Pacific Northwest
NATIONAL LABORATORY

Energy Credits

Building Energy Code Technical Brief

INTRODUCTION

For prescriptive energy codes, energy credits offer a flexible way to achieve greater energy savings in buildings, where “one size fits all” approaches are limiting. Energy credits offer a simple system for building owners to choose energy saving measures tailored to their specific climate zone and building type. Energy credit measures can be expanded to 45 from the original 15 included in the 2021 International Energy Conservation Code (IECC) and now include load management.

States and local governments have expressed interest to DOE in having energy code overlay requirements that support policy goals. This technical brief provides code language that model codes, and state and local governments can use to adopt the expanded energy credits.

IMPACTS

- Improving the energy efficiency of commercial buildings directly benefits the planet and building owners – both by cutting down on GHG emissions and energy bills.
- PNNL evaluated a broad range of energy saving measures applicable to new building construction and selected 45 measures that are applicable to multiple building types.
- PNNL determined relative energy saving measures after analyzing typical building prototypes in each climate zone so that building designers could easily select a flexible package of energy saving measures.
- The base package of measures was found to be cost effective for all building types, and requirements were adjusted so it would be cost effective in all climate zones as well.
- Seven load management measures are included that will help buildings respond better to electric grid needs, supporting the increase of renewable electricity.
- The base package of energy credits can be expanded to achieve added savings from 2.5% in existing codes to 7% of building energy use with an added 7% of load management and renewable cost savings.
- An advanced option allows savings 12% for the weighted average of building types in all U.S. climate zones.
- Potential national U.S. annual savings for the base package:
    - 7,760 billion site BTUs
    - $312 million savings on energy bill
    - 995,000 metric tons of CO_2 reduction
- Potential national U.S. annual savings for the advanced package:
    - 12,560 billion site BTUs
    - $382 million savings on energy bills
    - 1,405,000 metric tons of CO_2 reduction
- Annual savings shown will accrue year after year over each building’s life.

U.S. DEPARTMENT OF ENERGY

BACKGROUND

The U.S. Department of Energy (DOE) and Pacific Northwest National Laboratory have developed a series of technical briefs supporting national, state, and local initiatives to update and advance building energy codes. Each brief is presented in a module-based format, centered on technologies, measures, or practices that can be incorporated as “plug-ins” to building energy codes. These are made available for adoption directly by state and local governments pursuing advanced energy savings and GHG emission reductions, or for future consideration as part of the national model energy codes, such as the International Energy Conservation Code or ASHRAE Standard 90.1. The collection of briefs supports DOE’s mission to provide technical assistance supporting states and local governments, helping them to successfully implement their building codes, as well as pursue energy and climate goals.

LEARN MORE

Find the full technical brief, including supporting technical information and sample code language, at https://www.energycodes.gov/sites/default/files/2021-11/TechBrief_Energy-Load-Credits_2021Oct20.pdf.

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