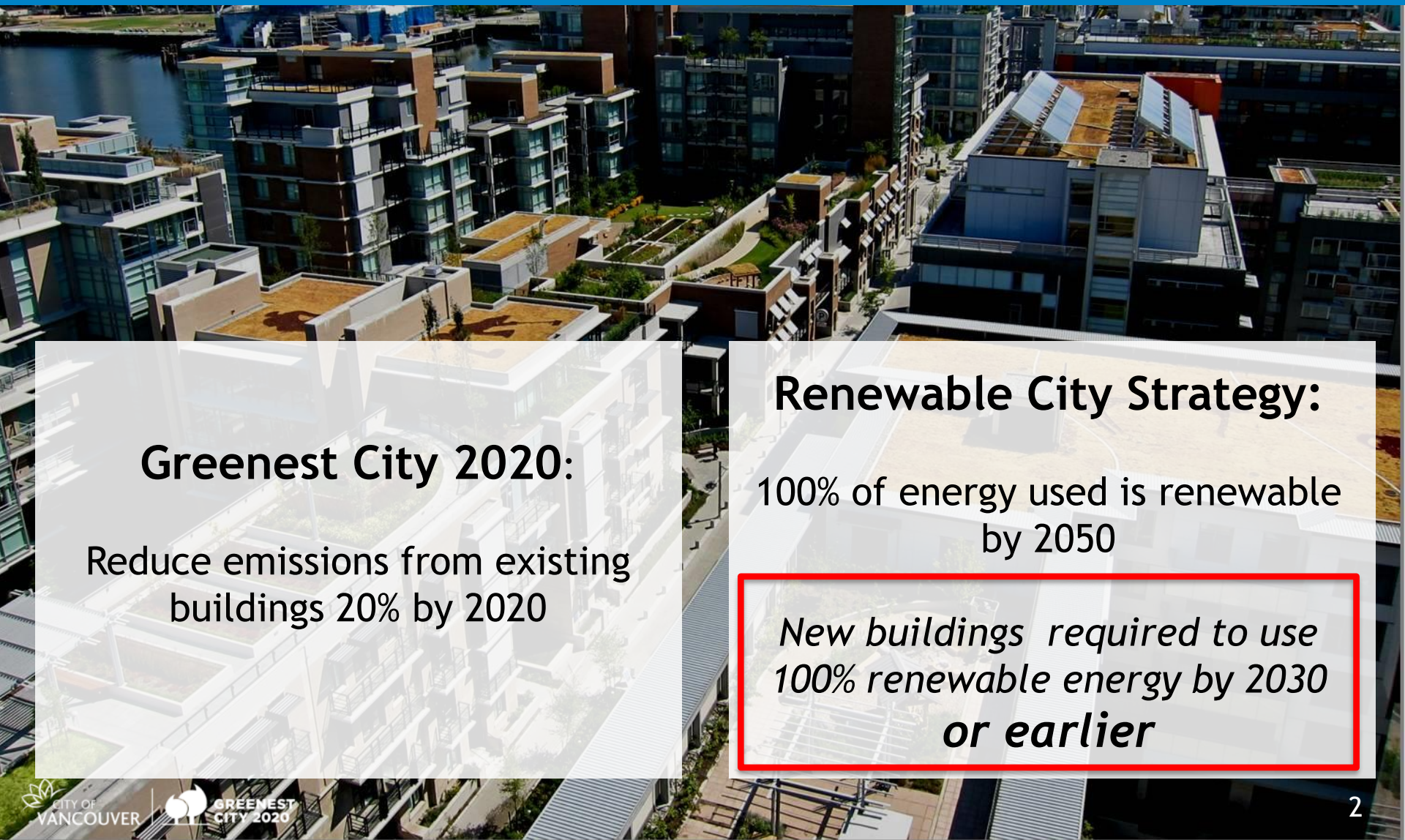
Vancouver`s Zero Emissions Buildings Plan

Clean Air Partnership

Jan 24, 2017

GREEN BUILDINGS

Lead the world in green building design and construction



Greenest City 2020:

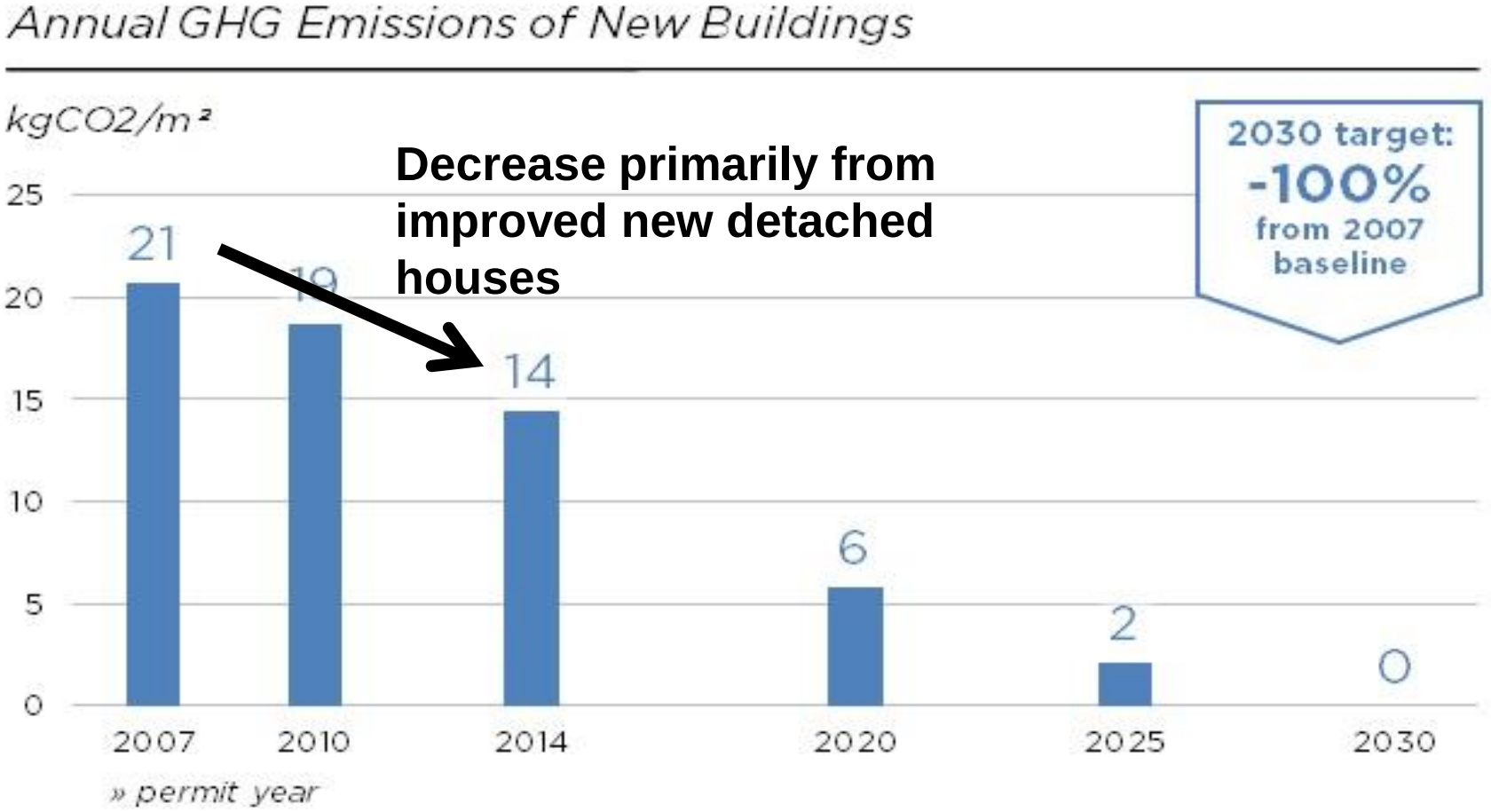
Reduce emissions from existing buildings 20% by 2020

Renewable City Strategy:

100% of energy used is renewable by 2050

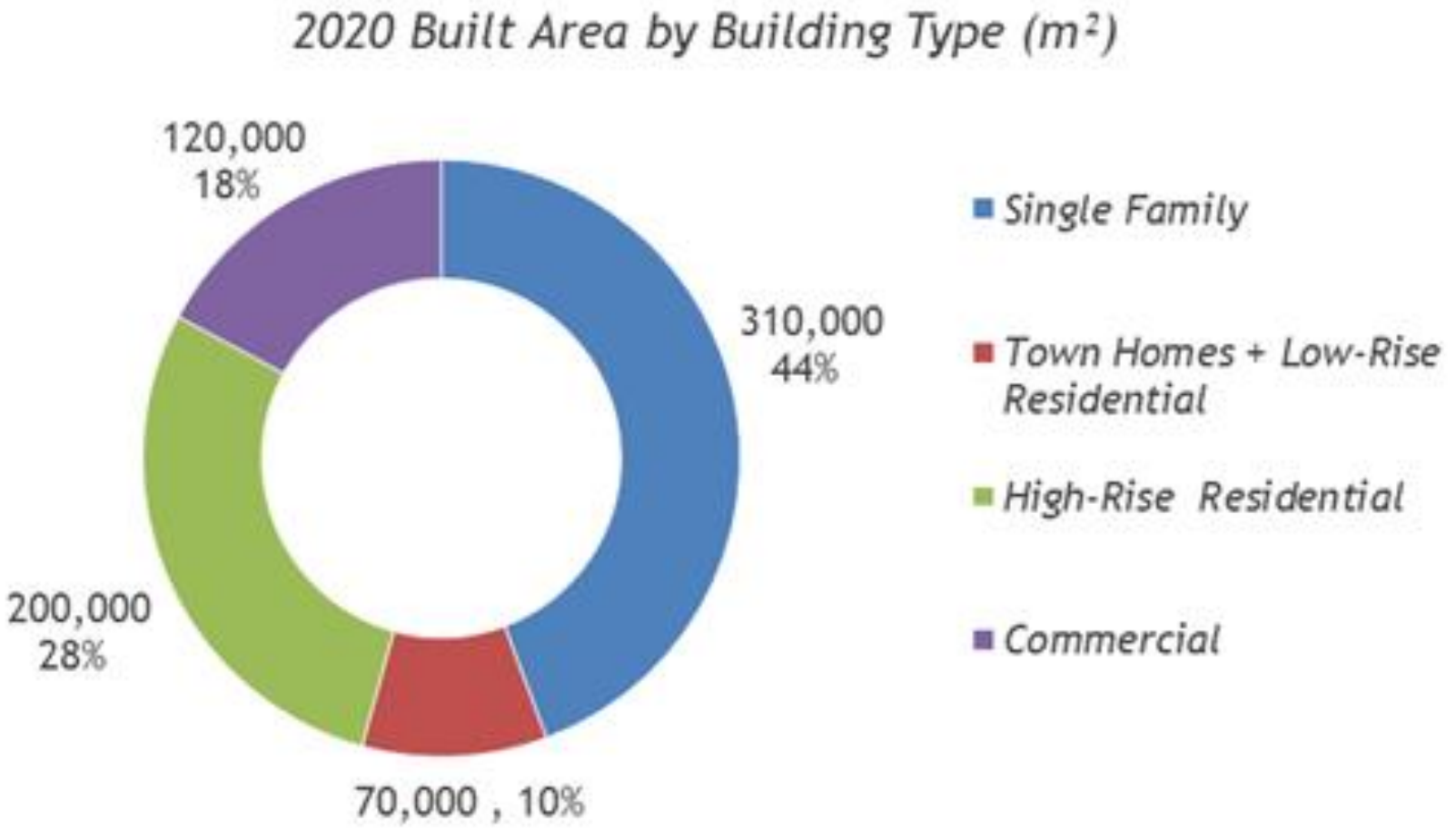
New buildings required to use 100% renewable energy by 2030 ***or earlier***

New Building Emissions – Measure It!



Weighted Average GHG Intensity of New Buildings (all types)

Focus on What Get's Built



82% of new development building area is residential

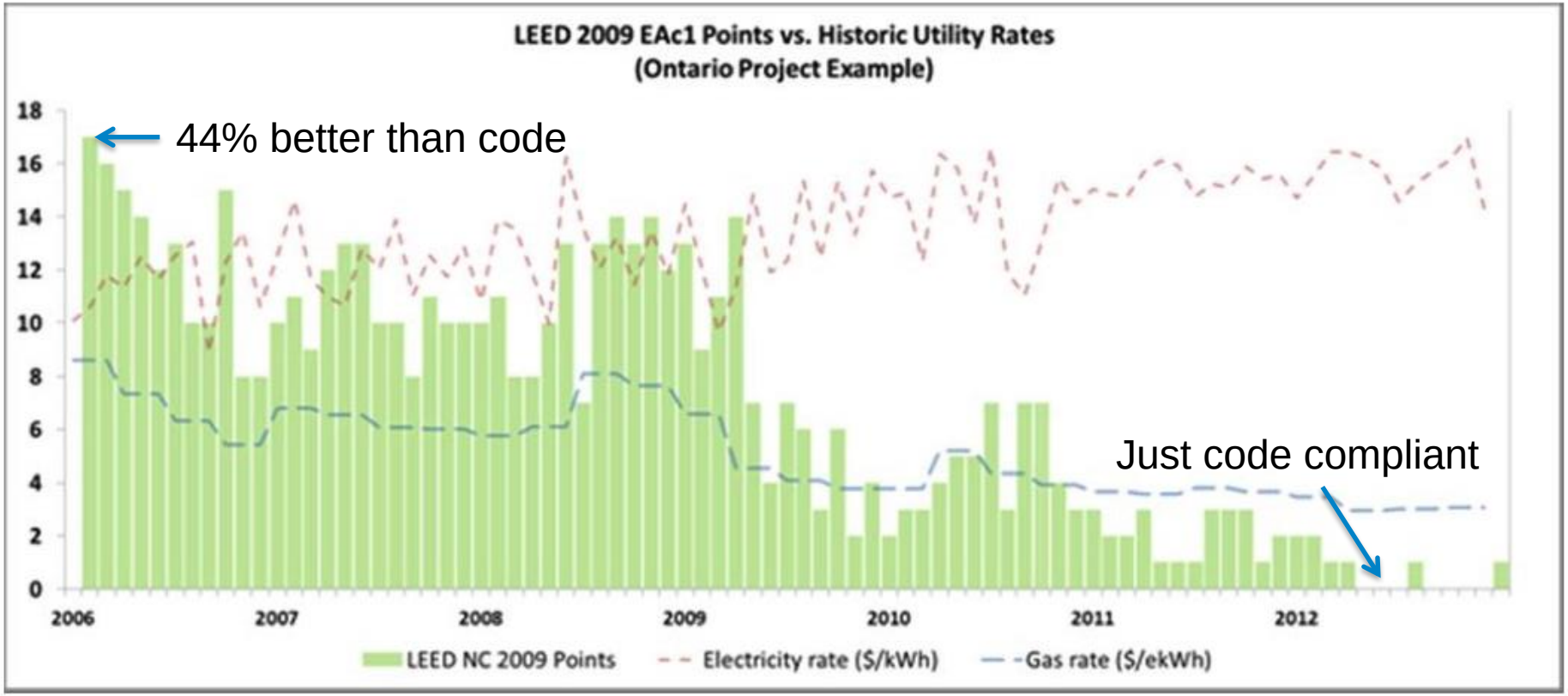
CITY OF VANCOUVER

Context

- Vancouver has it's own building code + strong development market makes rezoning a powerful tool
- Since 2011, Rezoning Policy required LEED Gold + 22% better than ASHRAE90.1
- % better than ASHRAE is not effectively reducing energy use or GHG + COMPLEX mechanical are a problem for residential owners
- MURB ventilation = poor efficiency + poor indoor air quality
- Thermal bridging is a significant problem

ASHRAE 90.1

- Cost efficiency standard NOT use efficiency
- Leads to (complex) mechanical solution focus



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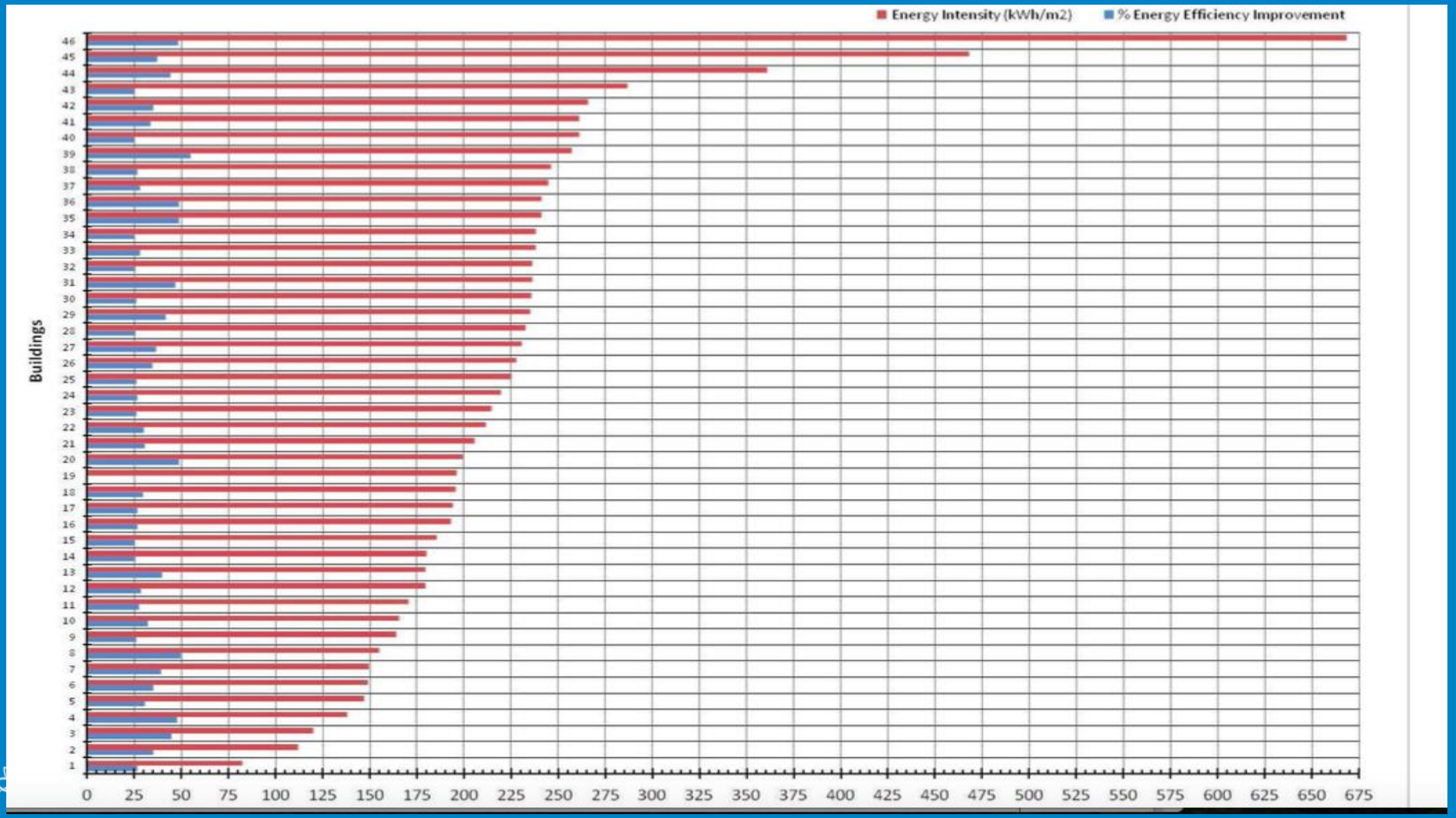


Zero Emissions Building Plan

1. Stepped Limits: step GHG, *heat loss*, total EUI limits down until zero emissions
2. Leadership: new City-owned buildings achieve Passive House (or alt. zero emissions)
3. Catalyze: private sector leadership
4. Capacity Building: invest in tools to develop & share knowledge and to remove barriers

UPDATED REZONING POLICY (Nov 2016)

ZERO EMISSIONS BUILDINGS	**1) ZEB 2016 Limits** **- Modeling Guidelines (!!!)** **2) Report Embodied and Refrigerant Emissions** **3) Enhanced Commissioning** **4) Whole-Building Airtightness Testing** **5) Energy System Sub-Metering & Reporting**
HEALTHY BUILDINGS	**6) Direct Ventilation** 7) Low-Emitting Materials 8) Indoor Air Quality Testing
RESILIENT BUILDINGS	9) Green Stormwater Infrastructure 10) Resilient Water Access

No incremental capital or operating costs vs LEED, MURBs = 70% lower GHG than code building

Detached Houses

- 2014 Building Bylaw = 48% lower GHGs: R22 *effective* walls, U1.4 windows, 3.5 ACH, HRVs and efficient equipment
- Compliance tools are ESSENTIAL
- Renovation Permit Reqmt:

  >$5,000 = EGH

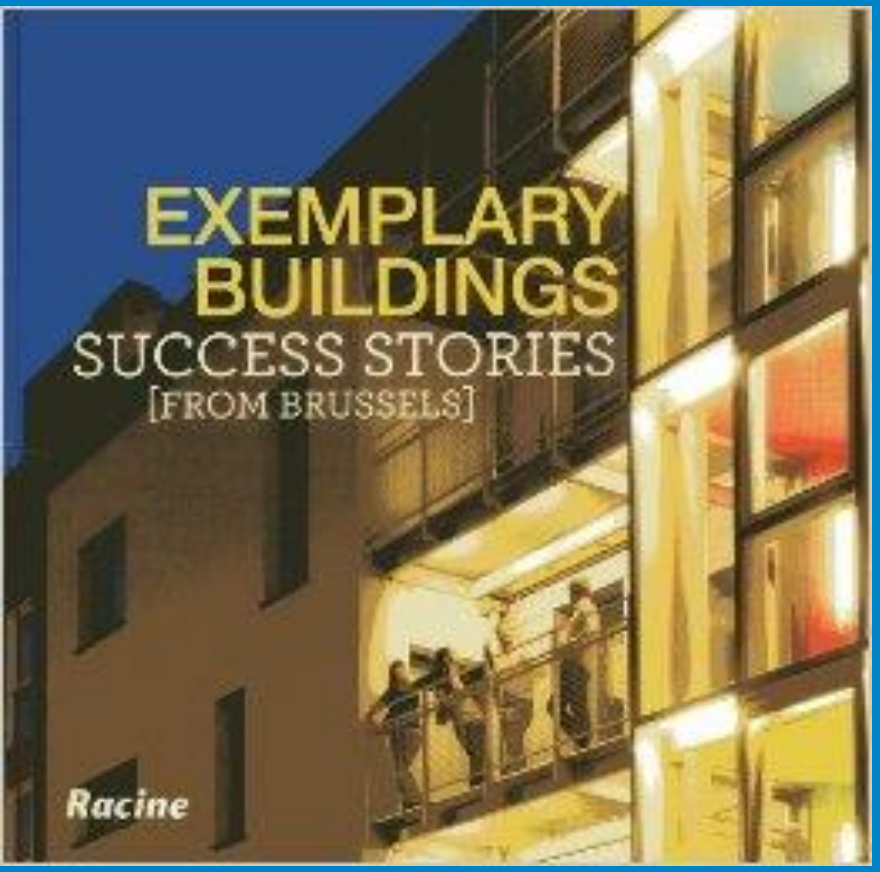
  >$25,000 = air tightness

  >$50,000 = attic insulation

2. CITY LEADERSHIP

- All City-owned and VAHA projects pursue Passive House certification (or alternate zero emissions approach) *where feasible*
- Develop case studies and share findings with industry

3. INCENTIVES



- Catalyze private sector leaders to develop and showcase *cost effective* approaches to building *attractive* zero emissions buildings (great envelopes, renewable energy for DHW)
- Brussels BATEX program model
- Case study procurement, design competition, priority permitting, property tax holiday all being explored

4. CAPACITY BUILDING

- <u>Remove policy barriers</u>
- Fund case study development/sharing
- Public education

- Zero Emission Building Centre of Excellence
  - ✓ Facilitate workshops, dialogues, peer-to-peer knowledge sharing
  - ✓ Curated research library of best practices
  - ✓ Identify trends

QUESTIONS?