

**Helping Municipalities  
Champion Deep Energy Retrofits**

# Hello!

I am Dan Dicaire.

- P.Eng.
- Certified Energy Manager
- Certified Measurement and Verification Professional
- WELL Accredited Professional



# Agenda

- Current Housing Context
- Presland Net-Zero Panelized Retrofit
- Deep Energy Retrofit Tools

Inspire you to champion Deep Energy Retrofits in your community!

## I spend my days

- Ottawa Community Housing
- 15,000 units in 60+ yr old buildings in 160 communities
- Over 25M\$ of annual utilities

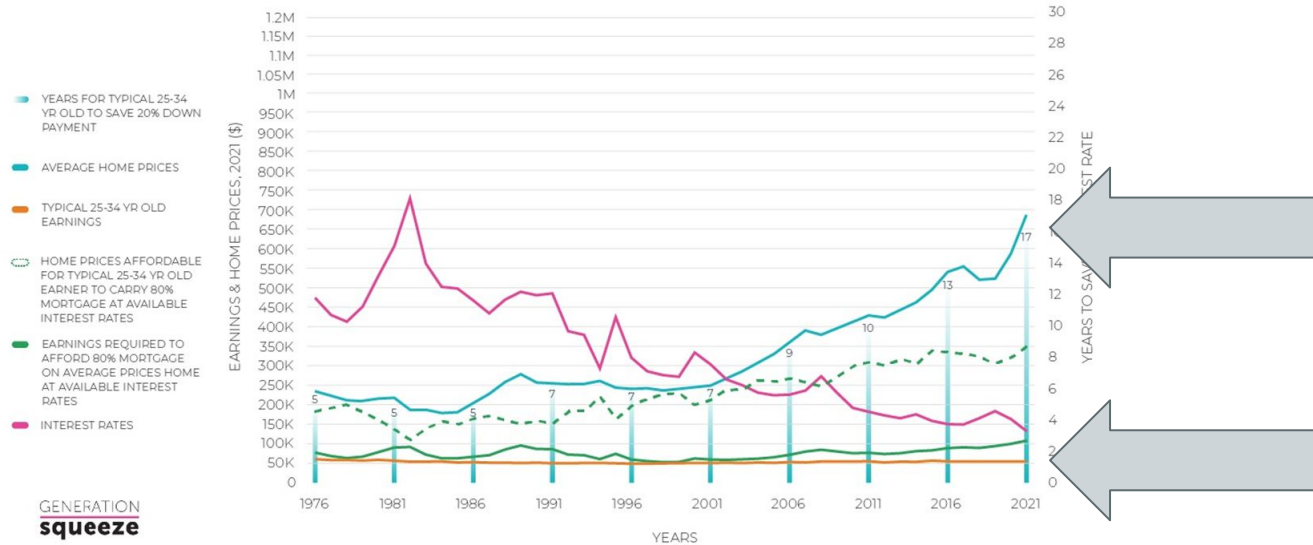
I spend my days

Over \$59M of savings over the past 12 years



# Housing Affordability

FIGURE 8: THE GAP. CANADIAN HOME PRICES RELATIVE TO YOUNG PEOPLE'S FULL-TIME EARNINGS



GENERATION  
**squeeze**

# Climate Crisis

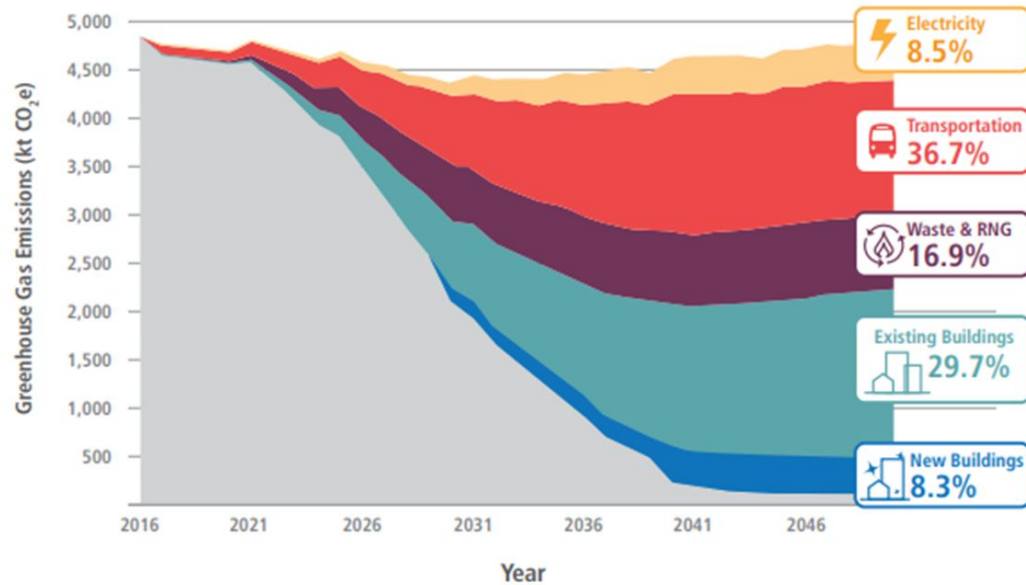


Figure 3: Total projected community-wide GHG emission reductions required to achieve 100% scenario incremental to BAP scenario by sector, 2016-2050 (percentages shown at 2050 are non-cumulative)

# Presland Net-Zero Pre-fabricated Retrofit

## Pre-Retrofit



- 7,200\$ of utilities
- 18 tons of CO2 e annually

## Post-Retrofit



- Net-Zero Energy
- 0 tons of CO2 e annually
- Tenant in-suite during retrofit

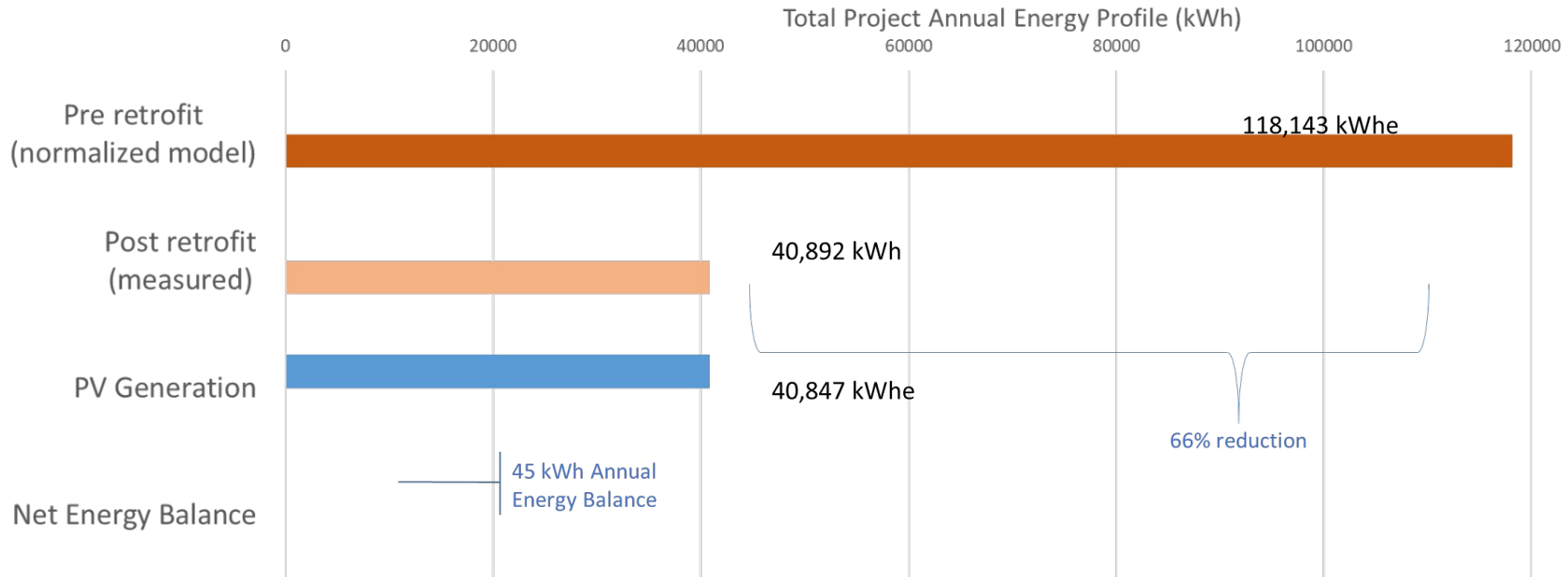


# Presland Net-Zero Pre-fabricated Retrofit

TimeLapse

# Results

## Energy Performance (September 2021 – August 2022)



# Deep Energy Retrofit Toolbox

# DER ToolBox - Technical

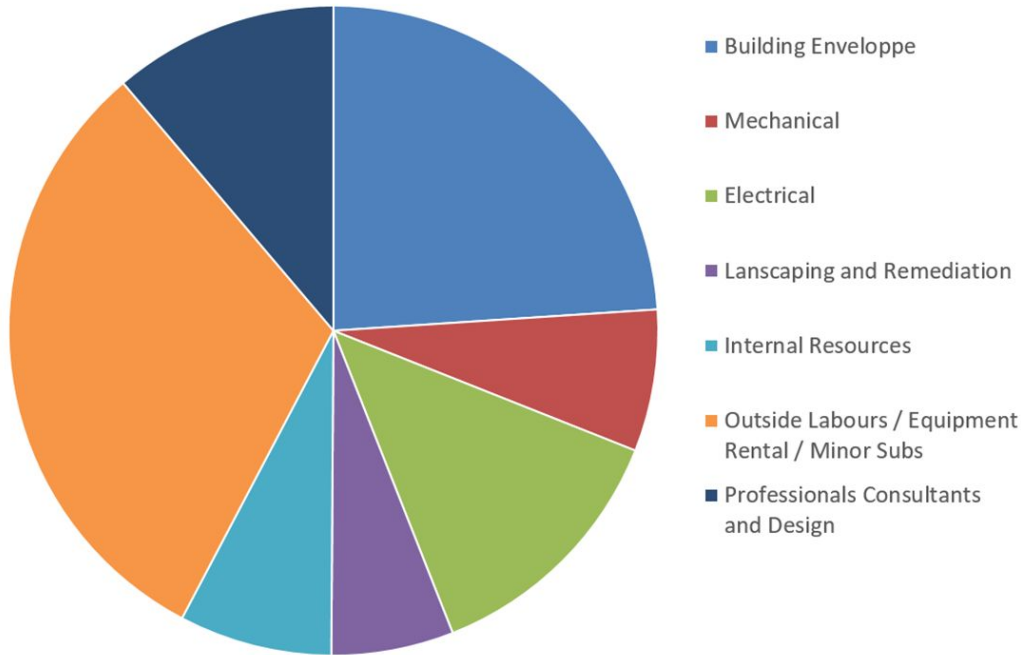


- EnergieSprong / EnerPHit / Passive House Standard
- NRCan's Prefabricated Exterior Energy Retrofit Guide

Not rocket science for experienced architects,  
engineers and contractors!

# DER ToolBox - Financial

Presland Net Zero Cost Breakdown



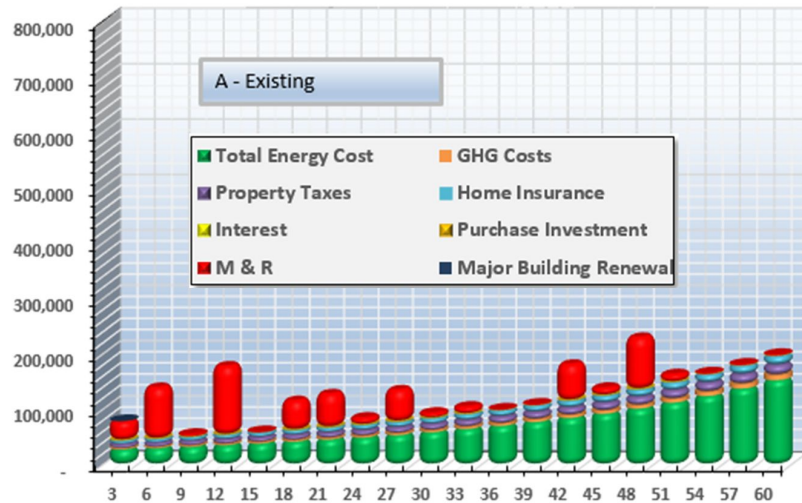
How much does it cost?

Grants / Incentive /  
Partnerships / Bonds

How much is it costing you?

# Total Cost of Building Ownership (TCBO)

## Status Quo NPV



## DER Retrofit

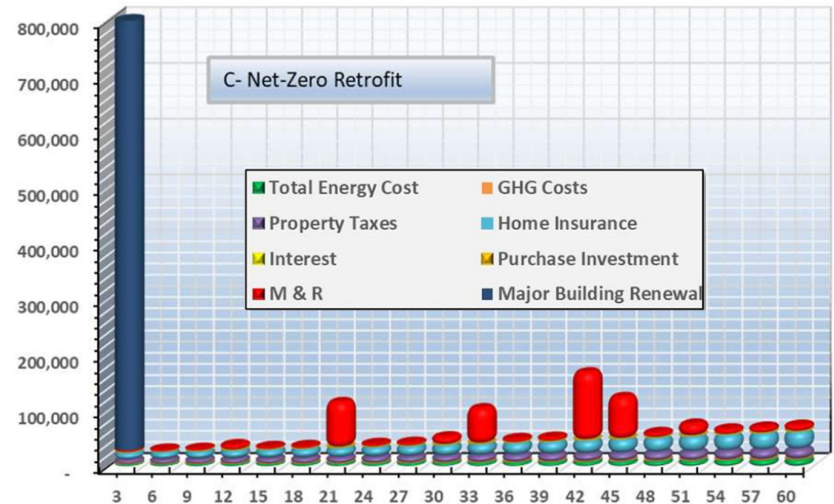
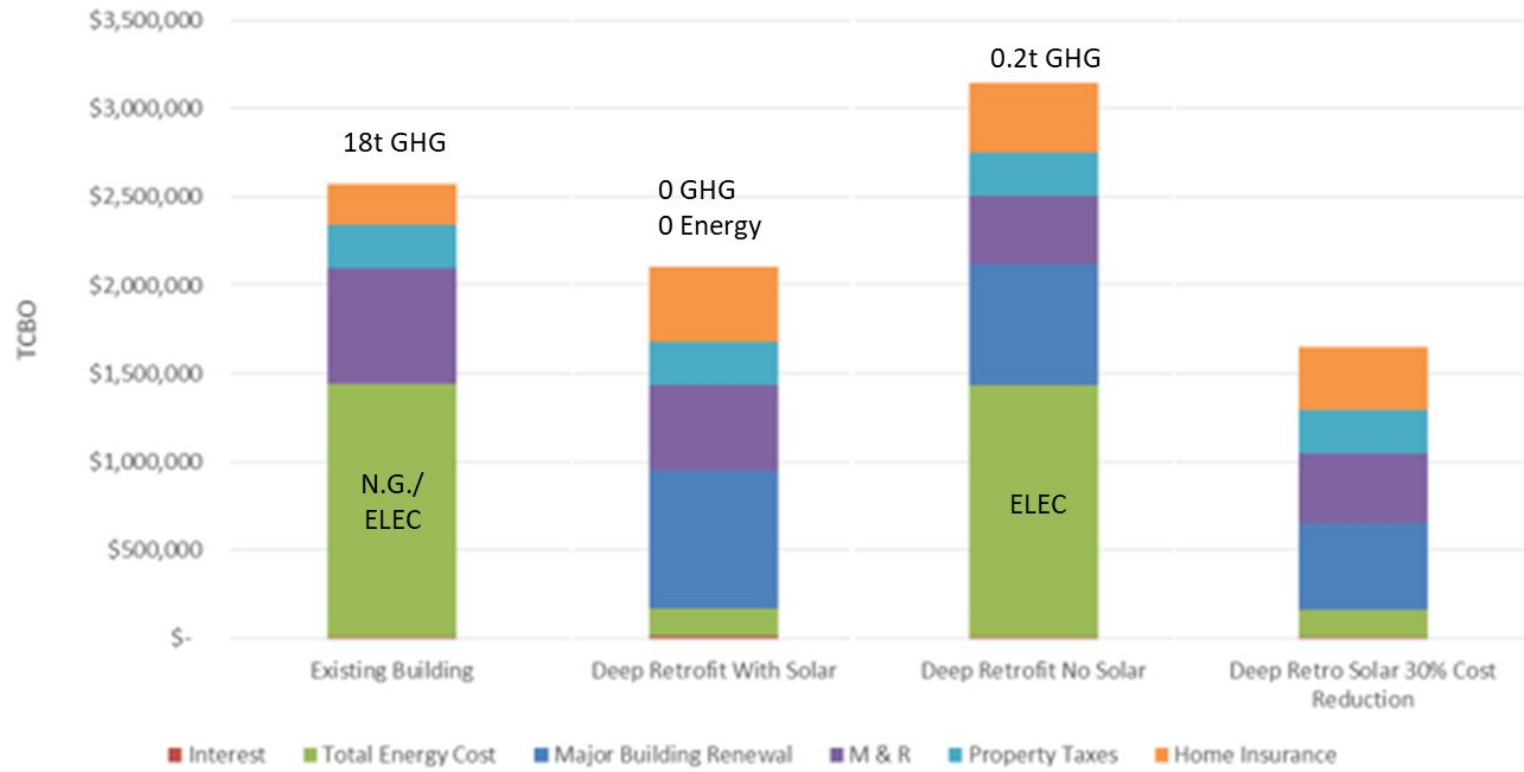


Figure 1 - Home TCBO Comparison



# DER ToolBox - Market Development

Engage  
Manufacturers



Trade  
Organizations



Aggregate  
Demand





## DER ToolBox - ESCO Model



- Lack of Capital - On-going Maintenance - Labour
- Energy Service Contract model fills the gap
- Standing offer for an aggregated volume ready to deploy!

Perfect to expand business case from catalyst/anchor client (Social housing) to private companies and homeowners.

# DER toolBox - Human Approach



## Housing Crisis

We have no free units to shuffle around, but we also can't lose Housing stock to dis-repair.

## Disruptive

Majority of this work will need to be done with tenants in place.

## Responsibility

We have a responsibility to minimize the impact of utility increases and carbon tax on our tenants.

# DER ToolBox - WELL Building Standard



## AIR

- Quality
- Purification
- Humidity



## WATER

- Quality
- Treatment
- Drinking Promotion



## LIGHT

- Natural Access
- Color
- Dimming/Circadian Rhythms



## NOURISHMENT

- Selection/Availability
- Serving Size
- Information



## FITNESS

- Fitness Centers
- Stairs
- Bike Room
- Incentives Programs



## COMFORT

- Ergonomics
- Sound Reduction
- Olfactory Comfort



## MIND

- Collaboration
- Quiet Rooms
- On-site Child Care
- Health & Wellness Library

OPERATIONAL EFFECTIVENESS | PAGE 19



- Health and Wellness
- Equity and people centric design
- “We spend 90% of our time in buildings, they should positively impact our health”



A society grows great when it's citizens  
plant trees whose shade they will never  
enjoy! - *Greek Proverb*

# Questions

For more info:

• [och-lco.ca/och-eco2-plan/peer-presland-prefabricated-exterior-energy-retrofit/](http://och-lco.ca/och-eco2-plan/peer-presland-prefabricated-exterior-energy-retrofit/)

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