Home and Building Owners

10 Affordable Ways to Reduce Embodied Carbon on Your Build

With rising building costs and low vacancy rates, finding affordable housing is challenging for many Canadians. This can make it difficult to pay attention to other issues, like environmental impacts. The good news is that **embodied carbon emissions can be reduced by nearly 50% for less than a 1% increase in building costs!** Considering embodied carbon early on when designing a building makes it easier to reduce these emissions. Ask your building team to follow an **Integrated Design Process (IDP)** to encourage collaboration and reduce embodied emissions, building costs, and construction delays. In general, using recycled, biogenic, locally sourced, and responsibly harvested materials tends to create less emissions. Check out **Nelson's Materials Guide**, and the **CLF's Materials Guide** to compare the impacts of different materials like flooring, siding, and insulation.

CO2 embodied carbon | building costs | homeowner income | energy costs | housing availability | maintenance

Build Less for More

1 Retrofit or Reuse Existing Buildings

- Challenge building designers/homeowners to be creative in achieving more efficient uses of smaller floor areas

2 Build Smaller Buildings

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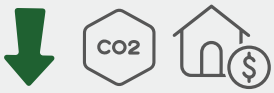

3 Increase Occupant Capacity

- Add a second unit to single-family homes or choose multi-unit buildings
- New BC zoning = more housing

Build Smarter

4 Design for Durability

- Design buildings that last longer, have potential for various future uses, consider end-of-life material recycling & reuse possibilities

5 Optimize Windows

- Optimize size and location of windows (which account for ~11% of a home's embodied emissions and ~30% of heating/cooling demand)

6 Improve Efficiency & MEP System Sizes

- Improve the building envelope, increase insulation, select appropriate building orientation/form
- MEPs can contribute 15-50% of embodied emissions. Right-size them for a more comfortable/efficient home

Building Material Consideration

7 Reduce Concrete Use

- Reduce wall thickness from 8” to 6”
- Reduce slab thickness from 5” to 3-4”
- Reconsider in-floor heating
- Eliminate basements, use pier/screw pile foundations

~25% CO2

~20-40% CO2

8 Improve Concrete Mix

- Ask for a lower carbon concrete mix
- Reduce compressive strength of concrete mix to those specified by building code/or engineering

~16-18% CO2

~15% CO2

9 Consider Alternative Insulation Materials

Material		R-Value x in²	Resistance (fire | moisture | pests)	Cost	Emissions based on 100 m² (-1000 0 1000 2000 3000 kg/CO₂)
Batts	Mineral Wool	4	🔥 💧 🐛	< $6	608
	Fibreglass	3.6	🔥	< $2	154
Spray / Blow-In	Spray Foam	4.6	🔥 💧 🐛	< $6	open cell 380 … closed cell 3013
	Fibreglass	2.6	🔥	< $4	229
	Cellulose	3.6	🔥 💧 🐛	< $4	dense packed -564 … -445 loose fill
Rigid Board	XPS	5	💧	< $3	715
	EPS	4	💧	< $2	288
	Mineral Wool	3.6	🔥 💧 🐛	< $6	473

Manage Waste & Material Reuse

10 Deconstruct, Reuse, and Recycle

- Reuse wood, brick, old fixtures
- Recycle metal, unusable wood, glass, asphalt shingles, paint, concrete, and drywall.

↓ dump fees

↓ landfill emissions

↑ $ from selling salvaged materials

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