



Sustainable Development Program 2020





Need for Change

- In 2016 Douro-Dummer signed on to the Greater Peterborough Area Climate Change Action Plan
- Community Sector overall reduction target of 29%
- New residential buildings specifically targeted for reductions in Strategy H2



Strategy H2: Build new homes to be more efficient and have a smaller environmental footprint

How much do buildings CONTRIBUTE TO CLIMATE CHANGE? **Total global emissions** by sector, 2017 **ENERGY ENERGY** Transportation **USE INTENSITY** SOURCE EMISSIONS = Operational Carbon Non-Building Mfg 22% **EXTRACTION** Source: © 2018 2030, Inc. / Architecture 2030. All Rights Reserved. Data Sources: UN Environment Global Status Report 2017; EIA International Energy Outlook 2017 + TRANSPORTATION + MANUFACTURING = Up-front Embodied Carbon We can't meet global targets without addressing buildings

Range of Up-front Embodied Carbon Results for Single Family Residence



Builders for Climate Action study shows that material selection can make a dramatic difference in a building's up-front carbon emissions.

This provides a unique opportunity to greatly lower emissions at the construction phase, by 250kg/m2 or 50 tonnes per 200m² (2150ft²) house!



Total Net

The same building can have very different up-front

	EMISSIONS EMISSIONS
	418 191 kg(0 e/m ²
High LIEC	
Ingli dec	Typical OLC
Assembly includes:	Assembly includes:
High carbon concrete	Average carbon concrete
XPS & closed cell spray foam	Mineral wool insulation
Brick cladding	Fiber cement cladding
Steel interior framing	Wood & TJI interior framing
Drywall	Drywall
Vinyl windows	Vinyl windows
Tile & carpet flooring	Engineered wood & vinyl flooring
Clav tile roofing	Asphalt shingle roofing

kgCO₂e/m² est Conventional UEC

Total Net Carbon

STORAGE

0

ssembly includes:

Total Net

igh SCM concrete ellulose & wood fiberboard sulation lood cladding ood interior framing rywall & wood walls uminum clad wood windows ngineered wood & FSC hardwood flooring

Assembly includes:

Best UEC

Iso-Span ICF with high SCM concrete Expanded glass sub-grade insulation Straw & wood fiberboard insulation Wood cladding Compressed straw panel interior walls **ReWall interior cladding** Wood windows Linoleum & FSC softwood flooring Cedar shake roofing

Total Net Carbon

STORAGE

151

kgCO₂e/m²

Program Goal

Incentivize builders to reduce upfront AND operational emissions with a program that is:

- Easy to use
- Cost-neutral
- Significant reductions in GHG emissions



Program Structure

Reduction in permit fees for reducing GHG emissions:

- 40% reduction in permit fees for achieving lower up-front (materials) emissions
- 80% reduction for also achieving near net-zero operating emissions
- FCM Funding application underway which should offer up to 400% permit fee grant

Program Rollout

- Applications open March 1st, 2020 for Douro-Dummer
- Program Administration completed by Builders for Climate Action
- Applicants will apply for building permit normally
- Program criteria and more information in toolkit
- Municipal toolkit will be available for other government agencies to work with BFCA to roll out the program for other municipalities

Program Impact

- 25 single detached dwelling built per year in Douro-Dummer
- 50 tonnes saved on average per detached single dwelling
- Total of 1250 tonnes of CO₂e avoided each year
- 213 single detached dwelling in Peterborough County last year, totaling 10,650 tonnes of CO₂e each year saved.

One Tonne of CO₂

- A single tonne of CO₂ is equivalent to driving a vehicle for 5400km (8L/100km at 2.31kgCO₂e/L gasoline)
- 50 tonne equal to 270,000km driven, or 13.5 cars taken off the road each year (per house!)
- 1250 tonne equal to 6.75 Million km, or almost 9 return trips to the moon. Also the same emissions as 338 cars each year.
- 10,650 tonne equal to 57.5 Million km, or the same carbon sequestered by planting 175,725 tree seedlings grown for 10 years. Also the same emissions as 2,875 cars each year.





For more information:

Brian Fawcett, Chief Building Official Township of Douro-Dummer

> Chris Magwood, Director Endeavour Centre



