

# Welcome to today's CHBA Net Zero Webinar!

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# Housekeeping

- **This webinar is being recorded.** CHBA Members can access the Net Zero webinar archive (recording + slide deck) at [www.chba.ca/NZwebinars](http://www.chba.ca/NZwebinars).
- **You will be in “listen-only” mode** for the duration of the webinar.
- **After the presentation we will have time for questions. Please use the question section of the dashboard** throughout the webinar and your questions will be relayed to the presenter(s).
- You can **change your screen view** by clicking on the  **View icon** in the top right corner, and by dragging the slider between sections to make the slideshow and webcams smaller/larger.

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Lunch & Learn Seminar available on topics such as:

- Building Net Zero Energy/Net Zero Energy Ready Homes
- High Performance Building Enclosure Systems

## ARCHITECT DESIGN EVENTS

Lunch & Learn Seminar available on topics such as:

- Principles of Acoustics and new ASTC Code Requirements
- Eliminating Thermal Bridges and Online Design Tools
- High Performance Building Envelope Solutions



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# Today's Webinar

July 14, 2022 from 10:30-11:30 PT / 1:30-2:30 ET

## Shifting to Net Zero and Net Zero Ready at Scale



**Presented by Brian Cooke, Sales & Marketing Manager, AeroBarrier Canada**

According to the CHBA National 2021 Home Buyer Preference Study, the top 3 overall “Must Have” home features identified by recent homebuyers are 1) high-efficiency windows, 2) energy-efficient appliances, and 3) an overall energy-efficient home. Additionally, 523 Canadian governments have declared a Climate Emergency, representing 99.56% of the population . These governments are now driving climate action, including the reduction of emissions from homes.<sup>1</sup> The industry is now under more pressure to meet these expectations than ever before.

This webinar focuses on how builders can meet these expectations by providing a path to Net Zero/Ready on a production scale without compromising construction schedules or increasing costs. In this webinar we'll discuss:

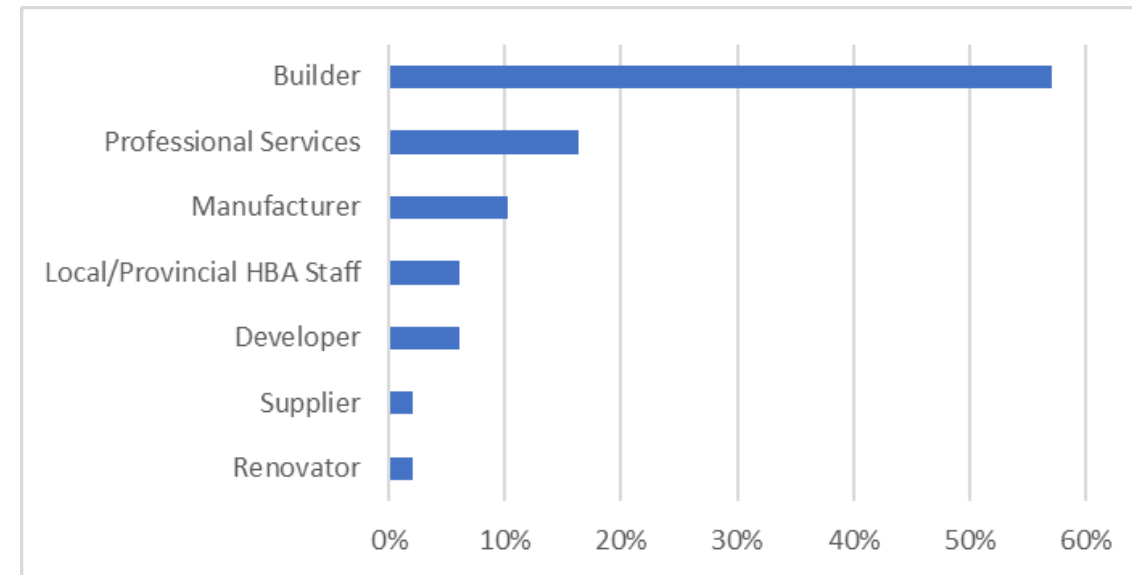
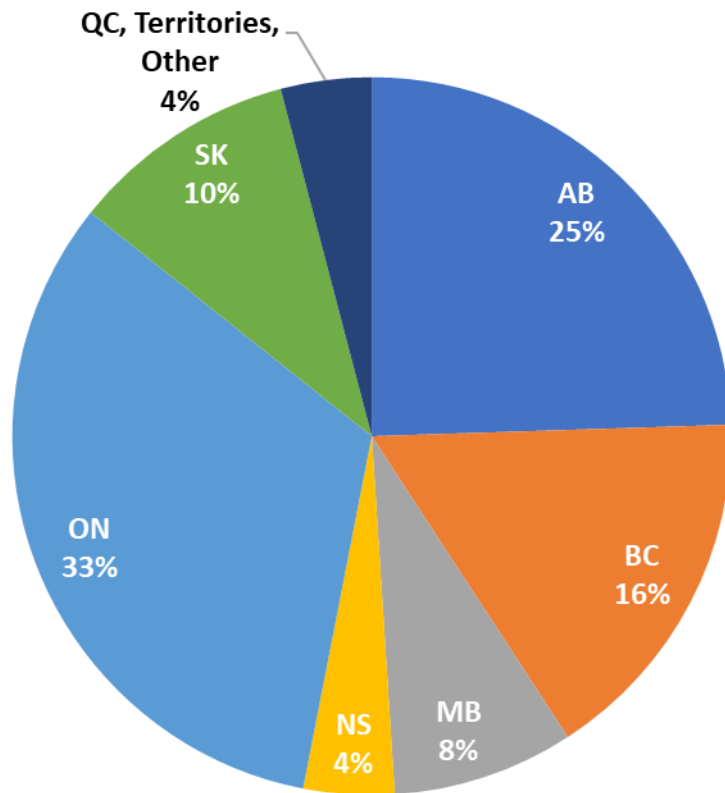
- Differences between Net Zero Ready and the performance of homes currently in the marketplace
- Solutions to air tightness challenges found in the industry
- A deep dive into our learnings from full net zero production sites
- A comparison of AeroBarrier's software results and final blower door test results

**Members will be able to access the recording & slide deck at [chba.ca/NZwebinars](https://chba.ca/NZwebinars)**

<sup>1</sup> Source: <https://climateemergencydeclaration.org/climate-emergency-declarations-cover-15-million-citizens/>



# POLLS





The logo for AEROBARRIER, featuring the brand name in a bold, italicized, sans-serif font. A registered trademark symbol (®) is located at the end of the word.

**AEROBARRIER®**

Air Sealing Technology from Aeroseal



# Shifting to Net Zero & Net Zero Ready at Scale

Brian Cooke, Sales & Marketing Director

# Canada's Commitment

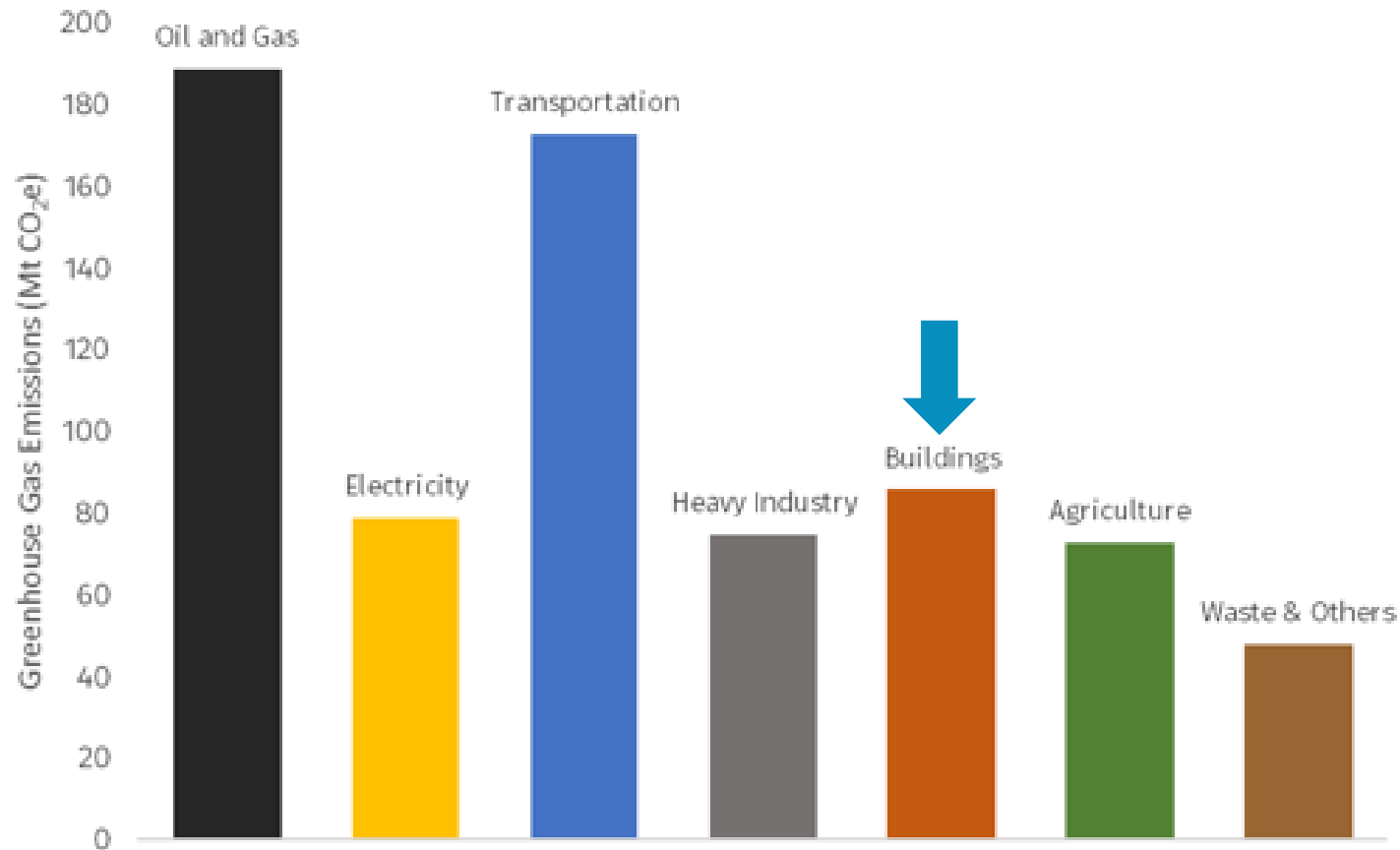
- Canada has committed to reduce GHG emissions by 40-45% below 2005 levels by 2030 and become net-zero by 2050.
- In 2022, Canada will have 287,000 housing starts. By 2030, its estimated well over 350,000 housing starts yearly.
- How does the industry achieve Canada's goal?





# Climate Change to Industry

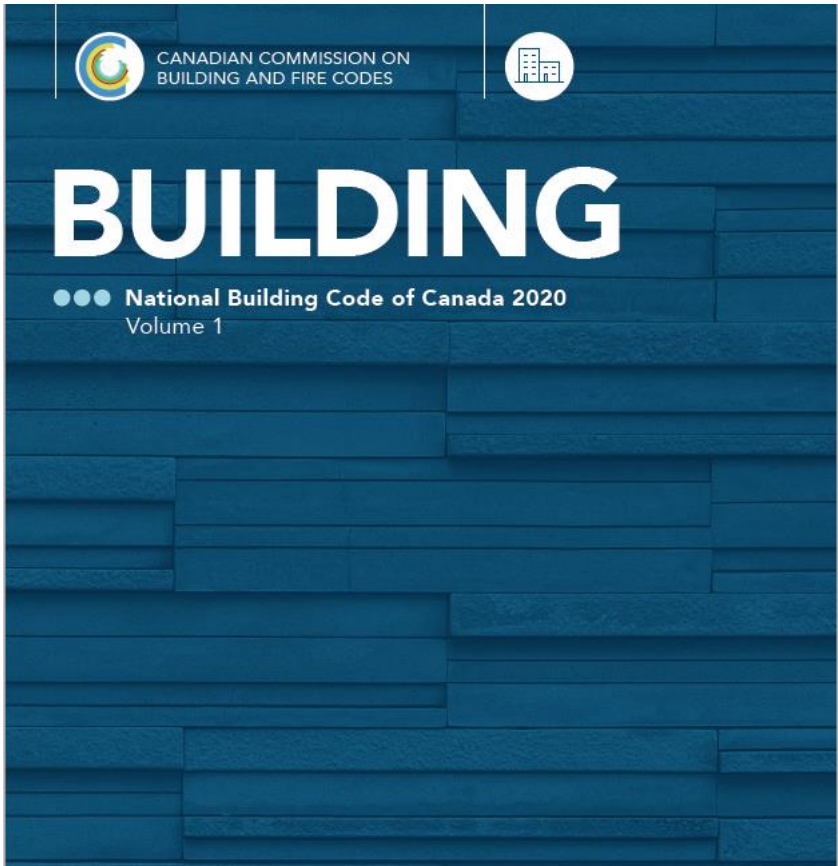
## Who is responsible for Canada's GHG Emissions?



Data source: Environment and  
Climate Change Canada (2015)

# Net Zero Ready vs Current Performance Homes





- 5 Tiers to get to Net Zero Energy Ready by 2035
- All provinces will adopt it by 2024

Tier	Overall Energy Performance Improvement	Envelope Performance Improvement
1	≥0%	N/A
2	≥10%	≥5%
3	≥20%	≥10%
4	≥40%	≥20%
5	≥70%	≥40%

# The Gap

## 13 Years to go

- 2961 Home builders In Canada
- 150 Net-Zero Builders / Renovators registered
- 600/300,000 homes expected this year to be Net-Zero ready

5% of Builders

0.2% of homes

### CHBA Net Zero Home Labelling Program

Homes Labelled Across Canada: 954

Last Updated: June 13, 2022

Detached:



597

Attached:



291

MURB Units:  
(within 5 buildings)



46

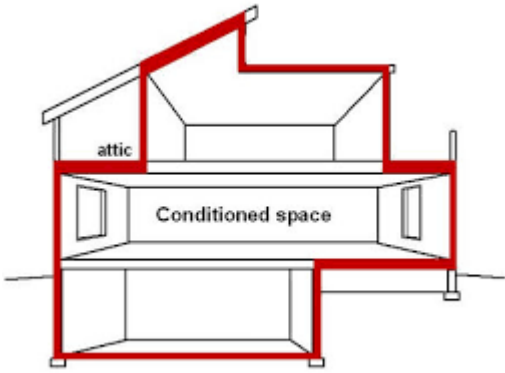
Renovation:



6

# Path To Net Zero Homes (NRCAN Study 2009-2011)

**AEROBARRIER®**  
Air Sealing Technology from Aeroseal



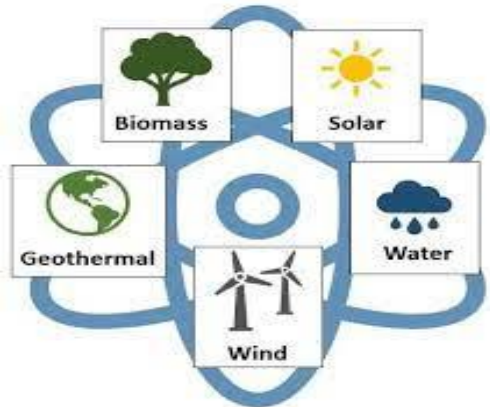
1. Improve Building Envelope



2. Resize Mechanical Systems



3. Add Renewable Energy Source



How do we  
solve air  
leakage?!





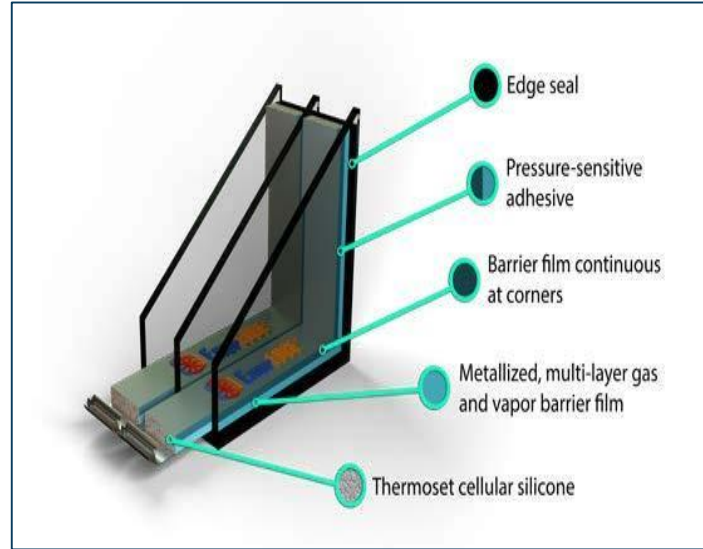
# Change is Slow & hard

- How many years does it take your organization to trial change?
- How long would it take to implement a fundamental change to how you build?
  - Wall assembly
- How many of you are actively working on Site plans for projects that are 5 , 10 ,15 years out?

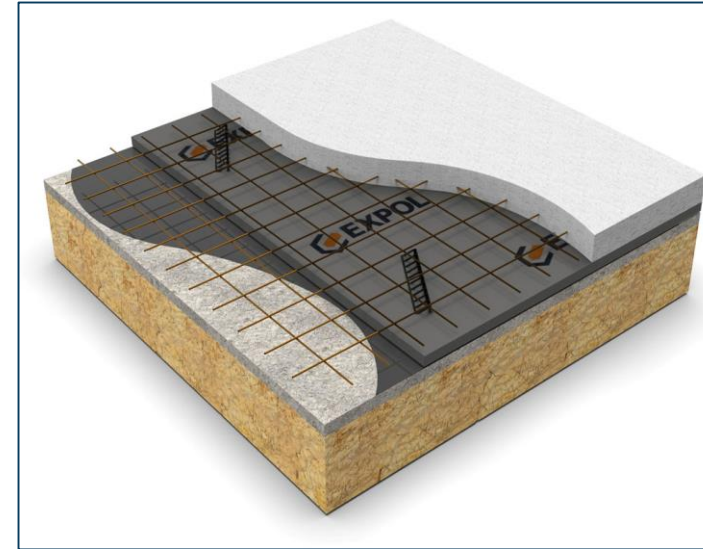
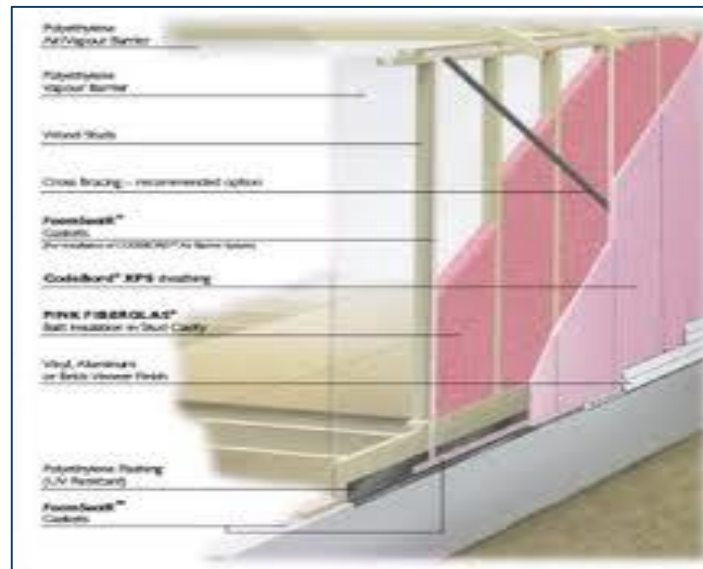


# Building Envelope

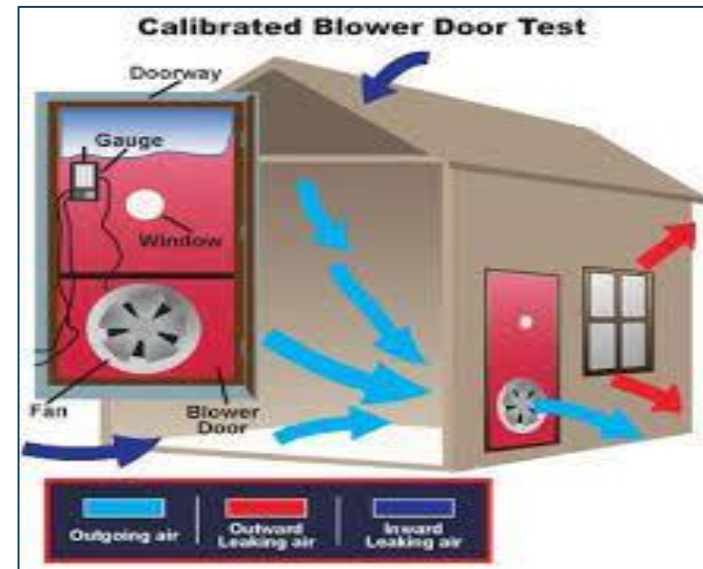
- Triple Pane Windows



- R22 plus R10 Continuous



- R10 Slab Insulation



- Airtightness Under 1.5

# Understand the Change in Loads

- The Key for Heat Pump is to match the Heat & Cooling loads

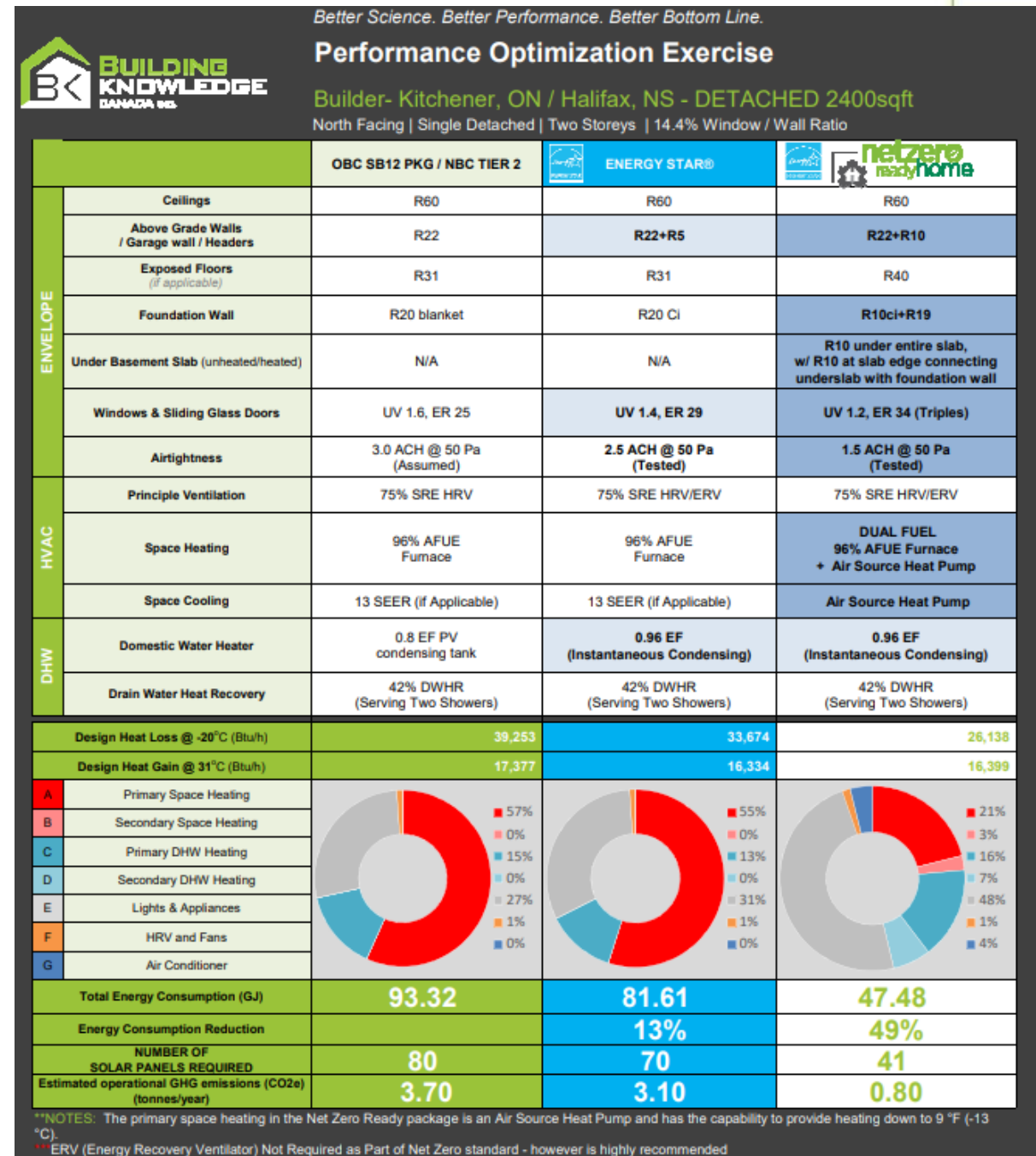


## Two important factors:

- Air leakage accounts for 25% to 35% of heating loads
- Windows accounts for 45% to 55% of cooling loads

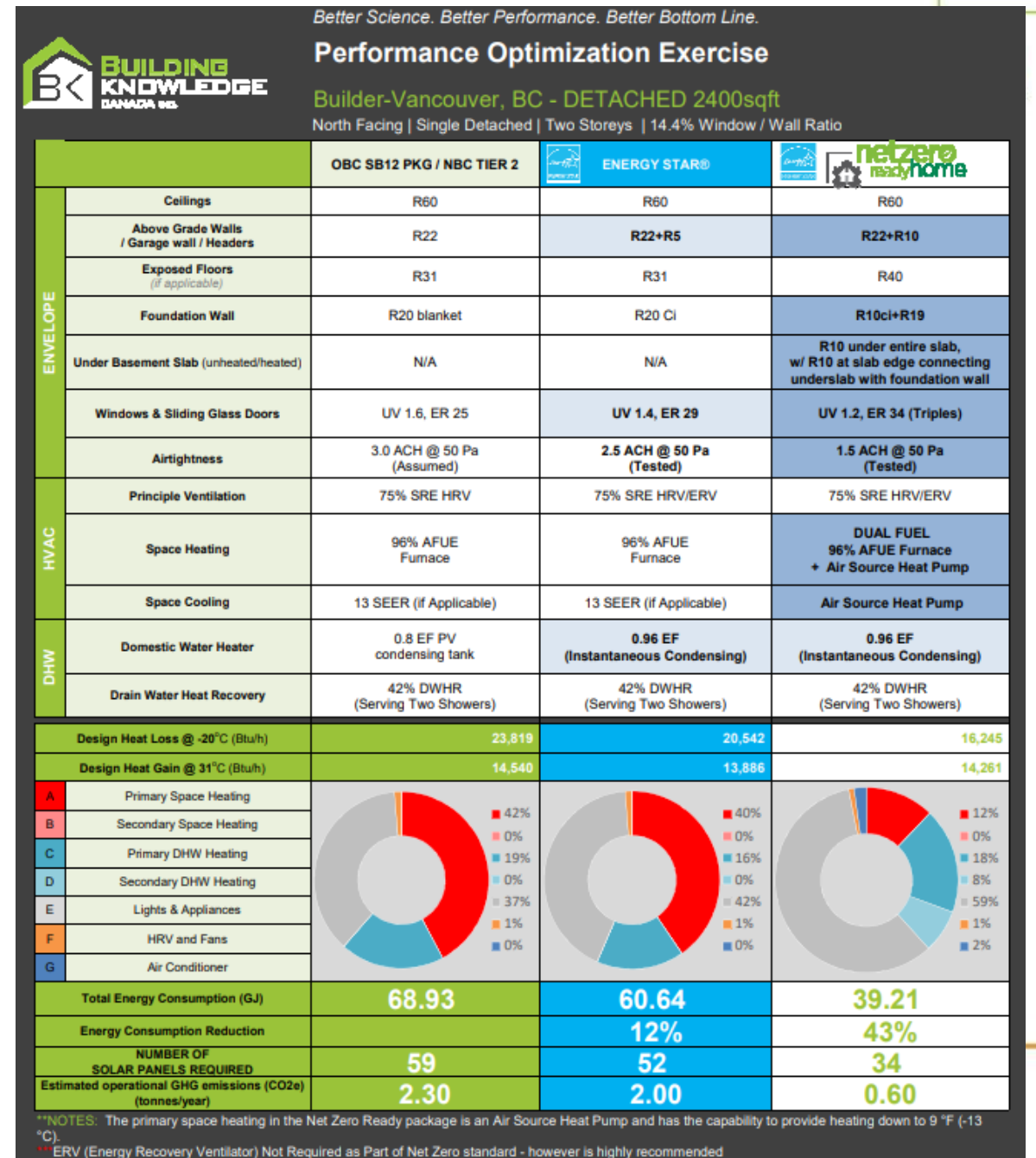
# Ontario Net Zero Ready

- Under 1.5 ACH
- Triple Pane
- R22 +10
- R10 under the slab



# BC Net Zero Ready

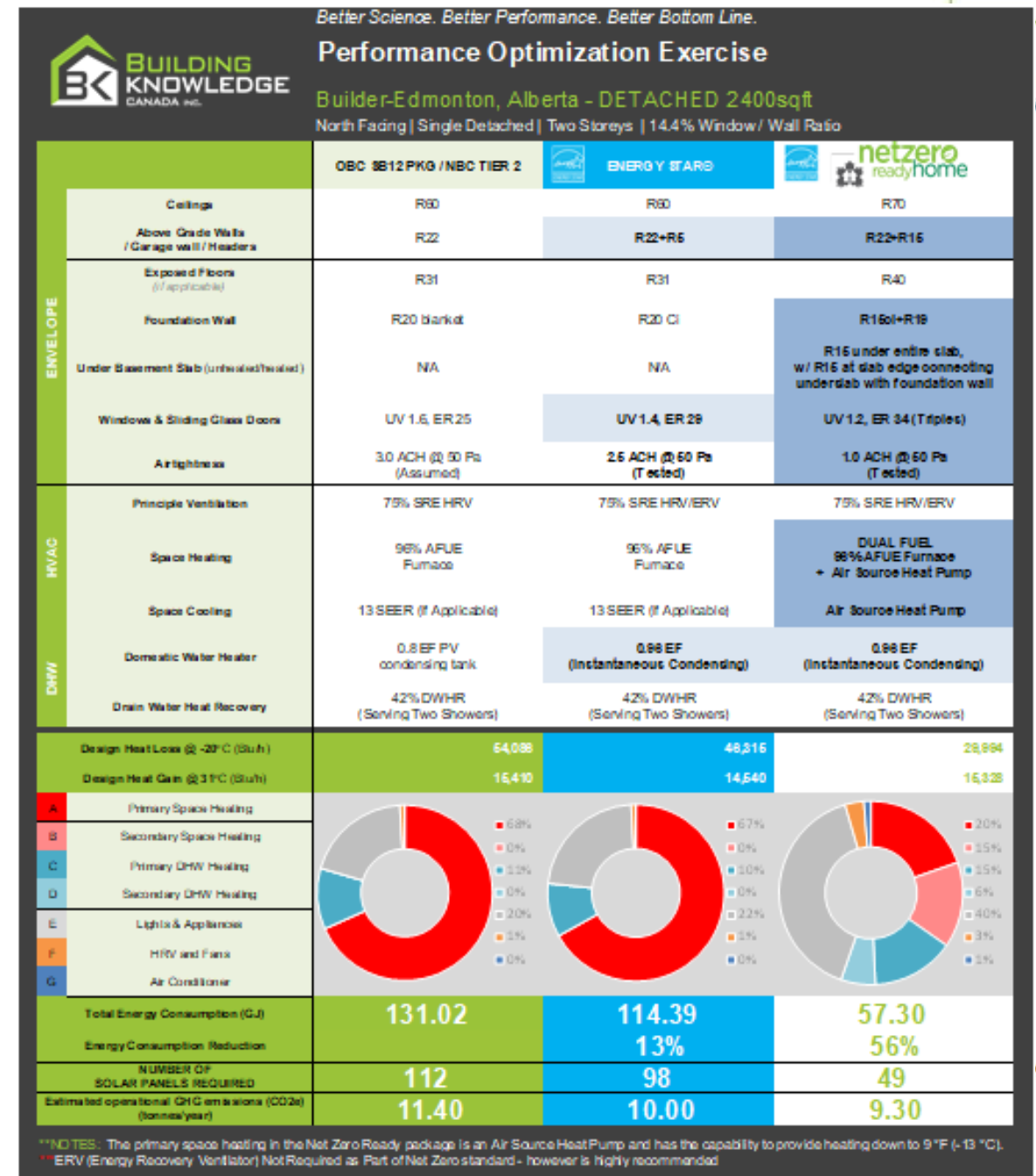
- Under 1.5 ACH
- Triple Pane
- R22 +10
- R10 under slab





# Edmonton

- Under 1.0 ACH
- Triple Pane
- R22 +15
- R16 under slab



# Heating / Cooling Loads

	Design Heat Loss	Design Heat Gain
Vancouver	16,250 BTUs/hr	14,260 BTUs/hr
Edmonton	29,995	15,328
Toronto & East	26,140	16,400

- Cooling loads are consistent across the country
- Even heating loads are remarkably close
  - under 30,000 BTUs/hr or under 2.5 Tons
- Heat pump sizing and duct system design will be simpler and more consistent

# Why Is Airtightness Difficult

## The current process is:

1. Time consuming
2. Inconsistent
3. Multi-step process
4. Requires extreme care
5. Across multiple trades



# A Solution that can be Implemented Today

**AeroBarrier is an automated, single step solution that seals air leaks in the building envelope**

## **Improving the Way Homes are Built with:**

- Consistently tighter building envelopes
- Verified and documented results
- Works with all Air barrier designs
- No scheduling or sequence changes needed



# AeroBarrier Process

## STEP 1:

*Prepare house for sealing. Cover all large openings (drains, bathroom vents, etc.) and horizontal surfaces, set up sealing equipment, and pressurize home.*

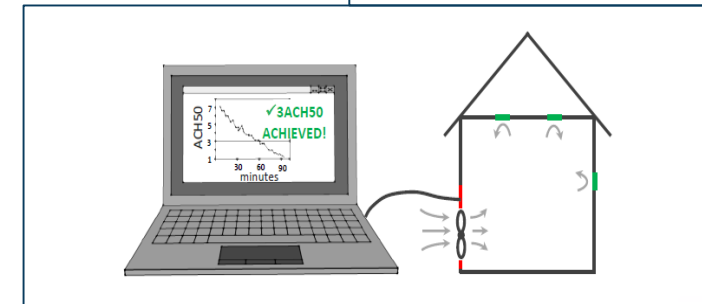
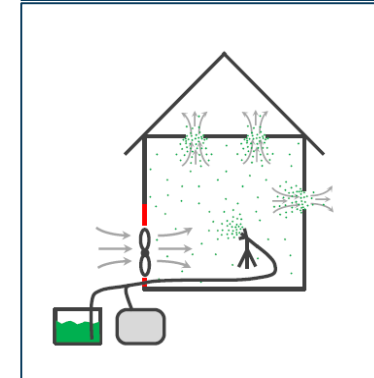
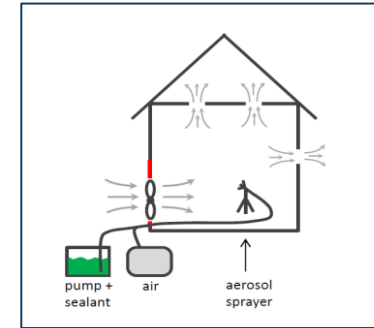
## STEP 2:

Start the sealing process and begin to aerosolize the sealant. Air currents will transport & deposit sealant particles along the leaks throughout the space.

## STEP 3:

The software regulates the entire process; controlling all parameters, monitoring the sealing, recording all data, and verifying air-tightness target is achieved.

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Air Sealing Technology from AeroSeal





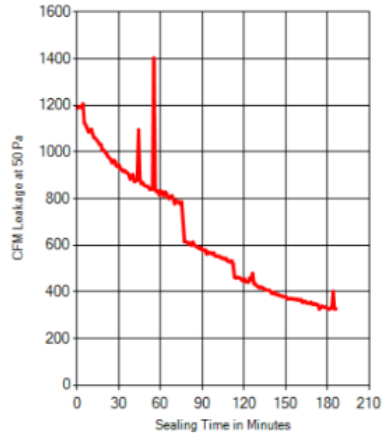
# The AeroBarrier Process


## Verified Results!

Every seal provides a certificate of completion outlining the sealing work. Pre- and post-leakage are captured, and the seal duration and leakage reduction are all displayed on the graph

### ENVELOPE SEALING REPORT

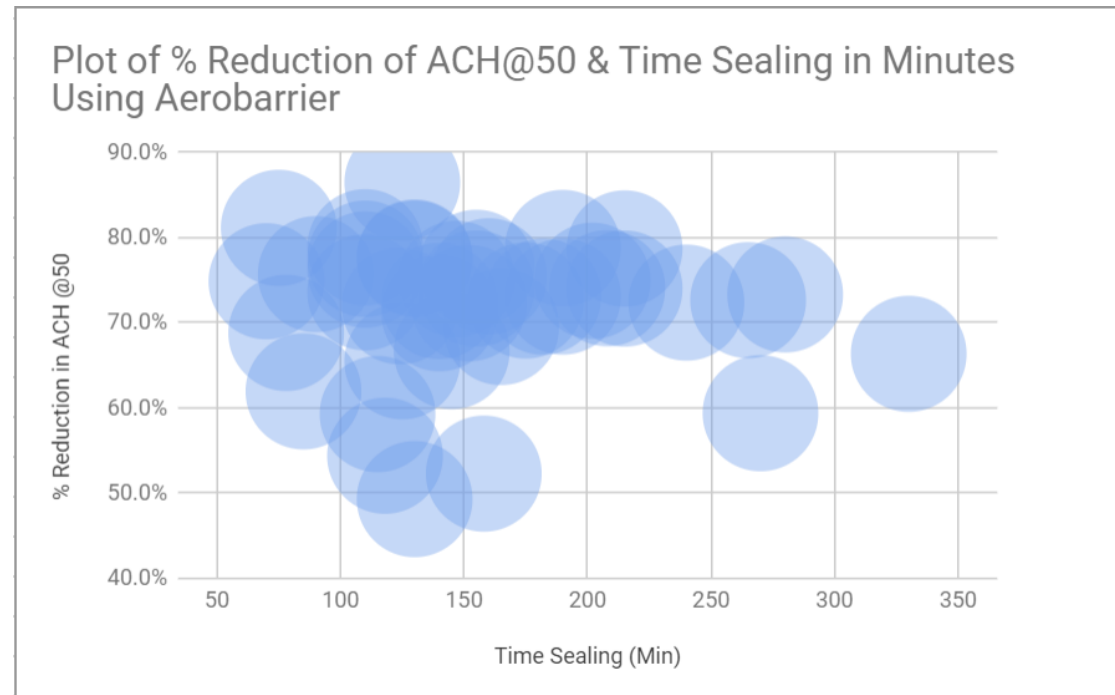
Envelope Sealing Performed For:	
Activa, Construction lot 84 NATHALIE CRE Kitchener, on 123abc	<b>AEROBARRIER CASE ID:</b> 8135 <b>HARDWARE:</b> AeroBarrier
<b>DATE:</b> 7/13/2022	<b>BUILDING TYPE:</b> Single Family Detached

Envelope Sealing Results:	Envelope Sealing Progress:																
<b>BEFORE SERVICE</b> <b>1186.7 CFM of Leakage</b> , equivalent to a <b>142.9 Square Inch Hole</b> or <b>2.62 Air Changes per Hour</b> <small>(for your 2000 square-foot structure enclosing a volume of 27149 cubic feet)</small>	 <table border="1"><caption>Envelope Sealing Progress Data (Estimated)</caption><thead><tr><th>Sealing Time (Minutes)</th><th>CFM Leakage at 50 Pa</th></tr></thead><tbody><tr><td>0</td><td>1200</td></tr><tr><td>30</td><td>900</td></tr><tr><td>60</td><td>800</td></tr><tr><td>90</td><td>600</td></tr><tr><td>120</td><td>450</td></tr><tr><td>150</td><td>400</td></tr><tr><td>180</td><td>350</td></tr></tbody></table>	Sealing Time (Minutes)	CFM Leakage at 50 Pa	0	1200	30	900	60	800	90	600	120	450	150	400	180	350
Sealing Time (Minutes)		CFM Leakage at 50 Pa															
0		1200															
30	900																
60	800																
90	600																
120	450																
150	400																
180	350																
<b>AFTER SERVICE</b> <b>326.2 CFM of Leakage</b> , equivalent to a <b>39.3 Square Inch Hole</b> or <b>0.72 Air Changes per Hour</b>																	
This corresponds to a <b>72.5% Reduction in Envelope Leakage</b>																	
<b>NOTE:</b> Envelope leakage and air-change results are calculated at a standard pressure of 50 Pa.																	

Envelope Sealing Performed By:	
	<b>AeroBarrier</b> 44 Beasley Dr Kitchener, ON N2E 1Y6 Phone: 2269894461

# AeroBarrier in Canada

- Launched June 2018 & Completed approximately 2500 Seals across Canada
- Single, Townhomes, Multi-family, High Rise, & Front/Back
- Units starting from 20 ACH@50 to sealing units starting <1
- All Construction / Air Barrier types
- 18 Dealers Coast to Coast



- Improved airtightness by >50%
- Seal time 2-3Hr

# Mattamy Springwater

- Located in Markham
- 1200 units masterplan over 4 phases
- Community Energy plan using Geothermal
- Net-Zero Ready
- Closing 300 per year

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Air Sealing Technology from AeroSeal





# Mattamy Springwater

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4 Months



# Mattamy Scorecard

Seals Completed	Avg Starting ACH	Avg Final Result	Pass Rate
36	2.4	1.2	100%

- 40 Seals Scheduled In July alone
- Plans for 6-8 units per day
- >200 closings in the next 8 months

## Site Feedback

- Scheduling has been accommodating and flexible
- Team has fit within the site environment
  - Moving trucks
  - Waiting for other trades
  - Respectful team members
- No mess concerns



# Activa – Trussler West

- Located Kitchener
- 115 Detached lots
- Single Detached Net Zero Ready Standard!



Activa is leading the way to a prosperous, resilient and low carbon community, building the Waterloo Region's first Net Zero Ready and Net Zero homes. Activa's goal is to impact the community now and in the future by incorporating energy-efficient home building and sustainability practices into its long-term strategy.

At Activa, Net Zero Ready comes standard in all single detached homes so that your home is optimized to generate as much energy as an average family consumes annually— all it needs post-closing is energy-producing technology like solar panels to be installed!



# Activa – Integrated Marketing / Sales Approach













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Air Sealing Technology from Aeroseal



**ACTIVA** our homes + communities your journey ~ our story your inspiration [register for updates](#)

## net zero ready home features

select a feature icon to learn more about our net zero ready homes

 Dual Fuel Furnace & Heat Pump	 Energy Recovery Ventilation System (ERV)	 Low Flow Plumbing	 LED Lighting	 Home Monitoring System	 Insulation Under Slab
 Extra Insulation in Walls & Ceilings	 Drain Water Heat Recovery	 Tankless Water Heater	 Aerobarrier	 Triple Pane Windows	 PLUS ability to upgrade home to full Net Zero by adding Solar Panels

 you and your  
**Net Zero home**

Built to higher standards, a Net Zero home is more durable – with high performance windows, ultra-efficient heating and cooling systems, and better insulated walls.

While the individual elements of this home may seem incredibly techy, there is no change in lifestyle required! In fact, with the addition of solar panels, you can generate enough energy to power your home activities year-round.

**THE BUILD**

- 1 Energy Star
- 2 Net Zero Ready
- 3 Net Zero

**THE FEATURES**

- 1 Smart Home Design Feature



# Net Zero MURB Pilot - Avalon

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Air Sealing Technology from Aeroseal

LIVE IN CALGARY'S FIRST  
**NET ZERO**  
TOWNHOMES



- SOLD OUT -

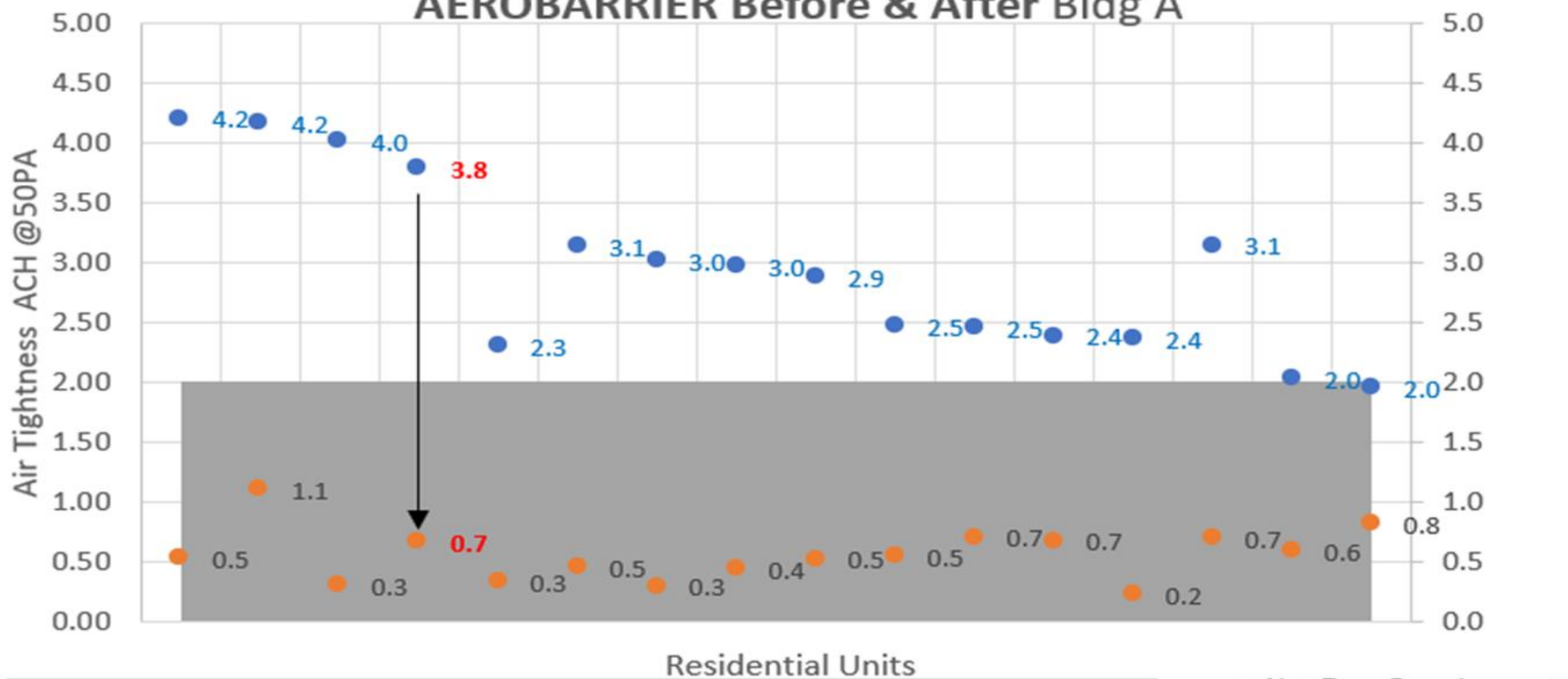


Example of Avalon's Net Zero Home Utility Bill Savings.

Aug 09 2021 - Sep 07 2021 Usage: 570 kWh	
<b>Previous Charges and Credits</b>	
Previous Balance	-\$125.62
Balance Forward	-\$125.62
<b>Charge Summary</b>	
Energy	\$147.34
Microgen	-\$275.31
Regulated Transmission and Distribution	\$45.64
Balancing Pool Allocation	\$1.34
Municipal Fee to City of Calgary	\$12.63
Retailer Fees	\$7.84
Subtotal	-\$60.52
GST (#896454626)	-\$3.03
Total Current Charges	-\$63.55
<b>Total Due</b>	<b>-\$189.17</b>
Your account has a credit balance. No payment is required.	

- Two other Murb Pilots ready to participate with Aerobarrier

## NZ MURB Air Tightness: AEROBARRIER Before & After Bldg A



AEROBARRIER in the NZ MURB:

**Average of 81% improvement.** Note Unit that has an arrow; 3.8 ACH to 0.7ACH. Blower door test later goes to 2.6ACH guarded; 2.9ACH unguarded.

■ Net Zero Requirement

● Before Aerobarrier

● After Aerobarrier

## NZ MURB Air Tightness: Aerobarrier "After" & Guarded EA Blower Door Bldg A



Between Aerobarrier application/test & EA test:  
Seeing anywhere from a **0.2 ACH** increase to a **1.9 ACH** variance (**avg 0.65**). Note: trades may poke more holes, different testing, vents covered

- Net Zero Requirement
- Guarded ACH@50PA
- After Aerobarrier



## Countless Other Builders Taking on Community Scale

**AEROBARRIER®**  
Air Sealing Technology from Aeroseal



# Thank You!

Brian Cooke

[bcooke@aerobarrier.ca](mailto:bcooke@aerobarrier.ca)

