

Zero Net Carbon Homes How, What and Why?

**Master Builders Association Victoria
Green Living Conference**

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Team Lead – Sustainable Homes

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Vision

A sustainable, thriving
Victoria

Purpose

Transitioning Victoria to a
circular climate resilient
economy

Challenge

Net zero emission, circular
economy in Victoria

For more information please refer to
[Our Year in Review](#)



**Enabling resource recovery
and reuse**



**Changing the way we manage
our waste**



**Identifying future
opportunities through data
insights**



**Circular economy at work –
from waste to energy**



**Working with industry to
produce affordable
sustainable homes**



**Sustainable education for a
brighter future**



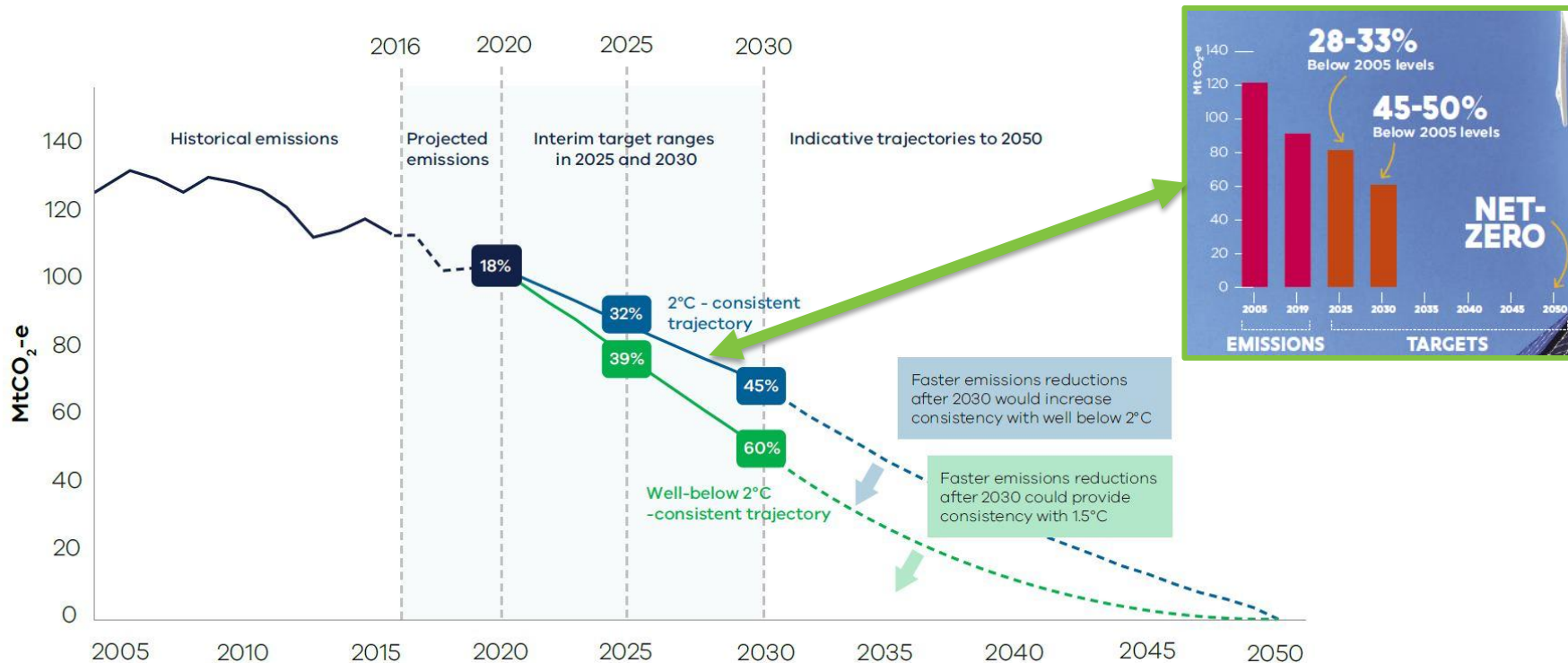
**Educating Victorians about
correct recycling behaviours**



**Enabling communities to
create local climate solutions**



Why and How? Climate Change Act (2017)



ZNC Homes Program



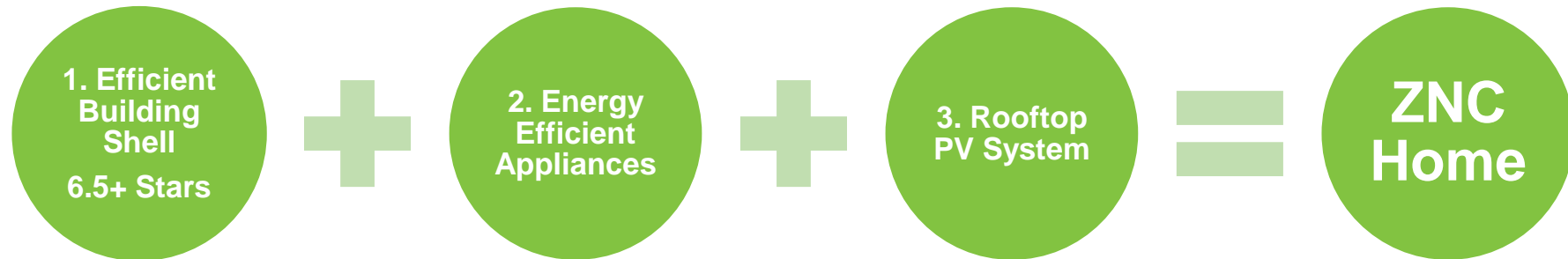
\$2.182 million pilot program to partner with three volume home builders to improve the supply of ZNC Homes and increase the consumer demand for ZNC homes.

Performance Measure	Achieved Outcome	Planned Outcome
ZNC homes built	38	6
ZNC display homes built or in the pipeline	10	6
ZNC home sales to consumers	178	Offer only
ZNC home sales without financial support from SV	140	Offer only
Number of Customer enquiries	812	500
Reach	115,000 (SV channels only)	7,000
Research pieces delivered	7	4



What is a Zero Net Carbon Home?

Designed to produce enough renewable energy to offset the annual greenhouse gas emissions of its estimated energy use.



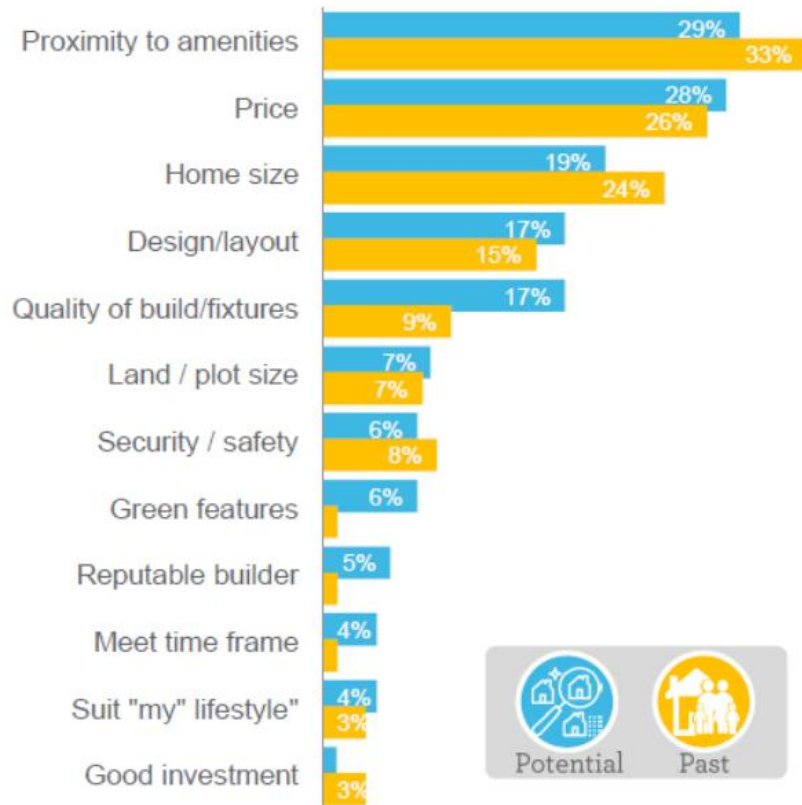
Homes need to undergo As Built Verification – air leakage & insulation

“A man’s home is his castle..”

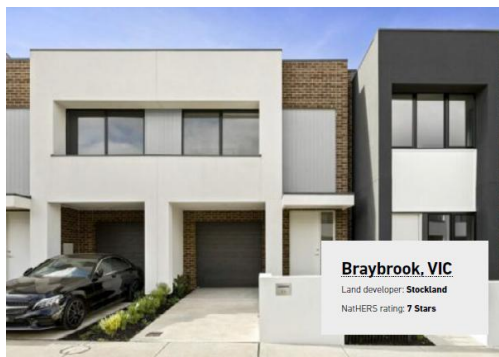




“LOCATION, LOCATION, LOCATION”



What did the homes look like?





Business as Usual to Zero Net Carbon

ZNC Display home details:

Located in Officer South
4 Bedrooms, 2 bathrooms, two
living areas, double garage
232 m² net floor area
ZNC rated 6.5 Stars NatHERS
As displayed purchase cost
\$364,265



Original Design:

6 Star NatHERS with standard appliances

V Upgrades chosen to get the 6.5 Stars and ZNC



Appliance upgrades:

Ducted reverse cycle air-conditioner with
ACOP and AEER of 3.4

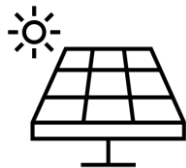
LED downlights and feature lights

Element:	Option:	6 Star (Business as Usual)	Final Design (ZNC compliant)
Roof		Reflective foil sarking	Reflective foil sarking
Ceilings		R6.0 batts	R6.0 batts
Walls (external)		R2.5 batts + wrap	R2.5 batts + wrap
Walls (internal)		R2.0 batts to all	R2.0 batts to all
Floors		Waffle pod slab	Waffle pod slab
Windows & Glazed Doors		Aluminium framed, clear double glazing generally, except: Clear single glazing to large sliding / stacker doors (Dining, Family & Bedroom 1)	Timber framed, clear low-e double glazing generally, except: Clear low-e single glazing to large sliding / stacker doors (Dining, Family & Bedroom 1)

Proposed design:
(South living area orientation)

6.0 Stars

6.5 Stars



6 KW

Outcomes



Savings:

Energy Savings	103% (61 GJ)
Emission reduction	105% (7 tCO ₂ -e)
Cost saving p.a.	58% (\$1,522)

Additional benefits:

Increased comfort for the occupants

These homes are available for anyone within Victoria.



BAU | 6 star with builder standard appliances

ZNC | 7 star with ZNC Homes program specification appliances and solar PV

typology	<ul style="list-style-type: none">• 3 townhouses• 5 small detached (<200sqm)• 7 large detached (>200sqm)
size	<ul style="list-style-type: none">• 111sqm to 294sqm
fuel mix	<ul style="list-style-type: none">• 5 all-electric• 10 electric and natural gas
climate zones	<ul style="list-style-type: none">• 8 in outer south-east Melbourne (62)• 3 in outer northern Melbourne (60)• 4 in Ballarat* (66)



Research from ZNC homes Program

Zero Net Carbon Homes:

1. **Produce no net emissions** in their operational phase and save 75 tonnes of CO₂ or more between now and 2050
2. **Need between 4 – 6 KW solar** if paired with thermally efficient envelope and efficient appliances
3. **Save money on your mortgage** from the reduction in bills from the onset even if you increase the loan value to pay for the upgrades which cost 3.8 – 6.7% extra to build
4. **Are built with existing materials and technology**
5. **Are attractive to buyers** provided they are explained the benefits

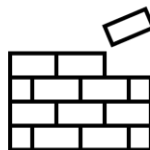


Beyond ZNC; The 7 Star Homes Program

**Builders
signed up**



Design



Build



As Built
Verification



Complete & rebate
paid

Builders = 29
Target was 20

30 to date
64% are ZNC
7.6 stars rating average
Target is
7 Star whole of home
design

Homes = 81
Target was 80

5 homes built
Target is 80

**4 houses
completed ABV**
Target is 80

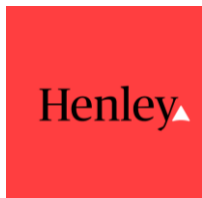
Provide training and support in:

- > Whole of Home assessment
- > 7 star plus design & construction
- > As built verification
- > Selling sustainable homes



Builders in the 7 Star Homes Program

Mansion Builders Pty Ltd





If you are interested

[Register for the 7 Star Homes Program training](#)

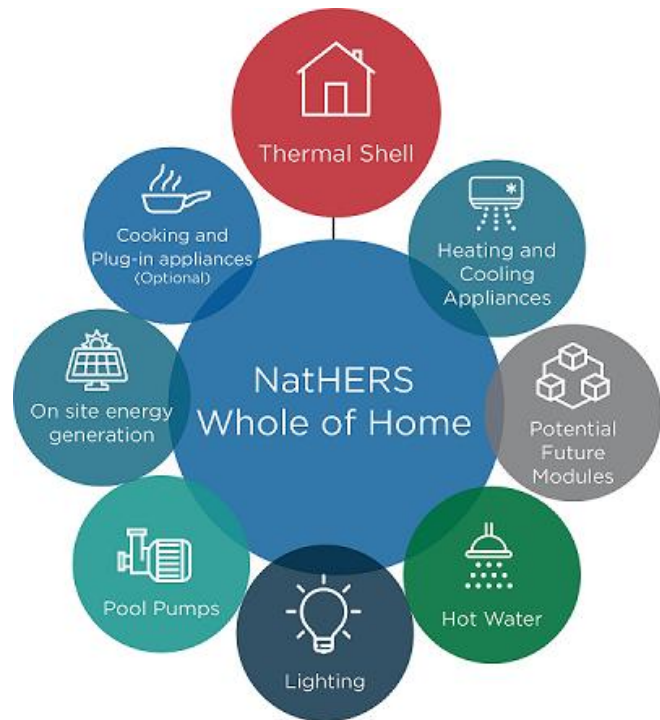
Case studies:

[ZNC Homes Program](#)

[7 Star Homes Program](#)

[Research from the ZNC homes program](#)

Or contact inge.Sarunic@sustainability.vic.gov.au



V Questions?

