

A downtown Chicago office tower, summer 2024

Ten Overture Room Sensors on floors 29, 30, and 31, hourly from July 19th to August 15th, 2024:
6,365 sensor-hours

Overall grade

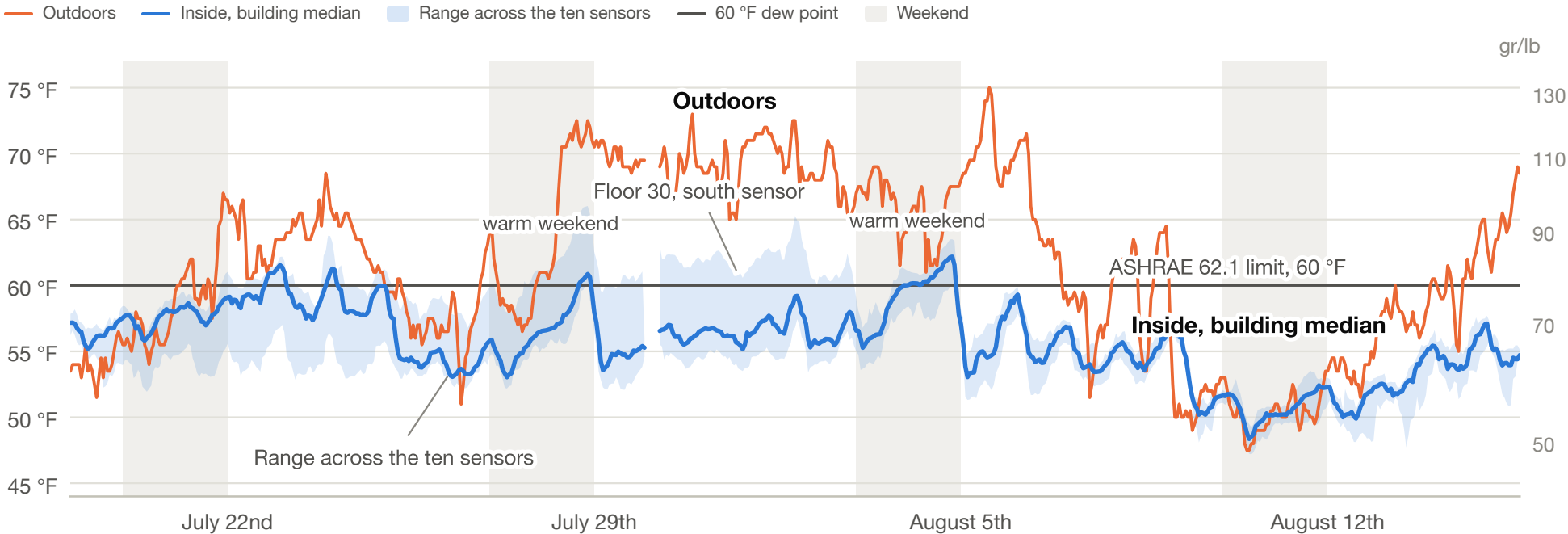
Our read: clean air, with CO₂, particles, and TVOC all at A or better. Moisture sets the grade: on two humid weekends the whole building crossed a 60 °F dew point, and one room on floor 30 held above it for days.



C Moisture 598 sensor-hours At or above a 60 °F dew point, 9.4% ASHRAE Standard 62.1's limit. Outdoors was above it 60% of the time; the building's median hour held 55.9 °F.	A CO₂ 16 sensor-hours At 1,000 ppm or more, 0.3% Overture's default CO₂ set point. All on one Tuesday evening; on a typical weekday the rooms peaked at 556 ppm.	A+ Particles 0 sensor-hours PM_{2.5} at 19 µg/m³ or more Overture's default PM_{2.5} set point. The median hour read 0.5 µg/m³, the highest 15.4 µg/m³.	A TVOC 14 sensor-hours At 1.0 mg/m³ or more, 0.2% Overture's default TVOC set point. The median hour read 0.14 mg/m³.
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How we grade. The share of sensor-hours at or above the reference: A+ none, A under 1%, B under 5%, C under 15%, D under 30%, and F 30% or more. The overall grade is the lowest of the four.

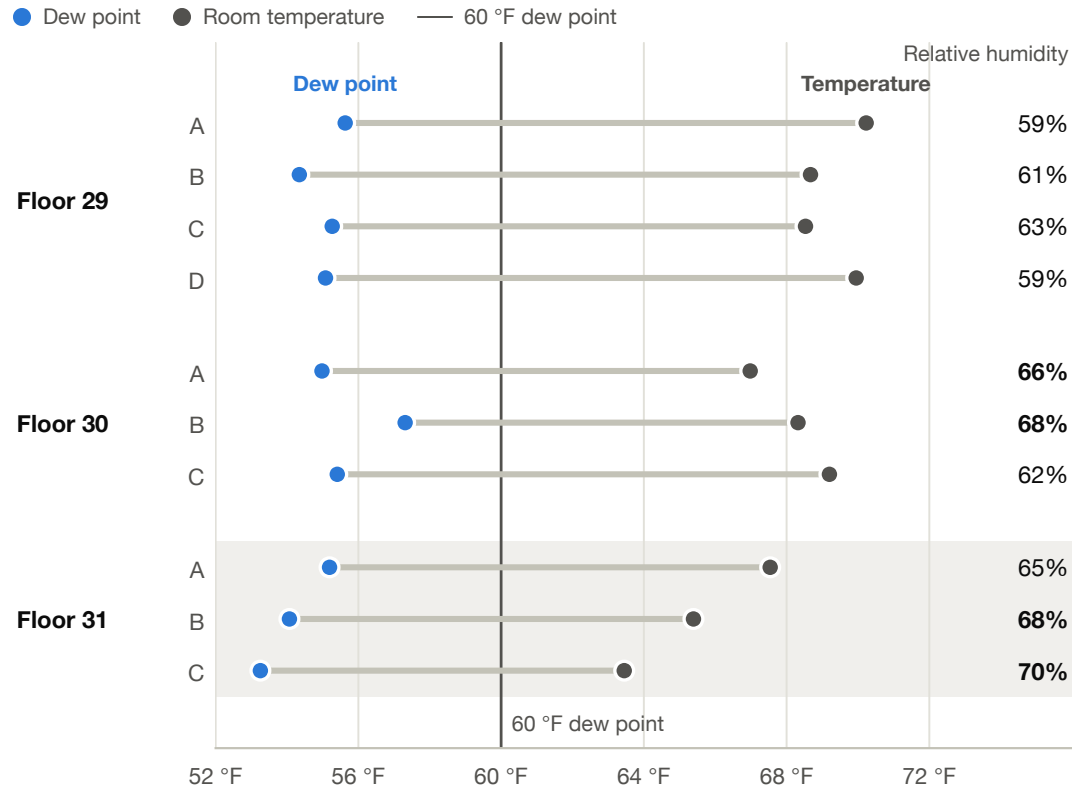
Outdoors sat above a 60 °F dew point 60% of the time. Inside held a median 55.9 °F, and crossed 60 °F on two warm weekends and in one room on floor 30.



Hourly dew point, July 19th to August 15th, 2024. Outdoors is the median of the National Weather Service stations at Chicago Midway and O'Hare. The right-hand scale gives the same values as moisture content, in grains per pound: in humid hours, indoor moisture content ran about 73% of outdoor. The break on July 30th is seven hours with no data.

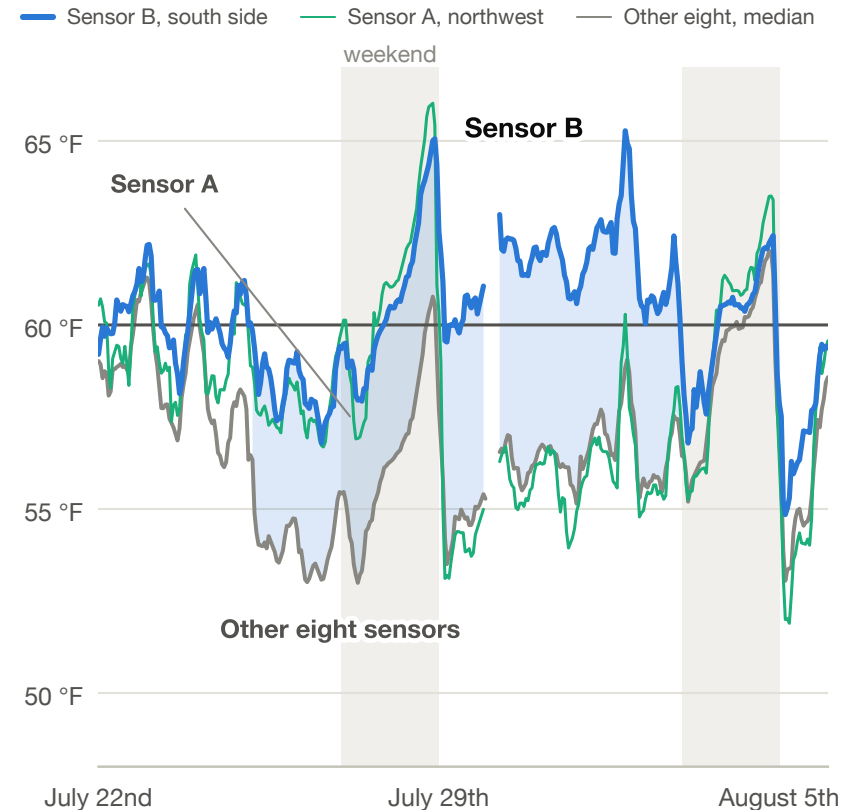
Relative humidity tracked room temperature. The dew point shows where the moisture was.

Weekday working hours, median by sensor



Weekdays, 8 AM to 6 PM; relative humidity at right. Floor 31 read about 3.5 °F cooler than floors 29 and 30 at a dew point 1.3 °F lower, so its relative humidity read about 5 points higher with less moisture.

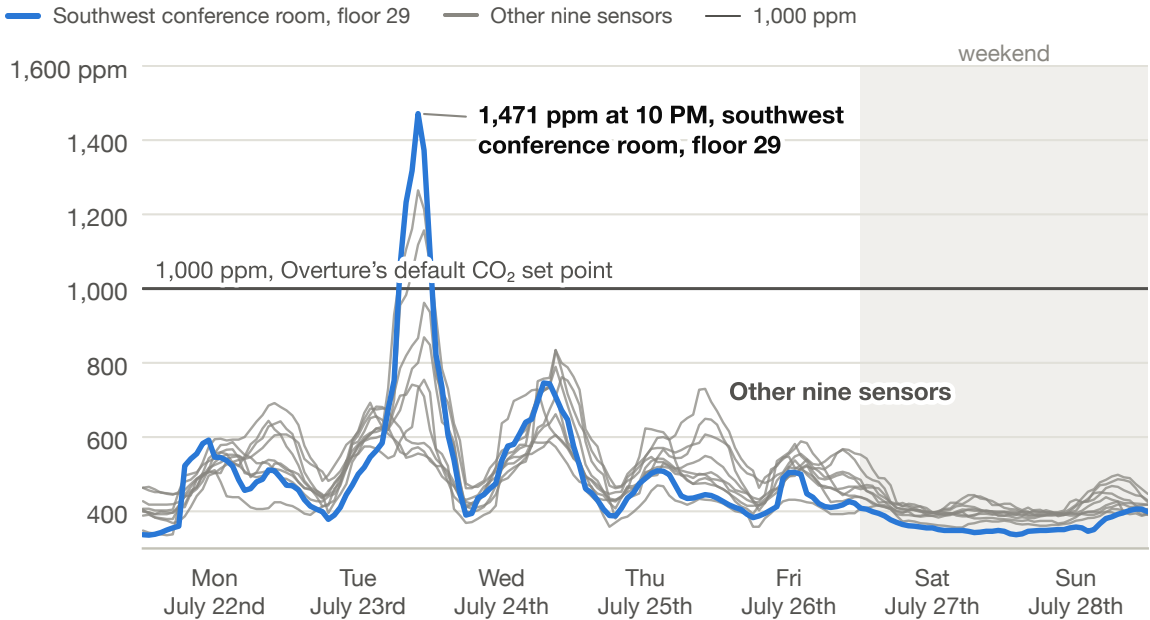
Floor 30 against the rest of the building



- Floor 31: cool rooms, not wet ones.** In working hours it ran the coolest rooms and the lowest dew point of the three floors, medians of 65.5 °F and 54.1 °F. Higher relative humidity at a lower dew point comes from the thermostat, and cooling further to fight it only raises relative humidity.
- Floor 30, south side: a local moisture source.** Sensor B held at or above a 60 °F dew point for 90 straight hours, July 30th to August 2nd, and reached 90% relative humidity on the evening of August 1st, while its room temperature matched the building's. A source that runs nights and weekends is not people, and outdoor air would have raised the whole floor: this points to water in or near that room, such as a leak or wet materials. Sensor A, on the northwest side, ran with it through July 28th.
- Two warm weekends: the whole building.** On July 27th and 28th and August 3rd and 4th, all ten sensors crossed 60 °F. In humid hours the rooms ran about 72 °F on weekends against 69 °F on weekdays, and the dew point 2 °F higher, with outdoors at 66 °F both ways: with the cooling set back, less moisture comes off the coils. These weekends and floor 30's sensor B account for 440 of the 598 sensor-hours at or above 60 °F.

Weekday ventilation was generous, with CO₂ peaking at a median 556 ppm. One evening in one conference room reached 1,471 ppm.

CO₂, Monday, July 22nd to Sunday, July 28th



Hourly. All 16 sensor-hours at or above 1,000 ppm came on Tuesday, July 23rd, from 7 PM to midnight, all on floor 29. By 5 AM the conference room was back under 500 ppm.

What we recommend

1. **Keep dehumidifying on humid weekends.** When outdoors is above a 60 °F dew point, the weekend setback lets the whole building cross 60 °F.
2. **Check floor 31's set point.** Its rooms read 3 to 4 °F cooler than the floors below; a warmer set point lowers relative humidity.
3. **Inspect floor 30's south side.** Look for a leak or wet materials near sensor B, and check the northwest corner too.

Typical levels median across the ten sensors	556 ppm ✓ weekday peak, under 1,000	73 cfm ✓ outdoor air per person, weekdays, over the 17 cfm office default	0.5 µg/m³ ✓ PM _{2.5} , all hours, under 19	0.14 mg/m³ ✓ TVOC, all hours, under 1.0
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- **Outdoor air per person.** The typical weekday rise of 144 ppm over the morning level works out to about 73 cfm of outdoor air per person present (56 to 86 by room), about four times the ASHRAE 62.1 office default of 17 cfm per person. At that rate the people themselves add about 4 gr/lb, under 2 °F of dew point, so they were not the moisture source.
- **The evening of July 23rd.** On ordinary weekdays, CO₂ held level from 7 PM to about 1 AM (503 to 488 ppm) while the rooms warmed about 2 °F, then both fell: the outdoor air and cooling ran on a daytime schedule. The July 23rd gathering on floor 29 ran in those off hours, and CO₂ cleared once the system came back on.

Overture Room Sensors report dew point, CO₂, PM_{2.5}, and TVOC around the clock, so a moisture problem that relative humidity alone would miss shows up the day it starts.

Hourly values from each sensor's history in the Overture app. Outdoor dew point: the median of the National Weather Service stations at Chicago Midway and O'Hare, through the Iowa Environmental Mesonet. Weekday working hours are 8 AM to 6 PM. Times are Central.

Prepared by Overture Air Quality, September 2026.