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Carbon Leadership Forum

Embodied Carbon Policy Strategies

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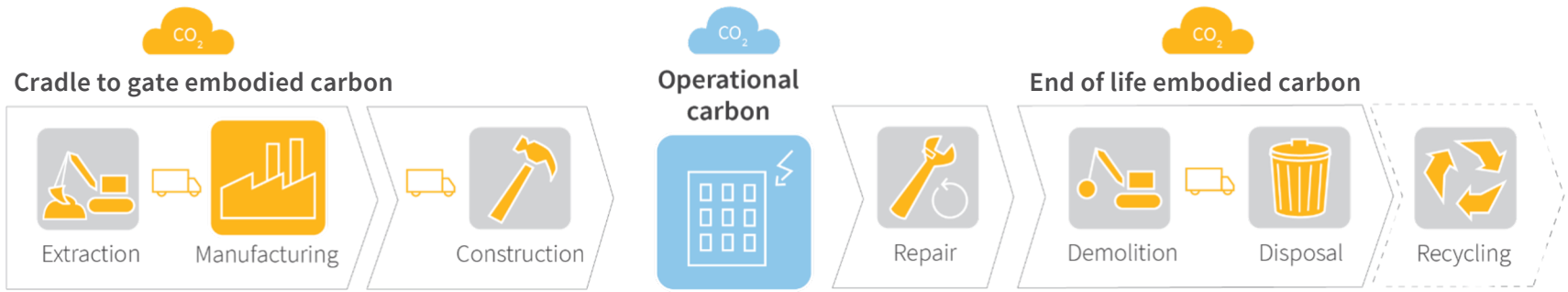
What is embodied carbon?

Image Credit: Stacy Smedley, Building Transparency

Embodied carbon refers to the greenhouse gas (GHG) emissions associated with the manufacturing, transportation, installation, maintenance, and disposal of construction materials.

Calculated as **global warming potential** (GWP) and expressed in carbon dioxide equivalent units **(CO2e)**



Reducing embodied carbon is urgent

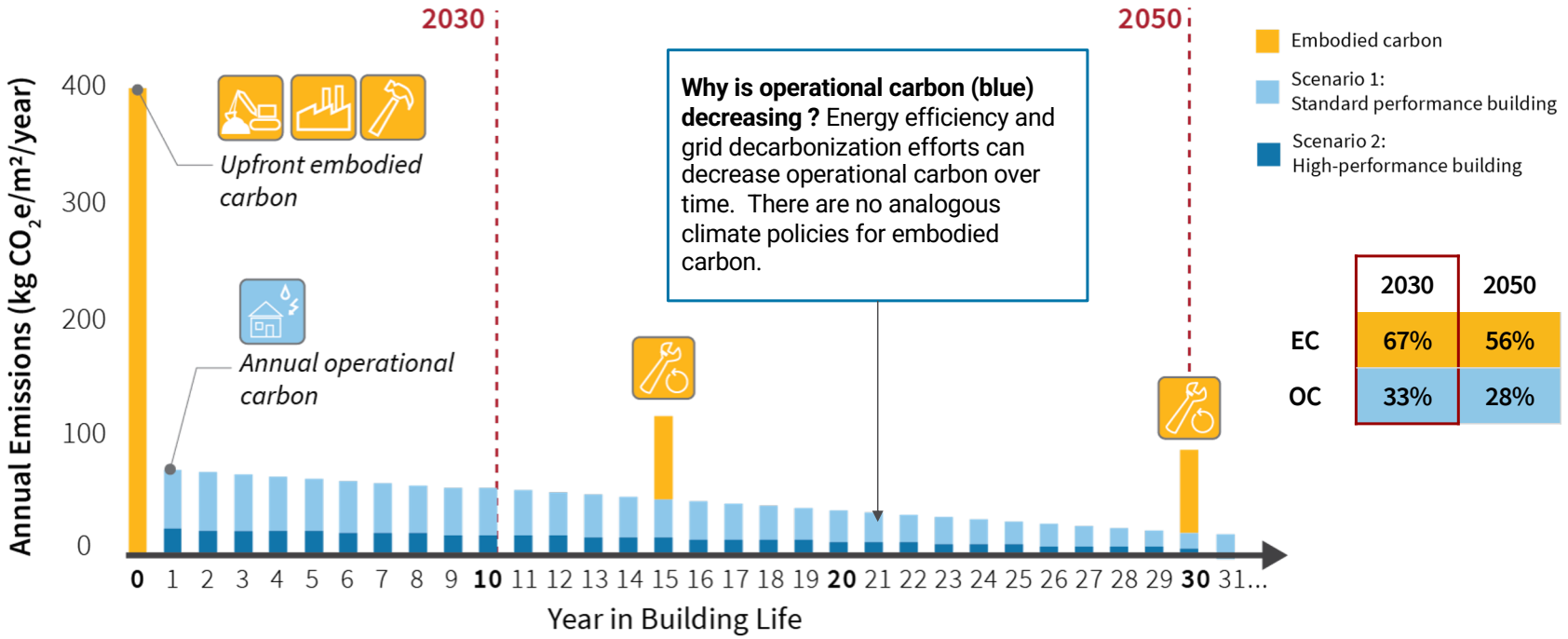
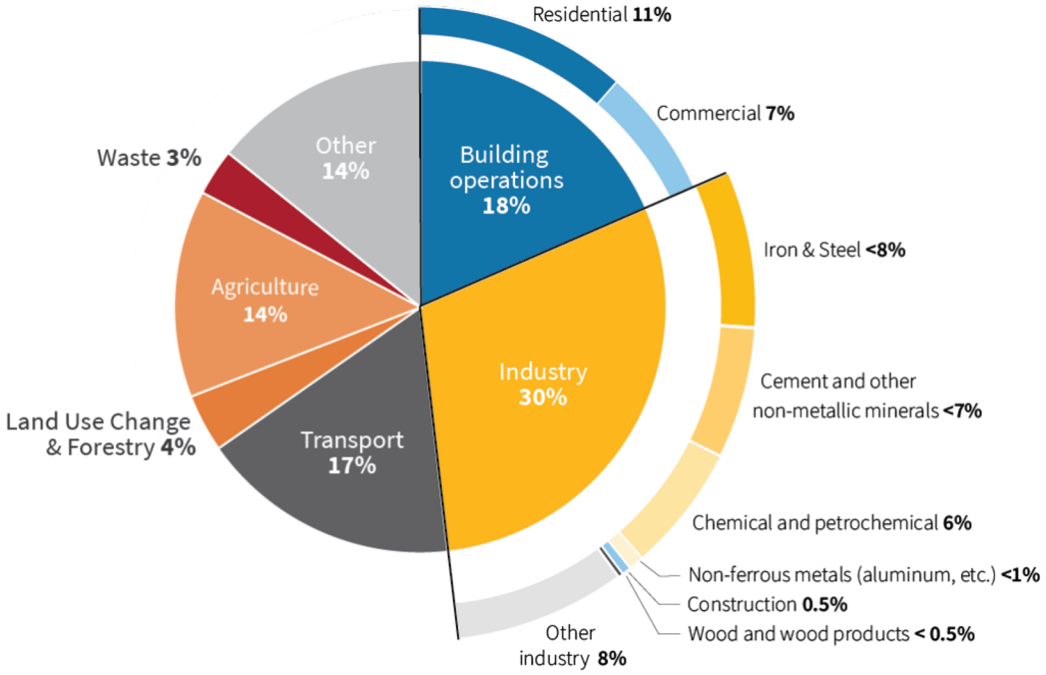


Image Source: Carbon Leadership Forum, 2020

Reducing embodied carbon is key to targeting industrial emissions

- Industrial sector is largest and 'hardest to abate' emissions sector
  - Can't be reduced with clean power/electrification efforts
  - Directly release GHG emissions
  - Require high-temp heat (needs R&D)
- Need policies that address supply chains, not just local facilities
- Reducing embodied carbon during construction (rather than at the facility) addresses challenges:
  - Includes global supply chains
  - Focuses on clean manufacturing *and* reducing volume of carbon intensive materials produced

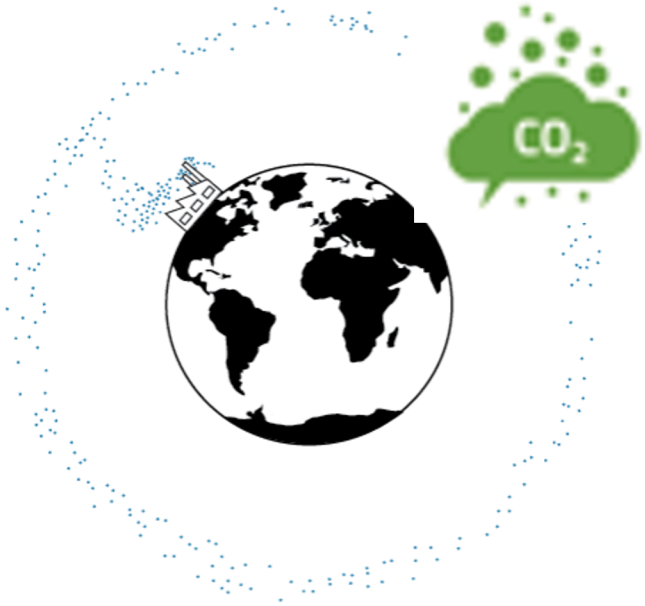
Global total greenhouse gas emissions by end use



Data sources: WRI Climate Watch (2016); IEA World Energy Balances (2019).

Embodied carbon **disproportionately impacts frontline communities**

GLOBAL impacts from
climate change



LOCAL impacts from
facility / transportation emissions

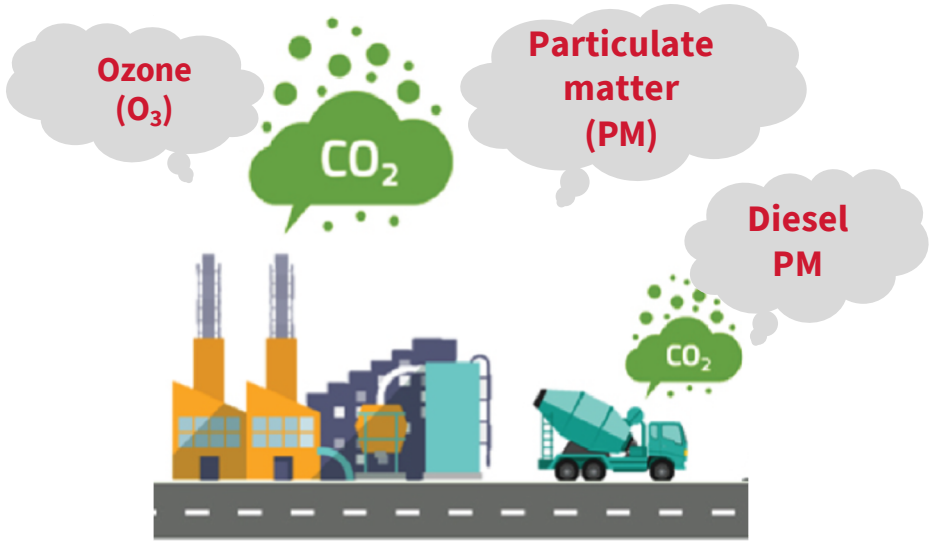
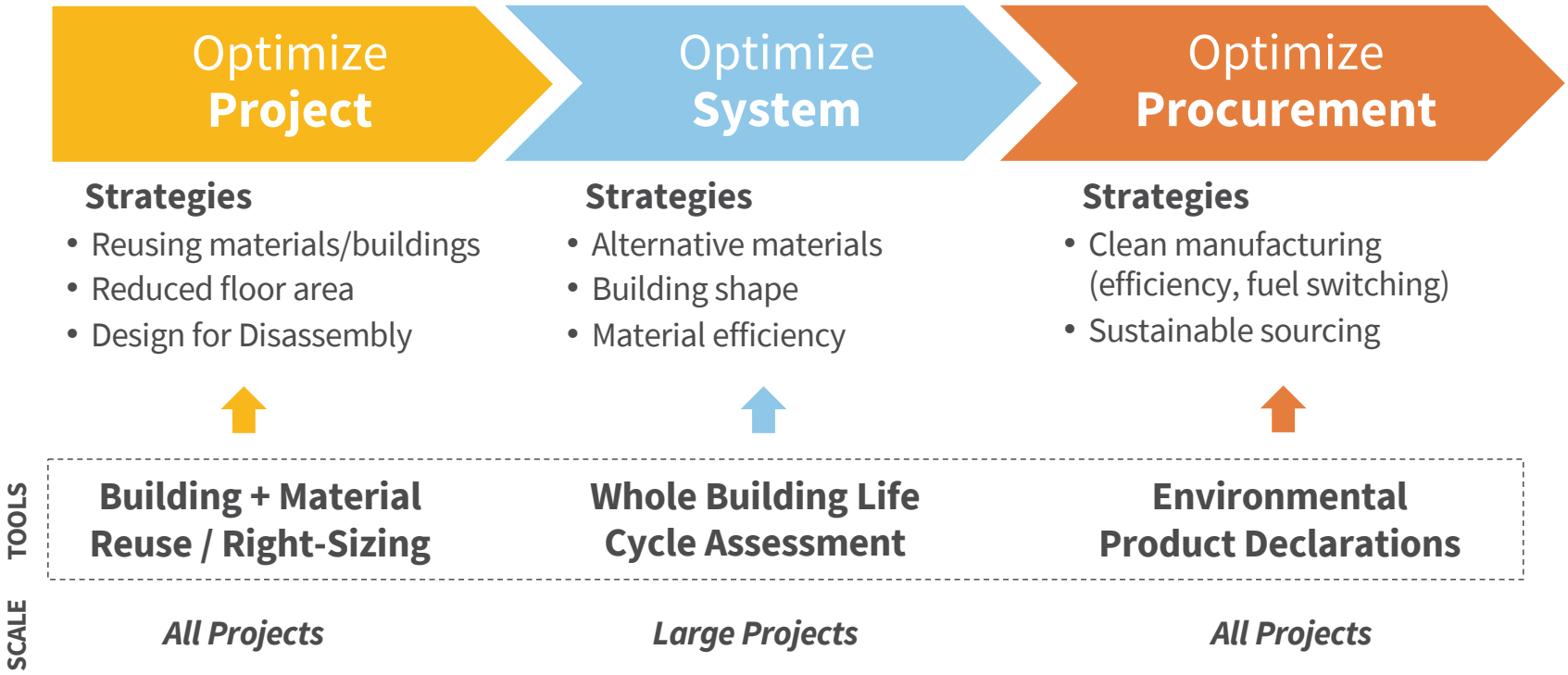


Image Sources (both): *Stacy Smedley, Building Transparency; Life Cycle Assessment (Simonen), edited by Meghan Lewis, Carbon Leadership Forum.*

Opportunities to reduce embodied carbon are widely available



Performance-Based Policies **Two Complementary Approaches**

Building Approach

- Uses **Whole Building LCA tools or early-design estimators** to measure performance

- Incentivizes **Designers** to collaborate to design a lower carbon building
- Captures strategies like:
  - Building/material reuse
  - Use of bio-based materials
  - Efficient structural design

Material Approach

- Use **Environmental Product Declarations** to measure performance

- Incentivizes **Manufacturers** to invest in clean manufacturing and **Contractors** to procure low carbon materials
- Captures strategies like:
  - Concrete mix designs
  - Mfg plant efficiency/fuel source

CLF Policy Toolkit (https://carbonleadershipforum.org/clf-policy-toolkit/)

Policy Primer Series

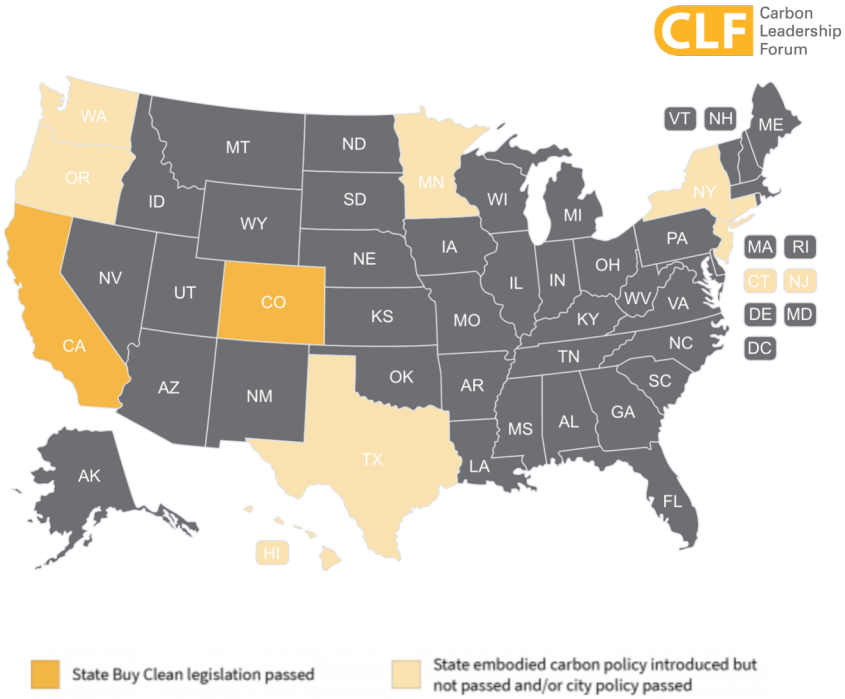
- Embodied Carbon 101 (for policymakers)
- What is Buy Clean
- Guidance on Disclosure & EPDs
- Steps to Developing a procurement policy
- Guidance on implementing Buy Clean

Curated **External Resource Library**

Policy tracker (currently US focused)

Additional resources continually added:

- Tracking Federal Action on Embodied Carbon
- EPD Requirements in Procurement Policies



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Thank you!

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