Energy Advisors

FREE BEAM ESTIMATOR TRAINING
- Boost your skills with this embodied carbon accounting tool
- Courtesy of the City of Nelson's Low Carbon Homes Pilot
- Contact Alex Leffelaar (aleffelaar@nelson.ca)

10 Affordable Ways to Reduce Embodied Carbon in Homes

In recent years, demand for **energy advisors** has grown significantly, driven by energy modelling requirements in building regulation and rebate programs. As awareness and regulation of embodied carbon emissions increases, we anticipate a similar demand to emerge for embodied carbon expertise. **As an energy advisor, your skillset and knowledge lend themselves well to this opportunity!** Here are some ways to begin integrating embodied carbon reductions and considerations into your work and projects:

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

Build Less for More

1 Build Smaller Buildings

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

2 Increase Occupant Capacity

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

Build Smarter

3 Advocate for an Integrated Design Process (IDP)

- Bring various building professionals together early in the design phase
- Encourage collaboration to help with innovative design

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 and form
- MEPs can contribute 15-50% of embodied emissions. Right-size them for a more comfortable and 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

10 Measure Embodied Carbon & Compare Material Options

- Use a Life Cycle Assessment (LCA) like the **BEAM Estimator Tool**
- Free, easy to use, designed for Canada
- Compare material options for flooring, siding, and other building systems
- Check out **Nelson's Materials Guide**, and the **CLF's Materials Guide** to compare the impacts of different materials like flooring, siding, and insulation.

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