



To: Interested Parties

From: Justin Balik, State Program Director and Lucas Boyd, State Policy Fellow¹

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Re: New Clean Building Code Opportunities for States—with Federal Funding

This memo from Evergreen Collaborative describes the funding opportunity before states to upgrade building energy codes and outlines the benefits of adopting the latest codes, including consumer savings, job creation, and significant reductions in climate pollution.

Background

Residential and commercial buildings are responsible for [nearly 40 percent of US energy consumption](#), and roughly [13 percent of greenhouse gas pollution \(30 percent once their electricity consumption is taken into account\)](#). Building energy codes are a means to tackle this issue by setting standards for efficiency that reduce wasted energy and cut climate pollution.

In addition to being a powerful and cost-effective tool in the fight against climate change, building energy codes save consumers money, create jobs, and advance equity by lowering costs for [energy-burdened residents](#). However, these benefits are only fully realized when states and cities adopt the latest codes. With \$45 million available now and nearly \$1.2 billion in federal funding on the way, states should act now to upgrade to the most current building energy codes and secure these benefits for decades to come.

Building energy codes are state and local laws that require builders to meet minimum energy efficiency targets in new building construction and buildings undergoing major renovation. Standardized energy codes for both residential and commercial buildings in the United States (also known as model codes) are written by private organizations made up of industry experts. These model codes are updated continuously, and new versions are published every three years. Generally, each new energy code is stricter than the last; the most recent model codes require [the most energy-efficient buildings](#).

Latest model codes for each sector:

Residential - [IECC 2021](#)

Commercial - [ASHRAE 90.1 2019](#)

¹ The authors want to express appreciation to former Evergreen Policy Fellow Molly Freed for her contributions to this memo

Importantly, there is [no single federal building code](#). States (and in some cases, individual municipalities) set the standards for buildings within their borders. This decentralized authority has led to huge variation in energy codes across the country. Only a few states are up to date on both their residential and commercial codes, and many states still [use versions](#) that are more than a decade old. Because most buildings are in use for decades, if not longer, the way they are designed and constructed² over just the next few years will have a significant impact on our ability to meet our climate targets and secure a livable future.

Here are four reasons that every US state should act now to upgrade to the latest model energy codes:

1. Updating Building Energy Codes Will Save Consumers Money

Buildings [waste](#) energy in a variety of ways, including poor insulation, leaky windows, old lighting fixtures, and outdated heating and cooling systems. These inefficiencies ultimately result in higher utility bills, as households require more energy to power their homes.

Building energy codes establish standards that mitigate these inefficiencies, lowering energy consumption and costs for residents and businesses. Though specific impacts will [vary by state](#), the additional energy efficiency gained from energy codes **could deliver as much as \$138 billion in total energy cost savings** for consumers by 2040. These savings are especially significant for low-income residents, who spend [three times](#) more of their income on energy costs compared to the average consumer.

2. Updating Building Energy Codes Will Slash Pollution

Wasted energy also means increased emissions, making the US building sector [a top national contributor](#) to climate pollution. An [analysis](#) by the Department Of Energy (DOE) projects building energy codes to **prevent 900 million metric tons of CO2 emissions nationwide** by 2040, equivalent to the annual emissions of 227 coal-fired power plants or 195 million gas-powered passenger vehicles. Therefore, upgrading to the most recent model energy codes will go a long way towards helping states and localities meet their climate commitments.

²In addition to new construction, buildings undergoing major renovations are typically required to meet state or local building energy codes.

3. Federal Funding is Available for States to Update Their Building Energy Codes

The Biden administration has committed to distributing over \$1.2 billion in support to states that upgrade their energy code—with an emphasis on jobs and justice—through funding included in both the Infrastructure Investment and Jobs Act (IIJA) and the Inflation Reduction Act (IRA).

Infrastructure Investment & Jobs Act: RECI program

Using funds appropriated from Section 40511 of the IIJA, DOE launched the [Resilient and Efficient Codes Implementation](#) (RECI) program with a \$45 million [Funding Opportunity Announcement](#) (FOA). RECI allocates \$225 million in funding over five years (2022 - 2026) for eligible state entities and partnerships through a competitive bidding process. Partnerships between states and other national, state, or local entities are strongly encouraged and will be prioritized in the application process.

The program aims to facilitate energy code updates and promote equity in code policy plans, ensuring some of the benefits from these updates flow to disadvantaged communities. Crucially, the program also supports improving energy code compliance through the development of a workforce skilled in advanced technologies and building science. Potential activities that this funding can support include developing a statewide training partnership to increase compliance, addressing implementation needs in rural or suburban communities, and more generally implementing updates in energy codes that result in increased energy efficiency.

Additionally, in alignment with President Biden's [Justice40 commitments](#), DOE will prioritize applications that decrease energy burdens and environmental exposure and/or increase access to job training, energy democracy, and energy resilience within [disadvantaged communities](#).

To view the FOA and apply for RECI funds visit [DOE's website here](#). The deadline for concept papers is January 31, 2023 and full applications are due March 27, 2023.

Inflation Reduction Act

Section 50131 of the IRA establishes two additional funding sources for state energy code adoption³. First, DOE will issue \$330 million in grant funding to states and local governments that adopt and implement an energy code that meets or exceeds the latest model codes. These funds can also be used for training, enforcement, and compliance measurement programs. Second, DOE will issue an additional \$670

³ DOE will publish updates on IRA building code funding [here](#).

million in grants to states and local governments that adopt and implement an energy code that meets or exceeds optional [net zero energy provisions](#) contained within the latest residential model codes or an equivalent [stretch code](#).

Both funding sources are to remain available through September 2029, and no local cost share is required. With millions in federal assistance available now, and over \$1 billion on the way, there has never been a better time for states to update their energy codes.

4. Building Energy Code Updates Create Jobs

Energy code upgrades [create new jobs](#) in construction, installation, and building evaluation, and require upskilling the existing workforce to ensure compliance. Federal funds allocated from both the IIJA and IRA building code programs can be used to train workers to fill these positions. Additionally, lower energy bills leave households with more discretionary income, further stimulating the economy and [leading to the creation](#) of thousands of good, high-paying jobs in states that choose to upgrade their energy codes.

Energy code upgrades should also be paired with workforce development programs that create a pipeline for historically marginalized groups to benefit from these new jobs. It is crucial that these programs reach all existing workers so that those without access are not pushed out of the workforce.

States Have Much to Gain

States can make [huge strides](#) in the efficiency of their building stock simply by adopting and enforcing the most recent model codes. Consequently, states who have not kept up stand to gain the most from upgrading, potentially ushering in a windfall of consumer cost savings, emissions reductions, and job growth, all supported by substantial federal funding.

For example, In June of 2022 Louisiana [upgraded](#) its residential building energy code from 2009 IECC to the most current code, 2021 IECC. As a result, Louisiana households are [projected](#) to see an average annual energy savings of \$423 and a life-cycle savings⁴ of nearly \$8,000. Additionally, this upgrade will [prevent](#) nearly 10 million metric tons of CO₂e emissions⁵ over the next 30 years.

⁴ Life cycle savings balances initial costs with longer term savings, accounting for maintenance, repairs, replacements and other operational costs.

⁵ CO₂e, or carbon dioxide equivalent, is a measure of total greenhouse gas emissions, weighted by the global warming potential of carbon dioxide.

The following table highlights some of the benefits that several states would receive from upgrading to the most current residential and commercial building energy codes.

State	Life cycle savings	Annual consumer savings	Avoided CO ₂ e emissions (next 30 years)	Jobs created (next 30 years)
Wisconsin	\$12,411	\$651	9,039,982 MT	10,972
Minnesota	\$2,772	\$238	14,538,076 MT	11,056
Pennsylvania	\$5,303	\$341	19,345,566 MT	17,258
Michigan	\$4,514	\$337	21,610,457 MT	15,262
Nevada	\$1,893	\$181	14,706,480 MT	12,138

Information for all states can be found on [DOE’s Building Energy Codes States Portal](#).

How Do States Go About Upgrading?

The process by which energy codes are adopted [varies](#) from state to state. Authority to adopt codes is vested to a [state legislative or regulatory body](#), or in some cases [local governments](#). In states that have limited authority over building construction—also known as “home rule” states—local governments are given the option to adopt their own standards.

Regardless of authority, new energy code proposals must undergo a public review process, the results of which are incorporated into the proposal. Once the proposed energy code is approved, the code is put into effect at some future date ([usually between 30 days and 6 months](#)) to allow stakeholders to prepare.

When authority rests with a legislative body, energy codes are commonly adopted with reference to an existing model code along with administrative provisions addressing enforcement and authority. **Evergreen recommends that jurisdictions update their energy code legislation to reference “the most recent edition” of the model code**, so that new legislation doesn’t have to be passed every three years when the model codes are updated.

Going Further with Stretch Codes

Stretch codes are an option for builders that want to pursue [a more aggressive compliance path](#) than the base code. It's important to remember that building energy codes lay out the *least efficient* building that can legally be built in that jurisdiction. Many builders will want to design and construct buildings that are more energy efficient than the base code, either for the future occupant cost savings, to meet a voluntary third-party certification, or to qualify for an incentive program from the utility or local jurisdiction. Additionally, the Inflation Reduction Act provides [\\$670 million](#) to assist in the adoption of stretch codes.

Using Energy Codes to Advance Equity

Most energy codes have not been designed with disadvantaged communities at the forefront, and some may even exacerbate existing inequities. There are several ways that energy codes can be designed to improve the energy efficiency of buildings while also advancing equitable outcomes.

First, communities must have an adequate opportunity to engage in the code development process. Public meetings should [follow best practices](#) for accessibility, and organizers should look for ways to simplify overly-technical code language, which is often inaccessible to anyone outside the building industry.

Additionally, code officials should ensure that the energy code is not unduly complicated, prescriptive, or onerous to implement. These pitfalls can disproportionately affect small and low-income communities, even potentially pushing out building owners or parts of the workforce that have not been trained sufficiently on green building technologies.

Finally, while code enforcement is an important tool for ensuring compliance, it is [too often wielded against the most vulnerable building owners and occupants](#). CitiesRISE [calls for](#) a code enforcement process that is restorative, evidence-based, collaborative, proactive, and community-centric.

Evergreen recommends that jurisdictions take full advantage of the federal funding being made available in order to ensure that they have the financial resources to adopt and equitably implement the most recent model codes.

Beyond the Model Code: Washington State Leads the Way

In addition to stretch codes, states should find ways to take building energy codes even further to reduce climate pollution and consumer costs. Washington is one of three states that has an energy code [equivalent](#) to the most current model codes for both commercial and residential buildings, but state officials didn't stop there. In April of 2022, the Washington State Building Code Council amended the statewide building energy code to [require](#) that all new commercial and large multifamily buildings install [electric heat pumps](#). Then, in November, the council extended the mandate to newly constructed [residential units](#). Beginning in 2023, heat pumps will heat and cool nearly every new building in Washington State.

An [analysis](#) from Rewiring America found that if every single-family household in the US replaced their heating and cooling systems with a heat pump, it would avoid 160 million metric tons of greenhouse gas emissions per year—[equivalent](#) to the annual emissions of 43 coal-fired power plants. Additionally, switching to heat pumps would save consumers [several hundred dollars each year](#) on their energy bills. Washington's Building Code Council has unlocked these benefits for millions of residents across the state. Other states should follow Washington's example and look for creative ways to leverage building codes for greater decarbonization and cost savings.

Fossil Fuel Industry Opposition to Building Code Progress

Nearly [80 percent of emissions](#) from residential and commercial buildings in the US come from the burning of fossil gas. A Stanford University [study](#) found that gas stoves alone have annual emissions comparable to 500,000 gasoline cars, and release dangerous air pollutants into the home that contribute to respiratory disease.

To address this major climate and public health concern, US cities have updated building codes to prohibit fossil gas connections in newly constructed buildings. To date, gas prohibition policies have been enacted in [San Jose](#), [New York City](#), [San Francisco](#), and dozens of other localities across the country.

In response to the growing momentum around restricting fossil fuel use in homes, the gas industry has mounted a staunch opposition to building energy code updates that threaten their profits. To hamstring cities' abilities to electrify their building stock, [20 states have passed](#) "preemption laws" that outlaw gas restrictions at the local level. Trade groups representing gas interests have been [highly involved](#) in encouraging these preemption laws. The industry is also active in states where preemption laws are not a legislative possibility, [advocating to derail](#) the building code updates in Washington State that would replace polluting gas appliances with electric heat pumps.

Policymakers and advocates will need proactive strategies to counteract well-funded opposition to aggressive building energy code updates.

Improving Efficiency in Existing Buildings

By 2040, [two-thirds of the global building stock](#) will be made up of buildings that exist today, but energy codes typically only apply to new construction. Therefore, improving efficiency in existing buildings is a crucial step in reducing climate pollution and delivering cost savings to consumers.

Building Performance Standards

Building performance standards set minimum energy efficiency requirements for the *existing* building stock. They are generally phased in over time, with a steadily decreasing cap on energy use or GHG emissions. In order to achieve maximum impact with minimum disruption, cities and states can target buildings over a certain size; big buildings are often [responsible for the majority of energy consumption](#) despite making up a small percentage of the building stock.

In January 2022, President Biden launched the [Building Performance Standard Coalition](#) made up of state and local governments representing over 20 percent of the American populace. Building performance standards have already been passed in [Washington State](#), [St. Louis, MO](#), and [Washington, D.C.](#)

Weatherization Assistance Program

States should also look to existing grant programs like the [Weatherization Assistance Program](#) (WAP) to address inefficient incumbent residential building stock. WAP grants reduce energy costs for low-income consumers by increasing the energy efficiency of their homes. On average, households that receive WAP improvements and upgrades save [\\$372 per year](#) on their energy bills.

Compliance and Enforcement Is Crucial

Energy codes only achieve the impacts outlined above if builders comply with them. Compliance and enforcement is often delegated to local authorities and/or independent institutions, where [lack of compliance](#) can be a result of ineffective communication to local builders as well as insufficient enforcement budget, staff, and analytical resources. As noted above, both the IIJA and IRA include funding for compliance programs.

The Institute for Market Transformation found [evidence of staggeringly high noncompliance rates](#) in states around the country, reaching as high as 100 percent. Bringing just one year’s worth of new construction into full alignment with the municipality’s adopted energy code would generate \$63 - \$189 million in annual savings, and reduce energy consumption by 2.8-8.5 quadrillion British thermal units⁶. A [DOE study](#) found that energy code education and training in just seven states would increase overall compliance, resulting in an estimated savings of \$3.5 billion and a reduction in over 100 million metric tons of CO2 emissions over 30 years.

Key Takeaway

Simply by aligning building codes to existing standards, states around the country have an opportunity to vastly improve the energy efficiency of their building stock. With over \$1.2 billion becoming available to facilitate upgrades, there has never been a better time for state and local officials to act. Updated building codes will save consumers money, reduce pollution, create jobs, advance justice, and are therefore a critical tool for states to accelerate their efforts in combating the climate crisis.

Additional Resources

- [Resilient and Efficient Code Implementation FOA](#)
- [DOE Building Energy Codes Program](#)
- [IIJA, Section 40511: Cost-effective codes implementation for efficiency and resilience](#)
- [IRA, Section 50131: Assistance for latest and zero energy code adoption](#)
- [DOE Building Energy Codes Program States Portal](#)
- [Office of Energy Efficiency & Renewable Energy](#)
- [A National Roadmap for Clean Buildings: Evergreen Action](#)

⁶ One quadrillion British thermal units or “quad” is the energy [equivalent](#) of 193 million barrels of petroleum.