National and State Analysis

National Analysis

Pacific Northwest National Laboratory (PNNL) assesses recent editions of the model codes to quantify the associated energy & cost savings. This analysis confirms the cost-effectiveness of updated editions of the model codes across U.S. climate zones, providing critical information during state and local adoption processes. The following national analyses are currently available:

Commercial

- National Cost Effectiveness of Standard 90.1-2022
- National Cost Effectiveness of Standard 90.1-2022 Workbook
- National Cost Effectiveness of Standard 90.1-2019
- National Cost Effectiveness of Standard 90.1-2019 Workbook
- National Cost Effectiveness of Standard 90.1-2016
- National Cost Effectiveness of Standard 90.1-2016 Workbook
- Energy and Energy Cost Savings Analysis of the 2021 IECC for Commercial Buildings
- Energy and Energy Cost Savings Analysis of the 2018 IECC for Commercial Buildings

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ENERGY AND ECONOMIC ANALYSIS

Residential

- National Cost Effectiveness of the 2021 IECC
- National Cost Effectiveness of the 2018 IECC
- HERS Index Values Corresponding to the IECC

State Analysis

Pacific Northwest National Laboratory (PNNL) assesses recent editions of the model codes to quantify the associated energy & cost savings. These analyses take into account varying state-level conditions, such as incremental costs, utility rates, climatic conditions and construction trends. The residential analyses are customized based on current state energy codes. The following state analyses are currently available:

State Cost-effectiveness Analysis Reports

State	Commercial	Residential
Alabama	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Alaska	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Arizona	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC

Arkansas	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
California*		
Colorado	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Connecticut	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Delaware	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
District of Columbia	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Florida	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC

Georgia	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Hawaii	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2015 IECC
Idaho	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Illinois	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2015 IECC
Indiana	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Iowa	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC

Kansas	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Kentucky	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Louisiana	ASHRAE 90.1-2019 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Maine	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Maryland	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2015 IECC
Massachusetts	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Michigan	ASHRAE 90.1-2019 ASHRAE 90.1-	MI Customized 2021 IECC 2021 IECC

	2016 ASHRAE 90.1-2013	2018 IECC 2015 IECC
Minnesota	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Mississippi	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Missouri	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Montana	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Nebraska	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Nevada	ASHRAE 90.1-2019 ASHRAE 90.1-2016	2021 IECC 2015 IECC

	ASHRAE 90.1-2013	
New Hampshire	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
New Jersey	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
New Mexico	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
New York	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
North Carolina	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC

North Dakota	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Ohio	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2015 IECC
Oklahoma	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Oregon	ASHRAE 90.1-2019	2021 IECC
Pennsylvania	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Rhode Island	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC

South Carolina	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
South Dakota	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Tennessee	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Texas	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Utah	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Vermont	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC

Virginia	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Washington*		
West Virginia	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC
Wisconsin	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013*	2021 IECC 2018 IECC 2015 IECC
Wyoming	ASHRAE 90.1-2019 ASHRAE 90.1-2016 ASHRAE 90.1-2013	2021 IECC 2018 IECC 2015 IECC

**Deviates from model codes*

State Fact Sheets

Adopting the 2021 IECC for residential buildings and ASHRAE Standard 90.1-2019 for commercial buildings will save energy, money, and enhance building resilience. These state fact sheets provide an overview of the expected benefits to homeowners and building owners.

Alabama	Louisiana	Ohio

Alaska	Maine	Oklahoma
Arizona	Maryland	Oregon
Arkansas	Massachusetts	Pennsylvania
California*	Michigan	Rhode Island
Colorado	Minnesota	South Carolina
Connecticut	Mississippi	South Dakota
Delaware	Missouri	Tennessee
Florida	Montana	Texas
Georgia	Nebraska	Utah
Hawaii	Nevada	Vermont
Idaho	New Hampshire	Virginia
Illinois	New Jersey	Washington*
Indiana	New Mexico	Washington, DC
Iowa	New York	West Virginia
Kansas	North Carolina	Wisconsin
Kentucky	North Dakota	Wyoming

**Deviates from model codes*

Local Fact Sheets

Adopting the 2021 IECC for residential buildings and ASHRAE Standard 90.1-2019 for commercial buildings will save energy, money, and enhance building resilience. These local fact sheets provide an overview of the expected benefits to homeowners and building owners.

Atlanta	Des Moines	Miami
Baltimore	Grand Rapids	Minneapolis
Baton Rouge	Houston	Oklahoma City

Birmingham	Las Vegas	Pittsburgh
Boise	Lexington	Richmond
Columbia	Little Rock	Salt Lake City
Columbus	Madison	

Building Energy Codes Program is a resource of the U.S. Department of Energy's Building Technologies Office.

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