

## ASHRAE Handbook Preview

# More Stations in Update Of Climate Design Data

The 2021 update to the “Climatic Design Information” chapter of the *ASHRAE Handbook—Fundamentals* includes climate data from more than 1,100 more climate stations than the 2017 chapter. The 2021 *Handbook* chapter includes data from 9,237 stations throughout the world, including a new location in Lagos, Nigeria.

Updated every four years, the chapter is updated with recent, reliable climate data to help building professionals size and design building components. The *Handbook* chapter also contributes to ANSI/ASHRAE Standard 169, *Climatic Data for Building Design Standards*.

Michael Roth, Ph.D., P.Eng., Member ASHRAE, vice chair of TC 4.2, Climatic Information, discusses the chapter’s updated information.

### Why is the updated climatic data important?

There are many reasons, but beyond algorithmic improvements and more reported design conditions, we have more stations. The 2017 chapter saw the publication of 8,118 stations. This update will see that number rise to 9,237 stations. This means we now have design conditions in new locations such as Lagos, Nigeria, which is home to 21 million people.

### Were there any changes in the data this time?

This update sees the development of a web interface into the climatic data for the ASHRAE membership, which allows ASHRAE members to select a weather station via a map and download the design conditions and visualization/analysis tools—all through a few clicks. We will be reporting more information on this development this year.

### Were there any changes in the methodology?

This edition sees the introduction of historical trends. Our climatic data is processed and published based on the average conditions over the past 25 years. However,

in many locations, we have recorded rapid changes. Where these changes are deemed statistically significant, we now report the decadal trends for some of the key design elements.

As in previous editions, we look forward to hearing how designers are using this information and anticipate evolving the reporting in the next edition based on this feedback.

### What are your recommended best practices for how design engineers can better use this data?

In TC 4.2, we typically turn this question back on the designers. We are very receptive to hearing how design engineers use the data, how it feeds into their workflows, and more importantly what is missing. So, we ask “How can we do better?”

### What lessons can an engineer take away from this research?

Globally there continues to be a persistent trend toward warming. This warming causes a knock-on effect: heating and cooling degree days decrease and rise, respectively, leading to changes in the classification of climate zones, resulting in code changes, and ending in building and equipment design adaptation. I encourage every engineer to read the forthcoming *Handbook* chapter on climate change.

### Were there any surprises or unforeseen challenges for you when preparing this research?

After more than 20 years of wrangling climate data, I continue to be surprised at the various clever ways that climatic data can go bad. Whether it is unit conversions, equipment failing when too hot or too cold or missing data, the list is endless. It is a recommendation of this research that we revisit and improve our procedures for dealing with erroneous data for the 2025 update. ■

## Industry Roundup

### Heating Buildings Using Wastewater

**MONCTON, NEW BRUNSWICK, CANADA**—A Canadian utility plans to use the sewage and wastewater it treats to heat four of its buildings starting this year. The incoming material from toilets, showers, sinks and washing machines is warm enough that the utility wants to use a heat recovery system. The new system could reduce the facility's net greenhouse gas emissions by about 22%.

*Source: CBC*

### Study Analyzes How Sweat, Bleach Affect Gym Air Quality

**BOULDER, COLO.**—One sweaty, huffing, exercising person emits as many chemicals as up to five sedentary people, according to a new University of Colorado Boulder study. Those human emissions could chemically combine with bleach cleaners, which many gym facilities use to sanitize equipment, to form new airborne chemicals with unknown impacts to IAQ. *Source: University of Colorado Boulder*

### Making Smart Thermostats More Efficient

**CAMBRIDGE, MASS.**—Since HVAC systems account for nearly half of a building's energy use, smart buildings use smart thermostats. But acquiring data in smart buildings is a time-consuming process. MIT researchers have designed a new smart thermostat that uses data-efficient algorithms that can learn optimal temperature thresholds within a week. The smart thermostat quickly learns to optimize building microclimates for both energy consumption and user preference.

*Source: MIT*

### Geothermal Micro-Districts Progress

**MERRIMACK VALLEY, MASS.**—Two pilot projects in Massachusetts will attempt to deploy geothermal heating across entire neighborhoods—an innovative model that aims to reduce fossil fuel use while providing an economic transition for gas utilities and their workers. One of the micro-district concept's goals is to help the state reach its goal of achieving net-zero carbon emissions by 2050.

*Source: Energy News Network ■*

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