

ADDENDA

**ASHRAE/IBPSA Addendum n to
ANSI/ASHRAE Standard 209-2018**

Energy Simulation Aided Design for Buildings Except Low-Rise Residential Buildings

This addendum is editorial only. It was approved by ASHRAE and the International Building Performance Simulation Association on September 26, 2024.

This addendum was approved by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the standard. Instructions for how to submit a change can be found on the ASHRAE® website (www.ashrae.org/continuous-maintenance).

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International
Building
Performance
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Association

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Cognizant TC: 4.7, Energy Calculations

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FOREWORD

Addendum n modifies Informative Appendix B to improve its readability and to include additional benchmarking resources.

Informative Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and ~~striketrough~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

Addendum n to Standard 209-2018

Modify Informative Appendix B as shown.

INFORMATIVE APPENDIX B BENCHMARK INFORMATION

This appendix provides information sources for building energy use data. These data can be used to define a building energy use benchmark that identifies the energy use for buildings similar to the building undergoing *energy modeling* analysis. The term *similar* can refer to buildings that have similar

- a. use/occupants,
- b. location/climate,
- c. building energy use systems (*HVAC*, electrical, etc.), and
- d. size/orientation.

Determining what similar qualities are most important to the *energy modeling* analysis is the job of the *energy modeler*. Table B-1 lists some benchmarking resources.

1. General information resources (see Informative Appendix F):
 - 1.1 Brown et al. (2014), Richard E., T. Walter, L.N. Dunn, C.Y. Custodio, P.A. Mathew, D.M. Cheifetz, E. Alschuler, and J. Knapstein. 2014. Getting real with energy data: Using the building performance database to support data-driven analyses and decision making. Proceedings of 2014 ACEEE Summer Study on Energy Efficiency in Buildings—The Next Generation: *Reaching for High Energy Savings*. American Council for an Energy Efficient Economy, Washington, DC.
 - 1.2 Glazer (2016, 2017)
2. National energy use data Benchmarking data resources
 - 2.1 United States (U.S.) Department of Energy (DOE)
 - 2.1.1 Building Performance Database (BPD)
 - 2.1.2 Federal Energy Management Program (FEMP)
 - 2.1.2.1 Comprehensive Annual Energy Data and Sustainability Performance
 - 2.1.3 Buildings Energy Data Book
 - 2.1.4 U.S. Energy Information Administration (EIA)
 - 2.1.4.1 Commercial Buildings Energy Consumption Survey (CBECS)
 - 2.1.4.2 Residential Energy Consumption Survey (RECS)
 - 2.1.5 High Performance Buildings Database
 - 2.1.6 Commercial Building Energy Asset Scoring Tool
 - 2.1.7 EnergyPlus Energy Simulation Software—Commercial Reference Buildings
 - 2.2 United States (U.S.) Environmental Protection Agency (EPA)
 - 2.2.1 Portfolio Manager—existing buildings database
 - 2.2.2 Target Finder—new building energy use goal setter
 - 2.3 Building Owners and Managers Association (BOMA)
 - 2.3.1 BOMA BEST Energy and Environment Report
 - 2.4 Lawrence Berkeley National Laboratory
 - 2.4.1 LABS 21
 - 2.5 ASHRAE
 - 2.5.1 ASHRAE Standard 100
3. Regional, state, and city energy use data resources

Table B-1 Benchmarking Resources

| <u>Name</u> | <u>Scope</u> | <u>Reference*</u> |
|--|--------------------------|-------------------------------------|
| <u>Building Performance Database</u> | <u>National</u> | <u>Berkeley Lab</u> |
| <u>Comprehensive Annual Energy Data and Sustainability Performance</u> | <u>National</u> | <u>U.S. DOE</u> |
| <u>Buildings Energy Databook</u> | <u>National</u> | <u>U.S.DOE</u> |
| <u>Commercial Buildings Energy Consumption Survey</u> | <u>National</u> | <u>EIA</u> |
| <u>Residential Energy Consumption Survey</u> | <u>National</u> | <u>EIA</u> |
| <u>Building Energy Data Asset Score</u> | <u>National</u> | <u>U.S. DOE</u> |
| <u>Commercial Reference Buildings</u> | <u>National</u> | <u>U.S.DOE</u> |
| <u>Portfolio Manager</u> | <u>National</u> | <u>ENERGY STAR</u> |
| <u>Portfolio Manager Target Finder</u> | <u>National</u> | <u>ENERGY STAR</u> |
| <u>Laboratory Benchmarking Tool</u> | <u>National</u> | <u>Berkeley Lab</u> |
| <u>ANSI/ASHRAE/IES Standard 100</u> | <u>National</u> | <u>ASHRAE</u> |
| <u>Commercial Building Stock Assessment</u> | <u>Northwest</u> | <u>NEEA</u> |
| <u>Residential Building Stock Assessment</u> | <u>Northwest</u> | <u>NEEA</u> |
| <u>Northwest End Use Load Research</u> | <u>Northwest</u> | <u>NEEA</u> |
| <u>California Commercial End-Use Survey</u> | <u>California</u> | <u>CEC</u> |
| <u>ASHRAE RP-1651</u> | <u>National</u> | <u>Glazer</u> |
| <u>Architecture 2030 ZeroTool</u> | <u>National</u> | <u>Architecture 2030</u> |
| <u>Getting to Zero Database</u> | <u>National</u> | <u>New Building Institute</u> |
| <u>Building Energy Use Surveys</u> | <u>Canada</u> | <u>NRC</u> |
| <u>Energy Use and Greenhouse Gas Emissions for the Broader Public Sector</u> | <u>Ontario Canada</u> | <u>Ontario</u> |
| <u>CalBEM Benchmarking Database</u> | <u>California</u> | <u>Southern California Edison</u> |
| <u>Energy and Water Usage of Large Buildings in Ontario</u> | <u>Ontario Canada</u> | <u>Ontario</u> |
| <u>Building Energy Benchmarking DC</u> | <u>Washington DC</u> | <u>Open Data DC</u> |
| <u>Montgomery County Energy Benchmarking</u> | <u>Montgomery, MD</u> | <u>Montgomery, MD</u> |
| <u>Benchmarking and Energy Efficiency Rating</u> | <u>New York City, NY</u> | <u>New York City</u> |
| <u>Chicago Energy Benchmarking</u> | <u>Chicago, IL</u> | <u>Chicago</u> |
| <u>Seattle Energy Benchmarking Data and Reports</u> | <u>Seattle, WA</u> | <u>Seattle</u> |
| <u>Portland Commercial Building Energy Reporting</u> | <u>Portland, OR</u> | <u>Portland</u> |
| <u>Building Energy Benchmarking Program</u> | <u>California</u> | <u>California Energy Commission</u> |
| <u>Existing Buildings Energy and Water Efficiency</u> | <u>Los Angeles, CA</u> | <u>Los Angeles</u> |
| <u>Existing Buildings Energy Performance Ordinance Report</u> | <u>San Francisco, CA</u> | <u>San Francisco</u> |
| <u>U.S. City, County, and State Policies for Existing Buildings: Benchmarking, Transparency and Beyond</u> | <u>National</u> | <u>IMT</u> |
| <u>Building Performance Standards</u> | <u>National</u> | <u>U.S. DOE</u> |

3.1 Northwest Energy Efficiency Alliance (NEEA)

3.1.1 Commercial Building Stock Assessment (CBSA)

3.2 California Energy Commission

3.2.1 California Commercial End-Use Survey (CEUS)

3.3 Institute for Market Transformation

3.3.1 Building Energy Performance Policy—information on state and city building energy benchmarking and transparency policies

Modify Informative Appendix F as shown. Add new subsections for references and resources, respectively.

INFORMATIVE APPENDIX F INFORMATIVE REFERENCES

[...]

ASHRAE. ~~2015~~2024. ANSI/IES/ASHRAE 100, *Energy Efficiency in Existing Buildings*. Atlanta: ASHRAE.

[...]

Brown, R.E., T. Walter, L.N. Dunn, C.Y. Custodio, P.A. Mathew, D.M. Cheifetz, E. Alschuler, and J. Knapstein. 2014. Getting real with energy data: Using the building performance database to support data-driven analyses and decision-making. Proceedings of 2014 ACEEE Summer Study on Energy Efficiency in Buildings—The Next Generation: *Reaching for High Energy Savings*. American Council for an Energy Efficient Economy, Washington, DC. <http://aceee.org/files/proceedings/2014/data/index.htm>.

[...]

Glazer, J. 2016. Development of Maximum Technically Achievable Energy Targets for Commercial Buildings. Research Project RP-1651. Peachtree Corners, GA: ASHRAE. Available at https://www.techstreet.com/ashrae/standards/rp-1651-development-of-maximum-technically-achievable-energy-targets-for-commercial-buildings?product_id=1911167.

Glazer, J. 2017. Development of maximum technically achievable energy targets for commercial buildings. *ASHRAE Transactions* 123(2):32–52.

[...]

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ASHRAE is concerned with the impact of its members' activities on both the indoor and outdoor environment. ASHRAE's members will strive to minimize any possible deleterious effect on the indoor and outdoor environment of the systems and components in their responsibility while maximizing the beneficial effects these systems provide, consistent with accepted Standards and the practical state of the art.

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The effects of the design and selection of equipment and systems will be considered within the scope of the system's intended use and expected misuse. The disposal of hazardous materials, if any, will also be considered.

ASHRAE's primary concern for environmental impact will be at the site where equipment within ASHRAE's scope operates. However, energy source selection and the possible environmental impact due to the energy source and energy transportation will be considered where possible. Recommendations concerning energy source selection should be made by its members.

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