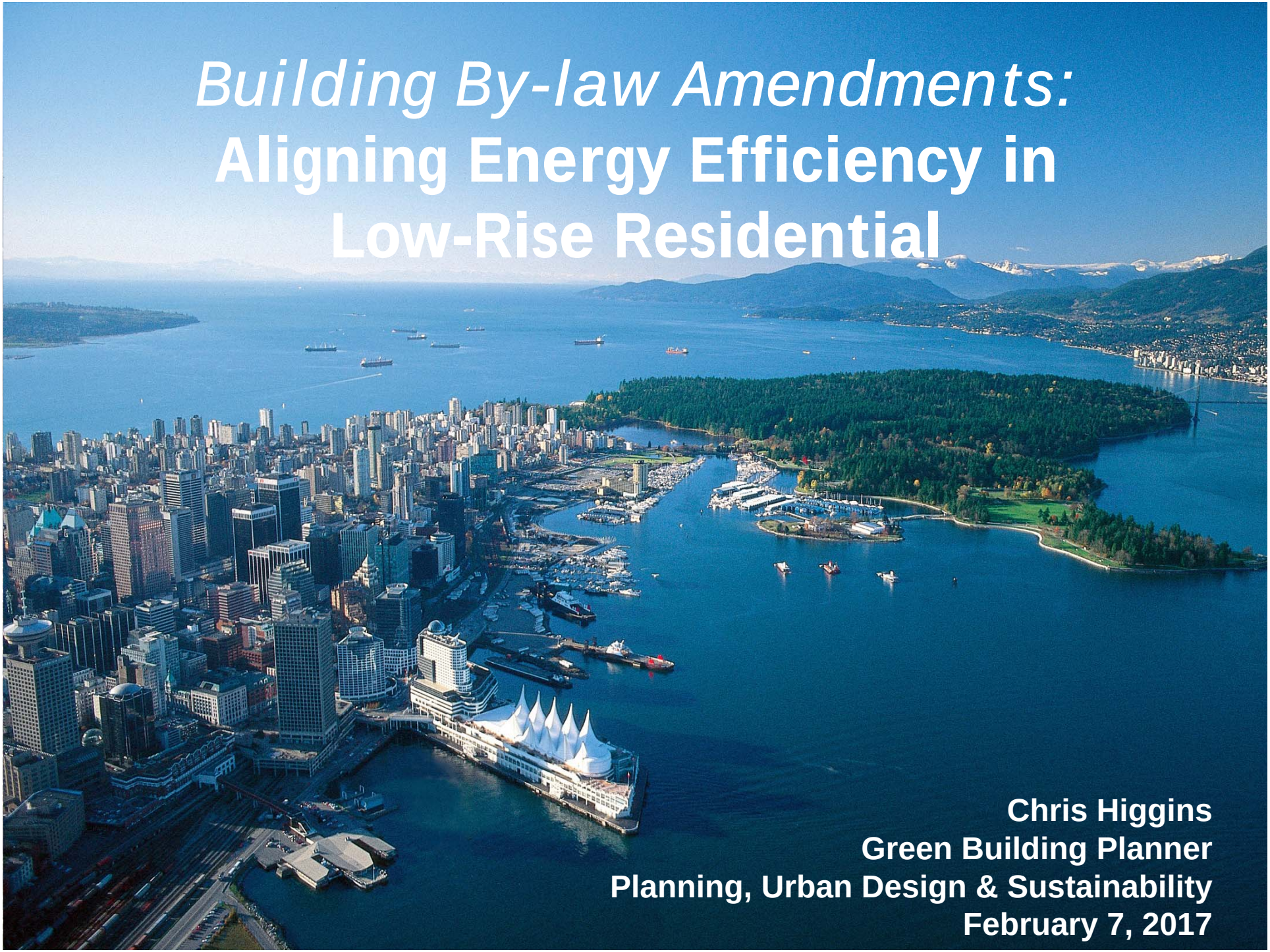


Building By-law Amendments: **Aligning Energy Efficiency in Low-Rise Residential**

Chris Higgins
Green Building Planner
Planning, Urban Design & Sustainability
February 7, 2017

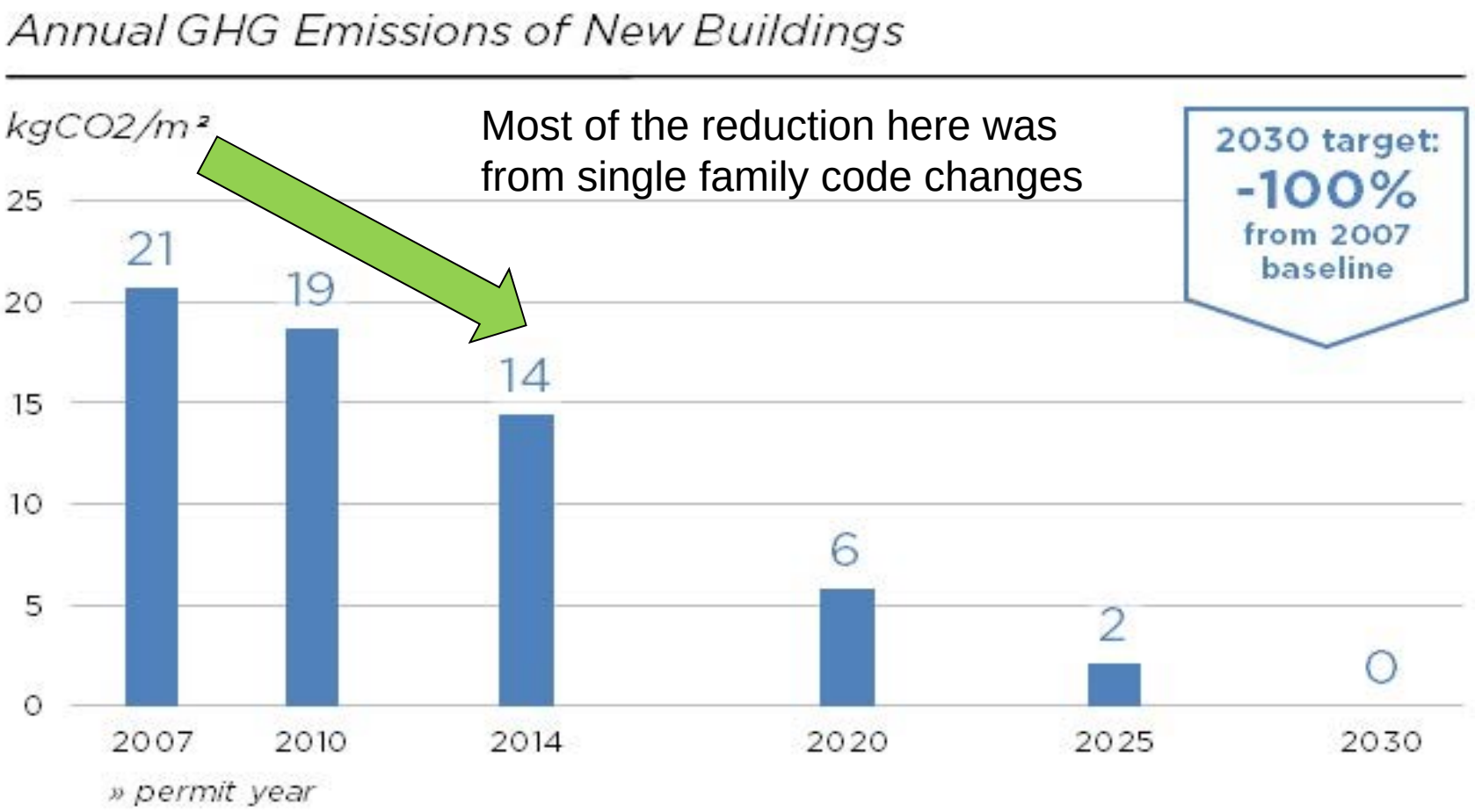
Outline

1. Goals
2. Next step in the Zero Emissions Building Plan
3. Specific by-law updates
4. Cost
5. Very large homes
6. Consultation
7. Permitting
8. Outcomes

Goals

1. Align requirements
2. Limit carbon pollution
3. Maintain choice
4. Health and comfort
5. Lower operating costs

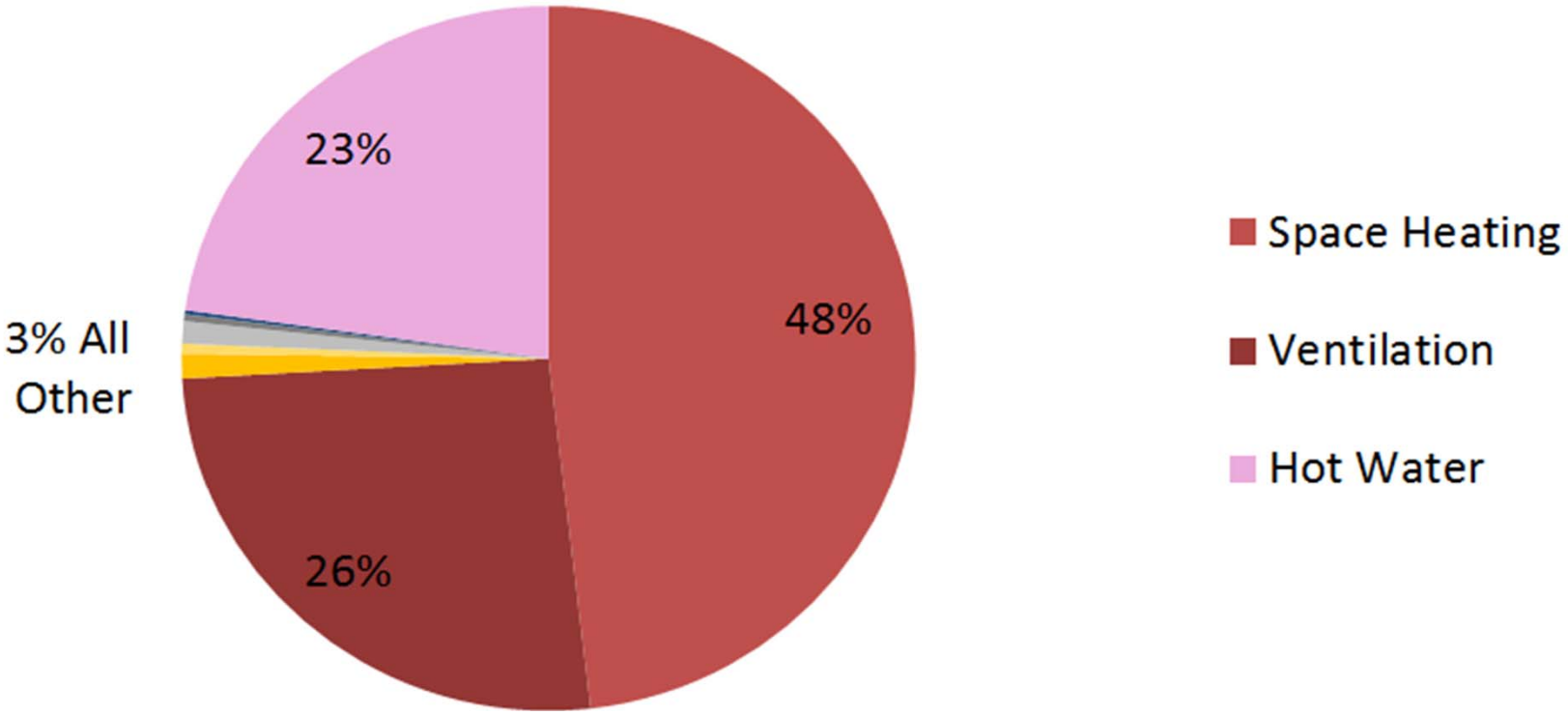
New Building Emissions and Targets



Weighted Average GHG Intensity of New Buildings (all types)

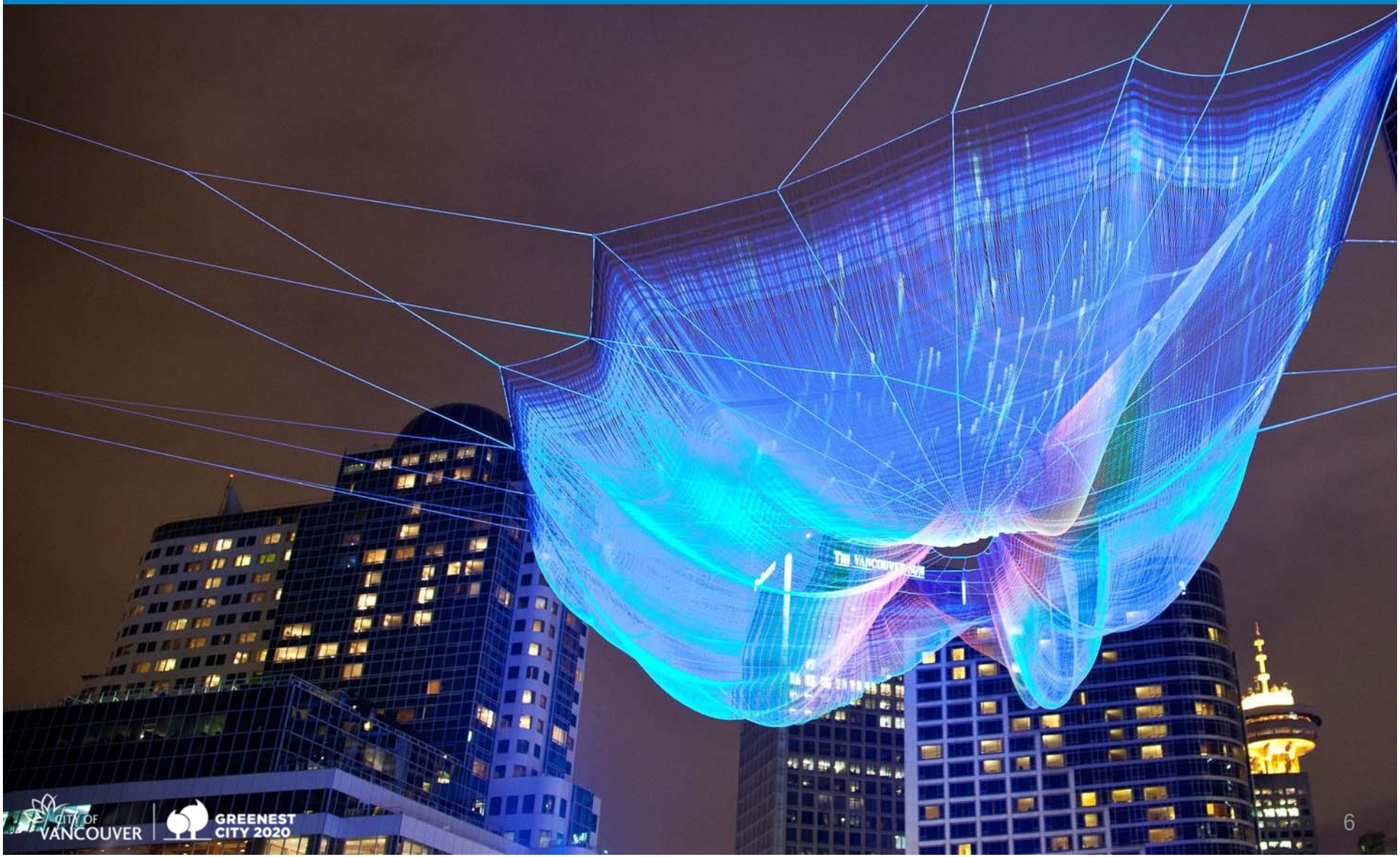
Sources of Carbon Pollution in New Low-rise Multi Unit Residential Buildings (MURB)

GHGs by End-Use in a Vancouver Code-Minimum MURB



Recommended changes would reduce carbon pollution 40% - 55% for new low-rise multi-family buildings

Specific Updates



Building By-law

Two Pathways to Real and Reliable GHG Reductions

Prescriptive Path (All)

- Simple efficiency requirements
- Typical fuels
- Energy modeling not required

Performance Path (4-6)

- Design flexibility
- Space Heating, GHG, and overall energy use limits
- Requires energy modelling

Aligning Prescriptive Requirements

1. Envelope (walls, windows, roof)
2. Mechanical
3. Measuring air tightness

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Prescriptive Requirements

Components Metric (Imperial)	1&2 Family (Existing)	Townhomes and MURB<4	MURB 4-6 Storey
Walls RSI	3.85 (R22)	3.85 (R22)	3.85 (R22)
Windows + sliding glass doors	U1.4 (0.25)	U1.4 (.25)	U1.4 (.25)
Airtightness	Testing + Target	Testing + Target	Testing + Target
Domestic Hot Water	78%	78%	78%
Furnace / Make up air	92%	92%	92%

Metric & Effective: (Imperial) numbers provided for information only, regulation will be metric

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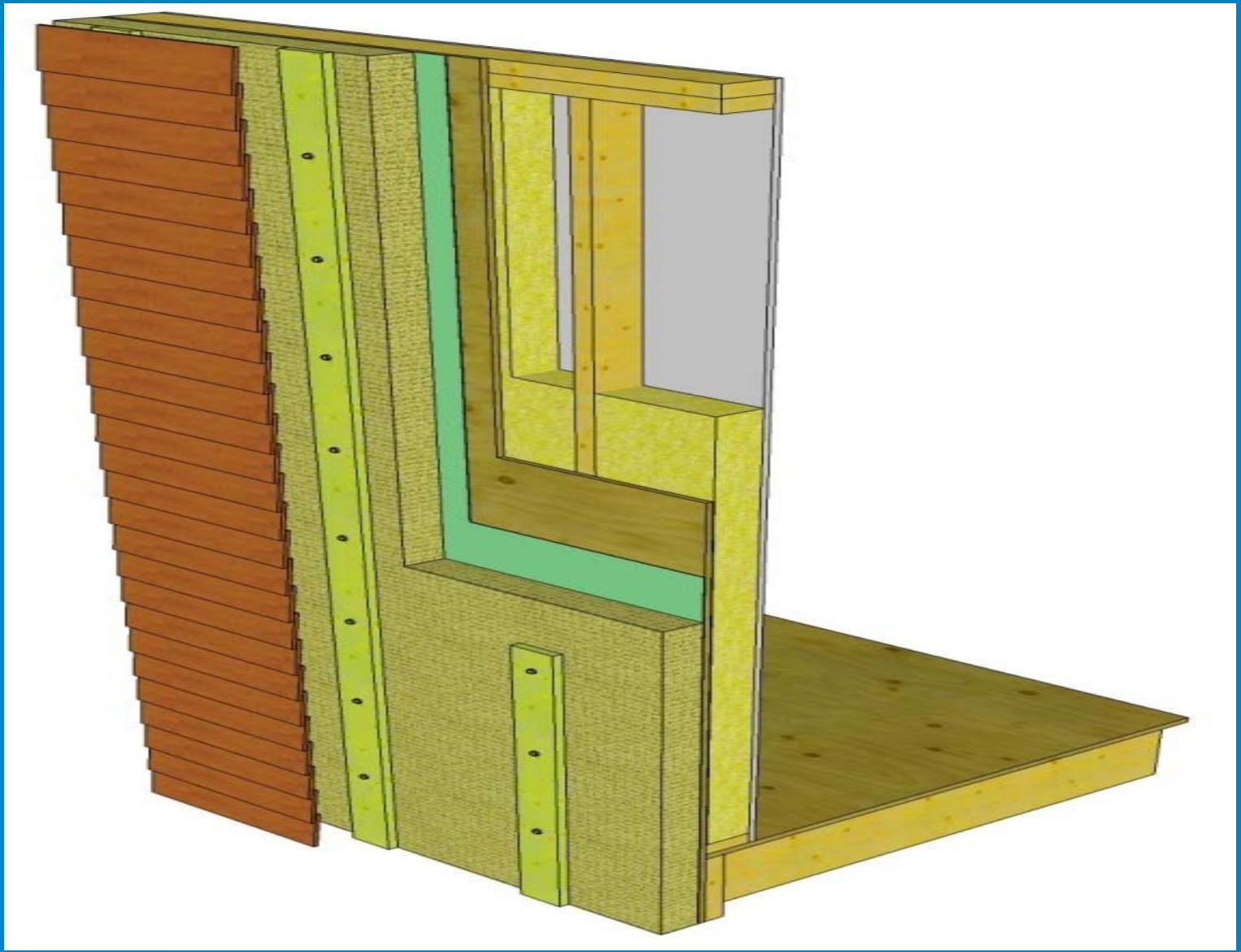
Wood wall example



Performance Path for 4-6 storey

Bylaw	Total Energy Use	Space Heating	Greenhouse Gas Intensity
	Total EUI kWh/m2	**TEDI kWh/m2**	**GHGI Kg/m2**
Proposed By-law requirements	**110**	**25**	**5.5**

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Alternative Compliance Path

A Pathway to Real and Reliable GHG Reductions

- Zero Emissions Building Plan Requirement
- Staff will report back Summer 2017
- Update mandatory connection requirements to they only apply when low carbon supply secured

Cost of Building Code Energy Alignment

- Builder input
- Stakeholder Review
- GVHBA surveyed members

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Cost of Building Code Example

- For a 950sf suite this means a change of
  - $3.50/ft2 or 0.35% of sales price
  - Monthly Mortgage payment: +$11
  - Monthly energy bill: -$20
  - Occupant Savings = $9

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Demonstrating leadership with very large homes

- Average new home size in Vancouver: 2,600 sq ft
- Average new home size in BC: 1,900 sq ft
- This policy would apply only to single family homes 3,500 sq ft or larger
- Requires new homes 3,500+ sq ft to have the same greenhouse gas footprint as a 3,500 sq ft home

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Stakeholder Consultation

Stakeholder Consultation

- Greater Vancouver Homebuilders Association
- Urban Development Institute
- Landlord BC
- Condominium Home Owners Association
- Association of Professional Engineers and Geoscientists of BC
- Architectural Institute of BC

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Stakeholder Consultation

- Two biggest issues:
  - Wall thickness
  - Implementation date
- Stakeholder support

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Permitting

Industry Training, Education and Materials

- Develop guidance and training materials
- Updated R22 insulation guide for multi family
- Hosting education and awareness sessions

Training and Education

- EnerGuide Advisor

- Training and support for permit staff pre and post launch
- Educational sessions for industry

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Clarifications

- EV requirements: No change
- Drain Water Heat Recovery: Exemption request for electric townhomes
- Electrical bylaw: Simply closes a loophole

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Outcomes

- **Harmonized and simplified building code**
- **40% - 55% reduction** in carbon pollution
- **40% reduction in energy use**
- **Improved comfort and health**
- **Lower cost on a monthly basis for homeowners and renters**

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Questions