

Update: Energy Codes for Buildings & Equipment Efficiency Standards

November 2023

WELCOME

The equipment we buy, the buildings in which we live and work, and the vehicles we drive are all subject to energy codes and efficiency standards. These codes and standards “set the floor” for the efficiency and safety of all new products and buildings.

When codes and standards are technically feasible and economically justified, there are significant net benefits to customers. Energy codes and efficiency standards should be driven by actual customer savings.

FEDERAL ACTIONS UPDATE

INCANDESCENT LIGHT BULB BAN UPDATE

August 1, 2023, was a historic day for lighting. From that date forward, due to federal laws and regulations finalized by the U.S. Department of Energy last year, retailers in the United States are only allowed to sell general service light bulbs that meet minimum efficiency levels of at least 45 lumens per Watt. Manufacturers were required to stop producing and importing less efficient incandescent and halogen light bulbs on January 1, 2023.

Certain products are exempt from this ban – light bulbs that are sold as part of appliances (such as ovens, where LED lighting would not withstand the high heat), holiday lighting, and other types of “exempt” light bulbs. These niche products have been estimated to constitute less than 10 percent of the general service lighting market.

As late as 2022, according to the [National Electrical Manufacturers Association \(NEMA\)](#), halogen and incandescent lighting still had a market share of about 20 percent, compared to LED light bulbs at about 78-79 percent and compact fluorescent lighting at about 1-2

percent. In the United States, more than 1.2 billion general service light bulbs were shipped in 2020.

DOE ISSUES “GAME CHANGING” PROPOSED AND FINAL RULES.

Between July and October 2023, DOE published proposed or final rules that can be considered “game changers” for certain appliances.

Residential furnaces: DOE pre-published a final rule that requires non-weatherized gas furnaces and mobile home gas furnaces to have a minimum efficiency of 95 percent AFUE (compared to 75 percent or 80 percent AFUE today). This would require all new furnaces to be condensing units for new residential dwelling units and existing homes, apartments, and condominiums. Existing furnaces in space constrained areas could face significant retrofit costs. The new standard will take effect five years after the rule is published in the *Federal Register*.

Commercial water heaters: DOE published a final rule that requires all new and replacement gas commercial water heaters be condensing units with thermal efficiencies of 95 percent or 96 percent. This standard takes effect in October 2026.

Residential water heaters: DOE published a proposed rule that would require nearly all electric storage water heaters with a storage capacity of below 55 gallons to be heat pump water heaters. It would also require most gas instantaneous water heaters (which are about 10% of the residential gas water heater market) to be condensing units. Gas storage water heaters would have a slight efficiency increase but would not be required to be condensing units.

Many parties, including EEI, provided comments to DOE in September 2023. EEI's comments concluded:

- “DOE needs to revise the proposed rule to ensure that the market for high-efficiency electric water heaters is not distorted to the detriment of the Administration’s electrification and decarbonization goals. The analysis needs to be updated to provide realistic cost estimates, realistic life cycle economic impacts, realistic energy savings estimates, and realistic emissions impacts.
- “As currently written, the Proposed Rule is not fuel or market neutral and will lead to unintended consequences that will likely include higher energy usage and higher emissions from fossil-fuel fired water heaters.”

D.C. CIRCUIT COURT DIRECTS DOE TO VACATE COMMERCIAL BOILER FINAL RULE

In September 2023, DOE vacated its January 2020 final rule for commercial boilers (that was to be effective on 1/10/2023) following a lawsuit filed by American Public Gas Association (APGA) and Air-Conditioning, Heating, and Refrigeration Institute (AHRI), stating the rule failed to provide “clear and convincing evidence” to go above and beyond ASHRAE 90.1 values.

In January 2022, the D.C. Circuit Court agreed with the petitioners and remanded the rule back to DOE. In April 2022, DOE updated its analysis and issued a new final rule that maintained the same standards as the prior rule. APGA and AHRI sued again.

In July 2023, the D.C. Circuit Court vacated the rule and remanded it back to DOE. In its decision, the court noted “The Agency failed to provide notice and comment despite its reliance on new studies and data critical to supporting its use of random assignment to assign boilers in the life-cycle cost analysis.”

In addition, the court stated that “The DOE also failed to address challenges to its 30 Btu/h assumption in calculating burner operating hours for the lifecycle cost analysis for the second time.”

On September 19, 2023, DOE formally vacated that rule in a Federal Register notice, and published standards equivalent to those found in ASHRAE 90.1-2022. In the notice, DOE wrote “DOE must comply with the order of

a Federal court, and has no discretion to do otherwise. In implementation of that order, DOE is vacating the current energy conservation standards for commercial packaged boilers. Comments suggesting any other course would serve no useful purpose.”

The Bottom Line

When DOE publishes proposed or final rules that are controversial and create “game changers” in terms of product costs and impact on consumers and businesses, there is a higher likelihood of legal action that can take years to resolve. As shown with commercial boilers, the legal action can last beyond the effective date of a new efficiency standard.

DOE AND EPA ISSUE PROPOSED AND FINAL RULES ON COMMERCIAL REFRIGERATION EQUIPMENT USING HFC’S

In October 2023, both DOE and the U.S Environmental Protection Agency (EPA) published rules on commercial refrigeration equipment.

EPA issued a final rule on the production and allocation of hydrofluorocarbon (HFC) refrigerants to comply with the Kigali Treaty and federal legislation passed in 2020. In 2023, the allowed amount was 90 percent of the 2019 baseline production. In 2024, the amount drops to 60 percent of the baseline, and in 2029, the amount drops to 30 percent of the baseline.

Another final EPA rule, signed on Oct 5, 2023, restricts the use of higher-global warming potential (GWP) HFCs in new aerosol, foam, and refrigeration, air conditioning, and heat pump (RACHP) products and equipment. In most subsectors, EPA has set a maximum GWP limit on HFC’s or HFC blends that can be used. In a few subsectors, EPA has listed the specific HFC’s or HFC blends that are restricted.

In addition, EPA is also requiring that all new products and components using HFCs be labeled and that companies that manufacture or import such products or components using HFCs report certain information to EPA.

For this rule, the compliance dates for manufacturing, importing, or installing the products or systems begins as early as January 1, 2025. For some products and systems, the compliance date is January 1, 2028, and other systems have compliance dates in 2026 or 2027. [Link here](#) for more information about this final rule.

Also, on October 19, 2023, EPA published a proposed rule that “proposes to establish a program for the management of hydrofluorocarbons that includes requirements for leak repair and use of automatic leak detection systems for certain equipment using refrigerants containing hydrofluorocarbons and certain substitutes; requirements for the use of reclaimed hydrofluorocarbons in certain sectors or subsectors; the use of recycled hydrofluorocarbons in fire suppression equipment; recovery of hydrofluorocarbons

from cylinders; container tracking; and certain recordkeeping, reporting, and labeling requirements. The Environmental Protection Agency is also proposing alternative Resource Conservation and Recovery Act standards for spent ignitable refrigerants being recycled for reuse.”

This rule would apply to many existing commercial refrigeration systems in the United States. While some parts of this proposed rule would go into effect on January 1, 2025, other parts of the rule would go into effect on the day the final rule is published in the *Federal Register*. Comments on this proposed rule are due to EPA by December 18, 2023.

On October 10, 2023, DOE published a proposed rule that updates energy efficiency standards for commercial refrigeration equipment and expands the scope of covered products. The updated DOE efficiency standards will take effect three years after the rule is published in the *Federal Register*. Comments on DOE’s proposed rule are due to the agency by December 11, 2023.

The Bottom Line

For commercial refrigeration equipment, energy companies and commercial customers that use this equipment need to be cognizant of the actions being taken by both EPA and DOE between now and 2028.

DOE, EPA, AND FEMA ANNOUNCE GRANTS FOR UPDATING BUILDING CODES

In September 2023, DOE and EPA announced the release of program funding that can be used for building energy codes or other climate emissions reductions. In October 2023, the Federal Emergency Management Agency (FEMA) announced funding for states and localities to make buildings more resilient, including the adoption of recent building codes.

EPA

On September 20, 2023, EPA announced two competitions for \$4.6 billion in grants under the Climate Pollution Reduction Grants program. All sectors of the economy, including buildings, transportation, electric power, industrial, and agricultural sectors are eligible. For the first general competition, EPA announced that it anticipates awarding individual grants between \$2 million and \$500 million, with funding tiers allowing comparably sized projects to compete against one another. In the second competition for tribes and territories, EPA anticipates awarding individual grants ranging between \$1 million to \$25 million. The following actions in the buildings sector are eligible for grants:

- Adoption and implementation of the most up-to-date building energy codes or stretch codes for new commercial and residential buildings.
- Implementation of a “clean heat” standard.
- Incentive programs for implementation of end-use energy efficiency measures in existing government-owned, commercial, and residential buildings.

- Incentive programs for the purchase of certified energy-efficient appliances, heating and cooling equipment, lighting, and building products to replace inefficient products.
- Programs and policies to promote electrification of government-owned, commercial, and residential buildings.
- Programs and policies to accelerate the incorporation of efficient electric technologies and electric vehicle charging at new single-family, multi-family, or affordable residential buildings and commercial buildings, including building codes related to electric vehicle charging.
- Implementation of a building energy performance management program for government-owned buildings.
- Implementation of a new benchmarking and existing building performance standards.
- Programs to promote recovery and destruction of high-GWP HFCs used in existing appliances, air conditioning systems, and commercial chillers.

EPA’s deadline to apply to the general competition is April 1, 2024. The deadline to apply to the tribes and territories competition is May 1, 2024. EPA estimates that the implementation grants will be awarded by the fall of 2024 for the general competition and by winter 2024-2025 for the Tribes and territories competition.

DOE

On September 19, 2023, DOE announced the release of \$400 million from the Inflation Reduction Act for states and territories: \$240 million to assist states and localities in implementing the latest building energy codes, such as the 2021 International Energy Conservation Code (IECC) for residential buildings and the American Society of Heating, Refrigerating and Air-Conditioning Engineers’ (ASHRAE) Standard 90.1-2019 for commercial buildings and \$160 million to help states and territories adopt and implement the “zero net energy” provisions in the 2021 IECC.

The funds can also be used to implement other codes with equivalent or greater energy savings. To reserve access to funding, states and territories must submit letters of intent to DOE by November 21, 2023 and full applications by September 30, 2025.

FEMA

On October 12, 2023, FEMA announced the release of nearly \$2 billion to increase climate resilience in buildings, of which \$112 million is available to fund building code activities. Each state and territory will be eligible for a maximum of up to \$2 million for these projects. For tribes, FEMA is offering a \$25 million building code “plus-up.”

The application period for these funds runs from October 16, 2023 through February 29, 2024.

All of the DOE, EPA, and FEMA programs are aligned with the Biden Administration's National Initiative to Advance Building Codes (NIABC) to accelerate the adoption of the latest building codes.

STATE/LOCAL ACTIONS UPDATE

U.S. CLIMATE ALLIANCE ANNOUNCES NEW COMMITMENTS TO DECARBONIZE BUILDINGS

On September 21, 2023, the U.S. Climate Alliance, a “bipartisan coalition of 25 governors representing approximately 60 percent of the U.S. economy and 55 percent of the U.S. population,” announced a series of new commitments from its members to eliminate emissions from buildings. Members of the alliance agreed to pursue the following activities:

- Quadruple heat pump installations in the United States by 2030 (to 20 million).
- Support planning for an equitable and predictable transition to a zero-emission buildings future.
- Advance actions to ensure new buildings lead the way to achieve long-term decarbonization goals, including the development of zero-emission building codes and standards.
- Accelerate efficient, electric retrofits that promote healthy homes and businesses.
- Lead by example through efforts to reduce emissions from state facilities.

In addition, certain states made the following commitments:

- Ten states committed to explore adopting “zero-emissions standards” for space and water heating equipment (CA, CT, HI, MA, MD, NY, OR, PA, RI, and WA).
- Eight states committed to explore adopting state-wide building performance standards similar to ones enacted in Colorado, Maryland, Oregon, and Washington (CA, CT, HI, MA, ME, NY, PA, and RI).
- Eight states committed to explore adopting “clean heat standards” (CT, HI, MA, MD, NJ, NY, PA, and RI).
- Twelve states committed to support adoption of advanced building energy codes with electrification, solar, and EV-ready language (CA, CO, CT, MA, MD, ME, NM, NY, OR, PA, RI, and WA).
- Ten states committed to align building sector utility resource planning and procurement with state climate goals (CA, CT, HI, MA, MD, NJ, NY, OR, RI, and WA).
- Five states will work to phase out fossil fuel heating and cooling in new construction by 2027 (CA, MA, MD, NY, and WA).

The Bottom Line

As a result of these programs, there is likely to be an acceleration of states and territories that adopt the most recent building energy codes, non-energy building codes, and “zero net energy” codes.

The Bottom Line

A significant number of states plan to take aggressive actions to reduce carbon emissions from buildings and to make them more energy efficient. As a result, there may be more restrictions or hurdles when using fossil fuels at new or existing buildings.

SEVEN STATES BAN THE SALE OF FLUORESCENT LIGHTING. IS A GLOBAL BAN NEXT?

As of October 19, 2023, seven US states (California, Colorado, Hawaii, Maine, Oregon, Rhode Island, and Vermont) have passed laws that ban the sale of compact fluorescent lamps and linear fluorescent lamps (T5, T8, T12, etc.). For screw-in base compact fluorescent lamps (CFLs), the bans took or take effect between February 17, 2023 and January 1, 2025. For pin-based CFL's and fluorescent tubes, the bans take effect between January 1, 2024 and January 1, 2026.

Six other states considered similar legislation in 2023. In Illinois, Maryland, New Mexico, and Washington, proposals were defeated or did not advance out of committees. In Nevada, legislation passed the House and Senate but was vetoed by Governor Joe Lombardo in June. In Massachusetts, there was a hearing on a bill on October 31, 2023.

The bans are based on mercury content (environmental issue) rather than efficiency, thus they are not in violation of federal preemption laws.

On a world-wide basis, the Fifth Meeting of the Conference of the Parties to the Minamata Convention on Mercury will consider at least one proposal to prohibit the global production, import, or export of compact fluorescent lamps in 2025 and linear fluorescent lamps in 2026. Several countries have already adopted laws or regulations banning CFLs.

The Bottom Line

Laws and regulations are phasing out low-efficiency (but high CRI) incandescent/halogen lamps and high-efficiency lamps with mercury. However, there may be unintended consequences in the short-term due to hoarding and reluctance to switch out high-efficiency fluorescent lamps that may be less expensive than their LED counterparts (that may or may not be more efficient). EEI member companies may want to consider providing information on LED lamps that have lower costs and higher quality (in terms of CRI values

and compatibility with existing incandescent and fluorescent lighting controls).

STATES CONTINUE TO TAKE DIVERGENT PATHS RELATED TO THE USE OF FOSSIL FUELS IN NEW AND/OR EXISTING BUILDINGS

Over the past several months, several states have taken significant regulatory and legislative actions related to the use of energy in new and/or existing buildings.

California

In August 2023, the California Building Standards Commission voted to limit embodied carbon emissions in the construction, remodel, or adaptive reuse of commercial buildings greater than 100,000 square feet and educational buildings greater than 50,000 square feet. These changes go into effect on July 1, 2024. For commercial buildings, the threshold goes to buildings greater than 50,000 square feet in 2026. There are multiple compliance paths based on the reuse of existing structures, material specifications, and life cycle assessment performance. California became the first state to create such a limit.

In August 2023, the South Coast Air Quality Management District (SCAQMD) voted to phase out commercial gas ovens in southern California. This regulation covers NOx emissions. The current standard is 30 ppm for new commercial ovens now; in 2027, the standard will be 0.0 ppm. Oven burners more than 10 years old have to be immediately replaced with low-NOx burners. In 2027, ovens more than 25 years old with 10+ year old burners must be replaced with electric options. All ovens more than 25 years old must be replaced by 2036. There are exceptions for tortilla makers and nut roasters.

In August 2023, final draft proposals were submitted to the California Energy Commission (CEC) for updates to the state-wide Title 24-2025 energy code. Among the proposals were the following:

- Mandatory solar heating for pools and spas.
- Requirements for pool insulation.
- All-electric readiness required for commercial kitchens.
- Prescriptive 300-ton air-cooled chiller limit.
- Hydronic electric readiness through a limit on hot water supply temperature.
- All-electric energy efficiency in large buildings (with hydronic heat recovery and thermal energy storage).

By the end of 2023, the CEC will finalize its first draft of Title 24-2025. More information on the proposed changes for all building types (single family, multi-family, and commercial) can be found [here](#).

On October 7, 2023, California Governor Gavin Newsom signed into law two climate-related bills that passed in September 2023.

Under SB 261, companies that do business in California and have gross annual revenues of more than \$500 million must file

reports on their climate-related financial risks (world-wide). Under the law, insurance companies are exempt. It has been estimated that SB 261 applies to over 10,000 companies.

Under SB 253, companies that do business in California and have gross annual revenues that exceed \$1 billion must report all Scope 1 and 2 emissions starting in 2026 and Scope 3 emissions starting in 2027. By 2030, affected companies must obtain “reasonable, third-party assurance” for their scope 1 and 2 emissions reporting, along with “limited third-party assurance” for scope 3 emissions reporting. The California Air Resources Board (CARB) must publish implementing regulations by January 1, 2025. Reporting entities will need to pay a fee for CARB’s implementation efforts. CARB can also issue administrative penalties if a reporting entity fails to file, files late, or otherwise violates these provisions, up to \$500,000 per year per reporting entity.

EEI submitted comments on SB 253, stating “We are concerned that proposed Senate Bill (SB) 253 would create significant uncertainty for investors and public companies because of potential conflicts and overlaps with the pending SEC climate disclosure rule and the possibility that it would create redundant and unnecessary costs that ultimately would be passed on the consumers.”

In addition, EEI wrote: “Furthermore, we are concerned with certain aspects of SB 253 including a requirement for the disclosure of audited scope 3 emissions. Scope 3 emissions are very difficult to estimate with accuracy since obtaining emissions information from upstream vendors, both private and public companies, downstream customers, and end-users is challenging and frequently erroneous, especially when compared to the reporting of scope 1 and 2 emissions, which can be accomplished with a reasonable degree of accuracy.”

It has been estimated that SB 253 applies to more than 5,300 companies.

Colorado

In June 2023, the Colorado Energy Code Board published the model code for residential and commercial buildings that includes provisions for: EV charging readiness/infrastructure; rooftop solar readiness/infrastructure; and electric appliance readiness/infrastructure. Under state law, all cities/counties that update their buildings codes between July 1, 2023 and July 1, 2026 must include these provisions.

In August 2023, the Colorado Air Quality Control Commission adopted greenhouse gas emissions reductions rules for commercial, public, and residential buildings over 50,000 square feet. It has been estimated that this regulation will affect about 8,000 existing buildings. The regulations require covered buildings to reduce emissions by 7 percent below 2021 levels by 2026 and 20 percent below 2021 levels by 2030 and report emissions, energy use, and reduction plans to the Colorado Energy Office.

Colorado became the first state in the United States to specifically limit emissions from industrial facilities when the Colorado Air Quality Control Commission adopted rules in September 2023 for the 18 largest manufacturing facilities in the state starting in 2026, including Suncor (Oil Refinery), Molson Coors (beer producer), and Leprino Foods (the world's largest mozzarella producer). Under state law, the manufacturing sector is required to cut emissions by 20 percent below 2015 levels by 2030. The new rules are all site based. Manufacturers are allowed to sell emissions credits for early reductions, use carbon capture technologies, and pay into a state climate fund.

New York

On October 12, 2023, a coalition of business and labor groups filed a legal challenge to a New York law that restricts natural gas and fossil fuel equipment and systems in new construction with seven floors or fewer and less than 100,000 square feet by 2026. The requirement expands to all new construction in New York state construction by 2029. The plaintiffs are using the same law firm that secured an opinion overturning Berkeley, California's first-in-the-nation gas ban earlier this year.

In the filing, lawyers for the plaintiffs argued that the federal Energy Policy and Conservation Act (EPCA) preempts New York's law directing state code officials to restrict gas equipment in an upcoming update to state building energy codes. The lawyers asked the U.S. District Court for the Northern District of New York to declare the law unenforceable and issue an injunction preventing its enforcement.

The plaintiffs include Mulhern Gas Company, the New

York Propane Gas Association, the National Propane Gas Association, the New York State Builders Association, the National Association of Homebuilders, the Plumbing Contractors Association of Long Island, the Northeast Hearth, Patio and Barbecue Association, and Holmes Mechanical.

North Carolina

In August 2023, the North Carolina legislature overrode Governor Roy Cooper's veto and enacted HB 488. This new law prevents the North Carolina State Building Code Council from updating key sections of the state building code until 2031. It also created a new state residential code council (RCC) that will be appointed by state legislators and the Governor to oversee and review any changes to the state energy code, mechanical code, and fuel gas code.

The bill was backed by the North Carolina Home Builders Association, which argued that the new energy code requirements for windows, doors, insulation, and HVAC systems would make homes too expensive. Energy efficiency and environmental advocates cite a report by a federal laboratory that said that the homebuilders overestimated the initial costs and that homeowners would save money over time.

The Bottom Line

In terms of building energy laws and regulations, along with newer building emissions laws and regulations, states continue to go in different directions. Customers with facilities in multiple states will need to be aware of the differences in state policies on energy efficiency and emissions for their new and existing buildings, and EEI member companies will be affected by the actions in multiple states.

BUILDING ENERGY CODE ACTION UPDATE

ICC INTERNATIONAL ENERGY CONSERVATION CODE 2024 "ROUND 3" VOTES COMPLETED; APPEALS PROCESS IS FINAL STEP

In August 2023, all proposed changes to the 2024 IECC Residential and Commercial energy codes had been discussed and were voted on. The ballots on the revised versions of the codes were sent out to committee members on September 18, 2023. The process requires a consensus of the committee (2/3 yes) to approve the final version. Ballots were due to ICC by October 18, 2023. On October 19, 2023, the results of the first ballots were announced. Both ballots achieved consensus votes. Because negative votes with comments were received, there was a recirculation ballot issued, and committee members had until November 2, 2023, to review the comments and change their vote if they so choose. On November 3, 2023, the results of the recirculation ballots were announced. Again, the ballots confirmed the committee decisions.

Since no individual proposal received more than 1/3 negative votes, the committee process has ended for the 2024 version. Under the ICC rules, "The Final Results of the ballot process was the approval of all balloted code changes by a 2/3 vote in accordance with Section 9.4 of the ICC CP. The approved code changes will be incorporated into the final draft of the 2024 IECC Commercial. The submittal period for appeals now commences in accordance with Council Policy #1. The deadline for complete submittal of appeals is Sunday, December 3 at 11:59 p.m. Pacific."

EEI has learned that at least two stakeholders are going to file appeals on the Residential and Commercial codes by the deadline. After appeals are filed, the ICC will appoint an appeals board to hold hearings. The decision of the appeals board will then be reviewed by the Board of Directors, which will render a final decision and publish final changes.

If the IECC is published with the language that was approved in August 2023, the following “game changers” will be included in the energy code:

- Requirements for on-site renewable energy systems along with community renewable options for certain buildings.
- Requirements for EV charging infrastructure in commercial buildings, multi-family buildings, and single family residential buildings.
- Requirements for “electric ready” infrastructure near where fossil fuel equipment/appliances are installed (Appendix).
- Requirements for all-electric buildings (Appendix).
- Requirements for demand responsive/grid-interactive appliances.
- Requirements for electric and gas system metering/submetering.
- Requirements for energy credits, with higher requirements for buildings without electric heat pumps.

The Bottom Line

Even after the final voting, there will be appeals filed that may delay the use and publication of IECC 2024. After the 2024 version is published, the IECC will be on a new “continuous maintenance” process that has not been detailed or published as of November 2023.

Comments or Questions?

For questions or more information, please contact Steve Rosenstock at srosenstock@eei.org.



About the Workshop

EEI's semi-annual [National Key Accounts Workshop](#) is the venue where national corporate energy users can explore the latest industry trends and discuss best practices for tackling all of their energy-related needs.

Build powerful relationships with electric company representatives, explore the latest technologies in the Energy Marketplace, and network with customer peers who share similar responsibilities and priorities.

Contact Scott Traweck at straweck@eei.org if you have any questions or need additional information.

Upcoming Workshop

[Spring National Key Accounts Workshop](#)

[April 7-10, 2024, Seattle, WA](#)