

INFLATION REDUCTION ACT: THE CARROT BEFORE THE STICK FOR BUILDING OWNERS?

With nearly \$2 trillion of combined funding over the next decade, the Inflation Reduction Act (IRA) and Infrastructure Investment and Jobs Act (IIJA) are poised to create a well-paid workforce via millions of new clean energy jobs, address infrastructure and grid capacity concerns, and drive unprecedented clean energy investments and climate change mitigation. The question is, are these programs enough to motivate building owners to reduce their carbon footprint and energy consumption? Could they be setting the stage for more extreme building energy efficiency laws with the teeth to drive compliance?

INTRODUCTION

There are many variations to the definition of Mission Critical, but most describe it as being a component of business operations whose failure or malfunction poses a direct and immediate threat to the achievement of an organization's objectives and could result in financial losses, damaged reputation, and even the loss of life.

And yes, it's impossible for Data Centers to not steal the spotlight when it comes to the topic of Mission Critical. Data centers are projected to account for 8%-9% of US power consumption by 2030, up from 3% in 2022. Some aggressive estimates are much higher. That explosive growth absolutely merits exploration, along with changes being driven by AI, sustainability, and cooling technology which will also be examined.

Equally important in providing an expansive view of Mission Critical are matters such as: HVAC and Electrical infrastructure, Safe Work Practices, preventative maintenance, code compliance, regulation and availability of resources, and proficiencies that all stakeholders must employ to keep everyone safe, protect their brand name, and maintain business continuity.

IRA OVERVIEW

Over half of the estimated \$369B+ of IRA funding is directly applicable to commercial buildings. And while emission

reduction is the main target, there are a few key items of note that support the theme of environmental justice and the creation of quality jobs to deliver prosperity to American families.

Key Terms & Concepts of Note

- **Disadvantaged Communities:** This includes areas that have low-income, high unemployment, high air pollution, inaccessible transportation, or have been impacted by the loss of fossil fuel industry (referred to as "[Energy Communities](#)").
- **Equitable Investment:** Many programs and incentives are aligned with the government's commitment of delivering 40% of the benefits from federal climate and energy investments to disadvantaged communities.
- **Elective Pay / Direct Pay:** [Some of the IRA's provisions](#) are eligible for Direct Pay. This allows tax-exempt organizations to take advantage of the tax credit as a direct payment from the IRS.
- **Prevailing Wage Requirement:** For projects to qualify for 5X bonus tax credits, any laborers and mechanics employed by the taxpayer, contractor, or subcontractor must be paid wages at rates not less than the prevailing rates in the locality in which such facility is located.
- **Apprenticeship Requirement:** For projects to qualify for 5X bonus tax credits, a minimum percentage of total hours worked must be performed by qualified apprentices.

Building-Related Components

Many tax incentive programs were created or modified and extended with the passing of the IRA that directly impact commercial buildings. This represents an estimated \$130B in credits, though many programs are uncapped, shown below with the IRA section and associated Internal Revenue Code (IRC).

- **Section 13102 / 13702 (IRC 48):** Investment Tax Credit for Energy Property - up to 30% of investment if prevailing wage and apprenticeship requirements are met or exempted from and dropped to 6% if not met. Bonus credits of 10% if domestic content requirements are met and 10% if the project is in an [energy community](#).
- **Section 13101 / (IRC 45):** Production Tax Credit for Electricity from Renewables – up to \$0.15/kW produced if prevailing wage and apprenticeship requirements are met or exempted from and dropped to \$0.03/kW if not met. Bonus credits of 10% if domestic content requirements are met and 10% if the project is in an energy community.
- **Section 13303 (IRC 179D):** Tax Deduction for Energy Efficient Commercial Buildings - previously range was \$0.60 to \$1.80 per square foot. That range increased to \$2.50 to \$5.00 per square foot if prevailing wage and apprenticeship requirements are met, dropped to \$0.50 to \$1.00 if not met.
- **Section 13404 (IRC 30C):** Alternative Fuel Vehicle Refueling Property Credit - up to 30% of investment (max of \$100k) per charging/fueling unit when placed in service in a low-income or rural census tract. The previous cap was \$30k per property. Must meet prevailing wage and apprenticeship requirements or credit is reduced to 6%.

Additionally, over \$90B in grants and financing were included in 3 primary IRA provisions.

- **Section 13403:** Commercial Clean Vehicles – though not directly related to buildings, this will impact the amount of direct emissions (GHG Scope 1) reported by building owners.
- **Section 60103:** Greenhouse Gas Reduction Fund - Competitive grants to establish or expand financial institutions that support GHG-reduction and zero-emission projects.
- **Section 60114:** GHG Planning and Implementation Grants - Competitive grants for planning or implementation of initiatives that reduce GHGs in low-income and disadvantaged communities.

Energy Code Improvement and Adoption

The IIJA Section 40511 provides [\\$225M in funding](#) for improved building codes to ensure more efficient and resilient buildings through the Resilient and Efficient Code Implementation (RECI) competitive grant program. The IRA Section 50131 provides \$1B of funding for states and local governments with the authority

to adopt traditional building energy codes and innovative building energy codes, such as building performance standards, to lead the way in decarbonizing the new and existing residential and commercial buildings. This initiative is supported and administered by the Office of Energy Efficiency & Renewable Energy (EERE) and the Office of State & Community Energy Programs (SCEP).

Code Standards

One way to think of “energy codes” is to assume they are primarily created to provide cities and states with optional standards for energy efficiency in new construction. National model energy codes are developed by two private organizations, ASHRAE and the International Codes Council. ASHRAE develops the model commercial energy code, known as [Standard 90.1](#). The International Code Council develops the [International Energy Conservation Code \(IECC\)](#). Most codes are adopted at the state level, though, in about 10 states they are adopted by cities. For example, Texas requires a minimum performance of 90.1-2013, yet cities like Austin, Dallas, and San Antonio require new construction to meet 90.1-2019.

Energy codes and new construction standards play into some of the IRA’s programs, such as [179D Commercial Buildings Energy Efficiency Tax Deduction](#). For example, scope items were previously compared to ASHRAE 90.1 version 2007 to determine if they qualified. Now, models must utilize the most recent ASHRAE 90.1 version in effect 2 years prior to the start of construction. As you would expect, the latest versions of 90.1 and IECC codes continue to emphasize resilience, energy efficiency, and sustainability in response to climate change and evolving technologies. This makes it critical for designers to understand the strict and efficient applicable standards and influence project design to ensure deductions remain a potential source of benefit.

The funding for energy code improvement through the IIJA is progressing. See the [Resilient and Efficient Code Implementation \(RECI\)](#) page showing the most recent awarded projects, including \$90M awarded for 27 projects across 26 states in July 2023 and a second \$90M installment in March 2024.

In December 2023, a competitive Funding Opportunity Announcement (FOA) was released by the DOE making \$530M available for code adoption.

Building Performance Standards

The \$1B of IRA funding for code adoption doesn’t have to be used strictly for code adoption on new construction, it also allows jurisdictions to take innovative approaches to efficiency and emissions reductions for existing buildings through

the adoption of other standards with equivalent energy/emissions savings, such as a building performance standard. This can come in the form of Local Laws, Statewide legislation, electrification mandates, etc.

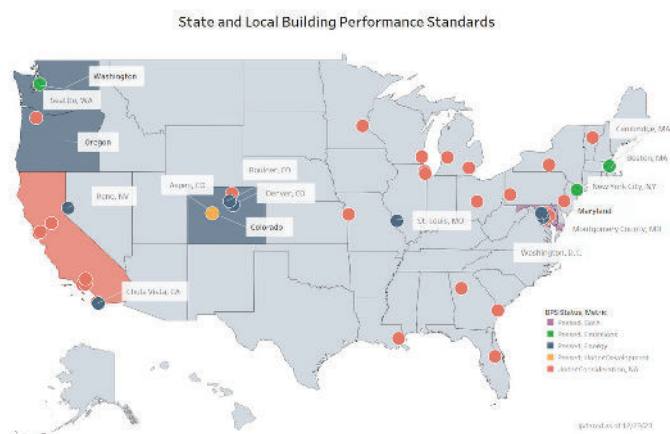


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Existing building energy efficiency must be part of the plan if the U.S. is to meet emissions goals. According to a report by the [USGBC](#), “commercial buildings built before 1980 that have not been renovated since 2000 represent 37% of the national gross floor area. These buildings offer the greatest opportunity for energy savings given their age and assumed condition.”

On the [DOE Building Energy Codes Program Infographics](#) page, you can not only view how efficient the adopted codes are in specific cities and states, you can also directly access Building Performance Standards, or BPS (sometimes listed as Building Energy Performance Standards, or BEPS) which include items like “Energize Denver” and “Local Law 97” in New York (see picture below) and are typically driven by the [National BPS Coalition](#). To date, 4 states and 50 local municipalities have adopted some level of BPS, with many more under development.



Some cities such as Boston, MA started down the path many years ago. In 2013, they passed a Building Energy Reporting and Disclosure Ordinance (BERDO) requiring buildings over 35k square feet or with 35 units or more to report their energy and water consumption.

Often, baseline energy reporting (benchmarking) is used as a starting point for BPS adoption to drive visibility and transparency to energy and water consumption (many entities have adopted the use of Energy Star's Portfolio Manager). An initial law or standard passed and repeatedly amended to include improvement targets, penalties, credits, etc. to drive action. In other cases, such as in NY, separate laws are enacted to require reporting (LL84) vs. emissions reduction (LL97). Improvement targets typically involve a specific target but can also include a baseline reduction percentage. Target units are most often based on emissions (metric tons of eCO₂) or site Energy Use Intensity (EUI, measured in kBtu/sf). While some standards do have requirements for the elimination of fossil fuels (electrification), most include an emissions reduction target to encourage electrification, not just energy efficiency.

As you may expect, these standards can be accompanied by fines and penalties. Non-compliance on reporting may include a daily penalty such as \$300/day (Boston) or \$0.50/sf/month (New York City). Non-compliance for emissions and energy being above target can have varying structures. Examples may be \$1,000/day (Boston), \$10/sf/year (Washington D.C.), \$268/ton over target/year (New York City), \$0.30 - \$0.70/kBtu over target/year (Denver). Penalty amounts can vary drastically by BPS and can result in millions of dollars in annual fines.

Denver: [Energize Denver](#): This legislation, enacted in November 2022, requires buildings over 25,000 square feet to meet specific Energy Use Intensity (EUI) targets by 2030. Non-compliance can lead to substantial fines, encouraging building owners to make necessary upgrades to improve energy efficiency. For example, buildings not meeting their 2024 interim targets could face fines of \$0.30 per kilowatt-hour (kWh) not reduced, increasing to \$0.35 per kWh for the final 2030 targets. Incentives for electrification and renewable energy usage are also part of the compliance strategy. Buildings using at least 80% electricity may receive a 10% bonus on EUI targets, making compliance easier.

New York City: [Local Law 97](#): Part of the Climate Mobilization Act, Local Law 97 requires buildings over 25,000 square feet to meet new energy efficiency and greenhouse gas emissions limits starting in 2024, with stricter limits in 2030. Covered buildings that exceed annual emissions limits will face an annual financial penalty of \$268 per ton of CO2 equivalent over the limit based on 2024 energy usage and emissions. In December 2023, New York implemented a new rule for LL97 that provides a beneficial electrification credit ("BE Credit"). The larger the heat pump, the larger the credit, and equipment installed before 2027 earns double the credit, and the electricity used by the heat pump is deducted from their building's total electricity use. According to Urban Green

Council, the BE Credit is particularly important for buildings that must upgrade equipment to eliminate carbon-intensive fuel oil #4 by 2027 in compliance with LL32 of 2023. That law, adopted in 2016, states that oil number 4 (No. 4 oil) will be banned in city-owned buildings starting July 1, 2025, and in all other buildings starting July 1, 2027. Details on this and other New York Local Laws can be found on NYC Accelerator site.

Building Performance Standards have been on the rise since the IRA was signed into law 2 years ago, and with the \$1.225B of funding put in place by the IIJA and IRA for the advancement and adoption of building energy codes and efficiency standards, it is a matter of time before more laws are passed targeting existing building energy and emissions.

The Impact of Delay

Many building owners in cities and states with benchmarking and BPS legislation in place are already up against deadlines to report and reduce energy use. And as 2030 approaches, the inevitable spread of these laws will impact a greater portion of the built environment. Upgrading building equipment with energy-efficient and low-emission equipment and advanced controls now will not only avoid wasted energy and expensive repairs, but it will maximize the potential of the generational funding provided by the IRA. Many of the IRA provisions for tax credits and deductions have increasing requirements regarding Prevailing Wage, Apprenticeship Requirements, and Domestic Content that could reduce or fully eliminate financial benefits, such as:

- Apprenticeship requirements to maximize tax credits increase as follows: 10% of total labor hours if construction begins before 2023; 12.5% if construction begins during 2024; and 15% if construction begins after 2024.
- Solar projects starting construction in 2024 and 1 MW or above must meet domestic content requirements or may only receive a refund of 90% of the tax credit. This percentage lowers to 85% for projects starting construction in 2025 and 0% for projects starting construction after 2025. Domestic content requirement starts at 40% for all projects beginning construction before 2025, increases to 45% for projects beginning construction in 2025, 50% for projects beginning construction in 2026, and 55% for projects beginning construction after 2026. (This also applies to projects of any size if they are taking direct pay.)
- For geothermal heat property, the base investment tax credit is 6% for the first 10 years, scaling down to 5.2% in 2033 and 4.4% in 2034.
- Per the Tax Cuts and Job Act (TCJA), a business with a solar PV system placed in service between January 1, 2018, and December 31, 2022, can claim a 100% bonus depreciation.

Unless the law changes, the percentage of capital equipment that can be expensed drops 20% per year (e.g., 80% in 2023 and 60% in 2024) until the provision drops to 0% in 2027.

Challenges

Although an unprecedented amount of funding has been allocated to improving efficiency and reducing emissions, many challenges remain.



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Visibility to Energy Benchmarking: According to the 2018 CBECS report, total commercial building floorspace grew 11% between 2012 and 2018. If that trend continues, that will mean the U.S. could have another 12 billion square feet of floorspace by 2030. One reason that could be a challenge is that nearly 70% of commercial buildings are under 10k square feet and may not be included in BPS energy benchmark reporting and improvement mandates. Benchmarking policies apply to only <1% of commercial buildings nationwide. California buildings account for 39% of the total number of buildings benchmarked in the United States. In areas without benchmarking policies, data and the context for understanding building performance are lacking, which deter both private sector action as well as jurisdictions' policy development.



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Power Demand: In addition to the expansion of building stock, office and retail vacancy rates in urban downtowns will likely affect investment in existing buildings. And while remote work is estimated to reduce employee's carbon footprint by half due to reduced transportation, many offices with vacancy are still operational and running equipment at inefficient loads. That isn't necessarily due to a lack of prioritization on energy. Many HVAC systems such as chiller plants cannot simply be shut off for long periods of time or they may be at risk of failure when they are turned back on. Other risks include humidity

and mold. Additionally, we are in the era AI and transportation electrification, and according to Reuters, data centers and electric vehicles are expected to ramp up U.S. power demand by about 300 terawatt-hours (TWh) by 2030. For reference, the U.S. used 4,065 TWh in 2023. This forecasted growth in power demand has the potential to add stress to the grid and offset a large of efficiency efforts and must be supported with clean energy generation and distributed energy resources.

Electrification Adoption and Grid Resilience: Half of buildings and 70% of floorspace uses natural gas. Many building owners are hesitant to electrify because electrification may require upgrades to electrical infrastructure to increase capacity, including transformers, switchgear, etc. Also, natural gas is typically cheaper than electricity, but the DOE estimates electric utility rates will decrease 8%-9% by 2030 due to clean energy generation. And while the Acts are driving massive advances in distributed energy systems, solar, BESS, and grid expansion, the EIA estimates that commercial buildings (which use 13% of all energy in the U.S.) consumed 4,377 trillion Btu's of fossil fuels in 2023 compared to 4,691 trillion Btu's of electricity. The intermittent nature of renewable energy such as solar and wind is also a limiting factor, as unpredictable generation due to weather and non-matching hourly energy supply to demand cause energy inconsistency when not coupled with long-duration BESS, which remains a nascent and costly technology. In addition to commercial electrification demand, full electrification of the industrial sector could more than double the U.S. power demand, according to Utility Dive. So justifiably, grid reliability will continue to be a real concern for decision makers during electrification planning.

Money Left on the Table: Many of the available funding and valuable incentives of the Acts may not be fully understood or utilized. As a result, many contractors in the energy retrofit industry are not pursuing (or helping building owners) pursue items like the 179D tax deduction. And while many of the IRA's programs can be very beneficial, the 5X multiplier for Prevailing Wage and Apprenticeship Requirements and other bonus credits can be a limiting factor.

Technological Advances: To meet our emission target, retrofitting buildings with current technologies may not be enough to combat the expected growth. Rapid scaling of emerging technologies will be necessary to reach new levels of efficiency, resilience, and demand response. The advancement and relative levelized cost of energy of BESS, hydrogen, nuclear fusion, modular nuclear, and carbon sequestration will be needed as well.

Will it be Enough?

Based on EPA projections, even if the IRA funding is fully utilized, the U.S. would have to reduce emissions by an additional 17% to meet the Paris Agreement target. Estimates show the U.S. must average an emissions reduction of 6.9% annually from 2024 to 2030, and the reduction in 2023 was only 1.9%. While much of 2023 was spent understanding how to implement the Acts provisions, there has been significant progress and investment, and many predict increasing momentum in the coming years. A great resource for viewing all IRA components and steps taken by federal agencies to implement each IRA provision is the [IRA Tracker](#), where you can see announcements from the Department of Energy, Environmental Protection Agency, and more. IJA results can be found at [Build.gov](#), [Invest.gov](#), and [energy.gov/invest](#).

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The Acts provide a great path for buildings to achieve their proportional share of the reduction goal, and efforts by building owners to reduce emissions through electrification and decarbonization projects will be compounded by the investments to catalyze clean power generation and modernize the American energy system. (The American Clean Power Association, estimates a combined \$372B of public and private capital has already been invested in US utility-scale clean energy since the IRA was approved.) But the headwinds facing the U.S. emission goal will likely require widespread expansion and enforcement of rigorous energy codes as a lever to reach meet our climate commitment.

The good news is that not all carrots come from federal programs. States are stepping up funding and support in other ways as well. One example is Colorado's Senate Bill 21-246 that requires utilities to set greenhouse gas reduction targets and invest in building electrification. It includes \$81 million for beneficial electrification programs and \$280 million for electric energy efficiency programs. Other states like Illinois and Minnesota are driving substantial grant and rebate programs through their utilities and EPA and Energy offices, while other states such as New Jersey, Maryland, Massachusetts, Illinois, and more have established SREC (Solar Renewable Energy Certificate) programs.

Summary – “An Ounce of Prevention...”

The IIJA and IRA will undoubtedly provide drastic improvements to our energy grid, help curb energy demand, and reduce emissions from the built environment. But there is a real risk that slow adoption, underutilized programs, and expansion of building stock could combat the intention of these laws and make our environmental pledges very difficult to achieve by 2030. Knowing the possibility of increased urgency in the coming years, paired with the inevitability of increased efficiency and emissions standards with substantial fines, building owners should act as soon as possible to get ahead of the curve with proactive planning and swift action.

It's been said that “you can't improve what you don't measure”, so fully understanding building energy consumption and keeping apprised of local legislation activity should be core components to strategic planning for all building owners. Through benchmarking analysis, building owners can compare their energy use intensity and emissions to other buildings in the same category and against existing BPS target across the nation to gage their risk. Furthermore, conducting a comprehensive evaluation of equipment and energy management systems within their facilities will determine what projects should be prioritized based on efficiency, emissions, potential for electrification, and IRA-eligible tax incentives.

At Crete United, we welcome the opportunity to speak with you further about your energy, equipment, and tax incentives that will help you prioritize energy efficiency and decarbonization projects on your journey to 2030 and beyond.



CONSISTENCY, LASER FOCUS AND DIRECT ACCOUNTABILITY

Crete United is an energy efficiency powerhouse with in-house mechanical, electrical, plumbing, and building automation capabilities. We are focused and committed to improving the built environment.

Crete United is a unified network of local mechanical, electrical and plumbing (MEP) and Building Automation companies spanning the U.S. You can work with just one of our partners or we can bring multiple services together so that you can experience a fully integrated, energy efficient solution for every aspect of your building's health.

Across the nation, our self-performing teams create energy efficient solutions that advance your sustainability goals while improving your bottom line.

LET'S WORK TOGETHER

Whether you have talent and experience in the commercial / industrial MEP space, want to join our network or need our services, contact us today.

3700 South Boulevard, Suite 250
Charlotte, NC 28209

info@creteunited.com

1-833-273-8364



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