Sustainable Development Guidelines 2020

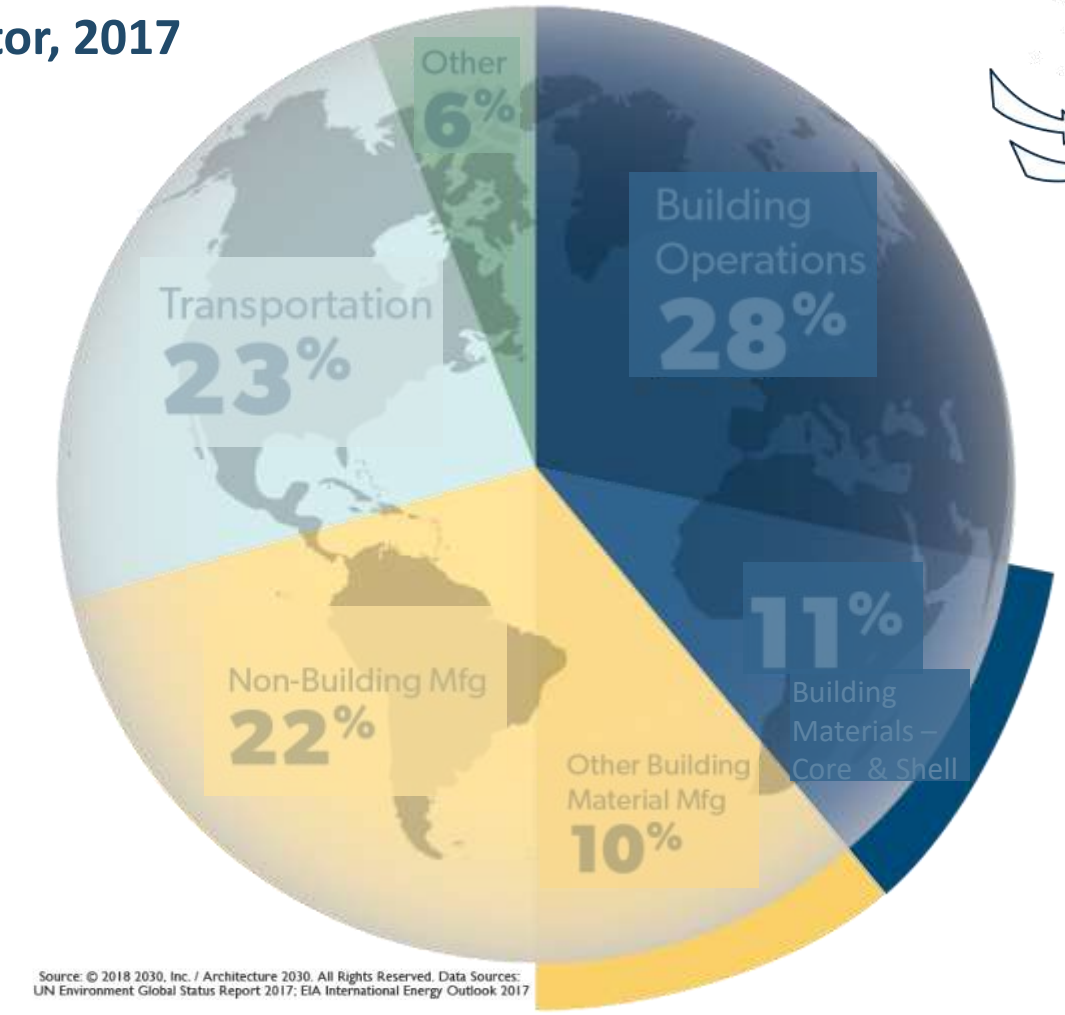
Need for Change

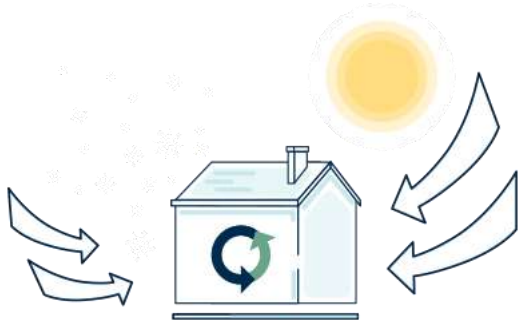
- In 2016 Douro-Dummer signed on to the Greater Peterborough Area Climate Change Action Plan
- Community Sector overall reduction target of 29%
- New residential buildings specifically targeted for reductions in Strategy H2

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

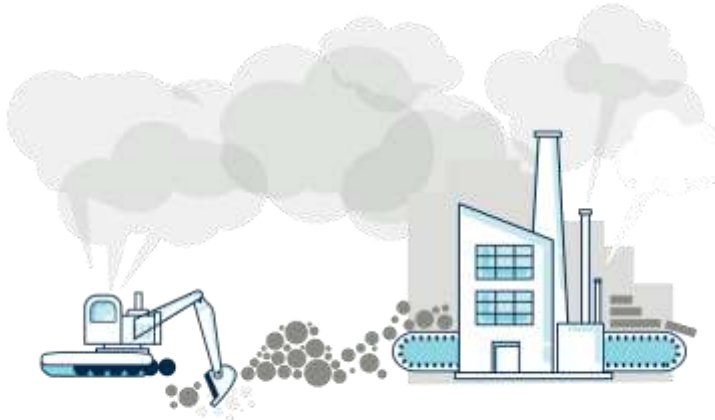




ENERGY
USE INTENSITY

ENERGY
SOURCE EMISSIONS

= Operational Carbon

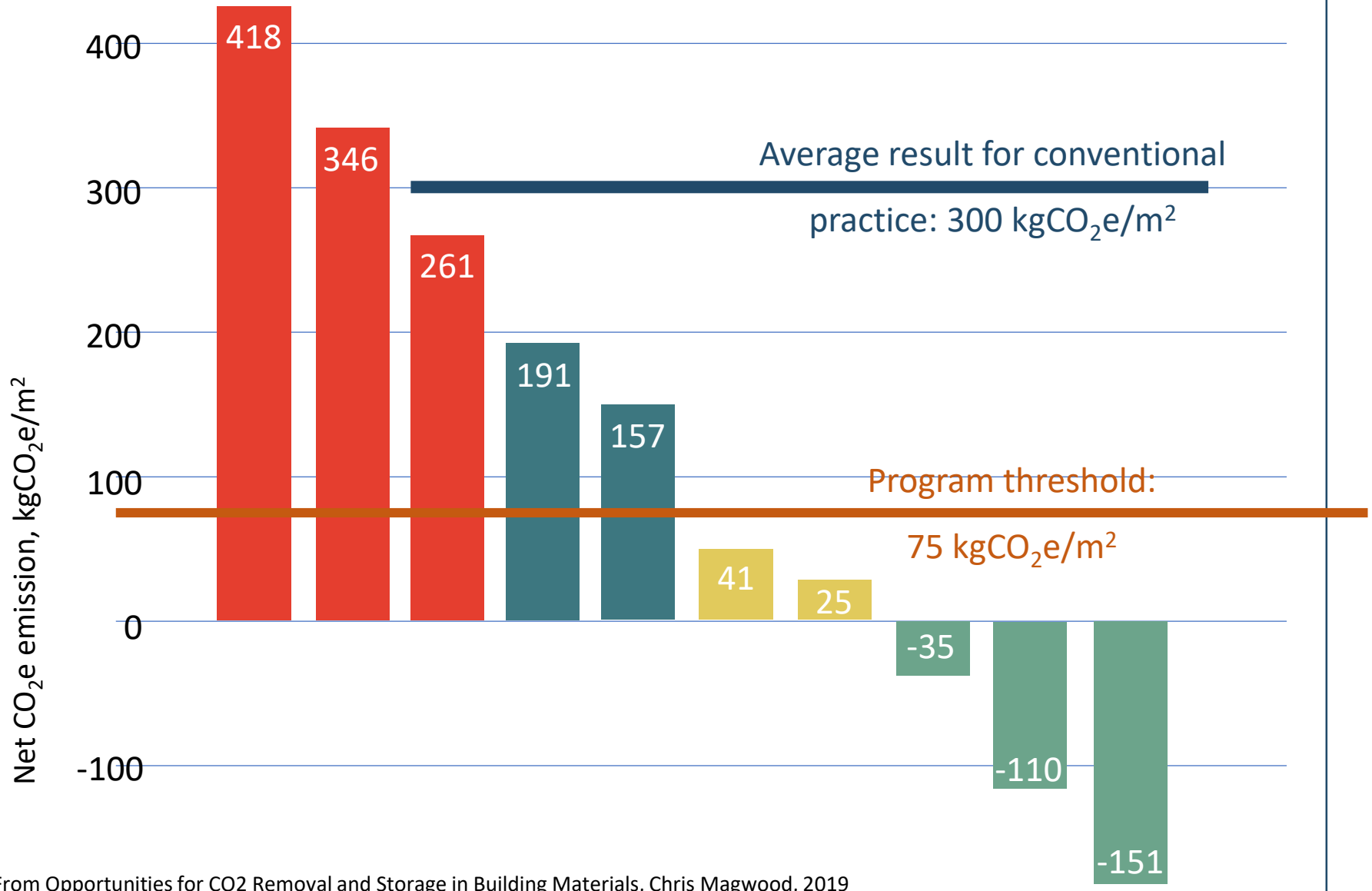


EXTRACTION
+ TRANSPORTATION
+ MANUFACTURING

= Up-front Embodied Carbon

We can't meet global targets without addressing buildings

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

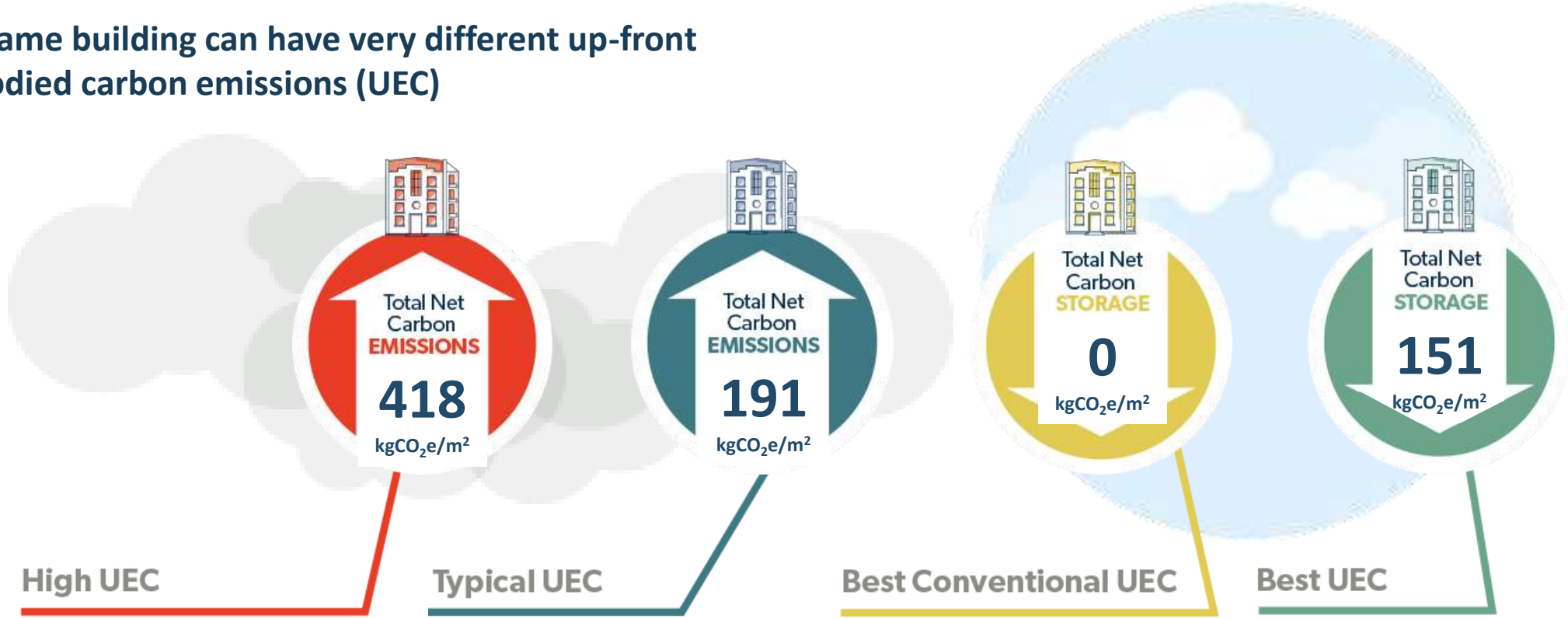


From Opportunities for CO2 Removal and Storage in Building Materials, Chris Magwood, 2019

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 225kg/m2 or 45 tonnes per 2,000 square foot house!

The same building can have very different up-front embodied carbon emissions (UEC)



High UEC

Assembly includes:

- High carbon concrete
- XPS & closed cell spray foam
- Brick cladding
- Steel interior framing
- Drywall
- Vinyl windows
- Tile & carpet flooring
- Clay tile roofing

Typical UEC

Assembly includes:

- Average carbon concrete
- Mineral wool insulation
- Fiber cement cladding
- Wood & TJI interior framing
- Drywall
- Vinyl windows
- Engineered wood & vinyl flooring
- Asphalt shingle roofing

Best Conventional UEC

Assembly includes:

- High SCM concrete
- Cellulose & wood fiberboard insulation
- Wood cladding
- Wood interior framing
- Drywall & wood walls
- Aluminum clad wood windows
- Engineered wood & FSC hardwood flooring

Best UEC

Assembly includes:

- 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

Program Goal

Incentivize builders to reduce up-front 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 CO_2e avoided each year
- 213 single detached dwelling in Peterborough County last year, totaling 10,650 tonnes of CO_2e each year saved.

One Tonne of CO_2

- A single tonne of CO_2 is equivalent to driving a vehicle for 5400km (8L/100km at 2.31kgCO_2e/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
- 10,650 tonne equal to 57.5 Million km, or the same carbon sequestered by planting 175,725 tree seedlings grown for 10 years.

For more information:

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Township of Douro-Dummer

Chris Magwood, Director
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