

ASHRAE TC 9.7 – Educational Facilities

Virtual Full Committee Interim Meeting – Notes
Thursday, October 30, 2025| 2:00 – 3:00 PM EST

Zoom Available

1. Call to Order 11:02 am (PT)

Chair: Raj Setty

2. Review of Scope (Raj Setty)

“TC 9.7 is concerned with the application of heating, ventilating, air-conditioning, refrigeration, life safety, and energy conservation systems for educational facilities, including early childhood education through higher education facilities.”

3. ASHRAE Code of Ethics Commitment (Raj Setty)

ASHRAE Code of Ethics Commitment

“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.”

See full ASHRAE Code of Ethics: <https://www.ashrae.org/about-ashrae/ashrae-code-of-ethics>

4. Chair’s Report (Raj Setty)

5. Knowledge Share (Open Forum) **Time allotted to discuss current events and recent research relevant to TC 9.7.**

Cory M - ASHRAE Updates

- Research projects are ongoing regarding topics that would be of interest to this group.
- IEQ Hub – Focus in IAQ
 - TC 9.7 can be tied in directly

Updates for UN IAQ Conference

- Tony
 - Assembling list of global commissioners

- Interest in documents like 9.7 Guidance document that can be a conduit between technical standards and the real world
- Continuous monitoring discussed
 - Boston Public Schools
- France doing air quality for schools
- Resources
 - To sign on, globalcommission@wellcertified.com.
 - <https://www.wellcertified.com/global-commission>
- Office of Public School Construction
 - CA Inspection
 - Tool
 - Guidance Document
 - Designates what people would look at within inspections
 - Recommend that 9.7 documents be included
- Efficiency Tool
 - Notebook LM
- Alice Yates and Emily Proccari - Response back on Model Language
 - Share ideas with Government Affairs Committee
 - Raj to reach out and set up meetings

NEW PROJECTS AWARDED

- The following four projects were approved for award in Phoenix as follows:
- **1873-TRP**, “Upper-Air Ultraviolet Germicidal Irradiation (UVGI) for Tall Spaces,”; Responsible Committee: **TC 2.9** (Ultraviolet Air and Surface Treatment), Co-Sponsors: **TC 9.6** (Healthcare Facilities) Co-funding: None; Estimated Duration: 18 months; Cost to ASHRAE: \$250,031. Contractor: University of Cincinnati
- **1913-TRP**, “Study of the Corrosion Impact on Information Technology Equipment in Data Centers Located in Coastal Regions with High Sea Salt Concentration”; Responsible Committee: **TC 9.09**, (Mission Critical Facilities, Data Centers, Technology Spaces and Electronic Equipment); Co-Sponsors: **TC 2.03** (Gaseous Air Contaminants and Gas Contaminant Removal Equipment), **TC 2.4** (Particulate Air Contaminates and Particulate Contaminant Removal Equipment) Co-funding: None; Estimated Duration: 24 Months; Cost to ASHRAE: \$254,972 Contractor: Syracuse University.
- **1936-TRP**, “Evaluation of relative impact of air change rate (ACR) and airflow patterns on the ventilation performance of indoor spaces”; Responsible Committee: **MTG.ACR** (Air Change Rate); Co-funding: Price

(\$60k), Phoenix Controls (\$25k) ; Estimated Duration: 36 Months; Cost to ASHRAE: \$399,755 Contractor: Worcester Polytechnic Institute.

- **1970-TRP**, "*Study of Grout for Ground Heat Exchangers*" Responsible Committee: TC 6.08 (Geothermal Heat Pump and Energy Recovery Applications); Co-funding: None; Estimated Duration: 12 Months; Cost to ASHRAE: \$48,523 Contractor: Oklahoma State University.

● **PROJECTS PENDING AWARD**

- Proposals for the following tentative research projects (TRP) were received prior to the Phoenix meeting, but a funding decision could not be made at this meeting for the following reasons:
- **1825-TRP**, Effects of Locally Provided Makeup Air on Commercial Kitchens, Responsible Committee: TC 5.10, (Kitchen Ventilation); Co-sponsored by: TC 5.03, Room Air Distribution & TC 2.03, (Gaseous Air Contaminants and Gas Contaminant Removal Equipment) – Two bids were received but the PES has not met to make a recommendation. The TC can consider a letter ballot and RAC can consider at a later meeting.
- **1895-TRP**, Effect of penetration through particle pre-filters on the performance of gas filters, Responsible Committee: TC 2.3 (Gaseous Air Contaminants and Gas Contaminant removal Equipment); Co-sponsored by: TC 2.04, (Particulate Air Contaminants and Particulate Contaminant Removal Equipment & GPC34) – Five bids were received but the PES has not met to make a recommendation. The TC can consider a letter ballot and RAC can consider approving at a later meeting.
- **1918-TRP**, The Verification of openings, the limitations of openings, air distribution and humidity conditions in Naturally Ventilated spaces to compliment Section 6.4 of ASHRAE Standard 62.1, Responsible Committee: TC 4.05, (Fenestration), Co-sponsored by: SSPC 62.1, (Ventilation and Acceptable Indoor Air Quality) – Eight bids were received but the PES has not met to make a recommendation. The TC can consider a letter ballot for RAC consideration at a later meeting.
- **1925-TRP**, Development of view clarity metrics for fenestration systems, Responsible Committee: TC 4.05, (Fenestration) – Five bids were received but the TC has not submitted a recommendation. The TC can consider a letter ballot for RAC consideration at a later meeting.
- **1950-TRP**, Effect of residential exhaust terminations on jet mechanics and resulting required intake separation, Responsible Committee: TC 4.03, (Ventilation Requirements & Infiltration) Co-sponsored by: SSPC62.1 – The TC wishes to revise work statement and rebid project.

● **ASHRAE Position Document Updates**

- A new Position Document was approved:
- Human Health and Wellness in the Built Environment
- Two Position Documents were reaffirmed:

- Infectious Aerosols
- Refrigerants and their Responsible Users
- **UPCOMING WORKSHOPS, CONFERENCES AND EVENTS**
 - [NAFA Annual Convention](http://www.nafahq.org) - October 21 - 23, 2025 - Newport, RI.
 - [RETA Conference](http://www.reta.com) - October 21 - 24, 2025 - Spokane, WA.
 - [2025 AABC Annual Meeting](http://www.aabc.com) - October 22 - 24, 2025 - Amelia Island, FL.
 - [SMACNA Annual Conference](https://tinyurl.com/SMACNA25) - October 26 - 29, 2025 - Maui, HI.
 - [Greenbuild](https://informaconnect.com/greenbuild/) (Official Greenbuild International Conference and Expo) - November 4-7 - Los Angeles, CA.
 - [Climatización y Refrigeración](http://www.ifema.es/en/cr) - November 18 - 21 - Madrid, Spain.
 - [elementalLondon](https://elementallondon.show/) - November 19-20 - London, UK.
 - [ISHVAC 2025](https://ishvac2025.com/) (The 14th International Symposium on Heating, Ventilating, and Air Conditioning) - November 29, 2025 – December 2, 2025 - Tokyo, Japan.
- **2026**
 - ASHRAE Winter Meeting - Jan. 31-Feb. 4, 2026 – Las Vegas, NV
 - [CIBSE Technical Symposium 2026](http://www.cibse.org/whats-on/cibse-technical-symposium) - April 23-24, 2026 - Loughborough University - Leicestershire, UK.
 - [12th International Conference on Indoor Air Quality, Ventilation, and Energy Conservation in Buildings \(IAQVEC 2026\)](https://iaqvec2026.org/) - May 18 to 22, 2026 | Los Angeles, California .
 - ASHRAE Annual Meeting - June 27-July 1, 2026 – Austin, TX
 - [AHR Expo Mexico](http://www.ahrexpomexico.com/) - September 29 to October 1, 2026 - Guadalajara, Mexico.

6. Old Business

Design Guidance for Educational Facilities – Version 3.0 & 4.0

Lead V3: Corey Metzger –Close to finishing V3. - Not completed as of 10/30/24

- Will share with others who have had concerns about the document in the past.

Lead V4: Work on V4 will begin once V3 is released.

- Assessment Section Linked to updates guidelines, and state adoptions

- Standardization of Guidelines

7. Project Status Report

- **IAQ Control Strategy** – Steven Winstead
 - Meeting was cut short
- **Model Language and Assessments for Legislation** – Tony & JuNelle
 - Focus on sample language to be used as a model for IAQ Legislation
 - **First Deliverable**
 - Mapping of history and corresponding legislation
 - MERV 13
 - Mid to late November
 - Metzger - Changes from updated 5.2. Are we looking at this?
 - Jon Raja – No changes to the MERV tables
 - Metzger - Are we communicating with ASHRAE leadership?
 - Ruch – Yes – Meeting with Alice Yates
- **Early Childhood Handbook Addition** – Itzhak Mahor
 - Recent meeting last week
 - Summary – See Addendum1
 - Design Conditions
 - Occupancy / Capacity
 - Temperature
 - Ventilation and Filtration
 - Carl - For UVGI, check with the ongoing work of GPC-37 under TC 2.9
 - GPC 37, Guidelines for the Application of Upper-Air (Upper Room) Ultraviolet Germicidal (UV-C) Devices to Control the Transmission of Airborne Pathogens, will hold conference calls from 1:00 pm to 3:00 pm (Eastern) on the following dates: ☐ May 31, 2024 ☐ June 21, 2024 Cancelled For additional information contact Richard Vincent, Chair of GPC 37 (vincentrl777@gmail.com).
 - Derrick Knight - @Derrick Knight - Trane does ANSI/ASA S12.60 apply to daycare
 - ;1.1 Scope
 - 1.1.1 Part 1 of ANSI/ASA S12.60 is applicable to core learning spaces and classrooms with interior volumes not exceeding 566 m3 (20 000 ft3) and to ancillary learning spaces of any volume. Learning spaces with volumes larger than 566 m3

(20 000 ft³) are considered ancillary learning spaces for purposes of this standard. Annex A provides testing procedures when optional tests are performed to determine conformance with the source background noise requirements and the noise isolation requirements of this standard. Annex B provides commentary information on various paragraphs of this standard. Annex C provides guidelines for controlling reverberation in classrooms and other learning spaces.

- ;This Part does not apply for natatoria, auditoria, music performance spaces, teleconferencing rooms, or special education rooms such as those for severely acoustically challenged students, which all require special acoustical design and treatment that is not within the scope of this standard. This Part does not apply to relocatable classrooms or relocatable modular learning spaces, which are covered by Part 2 of ANSI/ASA S12.60.

9. Next Interim Meeting: Thursday December 11, 2025 12noon-1pm PT

10. Adjournment: 11:53 am (PT)

Addendum 1

ASHRAE TC 9.7 – Educational Facilities – Early Childhood / Childcare Facilities Update and Notes

October 30, 2025,

1. Childcare Facilities Sizes, Occupancy, typical cooling and heating capacities

- Architecture – typically one (1) story, in many cases standalone facility, most of the spaces are perimeter zones (with windows).
- Facility Size- from around 5,000 Sqft to 25,000 Sqft (gross)
- Occupancy (Sqft/Child) - typically, 35 to 40 Sqft /child – net, 75 to 100 Sqft/child- gross (including support, admin areas)
- Typical Cooling Capacity – around 15 to 85 Tons (based on 300 Sqft /Ton), can vary, depending on location, architecture, etc.
- Typical Heating Capacity – around 200,000 Btu/h (~ 60 kW) to 1,000,000 Btu/h (~293 kW) , (based on 40 Btu/h /Sqft) can vary, depending on location, architecture, etc.

2. Design conditions (Space Temperature and Humidity)

- Thermal comfort / ASHRAE Std 55
 - The Standard is not applicable for the children but can be used for the teachers /adults.
- Medical concerns
 - Sleep safety, Sudden Infant Death (SID) risk due to overheat, but there is no clear recommendation for space temperature (source: American Academy of Pediatrics or AAP)
- Space temperature requirements by State
 - Most of the states require a range of 66 Deg F (min) to 85 Deg F (max).
 - Several states specifying also the height above floor (6" -24 ")
 - Max allowed Temperature is outside the thermal comfort range. Complaints from teachers and possible overheating for children.
- ASHRAE Std 170
 - Although this standard is for healthcare facilities, data from the standard can be consulted.
- National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs, Third Edition (page 212)
 - Suggests 68 to 75 Deg F / 30 -50 % RH for winter and 74 -82 Deg F /30 -50 % RH for summer.
 - Numbers are based on ASHRAE Std 55-2007 (more likely was not coordinated with ASHRAE SSPC 55 if applicable)
 - 82 Deg F seems to be high for adults.

Summary of findings

Children				
RH %	Space /source	Category	Deg F -Min	Deg F -Max
30-60	Delivery room (caesarean)	Health Care Facility	72	78
60 max	Labor/delivery/recovery	Health Care Facility	70	75
30-60	Newborn intensive care	Health Care Facility	72	78
NR	Newborn intensive care- Formula	Health Care Facility	70	75
30-60	Newborn/well baby Nursery suite	Health Care Facility	72	78
NR	Pediatric play area	Health Care Facility	70	75
NA	State Code Median	Childcare	68	82
50 Max	GSA	Childcare	70	79
50 Max	Navy	Childcare	68	77
30-50	National Health	Childcare	68	82
NA	Commonwealth of MA	Childcare	68	72
		Average (Deg F)	70	77
		Median(Deg F)	70	78
		Range(Deg F)	68-72	72-82

Notes/Summary:

Since not having solid /well supported numbers, consider the following:

1. 70- 72 Deg -winter, 72- 74 Deg F - summer (humidity, 30 to 60 % RH).
2. 40 % RH as a minimum can be considered when applicable.
3. The suggested space conditions satisfy all the requirements described above and ASHRAE Std 55 for adults (teachers)
4. Space temperature should be maintained at 6" to 24" above floor level.
5. Possibility of temperature gradient (in cooling mode) between the required "children" low elevation temperature and the "adult" normal elevation temperature.

3. Ventilation & Filtration

- ASHRAE Std 62.1 - 2022 and ASHRAE Std. 241-2023
 - The Standard VRP section provides ventilation criteria for "Daycare" and "Daycare Sick rooms".
 - The numbers in ASHRAE Std 62.1 -2022 are identical except for the air class (Class 2 for Daycare, Class 3 for Daycare Sick room).
 - Applying these numbers in a typical childcare setting (infants, toddlers and preschoolers) and MERV 13 filters (for the classroom AC local unit running at Constant Volume) and a DOAS system (MERV 13 in the OA air stream as well), might comply with ASHRAE Std 241-2023 for ECAi (40 CFM/Person)
 - Children being sick 8 -12 times per year per child (based on AAP) compliance with ASHRAE Std 241-2023 might allow being in IRMM for the entire time.
 - ASHRAE Std 62.1 -2022 addendum ab suggests that Daycare and Daycare-sick room do not need DCV. ASHRAE 90.1 -2022 addendum o removes these occupancies from the mandatory provision for DCV. Will be in the 2025 62.1 and 90.1 standards.
- Filtration
 - MERV 13 will be recommended.
 - Still investigating issues such as odors and TVOC filtration enhancements.

Summary of Findings

GSA Childcare Center Design data			
Age Group	Total Calculated Ventilation CFM/Person Per ASHRAE Std 62.1-2022	ECAi Provided by the Option (MERV 13) CFM/Person	ECAi Per ASHRAE Std 241-2023 in Breathing zone in IRMM CFM/Person
Infant	21	91.3	40
Pre- Toddler	19	80.9	40
Toddler	19	73.5	40
Pre- School	20	80.3	40

Based on GSA (<https://www.gsa.gov/cdnstatic/designguidesmall.pdf>) design guide examples and using ASHRAE 241-2023 Equivalent Clean Air Calculator

https://docs.google.com/spreadsheets/d/1GUCcjAyhZrTATHD8SQvNcF7JnuWKpadSVT6LA_8SUII/edit?usp=sharing

Note: these are preliminary numbers, further investigation is required.

Notes/Summary:

1. ASHRAE Std 62.1 -2022 VRP along with proper filters selection, might meet ASHRAE Std. 241-2023 ECAi .
2. MERV 13 filters in spaces AC unit (100 % recirculation air, AC unit is Constant Volume) should be recommended.
3. DOAS unit(s) equipped with MERV 13 filters in OA air stream. Exhaust air stream filter can be MERV 8.
4. Suggest applying Air Class 3 requirement also for Daycare Space (no mixing of air with other spaces).

4. Noise

- Noise will be based on AAP recommendations. <35 dbA for 80 % of time.

5. Air Distribution

- Space temperature should be maintained at around 6 " to 24" above floor level for the children and based on several states' requirements.
- Diffusers and return grilles should be carefully selected, sized and placed for the controlled temperature and OA/filtered air proper supply.
- More likely, fully mixed air system with careful consideration for full mixing of OA from the DOAS system and the local classroom/space AC unit for low delivery (6" - 24 "above floor)
- Special attention for air distribution and diffusers placement near windows (most architectural plans showing perimeter zones with windows)
- The applicability of Displacement Ventilation (DV) system will be checked.
- No detailed CFD studies were found, except one (1) with very limited info.

6. HVAC systems

- Small to larger systems. Systems such as PSZ, GSHP, WSHP, VRF, hydronic Fan Coils, DOAS, chiller(s), boiler(s), air-to-water chiller heat pumps etc. can be applied.
- Special attention to VRF systems on issues such as refrigerant leaks and maintenance challenges.
- UVGI systems applicability will be checked.
- A survey was distributed to obtain actual cases. The data will be used to better understand industry experience and applicability of HVAC systems.

7. Control Systems

- HVAC systems are relatively small (serving buildings from 5,000 Sqft to 25,000 Sqft), but the control systems should be able to control variety, more sophisticated systems such as DOAS units, terminals, local space units (WSHP, GSHP, hydronic Fan coils, VRF, PSZ), chillers, pumps etc.
- Space control systems should control temp at 6" -24 " above floor, and monitor CO2, PM 2.5, TVOC etc.
- Thermostat with offset located in a typical height (52" to 60 ") can be an option to accommodate space temperature gradient (lower temperature at 6" -24 "for children, higher temperature at 52" -60 "for teachers).

Tasks for November/ December 2025

1. Review and apply the results of HVAC systems survey.
2. Feedback about the applicability of UVGI systems.
3. Research/check the applicability of Displacement Ventilation (DV) systems for Childcare facilities.
4. Investigate the availability and applicability of control systems for this application.
5. Check the applicability of ASHRAE Guideline 36-2021
6. Next Work group meeting around December 15, 2025
7. Chapter Childcare section writing from December 15 until December 31, 2025.