

Reducing Greenhouse Gas Emissions from the Built Environment with Low-Carbon Materials & Methods

Buildings are responsible for at least 39% of global energy-related carbon emissions each year, and 11% comes from embodied carbon. **Embodied carbon** refers to all the greenhouse gas emissions generated by the manufacturing, installation, maintenance, and disposal of construction materials used in buildings, roads, and other infrastructure. PCC jurisdictions have developed a shared [vision and action plan](#) to tackle embodied carbon. The action plan envisions a regional building and construction sector that reduces and ultimately eliminates excess embodied carbon from construction practices along the Pacific Coast of North America. Many cities, states, and the province within the region already have efforts in place to reduce embodied carbon emissions.

The PCC represents the world's fourth largest economy, a thriving region of 58 million people with a combined GDP of nearly \$5 trillion.

How we will achieve our vision:

The vision and action plan articulates five key principles and three pathways—each with specific strategies and actions—to move the region toward the vision of reducing embodied carbon through low-carbon construction.

Pathway 1

Building regional demand for low-carbon construction

Pathway 2

Encourage growth of regional supply of low-carbon construction materials and services

Pathway 3

Build and strengthen strategic partnerships within PCC jurisdictions and public sector players

KEY GUIDING PRINCIPLES FOR PCC ACTION ON EMBODIED CARBON

1. Intentionally engage and collaborate with impacted communities
2. Create jobs and attract investment to the Pacific Coast of North America
3. Increase awareness and use of low-carbon materials
4. Better data to empower decisions on low-carbon materials and services
5. Collaborate and share learnings and best practices

Why is low-carbon construction important?

According to the World Green Building Council, the embodied carbon emissions released before a building opens, referred to as 'upfront carbon', will be responsible for half of the entire carbon footprint of new construction between now and 2050. Additional sources of embodied carbon come from the broader built environment (e.g., roads, bridges, water distribution systems, and other infrastructure). It is important to note that embodied carbon includes other greenhouse gases that impact climate change like methane, not only carbon dioxide. Although many of these emissions are thought of as industrial or waste emissions, building and construction policies and programs have a key role to play in reducing them.



Reprinted from the [Carbon Leadership Forum's Embodied Carbon 101](#)

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Seattle Mayor

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Los Angeles Mayor

Sample Policies in the Region

British Columbia - [CleanBC Roadmap to 2030](#): This roadmap supports low carbon construction by setting an example using public sector buildings, increasing energy efficiency through the new [Zero Carbon Step Code](#), and encouraging use of low-carbon building materials like mass timber. New [changes to the BC Building Code](#) mean mass timber can now be used in buildings up to 18 stories tall and in a wide variety of new building types.

Vancouver - [Zero Emissions Buildings Plan](#): The plan establishes specific targets and actions to achieve zero emissions in all new buildings by 2030.

Washington State - [Buy Clean and Buy Fair](#): This law requires state agencies and higher education institutions to provide environmental product disclosures (EPDs) and information about the manufacturing workforce for concrete, wood, and steel products used in new building construction. WA will also develop a state-specific embodied carbon database and establish a technical work group to provide recommendations on future policy, program, and market development efforts.

Seattle - [Green Building Incentive Program](#): These incentives aim to create more efficient buildings that center around clean electric energy, water, and resource conservation. The program incentivizes projects to meet specific green building goals and certifications in order to gain additional height, floor area, or a faster building permit.

Oregon - [Buy Clean Oregon](#): This bill requires the Department of Transportation to establish a program to assess greenhouse gas emissions of covered materials (concrete, asphalt, and steel) used in construction and maintenance of Oregon's transportation system, including life cycle assessments on select construction and maintenance activities, collect Environmental Product Declarations (EPDs) for covered materials, and establish a grant to support development of EPDs.

Portland - [Residential Infill Project](#): This project will allow for more housing options in Portland's neighborhoods at a variety of prices to address the housing shortage that has driven up costs of living.

California - [Framework for GHG Reductions](#): This bill (AB 2446) requires the state to develop a framework for measuring and reducing the carbon intensity of construction materials with a target of a 40% net reduction in greenhouse gas emissions of building materials no later than the end of 2035. An interim target of a 20% reduction has been set by the end of 2030 with a report outlining a strategy for achieving the 40% reduction due to the legislature by July 1, 2025.

San Francisco - [Construction and Demolition Debris Recovery Law](#): San Francisco amended multiple city codes to require that all construction and demolition material removed from a project within the city be recycled or reused.

Oakland - [2030 Equitable Climate Action Plan](#): The Plan calls for the City of Oakland to adopt a concrete code for new construction that limits embodied carbon emissions and implements material-efficient building practices.

Los Angeles - [Green New Deal](#): The city of Los Angeles aims to cut down building carbon emissions by 50% by 2030 and will work towards having 100% of buildings be net zero carbon by 2050.

