



THE SENATE

Senate Economics References Committee

Inquiry into residential electrification

**Answer to a question on notice from AusNet, asked by Senator David Pocock
at a public hearing in Canberra on 22 November 2023**

(Received 6 December 2023)

Question

Senator DAVID POCOCK: That's fascinating. Are you able to provide any data on that in terms of actual loads that seven-star versus an existing standard stock house would be pulling in peak times?

Ms Eddy: I can definitely take that on notice. One of the limitations is that the current seven-star estates tend to be based in holiday destinations—very high-end households—so they don't necessarily give an accurate picture of what it would look like in a broader rollout—

Senator DAVID POCOCK: Day in, day out.

Ms Eddy: but I'll take that on notice.

Senator DAVID POCOCK: Thank you.

(Proof Committee Hansard, p. 12)

Answer

Please see attached.

AusNet

Demand Data for 7* homes vs all electric homes

03 October 2023



What we looked into

	The Cape Estate, located in Cape Paterson, Victoria (7.5+ star homes)	AusNet All Electric Homes (Segmentation study)	Cape Paterson 6+ Star Homes (Built after 2011)
No. of homes	90	352	104
% with PV	100%	40%	31%
Avg. PV capacity (kW)	5.2	5.1	4.8
Main Gas	No	No	No
Hot Water System	Heat Pump	Various	Various
Tariff	Various;	Various	Various
Location	Regional	Metro + Regional	Regional

Data covers the period between Sep 2022 and Aug 2023.

Smart meter data was analysed. Victoria has close to 100% smart meter penetration which provide 5 minute energy consumption data.

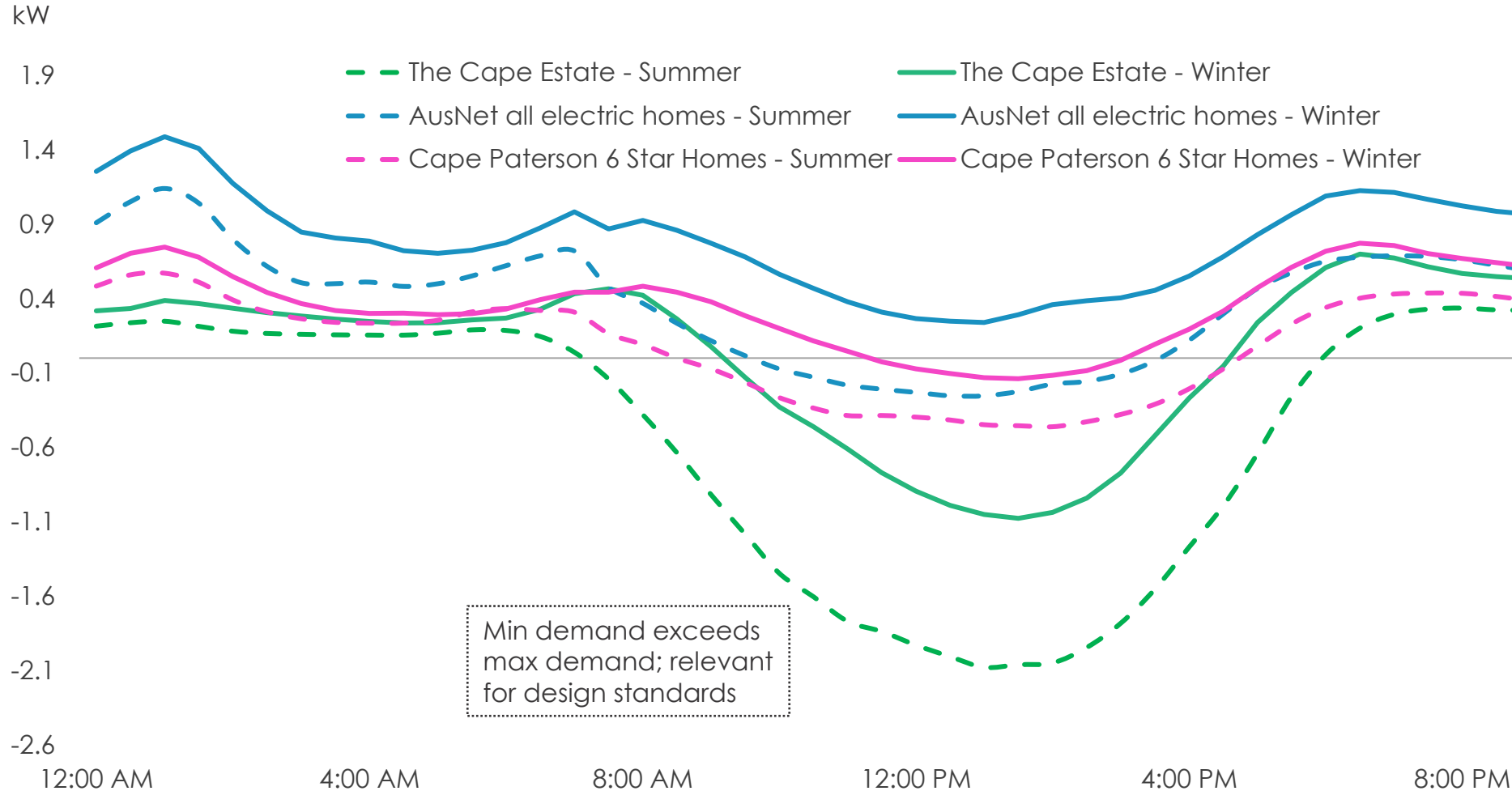
Only homes with a minimum of 12 months usage data were included (i.e. no brand new homes)

Data for AusNet all electric homes was sourced from our Customer Segmentation study (described in our submission to the Inquiry) as through this survey we identified customers without mains or LPG gas (self-reported).

Daily usage pattern

Average over study period (Sep. 2022 – Aug. 2023)

Average demand illustrates differential in energy use across the different housing types. This is not relevant for network capacity planning for which **peak demand data** is required (see next slides)
Note – consumption is low as includes vacant periods.



Min demand exceeds max demand; relevant for design standards

Drawing from grid



Exporting to grid



Non-coincident maximum demand per dwelling

Season	Group	Lowest MD (kW)	Average MD (kW)	Highest MD (kW)
SUMMER	The Cape Estate homes	0.47	4.22	12.61
	AusNet electric homes	1.16	6.30	22.68
	Cape Paterson 6 Star Homes	2.24	5.06	9.88
WINTER	The Cape Estate homes	1.52	5.73	16.30
	AusNet electric homes	1.70	7.19	29.08
	Cape Paterson 6 Star Homes	2.61	5.85	10.00

This shows peak demand (ie the highest or lowest 30 min demand observation) averaged across all houses.

This is relevant for planning the network capacity to each individual house but diversity must be applied when planning network capacity further upstream – because not all houses will record peak demand at the same time.

- The Cape shows lowest average MDs per dwelling both in winter and summer; has the largest difference between summer and winter peak
- Across all 3 groups, winter's average peaks are higher than summer ones

Coincident Maximum Demand (ADMD) is lower given Cape Paterson is a holiday destination

These numbers record peak demand of the relevant sample, divided by the number of households. This captures diversity (ie not all households peak at once).
 These results do not reflect the expected impact of electrification across the network due to nature of the Cape Estate (see below commentary)

Season	Group	Date	Time	ADMD (kW)
SUMMER	The Cape Estate homes	07/01/2023	22:30	0.69
	AusNet electric homes	27/12/2022	18:00	1.51
	Cape Paterson 6 Star Homes	27/12/2022	19:00	1.61
WINTER	The Cape Estate homes	25/06/2023	18:30	1.33
	AusNet electric homes	20/06/2023	01:30	1.84
	Cape Paterson 6 Star Homes	09/04/2023	18:30	1.49

The Cape Estate has the lowest ADMD, both in summer and winter, compared to the other 2 groups. Impacted by small sample size and being a holiday destination which adds to diversity (unlike a new 7* development in growth corridors)

Cape Estate ADMD also less than solar export (which will increase if property is vacant).

- In 2022 Winter ADMD was higher than summer ADMD by:
 - **92%** for the Cape Estate Homes
 - **22%** for AusNet electric homes
 - **-7%** for Cape Paterson 6 Star Homes
- 2022-23 had warmest winter since at least 2010.
- Also impacted by location, climate, income, house size and number of occupants, occupancy rates etc.
- Need to consider sustained extreme weather – eg LV network failures over public holiday in 2018
- **The impact of EVs is expected to increase ADMD in future**

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Thank You

