for leveraging ASHRAE AMS as location for logging PDHs in order to enhance customer experience.	If need and demand are identified.	3	2	9/30/2024	No													

Attachment B

TRAINING AND EDUCATION COMMITTEE

REPORT TO THE PROFESSIONAL DEVELOPMENT COMMITTEE
ASHRAE 2025 Winter Conference - Orlando

Information Items

1. Twenty ALI courses are scheduled with the 2025 ASHRAE Winter Conference. To date, combined registration numbers total 652 and income is $154,058.

PREVIOUS WINTER CONF COURSE REGS				
Year	**Location**	**#Courses**	**#Regs**	**Income**
2025	Orlando	20	652	$154,058
2024	Chicago	20	532	$112,736
2023	Atlanta	20	734	$147,445
2022	Vegas	20	491	$100,966
2021	Chicago	0	0	$0
2020	Orlando	21	1,141	$230,081

2. eLearning revenue peaked again in December 2024 and is tracking to exceed the fiscal performance of the 2023-2024 Society Year.

3. Individuals that chose the eLearning membership benefit in July- December 2024 increased by 253 from the same time last year, a increase value of over $10K.

4. A course on the Grid-Interactive Buildings for Decarbonization: Design and Operation Resource Guide was added to the eLearning catalog in early fall. Work is in progress to provide the content as an instructor-led course. Content related to more decarbonization guides is expected from the CEBD, and TEC will lead in adopting it to new eLearning and instructor-led courses.

5. Work is in progress to develop a course on the new A2L refrigerants and the future of A3 refrigerants.

6. Proposals for new ALI courses related to dehumidification, laboratory system controls, and whole life decarbonization strategies are being reviewed by the committee. A vote on each course is expected to be complete soon after the this conference, with the goal of significant developmental progress by the annual meeting.

7. Development of a multi-day, multi-instructor prep course for the CDP certification exam is underway. Funding for this course was received from the ASHRAE Foundation. The content of the course will reflect the topics and resources identified in the CDP candidate guide and will not be a test prep course that teaches to the exam questions.

8. The TEC is finalizing policy and guideline procedures for the new course reaffirmation and sunset program. The next round of reviews will begin shortly after the Winter Meeting. [MBO 1]

9. TEC is developing a franchise model for courses that allows multiple presenters to teach ALI courses. This will allow for translation to different languages, units, and regions. Once the franchise guidelines are developed, TEC will pilot the process for a few selected courses. [MBO 2]

10. Following the winter meeting, TEC will review the RFP process for soliciting courses and speakers from technical engines in ASHRAE, particularly the TCs. [MBO 3]

11. The TEC will continue to work with ASHRAE Marketing to advertise coursework. Marketing has created new emails and communications for programs, and an increase in courses is being seen. [MBO 4]

12. MBOs follow.

Respectfully submitted,
Kim Pierson, Training and Education Committee Chair
February 10, 2025

Training & Education Committee
Chair: Kim Pierson; Vice Chairs: Ashley Weekly (Planning) and Tim Ashby (Operations)
July 17, 2024

MBO #	Description	Metric	Initiative #	Goal #	Completion % /Date	Financial Assist Req'd?	MBO Comments
1	Finalize and continue implementation of the Course Reaffirmation Process	Working guide and instructions to be used going forward				None	Finalize the process for future years and document the procedures so that future Ops Subcommittees.
2	Develop and pilot a "franchise" model for popular courses	1. Develop the guidelines (Planning) 2. Pilot the franchise program (Operations)				Yes – for speakers who present courses	Guidelines to cover creating new courses, and materials needed for multiple presenters. Address presentation template, units, examples, syllabus, closed captioning, etc. Outline overall instructor qualifications. Existing Course New course Certification Prep Course
3	Develop a means and methods to solicit, review and approve course materials from the technical engines of ASHRAE.	RFP Template				None	Draft RFPs for new courses that can be developed, and utilize the new franchise model
4	Develop a simplified marketing plan for TEC courses. Work with ASHRAE marketing.	TEC will write up suggested changes to the Board.				Yes - once pathway is mapped out the webmaster /consultant will need to implement.	Consolidated marketing page for all learning (Planning). Learning Pathways - Establish new pathways. Cross Organization Marketing

Planning Subcommittee Report to PEC

Tuesday, February 11, 2025
8:00am – 12:00pm
Hilton Orlando – Orlando, FL
Room - Lake Mizell A (Lobby Level)

Attendance

Members: Ken Fulk – Chair, Badri Patel, Stephanie Mages, Akinbowale Soluade (absent), Kurt Monteiro(absent), Ashley N Weekly, Jeremy T Smith, Kimberly Cowman, Jonathan Smith (absent), Doug Cochrane

Guests: Cindy Micheals, Spencer Morasch, Tim Kline, Aaron Bessel, Mitchell Goss

Motions

1. **Publications Committee recommends that PEC Products Subcommittee approve the changes to the committee's ROB as shown in Attachment A.**

   Background: This attachment reflects changes to the ROB based off of feedback from this Council as well as guidance from the Society Rules Committee.

   Fiscal Impact: None.

   Note: PEC Products Subcommittee reviewed the motion and forwarded to PEC Planning Subcommittee without changes or comments. PEC Planning Subcommittee reviewed the motion and forwarded to PEC for approval.

2. **Publications Committee recommends that PEC Products Subcommittee approve the changes to the committee's MOP as shown in Attachment B.**

   Background: This attachment reflects changes to Section 1 of the Publications Committee MOP that add the conditions the committee is subject to, which have been removed from the committee's ROB.

   Fiscal Impact: None.

   Note: PEC Products Subcommittee reviewed the motion and forwarded to PEC Planning Subcommittee without changes or comments. PEC Planning Subcommittee reviewed the motion and forwarded to PEC for approval.

Information Items

1. Handbook Committee (HBC) Report to PEC Products Subcommittee was given by Mr. Furman. (Attachment C)

    1.1 HBC will begin implementing the volume restructuring plan developed by the PEC Ad Hoc Subcommittee on Handbook Volume Rebalancing with the 2028 *HVAC Systems and Equipment* volume.

2. Historical Committee Report to PEC Products Subcommittee was given by Mr. Grusnick. (Attachment D)

    2.1 Mr. Comstock visited ASHRAE Headquarters to survey and take photos of the library and library archives and provided a report to the committee with some suggestions for possible creation of an ASHRAE Heritage Center shown in *Attachment B of the Historical Committee Report to PEC Products Subcommittee.*

    2.2 Historical Committee approved a nomination for the Lou Flagg Historical Award and submitted it to the ASHRAE Honors and Awards Committee. *(Historical Committee Approved 4-0-0, CV)*

3. Publications Committee Report to PEC Products Subcommittee was given by Mr. Tosh. (Attachment E)

    3.1 Publications Committee has developed a spreadsheet for the TCs that lists all the ASHRAE book titles that each TC is responsible for. It was introduced to TC leadership by the Publications Committee chair at the TC/TG/MTG Chairs' Breakfast on Sunday morning. The goal of this spreadsheet is to improve communication between Publications Committee and the TCs regarding older ASHRAE publications that need to be reviewed for relevance *(Shown as MBO #3 in Attachment C of Publications Committee Report to the PEC Products Subcommittee)*

4. Research Journal Subcommittee Report to PEC Products Subcommittee was given by Mr. Ellis. (Attachment F)

5. Committee members were reminded to review the CRC Roundtable Executive Summary (Attachment G) and ASHRAE's new Strategic Plan for possible changes or updates to their committee MBOs.

An action item was assigned to staff to send out The CRC Roundtable Executive Summary to PEC standing Committee Chairs. (**ACTION ITEM 1**) *Complete - February 10, 2025*

Respectfully submitted,

Ken Fulk
PEC Planning Subcommittee Chair
February 10, 2025
JH

Changes to Publications Committee ROB

2.419 PUBLICATIONS COMMITTEE

2.419.001 SCOPE AND PURPOSE

This committee identifies the technical information needs of the HVAC&R industry not met through the ASHRAE Handbook series, ASHRAE's research journal, standards, guidelines, or user's manuals and oversees editorial policies and delivery of products to the marketplace. This committee also determines the best paper published in the volume year of *ASHRAE Journal* preceding the ASHRAE Winter Conference.

This committee shall report to the Publishing and Education Council.

2.419.002 MEMBERSHIP

2.419.002.1 Composition

The members of this committee are as follows:

A. Twelve (12) voting members, including a chair and a vice chair. (16-06-29-20)
B. Non-voting members include a Board ex officio member and coordinating officer.

2.419.002.2 Qualifications

A. All members of the committee shall hold the grade of Associate Member or higher in the Society.
B. Members should have an awareness of the current technical information needs of various segments of the HVAC&R industry.
C. Membership should include broad representation from the HVAC&R industry including the academic, design, construction, facility operations and manufacturing communities.
D. At least three members should have recent experience with the production or writing of technical publications or periodicals.

2.419.002.3 Term of Service

The term of service for the chair and vice chair is intended to be one (1) year. The term of service for other voting members is intended to be three (3) years.

2.419.003 OPERATION

2.419.003.1 General Requirements

~~A.~~ This committee shall oversee the editorial policies of ASHRAE's Special Publications, *ASHRAE Transactions* and other conference proceedings, *ASHRAE Journal*, and ASHRAE's electronic newsletters.
~~The committee shall be subject to these conditions:~~
~~2. The data recommended for publication shall tend toward the professional education of the individual engineer;~~
~~3. Such data shall be free from commercial bias;~~

4.1. Such data shall tend to advance for the public benefit the arts and sciences relating to heating, refrigeration, air conditioning, and ventilation and the allied arts and sciences.
(67-06-25-08/82-06-30-25/86-06-22-18M)

B. ASHRAE This committee shall oversee produce Special Publications that shall be defined as all technical publications produced by ASHRAE in print and machine-readable format in print format (except for the ASHRAE Handbook series; standards, guidelines, and user's manuals; and ASHRAE's research journal, and ASHRAE's magazines, and newsletters), such asincluding books (including books resulting from ASHRAE Research Projects and Special Projects), charts, and tools, as well as all technical publications in machine-readable format, such as audio and visual presentations, software, databases, apps, and online resources. These special publications may be generated from proposals submitted directly to Publications Committee or from accepted Publication Topic Acceptance Requests (PTARs), which Publications Committee reviews before providing recommendations to Research Administration Committee (RAC) for the final vote regarding funding. This committee shall also communicate with the cognizant TCs of existing ASHRAE publications to help staff determine whether older publications are up to date as is, need to be revised, or need to be removed from sale.

C. The objective of *ASHRAE Transactions* shall be to serve as the archival publication of unsolicited research papers and Society-sponsored research and discussions in HVAC&R technical areas presented at the ASHRAE Annual and Winter Conferences as well as of Society business such as council and committee membership and award recognition. The objective of proceedings of ASHRAE-sponsored conferences and ASHRAE-cosponsored conferences shall be to serve as the archival publications of the unsolicited research papers presented at these conferences.

C. This committee shall advise about the magazineThe objective of *ASHRAE Journal*, which shall be to lead in the communication of heating, ventilating, air-conditioning and refrigeration information to and from the profession, industry, and related interests. (ROB 520-144-007) and which shall include e. Editorial and advertising content of *ASHRAE Journal* shall be directed toward the professional education of persons engaged in industries related to heating, ventilating, air conditioning, and refrigeration (86-06-22-18L).

D. This committee shall determine the annual winner of the Journal Paper Award.

E. The objective of ASHRAE's electronic newsletters shall be to communicate news to various audiences. *Insights*, distributed to members only, includes news of members, chapters, regions, Society committees, and International Associates. (ROB 520-144-007; 86-06-22-18L) *ASHRAE Journal Newsletter*, distributed to members only, connects news of industry trends with articles from *ASHRAE Journal*'s archive of peer-reviewed content. *ASHRAE HVAC&R Industry News* curates the latest trends and announcements from the industry to a large readership of members and non-members. *HPB Newsletter* combines online HPB articles and *ASHRAE Journal* articles with links to external articles related to energy efficiency, resiliency and sustainability for a diverse audience of ASHRAE engineers, architects, facilities managers and building owners.

2.419.004 STRATEGIC PLAN (09-06-21-12C)

This committee shall develop procedures for recommending updates to the strategic plan on a continuous basis. As a minimum the committee shall submit a report to the council prior to the Annual Meeting. The report includes the current status of each activity which supports the fulfillment of the committee's assignments under the strategic plan. The committee shall report to the council all recommendations for changes to the strategic plan as provided by the committee's constituents prior to the Annual Meeting.

Changes to Publications Committee MOP

1. GENERAL RESPONSIBILITIES

1.1. The Publications Committee identifies the technical information needs of the HVAC&R industry not met through the ASHRAE Handbook series, ASHRAE's research journal, standards, guidelines, or user's manuals and oversees editorial policies and delivery of products to the marketplace. This includes the editorial policies of *ASHRAE Journal*, ASHRAE's electronic newsletters, *ASHRAE Transactions* and other conference proceedings, and ASHRAE Special Publications, which are technical publications in print format, such as non-series books (including books resulting from ASHRAE Research Projects, PTARs, and Special Projects), books in the Advanced Energy Design Guide series and the ASHRAE Datacom Series, charts, and tools, as well as all technical publications in machine-readable format, such as audio and visual presentations, software, databases, apps, and online resources.

1.2. The committee shall be subject to these conditions:

1.2.1. The data recommended for publication shall tend toward the professional education of the individual;

1.2.2. Such data shall be free from commercial bias;

~~1.1.1.~~1.2.3. Such data shall tend to advance for the public benefit the arts and sciences relating to heating, refrigeration, air conditioning, and ventilation and the allied arts and sciences.

Handbook Committee Report to PEC, Products Subcommittee
Sunday, February 9, 2025

Major Passed Motion

1. **HBC moved, seconded, and approved to begin implementing the volume restructuring plan developed by the PEC Ad Hoc Subcommittee on Handbook Volume Rebalancing with the 2028 *HVAC Systems and Equipment* volume.**

   Background: Volume growth over the years has led to Handbook volumes ranging from less that 800 pages to nearly 1500. This causes drastic changes in staff workloads, subcontractor time, shipping, and usability by members. PEC's ad hoc subcommittee, led by John Constantinide, developed a protocol to relocate chapters to make volumes more evenly sized, and to rename the Refrigeration volume "Refrigeration and Building Operations" (name is tentative at this point).

   Implementing this change (Attachment A, spreadsheet) in 2028 will give HBC time to communicate with the affected TCs, gather feedback, and allow time for adjustments in TC revision schedules.

   Motion was passed unanimously by VV, CNV.

   Fiscal Impact: None to slight positive impact. More equal volume sizes will level out expenditures for shipping of print products and developmental costs for PDF and Handbook Online products, also making budget forecasts more accurate.

Information Items

1. A new chapter on exergy in sustainable building environments was considered and discussed with TC 7.43, but no conclusion was reached. A conference call will be held soon after the Orlando meeting for more in-depth discussion.

2. See *Attachment B* for MBOs for 2024-2025.

Respectfully submitted,

Joseph Furman, HBC Chair

JF [mhek]

ASHRAE HANDBOOK analysis			4312 total page count	4979	
			Target average	1245	
Handbook 2028 HVAC SYSTEMS AND EQUIPMENT			1075	170	**pages under average**
AIR CONDITIONING AND HEATING SYSTEMS		Pg count	383	**Added:**	128 pages
	Chapter	Title		**Remove**	0 pages
	S1	HVAC Systems Analysis and Selection	10		
	S2	Decentralized Cooling and Heating	12		
	S3	Central Cooling and Heating Plants	12		
	S4	Air Handling and Distribution	20		
	S5	In-Room Terminal Systems	16		
	S6	Radiant Heating and Cooling	21		
	S7	Combined Heat and Power Systems	56		
	S8	Combustion Inlet Turbine Cooling	9		
	S9	Applied Heat Pump and Heat Recovery Systems	26		
	S10	Small-Forced Air Heating and Cooling Systems	13		
	S11	Steam Systems	16		
	S12	District Heating and Cooling	48		
	S13	Hydronic Heating and Cooling	26		
	S14	Condenser Water Systems	4		
	S15	Medium- and High-Temperature Water Heating	8		
	S16	Infrared Radiant Heating	8		
	S17	Ultraviolet Lamp Systems	10		
	S18	Variable Refrigerant Flow	15		
From A	A54	Fire and Smoke Control	27		
From A	A59	Indoor Air Modeling	26		
AIR HANDLING EUIPMENT AND COMPONENTS			237		
	S19	Duct Construction	15		
	S20	Room Air Distribution Equipment	16		
	S21	Fans	16		
	S22	Humidifiers	18		
	S23	Air-Cooling and Dehumidifying Coils	17		
	S24	Desiccant Dehumidification and Pressure Drying Eq	14		
	S25	Mechanical Dehumidification and Related Compone	11		
	S26	Air-to-Air Energy Recovery Equipment	38		
	S27	Air-Heating Coils	5		
	S28	Unit Ventilators, Unit Heaters, and Makeup Air Units	10		
	S29	Air Cleaners for Particulate Contaminants	14		
	S30	Industrial Gas Cleaning and Air Pollution Control	30		
From F	F21	Duct Design	33		
HEATING EQUIPMENT AND COMPONENTS			157		
	S31	Automatic Fuel-Burning Systems	23		
	S32	Boilers	8		
	S33	Furnaces	10		
	S34	Residential In-Space Heating Equipment	7		
	S35	Chimney, Vent, and Fireplace Systems	36		
	S36	Hydronic Heat-Distribution Units and Radiators	6		
	S37	Solar Energy Equipment	25		
From A	A58	Room Air Distribution	42		

COOLING EQUIPMENT AND COMPONENTS			126
S38	Compressors	44	
S39	Condensers	21	
S40	Cooling Towers	26	
S41	Evaporative Air-Cooling Equipment	12	
S42	Liquid Coolers	7	
S43	Liquid -Chilling Systesm	16	

GENERAL COMPONENTS			60
S44	Centrifugal Pumps	18	
S45	Motors, Motor Controls, and Variable-Frequency Dri	21	
S46	Valves	15	
S47	Heat Exchangers	6	

PACKAGED UNITARY, AND SPLIT-SYSTEMS EQUIPMENT			23
S48	Unitary Air Conditioners and Heat Pumps	15	
S49	Room Air Conditioners and Packaged Terminal Air (	8	

GENERAL			89
S50	Thermal Storage	41	
S51	Dedicated Outdoor Air Systems	7	
S52	Codes and Standards	29	
S	Appendix	2	
S	Comment Page	10	

Handbook 2025 FUNDAMENTALS			1082
PRINCIPLES		Pg count	189
Chapter	Title		
F1	Pschrometrics	33	
F2	Thermodynamics & Refrigeration	21	
F3	Fluid Flow	15	
F4	Heat Transfer	36	
F5	Two-Phase Flow	26	
F6	Mass Transfer	15	
F7	Fundamentals of Control	22	
F8	Sound and Vibration	21	

INDOOR ENVIRONMENTAL QUALITY			119
F9	Thermal Comfort	33	
F10	Indoor Environmental Health	30	
F11	Air Contaminants	25	
F12	Odors	8	
F13	Indoor Environmental Modeling	23	

LOAD AND ENERGY CALCULATIONS			314
F14	Climatic Design Conditions 20 & 30	50	

163 **pages under average**

Added: 92 pages

Removed: 123 pages

F15	Fenestration	68	
F16	Ventilation and Infiltration	41	
F17	Residential Cooling and Heating Load Calculations	16	
F18	Nonresidential Cooling and Heating Load Calculatio	67	
F19	Energy Estimating and Modeling Methods	72	

Note: moved section from Applications

ENERGY-RELATED APPLICATION			92
From A A35	Ground-Source Heat Pumps and Geotherm	53	
From A A36	Solar Energy	39	

HVAC DESIGN			88
F20	Space Air Diffusion	4	
to S F21	Duct Design		
F22	Pipe Design	41	
F23	Insulation for Mechanical Systems	24	
F24	Airflow Around Buildings	19	

BUILDING ENEVELOPE			53
F25	Heat, Air, and Moisture Control in Building Assembli	18	
F26	Heat, Air, and Moisture Control in Building Assembli	23	
F27	Heat, Air, and Moisture Control in Building Assembli	12	

MATERIALS			45
F28	Combustion and Fuels	21	
to R F29	Refrigerants		
to R F30	Theromdynamics Properties of Refrigerants		
F31	Physical Properties of Secondary Coolants (Brine)	14	
F32	Sorbents and Desiccants	6	
F33	Physical Properties of Materials	4	

GENERAL			147
F34	Energy Resources	11	
F35	Sustainability	13	
F36	Global Climate Change	25	
F37	Moisture Management in Buildings	14	
F38	Measurements and Instruments	42	
F39	Abbreviations and Symbols	11	
F40	Units and Conversions	2	
F41	Codes and Standards	29	
F	Appendix	6	35
F	Composite Index	29	

Note: Volume may need to be renamed to address the expanded scope

Handbook 2026 REFRIGERATION (Part 1) and BUILDINGS OPERAT	pg count	1806	561 **pages over average**

Added: 360 pages
Removed: 0 pages

R38	Fruit Juice Concentrates and Chilled Juice Products	8	
R39	Beverages	12	
R40	Processed, Precooked, and Prepared Foods	7	
R41	Bakery Products	7	
R42	Chocolates, Candies,Huts, Dried Fruits, and Dried V	8	

INDUSTRIAL APPLICATIONS			34
R43	Ice Manufacture	6	
R44	Ice Rinks	13	
R45	Concrete Dams and subsurface Soils	6	
R46	Refrigeration in the Chemical Industry	9	

LOW-TEMPERATURE APPLICATIONS			323
R47	Cryogenics	32	
R48	Ultralow-Temperature Refrigeration	12	
R49	Biomedical Applications of Cryogenics Refrigeration	9	

Note: Relocated entire section from Applications

PART 2: BUILDING OPERATIONS AND MANAGEMENT			**270**	
From A A37	Energy Use and Management	23		
From A A38	Owning and Operating Cost	15		
From A A39	Testing, Adjusting, and Balancing	44		implement in 2028
From A A40	Operations and Maintenance Management	14		Maybe Built Environment instead of BOM?
From A A41	Computer Applications	11		And Building Operations?
From A A42	Building Energy and Water Monitoring	17		
From A A43	Supervisory Control Strategies and Optimiz	50		9.13 Space HB subcom chair will be John C.
From A A44	HVAC Commissioning	15		Proposed new chapter to be online only
From A A48	Design and Application of Controls	23		
From A A49	Noise and Vibration Control	58		

GENERAL			41
R50	Terminology of Refrigeration	12	
R51	Codes and Standards	29	

R	Appendix	2	41
R	Composite Index	39	

Handbook 2023 HVAC APPLICATION			1016	229	**pages under average**
COMFORT APPLICATIONS			211	**Added:**	0 pages
A1	Residential Space Conditioning	11		**Removed:**	457 pages
A2	Retail Facilities	9			
A3	Commercial and Public Buildings	14			
A4	Tall Buildings	21			
A5	Places of Assembly	7			
A6	Indoor Swimming Pools	9			
A7	Hospitality	9			
A8	Educational Facilities	40			

A9	Health Care Facilities	29
A10	Justice Facilities	9
A11	Automobilies	19
A12	Mass Transit	10
A13	Aircraft	19
A14	Ships	5

INDUSTRIAL APPLICATIONS		372
A15	Industrial Air Conditioning	12
A16	Enclosed Vehicular Facilities	44
A17	Laboratories	24
A18	Engine Test Facilities	5
A19	Clean Spaces	35
A20	Data Centers and Telecommunication Facilities	31
A21	Printing Plants	5
A22	Textile Processing Plants	7
A23	Fire and EMT Stations and Training Academies	4
A24	Museums, Galleries, Archives, and Libraries	47
A25	Environmental Control for Animals and Plants	30
A26	Drying and Storing Selected Farm Crops	12
A27	Air Conditioning of Wood and Paper Products	4
A28	Power Plants	13
A29	Nuclear Facilities	14
A30	Mine Ventilation and Air Conditioning	14
A31	Industrial Drying	7
A32	Ventilation of the Industrial Environment	8
A33	Industrial Local Exhaust Systems	10
A34	Kitchen Ventilation	46

Note: moved section to Fundamentals

ENERGY-RELATED APPLICATION		
To F	A35	Ground-Source Heat Pumps and Geothermal Energy
To F	A36	Solar Energy

Note: Relocated entire section to Applications

BUILDING OPERATIONS AND MANAGEMENT		
To R	A37	Energy Use and Management
To R	A38	Owning and Operating Cost
To R	A39	Testing, Adjusting, and Balancing
To R	A40	Operations and Maintenance Management
To R	A41	Computer Applications
To R	A42	Building Energy and Water Monitoring
To R	A43	Supervisory Control Strategies and Optimization
To R	A44	HVAC Commissioning

GENERAL APPLICATIONS		394
A45	Building Envelopes	14
A46	Building Air Intake and Exhaust Design	14
A47	Air Cleaners for Gaseous Contaminants	25
To R	A48 Design and Applications of Controls	

MBO Submission to Planning Council: PEC | Date: 1/10/2025 | Chair: Joe Furman

Committee: Handbook Committee | Vice Chair: Stephanie Magas

#	Description	Metric (how do we determine success?)	Initiative #	Goal #	Comp % / Date	Financial Assist Req'd?	MBO Comments	Strategic Plan Tally: Initiative # 1	2	3	4	Goal a	Goal b	Goal 2 a	Goal 2 b	Goal 2 c	Goal 3 a	Goal 3 b	Goal 3 c	Note
1	Create process to escalate TC notice of pending/overdue delivery related chapter documents for the Handbook. Notice directed to TAC leadership.	Meet with TAC leadership. Co-Author and issue internal guidance document.			6/30/2025	No	Responsibility of TC Volume Chapter revisions seems to lie with the HBC in the current structure. TAC should be accountable for the content and updates/revisions. This will highlight any shortfalls so they will be remedied.													
2	Consider Handbook volumes as a whole: balance out volume sizes.	All four volumes are of roughly equal size and workload. Currently, the Refrigeration volume is about 800 pages and lightly updated; the Applications volume is over 1500 pages and is heavily updated.	3	1b	Completed	No	Assigned task to a PEC ad-hoc subcommittee, which will be stood up by 1/24/2024. Recommendation from the ad-hoc subcommittee will be made to PEC NLT 6/22/204.			x			x							Completed by ad hoc committee's recommendations to PEC
3	Review number of Chapters that are the responsibility of one TC	No TC is overloaded with more chapters than its membership can maintain.	3	1b	ongoing	No	Will even out burden on TCs; better response from individual overwhelmed TCs.			x			x							Ongoing
4	Encourage TCs to develop extra features (spreadsheets, sidebar discussions, video, etc.) for Handbook Online.	Increase in number of Handbook Online extra features.	3, 4	1b, 2c	ongoing	No	Suggest to TCs that they use their YEA members.			x	x		x			x				Vance Payne might know people at NIST who did something similar
5	Review and improve ARG for clarity and conciseness (this includes the chapter submittal form).	Updates to be made.	3	1b	ongoing	No				x			x							Ongoing
6	Review and improve MOP for clarity and conciseness.	Updates to be made.	3	1b	Target 6/24	No				x			x							Functional has an action item to update MOP to new template and move stuff that doesn't fit into Reference Manual (target for approval is January 2025)

MBO Submission to Planning Date 1/10/2025

Council: PEC Chair Joe Furman

Committee: Handbook Committee Vice Chair Stephanie Magas

#	Description	Metric	Initiative #	Goal #	Comp % / Date	Financial Assist Req'd?	MBO Comments	Strategic Plan Tally												
								Initiative #				Goal		Goal 2			Goal 3			
		(how do we determine success?)						1	2	3	4	a	b	a	b	c	a	b	c	Note
7	Author and develop how-to videos and other job aids for HBC liaisons, TC handbook subcommeittee chairs, and other stakeholders.	Author and post videos	3	1b	Target 6/24	No	Beta videos tested at June 2023 meeting; revisions in progress based on that trial.			x			x							Ongoing
8	Review single topic/multi TC Chapters responsibility to one TC.		3	1b	Target 6/24	No	Will help to avoid potential conflicting revisions from multiple TCs, and simplify chapter submittal process. May require guidance issued in reference manual for HBC use when conflicts arise			x			x								Chapter needs one cognizant authority (target December 2024)
9	Develop calendar-based activity prompts job aid for HBC leadership to use in managing the HBC.	Author and issue internal guidance document	3	1b	Target 6/24	No				x			x								Ongoing; HS will pass on progress from Scott F.
10	Work with staff to update Handbook Central.	Updates to be made.	3	1b	Target 6/24	No	Streamlining the public web page and making the chapter approval checklist available to TCs without having to sign into the Authoring Portal (e.g., for those with no planned changes for a cycle).			x			x								Ongoing
11	Update Reference Manual and post on Basecamp.	Updates to be made.	3	1b	Target 6/24	No	A vintage reference manual (ca. 2016) was found and is in the process of being updated for modern use.			x			x								Ongoing (target 1/25)
12	Work with TC Leadership to engage TC's when HC Liasions cannot contact respective TC Liasions	Author and issue internal guidance document	JLF		Target 12/24	No	Responsibility of TC Volume Chapter revisions seems to lie with the HBC in the current structure. TAC should be accountable for the content and updates/revisions														Ongoing
13																				
14																				
15																				
								3	1	11	2	2	11	2	1	2	2	1	1	

Historical Committee Report to PEC Products Subcommittee

Meeting of Monday, February 10, 2025
8:00 AM - 9:30 AM
Orlando Hilton - Orlando, FL

Motions

None.

Information Items

1. Historical Committee approved a motion and assigned an action item to staff to communicate with the necessary ASHRAE staff to track Gold Ribbon recipients. Gold ribbon awards are a requirement criterion for the Lou Flagg Historical award and the committee needs this information to vote on the award. *(Historical Committee Approved 4-0-0, CV)*

2. Historical Committee reviewed the committee's 2024-2025 MBOs. (Attachment A)

3. Mr. Pollard reported to Historical Committee that there has been increased activity on the Engineering and Technology History Website (ETHW) wiki.

4. Mr. Comstock visited ASHRAE Headquarters to survey and take photos of the library and library archives and provided a report to the committee with some suggestions for possible creation of an ASHRAE Heritage Center. (Attachment B)

5. Historical Committee is planning the next Leadership Interview for June 2025 Annual ASHRAE Conference in Pheonix. Staff reminded members that the process for these interviews is for the committee members to choose the individual to interview, develop the questions and conduct the interview. The filming of the interview will be done with assistance from the Marketing Department and their plenary vendor. Staff was assigned to confirm who will be responsible for the editing of Leadership interview recordings if needed.

6. Historical Committee appointed Mr. Nagengast, Mr. Feiner and Mr. Comstock to ad hoc to report in detail the on the future needs for the library and historical archives.

7. Historical Committee approved a nomination for the Lou Flagg Historical Award and submitted it to the ASHRAE Honors and Awards Committee. *(Historical Committee Approved 4-0-0, CV)*

8. Mr. Haberl reported that six historical papers have been published in ASHRAE's research journal, *Science and Technology for the Built Environment* (STBE):

   - Ahn, J., Haberl, J. 2025. "Origins of Whole-building Energy Simulation Programs Used for High Performance Commercial Buildings: Contributions of the 1968 and 1971 ASHRAE Algorithms for Weighting factor-based Hourly Heating and Cooling Load Calculations", Science and Technology for the Built Environment, accepted for publication (January).

   - Ahn, J., Haberl, J. 2025. "Origins of Whole-building Energy Simulation Programs Used for High Performance Commercial Buildings: Contributions of the 1975 ASHRAE Algorithms for Heat Balance-based Hourly Heating and Cooling Load Calculations", Science and Technology for the Built Environment, accepted for publication (January).

   - Ahn, J., Haberl, J. 2023. "Origins of Whole-building Energy Simulation Programs Used for High Performance Commercial Buildings: Contributions of the NATEOUS, SHEP, TACS, CP-26, and RESPTK programs", Science and Technology in the Built Environment, (March).

   - Oh, S., Haberl, J. 2016. "Origins of the Methods for Simulation of Building Energy Simulation: Part I: Whole Building Energy Use", Science and Technology for the Built Environment, Volume 22, Issue 1, pp.118-137, ESL-PA-16-01-02 (January).

   - Oh, S., Haberl, J. 2016. "Origins of the Methods for Simulation of Building Energy Simulation: Part II: Lighting and Daylighting Simulation", Science and Technology for the Built Environment, Volume 22, Issue 1, pp. 107-117, ESL-PA-16-01-03 (January).

   - Oh, S., Haberl, J. 2016. "Origins of the Methods for Simulation of Building Energy Simulation: Part III: Solar Thermal, PV and Passive Solar Simulation", Science and Technology for the Built Environment, Volume 22, Issue 1, pp. 87-106, ESL-PA-16-01-04 (January)

9. Historical Committee is considered developing an historical physical display for viewing in future conference bookstore. Having a physical presence at the ASHRAE Registration area will allow a merging of historical info with new younger members.

Respectfully submitted,

Norman Grusnick
February 9, 2025

MBO - Submission to Planning

last update: 2024-07/15

Council: Publications & Education
Committee: Historical

Chair: Norman Grusnick
Vice-chair: Olu Soluade

MBO #	Description	Metric	Initiative #	Goal #	Completion % /Date	Financial Assist Req'd?	MBO Comments	Strategic Plan Tally											
								Initiative #				Goal 1		Goal 2			Goal 3		
		(how do we determine success?)						1	2	3	4	a	b	a	b	c	a	b	c
1	Establish and maintain a continuous line of communication between Society Historical Committee and Regional+Chapter Historians	Electronic communication to be by Committee Chair on a quarterly basis, with input from committee members.	4	2a, 2c	Ongoing **50% complete**	No	propose Historical Committee newsletters to be issued in Nov,April				X			X		X			
2	Develop PAOE Recommended Changes for Next Year 2025-2026	To get ahead of the PAOE Committee Cycle with proposal for the following year's (Society Year 2024-2025), Historical PAOE subcommittee needs to work with the PAOE subcommittee of Members Council during the Fall to Submit recommendations.	4	2a	Ongoing due before Feb 1	No	review PAOE items and forward comments				x			X					
3	Encourage younger members of ASHRAE (specifically SA & YEA) to have interest in history related activities of the Society	reference PAOE H14=For each Membership Promotion, YEA, or Student Activities event planned with a representative from the chapter Historical Committee to add a historical context to the event	4	2a	Ongoing	No					X			X					
4	Identify volunteers to act as committee liaison to other Society Committees	Collaborating with other committees to support ASHRAE's mission by providing a historical context to educate and inspire members.	4	2a, 2c	Ongoing **25%**	No	**Historical Committee Liason:** Membership TBD **Young Engineers in ASHRAE** = TBD **Student Activities** = TBD				X			X		X			
5	Foster collaboration with other international societies to improve our historical research and support history related activities of the Society	1) Continue work to have ASHRAE membership in the IEEE History Center - Engineering & Technology History Wiki (ETHW) [web site: https://ethw.org]. 2) Grow support in the Life Members Club to fundraise & create an endowment fund that would provide ongoing financial support to sustain membership in the IEEE History Center. 3) Continue work on collaboration. HC has links with similar groups in CIBSE and AiCARR - opportunity to pursue to work w/similar committees in CEN, Intl Institute of Ammonia Refrigeration (IIAR), Intl Institute of Refrigeration (IIR), & Global Cold Chain Alliance (GCCA).	4	2b	Ongoing **ETHW complete Now Forward Items**	YES Annual fee	Budget has been approved for IEEE Wiki by PEC contigent on due diligince. Awaiting signature on agreement - **COMPLETED** **ETHW.org agreement signed,** **2024 payment completed,** **ASHRAE logo added to web site**				X				X				

6	Digitize, Sort and Archive historical items including old archived Journals and Transactions	Proposed to have some storage items at HQ identified	4	1b, 2c, 3c	Ongoing	Yes*	*require funds to purchase storage racking at HQ for storage of items *may require funds and persons to scan and index items **Plan trip to HQ to assess what we have**				x		x			X			X
7	Leadership Recall to be arrange at Winter and Summer Conference	Arrange two Presidential interviews. Review other potential interviewees	4	1b, 2c	Ongoing	Yes*	*used to have access to videogropher to video interviews at conferences, however no longer at present due to covid $ cuts. In discussion with ASHRAE Journal Podcast to use resources for interviews **Review if Podcast Team can provided then interviews**				X		x			X			
8	To increase committee visibility work with staff To have a historical display at in registration area at winter and annual meetings	First measure of success will be comments from members and what they have seen	4	1b, 2c	Will be ongoing displays	TBD	Display of past photos, blueprints artifacts will allow new members to See some of the origins of HVACR industry				x		X			x			
9	Ecourage Digital history displays at CRC Add to future PAOE value	Feedback from historians	4	1a, 2a	Ongoing	NO													
10																			
11																			
								0	**0**	**0**	**7**	**0**	**2**	**2**	**1**	**4**	**0**	**0**	**1**
								Initiative #				**Goal 1**		**Goal 2**			**Goal 3**		
								1	**2**	**3**	**4**	**a**	**b**	**a**	**b**	**c**	**a**	**b**	**c**

Site Review: ASHRAE Library and Archives: Initial Step in Creating an ASHRAE Heritage Center

September 10. 2024

Executive Summary

ASHRAE possesses the most extensive collection of HVACR literature in the world. It can be a world-class resource for members and those who research the development of technologies related to controlling temperature, humidity, and air quality. Having such a resource can increase the public's awareness of ASHRAE and promote the contributions ASHRAE members have made to improving the quality of life.

The transfer of items from the Iron Mountain storage facility to ASHRAE Headquarters now locates all historically significant items in a single facility that be accessed by members, staff, and researchers. A three-step process can enhance the value of this incredible and now expanded resource:

1) Review by the Historical Committee of items currently designated as being holdings of the library or archives. This will include the removal of items that do not meet the standards of historical significance, eliminating excess inventory, and assigning items to appropriate spaces: ASHRAE Library, ASHRAE Archives and Collections, and what is proposed as ASHRAE Library Annex. The umbrella term for these spaces is proposed to be the ASHRAE Heritage Center. (Note: current naming rights to rooms in the proposed center would need to be considered and resolved.)
2) Collaboration by the Historical Committee and staff to revise guidelines for the solicitation, acceptance, securing, and maintenance of the proposed Heritage Center.
3) Historical Committee development of a plan that promotes access to ASHRAE Heritage Center by members – remotely and onsite, supports the article publication and presentations which explain the evolution of HVACR technology, and contributes ASHRAE literature to the IEEE Engineering and Technology History Wiki.

General Comments

The protocols previously in place for Library and Archive maintenance must be updated to reflect current product availability and then reinstated. Currently, holdings are in 3 storage spaces and a Library room and an Archive room. The distinctions of what should be in the

library and what should be in an archive need to be articulated and items assigned accordingly.

Once definitions are in place, the items currently held can be reviewed and the number of items retained will be diminished. This is not to suggest that physical copies are not needed for works held in digital form, but over the years multiple copies of publications have been added to the library from donations or excess inventory. For example, no more than 3 physical copies are needed and in some cases 2 copies are sufficient.

Once this review is completed with the updated definitions, items can be assigned to either the ASHRAE Library, ASHRAE Archives, or in a space proposed as the Library Annex. The Library Annex can serve both as a retention location for spare copies of ASHRAE works and as a working space that can be used by members, staff, and researchers.

Steps in Process:

1) Review/Revise existing policy for acquisition, retention, and maintenance of ASHRAE Heritage Center, the umbrella term for the ASHRAE Library, Archives, and Collections. The policy needs to include a definition of each room's purpose, criteria for item inclusion, and access rules.

2) Remove items that do not meet the criteria for inclusion. This eliminates excess items and items that do not meet the threshold of historical significance. This step will remove clutter and unnecessary items.

3) Place retained holdings in assigned locations (Library, Archives and Collections, Library Annex) to match holdings with available space and identify needs for shelving, cabinets, and other furniture needs for the use and storage of holdings.

4) Prepare a plan to supplement physical holdings with their digitized format and make access to digital editions available in the Library Annex as a working space for members and researchers.

5) Implement policies for acquisition, retention, maintenance, and access, establishing clear staff and Historical Committee guidance contact points.

6) Promote holdings in and the benefits of the Heritage Center including the use of the rooms by researchers, promotion of how the holdings can be accessed,

commissioning articles for ASHRAE publications using the holdings, creation of displays that illustrate the historical development of the HVAC&R history, establish a robust web presence which extends access to the holdings, and execute plan for ASHRAE contributions to the IEEE Engineering and Technology History Wiki.

General Observations on the Current Overall Status of Heritage Policy

1) All items are now housed at ASHRAE Headquarters. They are situated in five locations:
    a. Library
    b. Archives
    c. Storage items (excess Library)
    d. Storage Items (excess archives)
    e. Storage Items (transferred from Iron Mountain)
2) I addition, there are the Centennial Items display cases, the display of the household refrigerator, the NY theater heating control panel display, and Hall of Fame Plague.
3) Whether all items are cataloged needs to be determined.
4) Policies need reinstatement (after former policies are reviewed).
5) Excess copies need to be removed, and non-historically significant items need to be removed.
6) There needs to be a clear definition of purpose for each of space. The term "ASHRAE Heritage Center" is an umbrella term that encompasses all the spaces holding ASHRAE-preserved literature, visual images and artifacts.
7) The distinction between what is in the "Archives" and what is in the "ASHRAE Library" and what is retained as "Back-Up" has been blurred. Items need reassignment based on reviewed distinctions.
8) Under a new plan, it is proposed the spaces in the ASHRAE Heritage Center be designated "ASHRAE Library," "ASHRAE Archive and Collections," and "Library Annex."
9) Based on the policy, all items should be designated for assignment in one of these spaces.
10) The previous policy was to keep three copies of each ASHRAE publication or product. This was to allow one for access and two for spares (to protect against loss or damage). The current policy is to accept as many as 6. This has resulted in excess backup.

11) In recent years, all ASHRAE publications have been accessible in digital form. This can be incorporated into a revised policy by:
    a. Ensuring visitors to the library can access digital collections.
    b. For any physical copy available in digital form only two physical copies need to be retained.
    c. For older ASHRAE publications for which no digital edition exists, three physical copies should be retained.

Observations on Space Currently Designated as "Library"

1) Generally, ASHRAE publications are maintained in the ASHRAE Library.
2) The space includes approximately 7 rows, each row with 4 shelving units and each unit with 5 shelves, and 2 rows of 3 shelving units each with 5 shelves. Total shelving is approximately 470 linear feet.
3) The shelved contents include:
    a. Lou Flagg Historical Award Paper Copies (Histories of ASHRAE Chapters and Localized People and Technology Applications)
    b. ASHRAE Special Publications since inception
    c. ASHRAE proceedings
    d. ASHRAE Journal (Bound and Unbound copies)
    e. ASHRAE Insights (Bound and Unbound copies)
    f. HVACR Publications from Commercial Publishers
    g. HPAC Magazine
    h. ASRE Data Books, ASHVE Guides
    i. ASHRAE Handbooks
    j. ASHRAE Standards (Current and Superseded)
    k. ASHRAE Transactions
4) Two bookcases store ASHRAE produced CDs
5) Two bookcases display Rare HVACR Books including the Meckler Collection.
6) One file cabinet with additional Lou Flagg Historical Award Paper Copies

Figure 1Library shelving with ASHRAE Special Publications.

Figure 2 Rare Book Collection in Library.

Figure 3 Unbound ASHRAE Journals in Library.

Figure 4 ASHRAE Handbooks and Standards in Library.

Observations on Space Currently Designated as "Archives"

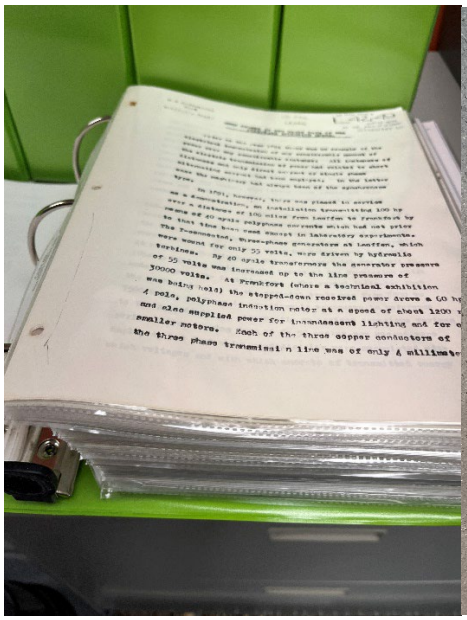
1) Generally, ASHRAE records of historical significance are currently in the archives along with the Al Newton collection, various ASHRAE publications, and trade magazines "Ice and Refrigeration" and "Metal Worker."
2) The space includes approximately 4 rows of shelving, each with 4 shelving units and each unit having 5 shelves. There are 2 lateral file cabinets with 2 drawers each and 2 vertical files with 4 drawers each.
3) The contents include:
    a. ASHRAE Special Publications
    b. Ice and Refrigeration

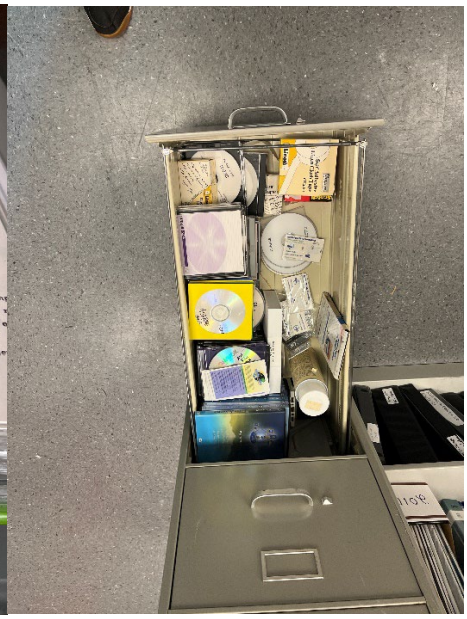
c. Metal Worker
d. Comstock paper files for important events 1974 through 2018.
e. Comstock miscellaneous photos and videos from Society events.
f. Files/records/projects submitted by members who believed they had historical significance.
g. Unbound copies of ASHRAE Journals
h. Books from 1930s to 1960s of potential historical significance
i. Membership files of prominent members – either past presidents or significant contributors to technology development
j. Meeting programs
k. Chapter Histories (unknown if Lou Flag Award Histories)
l. Nagengast green binders with Heat and Cold Files
m. Nagengast grey binders with Heat and Cold files
n. Nagangast First Century of AC files
o. Comstock files of ASHRAE annual reports and Society documentation
p. Comstock files of articles published about history of HVACR in general media, ASHRAE publications, and trade publications.





Boggs Retirement
2007 Winter Meeting
Dallas
Headquarters Relocation
Headquarters Dedication
Headquarters
'78 - Standard 90






ASHRAE - TIME LINE

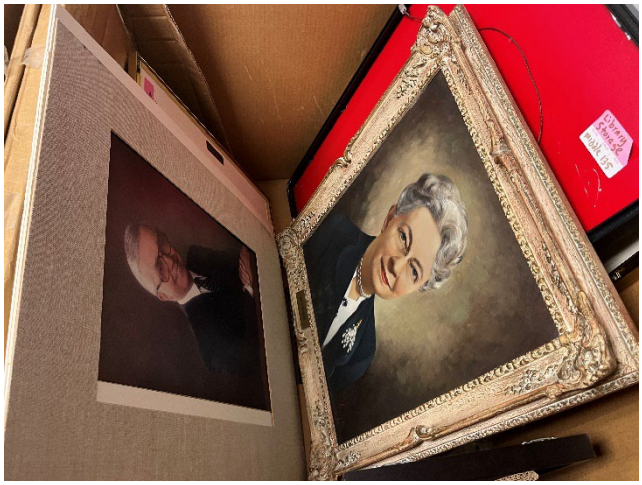
Observations on "Storage Space 1" (Basement level)

1) These are items that are on hold for assignment after submission to ASHRAE.
2) What is in the space is a rolling library cart with several manufacturers' catalogs, unbound copies of Refrigerating Engineering, Plumbing Journal, Heating and Ventilating magazine, HPAC magazine, and ASHVE Guide.
3) Items here should be designated for Library or Archives, with duplicate items (if determined needed) placed in the proposed Library Annex space. Some items may not be historically significant (such as manufacturers' catalogs – other than retaining examples).

Observations on "Storage Space 2" (Basement level)

1) What is in this space are 16 +/- boxes and several poster shipping containers.
2) Contents are:

a. The traveling ASHRAE history displays (mounted photographs) shipped to chapters during the Centennial celebration.
b. Photographs previously were displayed at HQ including meeting banquets from the 1920s, early ASHRAE summer meeting group photos, and portraits of AT Boggs, former ASHRAE Executive Vice President, and Mary Engle Pennington ("The Ice Woman").
c. Inventory of selected ASHRAE Special Publications.
d. Files from the Technology Department which appear to be intermingled with Historical holdings.
e. HPAC magazine
f. ASHRAE Journal unbound copies
g. ASHRAE Handbooks
h. ASHRAE Transactions



Observations on "Storage Space 3" (Basement level)

1) What is in this space are 22 +/- boxes. These are items retrieved from Iron Mountain.
2) Contents are:
    a. Frank Faust collection of early RAC literature including solar applications.
    b. American Artisan magazine
    c. HPAC magazine
    d. Domestic Engineering
    e. ASHRAE Transactions

Display Areas

ASHRAE has these display areas of Historical Items:

- Three display cases of gifted items to ASHRAE in observation of ASHRAE's Centennial Celebration in 1995 in the lower level lobby.

- Wall mounted steam heating gages retrieved from a 42nd Street vaudeville theater in New York City in the lower level lobby.
- Also in this area are framed certificates from the ASHRAE Centennial and also selected photos of past Society meetings.
- Early residential refrigeration unit manufactured by the Domelre Company in the basement level.
- Hall of Fame plaque outside of the library on lower level (but without corresponding descriptions of inductee achievements and selection).

Immediate Steps to Be Taken:

1) Historical Committee/Staff review/revise existing policy for acquisition, retention, and maintenance of items in the library, archives, and storage.
2) Historical Committee representatives meet on-site to work with staff to:
   a. Remove inventory that is in excess of what the policy allows.
   b. Remove items that do not meet the criteria of historical significance as defined in the policy.
   c. Determine if retained items should be placed in the library, archives, or annex.

3) Catalogue items not currently cataloged (or reassigned) and ensure procedures are in place to catalog items added in the future.
4) Flesh out concept of ASHRAE Heritage Center and determine space, furniture needs for its components: ASHRAE Library, ASHRAE Archives and Collections, ASHRAE Library Annex.
5) Begin work on a plan to promote the benefits of the Heritage Center including the use of the rooms by researchers, promotion of how the holdings can be accessed, commissioning articles for ASHRAE publications using the holdings, creation of displays that illustrate the historical development of the HVAC&R history, establish a robust web presence which extends access to the holdings, and execute a plan for ASHRAE contributions to the IEEE Engineering and Technology History Wiki.

Steve Comstock
September 10, 2024

Attachment E

Shaping Tomorrow's Global Built Environment Today

Publications Committee Report to the Products Subcommittee of the Publishing and Education Council

Monday, February 10, 2025, 8:00-9:30 a.m.

Action Items

1. Publications Committee recommends that PEC Products Subcommittee approve the changes to the committee's ROB as shown in **Attachment A**. This attachment reflects changes to the ROB based off of feedback from this Council as well as guidance from the Society Rules Committee.

Vote

2. Publications Committee recommends that PEC Products Subcommittee approve the changes to the committee's MOP as shown in **Attachment B**. This attachment reflects changes to Section 1 of the Publications Committee MOP that add the conditions the committee is subject to, which have been removed from the committee's ROB.

Vote

Information Items

Major Motions Passed:

1. Publications Committee voted to select the winner for the 2024 Journal Paper Award, the title and authors of which have been forwarded to the Honors and Awards Committee for award presentation at the 2025 ASHRAE Annual Conference.
2. Publications Committee voted to approve the final version of a Lessons Learned document that will be posted online and available to authors of book projects; this document was authored by an ASHRAE member experienced with preparing book projects for ASHRAE who wanted to provide guidance to other authors.
3. Publications Committee voted to approve the final version of a new Special Pubs Project Proposal Template, which is more aligned with the Publication Topic Acceptance Request (PTAR) proposal template and will replace the existing online Publication Request Form.

Other:

1. After discussion with RAC leadership, Publications Committee has developed a spreadsheet for the TCs that lists all the ASHRAE book titles that each TC is responsible for. This spreadsheet will be housed on the TC Basecamp page and available to all TCs. It was introduced to TC leadership by the Publications Committee chair at the TC/TG/MTG Chairs' Breakfast on Sunday morning. The goal of this spreadsheet is to improve communication between Publications Committee and the TCs regarding older ASHRAE publications that need to be reviewed for relevance (see Publications Committee MBO #3 in **Attachment C**).

2. Updates on the Publications Committee MBOs for the 2024-2025 Society year are included in **Attachment C**.

Respectfully submitted,
Megan Tosh, Chair
Publications Committee
8 February 2025

Attachment A

Changes to Publications Committee ROB

2.419 PUBLICATIONS COMMITTEE

2.419.001 SCOPE AND PURPOSE

This committee identifies the technical information needs of the HVAC&R industry not met through the ASHRAE Handbook series, ASHRAE's research journal, standards, guidelines, or user's manuals and oversees editorial policies and delivery of products to the marketplace. This committee also determines the best paper published in the volume year of *ASHRAE Journal* preceding the ASHRAE Winter Conference.

This committee shall report to the Publishing and Education Council.

2.419.002 MEMBERSHIP

2.419.002.1 Composition

The members of this committee are as follows:

A. Twelve (12) voting members, including a chair and a vice chair. (16-06-29-20)
B. Non-voting members include a Board ex officio member and coordinating officer.

2.419.002.2 Qualifications

A. All members of the committee shall hold the grade of Associate Member or higher in the Society.
B. Members should have an awareness of the current technical information needs of various segments of the HVAC&R industry.
C. Membership should include broad representation from the HVAC&R industry including the academic, design, construction, facility operations and manufacturing communities.
D. At least three members should have recent experience with the production or writing of technical publications or periodicals.

2.419.002.3 Term of Service

The term of service for the chair and vice chair is intended to be one (1) year. The term of service for other voting members is intended to be three (3) years.

2.419.003 OPERATION

2.419.003.1 General Requirements

~~A.~~ This committee shall oversee the editorial policies of ASHRAE's Special Publications, *ASHRAE Transactions* and other conference proceedings, *ASHRAE Journal*, and ASHRAE's electronic newsletters.
~~The committee shall be subject to these conditions:~~
~~2. The data recommended for publication shall tend toward the professional education of the individual engineer;~~
~~3. Such data shall be free from commercial bias;~~

~~4.~~1. ~~Such data shall tend to advance for the public benefit the arts and sciences relating to heating, refrigeration, air conditioning, and ventilation and the allied arts and sciences.~~
~~(67-06-25-08/82-06-30-25/86-06-22-18M)~~

B. ~~ASHRAE~~ This committee shall oversee ~~produce~~ Special Publications that shall be defined as ~~all~~ technical publications produced by ASHRAE in print and machine-readable format ~~in print format~~ (except for the ASHRAE Handbook series; standards, guidelines, and user's manuals; and ASHRAE's research journal, ~~and ASHRAE's~~ magazines, and newsletters), ~~such as~~including books ~~(including books resulting from ASHRAE Research Projects and Special Projects)~~, charts, ~~and~~ tools, ~~as well as all technical publications in machine-readable format, such as~~ audio and visual presentations, software, databases, apps, and online resources. ~~These special publications may be generated from proposals submitted directly to Publications Committee or from accepted Publication Topic Acceptance Requests (PTARs), which Publications Committee reviews before providing recommendations to Research Administration Committee (RAC) for the final vote regarding funding. This committee shall also communicate with the cognizant TCs of existing ASHRAE publications to help staff determine whether older publications are up-to-date as is, need to be revised, or need to be removed from sale.~~

~~C. The objective of *ASHRAE Transactions* shall be to serve as the archival publication of unsolicited research papers and Society-sponsored research and discussions in HVAC&R technical areas presented at the ASHRAE Annual and Winter Conferences as well as of Society business such as council and committee membership and award recognition. The objective of proceedings of ASHRAE-sponsored conferences and ASHRAE-cosponsored conferences shall be to serve as the archival publications of the unsolicited research papers presented at these conferences.~~

C. This committee shall advise about the magazine~~The objective of~~ *ASHRAE Journal*, which shall ~~be to~~ lead in the communication of heating, ventilating, air-conditioning and refrigeration information to and from the profession, industry, and related interests~~.~~ (ROB 520-144-007) and which shall include e~~.~~ Editorial and advertising content ~~of *ASHRAE Journal* shall be~~ directed toward the professional education of persons engaged in industries related to heating, ventilating, air conditioning, and refrigeration (86-06-22-18L).

D. This committee shall determine the annual winner of the Journal Paper Award.

~~E. The objective of ASHRAE's electronic newsletters shall be to communicate news to various audiences. *Insights*, distributed to members only, includes news of members, chapters, regions, Society committees, and International Associates. (ROB 520-144-007; 86-06-22-18L) *ASHRAE Journal Newsletter*, distributed to members only, connects news of industry trends with articles from *ASHRAE Journal*'s archive of peer-reviewed content. *ASHRAE HVAC&R Industry News* curates the latest trends and announcements from the industry to a large readership of members and non-members. *HPB Newsletter* combines online HPB articles and *ASHRAE Journal* articles with links to external articles related to energy efficiency, resiliency and sustainability for a diverse audience of ASHRAE engineers, architects, facilities managers and building owners.~~

2.419.004 STRATEGIC PLAN (09-06-21-12C)

This committee shall develop procedures for recommending updates to the strategic plan on a continuous basis. As a minimum the committee shall submit a report to the council prior to the Annual Meeting. The report includes the current status of each activity which supports the fulfillment of the committee's assignments under the strategic plan. The committee shall report to the council all recommendations for changes to the strategic plan as provided by the committee's constituents prior to the Annual Meeting.

Attachment B

Changes to Publications Committee MOP

1. GENERAL RESPONSIBILITIES

1.1. The Publications Committee identifies the technical information needs of the HVAC&R industry not met through the ASHRAE Handbook series, ASHRAE's research journal, standards, guidelines, or user's manuals and oversees editorial policies and delivery of products to the marketplace. This includes the editorial policies of *ASHRAE Journal*, ASHRAE's electronic newsletters, *ASHRAE Transactions* and other conference proceedings, and ASHRAE Special Publications, which are technical publications in print format, such as non-series books (including books resulting from ASHRAE Research Projects, PTARs, and Special Projects), books in the Advanced Energy Design Guide series and the ASHRAE Datacom Series, charts, and tools, as well as all technical publications in machine-readable format, such as audio and visual presentations, software, databases, apps, and online resources.

1.2. The committee shall be subject to these conditions:

1.2.1. The data recommended for publication shall tend toward the professional education of the individual;

1.2.2. Such data shall be free from commercial bias;

~~1.1.1.~~1.2.3. Such data shall tend to advance for the public benefit the arts and sciences relating to heating, refrigeration, air conditioning, and ventilation and the allied arts and sciences.

Attachment C

Publications Committee MBOs for Society Year 2024-2025

Chair: Megan Tosh **Date:** 8 February 2025

MBO #	Description	Metric	Initiative #	Goal #	Completion % /Date	Financial Assist Req'd?	MBO Comments
1	Create a process for the Publications Committee to compile information on market needs for publications and communicate that information to potential authors	Update the Reference Manual to describe the process for committee operations	3	1b, 2b, 3a	There is an outline for how to proceed; next we will put the plans into action. Completion expected at 2025 Annual Meeting	N	Publications Committee receives input on market needs from other committees and organizations, as well as through its own internal evaluations.
2	Integrate ASHRAE publications with other ASHRAE product offerings.	Compile a report on product opportunities and identify market gaps	4	1a, 1b, 2c	There is an outline for how to proceed; next we will put the plans into action. Completion expected at 2025 Annual Meeting	N	Liaise with Training & Education, Certifications, and others to ensure existing publications are fully leveraged and to identify new product opportunities.
3	Develop a streamlined communication process with technical committees that support publication	50% response rate from TC chairs by 2025 Annual Conference	3	3b	Completed (see #1 under "Other" above)	N	Publications Committee to set up a working group meeting with members of TAC to develop a method of communication with TC chairs so publications that have been developed by TCs are adequately maintained and managed.

Attachment F

Research Journal Subcommittee of PEC
Report to Products Subcommittee
Meeting of Monday, February 10, 2025
8:00am – 9:30am Eastern

Attendance: Blake Ellis-Chair, Jeffrey Siegel, Tim Dwyer (absent), Jeffrey Spitler-*STBE* Editor, Mark Owen-Staff Liaison, Stephanie Loeh- Taylor & Francis Mary Bolton- Staff - Associate Editor, Special Publications

Motions:
None

Information Items:

1. Mr. Owen reviewed the financial statements with the subcommittee.

2. The Publisher's Report from Taylor & Francis was reviewed and attached as Attachment A which included:
    - Production
        - Number of articles published by year
            - Includes breakdown of pay to read, hybrid read & publish, and hybrid open access along with total percentage of open access
        - Content flow and article count
            - 18 articles in backlog
        - Production schedule
            - 10 issues expected in 2025, similar to 2024
        - Speed of article publication
            - Speed of publication is consistent year over year
    - Global Reach & Usage
        - Circulation
            - Staying flat
        - Most downloaded articles
            - All of the top articles are open access
            - Total number of downloads is 113,000, up 2% from last year
        - Top ten institutions and download numbers
        - Comparison of past five years' numbers of article downloads
        - Comparison of past five years' numbers of articles usage by source
        - Article downloads usage by country & region
    - Citation Analysis

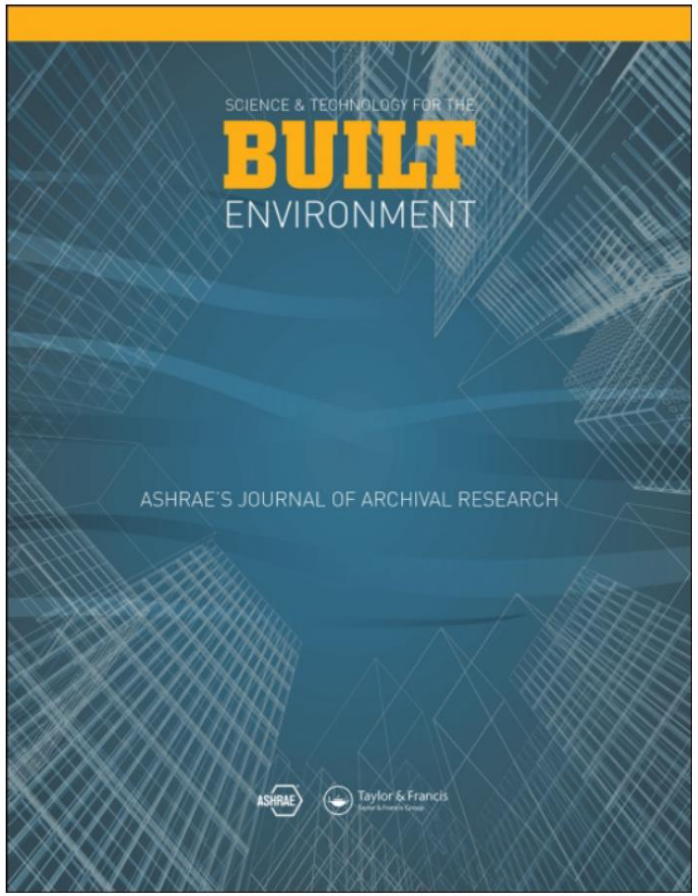
    - Impact Factor citation metrics
    - Scopus citation metrics
    - Top cited articles published online in the past two years and year-to-date
    - Citing sources & regions
- Altemetric Analysis
    - Top Altmetric scored in the past year
    - Overview & source breakdown of Altmetric attention in past year
- Author Survey
    - Author overall satisfaction
    - Author satisfaction with refereeing process
- General
    - Open Research update at Taylor & Francis
    - Development initiatives

3. Dr. Spitler gave the Editor's Report shown in Attachment B which included:
    - A comparison of STBE Impact Factor over ten years (through 2023)
    - A comparison of STBE submissions from 2018 through 2024 (fairly consistent)
    - As of January 29, 2025:
        - 320 submissions started
        - 313 submitted
        - 287 completed checklists
        - 257 have first decision (30 submitted towards the end of the year still in review)
        - 152 desk rejections by JDS (Common reasons: out of scope, case studies, poor English, lack of technical rigor.)
        - 54 rejections on recommendation of Associate Editors, before or after reviews
        - 52 papers still in review
        - 29 accepted
        - Accepted: 10%; Rejected 72%; Still in review, 18%
    - List of 2024 Special Issues and Topical Sections
        - Ground-source Heat Pump Systems (5 papers, Issue 3)
        - BPAC/Simbuild 2022 (7 papers, Issue 4)
        - Buildings XV Conference (10 papers, Issue 7)
        - Combined Issue (ASHRAE Conf. Research Papers - 2023 (7 submissions, 3 rejected) and Decarbonization conference in Athens (3 submissions, 2 rejected)
        - List of Future Special Issues and Topical Sections
    - ASHRAE Conference Research Papers from 2024
        - Buildings XVI Conference
        - Clima 2025
        - Ground-source Heat Pump Systems
    - There were no formal complaints, but two informal complaints concerning possible AI generated reviews.
    - There are four associated editors that have expiring terms. Mr. Spitler will develop a list replacement for the subcommittee to approve.
    - An update of activities of the STBE Social Media Editor, Zhihong Pang of Louisiana State University.
    - Mr. Spitler plans on a Reinhard Radermacher (former STBE editor) editorial obituary.
    - Mr. Spitler continues moving towards format-free submission.
    - Mr. Spitler continues to recruit special issues based on conferences.
    - Mr. Spitler will ask the Editorial Board to help identify non-conference-based topical issues.

4. In New Business, Mr. Siegel suggested that a number of institutions are requiring open access for articles to be published by their faculty and should STBE be making that more of an available option. Mr. Ellis took the Action item to set up a meeting of the subcommittee to discuss the topic and come up with any suggestions prior to the 2025 Annual Conference. **(Action Item 1)**

Taylor & Francis

Attachment A
PEC Research Journal Subcommittee
Report to PEC Products Subcommittee
Meeting of February 3, 2025
Orlando Winter Conference 2025



SCIENCE AND TECHNOLOGY FOR THE BUILT ENVIRONMENT

Confidential Publishing Report

Last Updated: January 2025

Highlights

Top Performing Articles (last 12 months)

Top Downloaded Article

Article Title	No. of Downloads
A review of the current status and development of 5GDHC and characterization of a novel shared energ...	1,103

Top Cited Article

Article Title	No. of Citations
Comparative analysis of the static and dynamic dehumidification performance of metal-organic framewo...	11

Top Altmetric Score

Title	Altmetric Attention Score
Strategies to minimize SARS-CoV-2 transmission in classroom settings: combined impacts of ventilation and mask effective filtration efficiency	382

Highlights

112K	79	13	1.7	4.3
2024 Downloads	2024 Volume Year Publications	2024 Volume Year OA Publications	2023 Impact Factor	2023 CiteScore

(Blank)	(Blank)	26	Q3	Q2
2024 Acceptance Rate (%)	Median Days Sub. to 1st Decision	Median Days Accept. to Online Pub	2023 Impact Factor Best Quartile	2023 CiteScore Best Quartile

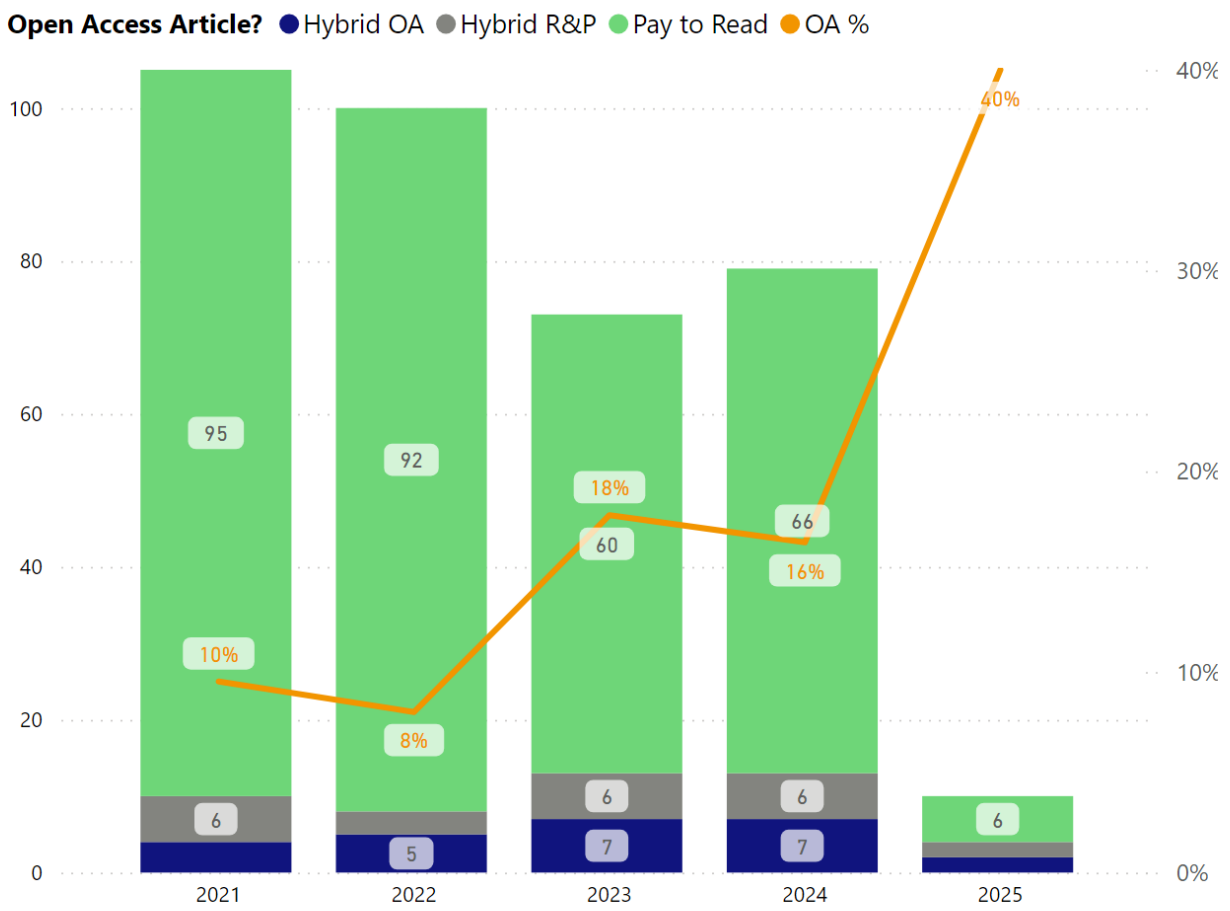
Production

Published Content

Number of Documents by Article Type (last full year and current year)

Article Type	Count
Research Article	86
Editorial	3
Total	**89**

Number of Articles Published by Volume Year - with OA Type Split



Content Flow and Article Count

Manuscript Type	Number of Manuscripts	Number of Typeset Pages
Research Article	18	295

Current Year

Volume Year	Volume #	Min Budget Research Articles	Actual Research Article	# of Online Issues	# of Print Issues
2025	31	105	10	10	2

The current backlog contains enough articles for the next 0.96 issues.

The oldest article not yet assigned to an issue was received in Production on 08 July 2024.

Production Schedule (Volume Years 2024 and 2025)

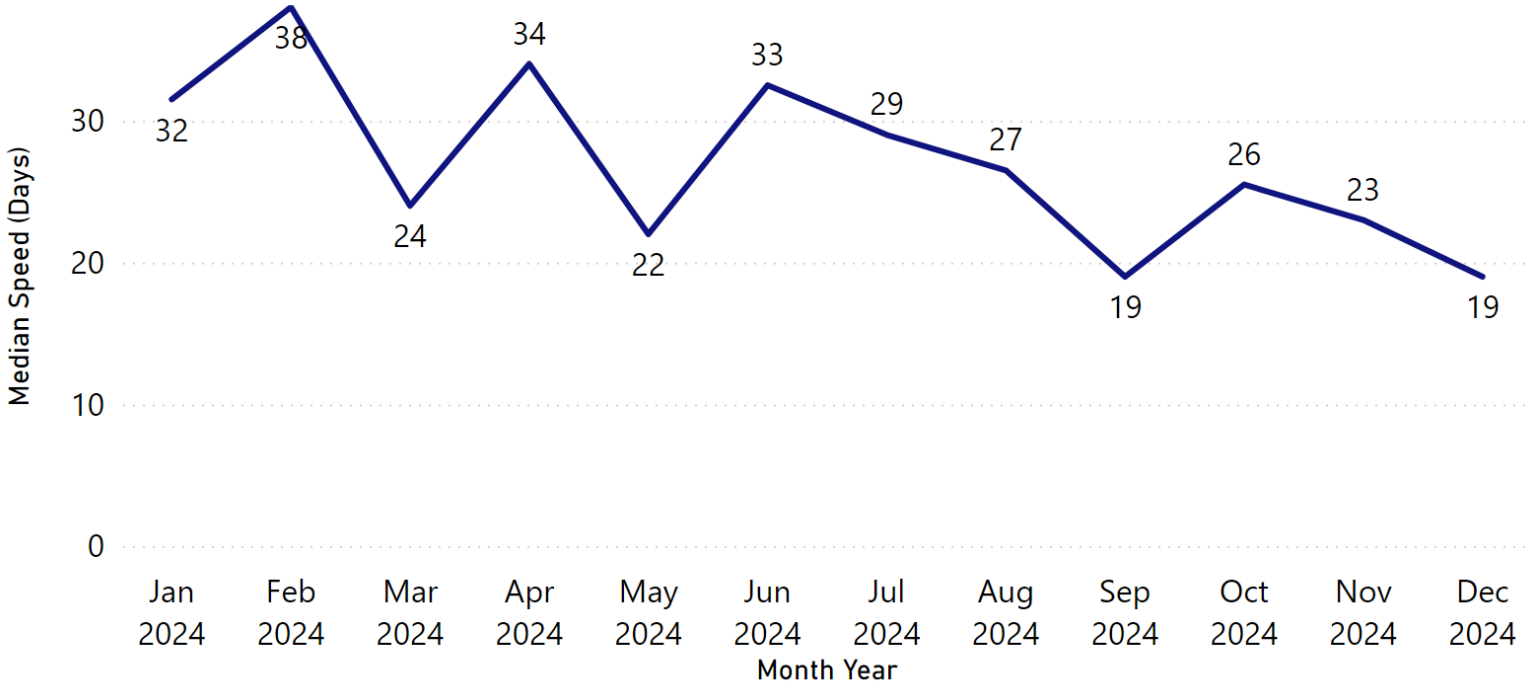
Online Issues

Issue Number	2024	2025
01	30 January 2024	30 December 2024
02	20 February 2024	30 January 2025
03	31 March 2024	28 February 2025
04	31 March 2024	01 April 2025
05	07 May 2024	02 May 2025
06	05 July 2024	01 July 2025
07	13 August 2024	01 August 2025
08	23 August 2024	02 September 2025
09	18 September 2024	01 October 2025
10	04 November 2024	30 October 2025

Print Issues

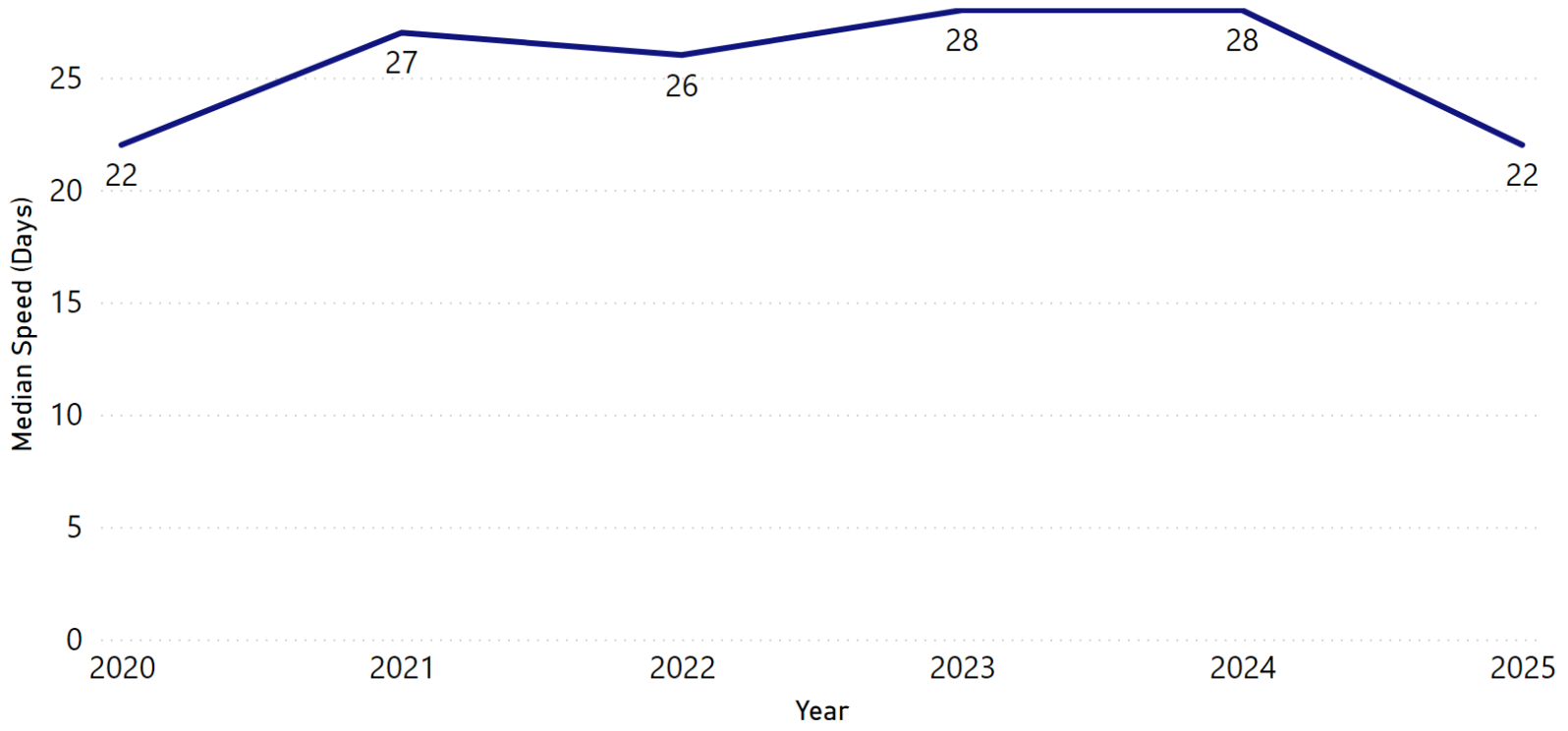
Issue Number	2024	2025
01-05	07 June 2024	22 May 2025
06-10	02 December 2024	20 November 2025

Average Speed of Article Publication (last 12 months)*



* median days from entered into Central Article Tracking System (CATS) to online publication.

Average Speed of Article Publication*



* median days from entered into Central Article Tracking System (CATS) to online publication.

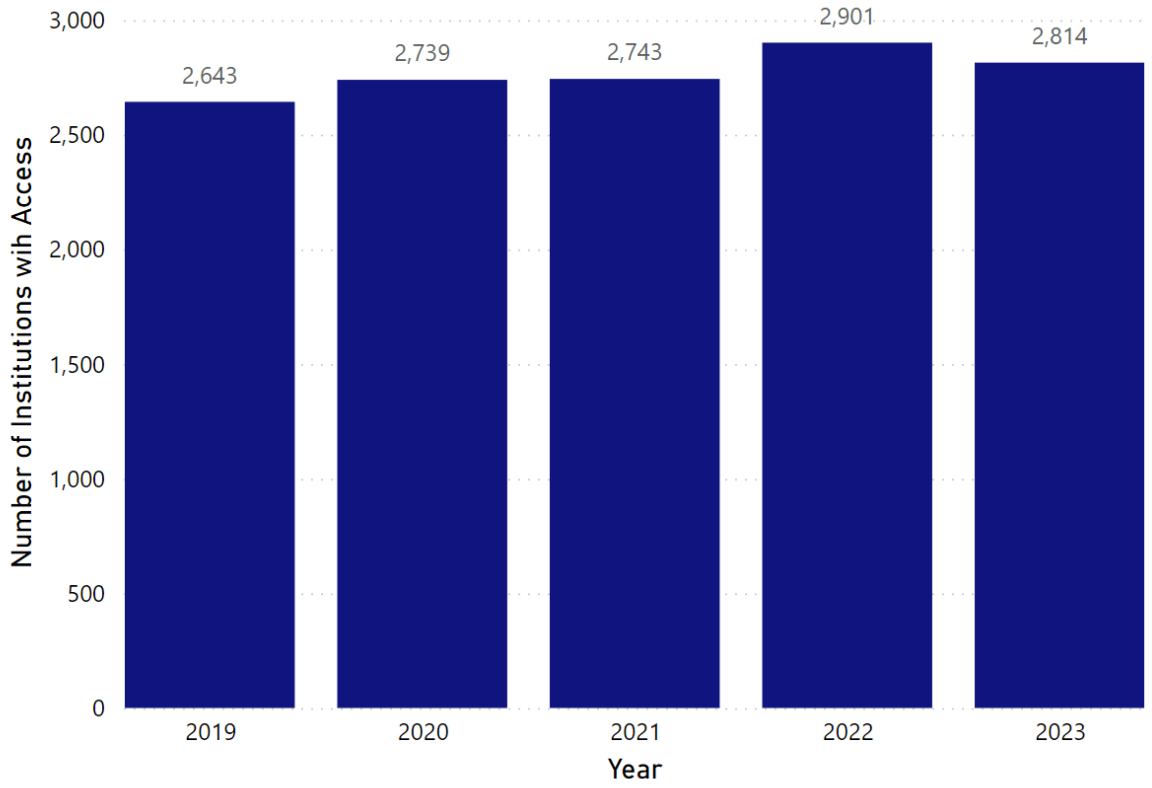
Global Reach & Usage

Global Reach - Circulation

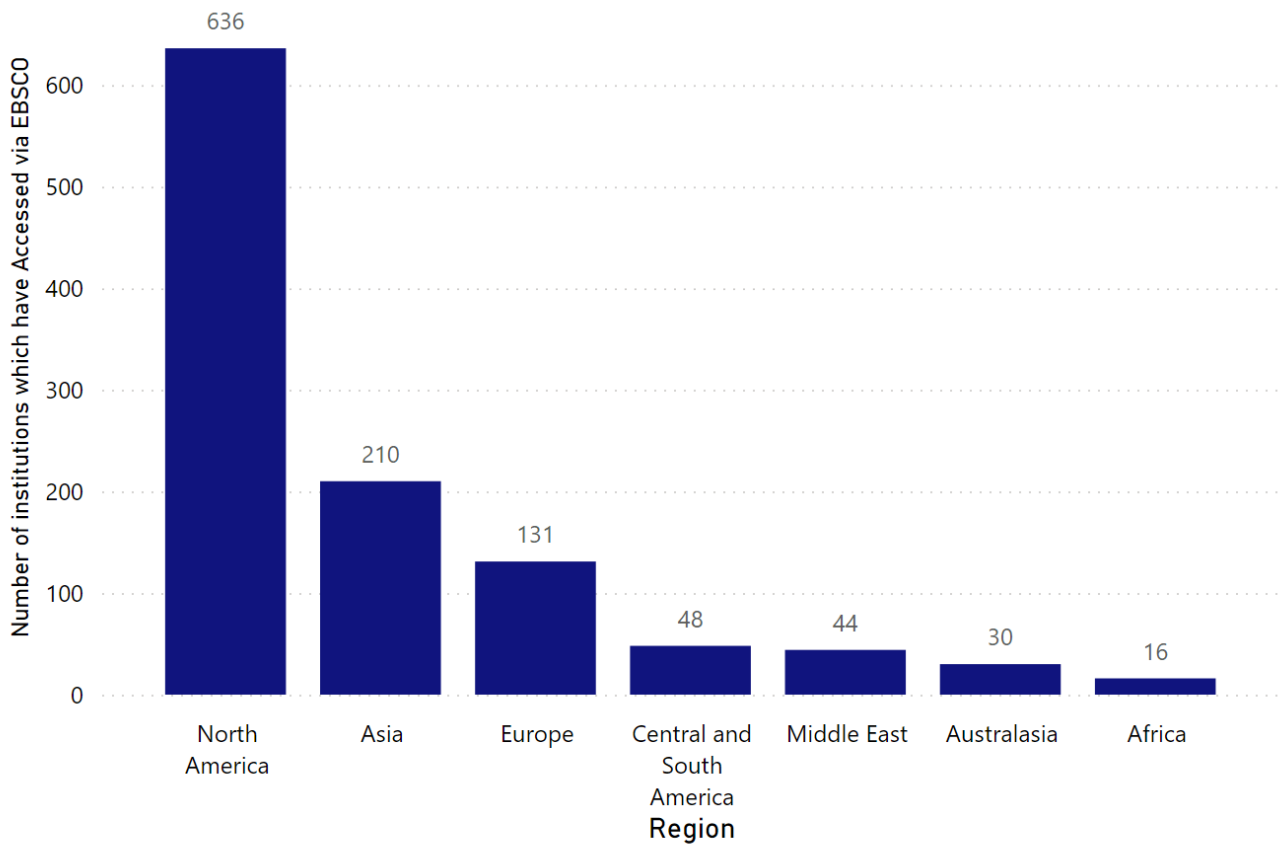
Collection Year	Subject Collection
2019	Mathematics & Statistics; Engineering, Computing & Technology
2020	Engineering, Computing & Technology
2021	Engineering, Computing & Technology
2022	Engineering, Computing & Technology
2023	Engineering, Computing & Technology

Collection Year	Library Package
2019	ST Library
2020	ST Library
2021	ST Library
2022	ST Library
2023	ST Library

Number of Institutions with access via Sales Deal, Subject and Non-Sales Deal subscriptions



EBSCO Coverage 2023 by Region



Most Downloaded Articles in the Past 12 Months (from Past Three Years)

Latest Update Date

Data is updated monthly and goes up to the end of:

December 2024

Article Title	First Author	Volume and Issue	Open Access?	Number of Downloads
A review of the current status and development of 5GDHC and characterization of a novel shared energ...	Jonas Lindhe	Volume 28 Issue 5	Yes	1,103
Model-based data center cooling controls comparative co-design	Milica Grahovac	2022 Building Performance Analysis Conference and ...	Yes	1,040
Data analysis and interpretable machine learning for HVAC predictive control: A case-study based imp...	Jianqiao Mao	IAQ 2020: Indoor Environmental Quality Performance...	Yes	862
Research on the effect of the refrigerant charge in a variable capacity heat pump	Ignacio Ortega	Volume 30 Issue 6	Yes	816
The borehole thermal energy storage at Emmaboda, Sweden: First distributed temperature measurements	Randi Kalskin Ramstad	Volume 29 Issue 2	Yes	768
Empirical analysis of the prevalence of HVAC faults in commercial buildings	Eliot Crowe	Volume 29 Issue 10	Yes	756
High efficiency 3-D printed microchannel polymer heat exchangers for air conditioning applications	Erfan Rasouli	Volume 28 Issue 3	Yes	736
Multi-scenario Extreme Weather Simulator application to heat waves: Ko'olauloa community resilience ...	Daniel L Villa	2022 Building Performance Analysis Conference and ...	Yes	721
Developing and testing low-cost air cleaners for safer spaces during wildfires	Brett Stinson	Volume 30 Issue 9	Yes	554
Quantifying leaks from Schrader valves in air conditioning systems	Theresa Pistochini	Volume 30 Issue 9	Yes	553

Additional timeframes available on: PR Dashboard (atypon.com)

Top Institutions by Downloads (Past 12 Months)

Latest Update Date

Data is updated monthly and goes up to the end of:

December 2024

Institution Name	Total No of Downloads
Zhejiang University	1,701
Xian Jiaotong University	1,440
Hong Kong Polytechnic University	1,287
Texas A & M University System	1,104
Machine Science Info Institute	1,062
Tsinghua University	1,056
Seoul National University	982
Carleton University	837
Purdue University	799
Shanghai Jiaotong University	794

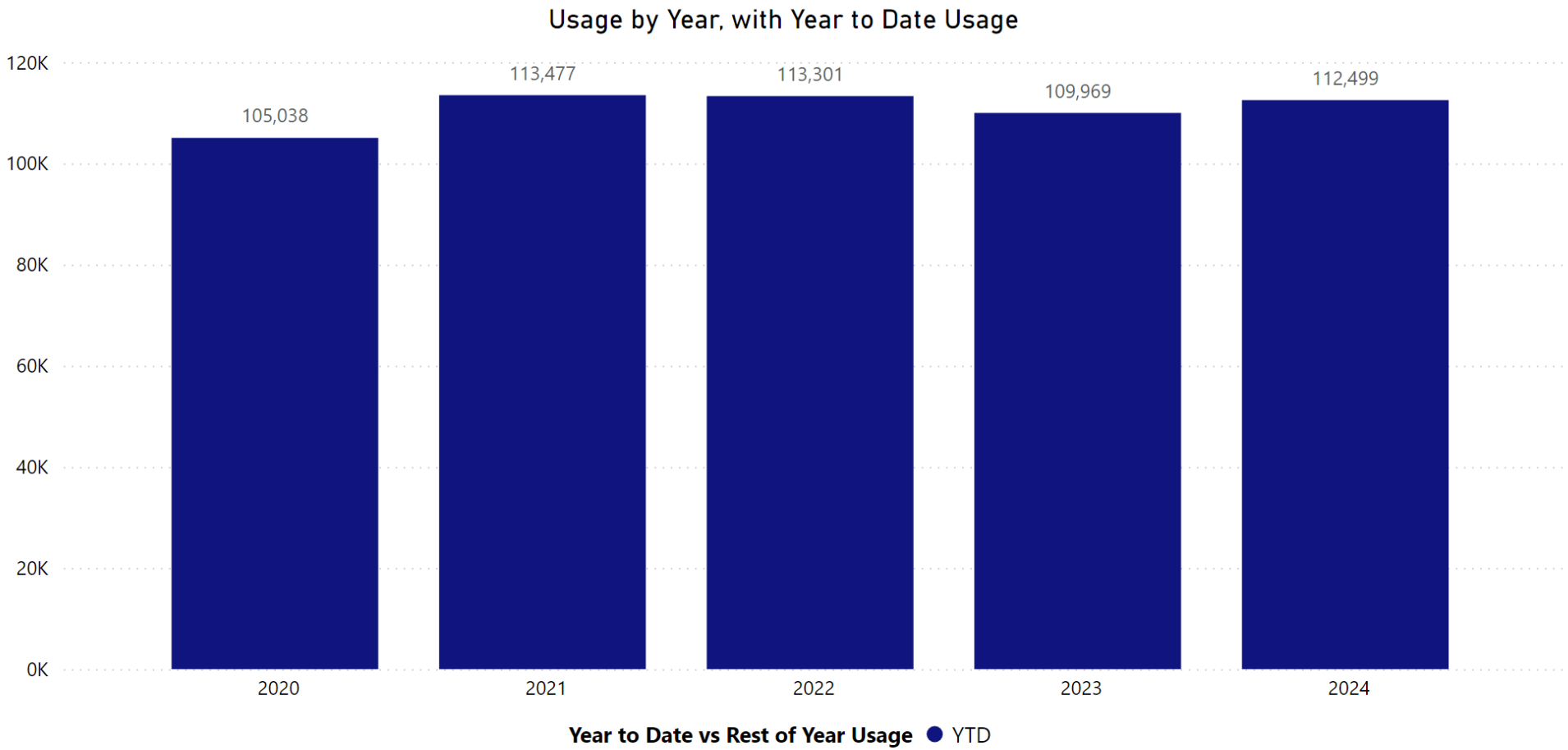
Note: Consortia have been removed from this table.

Article Downloads - Taylor & Francis Online (TFO) Usage

Latest Update Date

Data is updated monthly and goes up to the end of:

December 2024



2%

% Change Usage TY v LY

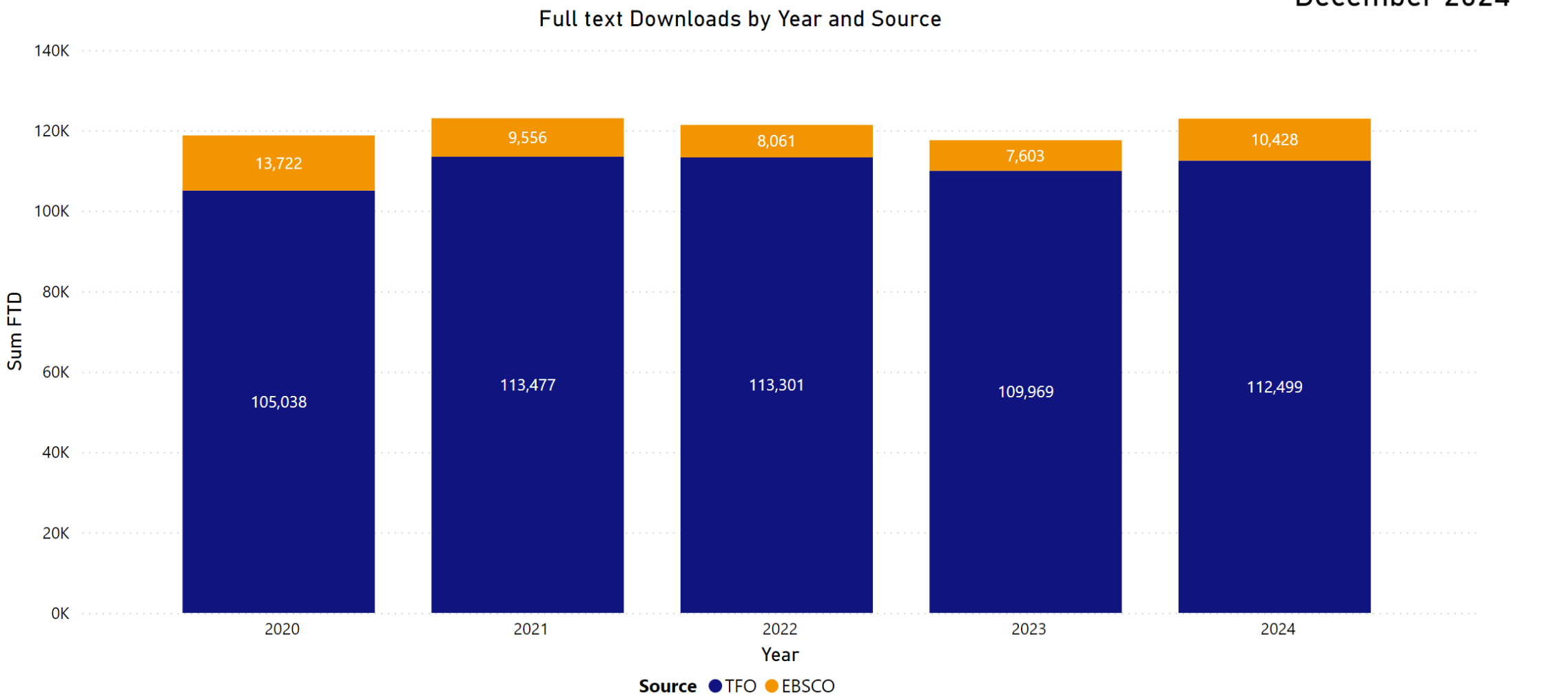
Article Downloads - Usage by Source

Please note that PMC and EBSCO usage data may not be updated until mid-month.

Latest Update Date

Data is updated monthly and goes up to the end of:

December 2024



Article Downloads - Usage by Country & Region

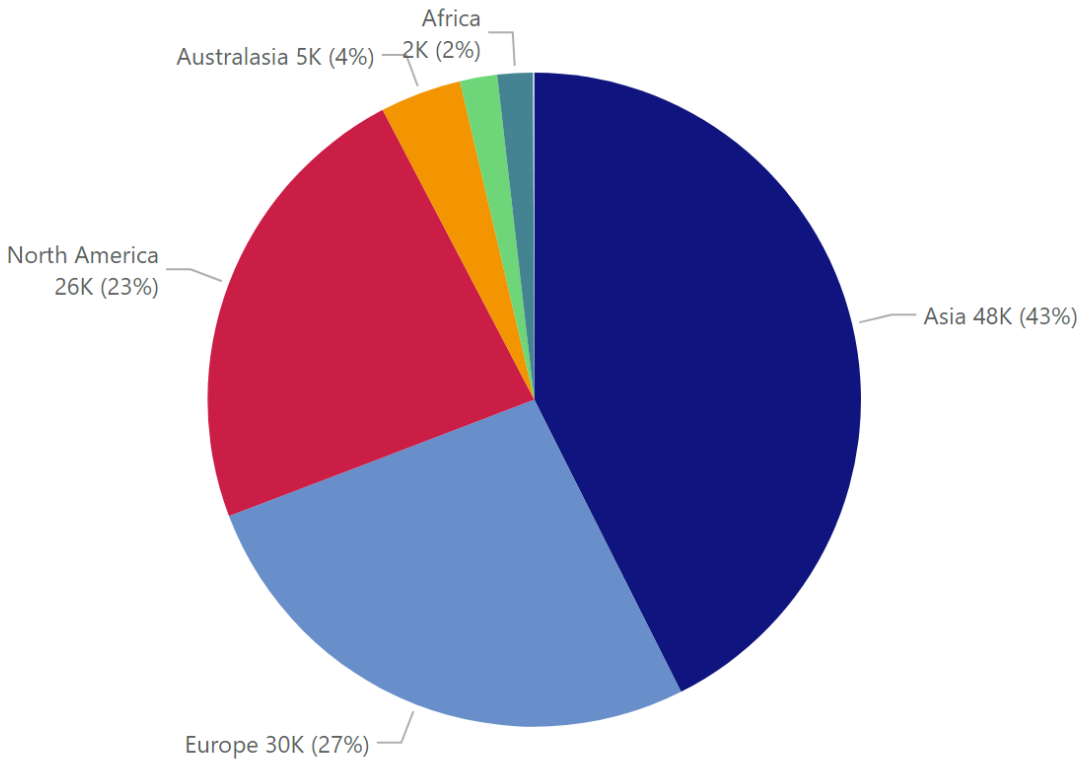
Latest Update Date

Data is updated monthly and goes up to the end of:

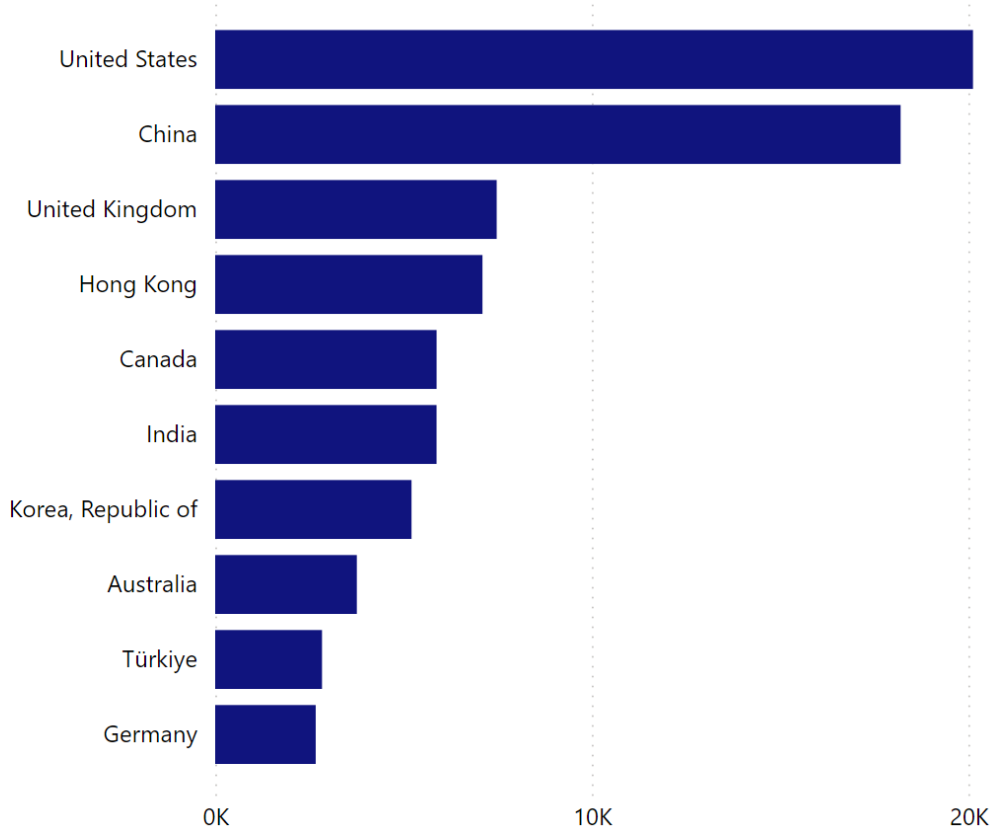
December 2024

Usage shown is for the last full year, plus the current year.

Full Text Downloads by Region



Full Text Downloads by Country

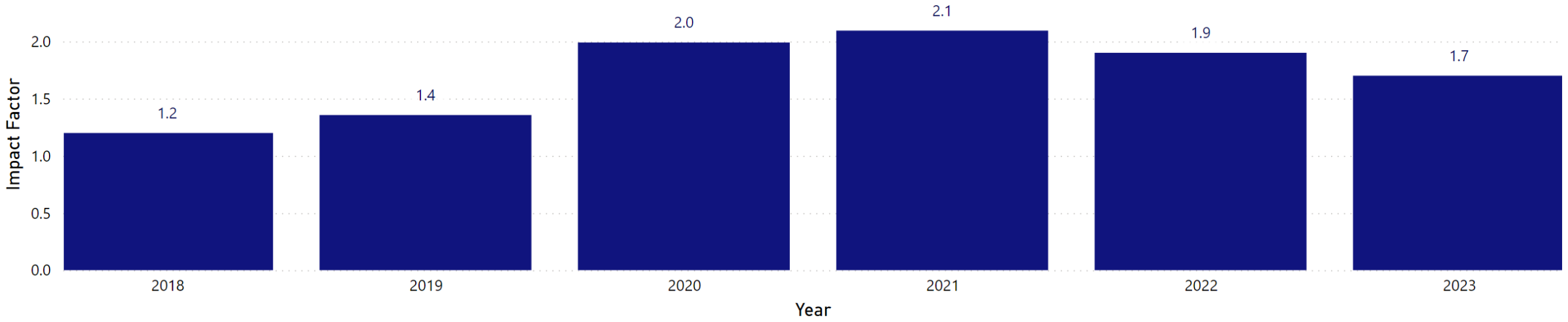


Citation Analysis

Citation Metrics (Impact Factor)

Year	Impact Factor	Impact Factor Rank	5 Year IF	Article Influence	Eigenfactor
2018	1.2	(42/63 CONSTRUCTION & BUILDING TECHNOLOGY - SCIE, 43/60 THERMODYNAMICS - SCIE, 90/129 ENGINEERING, MECHANICAL - SCIE)	1.3	0.324	0.00134
2019	1.4	42 / 63 CONSTRUCTION & BUILDING TECHNOLOGY - SCIE, 47 / 61 THERMODYNAMICS - SCIE, 96 / 130 ENGINEERING, MECHANICAL - SCIE	1.5	0.354	0.00183
2020	2.0	39 / 62 THERMODYNAMICS - SCIE, 41 / 66 CONSTRUCTION & BUILDING TECHNOLOGY - SCIE, 78 / 135 ENGINEERING, MECHANICAL - SCIE	1.8	0.418	0.00218
2021	2.1	39 / 63 THERMODYNAMICS - SCIE, 47 / 68 CONSTRUCTION & BUILDING TECHNOLOGY - SCIE, 78 / 137 ENGINEERING, MECHANICAL - SCIE	2.1	0.416	0.00215
2022	1.9	45 / 68 CONSTRUCTION & BUILDING TECHNOLOGY - SCIE, 46 / 63 THERMODYNAMICS - SCIE, 92 / 136 ENGINEERING, MECHANICAL - SCIE	1.9	0.360	0.00200
2023	1.7	45/78 THERMODYNAMICS, 51/92 CONSTRUCTION & BUILDING TECHNOLOGY, 107/183 ENGINEERING, MECHANICAL	1.9	0.341	0.00100

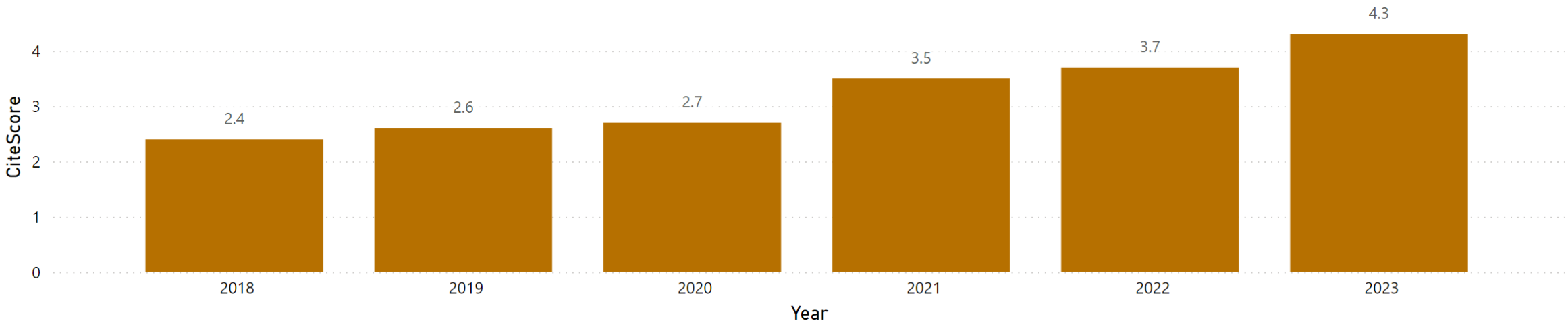
Impact Factor by Year



Citation Metrics (Scopus)

Year	CiteScore	CiteScore Rank	SNIP	SJR
2018	2.4	27 / 83 Fluid Flow and Transfer Processes, 56 / 124 Environmental Engineering, 63 / 176 Building and Construction	0.77	0.597
2019	2.6	32 / 83 Fluid Flow and Transfer Processes, 61 / 132 Environmental Engineering, 62 / 174 Building and Construction	0.83	0.594
2020	2.7	39 / 83 Fluid Flow and Transfer Processes, 70 / 185 Building and Construction, 70 / 146 Environmental Engineering	0.92	0.510
2021	3.5	38 / 87 Fluid Flow and Transfer Processes, 73 / 173 Environmental Engineering, 79 / 211 Building and Construction	0.81	0.493
2022	3.7	40 / 92 Fluid Flow and Transfer Processes, 72 / 200 Building and Construction, 85 / 184 Environmental Engineering	0.71	0.471
2023	4.3	37 / 96 Fluid Flow and Transfer Processes, 74 / 223 Building and Construction, 89 / 197 Environmental Engineering	0.70	0.461

CiteScore by Year



Top Cited Articles (Published Online in the Past 2 Years + YTD)

4.7%

% Self-Citations

Article Title	Author Name	Published Online Year	Number of Citations	Altmetric Score
Comparative analysis of the static and dynamic dehumidification performance of metal-organic framewo...	Win-Jet Luo	2023	11	
Experimental comparison of R290 and R600a and prediction of performance with machine learning algori...	Oguzhan Pektezel	2023	7	
A simulation-based approach for evaluating indoor environmental quality at the early design stage	Arefeh Sadat Fathi	2023	6	
Development of a crankshaft driven single long NiTi tube compressive elastocaloric cooler	Siyuan Cheng	2023	6	
How to ensure occupant comfort and satisfaction through deep building retrofit? Lessons from a Danis...	Lucile Sarran	2023	6	
Within- and cross-domain effects of environmental factors on students' perception in educational bui...	Francesca Cappelletti	2023	6	
All-air vs. radiant cooling systems: Analysis of design and operation factors that impact building c...	Atila Novoselac	2023	5	
Multi-objective optimization design of energy efficiency for office building window systems based on...	Qiao Ning	2023	5	
Relating air quality and other factors to comfort and health related symptoms reported by passengers...	Robert A. Lordo	2023	5	
Origins of whole-building energy simulations for high-performance commercial buildings: Contribution...	Jounghwan Ahn	2023	3	
Origins of whole-building energy simulations for high-performance commercial buildings: Contribution...	Jounghwan Ahn	2025	2	

Data is collected from Dimensions

Citing Sources & Regions

Published online in the past 2 years + YTD data, citations from any time

Citing Journal	Citing Articles - Sources
Science and Technology for the Built Environment	19
Energy and Buildings	16
Building and Environment	14
Journal of Building Engineering	9
Applied Thermal Engineering	5
Energy	5
Sustainability	5
Energies	4
Buildings	3
International Journal of Refrigeration	3
Applied Energy	2
Journal of Building Physics	2
Journal of Educational Technology and Learning Creativity	2
SSRN Electronic Journal	2

Country name	Citing Articles - Countries
China	50
United States	44
Canada	24
Italy	13
India	12
Türkiye	10
France	6
United Kingdom	6
Malaysia	5
Netherlands	5
Singapore	5
Hungary	4
Saudi Arabia	4
Spain	4

Data is collected from Dimensions

Altmetric Analysis

Altmetric Analysis – Top Altmetric Scores (Past Year)

Badge	Altmetric Attention Score	Article Title	Publication Date
	382	Strategies to minimize SARS-CoV-2 transmission in classroom settings: combined impacts of ventilation and mask effective filtration efficiency	July 2021
	195	Associations of bedroom temperature and ventilation with sleep quality	May 2020
	129	IAQ and energy implications of high efficiency filters in residential buildings: A review (RP-1649)	January 2019
	111	Airborne transmission of SARS-CoV-2 in indoor environments: A comprehensive review	September 2021
	83	Energy and ventilation performance analysis for CO2-based demand-controlled ventilation in multiple-zone VAV systems with fan-powered terminal units (ASHRAE RP-1819)	October 2020
	19	The Effects of Outdoor Air Supply Rate and Supply Air Filter Condition in Classrooms on the Performance of Schoolwork by Children (RP-1257)	February 2011
	8	Experimental and numerical study on the thermal plumes of a standing and lying human in an operating room	August 2021
	6	Review of Liquid Desiccant Technology for HVAC Applications	February 2011
	6	Optimization of HVAC Control System Strategy Using Two-Objective Genetic Algorithm	February 2011
	6	Agglomeration Control of Ice Particles in Ice-Water Slurry System Using Surfactant Additives	February 2011

Overview and Source Breakdown of Altmetric Attention (Past Year)

Total Mentions	Outputs with Mentions	Research Outputs
1210	32	32
Total mentions for research outputs in this report.	Total number of research outputs in this report that have Altmetric mentions	Total number of research outputs in this report, including those without mentions

ATTENTION SOURCE BREAKDOWN

The number of mentions from each source that Altmetric has tracked for the research output in this report

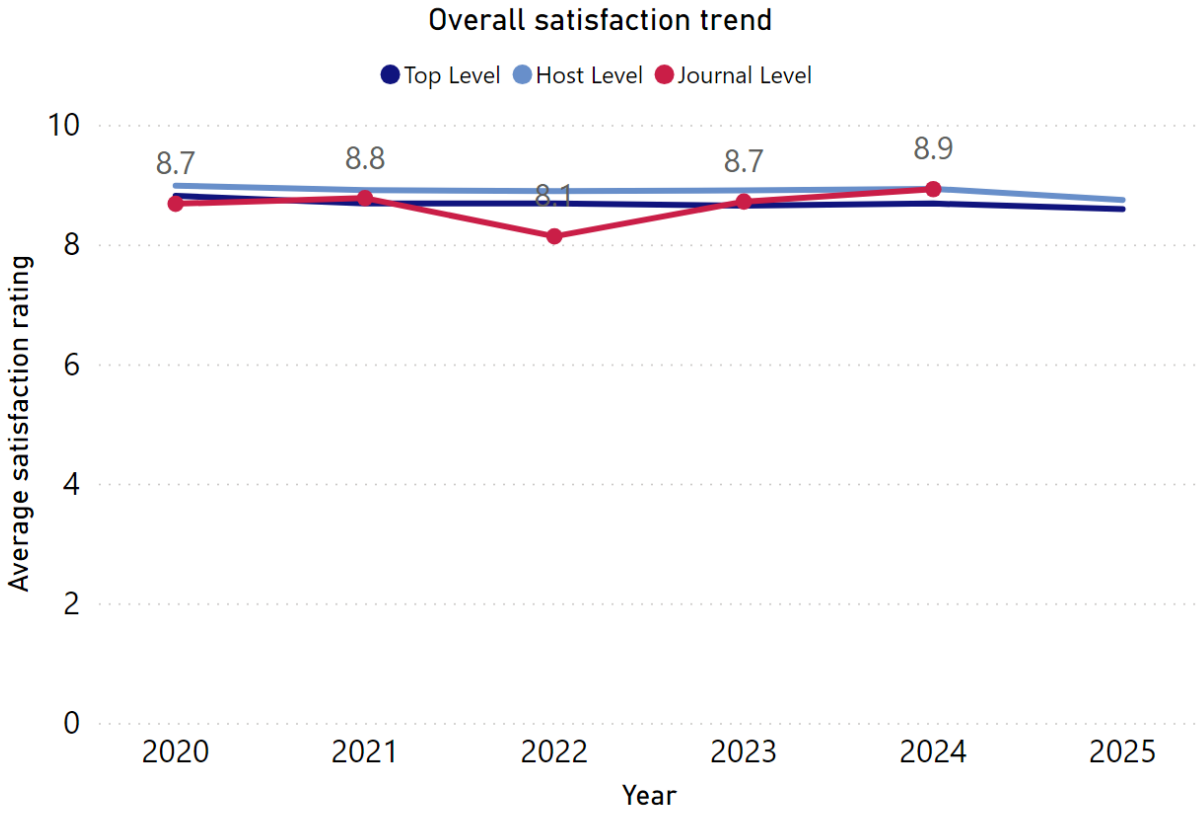
53	3	1021	0
News mentions	Blog mentions	X mentions	Facebook mentions

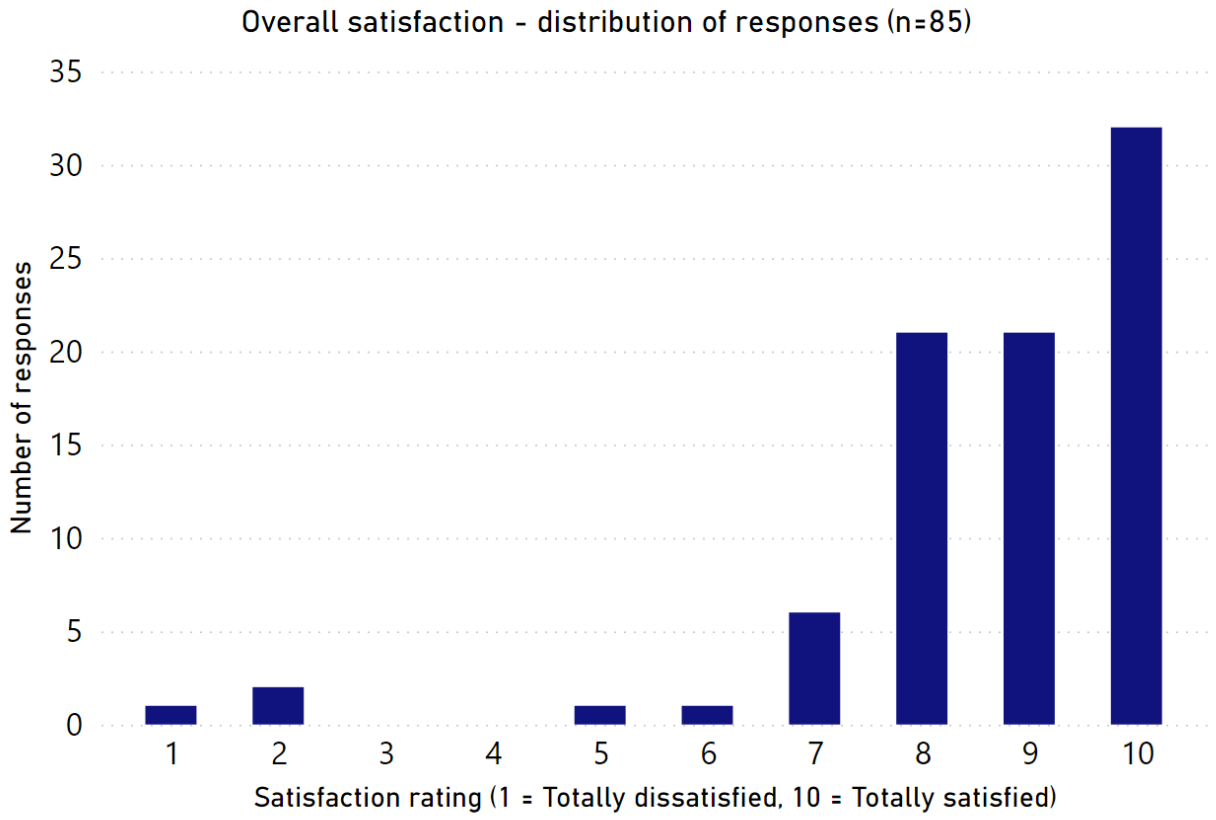
First Altmetric Shareable Link

https://www.altmetric.com/explorer/report/269fecca-3cf3-409d-956b-56161e477766

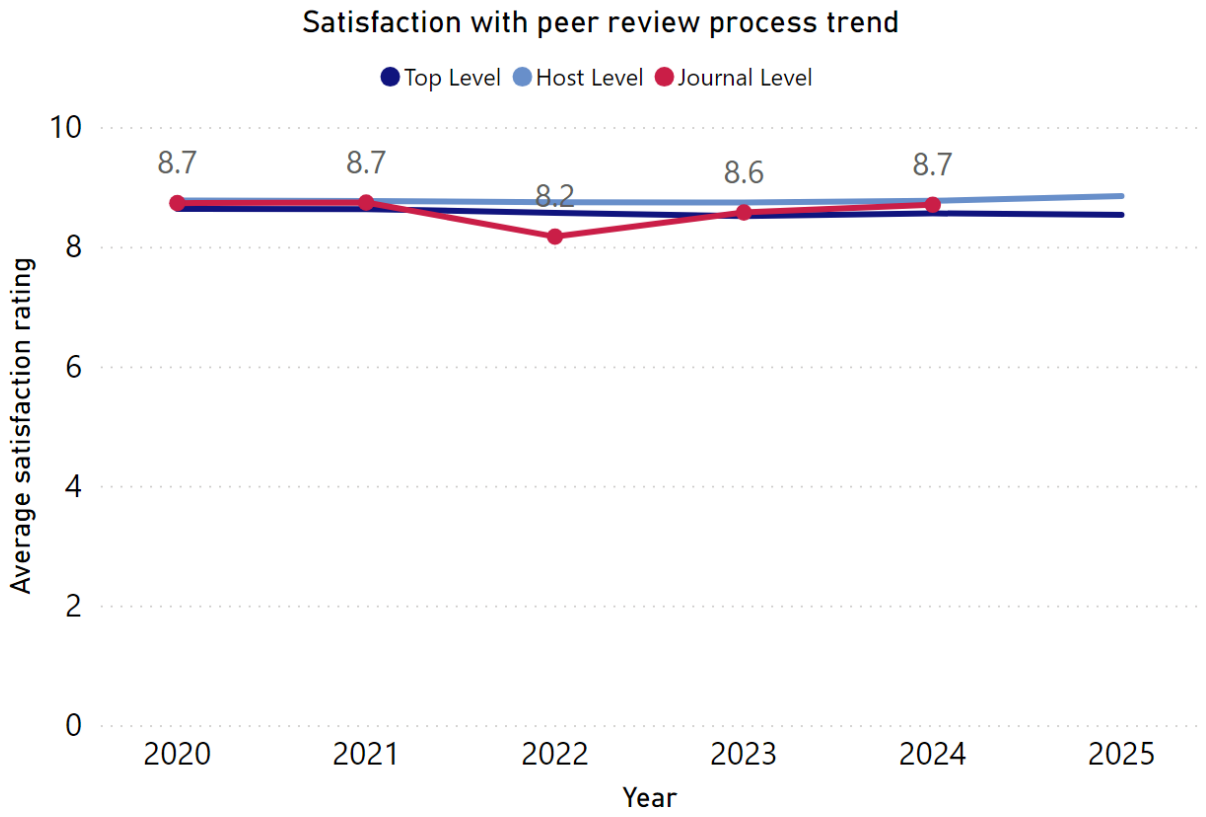
Author Survey

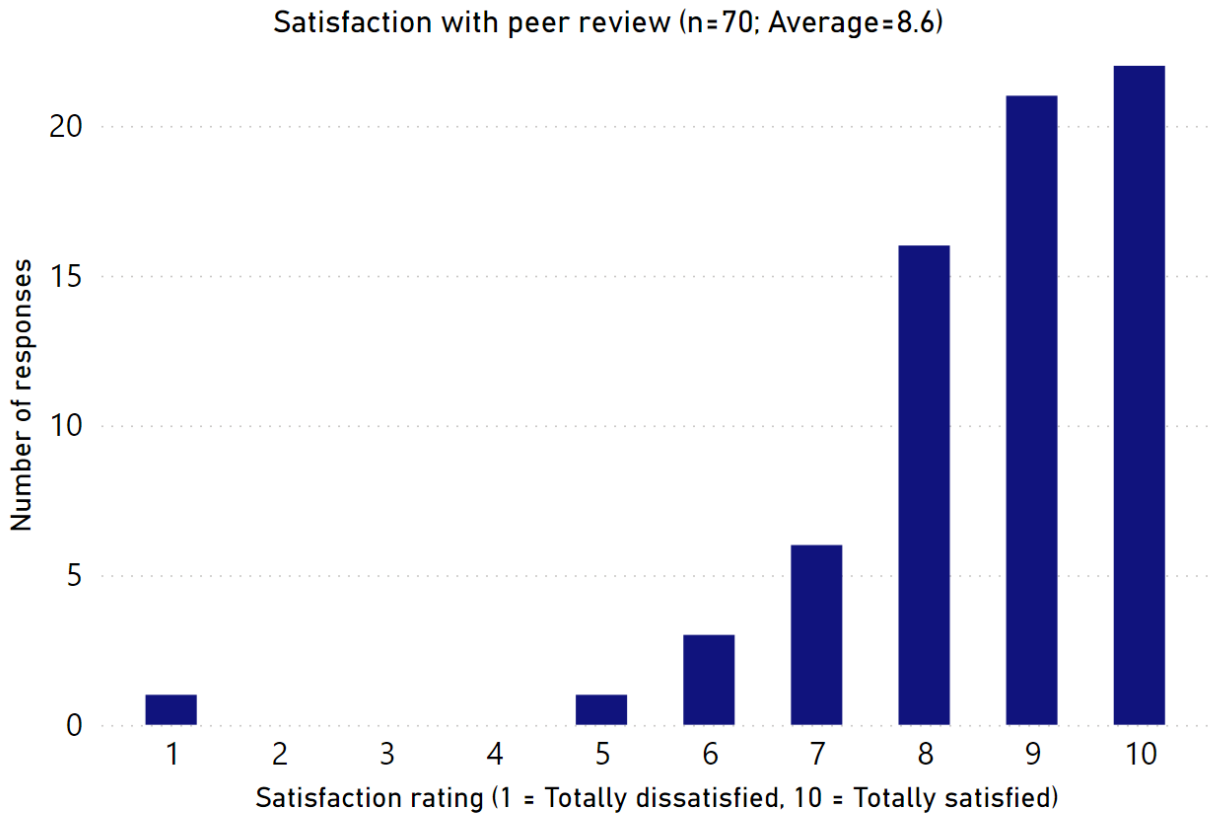
Author Survey - Overall Satisfaction





Author Survey - Satisfaction with Refereeing Process





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AUTHOR SERVICES
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Sign up for updates, tips and talking points from **Author Services**, **Editor Resources** and Librarian Resources websites straight to your inbox:

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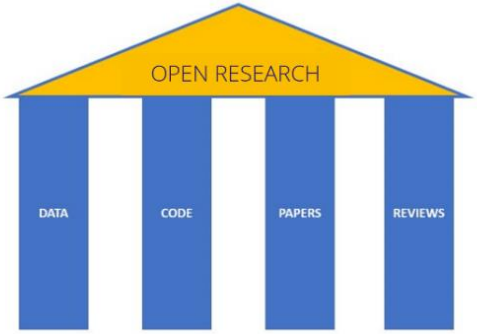
Open Research at Taylor & Francis

• **Open Research** (sometimes called 'open scholarship' or 'open science') is an umbrella term focusing on making research **transparent** and **reproducible**. It describes the movement to make all the outputs of scholarly activity available for others to read and build upon, improving trust in research. In addition to Gold Open Access licensing options and sharing of early versions (preprints), open research provides routes for researchers to make all outputs of research open and accessible, from the peer review comments to the data and code.



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- Open Science Badges
- Registered Reports
- Methods
- Data Notes
- Preprints

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Your Editorial contact is your main point of contact for general journal or editorial queries, support and requests.

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Attachment B
PEC Research Journal Subcommittee
Report to PEC Products Subcommittee
Meeting of February 3, 2025
Orlando Winter Conference 2025

Science and Technology for the Built Environment

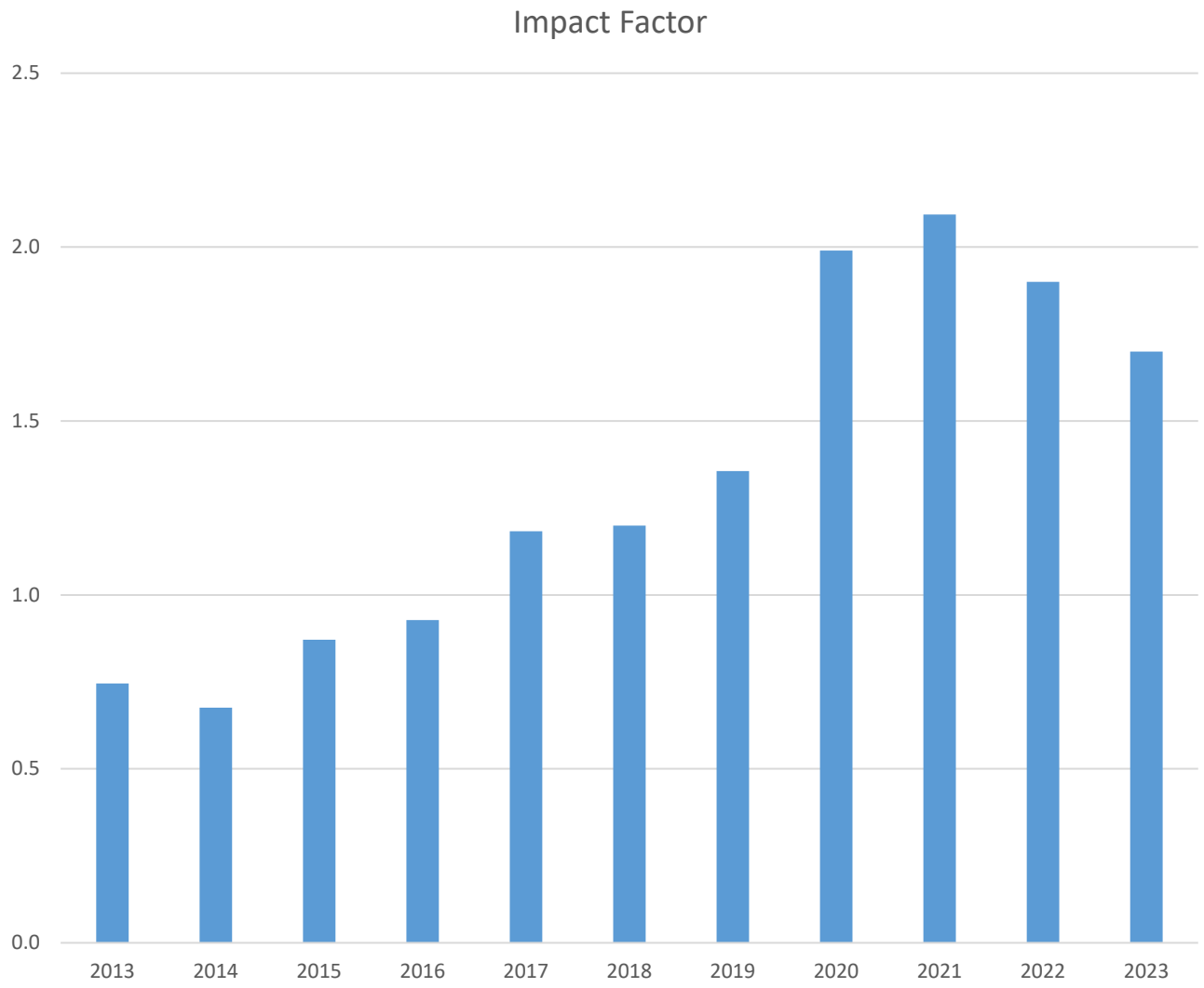
Jeffrey D. Spitler

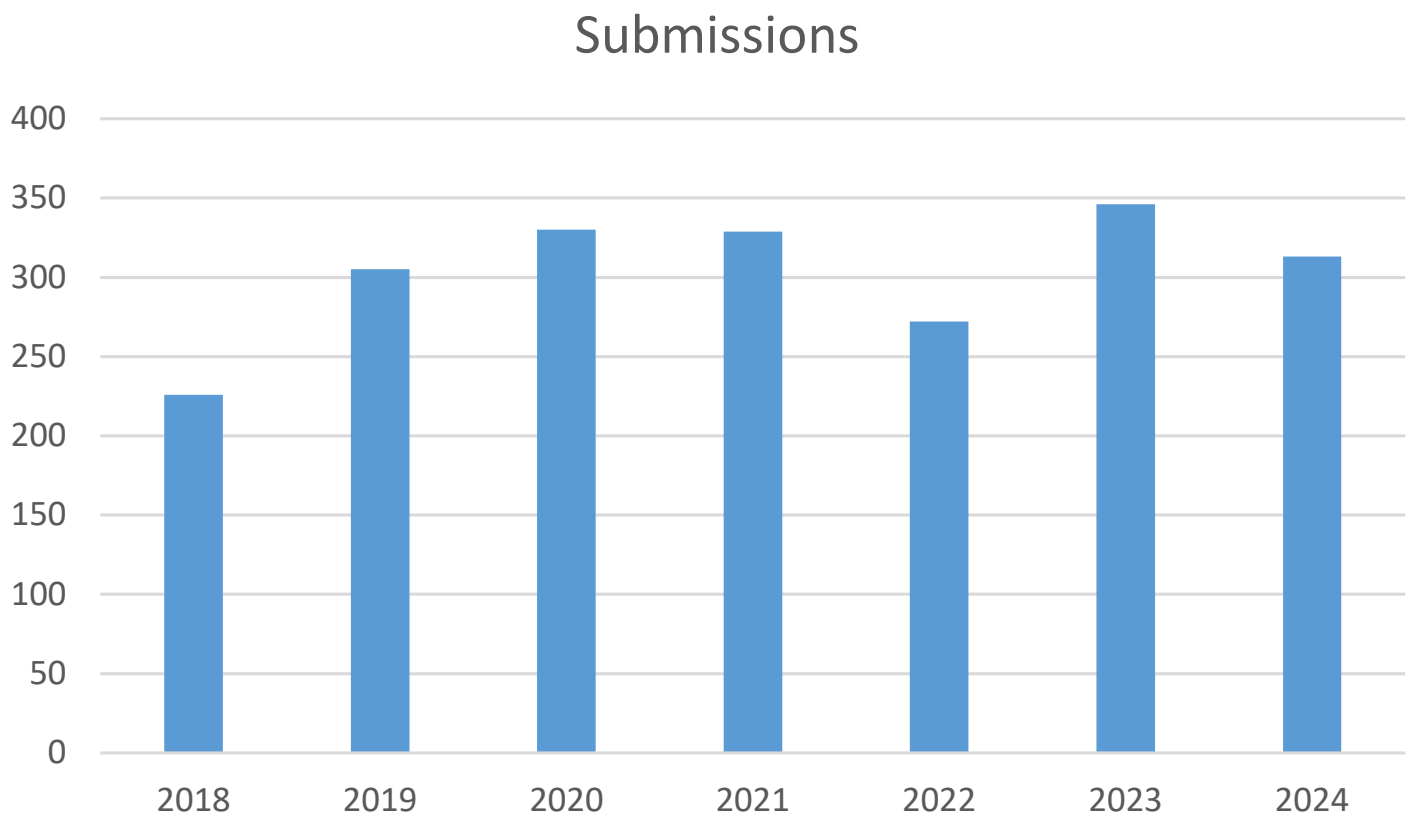
February 3, 2025

Numbers in red from January 2024

Journal metrics

	Usage		Citation metrics	Speed/acceptance
113K	• **110K** annual downloads/views	1.9	• **1.7 (2023)** Impact Factor	• **34** days avg. from acceptance to online publication
		1.9	• **1.9 (2023)** 5 year IF	*29 days*
		3.7	• **4.3 (2023)** CiteScore (Scopus)	
		Q2	• **Q2** CiteScore Best Quartile	
		0.706	• **0.702 (2023)** SNIP	
		0.471	• **0.461 (2023)** SJR	


Impact Factor
2.5
2.0
1.5
1.0
0.5
0.0
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023


Submissions
400
350
300
250
200
150
100
50
0
2018
2019
2020
2021
2022
2023
2024

2024 (as of January 29, 2025)

- 320 submissions started
- 313 submitted
- 287 completed checklist
- 257 have first decision (30 submitted towards the end of the year still in review)
- 152 desk rejections by JDS
  - Common reasons: out of scope, case studies, poor English, lack of technical rigor.
- 54 rejections on recommendation of AE, before or after reviews
- 52 papers still in review
- 29 accepted
- Accepted: 10%; Rejected 72%; Still in review, 18%

Special Issues & Topical Sections

- 2024 Special Issues and Topical Sections
  - Ground-source Heat Pump Systems (5 papers, Issue 3)
  - BPAC/Simbuild 2022 (7 papers, Issue 4)
  - Buildings XV Conference(10 papers, Issue 7)
  - Combined:
    - ASHRAE Conf. Research Papers - 2023 (7 submissions, 3 rejected)
    - Decarbonization conference in Athens (3 submissions, 2 rejected)
- Future Special Issues and Topical Sections
  - ASHRAE Conference Research Papers from 2024
  - Buildings XVI Conference
  - Clima 2025
  - Ground-source Heat Pump Systems

Misconduct allegations

- No formal complaints.
- Two informal complaints that reviews appear to have been AI-generated.
- One incident of user-suggested ill-qualified reviewers.

Associate Editors

- 4 Associate Editors have terms expiring (highlighted)
- Still have one slot for the right candidate.
- Current roster:

Name	Department	Institution	Country	Term expires
Jie Cai	School of Aerospace and Mechanical Engineering	University of Oklahoma	USA	6/30/2026
Kristen Cetin	Department of Civil and Environmental Engineering	Michigan State University	USA	6/30/2026
Richard De Dear	Faculty of Architecture	The University of Sydney	Australia	6/30/2027
Brian Fronk	Department of Mechanical Engineering	Pennsylvania State University	USA	6/30/2026
Saqib Javed	Building Services Division	Lund University	Sweden	6/30/2026
Yong Chan Kim	Department of Mechanical Engineering	Korea University	South Korea	6/30/2025
Clayton Miller	Department of the Built Environment	National University of Singapore	Singapore	6/30/2026
Liam O'Brien	Department of Civil and Environmental Engineering	Carleton University	Canada	6/30/2026
Zheng O'Neill	Mike Walker '66 Department of Mechanical Eng.	Texas A&M University	USA	6/30/2025
Rajan Rawal	Faculty of Technology	CEPT University	India	6/30/2026
Jørn Toftum	Department of Civil Engineering	Technical University of Denmark	Denmark	6/30/2025
Shengwei Wang	Department of Building Services Engineering	The Hong Kong Polytechnic University	Hong Kong	6/30/2026
Bin Yang	School of Energy and Safety Engineering	Tianjin Chengjian University	China	6/30/2026
John Zhai	Dept. of Civil, Environmental, and Architectural Eng.	University of Colorado-Boulder	USA	6/30/2026
Jianshun "Jensen"	Department of Civil and Environmental Engineering	Syracuse University	USA	6/30/2025
Claudio Zilio	Department of Management and Engineering	University of Padova	Italy	6/30/2026

Reviewer Board

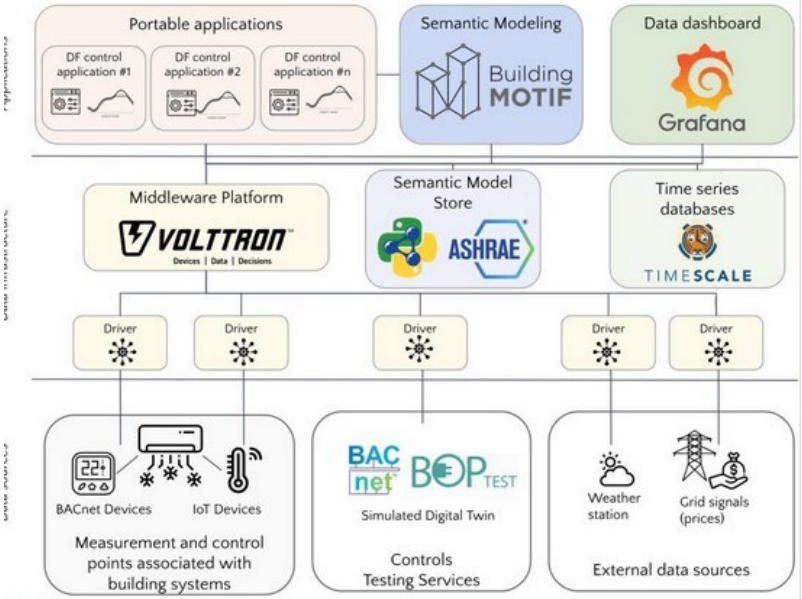
- Concept:
  - Recruit members from junior and mid-level faculty, recent PhD graduates.
  - Commitment to review ~4 papers per year in a timely fashion (2 weeks or less).
- Status (June 2024):
  - 45 members; 3 nominated for Associate Editor
  - Since Jan. 2022, on average:
    - 4.5 invitations
    - 3.4 acceptances

Social Media

- Added Social Media Editor
  Zhihong Pang of Louisiana State U.

Science and Technology for the Built Environment ✓ Following
420 followers
1w •

New research published in Science and Technology for the Built Environment (#STBE) introduces a groundbreaking open-source platform for grid-interactive efficient buildings (#GEBs). ...more

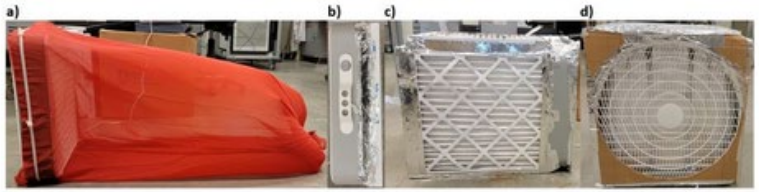


You and 65 others 3 comments · 5 reposts

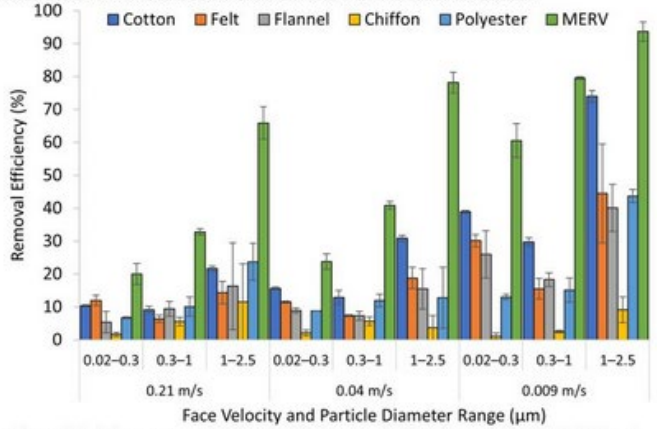
Like Comment Repost Send

Science and Technology for the Built Environment
421 followers
4d • Edited •

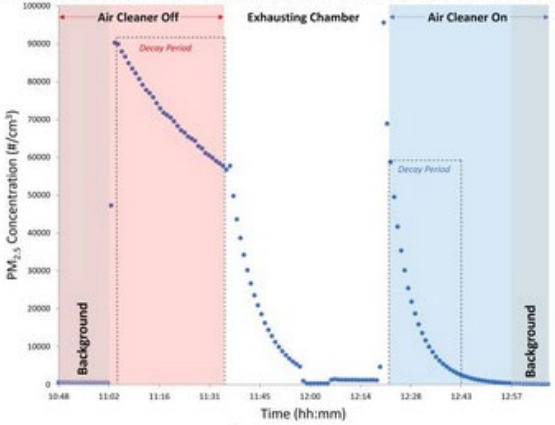
New research published in Science and Technology for the Built Environment (#STBE) presents a timely solution for #AffordableAirCleaning during #wildfire event: ...more



Images of the low-cost air cleaner with a (a) chiffon fabric filter, (b) single MERV 13 filter, (c) cube of MERV 13 filters (modified Corsi-Rosenthal box), and (d) cardboard shroud affixed to the box fan's outlet side.



Average (± range/2) single-pass removal efficiencies (%) determined at three face velocities (0.21, 0.04, and 0.009 m/s) for each of the five fabrics and MERV 13 filter in 0.02–0.3, 0.3–1, and 1–2.5 µm diameter particle size bins.



$PM_{2.5}$ concentration (#/cm³) vs. time for trial 2 of the double fabric chamber experiment.

William Bahnfleth and 51 others 3 comments · 4 reposts

Logistical Problems (LaTeX)

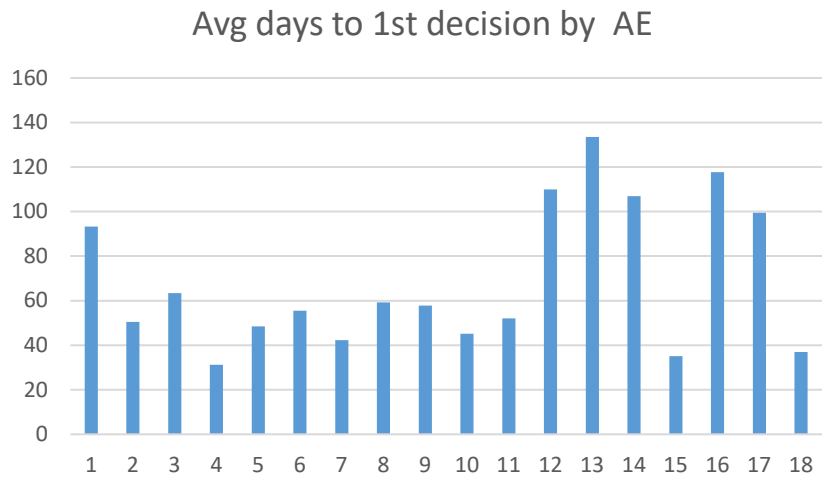
- LaTeX submissions remain problematic.
- Mark Owen sent Stephanie agreement on Feb. 1, 2024 – Stephanie may have a date today.
- We have a partial work-around for LaTeX submissions.

Logistical problems (low backlog)

- Backlog is improved, but still low:
- January 2023: 5 papers in backlog.
- June 2023: 6 papers in backlog.
- December 2023, after filling 2024.01 lineup:
  - 20 papers total.
- August 2024, after allocating 20 papers to 2024.06 and 2024.07:
  - 12 papers total.
- January 2024, after allocating 15 papers to 2025.01, 02:
  - 18 papers

Logistical problems (general)

- Several AEs were slow for different reasons.
  - Average days to 1st decision: 31
  - Excluding desk rejections: 63
- Obtaining timely, high-quality reviews remains challenging. (Even with the reviewer board!)
- AI…?



General Plans

- Reinhard Radermacher obituary-editorial.
- Continue with moving towards format-free submission.
- Continue to recruit special issues based on conferences.
- Will ask the Editorial Board to help identify non-conference-based topical issues.

Attachment G

ASHRAE Roundtables Review and Findings

January 2025

Notes have been collected for some 12 roundtable discussions held between January and October 2024. The roundtable reports are available on the BOD Basecamp here. Appendix A provides a simple executive summary of each roundtable. (Note: Other roundtable discussions may have occurred, but notes were not available.)

Fully 4 of the 12 roundtable discussions (33%) were held outside of the U.S. The locations are listed below in the order in which they were held.

1. Central Florida Chapter (Region XII), Orlando, FL, January 2024
2. Region VIII CRC Dallas, TX, April 2024
3. Region XI CRC Spokane, WA, May 2024
4. Region V CRC Cincinnati, OH, July 2024
5. Region IX CRC Boise, ID, August 2024
6. Region III CRC Bethlehem, PA, August 2024
7. Region I CRC Albany, NY, August 2024
8. Region X CRC Phoenix, AZ, August 2024
9. Region II CRC Toronto, ON, Canada, August 2024
10. Region XIV CRC London, UK, September 2024
11. Region XV CRC Udaipur, India, September 2024
12. Region-at-Large CRC Karachi, Pakistan, October 2024

Executive Summary

The notes from the 2024 Industry Roundtables all reflect an important need for better education, training and industry collaboration to address both short-term and long-term challenges in the HVACR industry. Most roundtables discussed focusing on preparing the next generation to meet the demands of a rapidly changing industry. A stronger connection between industry and academia is needed.

It is worth noting that the three earlier roundtables were conducted during President Scoggin's term in which the Society Theme was "Challenge Accepted: Tackling the Climate Crisis." The ten later roundtables were conducted during President Knight's term in which the Society Theme is "Empowering Our Workforce: Building a Sustainable Future." Topics covered in roundtables may have been dependent on the participants and the current Society theme.

Six common themes emerged from the feedback received during the Roundtables, providing opportunities for each of the councils to explore to better serve the needs of our members.

- **Publishing and Education Council** – Training and education, particularly for young professionals entering the industry is critically needed. Publishing and Education Council may consider:

    - Leveraging emerging technologies and alternative formats to create training materials that may be more accessible for young professionals
    - Developing additional training programs focused on HVAC fundamentals
    - Adapting ALI courses to be region/country specific
    - Developing resources to better educate the general public

- **Members Council** - Acknowledging President Knight's theme of workforce development, many of the discussions centered around the need to engage with students and young professionals, supporting and encouraging them in their career journey in the built environment. Members Council may consider:
    - Developing programs that focus on showing students (K-12, post-High including trade/technical schools) the impact they can have by choosing careers in the built environment
    - Encouraging chapters to include technical training on HVAC fundamentals
    - Encouraging collaboration with other industry organizations
    - Exploring alternative training options, such as podcasts, videos, hands-on technical tours
    - Developing a program to help facilitate internships for engineering students

- **Technology Council** – Decarbonization, IEQ and refrigerant regulations are issues that members at all levels need guidance on. Technology Council may consider:
    - Continuing to develop resources and practical guides on decarbonization, IEQ and refrigerants for manufacturers, design professionals, contractors, building owners/facility managers and building scientists
    - Providing guidance on how emerging technologies like AI can be used to improve productivity and optimize system performance
    - Providing more opportunities for technicians/operators to get involved in ASHRAE

These are just a few recommendations gleaned from the feedback received during the Roundtables. A summary of each of the discussions can be found below. We invite all councils, along with Planning Committee, PEAC and TRAC to review these notes to see what other opportunities there may be to better serve our members as MBOs are developed moving forward.

Critical Issues in the Industry

The 2024 roundtables highlighted several critical issues within the HVACR industry:

- The role that the industry is taking on reducing carbon emissions and adopting sustainable practices, through decarbonization and electrification
- Refrigerant regulations
- The growing generational gap in the workforce
- The lack of HVAC education presence in undergraduate curriculum
- The need for more collaboration between technicians, building owners, engineers, and architects on projects
- New, more interactive and engaging tools to train and educate new and young professionals

Some of the critical issues addressed at roundtables in 2024 were also addressed in roundtables in previous years. See Appendix B for the 2022-2023 roundtables summary with updates/additions from 2024 roundtables highlighted.

Decarbonization, Sustainability and Resiliency

ASHRAE can empower organizations, students, individuals and the general public to make carbon emission reduction goals. Educating all stakeholders (design engineers, architects, commissioners, technicians, building owners/operators, facility managers, etc.) on the importance of their work and the role it plays in reducing carbon is critical. The work the team does together makes a difference on every project.

Some regions in the US and globally are using the term "Resiliency" to encompass decarbonization, IEQ and sustainability practices. One roundtable suggested incorporating carbon calculations into all ASHRAE standards.

Refrigerant Regulations

The industry faces an overwhelming amount of regulatory information, creating confusion about which guidelines to follow for refrigerant regulations and safety. The challenges of flammable refrigerants, their impact on different sectors, and ongoing phaseouts further add to the complexity.

Education and Training

Several roundtables discussed the lack of specific HVAC training at colleges and universities around the world and the need for dedicated curricula. Workforce development initiatives such as vocational training, internships and professional mentorship programs can help bridge the gap between formal education and real-world skills. One roundtable suggested creating a university course that utilizes hands-on training of the universities HVAC system since all colleges and universities have large HVAC systems located on campus. On-the-job training and real-world experience were expressed as critical in learning this industry and currently there is a lack of this type of education in the HVACR space. On-the-job training also involves relationship skills that are needed for all the roles to work together on a project (i.e. technician/contractor, building owner/operator, facility manager, design engineer and architect). One roundtable suggested developing a "year in the field" approach to teaching engineering students about the practical side of the industry.

Training and education delivery was also discussed at most roundtables. There is consensus on evolving delivery methods to better engage the younger generation such as short YouTube training videos, podcasts, utilizing LinkedIn Learning platforms, interactive training tools such as VR and gamification. One roundtable even suggested creating a buildings/HVAC version or modification to Minecraft to support interest and understanding starting with an even younger audience.

Education and training must also be tailored geographically based on the needs of the audience. For example, Canada Net Zero goals are hard to achieve due to cost and implementation strategies while in the Middle East and Africa, there are challenges on how the HVACR industry is adapting to the rapidly changing climate conditions.

Industry Collaboration

The industry is currently working in silos based on their role and job title. Collaboration is key in moving the industry forward as well as motivating and educating the next generation to choose a profession within the HVACR industry. Industry collaboration with academia is needed to integrate HVAC curriculum and education into MEP programs. Collaboration and better communication between the different roles within the industry (engineers, technicians, building owners, etc.) is critical to understanding new technology and proper design and maintenance of building systems.

ASHRAE Standards are excellent and very valuable but mostly address design issues. Industry collaboration is needed to expand content in ASHRAE Standards to include commissioning and installation direction.

Development of New Tools

ASHRAE has incredible resources such as the ASHRAE Handbook, Standards and Guidelines. Many roundtables indicated that while the more seasoned professionals rely on these tools, the younger generation is looking for more efficient, quicker ways to access information, guidance, and data. One roundtable suggested having the TCs create short videos about their Handbook chapters for quicker content consumption. Another roundtable suggested a small language model AI tool for ASHRAE publications. Creating an ASHRAE Reddit Forum was another idea from a roundtable.

Additionally, there are opportunities to leverage emerging technologies such as AI not only improve access to technical resources, but to improve processes and optimize system performance. ASHRAE can take on a leadership position in how AI can be used in our industry.

Engaging and Retaining the Younger Generations

Several roundtables discussed inspiring the next generation, starting as early as with K-12 students, by messaging the "why" HVACR matters and how it can impact the world. If ASHRAE can message and show the real-world impact of HVAC systems, particularly in terms of sustainability and climate change, more young people will want to explore careers in the HVACR industry. K-12 STEM activities, career fairs, and design competitions were cited as successful outreach programs and events throughout the regions.

Roundtable Process

Market intelligence gained from roundtables is very valuable. Conducting roundtables should be adopted as the best practice for all CRCs. The Roundtable Reports Review Committee (R3C) should provide to the Executive Committee and Planning Committee summaries from roundtables held immediately preceding the Spring and Fall CRCs at the Winter Conference. The Executive Committee will allocate items to the appropriate Councils for consideration. Councils will use the roundtable reports to inform their MBOs and action items. Society Planning Committee will use the roundtable reports to inform Strategic Plans and support development of Council MBOs. Roundtable notes should be archived on the BOD basecamp.

Guidelines for conducting ASHRAE Industry Roundtables were updated in July 2024 and can be found on the BOD basecamp here. The guidelines include an overview, goals, attendance, invitees, coordination and discussion questions. R3C should review and update this guidance and distribute to DRCs and RMCR by the Annual Conference.

Appendix A. Abbreviated Roundtable Highlights

- **Central Florida Chapter (Region XII) Orlando, FL, January 2024**
  - Critical needs impacting our industry include technical and cost illiteracy associated with high performance building construction and renovations and reliability including IEQ.
  - ASHRAE can support the industry by providing resources to better education the public with general education of the importance of reducing carbon emissions and understanding the climate impacts.
  - Empowering organizations and even individuals (starting with students) to make carbon emission reduction goals. This includes educating facility technicians, maintenance personnel and commissioning agents who normally do not connect their work to carbon. Supervisors need to be better educated on that connection.
  - ASHRAE can support workforce development by reaching out to technical schools and supporting technicians to development.
  - Connect the dots to technicians that their work matters in addressing climate change – not just installing and servicing HVAC systems.

- **Region VIII CRC Dallas, TX, April 2024**
  - Critical issues impacting our industry include refrigerant regulations.
  - Another critical issue is there is too much information available without a clear and consistent message on which guidance to follow (i.e. ICC, ASHRAE, state-wide/county-wide minimal energy code, Building Codes, UL, etc).
  - Standards are being written by academics and then "tossed to engineers/operators to implement.
  - Additional education to the younger generation of students and professionals with more direct HVAC education.
  - Suggestions include an undergraduate curriculum on HVAC, Reddit Forum on ASHRAE, More Fundamentals Training resources that could be pushed down to the Chapter and use Chapter Leaders to train.
  - ASHRAE materials are great for the trainer but not for the student/trainee.
  - Chapter leaders could be certified to train chapter members on fundamentals and systems training so that chapter members get industry training baked into their chapter meetings.
  - Interactive pieces of the ASHRAE Handbook are needed.

- **Region XI CRC Spokane, WA, May 2024**
  - Most critical condition in our industry is the lack of well-trained engineers in the 35-45 age range.
  - Inexperienced new hires are the norm.
  - Colleges are more focused on non-building related mechanical engineering.
  - Better candidates are usually people who have experience on job sites (not just a degree).
  - ASHRAE can help by providing background on how codes are developed so that people think more critically when applying standards.
  - Not enough people are trained to service VRF systems therefore people are backing away from these systems.
  - ASHRAE could develop a "year in the field" approach to teaching engineering students about the practical side of their work.
  - It is important for owners and contractors to work together and stay engaged with one

another to support long-term success.
    - A joint ASHRAE/AIA effort to coordinate work between disciplines.
    - ASHRAE should create a standard for the various options/templates for the sequence of operations to support technicians.
    - One idea might be for ASHRAE to create a curriculum for a local ASHRAE member/professional to teach 30-minute sessions in advance of Chapter Meetings. Perhaps utilize TCs that develop applications and fundamentals handbook.
    - A suggestion for ASHRAE to provide educational content in short YouTube- type videos for easy consumption (ASHE does something like this).

- **Region V CRC Cincinnati, OH, July 2024**
    - Focus on decarbonization/resiliency changes how projects are approached.
    - Sustainability practices of the past are now mainstream and part of the project implementation.
    - "Resiliency" is a term that is more used in this region of the country and is also catching on in Asia as well. It encompasses decarbonization, IEQ, and energy sustainability.
    - Building owners are only concerned with budget and meeting minimum code requirements.
    - Incorporate carbon calculations into all ASHRAE standards.
    - AI, machine learning/automation, digital visualization need investment from our industry.
    - Using AI to train new workers faster but also keep "old-school" understanding of plans and projects must be maintained in training.
    - ASHRAE can increase passion in the industry by more K12 STEM activities, show real-life impact, focus on cutting edge technologies and teach kids/youth how to change the world through HVAC.
    - Required HVAC courses in university curriculum is a must. Right now HVAC is just a footnote in Mechanical Engineering classes. There is a disconnect between the need in society versus emphasis in college.
    - Disconnect between design engineers and building owners. What is designed is ignored because the owners can't operate the systems.
    - Messaging should be to younger generations that the industry can help save the world. Buildings have a long-lasting impact due to their long lifetimes.

- **Region IX CRC Boise, ID, August 2024**
    - A critical issue in the industry includes the increasing costs associated with labor and projects which stalls or limits projects.
    - There is a growing gap between industry professionals with 5-20 years of experience that is causing labor shortages which increases project time and expense. A&E firms are beginning to bring in vocational training, even at the high school level, to offset some of the labor shortages.
    - There is a missing opportunity in industry training related to the "why."
    - Too few schools offer HVAC/Buildings specific programs. Most universities only offer one semester of HVAC course work.
    - There needs to be better messaging from ASHRAE on why HVAC is important to the world.
    - Encourage more ASHRAE-specific career fairs at Student Branch schools.
    - ASHRAE Design Challenges have been successful at local colleges/universities to get students engaged in the work of the industry.

- Make more co-op internships available within the industry.
- There isn't enough time to train and mentor younger professionals. There is too much to do and all projects seem to be urgent recently, which doesn't allow time to train.
- More "real world" experience is needed for example, taking students and young professionals into the mechanical room and on job sites.
- More interactive training available (i.e. VR).
- AI needs to be integrated. The Handbook is great, but searching through a 1,000-page handbook for an answer is the research of the past.
- Programs for technical people are needed. ASHRAE scholarships don't allow for support of people in technical schools.
- ASHRAE does networking and mentoring well.
- If people in the industry aren't engineers, they feel like they don't have a place at ASHRAE and therefore don't become members.
- There is a need for more programming for owners and facility managers.

- **Region III CRC Bethlehem, PA, August 2024**
  - Critical issues in the industry include lack of personnel and basic understanding of fundamentals, technology and equipment.
  - Another issue is the building owners awareness of products and applications. Regulations and equipment are changing rapidly which is creating compatibility issues.
  - Idea to create applications that field personnel can use to help make job site decisions.
  - ASHRAE Standards are great, but they only address design issues, more support is needed with commissioning and installation direction.
  - Training is needed for those installing the systems that engineers are designing. There is a big disconnect between the two.
  - Learning materials are changing for the younger generation. They aren't using handbooks and books anymore. They learn in shorter segments with 15 minute videos on specific topics.
  - Ideas include:
    - Subscription based podcasts, YouTube channels of training content
    - Consider providing a free number of PDHs each year to members
    - Get the Lucy books adopted into K-5 curriculum
    - A "Minecraft" game of sorts that's dedicated to buildings and is used as a training tool for the younger generations.
    - TCs provide content for short educational videos to cover Handbook chapters
  - Another issue the industry is facing is flammable refrigerants and how they impact various aspects of the industry.

- **Region I CRC Albany, NY, August 2024**
  - Critical issues in the industry include attracting and retaining new people, electrification and finding new ways to decarbonize while making smart decisions, and trying to get building owners back-to-basics training and IAQ knowledge.
  - Contractors have picked up more design work recently at the expense of design firms.
  - More focus should be on existing buildings to save energy within existing structure.
  - More student knowledge and engagement with ASHRAE. Professors are not pushing ASHRAE so students don't really know what it is or why ASHRAE is important. There are limited HVAC specific college courses available.

- Companies are having to do the bulk of the fundamentals training with employees who are right out of college since college courses don't dive deep enough into HVAC.
- Creating shorter, detailed videos to capture the educational content (not long manuals or handbooks).
- Training needs to showcase how this industry aligns with their ideals of environment and health
- AI tools are needed for ASHRAE members specific to ASHRAE.
- New technology is needed, other than heat pumps, to meet decarbonization goals.
- Hands-on training strategies are also needed.
- LinkedIn learning has proven to be successful in some areas of this region.
- Encourage facility internships at colleges and universities. Every university has a large HVAC system.

- **Region X CRC Phoenix, August 2024**
  - Refrigerant phase outs is the most critical issue.
  - Another issue is electrification and high ambient temperatures.
  - Rely on ASHRAE Fundamentals Training to train employees right out of college who did not get much HVAC/Buildings training with college courses.
  - Lack of college courses available for HVAC at local universities.
  - Education takes a lot of time. Are there ways we can deliver education in different methods for easier consumption?
  - Internships are critical for graduates. How can ASHRAE be involved?

- **Region II CRC Toronto, August 2024**
  - Critical issues are climate change, the many solutions for decarbonization yet issues implementing, and the industry is working in silos.
  - Building owners and operators need more training to understand the impact on building performance related to actions on the equipment. There needs to be more connection between the design engineers and this group.
  - ALI courses and instructors should be tailored to the region/country. Some courses and instructors are very US-based and aren't tailoring presentations to support international audiences.
  - There is a trend of drifting operating performance once consulting firms leave the projects.
  - Universities do not have courses that cover equipment.
  - Need to bridge the gap between building operations and design. How can ASHRAE help building owners plan and educate them about energy efficiency.
  - Net Zero targets in Canada are a big challenge when balanced with realistic plans and costs.
  - ASHRAE needs education on publishing data benchmark on buildings. ASHRAE should be guiding the industry on benchmarking data.
  - Small language model for Handbooks.

- **Region XIV CRC London, September 2024**
  - Critical issue in Europe is lack of government leadership.
  - There are gaps between "official paths" and actual policy implementation.
  - Training gaps in the workforce are fundamentals and bridge the gap between technicians and engineers.

- ASHRAE can incorporate new ideas into existing standards to help the industry.

- **Region XV CRC Udaipur, India September 2024**
  - Critical need for ASHRAE is MEP curriculum in last semester of engineering programs.
  - ASHRAE needs to connect with students in their last year of university.
  - Training for technicians is needed for installation and commissioning of the MEP system.
  - The salary gap between IT and engineers in India is great and most young professionals gravitate toward the IT industry because of the salary.
  - ASHRAE certification for installation or another area more geared toward technicians could be beneficial.
  - Government policy amendments to encourage decarbonization are needed.

- **Region-at-Large CRC, Pakistan, October 2024**
  - ASHRAE should invest more in AI:
    - AI usage in the HVACR industry is limited and not effectively advancing technology.
    - Education on how to use AI related to air conditioning is lagging.
  - Rapidly changing climate conditions leading to severe weather are impacting the economy and HVCAR needs to adapt more quickly.
  - Focus education to mirror current workforce and focus on technical and vocational training for technicians.
  - Training programs are needed for mid-level engineers and technicians that offer certification.
  - Enrollment in mechanical engineering programs is declining as students are invested in more money-making fields.

Appendix B. 2022-2023 Roundtable Summary
Updates from 2024 Roundtables are highlighted.

Broaden ASHRAE's Target Audience

The need to broaden ASHRAE's community to include both owner/operators and technicians/ contractors was cited at several roundtables again in 2024.

- According to the December 2024 membership dashboard, ASHRAE has 4,652 contractor members and 2,918 design/build members for a total of 7,570 or 14% of 54,486 members. Despite being the 3rd largest segment of ASHRAE's membership behind design engineers and manufacturers/reps, ASHRAE offers few programs designed specifically for contractors.
- Lack of qualified technicians is seen as a universal problem at roundtables. Advance MEP systems cannot be deployed without skilled technicians for both installation and service. Refrigeration technicians in particular are cited as being in low supply as demand for cooling grows globally.
    - The transition to mildly flammable, low GWP refrigerants underscores the need to provide training to both current and new technicians.
    - More complex mechanical and control systems will require technicians with higher skill sets.
- Improved communication between the owner/operator and the design communities is critical to accelerate the transition to healthier and more sustainable buildings. Increase owner/operator participation in ASHRAE is cited as benefiting the mechanical design community and ASHRAE's mission. One roundtable suggested bringing contractors, technicians, and building owners into project committees to bring their perspectives during the standard writing process.

Practical Guidance/Tools Needed

ASHRAE is the undisputed top global technical resource for HVAC systems. However, the Society lacks guidance on practical implementation of complex design best practices. Standards and handbooks are best-in-class, but simplified guidance is needed to bridge the gap between theory and implementation. Participants of the 2024 roundtables offered solutions such as creating short YouTube videos to cover content for each chapter in the ASHRAE Handbook, podcasts, VR and gamification (such a Minecraft modification focused on buildings and HVAC systems), and LinkedIn Learning.

This issue is linked to workforce development. The 'gray tsunami' of retirements drives the next generation's need for practice implementation guidance. Traditional delivery of technical information such as printed/electronic handbooks is not appealing to younger generations. Videos, apps, online tools, and interactive training is considered more valuable than complex printed guidance.

Similarly, guidance is needed on how to navigate through ASHRAE's volumes of technical guidance, training programs, publications and standards. Roundtable participants often cited difficulty in finding relevant information.

Young current and prospective members learn differently (interactively) and respond to being challenged. Practical solutions must be delivered in new ways to have broad appeal. A few roundtables suggested training local chapter members or leaders to be "certified" to teach industry basics to ASHRAE young and members for 30 minutes before Chapter Meetings begin so that local industry professionals can attend Chapter Meetings but also receive some industry training with peers in addition to networking

Labor Shortages are a Universal Issue

Workforce development was cited as a key issue at virtually every roundtable. Note that the workforce development conversation was prompted by questions in some roundtables rather than being volunteered independently by roundtable participants.

There was a universal call to improve the understanding of and the appeal of careers in HVAC&R ("convince me to be an HVAC&R engineer").

- Short videos
- Training needed to accelerate the learning curve of those new to HVAC&R.
- Tie HVAC&R buildings engineering to solving the climate crisis.
- Message to younger audience (K-12 even) and general public about the impact HVAC&R jobs have on the environment and the future of the world.

Chapters/Regions Need Flexibility, Resources for Localized Solutions

Challenge and opportunities differ widely in regions around the world, underscoring the importance of empowering and resourcing Chapters/Regions to provide localized benefits and services.

The degree to which language is a barrier for standards, training, etc. varies widely. For example, English is not a barrier in India but is considered an issued in Brazil and Turkey. Grid limitation is a significant issue driving energy efficiency in Monterrey. Declining population in Japan exacerbates HVAC&R workforce shortages.

Canadian roundtables noted the importance of ASHRAE courses being tailored to the region (i.e. climate, regulations, carbon emission and net zero goals, policies, etc.). The roundtable in India discussed their struggle with government advocacy and adoption of ASHRAE Standards and guidance.

The cost of ASHRAE products and services is a well-documented and growing issue for many countries, often driven by inflation, political turmoil and current valuations.

Practical Refrigerant Transition Strategies and Training is Needed

The transition to low-GWP refrigerants is paced differently around the globe. Standards and regulatory timelines are not aligned. Several roundtables underscore the importance of aligning refrigerant strategies.

A strong need for comprehensive training on the design and maintenance of systems using mildly-flammable refrigerants. The need for that training varies widely by region based on the regulatory timing. It is needed for design, but more significantly needed for technician/contractor/owner operation and maintenance.

Networking is Universally Valued

Multiple roundtables underscored the value of connecting with ASHRAE's global network of building professionals as a primary benefit of ASHRAE. The Society would be well-served to identify and increase opportunities for networking throughout the Society. Creating opportunities for cross-discipline networking between designers, contractors, researchers, building owners, and manufacturers was recommended as being particularly valuable.

ASHRAE®

Shaping Tomorrow's Global Built Environment Today

Industry Roundtables

2024 Critical Issues Summary and recommendations for Councils

ashrae.org

August 2024

2024 Industry Roundtable Critical Issues

January – October 2024

Florida, Texas, Washington, Ohio, Idaho, Pennsylvania, New York, Arizona

Toronto, London, Udaipur, and Karachi

- **Role of the Industry**
  The role that the industry is taking on reducing **carbon emissions** and **adopting sustainable practices**, through **decarbonization** and **electrification**

- **Refrigeration Regulations**
  The industry faces an overwhelming amount of regulatory information, creating confusion about which guidelines to follow for refrigerant regulations and safety. The challenges of flammable refrigerants, their impact on different sectors, and ongoing phaseouts further add to the complexity.

- **Workforce**
  The growing generational gap in the workforce.

- **HVAC in Higher Education**
  The lack of HVAC education presence in undergraduate curriculum.

- **Industry Collaboration**
  The need for more collaboration between technicians, building owners, engineers, and architects on projects.

- **New Educational Tools**
  New, more interactive and engaging tools to train and educate new and young professionals

Recommendations to Publishing & Education Council

Training and education, particularly for young professionals entering the industry is critically needed. Publishing and Education Council may consider:

- Leveraging emerging technologies and alternative formats to create training materials that may be more accessible for young professionals
- Developing additional training programs focused on HVAC fundamentals
- Adapting ALI courses to be region/country specific
- Developing resources to better educate the general public

Recommendations to Members Council

Acknowledging President Knight's theme of workforce development, many of the discussions centered around the need to engage with students and young professionals, supporting and encouraging them in their career journey in the built environment. Members Council may consider:

- Developing programs that focus on showing students (K-12, post-High including trade/technical schools) the impact they can have by choosing careers in the built environment
- Encouraging chapters to include technical training on HVAC fundamentals
- Encouraging collaboration with other industry organizations
- Exploring alternative training options, such as podcasts, videos, hands-on technical tours
- Developing a program to help facilitate internships for engineering students

Recommendations to Technology Council

Decarbonization, IEQ and refrigerant regulations are issues that members at all levels need guidance on. Technology Council may consider:

- Continuing to develop resources and practical guides on decarbonization, IEQ and refrigerants for manufacturers, design professionals, contractors, building owners/facility managers and building scientists

- Providing guidance on how emerging technologies like AI can be used to improve productivity and optimize system performance

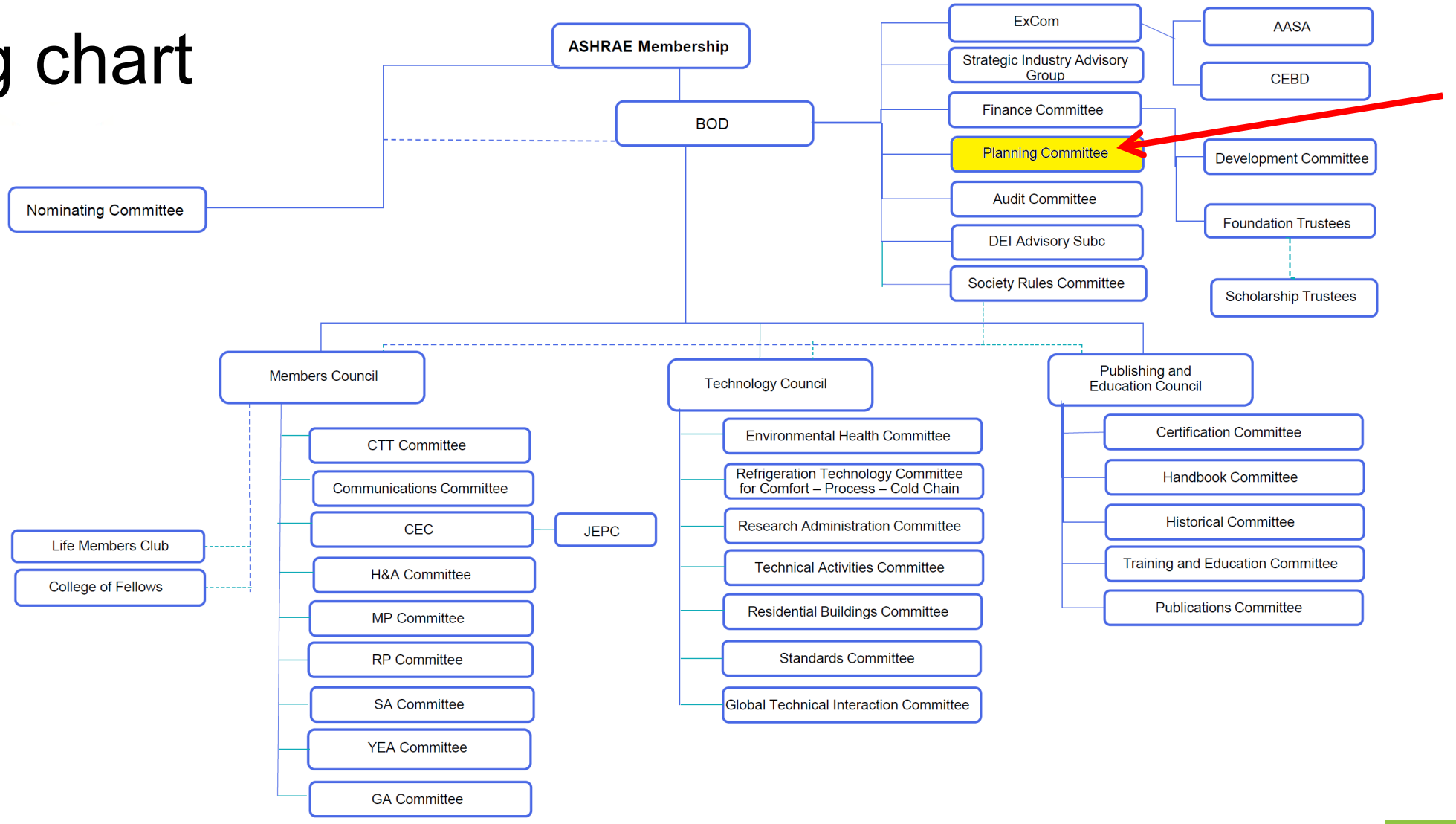
- Providing more opportunities for technicians/operators to get involved in ASHRAE

Planning Committee

(PLC)

Who is the Planning Committee?

- Org chart



What does the Planning Committee do?

- Role
  - The role of the Planning Committee (PLC) is to assist the Board of Directors (BOD) and the **organization** in the development of strategic thinking for the future.
  - The PLC uses an approved method of **soliciting continuous strategic planning from the councils and committees** for use in advising the Board of Directors on ideas which may be considered for changes to the strategic goals and directions of the Society.
  - On a regular basis the PLC:
    - Reports on Findings & Recommendations
    - Provides Gap Analysis on Strategic directions & goals of committees

What does the Planning Committee do?

- Subcommittees

Innovation and Implementation Subcommittee:

- Oversee Strategic Plan implementation
- **Teams with ASHRAE Councils and Committees** to ensure each develops appropriate timelines for implementation, metrics to measure success, and a method to measure progress related to the strategic plan
- Develops methodology to **identify gaps** and overlaps in implementing the Strategic Plan
- **Solicits creative ideas from the membership**, makes strategic assessments, identifies strategies, develops and recommends new initiatives to the PLC to adopt as strategic goals
- Makes recommendations for next year, three (3) year, five (5) year, ten (10) year, and twenty (20) year goals.

What does the Planning Committee do?

Validation and Documentation Subcommittee (is responsible for):

- **Receiving, reviewing, and quantifying each Council and Committee's MBOs.**
- Receiving the Continuous Strategic Planning (CSP) **input from the committees and councils** and presenting them to the full PLC for consideration by the Board of Directors at the Fall BOD meeting.
- Updating the survey, reviewing the responses, and compiling summary information and potential actionable items from the annual Membership Survey.
- Utilizing the metrics and Key Performance Indicators (KPIs) to evaluate the success and progress of the Strategic Plan and presenting them for the full PLC Annual Meeting.

What does the Planning Committee do?

- Strategic Plan

The Planning Committee (PLC) is responsible for ASHRAE's long-range and strategic planning activities **on a continuing basis**. The PLC role is to assist the Board of Directors (BOD) and the organization to think strategically in planning for the future.

Healthy, Sustainable and Resilient Communities

Providing a healthy, productive and resilient indoor environment, while minimizing greenhouse gas emissions, is critical to today's built environment. Further, global stakeholders' leveraging of ASHRAE's standards and technical resources presents an opportunity for ASHRAE to solidify global leadership in supporting healthy, sustainable and resilient communities. ASHRAE prioritizes timely identification of industry trends, expedient content development, and forges key partnerships to advocate and collaborate with industry.

Empowered Workforce

The development of a skilled, competent, and solutions-oriented workforce is critical to addressing the challenges facing the built environment and the HVAC&R industry, today and in the future. ASHRAE continues to provide educational and professional development resources. Our members and industry partners need these tools to implement key initiatives such as decarbonization, resiliency, and indoor environmental quality goals and policies. ASHRAE, with the support of our chapters and regions, partners with key industry stakeholders in tackling the unique workforce challenges facing the industry globally.

Organizational Agility

ASHRAE's ability to serve communities, the industry, the current and future workforce, and provide value to its volunteer members, is dependent on forward-looking products, services, and solutions. ASHRAE will use emerging technologies to support the development of resources and knowledge flow between ASHRAE's chapters, regions, technical bodies, and the industry, harnessing organizational and operational efficiencies.

Emerging Technologies

In today's rapidly evolving landscape, emerging technologies are revolutionizing the built environment and HVAC&R industry, expanding numerous career opportunities. By combining technological advancements such as AI with human creativity, both seasoned professionals and new talent can collaborate to drive industry-wide progress. Advanced automation and AI-enabled systems propel energy efficiency and smart buildings, enhance comfort and IEQ, improve operations and maintenance, and deliver holistic and sustainable solutions for industry professionals. ASHRAE engages in a thoughtful process to evaluate and prioritize opportunities to leverage new technologies.

How does the Planning Committee affect you?

- The Planning Committee (PLC) helps ASHRAE Committee and TC's design their goals and MBO's to align with the ASHRAE Strategic Plan.

How can the Planning Committee help you?

- Members of the Planning Committee (PLC) are available to help discuss anything related to ASHRAE's Strategic Plan, or even regarding your MBO's (and how they align with the Strategic Plan)

- Members of PLC are available to carry your suggestions / inputs back to PLC.

Contact Information

- Billy Austin, baustin@shultzeg.com
- Chandrias Jolly, CJolly@ashrae.org

ASHRAE Roundtables Review and Findings
January 2025

Notes have been collected for some 12 roundtable discussions held between January and October 2024. The roundtable reports are available on the BOD Basecamp here. Appendix A provides a simple executive summary of each roundtable. (Note: Other roundtable discussions may have occurred, but notes were not available.)

Fully 4 of the 12 roundtable discussions (33%) were held outside of the U.S. The locations are listed below in the order in which they were held.

1. Central Florida Chapter (Region XII), Orlando, FL, January 2024
2. Region VIII CRC Dallas, TX, April 2024
3. Region XI CRC Spokane, WA, May 2024
4. Region V CRC Cincinnati, OH, July 2024
5. Region IX CRC Boise, ID, August 2024
6. Region III CRC Bethlehem, PA, August 2024
7. Region I CRC Albany, NY, August 2024
8. Region X CRC Phoenix, AZ, August 2024
9. Region II CRC Toronto, ON, Canada, August 2024
10. Region XIV CRC London, UK, September 2024
11. Region XV CRC Udaipur, India, September 2024
12. Region-at-Large CRC Karachi, Pakistan, October 2024

Executive Summary

The notes from the 2024 Industry Roundtables all reflect an important need for better education, training and industry collaboration to address both short-term and long-term challenges in the HVACR industry. Most roundtables discussed focusing on preparing the next generation to meet the demands of a rapidly changing industry. A stronger connection between industry and academia is needed.

It is worth noting that the three earlier roundtables were conducted during President Scoggin's term in which the Society Theme was "Challenge Accepted: Tackling the Climate Crisis." The ten later roundtables were conducted during President Knight's term in which the Society Theme is "Empowering Our Workforce: Building a Sustainable Future." Topics covered in roundtables may have been dependent on the participants and the current Society theme.

Six common themes emerged from the feedback received during the Roundtables, providing opportunities for each of the councils to explore to better serve the needs of our members.

- **Publishing and Education Council** – Training and education, particularly for young professionals entering the industry is critically needed. Publishing and Education Council may consider:

    - Leveraging emerging technologies and alternative formats to create training materials that may be more accessible for young professionals
    - Developing additional training programs focused on HVAC fundamentals
    - Adapting ALI courses to be region/country specific
    - Developing resources to better educate the general public

- **Members Council** - Acknowledging President Knight's theme of workforce development, many of the discussions centered around the need to engage with students and young professionals, supporting and encouraging them in their career journey in the built environment. Members Council may consider:
    - Developing programs that focus on showing students (K-12, post-High including trade/technical schools) the impact they can have by choosing careers in the built environment
    - Encouraging chapters to include technical training on HVAC fundamentals
    - Encouraging collaboration with other industry organizations
    - Exploring alternative training options, such as podcasts, videos, hands-on technical tours
    - Developing a program to help facilitate internships for engineering students

- **Technology Council** – Decarbonization, IEQ and refrigerant regulations are issues that members at all levels need guidance on. Technology Council may consider:
    - Continuing to develop resources and practical guides on decarbonization, IEQ and refrigerants for manufacturers, design professionals, contractors, building owners/facility managers and building scientists
    - Providing guidance on how emerging technologies like AI can be used to improve productivity and optimize system performance
    - Providing more opportunities for technicians/operators to get involved in ASHRAE

These are just a few recommendations gleaned from the feedback received during the Roundtables. A summary of each of the discussions can be found below. We invite all councils, along with Planning Committee, PEAC and TRAC to review these notes to see what other opportunities there may be to better serve our members as MBOs are developed moving forward.

Critical Issues in the Industry

The 2024 roundtables highlighted several critical issues within the HVACR industry:

- The role that the industry is taking on reducing carbon emissions and adopting sustainable practices, through decarbonization and electrification
- Refrigerant regulations
- The growing generational gap in the workforce
- The lack of HVAC education presence in undergraduate curriculum
- The need for more collaboration between technicians, building owners, engineers, and architects on projects
- New, more interactive and engaging tools to train and educate new and young professionals

Some of the critical issues addressed at roundtables in 2024 were also addressed in roundtables in previous years. See Appendix B for the 2022-2023 roundtables summary with updates/additions from 2024 roundtables highlighted.

Decarbonization, Sustainability and Resiliency

ASHRAE can empower organizations, students, individuals and the general public to make carbon emission reduction goals. Educating all stakeholders (design engineers, architects, commissioners, technicians, building owners/operators, facility managers, etc.) on the importance of their work and the role it plays in reducing carbon is critical. The work the team does together makes a difference on every project.

Some regions in the US and globally are using the term "Resiliency" to encompass decarbonization, IEQ and sustainability practices. One roundtable suggested incorporating carbon calculations into all ASHRAE standards.

Refrigerant Regulations

The industry faces an overwhelming amount of regulatory information, creating confusion about which guidelines to follow for refrigerant regulations and safety. The challenges of flammable refrigerants, their impact on different sectors, and ongoing phaseouts further add to the complexity.

Education and Training

Several roundtables discussed the lack of specific HVAC training at colleges and universities around the world and the need for dedicated curricula. Workforce development initiatives such as vocational training, internships and professional mentorship programs can help bridge the gap between formal education and real-world skills. One roundtable suggested creating a university course that utilizes hands-on training of the universities HVAC system since all colleges and universities have large HVAC systems located on campus. On-the-job training and real-world experience were expressed as critical in learning this industry and currently there is a lack of this type of education in the HVACR space. On-the-job training also involves relationship skills that are needed for all the roles to work together on a project (i.e. technician/contractor, building owner/operator, facility manager, design engineer and architect). One roundtable suggested developing a "year in the field" approach to teaching engineering students about the practical side of the industry.

Training and education delivery was also discussed at most roundtables. There is consensus on evolving delivery methods to better engage the younger generation such as short YouTube training videos, podcasts, utilizing LinkedIn Learning platforms, interactive training tools such as VR and gamification. One roundtable even suggested creating a buildings/HVAC version or modification to Minecraft to support interest and understanding starting with an even younger audience.

Education and training must also be tailored geographically based on the needs of the audience. For example, Canada Net Zero goals are hard to achieve due to cost and implementation strategies while in the Middle East and Africa, there are challenges on how the HVACR industry is adapting to the rapidly changing climate conditions.

Industry Collaboration

The industry is currently working in silos based on their role and job title. Collaboration is key in moving the industry forward as well as motivating and educating the next generation to choose a profession within the HVACR industry. Industry collaboration with academia is needed to integrate HVAC curriculum and education into MEP programs. Collaboration and better communication between the different roles within the industry (engineers, technicians, building owners, etc.) is critical to understanding new technology and proper design and maintenance of building systems.

ASHRAE Standards are excellent and very valuable but mostly address design issues. Industry collaboration is needed to expand content in ASHRAE Standards to include commissioning and installation direction.

Development of New Tools

ASHRAE has incredible resources such as the ASHRAE Handbook, Standards and Guidelines. Many roundtables indicated that while the more seasoned professionals rely on these tools, the younger generation is looking for more efficient, quicker ways to access information, guidance, and data. One roundtable suggested having the TCs create short videos about their Handbook chapters for quicker content consumption. Another roundtable suggested a small language model AI tool for ASHRAE publications. Creating an ASHRAE Reddit Forum was another idea from a roundtable.

Additionally, there are opportunities to leverage emerging technologies such as AI not only improve access to technical resources, but to improve processes and optimize system performance. ASHRAE can take on a leadership position in how AI can be used in our industry.

Engaging and Retaining the Younger Generations

Several roundtables discussed inspiring the next generation, starting as early as with K-12 students, by messaging the "why" HVACR matters and how it can impact the world. If ASHRAE can message and show the real-world impact of HVAC systems, particularly in terms of sustainability and climate change, more young people will want to explore careers in the HVACR industry. K-12 STEM activities, career fairs, and design competitions were cited as successful outreach programs and events throughout the regions.

Roundtable Process

Market intelligence gained from roundtables is very valuable. Conducting roundtables should be adopted as the best practice for all CRCs. The Roundtable Reports Review Committee (R3C) should provide to the Executive Committee and Planning Committee summaries from roundtables held immediately preceding the Spring and Fall CRCs at the Winter Conference. The Executive Committee will allocate items to the appropriate Councils for consideration. Councils will use the roundtable reports to inform their MBOs and action items. Society Planning Committee will use the roundtable reports to inform Strategic Plans and support development of Council MBOs. Roundtable notes should be archived on the BOD basecamp.

Guidelines for conducting ASHRAE Industry Roundtables were updated in July 2024 and can be found on the BOD basecamp here. The guidelines include an overview, goals, attendance, invitees, coordination and discussion questions. R3C should review and update this guidance and distribute to DRCs and RMCR by the Annual Conference.

Appendix A. Abbreviated Roundtable Highlights

- **Central Florida Chapter (Region XII) Orlando, FL, January 2024**
  - Critical needs impacting our industry include technical and cost illiteracy associated with high performance building construction and renovations and reliability including IEQ.
  - ASHRAE can support the industry by providing resources to better education the public with general education of the importance of reducing carbon emissions and understanding the climate impacts.
  - Empowering organizations and even individuals (starting with students) to make carbon emission reduction goals. This includes educating facility technicians, maintenance personnel and commissioning agents who normally do not connect their work to carbon. Supervisors need to be better educated on that connection.
  - ASHRAE can support workforce development by reaching out to technical schools and supporting technicians to development.
  - Connect the dots to technicians that their work matters in addressing climate change – not just installing and servicing HVAC systems.

- **Region VIII CRC Dallas, TX, April 2024**
  - Critical issues impacting our industry include refrigerant regulations.
  - Another critical issue is there is too much information available without a clear and consistent message on which guidance to follow (i.e. ICC, ASHRAE, state-wide/county-wide minimal energy code, Building Codes, UL, etc).
  - Standards are being written by academics and then "tossed to engineers/operators to implement.
  - Additional education to the younger generation of students and professionals with more direct HVAC education.
  - Suggestions include an undergraduate curriculum on HVAC, Reddit Forum on ASHRAE, More Fundamentals Training resources that could be pushed down to the Chapter and use Chapter Leaders to train.
  - ASHRAE materials are great for the trainer but not for the student/trainee.
  - Chapter leaders could be certified to train chapter members on fundamentals and systems training so that chapter members get industry training baked into their chapter meetings.
  - Interactive pieces of the ASHRAE Handbook are needed.

- **Region XI CRC Spokane, WA, May 2024**
  - Most critical condition in our industry is the lack of well-trained engineers in the 35-45 age range.
  - Inexperienced new hires are the norm.
  - Colleges are more focused on non-building related mechanical engineering.
  - Better candidates are usually people who have experience on job sites (not just a degree).
  - ASHRAE can help by providing background on how codes are developed so that people think more critically when applying standards.
  - Not enough people are trained to service VRF systems therefore people are backing away from these systems.
  - ASHRAE could develop a "year in the field" approach to teaching engineering students about the practical side of their work.
  - It is important for owners and contractors to work together and stay engaged with one

another to support long-term success.
    - A joint ASHRAE/AIA effort to coordinate work between disciplines.
    - ASHRAE should create a standard for the various options/templates for the sequence of operations to support technicians.
    - One idea might be for ASHRAE to create a curriculum for a local ASHRAE member/professional to teach 30-minute sessions in advance of Chapter Meetings. Perhaps utilize TCs that develop applications and fundamentals handbook.
    - A suggestion for ASHRAE to provide educational content in short YouTube- type videos for easy consumption (ASHE does something like this).

- **Region V CRC Cincinnati, OH, July 2024**
    - Focus on decarbonization/resiliency changes how projects are approached.
    - Sustainability practices of the past are now mainstream and part of the project implementation.
    - "Resiliency" is a term that is more used in this region of the country and is also catching on in Asia as well. It encompasses decarbonization, IEQ, and energy sustainability.
    - Building owners are only concerned with budget and meeting minimum code requirements.
    - Incorporate carbon calculations into all ASHRAE standards.
    - AI, machine learning/automation, digital visualization need investment from our industry.
    - Using AI to train new workers faster but also keep "old-school" understanding of plans and projects must be maintained in training.
    - ASHRAE can increase passion in the industry by more K12 STEM activities, show real-life impact, focus on cutting edge technologies and teach kids/youth how to change the world through HVAC.
    - Required HVAC courses in university curriculum is a must. Right now HVAC is just a footnote in Mechanical Engineering classes. There is a disconnect between the need in society versus emphasis in college.
    - Disconnect between design engineers and building owners. What is designed is ignored because the owners can't operate the systems.
    - Messaging should be to younger generations that the industry can help save the world. Buildings have a long-lasting impact due to their long lifetimes.

- **Region IX CRC Boise, ID, August 2024**
    - A critical issue in the industry includes the increasing costs associated with labor and projects which stalls or limits projects.
    - There is a growing gap between industry professionals with 5-20 years of experience that is causing labor shortages which increases project time and expense. A&E firms are beginning to bring in vocational training, even at the high school level, to offset some of the labor shortages.
    - There is a missing opportunity in industry training related to the "why."
    - Too few schools offer HVAC/Buildings specific programs. Most universities only offer one semester of HVAC course work.
    - There needs to be better messaging from ASHRAE on why HVAC is important to the world.
    - Encourage more ASHRAE-specific career fairs at Student Branch schools.
    - ASHRAE Design Challenges have been successful at local colleges/universities to get students engaged in the work of the industry.

- Make more co-op internships available within the industry.
- There isn't enough time to train and mentor younger professionals. There is too much to do and all projects seem to be urgent recently, which doesn't allow time to train.
- More "real world" experience is needed for example, taking students and young professionals into the mechanical room and on job sites.
- More interactive training available (i.e. VR).
- AI needs to be integrated. The Handbook is great, but searching through a 1,000-page handbook for an answer is the research of the past.
- Programs for technical people are needed. ASHRAE scholarships don't allow for support of people in technical schools.
- ASHRAE does networking and mentoring well.
- If people in the industry aren't engineers, they feel like they don't have a place at ASHRAE and therefore don't become members.
- There is a need for more programming for owners and facility managers.

- **Region III CRC Bethlehem, PA, August 2024**
  - Critical issues in the industry include lack of personnel and basic understanding of fundamentals, technology and equipment.
  - Another issue is the building owners awareness of products and applications. Regulations and equipment are changing rapidly which is creating compatibility issues.
  - Idea to create applications that field personnel can use to help make job site decisions.
  - ASHRAE Standards are great, but they only address design issues, more support is needed with commissioning and installation direction.
  - Training is needed for those installing the systems that engineers are designing. There is a big disconnect between the two.
  - Learning materials are changing for the younger generation. They aren't using handbooks and books anymore. They learn in shorter segments with 15 minute videos on specific topics.
  - Ideas include:
    - Subscription based podcasts, YouTube channels of training content
    - Consider providing a free number of PDHs each year to members
    - Get the Lucy books adopted into K-5 curriculum
    - A "Minecraft" game of sorts that's dedicated to buildings and is used as a training tool for the younger generations.
    - TCs provide content for short educational videos to cover Handbook chapters
  - Another issue the industry is facing is flammable refrigerants and how they impact various aspects of the industry.

- **Region I CRC Albany, NY, August 2024**
  - Critical issues in the industry include attracting and retaining new people, electrification and finding new ways to decarbonize while making smart decisions, and trying to get building owners back-to-basics training and IAQ knowledge.
  - Contractors have picked up more design work recently at the expense of design firms.
  - More focus should be on existing buildings to save energy within existing structure.
  - More student knowledge and engagement with ASHRAE. Professors are not pushing ASHRAE so students don't really know what it is or why ASHRAE is important. There are limited HVAC specific college courses available.

- Companies are having to do the bulk of the fundamentals training with employees who are right out of college since college courses don't dive deep enough into HVAC.
- Creating shorter, detailed videos to capture the educational content (not long manuals or handbooks).
- Training needs to showcase how this industry aligns with their ideals of environment and health
- AI tools are needed for ASHRAE members specific to ASHRAE.
- New technology is needed, other than heat pumps, to meet decarbonization goals.
- Hands-on training strategies are also needed.
- LinkedIn learning has proven to be successful in some areas of this region.
- Encourage facility internships at colleges and universities. Every university has a large HVAC system.

- **Region X CRC Phoenix, August 2024**
  - Refrigerant phase outs is the most critical issue.
  - Another issue is electrification and high ambient temperatures.
  - Rely on ASHRAE Fundamentals Training to train employees right out of college who did not get much HVAC/Buildings training with college courses.
  - Lack of college courses available for HVAC at local universities.
  - Education takes a lot of time. Are there ways we can deliver education in different methods for easier consumption?
  - Internships are critical for graduates. How can ASHRAE be involved?

- **Region II CRC Toronto, August 2024**
  - Critical issues are climate change, the many solutions for decarbonization yet issues implementing, and the industry is working in silos.
  - Building owners and operators need more training to understand the impact on building performance related to actions on the equipment. There needs to be more connection between the design engineers and this group.
  - ALI courses and instructors should be tailored to the region/country. Some courses and instructors are very US-based and aren't tailoring presentations to support international audiences.
  - There is a trend of drifting operating performance once consulting firms leave the projects.
  - Universities do not have courses that cover equipment.
  - Need to bridge the gap between building operations and design. How can ASHRAE help building owners plan and educate them about energy efficiency.
  - Net Zero targets in Canada are a big challenge when balanced with realistic plans and costs.
  - ASHRAE needs education on publishing data benchmark on buildings. ASHRAE should be guiding the industry on benchmarking data.
  - Small language model for Handbooks.

- **Region XIV CRC London, September 2024**
  - Critical issue in Europe is lack of government leadership.
  - There are gaps between "official paths" and actual policy implementation.
  - Training gaps in the workforce are fundamentals and bridge the gap between technicians and engineers.

- ASHRAE can incorporate new ideas into existing standards to help the industry.

- **Region XV CRC Udaipur, India September 2024**
  - Critical need for ASHRAE is MEP curriculum in last semester of engineering programs.
  - ASHRAE needs to connect with students in their last year of university.
  - Training for technicians is needed for installation and commissioning of the MEP system.
  - The salary gap between IT and engineers in India is great and most young professionals gravitate toward the IT industry because of the salary.
  - ASHRAE certification for installation or another area more geared toward technicians could be beneficial.
  - Government policy amendments to encourage decarbonization are needed.

- **Region-at-Large CRC, Pakistan, October 2024**
  - ASHRAE should invest more in AI:
    - AI usage in the HVACR industry is limited and not effectively advancing technology.
    - Education on how to use AI related to air conditioning is lagging.
  - Rapidly changing climate conditions leading to severe weather are impacting the economy and HVCAR needs to adapt more quickly.
  - Focus education to mirror current workforce and focus on technical and vocational training for technicians.
  - Training programs are needed for mid-level engineers and technicians that offer certification.
  - Enrollment in mechanical engineering programs is declining as students are invested in more money-making fields.

Appendix B. 2022-2023 Roundtable Summary
Updates from 2024 Roundtables are highlighted.

Broaden ASHRAE's Target Audience

The need to broaden ASHRAE's community to include both owner/operators and technicians/ contractors was cited at several roundtables again in 2024.

- According to the December 2024 membership dashboard, ASHRAE has 4,652 contractor members and 2,918 design/build members for a total of 7,570 or 14% of 54,486 members. Despite being the 3rd largest segment of ASHRAE's membership behind design engineers and manufacturers/reps, ASHRAE offers few programs designed specifically for contractors.
- Lack of qualified technicians is seen as a universal problem at roundtables. Advance MEP systems cannot be deployed without skilled technicians for both installation and service. Refrigeration technicians in particular are cited as being in low supply as demand for cooling grows globally.
    - The transition to mildly flammable, low GWP refrigerants underscores the need to provide training to both current and new technicians.
    - More complex mechanical and control systems will require technicians with higher skill sets.
- Improved communication between the owner/operator and the design communities is critical to accelerate the transition to healthier and more sustainable buildings. Increase owner/operator participation in ASHRAE is cited as benefiting the mechanical design community and ASHRAE's mission. One roundtable suggested bringing contractors, technicians, and building owners into project committees to bring their perspectives during the standard writing process.

Practical Guidance/Tools Needed

ASHRAE is the undisputed top global technical resource for HVAC systems. However, the Society lacks guidance on practical implementation of complex design best practices. Standards and handbooks are best-in-class, but simplified guidance is needed to bridge the gap between theory and implementation. Participants of the 2024 roundtables offered solutions such as creating short YouTube videos to cover content for each chapter in the ASHRAE Handbook, podcasts, VR and gamification (such a Minecraft modification focused on buildings and HVAC systems), and LinkedIn Learning.

This issue is linked to workforce development. The 'gray tsunami' of retirements drives the next generation's need for practice implementation guidance. Traditional delivery of technical information such as printed/electronic handbooks is not appealing to younger generations. Videos, apps, online tools, and interactive training is considered more valuable than complex printed guidance.

Similarly, guidance is needed on how to navigate through ASHRAE's volumes of technical guidance, training programs, publications and standards. Roundtable participants often cited difficulty in finding relevant information.

Young current and prospective members learn differently (interactively) and respond to being challenged. Practical solutions must be delivered in new ways to have broad appeal. A few roundtables suggested training local chapter members or leaders to be "certified" to teach industry basics to ASHRAE young and members for 30 minutes before Chapter Meetings begin so that local industry professionals can attend Chapter Meetings but also receive some industry training with peers in addition to networking

Labor Shortages are a Universal Issue

Workforce development was cited as a key issue at virtually every roundtable. Note that the workforce development conversation was prompted by questions in some roundtables rather than being volunteered independently by roundtable participants.

There was a universal call to improve the understanding of and the appeal of careers in HVAC&R ("convince me to be an HVAC&R engineer").

- Short videos
- Training needed to accelerate the learning curve of those new to HVAC&R.
- Tie HVAC&R buildings engineering to solving the climate crisis.
- Message to younger audience (K-12 even) and general public about the impact HVAC&R jobs have on the environment and the future of the world.

Chapters/Regions Need Flexibility, Resources for Localized Solutions

Challenge and opportunities differ widely in regions around the world, underscoring the importance of empowering and resourcing Chapters/Regions to provide localized benefits and services.

The degree to which language is a barrier for standards, training, etc. varies widely. For example, English is not a barrier in India but is considered an issued in Brazil and Turkey. Grid limitation is a significant issue driving energy efficiency in Monterrey. Declining population in Japan exacerbates HVAC&R workforce shortages.

Canadian roundtables noted the importance of ASHRAE courses being tailored to the region (i.e. climate, regulations, carbon emission and net zero goals, policies, etc.). The roundtable in India discussed their struggle with government advocacy and adoption of ASHRAE Standards and guidance.

The cost of ASHRAE products and services is a well-documented and growing issue for many countries, often driven by inflation, political turmoil and current valuations.

Practical Refrigerant Transition Strategies and Training is Needed

The transition to low-GWP refrigerants is paced differently around the globe. Standards and regulatory timelines are not aligned. Several roundtables underscore the importance of aligning refrigerant strategies.

A strong need for comprehensive training on the design and maintenance of systems using mildly-flammable refrigerants. The need for that training varies widely by region based on the regulatory timing. It is needed for design, but more significantly needed for technician/contractor/owner operation and maintenance.

Networking is Universally Valued

Multiple roundtables underscored the value of connecting with ASHRAE's global network of building professionals as a primary benefit of ASHRAE. The Society would be well-served to identify and increase opportunities for networking throughout the Society. Creating opportunities for cross-discipline networking between designers, contractors, researchers, building owners, and manufacturers was recommended as being particularly valuable.

ASHRAE®

Shaping Tomorrow's Global Built Environment Today

Industry Roundtables

2024 Critical Issues Summary and recommendations for Councils

ashrae.org

August 2024

2024 Industry Roundtable Critical Issues

January – October 2024

Florida, Texas, Washington, Ohio, Idaho, Pennsylvania, New York, Arizona

Toronto, London, Udaipur, and Karachi

- **Role of the Industry**
  The role that the industry is taking on reducing **carbon emissions** and **adopting sustainable practices**, through **decarbonization** and **electrification**

- **Refrigeration Regulations**
  The industry faces an overwhelming amount of regulatory information, creating confusion about which guidelines to follow for refrigerant regulations and safety. The challenges of flammable refrigerants, their impact on different sectors, and ongoing phaseouts further add to the complexity.

- **Workforce**
  The growing generational gap in the workforce.

- **HVAC in Higher Education**
  The lack of HVAC education presence in undergraduate curriculum.

- **Industry Collaboration**
  The need for more collaboration between technicians, building owners, engineers, and architects on projects.

- **New Educational Tools**
  New, more interactive and engaging tools to train and educate new and young professionals

Recommendations to Publishing & Education Council

Training and education, particularly for young professionals entering the industry is critically needed. Publishing and Education Council may consider:

- Leveraging emerging technologies and alternative formats to create training materials that may be more accessible for young professionals
- Developing additional training programs focused on HVAC fundamentals
- Adapting ALI courses to be region/country specific
- Developing resources to better educate the general public

Recommendations to Members Council

Acknowledging President Knight's theme of workforce development, many of the discussions centered around the need to engage with students and young professionals, supporting and encouraging them in their career journey in the built environment. Members Council may consider:

- Developing programs that focus on showing students (K-12, post-High including trade/technical schools) the impact they can have by choosing careers in the built environment
- Encouraging chapters to include technical training on HVAC fundamentals
- Encouraging collaboration with other industry organizations
- Exploring alternative training options, such as podcasts, videos, hands-on technical tours
- Developing a program to help facilitate internships for engineering students

Recommendations to Technology Council

Decarbonization, IEQ and refrigerant regulations are issues that members at all levels need guidance on. Technology Council may consider:

- Continuing to develop resources and practical guides on decarbonization, IEQ and refrigerants for manufacturers, design professionals, contractors, building owners/facility managers and building scientists

- Providing guidance on how emerging technologies like AI can be used to improve productivity and optimize system performance

- Providing more opportunities for technicians/operators to get involved in ASHRAE

ASHRAE Strategic Planning:
Strategic Plan & Initiatives

December 2024

McKinleyAdvisors

Draft Strategic Plan

McKinleyAdvisors

MISSION STATEMENT | To serve humanity by advancing the arts and sciences of heating, ventilation, air conditioning, refrigeration and their allied fields.

VISION | A healthy and sustainable built environment for all.

ORGANIZATIONAL VALUES | Collaboration, Commitment, Diversity, Excellence, Integrity, Volunteerism

2025 – 2028 Strategic Goals	Objectives
1. ASHRAE **leads globally** in advancing solutions to improve IEQ and address climate change	a. Lead the development of widely adopted standards to support indoor environmental quality, decarbonization, and resilience. b. Develop alliances and diverse working groups that position ASHRAE to lead and collaborate globally in identifying challenges, defining solutions, and developing approaches to address them. c. Develop resources based on member needs and industry trends.
2. Pursue **impact-focused engagement** - targeting stakeholders to support a strong workforce and maximize utilization, adherence, and trust of ASHRAE's global expert resources	a. Tailor and target engagement and resources to ASHRAE members and defined key stakeholders b. Provide guidance to targeted stakeholders on impactful ways to maximize the positive downstream effect of their engagement on the built environment c. Empower professionals in their journey to maximize industry impact in support of ASHRAE's mission and vision d. Pursue partnerships to amplify the impact of ASHRAE's mission and support the HVAC&R and built environment workforce.
3. Increase the **accessibility** of ASHRAE content, resources, and member opportunities	a. Identify and address structural, content, and financial barriers to access b. Align communication and delivery methods and formats to enhance accessibility and effectiveness of content, resources, and volunteer opportunities c. Strengthen communication channels with and through chapters and regions to empower contribution to the Society as thought partners in adapting resources to local context and needs

Outcomes

ASHRAE's member and volunteer base maximizes the organization's reach, foresight, leadership position, and organizational knowledge.	A broad group of stakeholders leverage ASHRAE's resources to make decisions and meet objectives that positively affect the environment.	A viable, thriving industry makes a positive global impact.

Key Enablers

Research: The value of ASHRAE's resources is grounded in unbiased data, developed through rigorous research methods.	**AI**: The use of AI enables ASHRAE to improve data collection, automate internal operations, and promote agility.	**Global Network**: ASHRAE's global network convenes the industry to generate unparalleled knowledge and content.

Draft Strategic Initiatives

McKinleyAdvisors

Strategic Initiatives

Healthy, Sustainable and Resilient Communities

Empowered Workforce

Organizational Agility

Emerging Technologies

Healthy, Sustainable and Resilient Communities

Providing a healthy, productive and resilient indoor environment, while minimizing greenhouse gas emissions, is critical to today's built environment. Further, global stakeholders' leveraging of ASHRAE's standards and technical resources presents an opportunity for ASHRAE to solidify global leadership in supporting healthy, sustainable and resilient communities. ASHRAE prioritizes timely identification of industry trends, expedient content development, and forges key partnerships to advocate and collaborate with industry.

Empowered Workforce

The development of a skilled, competent, and solutions-oriented workforce is critical to addressing the challenges facing the built environment and the HVAC&R industry, today and in the future. ASHRAE continues to provide educational and professional development resources. Our members and industry partners need these tools to implement key initiatives such as decarbonization, resiliency, and indoor environmental quality goals and policies. ASHRAE, with the support of our chapters and regions, partners with key industry stakeholders in tackling the unique workforce challenges facing the industry globally.

Organizational Agility

ASHRAE's ability to serve communities, the industry, the current and future workforce, and provide value to its volunteer members, is dependent on forward-looking products, services, and solutions. ASHRAE will use emerging technologies to support the development of resources and knowledge flow between ASHRAE’s chapters, regions, technical bodies, and the industry, harnessing organizational and operational efficiencies.

Emerging Technologies

In today's rapidly evolving landscape, emerging technologies are revolutionizing the built environment and HVAC&R industry, expanding numerous career opportunities. By combining technological advancements such as AI with human creativity, both seasoned professionals and new talent can collaborate to drive industry-wide progress. Advanced automation and AI-enabled systems propel energy efficiency and smart buildings, enhance comfort and IEQ, improve operations and maintenance, and deliver holistic and sustainable solutions for industry professionals. ASHRAE engages in a thoughtful process to evaluate and prioritize opportunities to leverage new technologies.