

Update on Energy Retrofits for Existing Buildings

Council Presentation
Planning, Urban Design & Sustainability

February 7, 2017



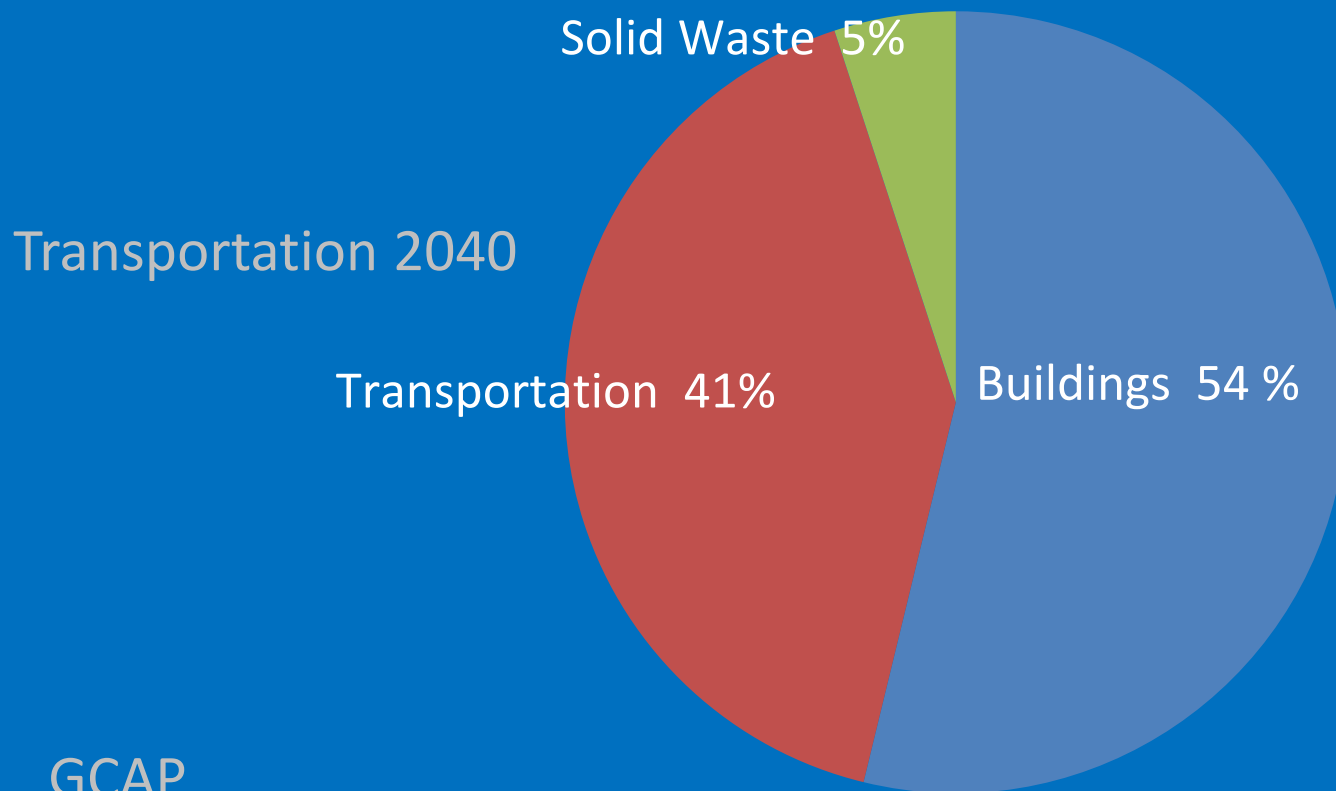
Outline

1. Strategy Overview
2. Policy and Regulation
3. Engage & Support Voluntary Retrofits
4. Summary & Next Steps

Strategy Overview

Community GHG Emissions (2015)

2.4M tCO₂e



Zero Emission Building Plan

- 2017 – 2030

Energy Retrofit Strategy for Existing Buildings

- 2015 – 2020

Neighbourhood Energy Strategy

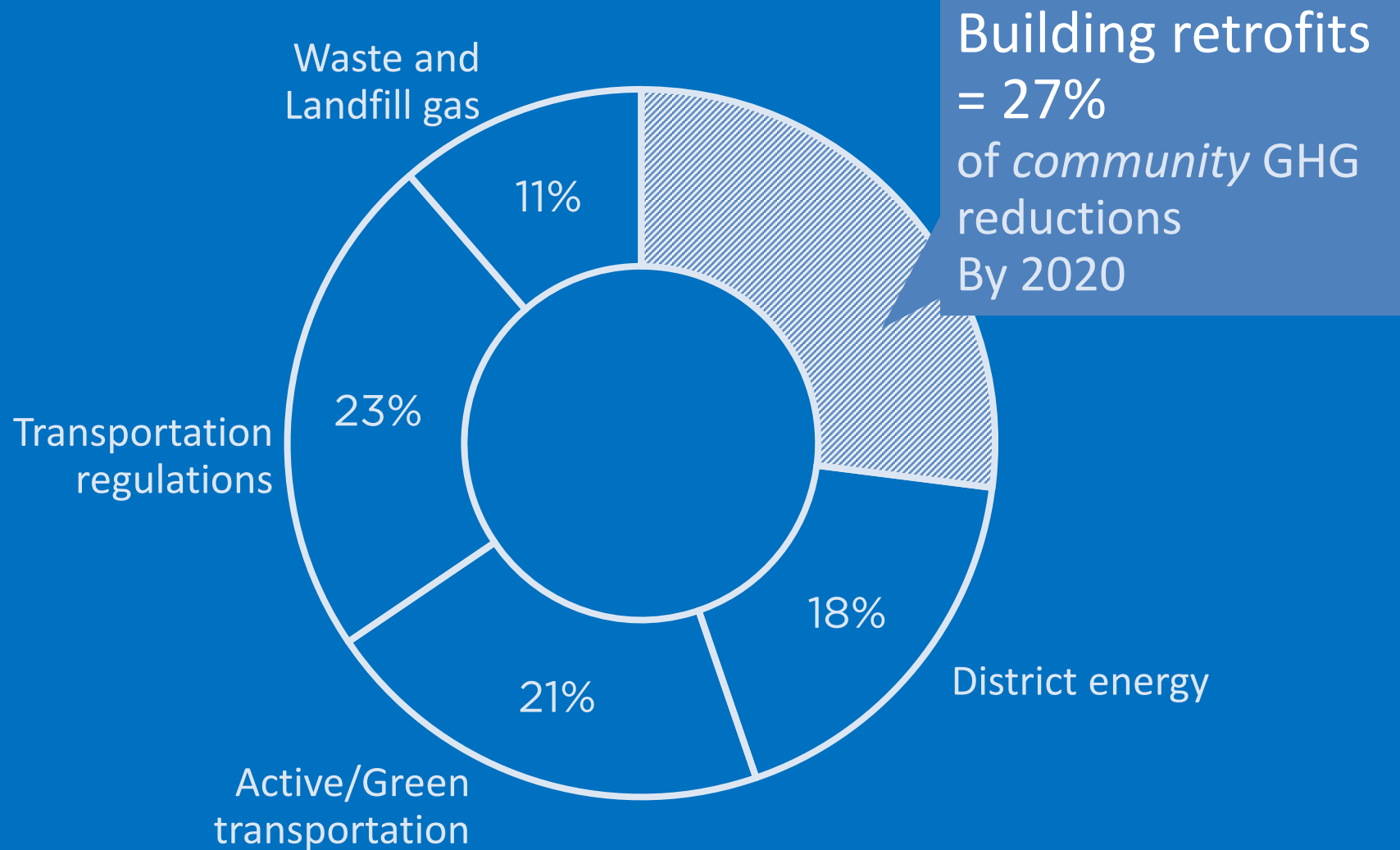
Transportation 2040

GCAP

Renewable City Strategy

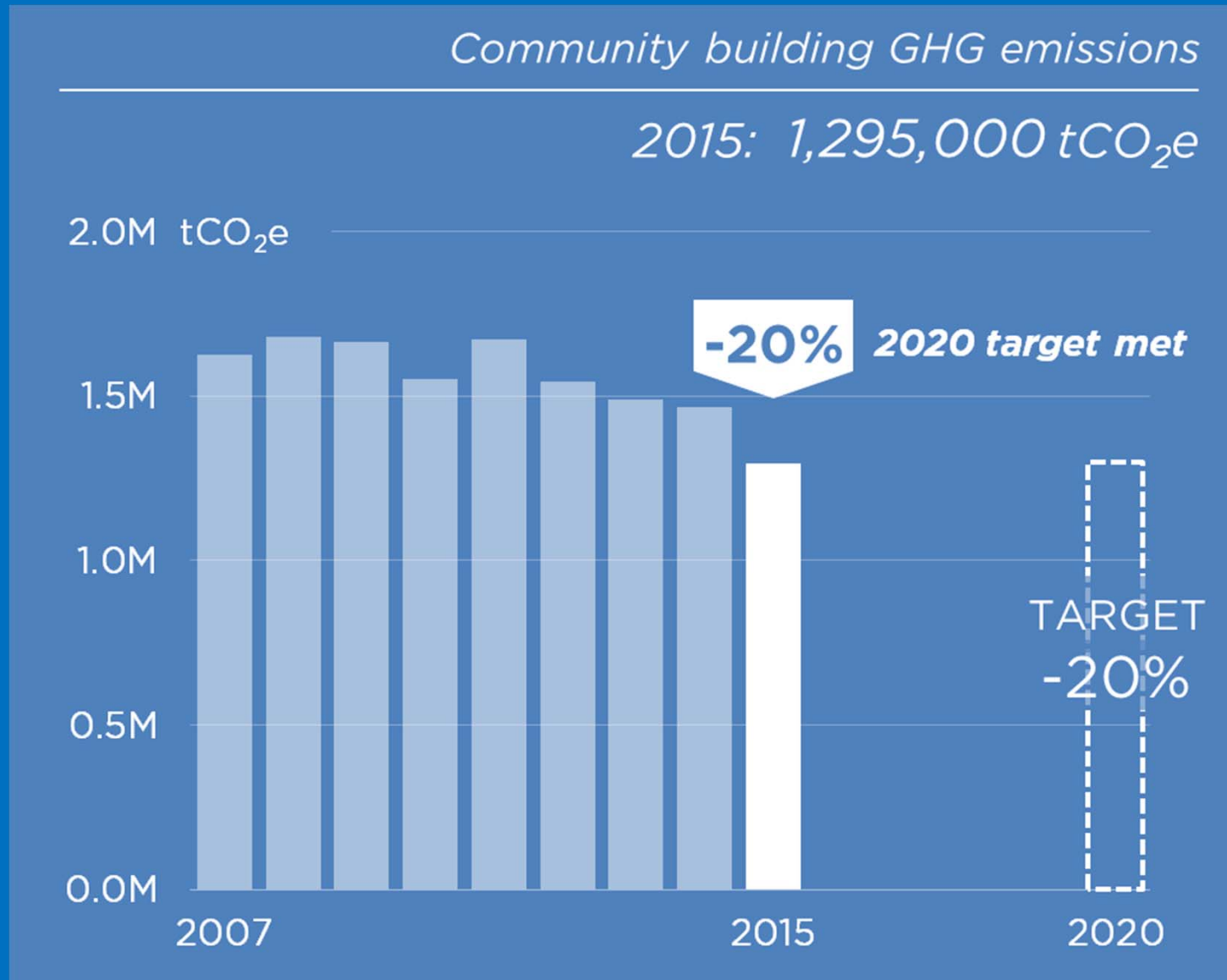
Strategy Overview

GCAP 2020 Community GHG Emission Reductions by Sector



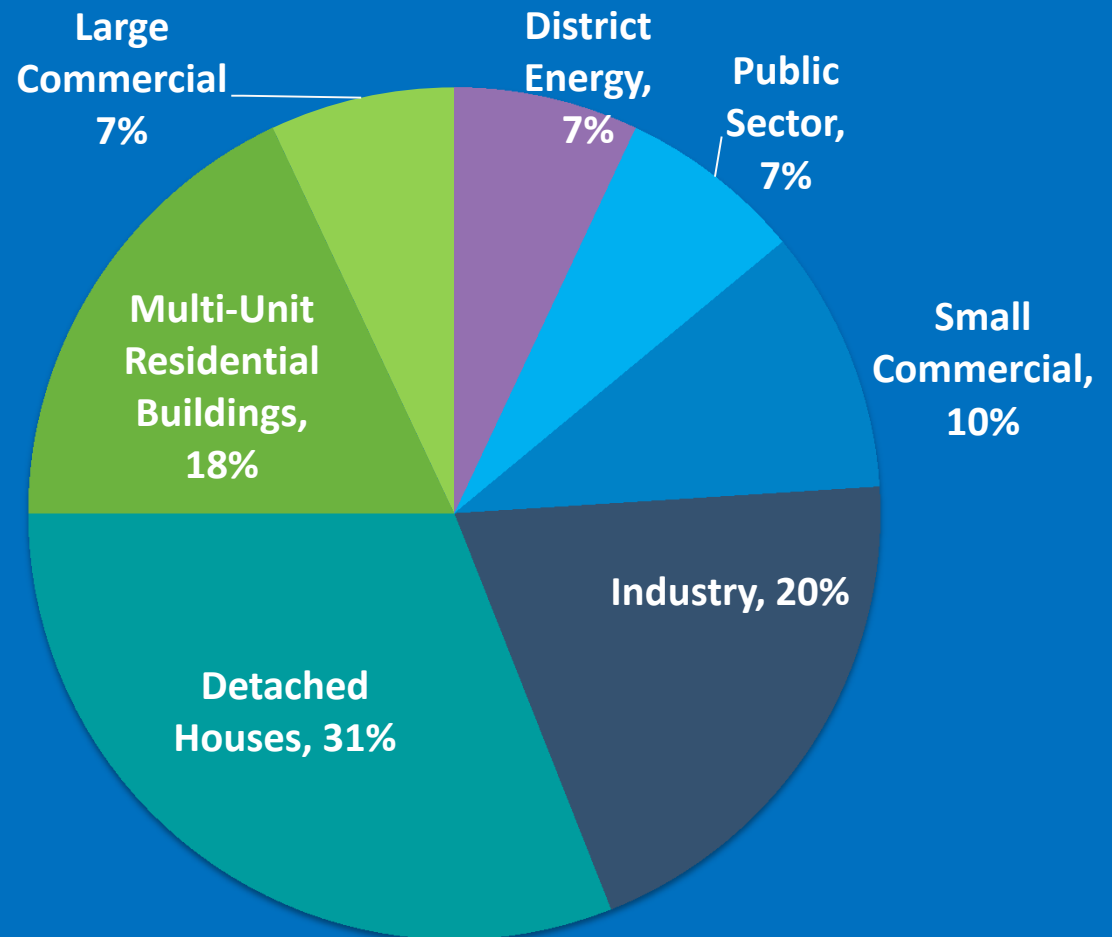
Building retrofits
= 27%
of *community* GHG
reductions
By 2020

Strategy Overview



Strategy Overview

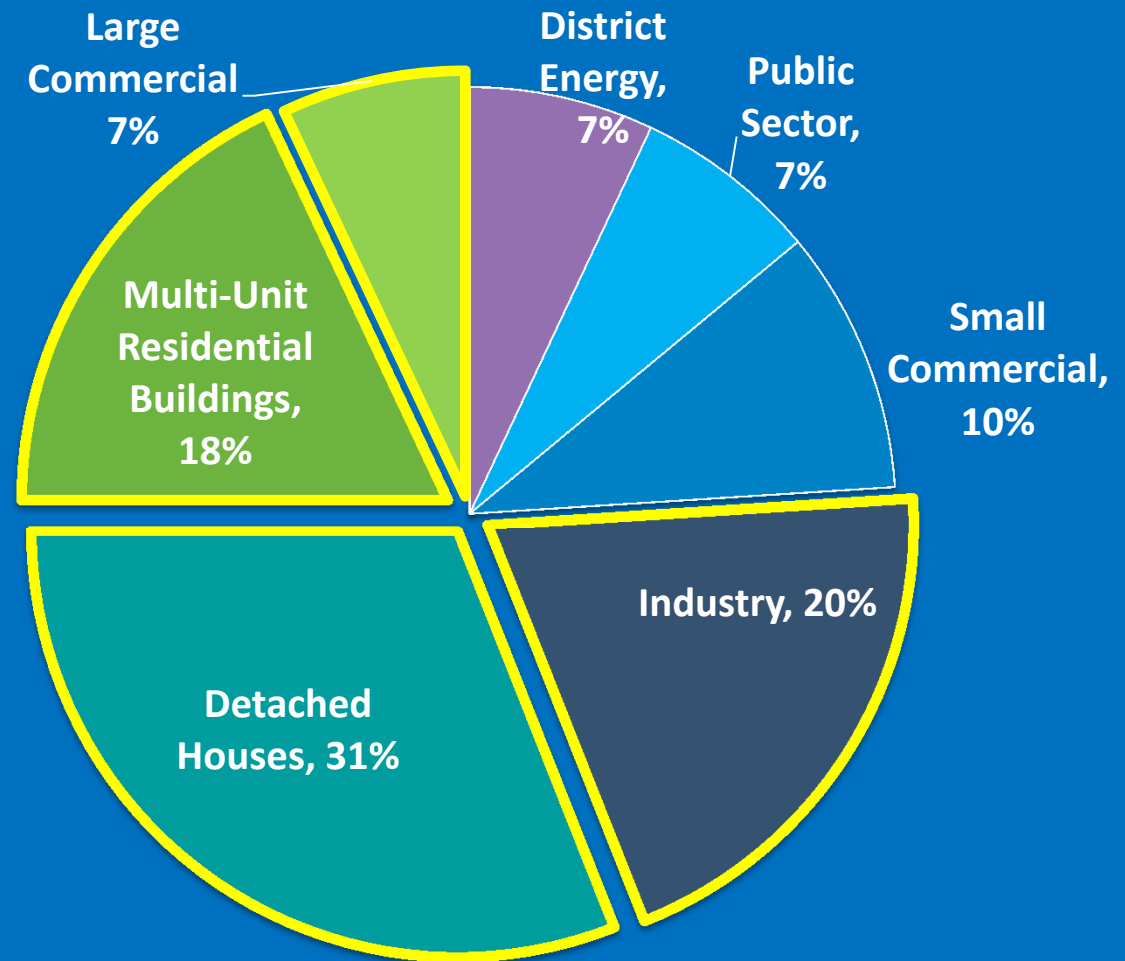
1.3M tCO₂e in 2015 | 54% of City Emissions



Strategy Overview

1.3M tCO₂e in 2015 | 54% of City Emissions

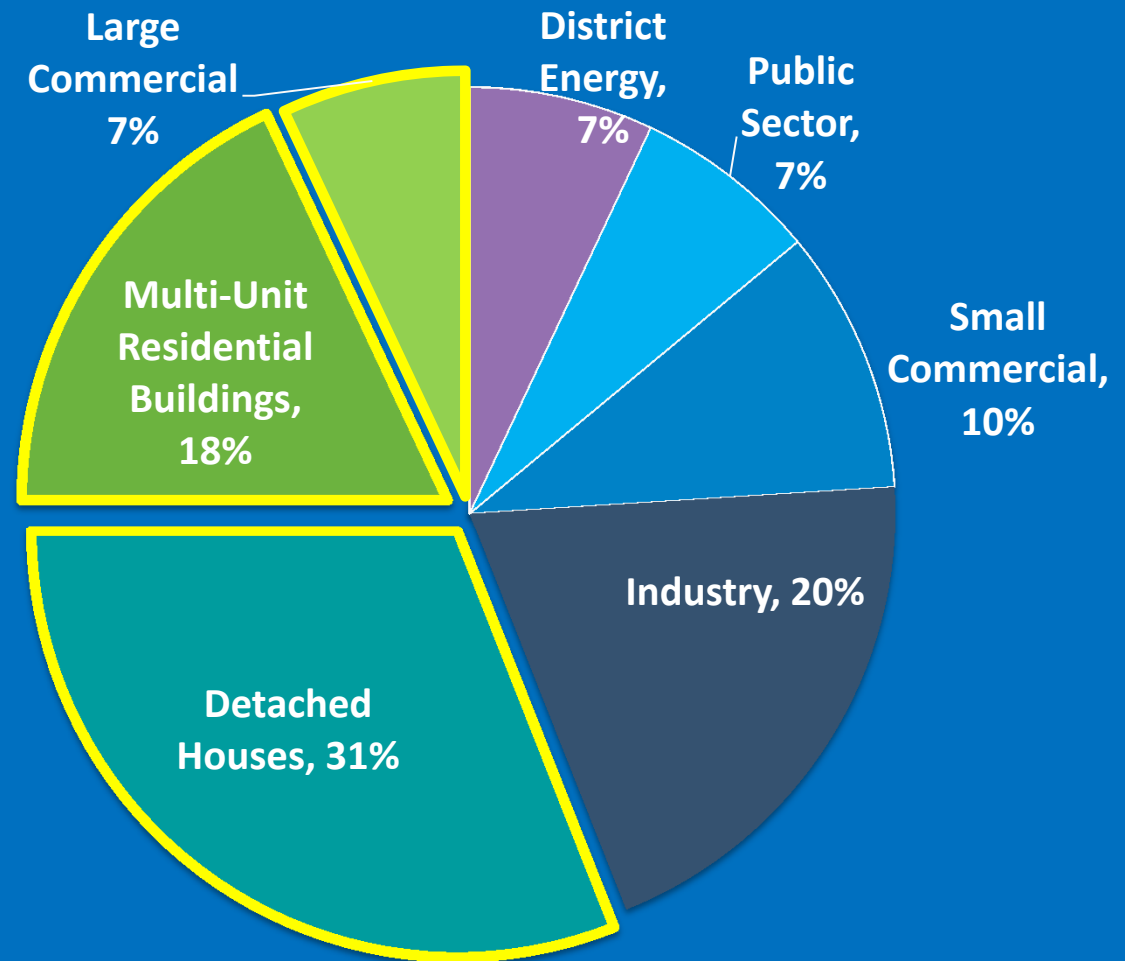
Existing Building Retrofit Strategy:
Focus on sectors where additional City action would have the biggest GHG reduction impact



Strategy Overview

1.3M tCO₂e in 2015 | 54% of City Emissions

Existing Building Retrofit Strategy:
Focus on sectors where additional City action would have the biggest GHG reduction impact





POLICY AND REGULATION

- 1. Home renovation permits**
- 2. Energy upgrades for multi-unit residential and commercial**
- 3. Energy Reporting & Benchmarking**

1. Home Renovation Permit Requirements

Audits & Upgrades

> \$5,000 = EnerGuide energy assessment

>\$25,000 = assessment + weather sealing

> \$50,000 = assessment + weather sealing + attic insulation



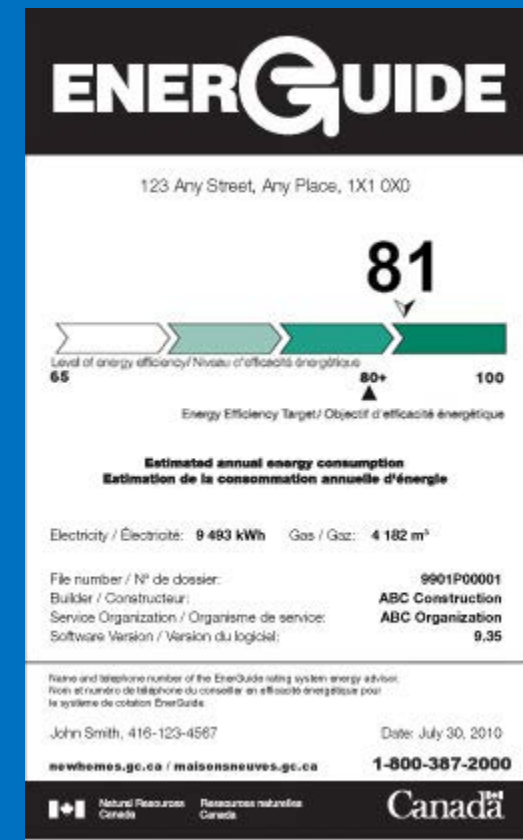
1. Home Renovation Permit Requirements

Audits & Upgrades

	2015	2016
Energy Audits	70	362
Voluntary Energy Retrofits	10	NA
Mandatory Retrofits	NA	NA

Energy Upgrades

- Insulation
- Better windows
- Weather-sealing
- Furnaces & hot water heaters



2. Commercial & Multi-Unit Residential Renovation Permit Requirements

Enforcement of ASHRAE 90.1 Performance Requirements

- Envelope (e.g. Insulation, glazing)
- Equipment efficiencies (e.g. motors, boilers)
- Lighting (e.g. electrical use)
- System Controls (e.g. occupancy sensors)

2. Commercial & Multi-Unit Residential Renovation Permit Requirements

Energy Upgrades Triggered by Retrofits to Existing Building Systems

Base-Building & Commercial Tenant Space

- Flexible menu-based approach
- Consistent with ASHRAE 90.1 (easy for industry)

Residential Suites

- Co-developed with industry
- Practical and simple approach

2. Commercial & Multi-Unit Residential Renovation Permit Requirements

Investment in Pioneering Compliance & Enforcement Process

Education

- Energy webpage, seminars, training videos

Standardization

- Digital submission forms and calculators



2. Commercial & Multi-Unit Residential Renovation Permit Requirements

Results

- Vancouver recognized as a leader in North America
- 100% compliance at building permit stage
 - (Typical elsewhere in BC is 60%)
- Expanded enforcement to construction stage
 - Lighting energy retrofits now 26% better than code

3. Energy Benchmarking

Key component of Retrofit Strategy

Importance:

1. Building owners use information to manage more effectively
2. City identifies largest energy users and can enhance programs & policies

3. Energy Benchmarking

Activities Completed

Established Regional Steering Committee

- ✓ Model Regulation
- ✓ Data Management Tools
- ✓ Stakeholder Consultation
- ✓ Implementation Plan

Next Step:

Advocate for Vancouver authority or BC-wide regulation

A woman with dark hair, wearing a grey long-sleeved shirt, is shown in profile from the side, focused on her work. She is using a hand tool, possibly a wallpaper scraper or pry bar, to remove a piece of light blue wallpaper from a wall. The wall is white, and the wallpaper is being peeled away, revealing the underlying surface. The scene is set in a room with a white ceiling and a white wall. The overall image has a blue tint and a grid pattern overlay.

ENGAGE & SUPPORT VOLUNTARY RETROFITS

1. Houses
2. Rental apartments
3. Non-market housing
4. Condominiums



1. Houses



1a. Houses



Targeting 10% energy savings in 157 pilot homes

1b. Houses



Thermal Imaging Pilot: Engaging 3,000 home owners to make informed retrofit decisions

1c. Houses



Empower Me: Award-winning energy conservation program that meets people in their own home and language

280 homes retrofitted | **1,700** tCO₂ reduced over ten years

1d. Houses



Heritage Energy Retrofit Grant: Providing energy audit and retrofit incentives for pre-1940 homes



2. Rental Apartments





2. Rental Apartments

City Pilot with Landlord BC

1. Free Audits

2. Access Utility Incentives

3. Implementation Support

2. Rental Apartments

City Pilot with Landlord BC



Rental Apartment Efficiency Program (FortisBC)

- Showerheads + faucet aerators
- Boilers for space heating + hot water

Operation Co\$t Cutter (LandlordBC)

- Control system optimization + upgrades

2. Rental Apartments - Outcomes

160

buildings participating

2,850

annual tCO₂e reduced

67 million

annual Liters of water saved

\$2.2 million

in retrofits catalyzed with \$175,000 from City of Vancouver



3. Non-Market Housing



3. Non-Market Housing

Energy Studies & Retrofit Support (2017)

City of Vancouver | BCNPHA | BC Housing

Targeting **1,000** tCO₂e reduction in year 1



4. Condominiums



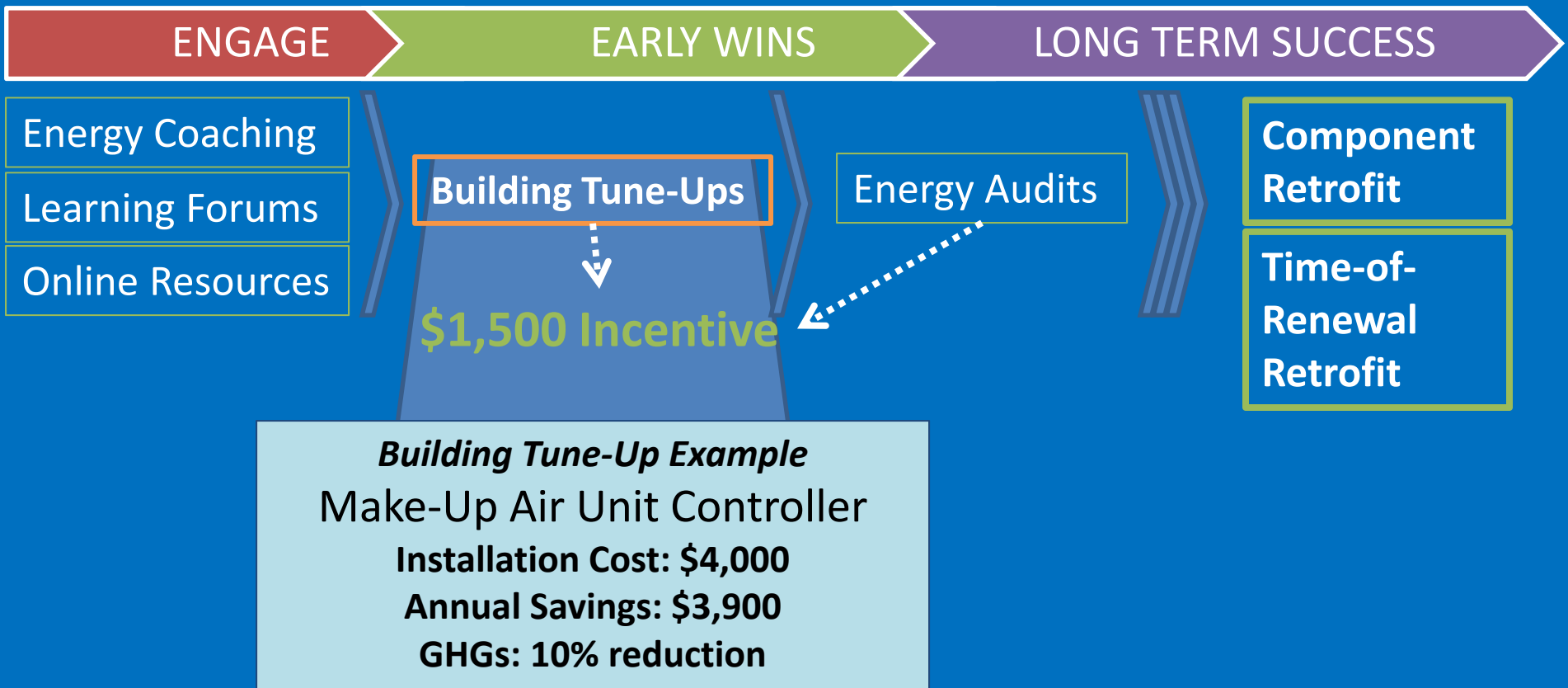
4. Condominiums

Historical challenges with strata decision making

- ✓ Researched global best practices & identified local opportunities
 - Engaged key stakeholders
- ✓ Developed “Strata Energy Adviser Program” with Metro Vancouver
 - Established regional steering committee
 - Helped secure \$200,000 in Metro Vancouver funding
 - Collaborating closely with Condominium Home Owners Association

Metro Vancouver Strata Energy Adviser Program (launching 2017)

Targeting **2,500 tCO₂** reduction in Vancouver by end of 2018





SUMMARY & NEXT STEPS

Summary

Initial success implementing regulations for house, multi-family and commercial energy retrofits

Voluntary pilot programs demonstrated potential and achieved GHG reductions

Engaged 14,500 households

Next Steps

Voluntary Programs

- Optimize current programs
- Implement new condo, house and non-market programs

Policy

- Optimize compliance tools and onsite inspections at construction stage
- Implement re-commissioning, energy reporting and benchmarking

Next Steps

Deep Retrofits

- Continue researching best practices
- Implement pilot projects



QUESTIONS?