

How CBECS Affects 90.1

ATLANTA—In November, the U.S. Energy Information Administration released the first estimates from the 2018 Commercial Buildings Energy Consumption Survey (CBECS), which provides information about the U.S. commercial building stock. The data can be used to quantify the energy reduction impact of the most recent versions of ANSI/ASHRAE/IES Standard 90.1, *Energy Standard for Buildings Except Low-Rise Residential Buildings*.

Standing Standards Project Committee 90.1 members Don Brundage, P.E., Member ASHRAE, chair of SSPC 90.1; Richard Lord, Fellow ASHRAE, co-vice chair of SSPC 90.1; Michael Rosenberg, Fellow ASHRAE; and Len Sciarra, AIA, Member ASHRAE, discuss how CBECS affects Standard 90.1.

What is the significance of the most recent CBECS?

CBECS is a very important information source on energy use and equipment stock in the United States for nonresidential buildings. It is used in countless different planning activities related to energy use and forecasting by many different public and private organizations. CBECS is produced by the Energy Information Administration, part of the United States Department of Energy (DOE).

How does CBECS affect Standard 90.1?

SSPC 90.1 uses CBECS data for a variety of purposes, including as an important data source for the standard's Progress Indicator. The Progress Indicator measures the reduction in energy use from one edition of Standard 90.1 to the next one, such as between the 2016 edition and the 2019 edition. Pacific Northwest National Laboratory (PNNL) uses the Progress Indicator methodology to track the national impact of Standard 90.1 throughout the three-year development cycle and periodically reports the results to SSPC 90.1.

The Progress Indicator applies the requirements of two different editions of the standard—the new edition compared to the previous—to a suite of established prototype energy models,¹ including 16 building types in the 16 ASHRAE climate zones found in the U.S. The savings are computed and the results aggregated across building

types and climate zones using weighting factors based on new-building permit data to provide a single national savings number. The characteristics of buildings in CBECS inform the configuration of the prototype buildings for areas such as building form, heating sources, HVAC system types, wall construction and window-to-wall area.

The DOE is required by federal law (the Energy Conservation and Production Act [ECPA], as amended) to issue a determination whether the latest edition of Standard 90.1 will improve energy efficiency in commercial buildings. DOE has 12 months to publish its determination in the *Federal Register*, triggered by each new edition of the standard. The same federal law then provides states two years from the publication of the determination to review and update their energy code, including demonstration that the state code meets or exceeds the provisions of the updated edition of Standard 90.1 (in this case Standard 90.1-2019). PNNL builds on the Progress Indicator approach to provide the analysis that serves as the basis for the determination.

In addition to the Progress Indicator and the DOE determination, CBECS and other data sources are used to determine the economic justification for new proposals to make sure they are cost-effective.

What do ASHRAE members need to know?

CBECS is a rich information source for existing building construction and equipment. This is important information for different types of planning and forecasting. The U.S. government provides data for free to anyone who wants to use it.

To explore the 2018 CBECS preliminary results, visit <https://www.eia.gov/consumption/commercial>

References

1. DOE. 2020. "Commercial Prototype Building Models." <https://tinyurl.com/yy7p3jkd> ■

To read more about how CBECS affects 90.1, visit <https://tinyurl.com/yahrw2ze> to read the full Q&A.

Industry Roundup

Desert Camels Inspire Cooling Technology

CAMBRIDGE, MASS.—How camels keep cool while conserving water in a scorching desert environment inspired MIT researchers' new system that could help keep pharmaceuticals or fresh produce cool in hot environments, with no power supply. A camel's coat can help to reduce loss of moisture while allowing enough sweat evaporation to provide a cooling effect. The new system developed by MIT engineers uses a two-layer material to achieve a similar effect. *Source: MIT*

ASHRAE Epidemic Task Force Releases Guidebook for Alternate Care Sites

ATLANTA—As many communities are setting up alternate care sites in response to spikes in COVID-19, a new resource from the ASHRAE Epidemic Task Force is available. The Alternate Care Site HVAC Guidebook recommends how

to apply standards primarily used for permanent facilities to temporary sites under less than ideal conditions or with time, budget and technical feasibility constraints. Specific recommendations include guidance for design requirements, airflow, filtration and space conditions. Download the guidebook: <https://tinyurl.com/yy9326w3>
Source: ASHRAE

Sensor Tech Provides Real-Time Feedback About HVAC&R Systems

WEST LAFAYETTE, IND.—Purdue University researchers have developed a new autonomous sensor technology that could help businesses monitor HVAC&R systems in real time much faster and easier. The sensor monitors the oil circulation ratio in real time for HVAC&R systems, which provides data on the health and functionality of the overall system. "Our technology is needed as more businesses use variable-speed HVAC systems," said researcher Orkan Kurtulus, Ph.D., Associate Member ASHRAE. *Source: Purdue University* ■

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