

Low Carbon Homebuilder Coalition Dinner

Sponsored by



LOW CARBON BUILDERS ESTIMATED CO₂ REDUCTIONS AND SAVINGS FOR HOMEOWNERS COMPARED TO TIER 1

BUILDER	AVERAGE % BETTER THAN CODE	*ESTIMATED COST SAVINGS FOR HOMEOWNER (\$)	# OF HOUSES	TOTAL ENERGY SAVINGS PER YEAR (\$)	TOTAL CO ₂ REDUCED TONNES	CARS OFF THE ROAD
BROOKFIELD	32%	836.88	195	163,192	163.2	55
CAMPANALE	35%	915.34	62	56,751	93.7	19
COUNTRY	31%	810.73	27	21,890	36.1	7
EMPIRE	35%	915.34	751	701,167	1157.4	231
DIETRICH	42%	1098.41	22	24,165	39.9	8
HEATHWOOD	35%	915.34	145	132,724	219.0	44
ICON	31%	810.73	32	21,079	34.8	7
LINDVEST	37%	967.64	117	113,214	227.0	45
MINTO	29%	758.42	18	13,652	22.5	8
ROSEHAVEN	32%	836.88	136	113,816	187.9	38
ROYAL PINE	39%	1019.95	75	76,496	126.3	25
REGAL CREST	37%	967.64	27	26,126	43.1	9
STARLANE	24%	627.66	7	4,394	7.3	1
TRIBUTE	36%	941.49	65	61,197	101.0	20
TOBEY	42%	1098.41	26	28,559	47.1	9
2022 TOTAL			1705	\$1,558,420	2506.3	527

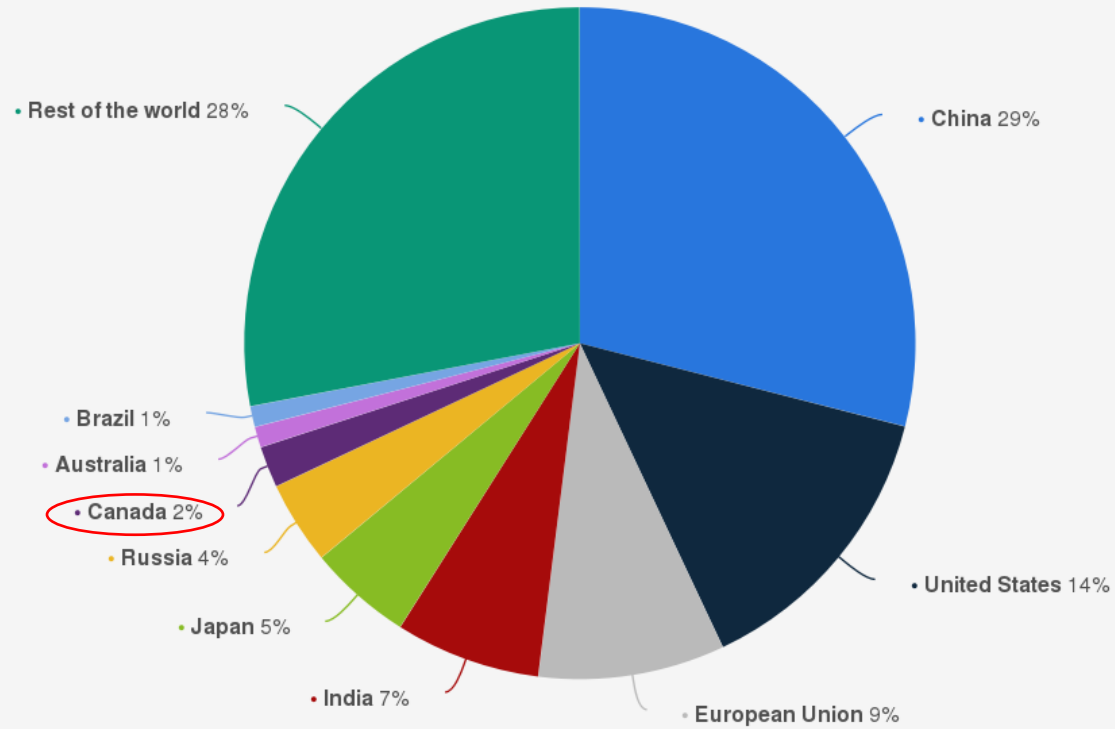
The Low Carbon Builder Coalition is collectively responsible for taking 527 cars off the road and saving home buyers over \$1.5 million dollars in energy costs on 1705 houses in 2022.

* Based on a comparison to NBC Tier 1 using the OBC SB-12 2017 reference house calculating with REMRate v.16.0.2

Putting Carbon into Perspective

Worldwide

Distribution of annual carbon dioxide emissions worldwide in 2017, by select country

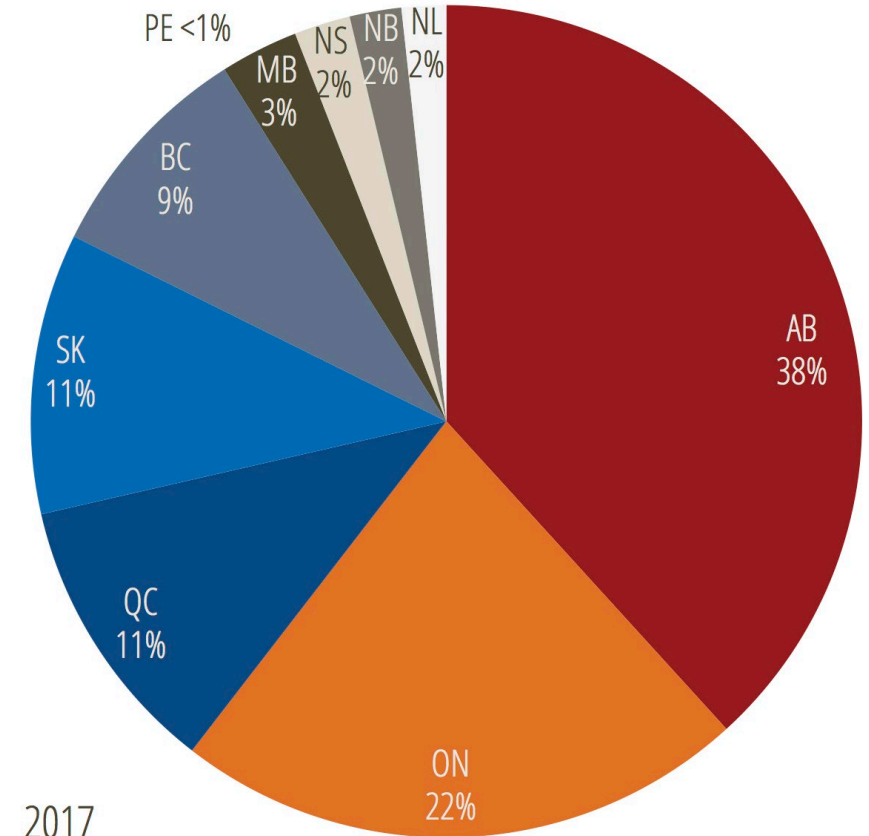


Source
Citi Research
© Statista 2023

Additional Information:
Worldwide; 2017

Buildings account for 12% of emissions, new low rise residential in Ontario accounts for $2.2 \times 100,000 = 220\,000$ tons or 0.24%

Canada



2017

Per Capita emissions Ontario is 3 tons
Per Capita emissions Alberta is 9 tons

Fun Facts about your Carbon Footprint

- 96 kg (211.2 lbs) co₂e a year if you use your phone 10 hours a day *
- 580 million tons co₂e global mobile phone usage
- Typical mobile phone use connected to the internet works out a 1g per minute, about the same as a large gulp of beer every hour.

* Based on an iPhone 11, including 0.7g for the embodied footprint, 0.2g for use-phase footprint, and 0.4g for electricity use in the network, data centers and Wi-Fi router.

- 46 million tons co₂e Bitcoin in 2019
- 68 million tons co₂e all cryptocurrencies in 2019**

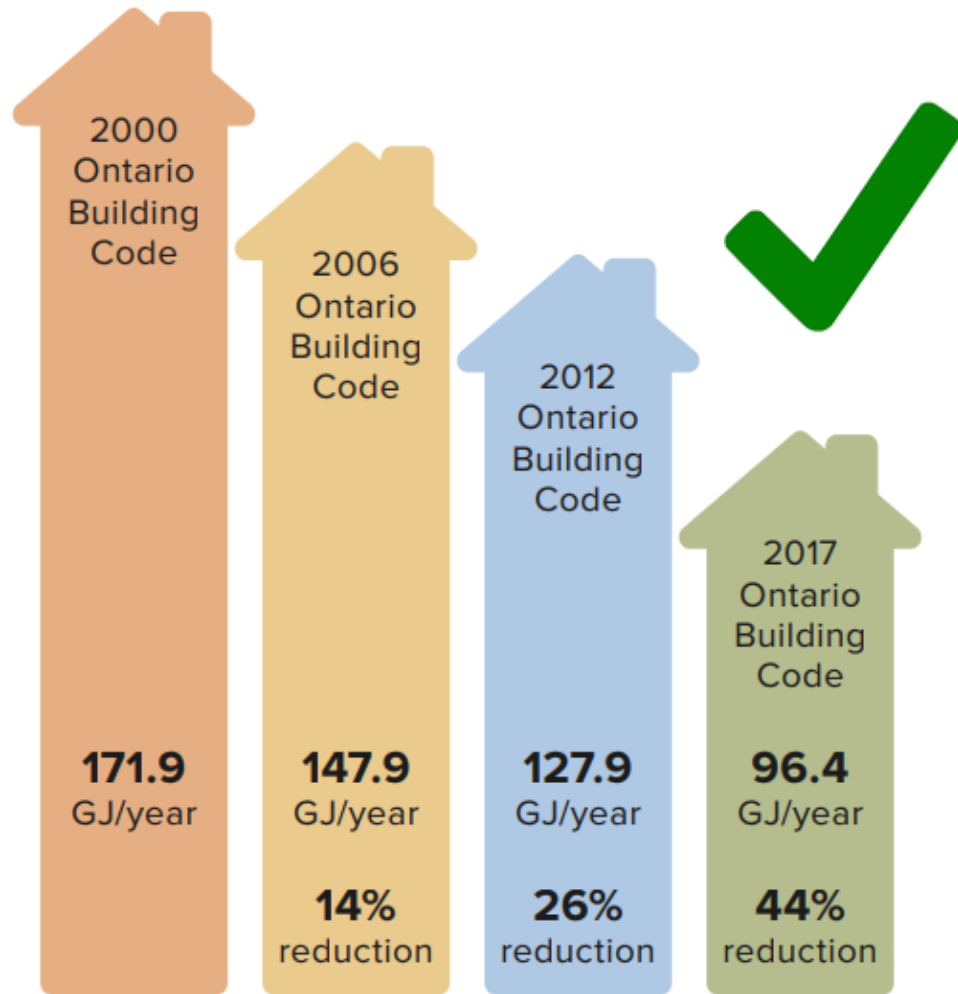
**Bitcoin electricity demand was 73.1 TWh assuming a global electricity mix with a carbon intensity of 0.63 million tons co₂e per TWh (Digiconomist 2020)

- The Cloud and the world's data centers used 160 million tons co₂e in 2020***

***International Energy Agency estimates that data centers worldwide used 200 Terrawatt hours in 2020 (1000 times a Megawatt).



OBC 2017 surpasses the PARIS ACCORD Targets (37% reduction below 1990 levels)

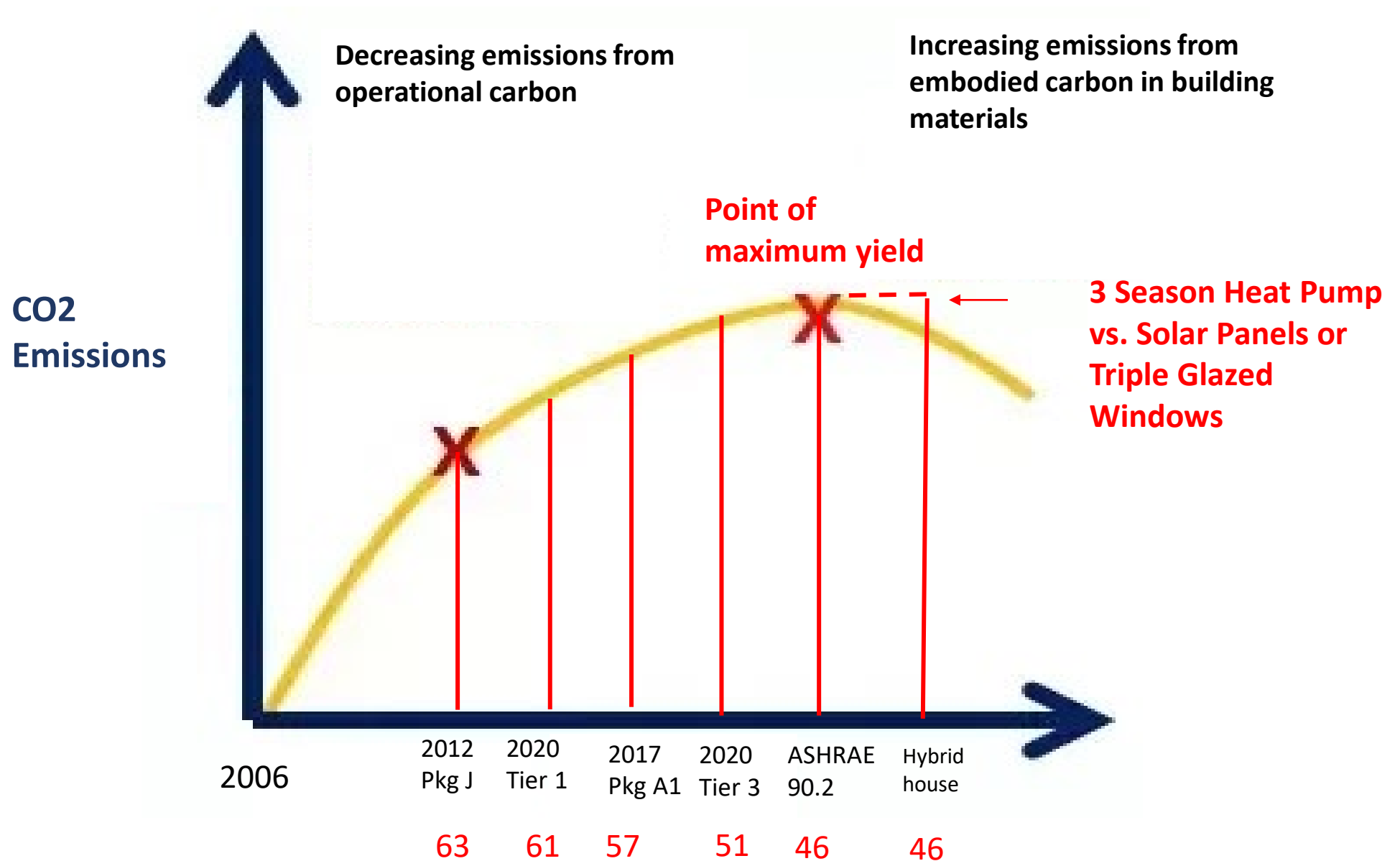


***Current Federal Targets are 40% reduction by 2030 based on 2005 levels. Target for 2050 is Net-Zero (80% reduction).**

Why are builders being singled out?

Total Household Energy Usage by Year of Construction

The Law of Diminishing Marginal Returns with Carbon



Low Carbon Homebuilder Coalition (LCHC)

T.L.E.E.P.

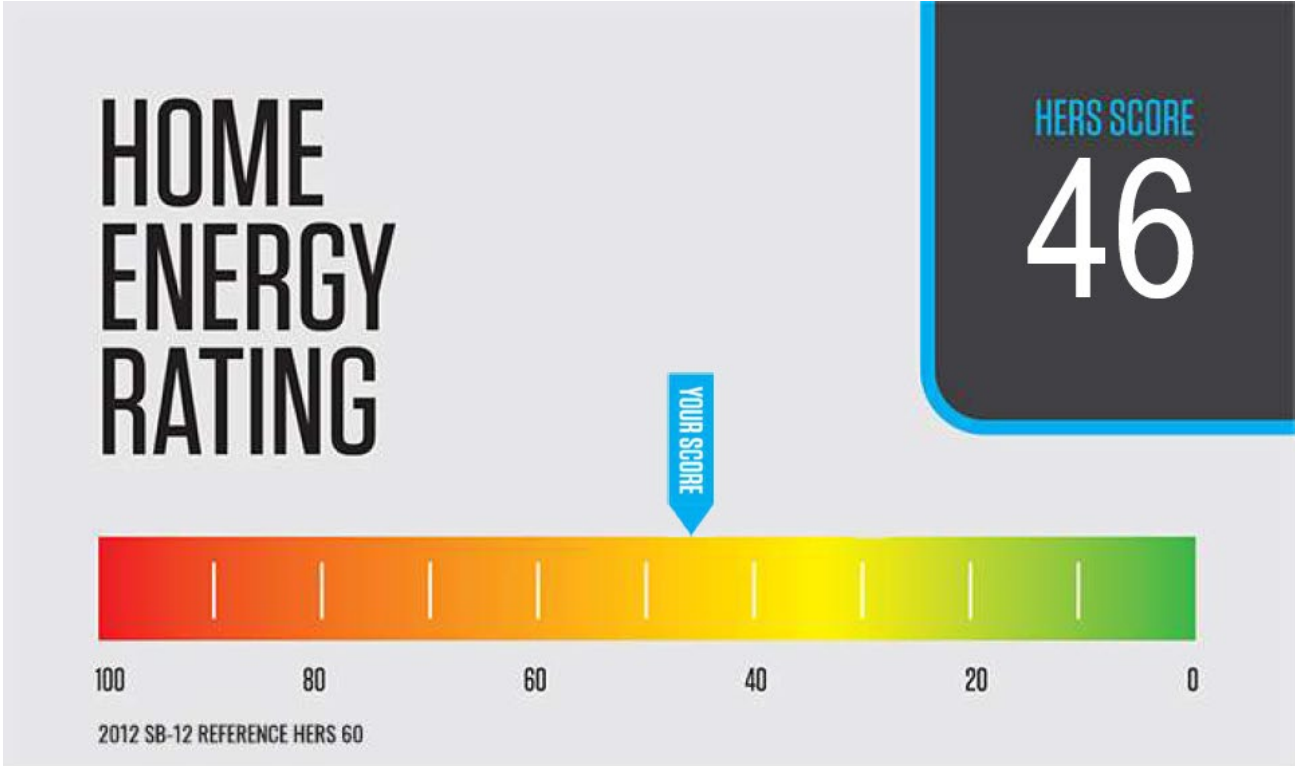
Track	Track carbon emission reductions using a standardized approach, post these annually with ESG reporting.
Lead	Leadership and choice in reducing operational and embodied carbon in housing.
Engage and Educate	Engage and Educate homebuyers and public in pragmatic approaches like Zero Energy Ready (HERS 46) and Hybrid house.
Empower	Empower the development of financing based on energy performance for affordability.
Promote	Promote the “wise use” of all energy sources including natural gas.

TRACK



Number of Homes achieving a HERS 46 or less per builder 2020-2022				
Builder	2020	2021	2022	Total # of homes
Brookfield Residential	138	205	80	423
Campanale Homes	57	35	61	153
Cleary Homes	4	17	1	22
Country Homes	0	13	9	22
Dietrich Homes	0	6	24	30
Empire Communities	841	559	428	1828
Geranium	3	1	0	4
Habitat for Humanity	0	12	76	88
Heathwood Homes	18	63	76	157
Hunt Homes	14	7	17	38
Lindvest Communities	1	42	123	166
Marshall Homes	0	7	0	7
North Star Homes	0	1	0	1
Rodeo Fine Homes	2	0	0	2
Regal Crest Homes	31	46	28	105
Rosehaven Homes	31	130	40	201
Royal Park Homes	45	0	0	45
Royal Pine Homes	2	2	66	70
Starlane Homes	1	20	0	21
Summitpines Estates	94	16	1	111
Tribute Communities	10	89	60	159
Upperview Homes	0	25	7	32
Vogue Homes	17	1	21	39
Custom Builders	5	9	0	14
Totals	1309	1297	1118	3724

Low Carbon Homebuilder Coalition builders who have rated homes over the past 3 years totaling 3724 that meet or exceed Zero Energy Ready (HERS 46)



(Insert builder logo here)

THIS HOME IS 23% BETTER THAN CODE
123 Anywhere Street, King City, ON

RATING DATE
April 23, 2021

STANDARD

ANSI/ASHRAE/IES Standard 90.2-2018
(Supersedes ANSI/ASHRAE/IES Standard 90.2-2007)

Energy-Efficient Design of Low-Rise Residential Buildings

Approved by the ASHRAE Standards Committee on October 24, 2018, by the ASHRAE Board of Directors on November 10, 2018, by the Illuminating Engineering Society on October 25, 2018, and by the American National Standards Institute on December 7, 2018.

This Standard is under continuous maintenance by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the Standard. Instructions for how to submit a change can be found on the ASHRAE® website (<https://www.ashrae.org/continuous-maintenance>).

The latest edition of an ASHRAE Standard may be purchased from the ASHRAE website (www.ashrae.org) or from ASHRAE Customer Service, 1791 Tullie Circle, NE, Atlanta, GA 30329-2305. E-mail: orders@ashrae.org. Fax: 678-539-2129. Telephone: 404-636-8400 (worldwide), or toll free 1-800-527-4723 (for orders in US and Canada). For reprint permission, go to www.ashrae.org/permissions.

© 2018 ASHRAE

ISSN 1041-2336



90.2 COMPLIANCE ERI SCORES BY CLIMATE ZONE	
CLIMATE	ERI SCORE
ZONE 1	43
ZONE 2	45
ZONE 3	47
ZONE 4	47
ZONE 5	47
ZONE 6	46
ZONE 7	46
ZONE 8	45
IN ONTARIO, LOW CARBON HOMES ARE ERI/HERS 46	

OBC Part 3 references ASHRAE 90.1 for large buildings. Part 9 should reference ASHRAE 90.2 for net zero ready in any climate zone

Low hanging Fruit

	Building Component	Saving (KgCO2e)	% Reduction
1	Cellulose (attic and walls)	3695	8.3
2	8" Pour SCM Concrete	1385	3.12
3	Brick to Stucco (facebrick)	7328	16.5
4	Carpet to SFI Hardwood	2752	6.2
	Total	15160	34.12

11.42% reduction
5 tons

Summary:

Typical Home	44 tons CO2
Hybrid house reduction	2 tons CO2
GWP materials reduction	15 tons CO2
Low Carbon footprint	27 tons CO2

CMHC and Energy Efficiency

MLI select program

Energy Efficiency getting longer amortization periods

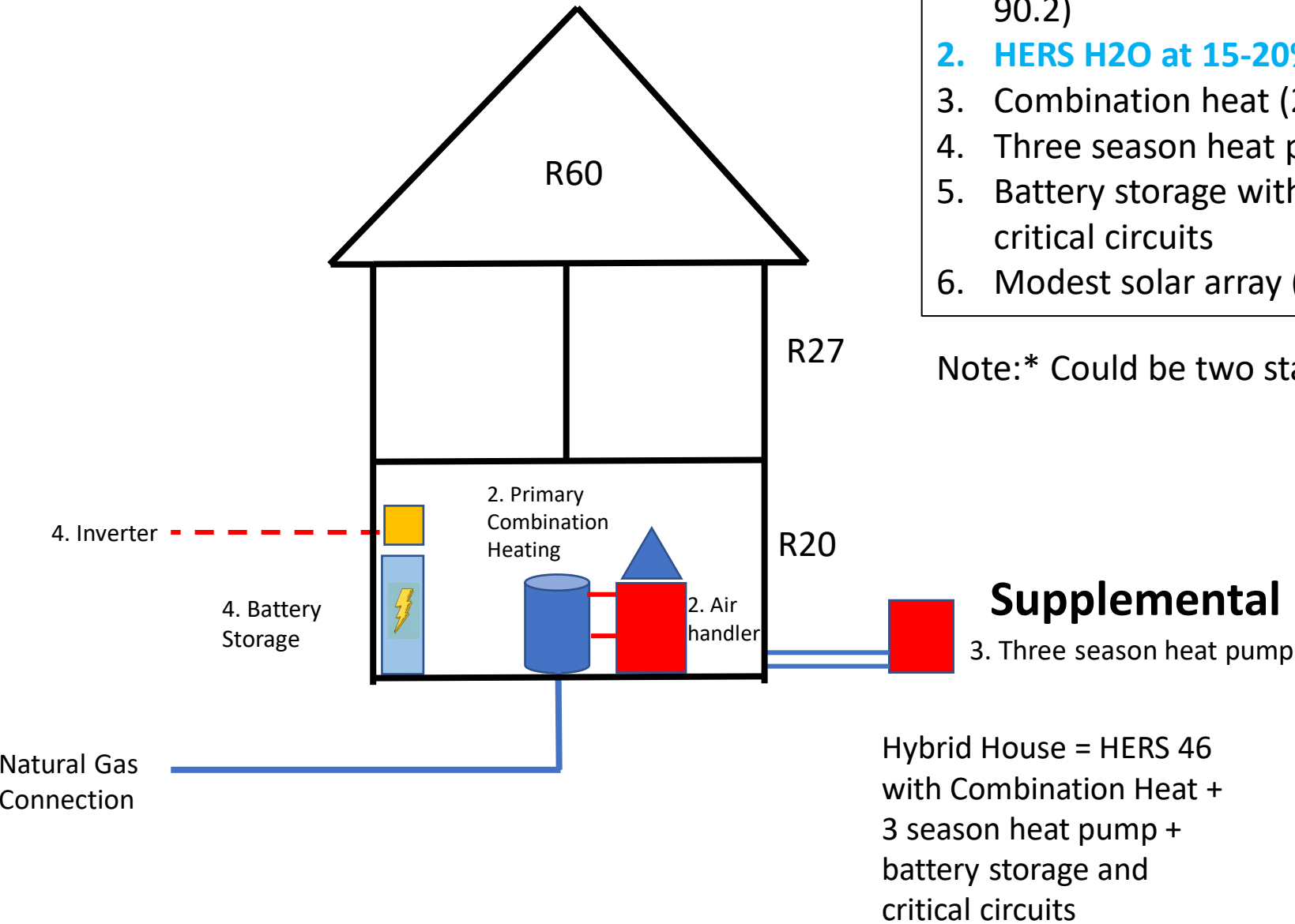
Lower fees

Lower rates



Builders like Campanale Homes and Heathwood Homes are already using this approach on projects.

HYBRID HOUSE FORMULA





Takeaway: Hybrid House with ASHP reduces carbon by
 $4291\text{kg} - 2239\text{kg} = 2062\text{kg}$ or 48%.

BETTER Builder

ISSUE 46 | SUMMER 2023

the builder's source

Simply the Best

**WINNERS
OF THE
2023
CROSS
BORDER
CHALLENGE**



Building Buy-In

Lindvest Homes Takes Home the Big Prize

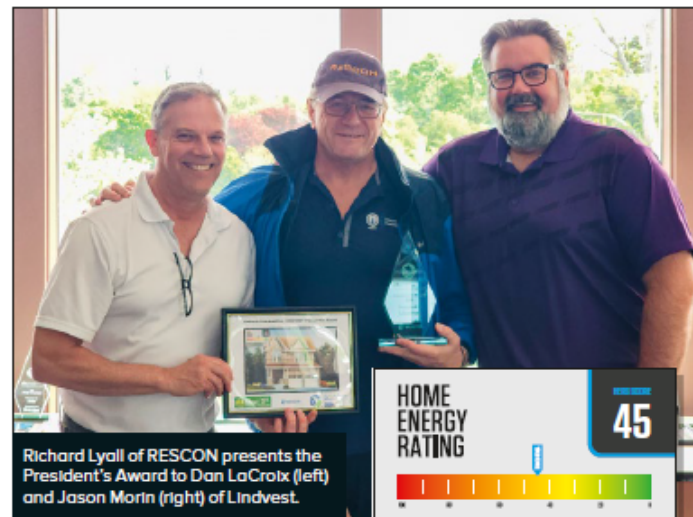
Over his nearly three-decade career in housing, Anthony Martelli has always been a big proponent of green building. "It's what I believe in," he says.

This philosophy has taken him from Greenpark Homes to LIV Communities to CountryWide Homes and, since 2018, to Lindvest, where he took over as CEO at the beginning of last year and has now guided the Toronto-based builder to the most coveted award available in the Cross Border Builder Challenge – the CRESNET President's Award.

Lindvest earned this honour for its Klein subdivision in Vaughan, Ontario, scoring an average fleet HERS score of 45. But, the truth is, the homes in this development weren't necessarily any better than Lindvest's usual offerings. That's because, as Martelli says, the company pretty much uses the same specs across all its projects.

Among the features the builder employed to help win this award were:

- Airtightness is very important to them, he says, and "we've found the best way to achieve that is through care and attention during the build process."
- A finish-ready basement (FRB) with ROCKWOOL on the outside of the framed wall, plus as much insulation as possible between the studs (R-22 or R-24). They really try to push up that R-value on the outside as high as they can, Martelli says. Many Lindvest homes have FRBs including R-10 under slab insulation.
- In terms of mechanicals, they use drain water heat recovery for pre-

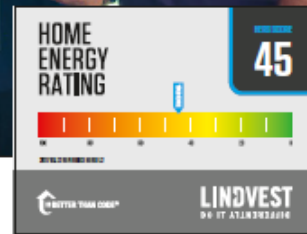


Richard Lyall of RESCON presents the President's Award to Dan LaCroix (left) and Jason Morin (right) of Lindvest.

heating (PowerPipe) with energy-efficient hot water tanks, furnaces and air handlers. Lindvest prefers energy recovery ventilators (ERVs) over heat recovery ventilators (HRVs) and heavily employs water-saving devices throughout the home.

For the Klein subdivision, Lindvest participated in Enbridge's Savings by Design (SBD) program and echoed the sentiments of countless builders who have graduated: the most valuable aspect of the initiative is the charrette, which offers a fantastic opportunity to strategize over building technique innovations and ensure the entire team is on the same page. "I think the best part of it was bringing everyone into the room and getting real-time feedback," Martelli says.

For instance, if the company proposes a new spec for a particular project when the stakeholders are



all there, they can get opinions or comments on it right away, and that's invaluable from an efficiency standpoint. "What appears to be a good idea in the boardroom doesn't always make its way to becoming a good idea in the field. So having them there to help vet some of the proposals, I think, was very beneficial."

He adds that this process really helped drive buy-in, because the key stakeholders (building supervisors, key trades, etc.) understood what the company was trying to do. "And that's part of the reason we've been so successful."

In fact, Martelli maintains that this buy-in is what differentiates Lindvest from other builders. The company takes a top-down approach to ensure their outside team gets very involved in understanding what the builder's

The first Tesla 'range inflation' lawsuit has been filed

Kirsten Korosec @kirstenkorosec / 12:59 PM EDT • August 3, 2023

 Comment



 Image Credits: Tesla

Several Tesla owners have filed a lawsuit against the U.S. automaker over allegations of consumer fraud a week after a [Reuters investigation](#) found the company had exaggerated the range estimates of its EVs for years.

Last week, [Reuters reported](#) that Tesla had inflated its range estimates, prompting owners to flood its service center over concerns that their vehicles needed service. The investigation, citing anonymous sources and industry experts, found that the directive to use algorithms to give rosier range numbers came from CEO Elon Musk.

As sales exploded, service requests also grew. To thwart the influx of requests and help keep costs in check, Tesla created a special “diversion team” dedicated to handle so-called “range cases” — meaning owners complaining of lower ranges than expected, according to the Reuters report. Diversion team members were trained to tell owners that the EPA-approved range estimates were just a prediction. They would also provide tips to customers on how to extend range. The team's goal was to cancel as many of those appointments as possible,

ANALYSIS OF THE MEASURED vs PREDICTED ENERGY PERFORMANCE OF NET ZERO ENERGY AND NET ZERO ENERGY READY HOUSES – SOME LESSONS LEARNED

House

Gas Usage – Why Was It So High?

- 2 Houses used gas for space heating with electric DHW
- 5 Houses used gas for space and DHW heating

House	Climate Region	Gas Consumption (GJ)			DHW
		Predicted	Actual	Predicted-Actual	
2	7A	15.6	39.9	-24.3	Electric
3	6	1.9	7.5	-5.6	Electric
4	6	11.7	29.2	-17.5	Gas
7	6	11.5	10.1	1.4	Gas
8	5	11.4	23.8	-12.4	Gas
11	5	12.7	34.5	-21.8	Gas
12	5	11.6	44.3	-32.7	Gas
Mean (Predicted – Actual) Gas Use Gas heating, electric DHW				-14.8	
Mean (Predicted – Actual) Gas Use Gas heating, gas DHW				-16.6	

For the 13 Houses:

Mean predicted energy use:
25.4 GJ/yr

Mean measured energy use:
35.3 GJ/yr

Actual average electrical and natural gas consumption
9.9/25.4 = 40% over predicted on Net Zero and Net Zero Ready Houses

Solar PV

PV System Performance

House	HOT2000-Predicted PV Generation (kWh/yr)	Measured PV Generation (kWh/yr)	Percent Achieved
2	14,174	9,710	69%
12	9,875	8,875	90%
13	12,975	9,570	74%
		Average	78%

On Net Zero Houses, photovoltaic powered generation is **22%** less energy predicted by software.

Hybrids versus Electric Cars

Michelle Krebs, executive analyst with Cox Automotive, says these concerns are common. And as a result, hybrids are much more popular with shoppers than all-electric vehicles.

"About 11% of all new car shoppers look at EVs," she says. "About 20% of all new car shoppers shop for hybrids."*

Actual sales figures are lower, for both types of vehicles, because there [aren't enough vehicles to meet demand](#). But the shopping figures show that a lot of people want hybrids, if they can get their hands on them.

<https://www.npr.org/2023/02/24/1158306767/prius-toyota-hybrids-electric-car-climate-change#:~:text=Michelle%20Krebs%2C%20executive%20analyst%20with,car%20shoppers%20shop%20for%20hybrids.%22>

*These are 2022 sales numbers

Brian and Sonny talk about Integration for the nation



Combination Hybrid Heat with ERV

Panasonic ERV 100
Exhaust ducted to
bathrooms



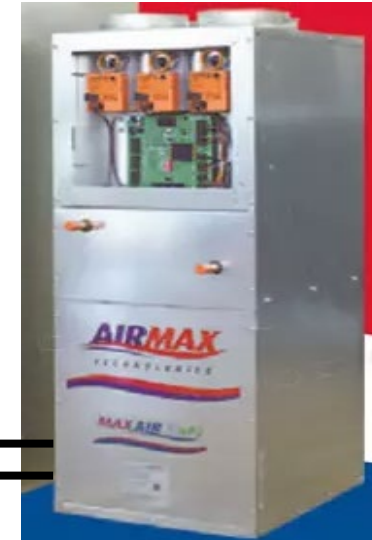
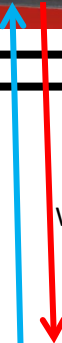
Matched
horizontal
discharge
compressor
at HSPF@8.8
1.5 tons



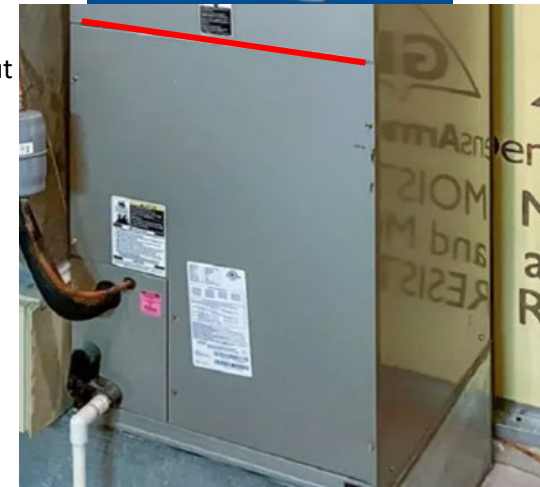
Combination
boiler – Glow C95



Water in
Water out

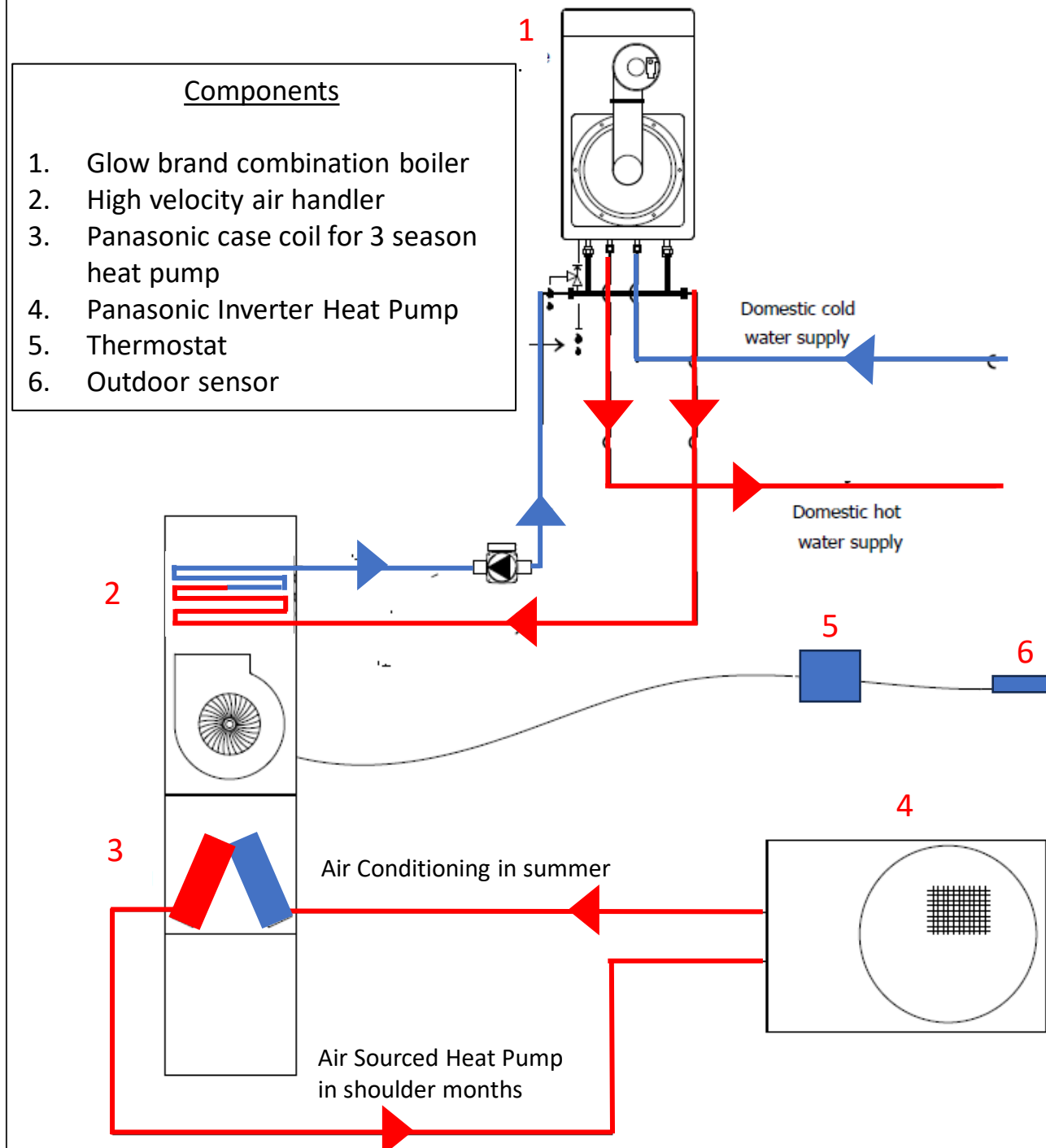


High Velocity
Zoned Air
Handling System



Case coil for air
conditioning and 3
season heat pump

Combination Hybrid Heat “How it Works”



Condensing hot water tank performs in 2500 sqft house built to the 1997 building code.
Enough space heating and hot water for a family of four during a very cold 2022 winter.



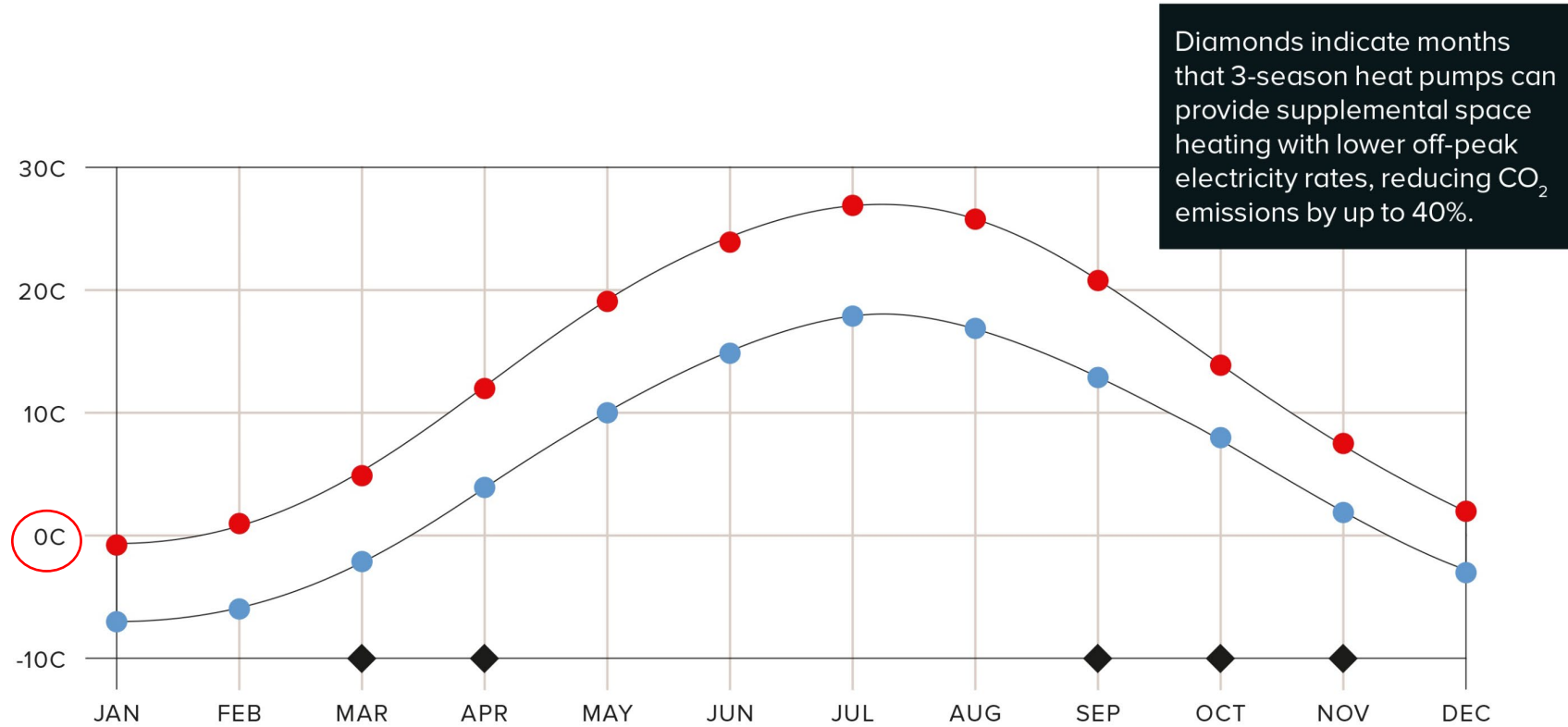
- Condensing furnace and power vented tank retrofitted with EnviroSense 5065 and Airmax low velocity air handler.
- Monitored over a 2-year period with a 19% reduction in gas consumption.

Notes:

- Complies with CSA B214 standard
- Air delivery improved with ECM blower
- Less gas piping and less venting

Average minimum and maximum temperatures in Toronto, Canada

Takeaway: 3 season heat pumps can provide supplemental heat in shoulder months



Average minimum and maximum temperatures in Toronto Canada

Copyright © 2020 www.weather-and-climate.com

◆ Months where average temperatures are near or above freezing

Ontario Electricity Rates

Ultra-Low Overnight (ULO)

ULO Price Periods	All Year	ULO Prices (¢/kWh)
Ultra-Low Overnight	Every day 11 p.m. - 7 a.m.	2.4
Weekend Off-Peak	Weekends and holidays 7 a.m. - 11 p.m.	7.4
Mid-Peak	Weekdays 7 a.m. - 4 p.m. and 9 p.m. to 11 p.m.	10.2
On-Peak	Weekdays 4 p.m. - 9 p.m.	24

Ultra-Low overnight rates can run heat pump in shoulder months



Takeaway: Hybrid House with ASHP reduces carbon by
 $4291\text{kg} - 2239\text{kg} = 2062\text{kg}$ or 48%.

Combination Hybrid Heat for Dummies – A wise use of Natural Gas

Combination Heat + 3 season heat pump = Total CO2 reduction

carbon drops 20%

(GTI studies show
30% with full modulation)

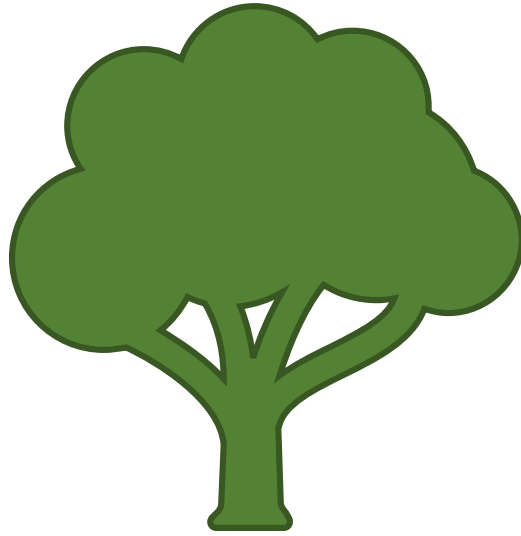
carbon drops 30%

(Low time-of-use electricity
used to offset natural gas
and save money)

48%

(modelled for reference house on REMRate)

Lowest cost strategy for highest impact on CO2 emission reductions. Envelope improvements show diminishing marginal returns and increased embodied carbon.



Code Harmonization and Green Building Standards Update

Paul De Berardis

Outgoing board
members,

Thank you!

Frank Buck

Dan Murphy

Travis Schiller

Thresholds represent
government programs

Tier 4 – Net Zero
Tier 5 – Passive House

Proposed OBC 2024
by municipal affairs
and housing

National Building Code 2020 9.36 Energy Code Tiers

Baseline is current 9.36 performance,* plug/lighting loads not included.

TIERS 4 AND 5 IN DANGER FOR MUNICIPAL OVERREACH

TIER 1 — 0% IMPROVEMENT

TIER 2 — 10% IMPROVEMENT

PACKAGE A1 — 15% IMPROVEMENT

TIER 3 — 20% IMPROVEMENT

TIER 4 — 40% IMPROVEMENT

TIER 5 — 70% IMPROVEMENT

Savings by Design would be a 35% improvement over Tier 1, not far to Tier 4

REVISED PROPOSED CHANGE FOLLOWING PUBLIC REVIEW

[9.36.5.3.] 9.36.5.3. Compliance

- [1] 1) The performance compliance calculations shall determine the annual energy consumption of the proposed house and the house energy target of a reference house in accordance with
- [a] a) this Subsection, or
 - [b] b) the EnerGuide Rating System, version 15, and Sentence (2).

(See Note A-9.36.5.3.(1).)

Note A-9.36.5.3.(1) Energy Modeling.

The energy modeling of the proposed and reference houses should be performed using the same software. An energy modeling platform other than the EnerGuide Rating System may be used to demonstrate compliance with Clause 9.36.5.3.(1)(a).

THE ONLY RATING SYSTEM MENTIONED IS ERS

August 14, 2023

BY EMAIL: lyall@rescon.com

Our File No. 306758

Richard Lyall
President
Residential Construction Council of Ontario
13-25 North Rivermede Road
Vaughan, ON L4K 5V4

Dear Mr. Lyall:

Re: Building Code Harmonization
Proposed Changes 1608 & 1620
Alignment of Subsection 9.36.5 of the National Building Code ("NBC")
with the EnerGuide Rating System ("ERS")

Aird & Berlis LLP was retained by Residential Construction Council of Ontario ("RESCON") to provide an opinion letter regarding the above referenced matter.

We have reviewed the materials you have provided and examined the genesis and consideration that this proposal has received to date. For reasons set out herein, we are of the opinion that:

1. The proposed changes, in effect, mandate the use of the ERS notwithstanding certain assurances to the contrary.
2. The justification and impact analysis for the proposed changes are superficial and fail to adequately consider existing data on the efficacy and accuracy of the ERS and the effect of the proposed changes on the construction industry in Ontario.
3. Revisions to the proposed changes are required to remedy the current shortcomings of the proposed changes.
4. If revisions are not made, Ontario should exercise its right pursuant to s. 2.3 of the Reconciliation Agreement on Construction Codes, to create a variation or exception from the harmonized code to maintain the OBC's current choices of rating systems set out in Supplementary Standard SB-12 "Energy Efficiency for Housing".
5. Further consideration should be given to whether the proposed changes are contrary to the Canada-United States-Mexico Agreement and/or a complaint should be filed with Canada's Competition Bureau.

Some background information will first be set out.

OPINION

simply as an acceptable compliance path, the provisions of 9.36 and the Tables in s. 9.36.5 will apply and mandate ERS inputs be used in other energy rating systems.

In our opinion Note A-9.36.5.3(1) should be revised to both replace the word "platform" with "modelling tools or software", including their unique inputs, and that other acceptable compliance paths are explicitly defined as including the use of:

- HOT2000 version 10.51 or later versions
- other software referenced by the EnerGuide Rating System
- Passive house software such as
 - WUFI Passive
 - Passive House Planning Package
- RESNET accredited Home Energy Rating System (HERS) software, such as:
 - ICF International Beacon Residential Version 2-80-3
 - Ekotrope, HERS Module v2.0
 - EnergyGauge@ USA Version 5.0
 - REM/Rate v14.6.2

If the suggested revisions to PCF 1608 & 1620 are not made, Ontario should exercise its right pursuant to s. 2.3 of the Reconciliation Agreement on Construction Codes, to create a variation or exception from the harmonized code to maintain the OBC's current choices of rating systems set out in Supplementary Standard SB-12 "Energy Efficiency for Housing".

Ontario's Building Code Act, 1992 ("BCA")⁵

While section 34 of the BCA provides Ontario with broad general regulation-making authority to establish governing standards for the construction of buildings, it is doubtful that such power could be used to mandate a single proprietary energy rating system be used exclusively in the province to the exclusion of all other rating systems.

Ontario's practice to date on rating systems is well established and been well received by the construction industry. Supplementary Standard SB-12 "Energy Efficiency for Housing" has set the standard for permitting a range of rating systems, allowing the use of numerous home label programs and energy rating systems in Canada, the United States and beyond. Aligning the NBC and OBC with the ERS creates an inherent bias towards one proprietary rating system, whereas building codes are not intended to support or favour any commercial products or programs, as this represents a clear conflict of interest. In fact, as previously noted, the Consumers Council of Canada issued a report titled "Incenting Energy Efficient Retrofits", whereby the findings include the recommendation that regulators allow a range of energy performance and ratings systems, contrary to the direction taken by the proposed changes discussed in this letter.

Under the current OBC Supplementary Standard SB-12, in section A-3.1.2.1. Application of Performance Compliance Path, several acceptable energy use software options are listed, facilitating an unbiased approach to rating systems and the performance path. To not present a bias, the harmonized code should list viable approval options, instead of referencing and aligning with the single rating system.

⁵ S.O. 1992, c. 23, as amended

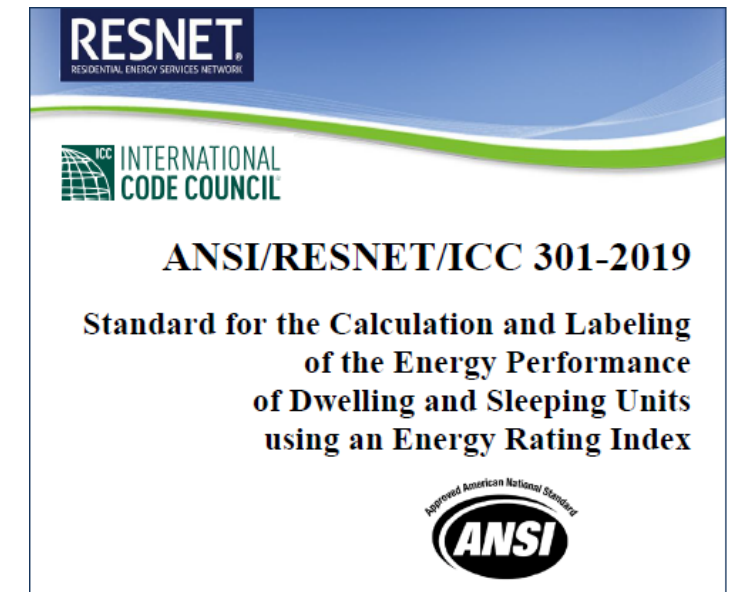
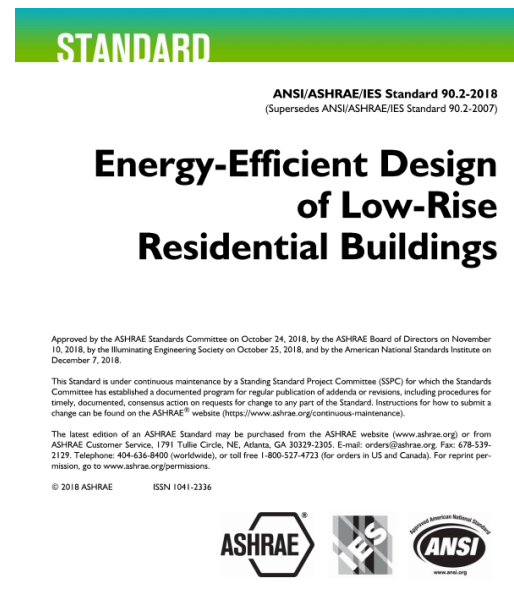
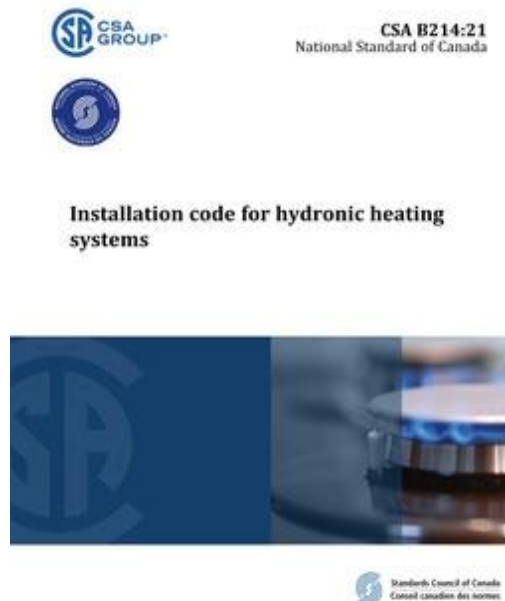
While section 34 of the BCA provides Ontario with broad general regulation-making authority to establish governing standards for the construction of buildings, it is doubtful that such power could be used to mandate a single proprietary energy rating system be used exclusively in the province to the exclusion of all other rating systems.

The difference between a standards and programs

Standards come from standards organizations like ANSI or CSA. A standard organization provides and promotes a process that withstands scrutiny while protecting the rights and interests of every participant. Standards can be used for voluntary compliance or legislated into codes.



These are standards



Programs

Programs are developed by special interest groups for policy or profit. Most special interests refer to their programs as standards, however, if they have not gone through a standards process, they are guidelines.

These are examples of programs which use brands and have rating systems attached to them.



Energide Rating System



Zero Carbon “Standard”

Green Building Standards around the GTA that allow equivalency

GTA			
Location	Mandatory	Voluntary	Incentives/Comments
Aurora	✓		Estar or BTC 15% & checklist
Brampton		✓	Estar or BTC 15% & checklist
Caledon	✓		9% BTC & Checklist
City of Ottawa	✓		Tier 1 Estar, Tier 2 NZR
Haltons Hills	✓		Estar or BTC 15%
King City	✓		Estar or BTC 15%
Kitchener		✓	Estar or BTC 15%
Markham	✓		Net Zero Ready Demonstration
Pickering		✓	Estar or BTC 15%
Richmond Hill	✓		ERS 83 or BTC 15%
East Gwillimbury (SDIP)		✓	Estar & Water Eff. Checklist
Vaughan	✓		Estar or BTC 15% & checklist
Whitby	✓		Estar Design, Estar, NZR, NetZero

The Pickering and Whitby Green Building Standards usually include programs

- The planning act does not give the authority to municipalities to mandate, mandatory compliance with programs like ENERGYSTAR or Net Zero.
- The Pickering Green Building “Standards” are an example of offering builders a choice in their approach. Notice ENERGYSTAR is attached to modelled equivalency, i.e 15% Better than Code.

Pickering Integrated Sustainable Design Standards

Low-Rise Residential

Performance Measures		Performance Criteria			For Submission		
Number	Development Feature	Tier 1 Mandatory	Met	Tier 2 Optional	Met	Documentation	Comments
ER2	Building Energy Performance and Emissions	Design and construct all buildings to achieve or exceed the Energy Star® for New Homes, latest version, or demonstrated modeled equivalent (e.g., Better Than Code ® using Home Energy Rating System (HERS)). or Design and construct all buildings to meet or exceed the Energy Performance Emissions' Total Energy Use Intensity (TEUI) , Thermal Energy Demand Intensity (TEDI) and GHG Emission Intensity (GHGI) targets.	<input checked="" type="checkbox"/>	Design and construct all buildings to achieve a minimum energy performance level of 25% or better than the Ontario Building Code requirements in force at the time of application. or Design and construct all buildings to meet or exceed the Energy Performance Emissions' Total Energy Use Intensity (TEUI) , Thermal Energy Demand Intensity (TEDI) and GHG Emission Intensity (GHGI) targets.	<input type="checkbox"/>	<input checked="" type="checkbox"/> Energy Modelling Report or other documentation demonstrating compliance with the target standard.	
ER3	Renewable Energy	Design and construct all buildings to be solar ready . or Incorporate web-based Home Energy Management Systems (HEMS) .	<input type="checkbox"/>	Incorporate on-site renewable energy sources of power generation to meet 5% or more of the building energy needs. or Incorporate peak shaving devices like battery storage.	<input type="checkbox"/>	<input type="checkbox"/> Drawings, plans, or other documentation demonstrating compliance.	

Currently under the Durham climate plan, Tier 5 is being considered as a minimum.

Example: Town of Whitby Performance Standard has already incorporated NBC's Step Code

Energy & Climate Change: Making buildings and manufacturing energy efficient and supplying all energy with renewables.

Development Feature	Tier 1 Criteria	Tier 2 Core Performance Criteria	Tier 3 Core Performance Criteria	Tier 4 Core Performance Criteria
District Energy Systems	Explore options to connect to existing on-site energy			
Renewable Energy	Determine the feasibility of energy generation from renewable	Ensure that buildings are designed to accommodate		
Passive Solar Orientation	Where feasible, 50% (or more) of the development blocks			
Building Commissioning		Commission the building using best practice commissioning.		
Energy Efficient Appliances		Provide Energy Star or equivalent labeled appliances.		
Building Energy Performance	Design the building to achieve 15%	Design the building to achieve Tier 2 TEUI, TEDI and GHGI	Design the building to achieve Tier 3 TEUI, TEDI and GHGI	Design the building to achieve Tier 4 TEUI, TEDI and GHGI
Building Energy Performance For low-rise residential development	Design the building(s) to achieve at least ENERGY STAR® for New Homes, version 17, R-2000® requirements or equivalent	Design, construct and label the building(s) to achieve at least ENERGY STAR® for New Homes, version 17, R-2000® requirements or equivalent	Design, construct the building to be Net Zero ready in accordance with the CHBA Net Zero Home Labeling Program or equivalent.	Design and construct the building in accordance with the CHBA Net Zero Home Labeling Program or the Passive House Standard.

Voluntary design to
ESTAR or equivalent

(NBC Tier 3)

Label to ESTAR or
equivalent

(NBC Tier 3)

Design to Net-Zero
or equivalent

(NBC Tier 4)

Label to Net-Zero
or Passive House

(NBC Tier 5)

NO EQUIVALENCY

- Over the past 10 years SB-12 has allowed the development of equivalency to government programs such as ENERGY STAR and Net-Zero

The Low Carb Quiz

1. Crystal is asking, which is the most informative builder magazine?
☐ Fine Home Building ☐ Better Builder Magazine
2. Nick wants to know, which is the best way to get a building permit in Ontario?
☐ Performance path ☐ Other
3. Howard wants to know, which heating system is more efficient?
☐ Furnace and hot water tank ☐ combination heating system
4. Suren wants to know, do electric vehicles actually get the range that drivers are promised?
☐ Yes ☐ No
5. How do you think John would answer the following question?
Which approach can reduce CO2 emissions in a house by 50% at the lowest cost?
☐ Hybrid House ☐ Net Zero Ready