



Decarbonizing the built environment in North America

Policy necessary to maintain momentum

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Report written by Michael Zuriff
RICS Senior Public Affairs Officer

Edited by Matthew Griffiths
RICS Editor

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Glossary

Term	Definition
Building life cycle	The BS/EN 15978 standard divides the building life cycle into four stages: • Stage A: Product and construction process • Stage B: Use • Stage C: End of life • Stage D: Benefits and loads beyond the system boundary. Each stage is further divided into modules.
Carbon emissions	Although carbon dioxide is only one among a number of greenhouse gases, the term ‘carbon emissions’ is used throughout this paper as a proxy for human-produced greenhouse gases.
Carbon intensity	The quantity of carbon emissions associated with an activity or product, often compared to its alternatives. For example, travelling by car is more carbon-intensive than travelling by train.
Embodied carbon	The total greenhouse gas emissions and removals associated with materials and construction processes throughout the whole life cycle of a building.*
Greenhouse gases (GHGs)	Constituents of the atmosphere, both natural and anthropogenic (human-created), that absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth’s surface, the atmosphere and clouds.
Life cycle assessment (LCA)	An assessment of the environmental impact of a product or service.
Net zero whole-life carbon building	A building where the sum total of all building-related greenhouse gas emissions over a building’s life cycle, both operational and embodied, is minimised; meets local carbon, energy and water targets; and, with residual offsets, equals zero.*

Term	Definition
Net zero carbon operational energy building	A building where: • no fossil fuels are used • all energy use has been minimised • it meets the local energy use target • all energy used is generated on or off site using renewables that demonstrate additionality (they are newly built for this purpose), and • any residual direct or indirect emissions from energy generation and distribution are offset (see Offset carbon emissions).*
Offset carbon emissions	Reduced or avoided emissions meant to compensate for an equivalent quantity of emissions occurring elsewhere.
Operational carbon	The GHG emissions arising from all energy and water consumed by an asset in use, over its life cycle.*
Whole life carbon emissions	The sum total of all building-related greenhouse emissions, both operational and embodied, over the life cycle of a building, including its decommission. Overall whole life carbon building performance includes separately reporting the potential benefit from future energy recovery, reuse and recycling.*

* Definitions adapted from RICS' [Whole life carbon assessment for the built environment](#), 2nd edition, 2023.



Introduction

The built environment is a significant contributor to carbon emissions, making it a crucial focal point in the global fight against climate change. In North America, the US and Canada have each put forward policies and initiatives to decarbonize their economies. As both countries are faced with the daily reminders of the consequences of climate change, mitigating the carbon footprint of the built environment is a critical move towards achieving their climate goals and transitioning to a low-carbon economy.

Rapid urban development, exponential demands on energy consumption and outdated infrastructure have resulted in a heavy carbon burden from the built environment. Globally, [the UN Environment Programme](#) reports that buildings alone account for nearly 40% of carbon emissions and are therefore an integral part of the challenge of achieving net-zero targets. Moreover, transportation systems and infrastructure contribute significantly to this problem, demanding a holistic approach to address their emissions effectively.

Decarbonization efforts require a shift in the way we plan, design, construct and operate buildings and infrastructure. Achieving the ambitious vision laid out by policymakers in both countries demands serious conversations about the impact of climate change – removing the rhetoric from current political discourse and developing dialogue between government, the private sector and the public around the true cost of these decarbonization measures – and the cost of doing nothing.

This paper seeks to support that dialogue. Building on RICS' [Decarbonising UK real estate report](#), it will identify some of the challenges facing policymakers in North America, and outline some strategies and initiatives to support the decarbonization goals related to the built environment in the US and Canada.

Ultimately, this paper aims to contribute to the ongoing dialogue on climate change and the pressing need for decisive action in the built environment. Decarbonization is not only a responsibility, but presents an opportunity to create sustainable, liveable communities that prioritize the well-being of both present and future generations.

Decarbonization in the US

A path to sustainability

Since 2021, the federal government has made investment in decarbonization strategies a priority through some key legislative action and seeks to position the US as a global leader in the fight against climate change.

The *Inflation Reduction Act* of 2022 includes \$370bn in resources for addressing climate change – representing one of the most significant climate investments in history by integrating decarbonization efforts into broader economic policy.

A US Department of Energy (DOE) [factsheet](#) makes a preliminary assessment of the legislation, saying that:

‘in combination with other enacted policies and past actions [it] will help drive 2030 economy-wide greenhouse gas (GHG) emissions to 40% below 2005 levels. The legislation would get the US a significant way towards our overall 2030 climate goals, positioning the US to reach 50–52% GHG emission reductions below 2005 levels’.

These will be achieved through a number of economic policies, including:

- tax incentives for on-site renewables, energy storage, and microgrids
- incentives and rebates for efficiency upgrades to new and existing commercial buildings, residential and public buildings
- grants for mitigating climate change, for environmental justice, for coastal resilience etc.
- technical upgrades to federal buildings
- grants for affordable housing upgrades and developing or improving building energy codes.

These efforts follow on from the climate investments made by the *Infrastructure Investment and Jobs Act* of 2021, more commonly known as the *Bipartisan Infrastructure Law*. When taken together, the two pieces of legislation account for historic environmental policy commitments, as Figure 1 illustrates.

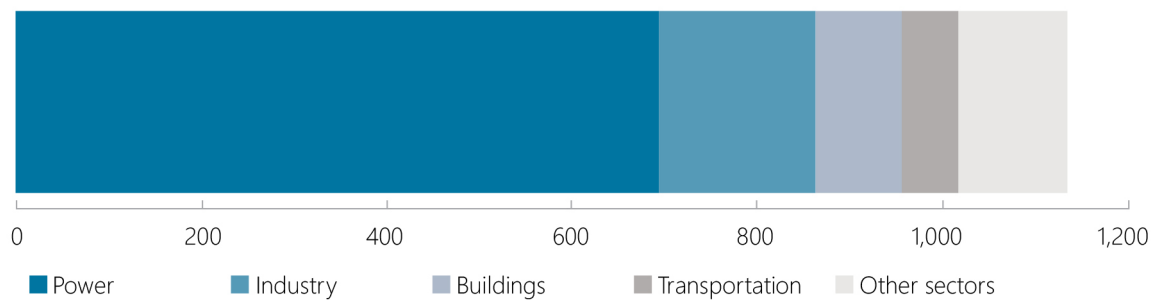


Figure 1: Estimated emissions reductions in 2030 from *Inflation Reduction Act* and *Bipartisan Infrastructure Law* (million metric tons of CO₂e). Source: [DOE factsheet](#)

We are beginning to see some of these priorities take effect. In May 2023, the General Services Administration (GSA) – which is responsible for managing all federally operated buildings in the US – [announced](#) new requirements for the procurement of ‘substantially lower embodied carbon construction materials for agency construction projects’. Funded by the *Inflation Reduction Act*, the initiative is designed to encourage the market for materials that have lower levels of embodied carbon.

At the state level, we see examples such as the *Buy Clean California Act*, enacted in 2017, which requires key materials such as structural and concrete-reinforcing steel to meet emissions targets in their production.

At the local level, there is the example of Montgomery County, Maryland, that will be [mandating](#) all-electric building standards for new construction by the end of 2026. The county also [amended](#) its existing building energy benchmarking program to expand the types of buildings that are subject to the requirement.

Going beyond the built environment, the Securities and Exchange Commission (SEC) has published [proposed rules](#) related to climate disclosures for publicly traded companies for domestic and foreign registrants alike. The commission is exploring requirements that would ensure each registrant reports on the following in its financial statements:

- climate-related risks and their actual or likely material impacts on the registrant’s business, strategy and outlook
- the registrant’s governance of climate-related risks and relevant risk management processes
- the registrant’s GHG emissions, which, for accelerated and large accelerated filers – being major firms with shorter reporting deadlines – would be subject to assurance
- climate-related financial statement metrics and related disclosures in a note to the registrant’s audited financial statements
- information about climate-related targets and goals, and transition plan, if any.

If the proposed rule takes effect, SEC registrants will need to consider the impact of their built assets in their financial reporting.

Challenges facing the US in implementing decarbonization policies

Despite these commitments and the willingness of the Biden administration to establish the US as a leader in the fight against climate change, there are significant challenges to implementing some of these policies.

As seen in almost every area of policy-making over the past few years, one of the most visible challenges to implementation is the partisan divide that has shaped the public discussion. Climate change scepticism is part of the national conversation around environmental policy, while industry groups lobby and make campaign contributions that further influence legislators' decision-making.

While the financial investments have been identified through the *Inflation Reduction Act* and the *Bipartisan Infrastructure Law*, concerns around cost remain. Debates about budget, including continued funding of the federal government and raising the federal debt ceiling, mean that new funding is frequently called into question. Even when funding has been established through legislation, the allocation of those funds becomes a point of political contention.

While the Biden administration has [taken action](#) to reduce the carbon footprint of federal buildings and [implement carbon emission standards](#) for such premises, state and local governments shoulder a significant burden, being responsible for the development and enforcement of building codes that support the reduction of carbon emissions. However, the Building Energy Codes Program has [estimated](#) that Biden administration funding to update building codes could save Americans \$138bn on their utility bills and cut 900m metric tons of CO₂ emissions.

While this is a start, there is more to do – both in developing more ambitious codes for energy reduction and consistency across jurisdictions. The disparate nature of building codes, compliance with regulation and even an inconsistency in the language of decarbonization undercuts public trust in climate initiatives, and has an impact on the ability to demonstrate their value.

Debates around federal spending combined with the scepticism about climate risk require public engagement that has been insufficient to this point. Fear of the effect of energy transition on jobs and the economy and a misunderstanding of the impact of building on carbon emissions lead to a muddled dialogue about the value of decarbonization efforts.

Decarbonization in Canada

Compared to the US, Canada is further ahead in tackling the challenges of climate change in the built environment. Since the [2015 Paris Agreement](#), Canada's federal government has been taking a number of initiatives to reduce carbon emissions and published the [Pan-Canadian Framework on Clean Growth and Climate Change](#). This framework outlines policies developed by the federal government, to be implemented by the provinces, in transitioning to a carbon-neutral economy.

Specific actions identified in the framework include:

- making new buildings more energy-efficient
- retrofitting existing buildings
- improving energy efficiency for appliances and equipment
- supporting building codes and energy-efficient housing in Indigenous communities.

A specific area of focus in Canada with an impact on the built environment is industrial decarbonization. [According to the International Energy Agency](#), the G7 nations, including Canada and the US, are not on track to reduce carbon emissions produced by heavy industrial sectors such as steel and concrete.

Growth in the built environment has placed an added burden on these industries. Canada has, however, moved to address some of these specific challenges by encouraging decarbonization through procurement practices for major contracts.

The [Standard on the Disclosure of Greenhouse Gas Emissions and the Setting of Reduction Targets](#) outlines that federal government procurements of more than \$25m should give suppliers incentives to disclose their carbon emissions and to set reduction targets in line with the Paris Agreement.

With immediate relevance to the built environment, the standard requires:

'the reporting and reduction of the embodied carbon footprint of all new major government construction projects initially starting with concrete. Specifically, these projects must use lower-carbon concrete, where available, so that the total GHG emissions associated with the project's concrete is at least 10% less than the regional average for concrete'.

In addition, the [Decarbonization Incentive Program](#) supports 'projects to accelerate the deployment of commercially available and proven low-carbon technologies and processes that will further reduce GHG emissions'.

Challenges facing Canada in implementing decarbonization policies

These programs, while ambitious and encouraging, still face similar challenges to those in the US. Differences in priorities across provinces, lack of consistent data and measurement, and concerns around increasing costs all are affecting implementation of some of these initiatives. Volatile costs, a booming construction market and significant cost inflation have made budgeting difficult for major projects. Major infrastructure projects that have ambitious decarbonization targets only compound these concerns, as cost escalation makes such targets harder to achieve.

Recommendations

While efforts to decarbonize are moving in the right direction in both the US and Canada, and states and provinces are doing some of the right things, it is clear that they just need to do more of them. The following recommendations are intended to help policymakers continue the dialogue, and to consider introducing frameworks to measure progress with consistent data and benchmarks.

Adopt consistent carbon emissions standards and measurement

Current activities will help reduce carbon emissions across the built environment. However, current benchmarking and measurement of carbon across the life of the asset is limited. In 2017, RICS published the first edition of [Whole life carbon assessment for the built environment](#). This professional standard provides a consistent whole life carbon assessment implementation plan and reporting structure for built projects, allowing for comparability across projects and assets. In September 2023, RICS published the second edition of this standard, which provides a more detailed reporting structure and guidance while also introducing differences between building and infrastructure.

Transparency and quality of data is even more important because federal, state or provincial and local codes and standards vary. Consistent standards would enable information and best practice to be shared across levels of governments and projects. Once carbon is measured accurately and consistently, policymakers can consider caps on carbon emissions to reach reduction targets.

Promote sustainability through building codes

Updated building codes have been shown to reduce energy usage and energy costs. Concerted efforts across federal, state or provincial and local governments will support decarbonization goals. RICS recommends that building codes and regulations reflect the stated carbon reduction targets.

Implement policy through procurement

Both the US and Canada are using contracting and procurement policy to help meet decarbonization goals. Efforts by the Treasury Board in Canada, the GSA in the US, and state or provincial and local governments demonstrate the power of procurement practices in shaping policy. RICS recommends that governments at all levels use the procurement process to help reach decarbonization targets.

Provide incentives that address cost

The *Inflation Reduction Act* has made considerable progress in helping address the cost of decarbonization for building owners, operators and homeowners. However, inflationary pressures have continued to put some of these measures at risk. Incentives such as grants, tax credits, green bonds and other economic policy tools can help accelerate implementation. With broader concerns around public spending, it is imperative that federal, state or provincial, and local governments have the ability to determine the efficiency of this public spending.

RICS, as part of the [International Cost Management Standard \(ICMS\) Coalition](#), has developed the world's first integrated taxonomy for life cycle cost and life cycle carbon emissions to contribute positively to efforts to decarbonize the construction sector in the most cost-effective way. Through the third edition of ICMS, there is a consistent method for carbon life cycle reporting across construction projects. The standard supports sustainable investment strategies by bringing much-needed transparency and comparability of embodied and operational carbon across the life cycle of construction projects.

Engage the public

Given the politicization of climate change, it is incumbent on all stakeholders – policymakers, non-profit organizations and the private sector – to educate citizens about the climate impact of buildings and the combined environmental, social and economic benefits of reducing energy use and emissions in buildings.

Invest in workforce development

An increase in investment for continuing education and training for the current workforce is critical in transition to a low-carbon economy. The professions in the built environment are facing [a skills gap](#) that will only widen if efforts aren't made to prepare them for these changes. The current and next generation of professionals will need to be trained and qualified to meet this demand.

Conclusions

The path to decarbonization in North America requires the strength and commitment of federal and local governments alike. It is critical for all stakeholders – public and private sector – to align efforts and support consistent benchmarking and measurement of carbon emissions in the built environment – including the cost of implementing these measures.

Fostering public awareness and engagement is crucial to ensuring the success of decarbonization initiatives. It requires open and depoliticized dialogue based on best practice and transparent data and information. It is essential for the public and policymakers to be aware of both the cost of implementation of decarbonization measures – as well as the ultimate cost of inaction.



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Americas, Europe, Middle East & Africa
aemea@rics.org

Asia Pacific
apac@rics.org

United Kingdom & Ireland
contactrics@rics.org



rics.org