

## Commercial Modeling Methodology with Input and Assumption Sources

### Overview of the Oregon Reach Code

This overview is intended to give supporting information for the Oregon Reach Code adoption process and assist those who submit a code proposal for the 2022 Oregon Commercial Reach Code. The Commercial Reach Code shall be based on the 2021 Oregon Energy Efficiency Specialty Code (OEESC), which is also Chapter 13 of the Oregon Structural Specialty Code (OSSC). The 2021 OEESC is based on ANSI/ASHRAE/IES Standard 90.1—2019.

The Commercial Reach Code is intended to improve average building performance by approximately 10% better than the baseline, statewide 2021 OEESC. The Commercial Reach Code is an overlay code, meaning the provisions are a supplemental addition to the minimum energy requirements of the state building code. A municipality may adopt the Commercial Reach Code by ordinance, but must provide incentives to attain the increased performance levels.

### Materials and methods for Commercial Reach Code proposals

The division requests supporting documentation for Commercial Reach Code proposals. The division has developed a Reach Code Proposal Workbook (RCPW) that provides guidance for consistent modeling and weighting of results for ease of inclusion with a proposal. However, the RCPW is not mandatory for submission with a code proposal application. If a proponent chooses not to use the RCPW with their submission, it would still be helpful to provide the information on the “Reach Code Reporting” tab of the RCPW in their own format.

The US Department of Energy (DOE) prototype models for ASHRAE 90.1-2019 have the Inputs and Assumptions (I&A) used for the 2021 OEESC base model. See the Prototype Building Models page at [energycodes.gov](http://energycodes.gov): [Prototype Building Models | Building Energy Codes Program](#). Models for Climate Zones 4C and 5B should be utilized. The Scorecard Excel spreadsheets list the modeling assumptions for each of the 16 building types. These system descriptions and assumptions are used in the EnergyPlus model files.

For cost analysis, the physical characteristics and building systems of the Scorecard models should be used. If different configuration of structures or building systems is used in the proposal analysis, the differences should be noted. The current statewide Energy Cost Data ([energy-CPU-modeling-path.pdf](#)) should be used for the cost of energy sources. The RCPW also includes the currently recognized weighting factors for 16 individual building types, per climate zone, which are used for the federal energy analysis, and a format to present a cost analysis of the proposed Commercial Reach Code.

A proposal should include improvements above the baseline energy use, but the division recognizes that some proposals may not have an energy savings component.

While the focus of the modeling I&A is based on the use of EnergyPlus software, the division recognizes that other software or calculation methods may have input selections, default values and variables that differ from those used by U.S. DOE using EnergyPlus. For those I&A not specifically noted in the Scorecard and methodology, best available, public sources and references should be used.

These materials are intended to assist proponents with developing consistent, reproducible energy models. By working from the same methodology, I&A (characteristics of size, shape, thermal envelope and mechanical components, etc.) and sources, the division, boards, proponents and reviewers of the Commercial Reach Code proposals will be able to comment from the same, or similar, viewpoint on a level playing field.

## Energy modeling and reporting resources

- Specific references for 2021 OEESC modeling are linked in the 2021 OEESC tab of the RCPW.
- 2021 Oregon Energy Efficiency Specialty Code (OEESC)  
[oregon.gov/bcd/codes-stand/Documents/2021oeesc.pdf](https://oregon.gov/bcd/codes-stand/Documents/2021oeesc.pdf)
- ANSI-ASHRAE-IES Standard 90.1—2019 (read-only versions of ASHRAE Standards)  
[ashrae.org/technical-resources/standards-and-guidelines/read-only-versions-of-ashrae-standards](https://ashrae.org/technical-resources/standards-and-guidelines/read-only-versions-of-ashrae-standards)
- U.S. DOE national model code prototypes
  - Commercial prototype building models for ASHRAE 90.1—2019  
[energycodes.gov/prototype-building-models#Commercial](https://energycodes.gov/prototype-building-models#Commercial)
  - DOE Methodology overview (ASHRAE Scalar Method):  
[energycodes.gov/methodology](https://energycodes.gov/methodology)
  - Methodology for Evaluating Cost-Effectiveness of Commercial Energy Code Changes, PNNL-21294 Rev 1.  
[energycodes.gov/sites/default/files/2021-07/commercial\\_methodology.pdf](https://energycodes.gov/sites/default/files/2021-07/commercial_methodology.pdf)
  - National Cost-Effectiveness of ANSI/ASHRAE/IES Standard 90.1-2019  
[energycodes.gov/sites/default/files/2021-07/90.1-2019\\_National\\_Cost-Effectiveness.pdf](https://energycodes.gov/sites/default/files/2021-07/90.1-2019_National_Cost-Effectiveness.pdf)
- Code of Federal Regulations, Title 10, Chapter II, Subchapter D, Part 430—Energy Conservation for Consumer Products.  
[ecfr.gov/current/title-10/chapter-II/subchapter-D/part-430](https://ecfr.gov/current/title-10/chapter-II/subchapter-D/part-430)
- Energy Cost Data (last adopted for 2019 OSSC energy modeling):  
[oregon.gov/bcd/codes-stand/Documents/energy-CPU-modeling-path.pdf](https://oregon.gov/bcd/codes-stand/Documents/energy-CPU-modeling-path.pdf)

## Weighting of results

Weighting figures in the RCPW are derived from regional weighting criteria developed by the U.S.DOE, Oregon Department of Energy and the Northwest Energy Efficiency Alliance (NEEA). There is a total of 16 national prototype buildings that are to be modeled individually for each climate zone (4C and 5B). The statewide average of these models will inform the OCRC process. These weighting factors across Climate Zones 4C and 5B may not be altered.