

**AusNet**

# Household Energy Cost Analysis

**31 Jan 2025**

Assumptions Document



# Purpose and contents

## Purpose

- Incorporates our current EDPR expenditure forecasts (i.e. the distribution component), and relies on several internal (e.g. 2023 customer segmentation) and external, publicly available data sources (ECA 'Stepping Up' report) for other bill components and key inputs/ assumptions
- Captures annual household 'running costs' and the cost of solar PV and wiring if applicable (i.e. upfront purchase costs of electrical appliances and EVs are excluded on the basis that these purchases will be made at end of life of existing appliances/vehicle, at cost parity)
- Includes the following three different household types, **with** and **without** solar PV
  - Dual fuel + ICE vehicle
  - Electrified household + ICE vehicle
  - Electrified household + EV
- Is expressed in real 2026 dollars (\$2026).

## Contents

1. Purpose
2. Methodology & assumptions
3. Acquisition Costs

# Our methodology and assumptions

## Our methodology:

- Assesses usage profiles for electricity, gas, petrol and electric vehicles over time
- Applies forecast prices of each technology over time and creates a cost stack of usage x price for each component
- Draws on credible third-party resources where available

## Exclusions from the methodology:

- Upfront costs related to electrification of appliances

## Note:

- Car ownership follows a conservative assumption of 1 compared to the AusNet average of 2.2 cars (Australian average 1.7 cars). This would make our analysis more favourable for customers with multiple cars
- Alignment with new EV usage profiles published by AEMO
- Gas and electricity consumption slightly higher than Vic Gas Substitution Roadmap

Component	Sources (Current as at July 2024)	Assumption
Current usage data	<ul style="list-style-type: none"> <li>• Frontier Economics analysis of gas network data</li> <li>• Survey of Motor vehicle use</li> <li>• AusNet segmentation study</li> <li>• AEMO Detailed EV Workbook</li> </ul>	<ul style="list-style-type: none"> <li>• Gas: 49,800MJ per household</li> <li>• Petrol/ICE: 1 vehicle per household, 11,100km/year for passenger vehicles that are Petrol/ICE and 11.1L/100km fuel efficiency</li> <li>• EV: 1 vehicle per household, 11,000km/year</li> <li>• Segmentation study averages for dual fuel and electrified households</li> </ul>
Current fuel prices	<ul style="list-style-type: none"> <li>• ACCC</li> <li>• ECA/CSIRO</li> <li>• AusNet pricing</li> </ul>	<ul style="list-style-type: none"> <li>• Petrol/ICE: \$1.83/L assumption</li> <li>• Wholesale \$149/MWh</li> <li>• Transmission \$21/MWh</li> <li>• Distribution \$112/MWh + Fixed charge</li> <li>• Retail \$75/MWh</li> <li>• Policy costs \$6/MWh</li> <li>• EV \$357/MWh</li> <li>• Gas \$0.03/MJ</li> </ul>
Forecast fuel price data and usage	<ul style="list-style-type: none"> <li>• ECA/CSIRO (well-coordinated) forecasts</li> <li>• AusNet Internal model</li> </ul>	<ul style="list-style-type: none"> <li>• Wholesale NEM electricity generation prices</li> <li>• Gas VIC average cost</li> <li>• Retail VIC average electricity cost</li> <li>• Distribution projections as per price impact analysis</li> <li>• Electricity/PV usage constant +/- any shift in EV usage</li> </ul>

# Assumptions for distribution component

Assumptions for distribution charge listed below:

- Household type usage has utilised AusNet smart meter data and our segmentation study data for dual fuel households and electrified households
- Electrified households with an EV – utilise the EV annual consumption from AEMO's forecast
- AusNet forecasts around total energy delivered and total customers
  - Residential energy delivered rate of change is in line with ESOO 2023
  - Residential revenue is in line with the rate of change for residential energy delivered
  - Residential customers forecast by AusNet using residential rate of change
- Fixed charge trended forwarded with CPI

## Energy indicated is net (inclusive of two-way flows)

USAGE MWh		FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	Base
Dual fuel	MWh	5.2	5.2	5.2	5.2	5.3	5.3	5.4	5.4	5.5	5.5	14.6kWh/day
Electrified House	MWh	6.5	6.5	6.5	6.6	6.7	6.7	6.8	6.9	6.9	7.0	17.9kWh/day 17.9kWh/day + consumption per EV
Electrified + EV	MWh	6.5	6.5	6.5	6.6	6.6	6.6	6.6	6.7	6.7	6.7	4.4kWh/day
Dual fuel + PV	MWh	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	8.1kWh/day 8.1kWh/day + consumption per EV
Electrified Household + PV	MWh	3.0	3.0	3.0	3.0	3.0	3.0	3.1	3.1	3.1	3.2	9.6kWh/day EV usage
Electrified Household + EV + PV	MWh	3.0	3.0	3.0	3.0	3.0	3.0	3.1	3.1	3.1	3.2	
PV Profile (approx.)	MWh	-3.6	-3.6	-3.6	-3.6	-3.7	-3.7	-3.8	-3.8	-3.9	-3.9	
EV only	MWh	1.2	1.2	1.6	1.8	1.8	1.8	1.9	2.0	2.0	2.0	

# Acquisition assumptions

Component	Rationale for upfront cost
EVs	<ul style="list-style-type: none"> <li>Included a \$1500 cost p.a. over 10 years based on EVs being more expensive to acquire.</li> <li>Cost parity is expected by 2030<sup>1</sup></li> </ul>
Solar panels & batteries	<ul style="list-style-type: none"> <li>Included a \$500 cost p.a. over 10 years based on a 4kW system Canstar comparison at \$4.3k in VIC rounded for contingency (average inverter life 10-15 years)</li> <li>Savings can also be realised without solar or batteries</li> </ul>
Wiring costs	<ul style="list-style-type: none"> <li>Included a \$1000 cost p.a. over 10 years based on a \$10k cost, conservative as studies below show they are highly house specific</li> <li>GHD<sup>2</sup> report found in most cases, <b>multi-phase connection only required with EVs</b>, and an average \$300 of additional wiring costs incurred</li> <li>GHD report also states the cost of <b>gas reticulation for new homes exceeds the cost of larger electrical wiring</b> required to support an all-electric home.</li> </ul>
Gas vs electric appliances	<ul style="list-style-type: none"> <li>Victorian Gas Substitution Roadmap projects <b>relatively similar installed costs</b> for gas and electric appliances (see RHS)</li> <li>GHD report<sup>2</sup> highlights <b>uniqueness</b> and <b>range</b> based on house type and appliance combination</li> <li>Our modelling assumes <b>end of life replacement</b></li> </ul>

## Victorian Gas Substitution Roadmap Update 2023

FIGURE 12 Product and installation costs for dual-fuel versus all-electric homes  
CLASS 1, DETACHED HOMES

HOME TYPE	Detached	Detached	Detached	Detached
APPLIANCE MIX	Dual-fuel	Dual-fuel	All-electric	All-electric
Space heating type	Gas ducted	Gas ducted	Ducted RCAC	Multi-split RCAC
TOTAL INSTALLED COST	\$5,770	\$5,770	\$12,520	\$12,110
Space cooling type	Evaporative	Multi-split RCAC	Ducted RCAC	Multi-split RCAC
TOTAL INSTALLED COST	\$6,640	\$12,110	Included in ducted RCAC cost above	Included in multi-split RCAC cost above
Water heating type	Gas instant	Gas SHW	Heat pump	Heat pump
TOTAL INSTALLED COST	\$2,430	\$4,390	\$4,530	\$4,530
Cooktop type	Gas	Gas	Induction	Induction
TOTAL INSTALLED COST	\$1,220	\$1,220	\$1,750	\$1,750
Total appliances installed cost	\$16,060	\$23,490	\$18,800	\$18,390

Our initial analysis was on the costs we can control (running costs) however following engagement with our customer panels we have incorporated a more holistic analysis closer to 'whole of ownership analysis' flagging that we cannot predict timing such as appliance purchasing costs.

1. As Published in Charging up the Australian EV market report, CEFC

2. GHD DELWP All electric new homes cost assessment

# External Sources

## CSIRO Technical Report

- [Microsoft Word - Report\\_20230718.docx \(energyconsumersaustralia.com.au\)](https://energyconsumersaustralia.com.au)

## ECA 'Stepping Up' Report

- [Stepping-Up-Report-Final.pdf \(energyconsumersaustralia.com.au\)](https://energyconsumersaustralia.com.au)

## Mind the gap study

- [Instructions for using this template \(energynetworks.com.au\)](https://energynetworks.com.au)

## ACCC

- [Diesel prices continued to decrease and were lower than average petrol prices in June 2023 | ACCC](https://www.accc.gov.au)

## ABS

- [Survey of Motor Vehicle Use, Australia, 12 Months ended 30 June 2020 | Australian Bureau of Statistics \(abs.gov.au\)](https://www.abs.gov.au)
- [Electric passenger vehicle use, experimental estimates | Australian Bureau of Statistics \(abs.gov.au\)](https://www.abs.gov.au)

## Frontier economics

- [Residential energy consumption benchmarks - 9 December 2020 0.pdf \(aer.gov.au\)](https://www.aer.gov.au)

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