

# Decarb Lunch Series

zebx

## Energy-as-a-Service Companies and Building Retrofits

Thu Sep 21, 2023,  
from 12- 1pm PDT  
Free Webinar | [zebx.org](https://zebx.org)

**The Zero Emissions  
Building Exchange**

**Zeb<sub>x</sub>**

**Podcast**





# RESOURCES

🔍 Enter your search

20 posts found

### Categories

- Articles
- Reports
- Case Studies
- Videos & Slides
- Podcasts

### Series

- Deep Emissions Retrofit Dialogues
- CleanBC Net Zero Energy-Ready Challenge Playbook
- CleanBC Net Zero Energy-Ready Challenge Winners
- Decarb Lunches
- Tech Demo Workshops
- Decarbonization Planning

### Systems

- Mechanical
- Building Enclosure
- Solar Energy
- Geothermal
- Domestic Hot Water Heat Pump

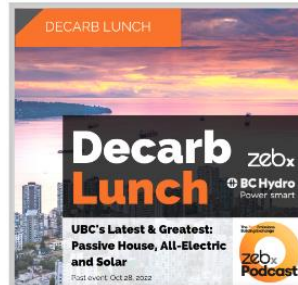
### Subjects

Reset all

Podcasts x



Decarb Lunch: Nov 2022, The OSO Residential Development



Decarb Lunch: Oct 2022, UBC's Latest & Greatest: Passive House, All-Electric and Solar



Decarb Lunch: Sep 2022, Getting Unstuck: Homeowner and Contractor perspectives on home electrification







ZERO EMISSIONS BUILDING EXCHANGE

# Resource Library

- ✓ BC Energy Step Code
- ✓ Passive House
- ✓ All-Electric Buildings
- ✓ Retrofits



# zeb x

ZERO EMISSIONS BUILDING EXCHANGE



**B2E**

Building to  
Electrification  
Coalition

Operational Emissions

New Construction

Retrofits

Embodied Emissions



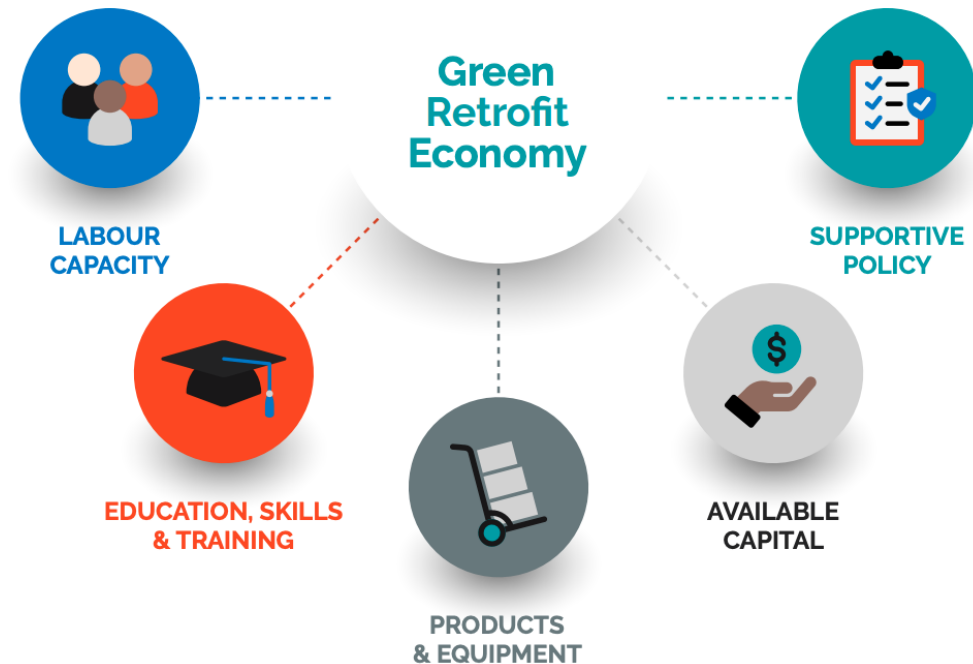
Carbon  
Leadership  
Forum  
British  
Columbia

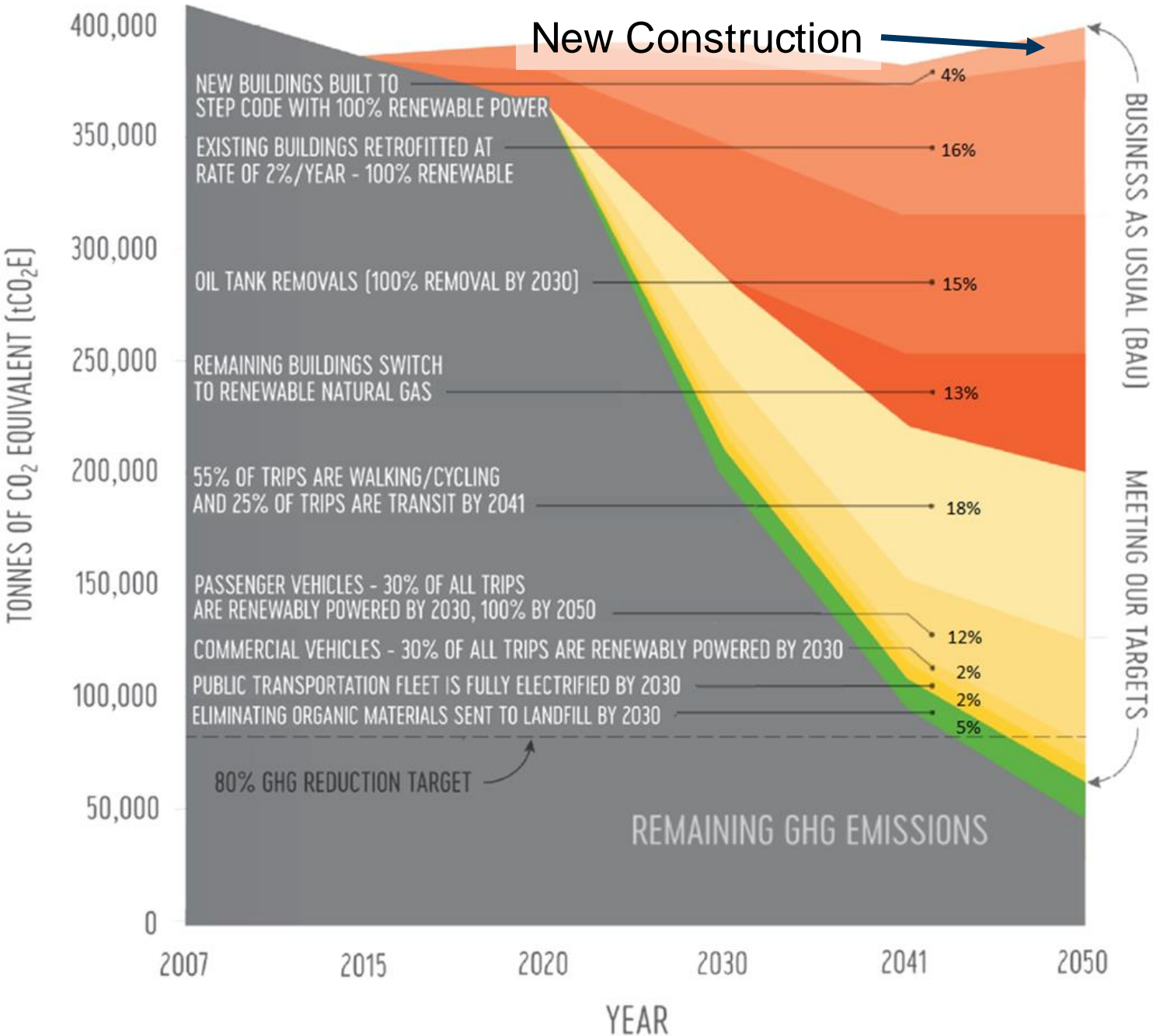
## 1.2 Enabling Conditions for a Green Retrofit Economy

Currently most retrofits are completed as separate custom projects, requiring significant resources to make a business case, plan, design, execute, and verify the work. In order to catalyze a self-sustaining local green retrofit economy that facilitates investment and mobilizes capital towards large portfolios of building retrofit projects, several enabling conditions need to be in place, including:

- Adequate local workforce capacity to meet the labour demand
- Skills and training partnerships to equip the modern green building workforce with the knowledge required
- Access to high performance building materials in the local supply chain
- Strategies for securing available capital financing
- Supportive policy at all levels of government that provide a clear roadmap upon which investments in training and retrofit projects can be secured

Figure 2: Enabling Conditions





# Emission Reductions Targets

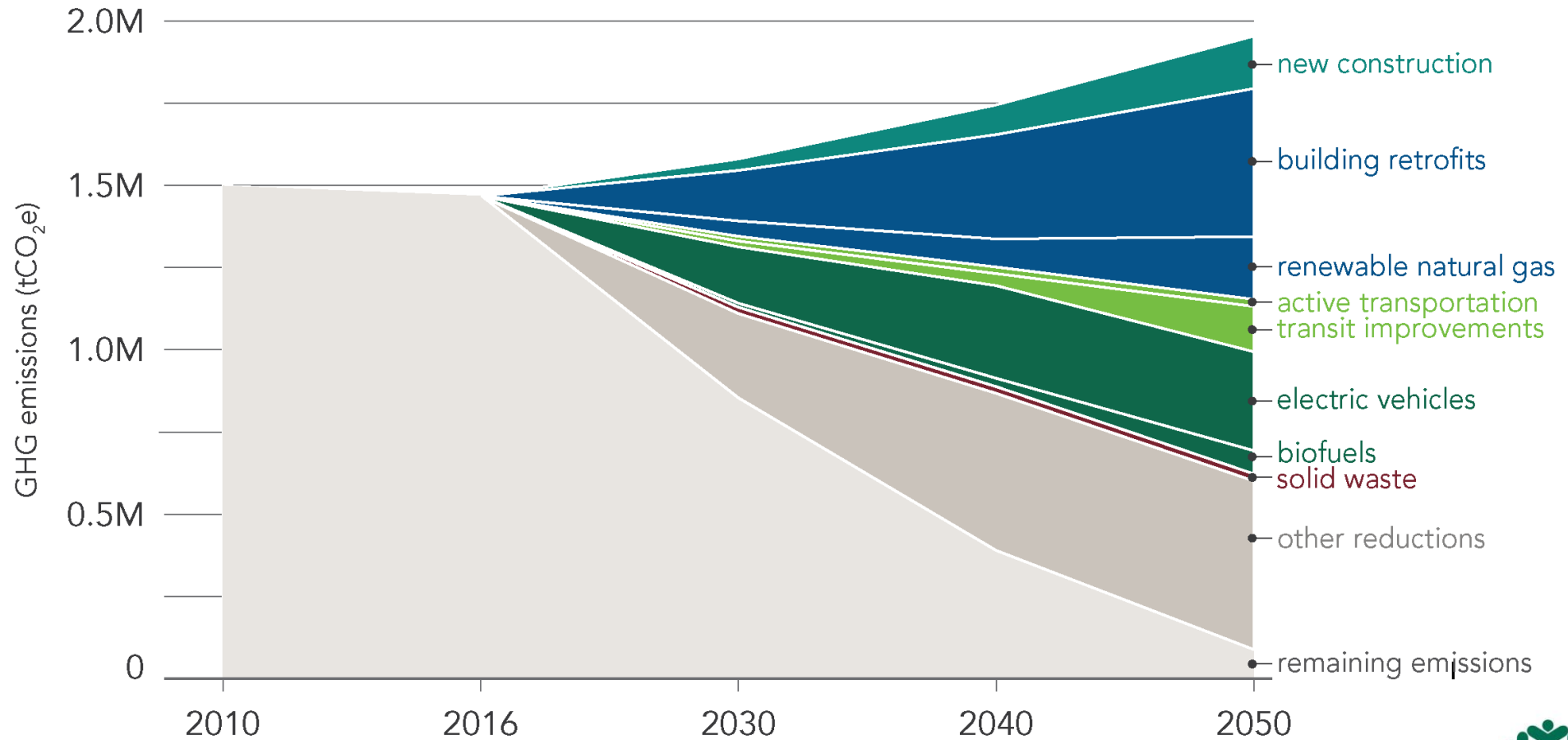
50% GHG emissions reduction by 2030

80% GHG emissions reduction by 2050

100% Renewable Energy by 2050



# 2020 Climate Action Framework







POLL 1

Tell us about yourself!

Three-part anonymous poll

# 2050 Net-Zero in BC

**2030**

35% reduction in building emissions in Metro Vancouver

**2025/2026**

City of Vancouver carbon pollution reporting regulation

**2030**

City of Vancouver Building Performance Standard

**TBD**

Metro Vancouver Building Performance Standard

**2030**

BC Highest Efficiency Heating Standards

**2024?**

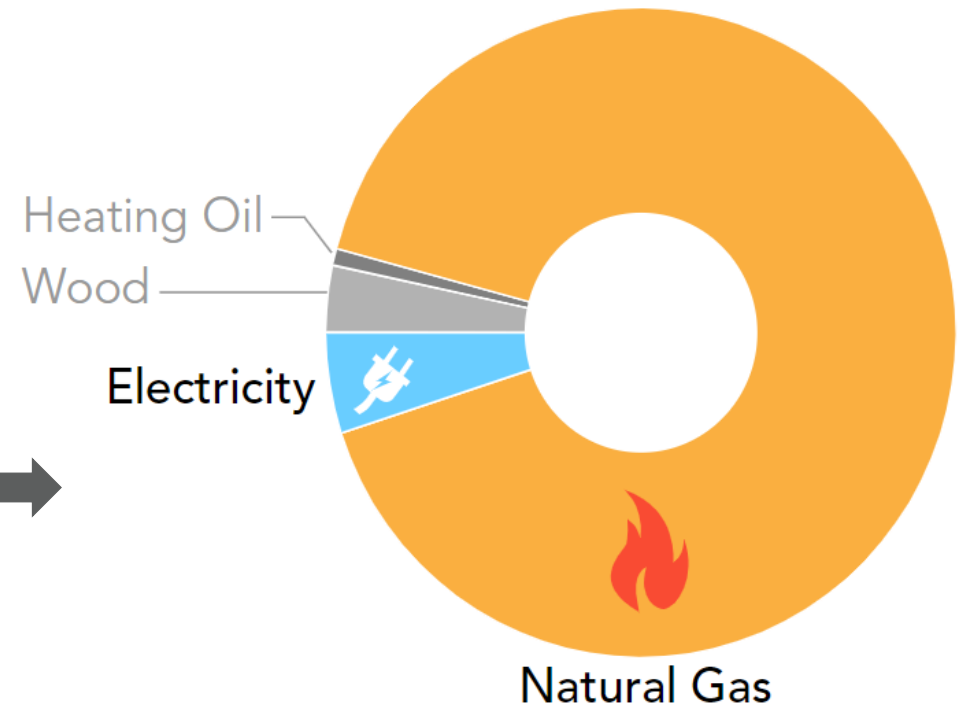
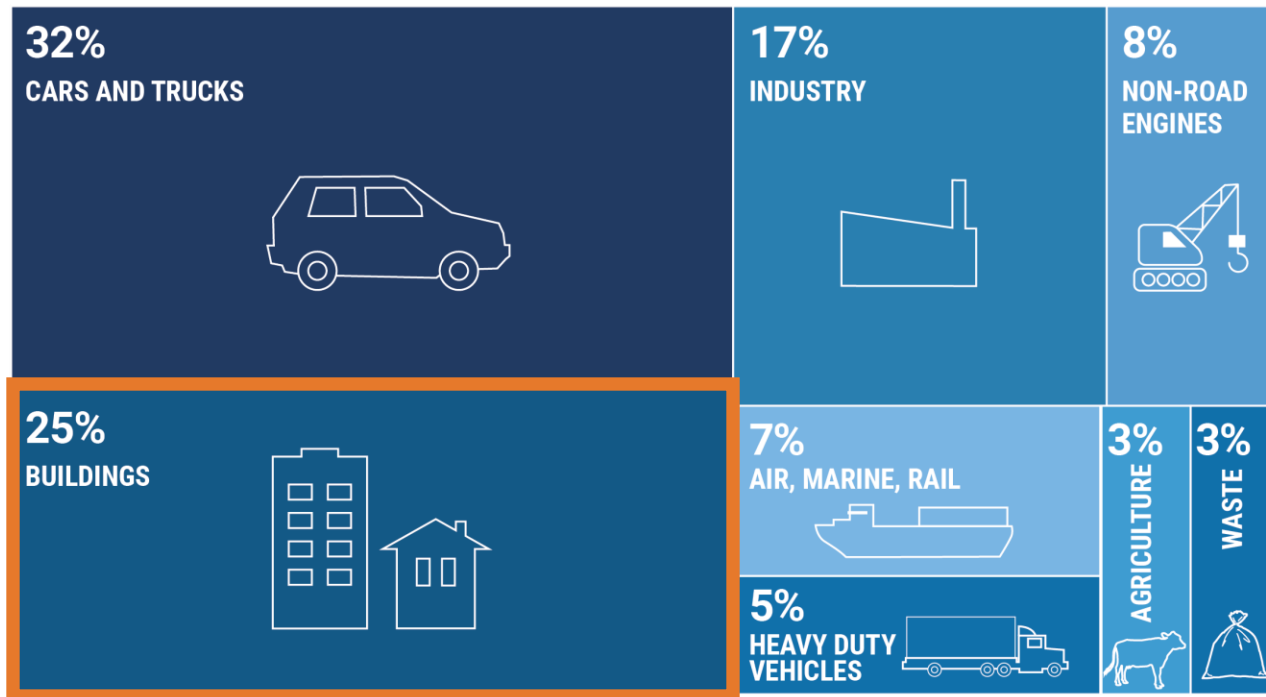
BC Alterations Code



## Roadmap to 2030



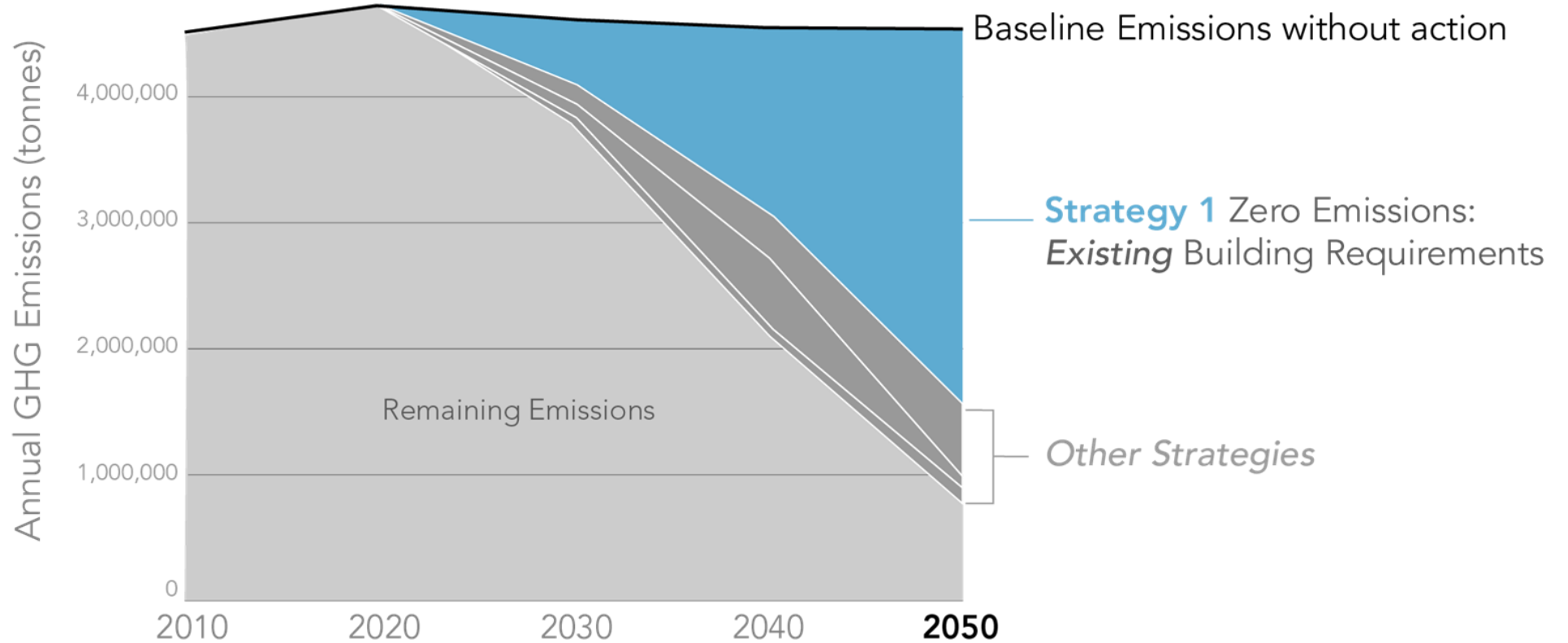
# GHG Emissions From Buildings | Metro Vancouver





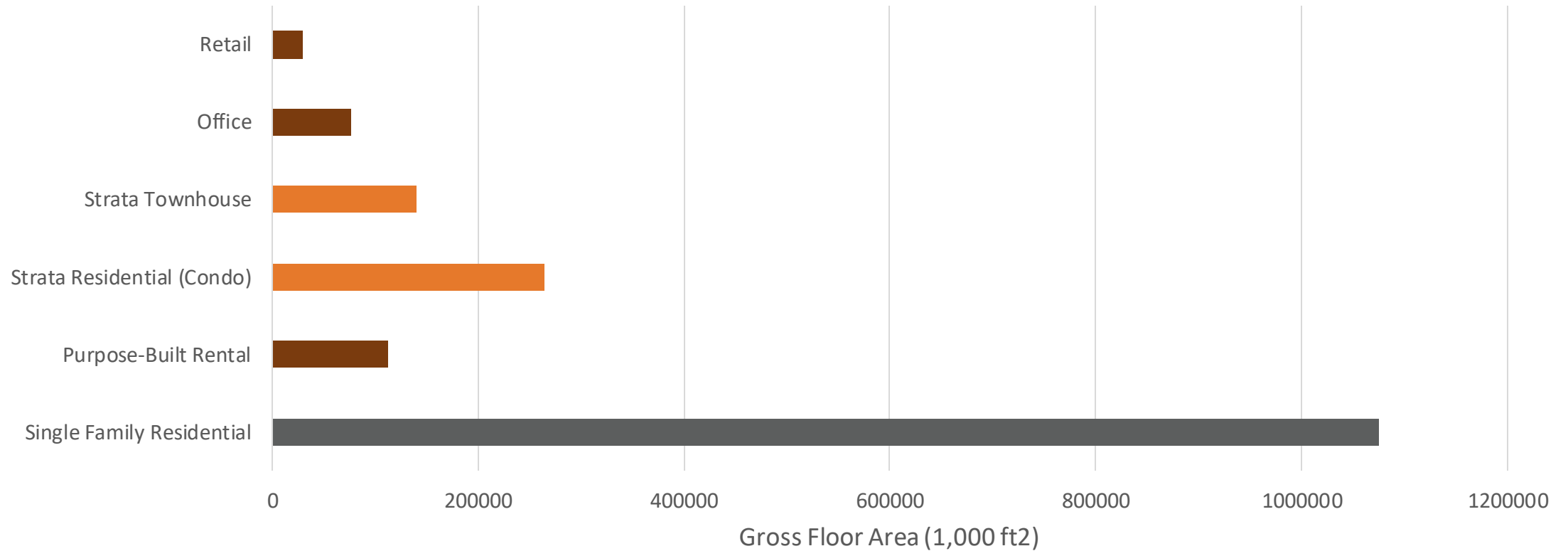
# GHG Reduction Potential for Buildings | Metro Vancouver

## POTENTIAL IMPACT OF STRATEGY 1 ON GHG EMISSIONS



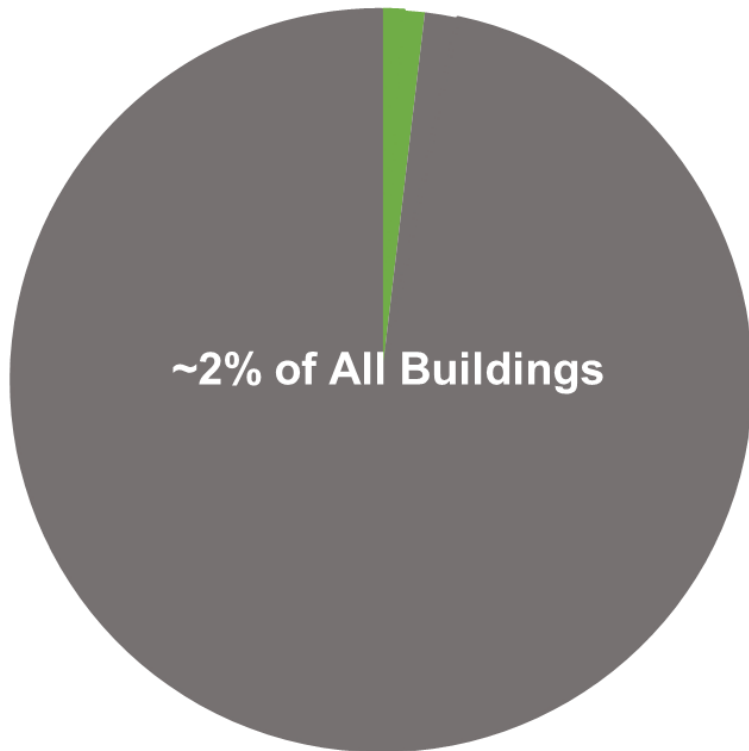
# Gross Floor Area | Metro Vancouver

Metro Vancouver Building Type Comparison

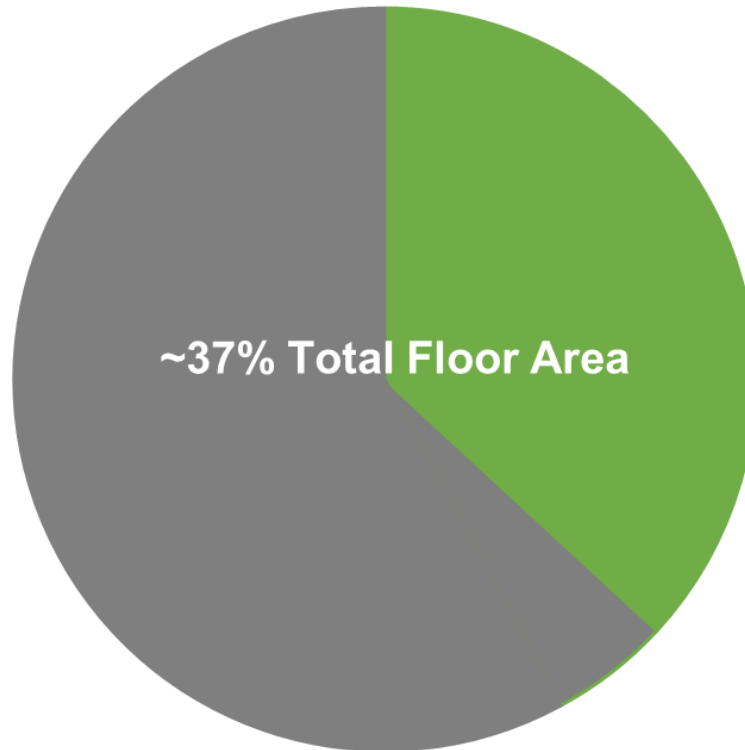


# Large Buildings >25,000 ft<sup>2</sup> | Metro Vancouver

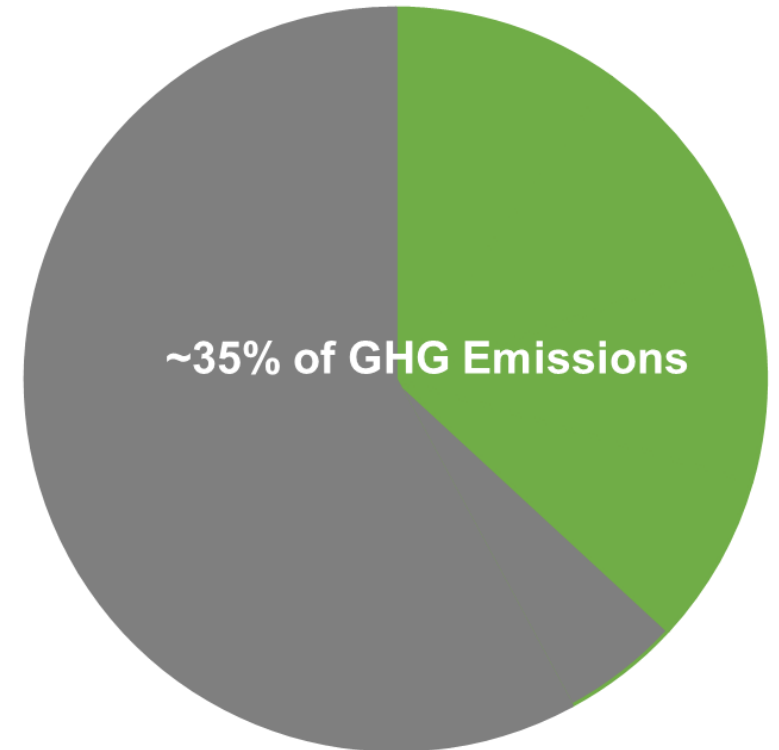
Total Building Count



Total Floor Area  
All Buildings



Total GHG Emissions  
All Buildings





# The Need is Urgent

To reach carbon neutral by 2050 in B.C., we have to decarbonize approximately:

**39,000** Single Family Homes

**900** Multi-unit Residential Buildings

**500** Townhomes

**50+** Commercial Buildings (Office & Retail)

**every year**

# The Challenges



**Cost** to retrofit buildings



**Impact** on housing affordability



**Alignment** of regulations with Vancouver & Province



**Electricity grid** impacts



**Aligning with non-energy benefits** including active and passive cooling and improved air quality

# Support to Decarbonize



## Incentives & Financing:

- CleanBC Incentives
- Utility Incentives
- Federal Tax Rebates & Incentives
- Canada Infrastructure Bank | Low-interest Financing (SOFIAC & Efficiency Capital & BMO/Radicle)
- Vancity Retrofit Financing Program

## Coaching & Support:

- BC Hydro Energy Manager Program
- CleanBC Better Homes & Small Building Energy Coach
- BC NPHA Member Services & Vancouver Resilient Retrofit pilot
- LandlordBC Rental Apartment Retrofit Accelerator (RARA) pilot
- BOMA BC 2030 District
- *Strata Energy Advisor II*



POLL 1

What did you tell us about yourself?





**EFFICIENCY CAPITAL**

**BUILDING ENERGY SAVINGS**

**ZEBx**

*Decarb Lunch Series*

September 21, 2023

# WHO WE ARE

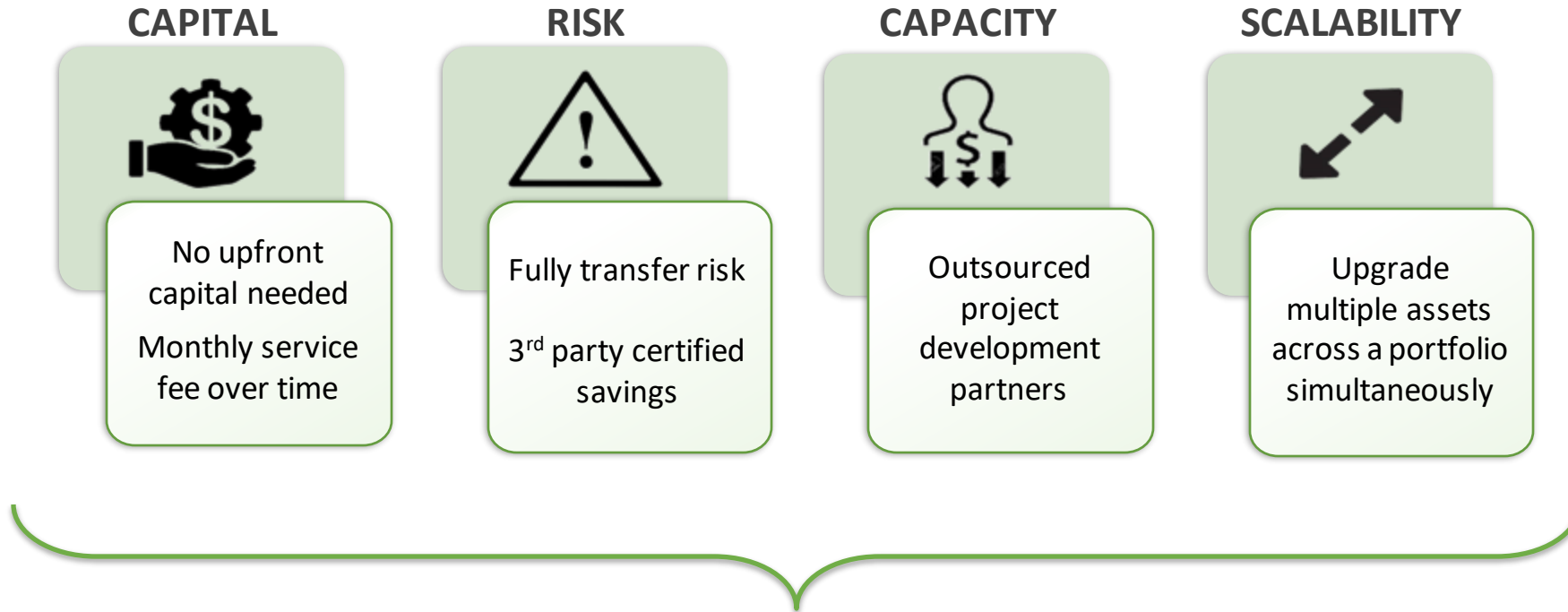
- Developer, investor and owner of energy efficiency projects
- Upgrades buildings with no upfront cost
- Incubated and launched by The Atmospheric Fund (TAF)
- Successful project track record since 2012
- Strategic partnerships/ funding from various foundations

## ESPA™ Track Record





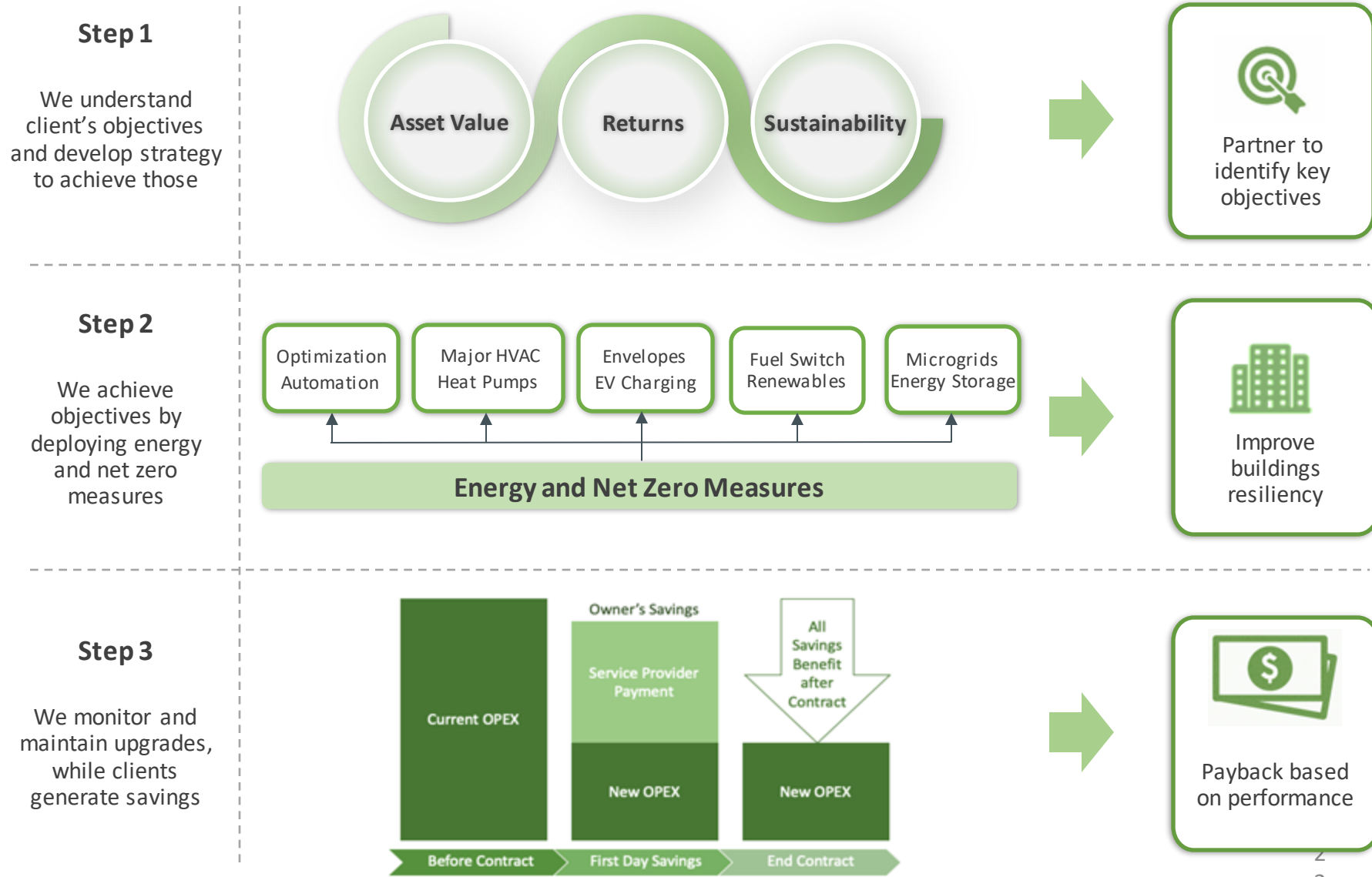
# WHAT WE DO



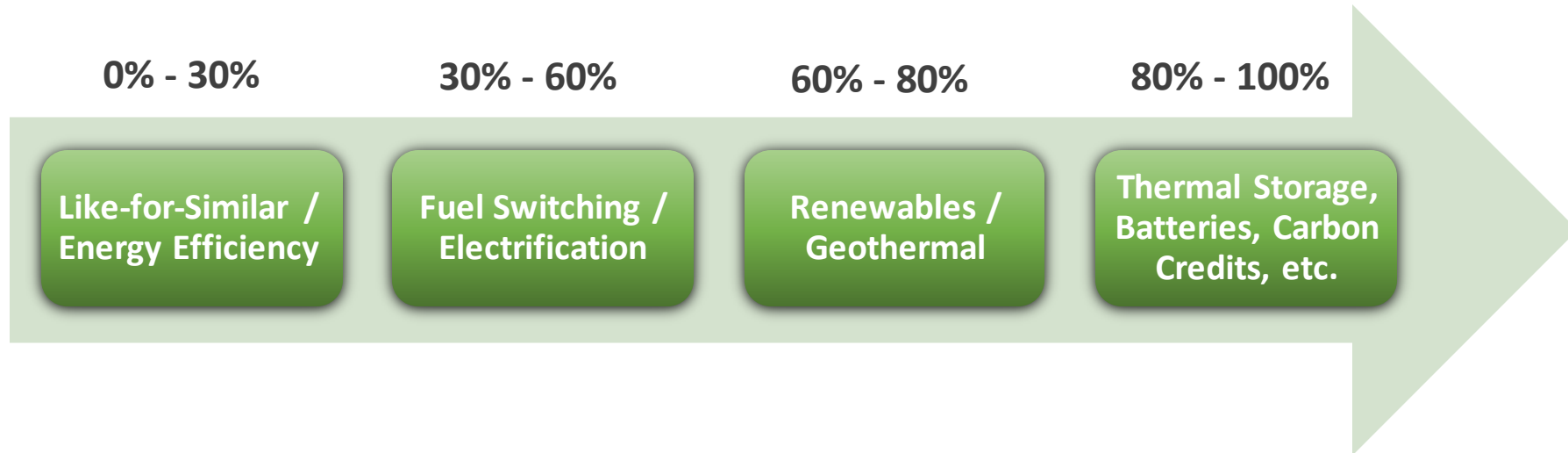
## Our Solutions

**ESPA™**  
**Energy Upgrade Agreement**  
**Net Zero-as-a-Service**

# OUR PROCESS



# RETROFIT PATHWAY TO NET-ZERO



**ENERGY EFFICIENCY + ELECTRIFICATION + RENEWABLE ENERGY = NET ZERO (READINESS)**

# INVESTMENT SOLUTIONS



## Energy Savings Performance Agreement

- Savings are guaranteed and pay for investment over time
- Turnkey design, procurement & contracting
- Performance is monitored and verified over term



## Energy Upgrade Agreement

- Favorable rates tied to level of expected GHG reductions
- Transparent & open procurement and contracting
- Can be a financing solution or operational expenditure



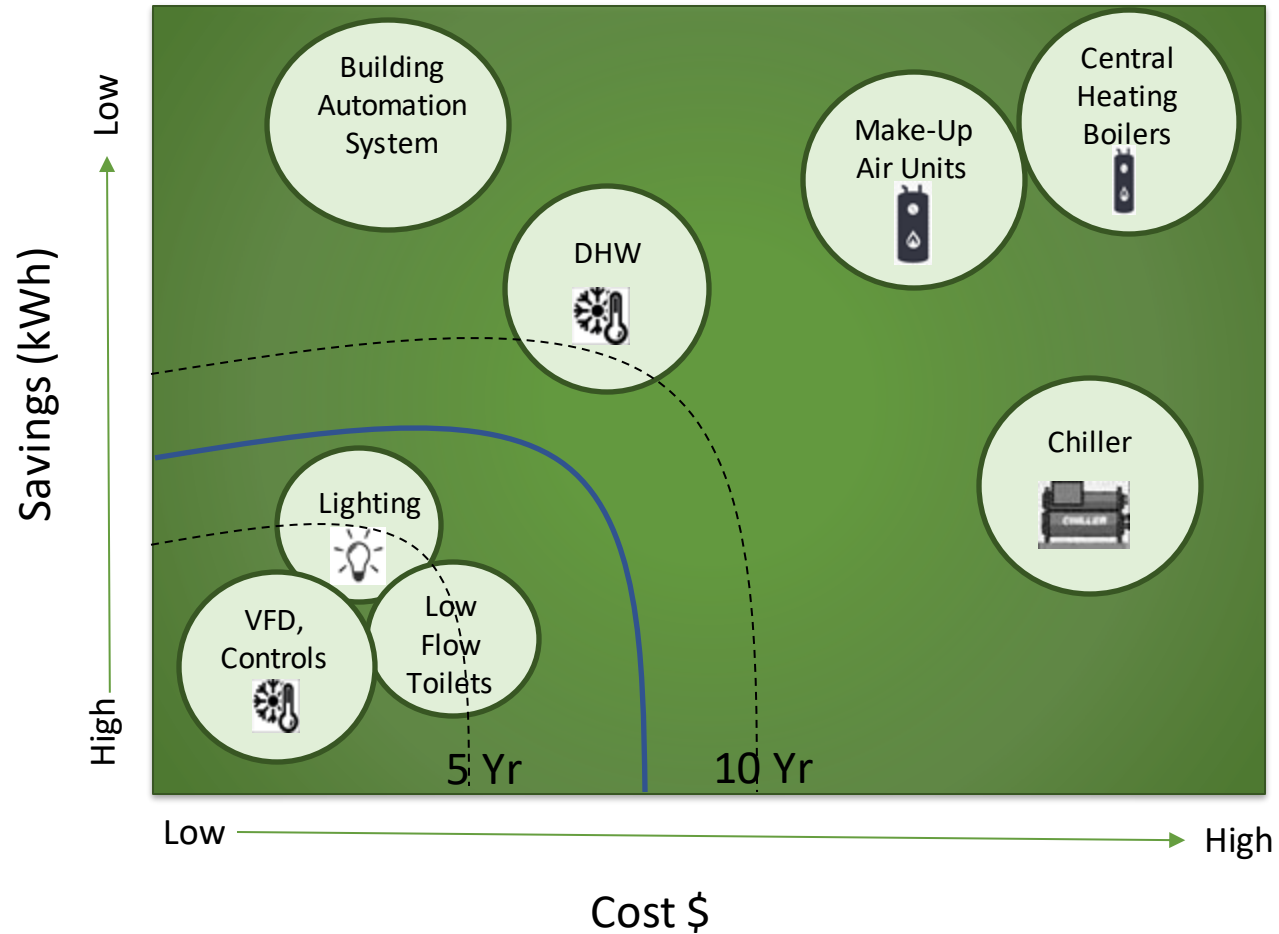
## Net Zero-As-a-Service Agreement

- Full outsource of energy services & infrastructure
- Turnkey design, build, fund, operate and maintain
- Off-balance sheet service payments



# COMPREHENSIVE APPROACH

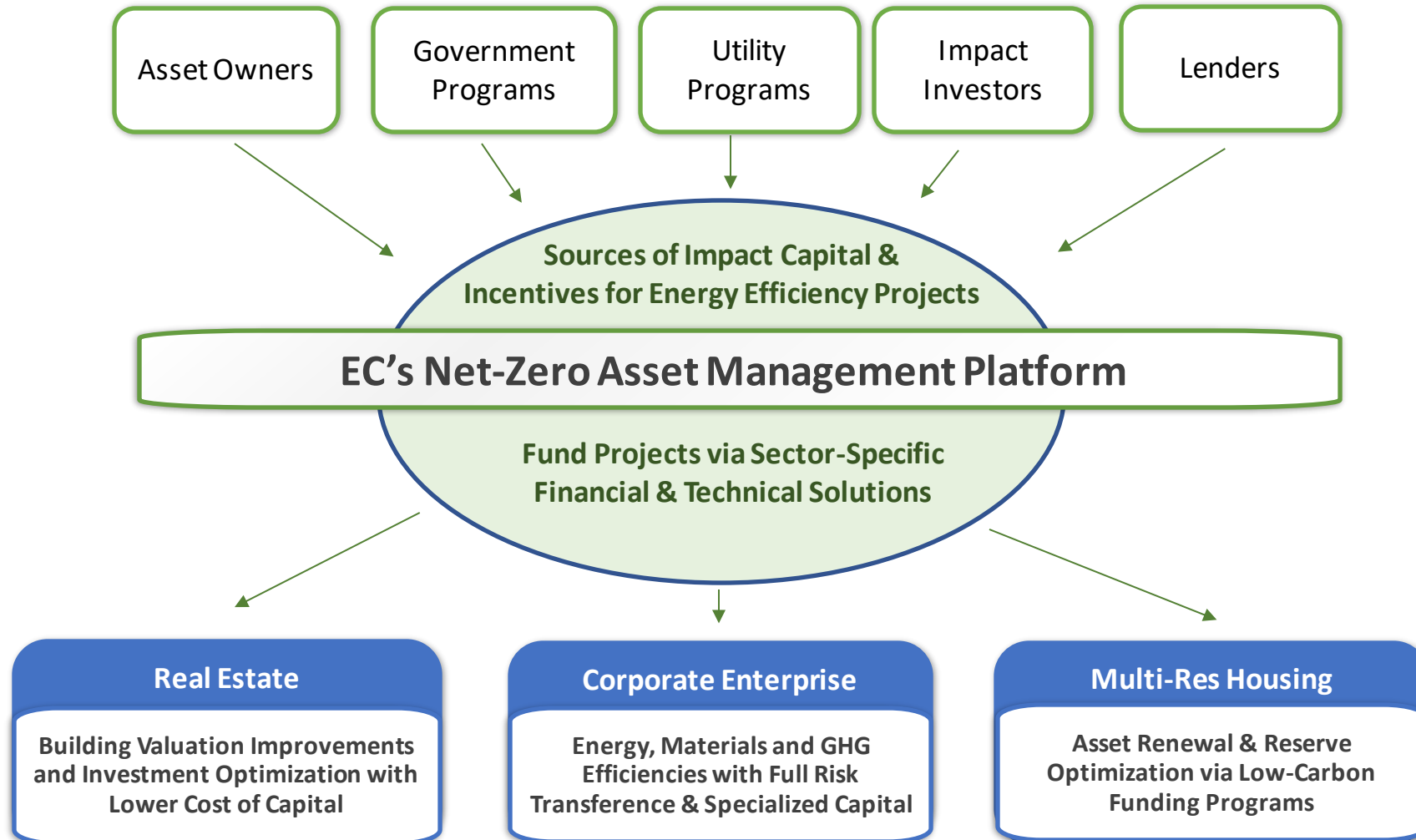
► Deep Retrofits Provide the Best Net Present Value



# PRODUCT FEATURES



# ENABLING NET-ZERO AT SCALE



# UNIQUE MARKET VALUE

Risks Taken	Engineer	ESCO	Lender	EC
Financial Risk	✗	✗	✓	✓
Performance Risk	✗	✓	✗	✓
Technical Risk	✓	✓	✗	✓

- ▶ EC is a “one-stop-shop” – we offer turnkey upgrades + deploy capital
- ▶ EC invests its own money in the projects – we are the “*lender*”
- ▶ Our re-payment is contingent on performance
- ▶ Other market structures generally involve financing vs. investment

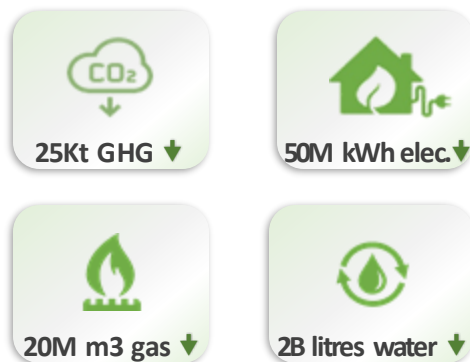


# EC Impact – summary

## Financial

- ▶ Lower costs, increased NOI
- ▶ Improved building value
- ▶ Enhanced ROE/ ROI
- ▶ Higher borrowing capacity

## Environmental



## Social

- ▶ 34% less exposure to extreme heat
- ▶ 31% less odour complaints
- ▶ 58% less absenteeism
- ▶ 37% less doctor visits

Before / After

Boosting Fresh Air Supply



## United Nations SDG



# WOODGREEN COMMUNITY

## ||| Vision

A Toronto where everyone has the opportunity to thrive.

## ||| Mission

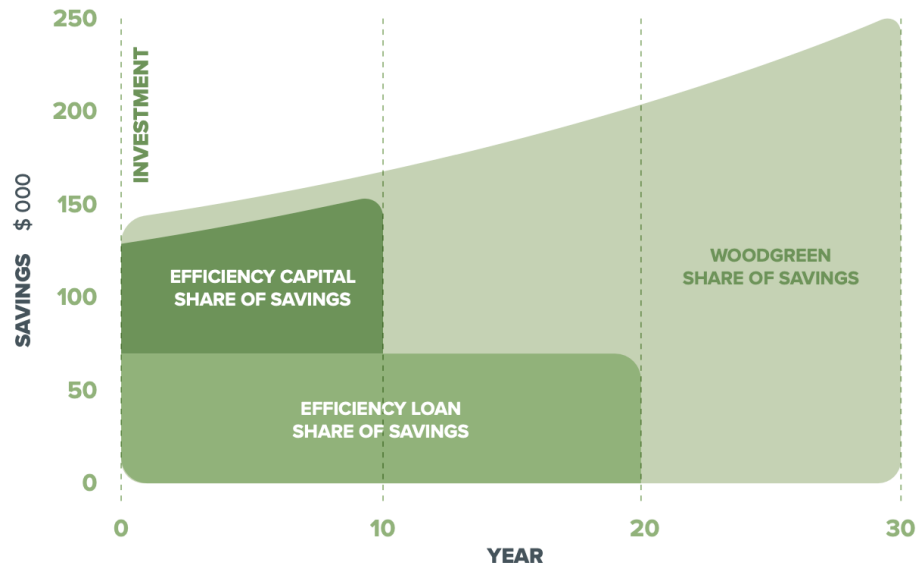
WoodGreen Community Services enhances self-sufficiency, promotes wellbeing and reduces poverty through innovative solutions to critical social needs.



- ▶ A non-profit affordable housing provider with more than more than 1500 units of affordable housing in 19 buildings across Toronto
- ▶ Home to seniors, youth, new immigrants, singles and families in need of housing and personal supports; Serves more than 37,000 people each year with integrated programs
- ▶ Works closely with clients and policymakers to reshape social service delivery, access, and interventions in the community through innovation

# FINANCIAL CHALLENGE

- ▶ Backlog of deferred maintenance and required end-of-life asset renewal amounting to **\$2.4M** across original portfolio of 8 social housing properties
- ▶ Additional **\$1M** in upgrades identified to build long-term operational savings and community resilience
- ▶ Only **\$1.3M** available in reserve fund for required upgrades (deficit of >\$1M)
- ▶ Lack of internal **capital, capacity and expertise** to manage large-scale portfolio retrofit
- ▶ Investment necessitated **guaranteed outcomes** for Woodgreen stewards and community members



# TECHNICAL CHALLENGE

- ▶ Lack of **internal expertise** required to leverage available government incentives, utility rebates, and associated energy efficiency market supports
- ▶ **No capacity** to manage multiple capital projects in parallel (equipment suppliers, contractors, skilled trades people, etc.) or to evaluate and optimize for desired techno-economic outcomes of retrofits
- ▶ Asset renewal/retrofits needed to be delivered with **speed and scale** to minimize disruption to existing tenants and programming within the community



## RECOMMENDED EFFICIENCY MEASURES



High efficiency boilers & air-cooled chillers



Pumps & make-up air units with variable drives



LED lighting



High-efficiency toilets & other water measures



Infiltration improvements



Controls, sensors & building automation

# EC SOLUTION: ESPA™

- ▶ First **IREE-certified** efficiency project in Canada
- ▶ More than **\$141,000 in annual utility savings** guaranteed
- ▶ Energy consumption reduced by over **1.7 gigawatt hours**
- ▶ Emissions footprint reduced by **250 tonnes of CO2e (14%)**
- ▶ **Guaranteed savings for the first 10 years** of the project



## SAVINGS HELP PAY FOR UPGRADES

MIXED MEASURES	TOTAL CAPITAL INVESTMENT	SOURCES OF CAPITAL	TOTAL SAVINGS	BENEFIT TO RESERVE
End-of-Life Efficiency Gains Health & Comfort	\$3.4 M	Efficiency Capital Efficiency Loan WoodGreen	\$5.7M	\$6.1M



# KEY OUTCOMES FOR WOODGREEN

- ▶ Leveraged \$1.3M investment to achieve \$3.4M in capital upgrades, generating **\$6.4M benefit to reserves**; 100% of contract payments backed by performance guarantees and utility savings
- ▶ Modernization of controls, systems, maintenance and energy management leads to organizational culture shift/data-driven decision making and **improved operational outcomes**
- ▶ Improved IEQ and thermal comfort leads to **improved social outcomes** for tenants and staff
- ▶ Buildings are more resilient, responsive and net-zero ready; **Improved sustainability outcomes**
- ▶ Original project scope since expanded to include additional sites and measures, leading to the development of a **long-term partnership** between EC and Woodgreen benefitting the community



## QUESTIONS?

### Erin Ellis

Director, Development  
Efficiency Capital

[erin.ellis@efficiencycap.com](mailto:erin.ellis@efficiencycap.com)

### Mwarigha

VP, Housing & Homelessness  
Woodgreen Community Housing

[mwarigha@woodgreen.org](mailto:mwarigha@woodgreen.org)

## Our Solutions

ESPA™

Energy Upgrade Agreement

Net Zero-as-a-Service