Australian Energy Market Commission

Residential electricity price trends 2024

November 2024

AEMC

Contents

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Australian Energy Market Commission

Introduction and purpose

This section explains the purpose of this report, how it has changed from previous Price Trends publications, and summarises our method for estimating electricity prices and household energy costs

November 2024

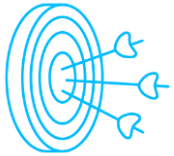
Providing an outlook of residential prices over the next decade

This report provides a 10-year outlook of residential electricity prices in the National Electricity Market (NEM) as a whole and by each jurisdiction

BACKGROUND

- We model each component of electricity prices – wholesale, network, renewable/energy efficiency schemes, and retail costs – using the generation and demand projections from the market operator's (AEMO's) latest system plan.
- From this analysis we identify the overall trends and cost drivers of prices over the next 10 years.
- We also model a number of scenarios outside of our central case to highlight the potential impact of risks and uncertainties to electricity prices.
- The electricity price outlook is used to project household energy expenditure (the 'Energy Wallet') under different levels of electrification.
- We previously produced a three-year forecast of electricity prices. A 10-year outlook reduces the potential for confusion with the Australian Energy Regulator's (AER's) Default Market Offer, is more robust to short-term market volatility, and provides more scope for useful insights.

PURPOSE



- The purpose of providing a 10-year outlook for residential electricity prices to consumers, policy makers and the industry is to:
  - Promote transparency with a publicly available and tested price outlook which documents the method and assumptions we have used.
  - Show which cost drivers are most influential to help policymakers target the most effective policies to achieve affordable electricity.
  - Provide consumers with an understanding of how their decisions around electrification could influence their total energy expenditure.
- We also identify specific policy implications resulting from the outlook.
- These results should be interpreted as a projection based on current data and assumptions – in reality, prices may materially differ from this outlook.

We modelled each electricity cost component

A 10-year residential electricity price outlook is estimated by modelling each cost component with public information, including AEMO's ***Integrated System Plan*** (ISP), and developing in-house assumptions for future costs and market behaviour.

We identified trends and findings to inform decisions by consumers and policymakers

WHOLESALE COSTS

Estimated by simulating wholesale dispatch outcomes over the next 10 years, using generation and demand assumptions from AEMO's latest system plan and applying a representative retailer's hedging positions.

NETWORK COSTS

Distribution and transmission network costs are projected using the AER's revenue determinations, forward looking cost estimates from a range of sources, and estimating cost relationships based on historical costs.

OTHER COSTS

There are additional costs that make up a residential electricity cost stack such as renewable/energy efficiency schemes, retailer costs and other minor costs such as market fees and ancillary services. These are primarily estimated by projecting recent cost trends.

Residential electricity cost stack by NEM jurisdiction over time

Trends and cost drivers

We identified the 10-year trends in cost components by region and analysed the main drivers of these movements.

Scenario analysis

Wholesale and network assumptions were changed and the models re-run to analyse the impact of different variations in supply and demand conditions on prices.

Energy wallet analysis

Electricity price trends were analysed alongside total energy spending to see how electrification impacts consumers' total energy expenditure.

Please read the accompanying methodology paper for further information on the method and assumptions we have applied.

Our outlook is subject to a range of risks, uncertainties and modelling limitations

- This report should not be interpreted as a forecast of residential electricity prices, but rather an outlook for electricity and energy costs if investment is timely and efficient, and policy is well coordinated.
- The prices and costs provided in this report are based upon modelling of the future electricity market using AEMO's ISP 'Step Change' scenario as a basis. We then make further assumptions and use a range of other publicly available information – as detailed in our methodology paper – to inform network, renewable/energy efficiency schemes, retail and contracting costs.
- While our scenarios shed light on some of the risks to the outlook, there are a range of additional uncertainties and risks that are more difficult to capture.
- This outlook is predicated on the data used and the underlying assumptions made in determining costs, prices and trends. These assumptions, and their potential impacts, are outlined further in the accompanying methodology paper.
- The outlook does not include any government electricity rebates or bill reliefs.
- We intend to update our projections annually, to take into account new information and analysis in future publications.

Prices in the future may differ from the outlook presented in this report if underlying assumptions change, including:

- Changes in wholesale cost drivers such as bidding behaviour, commodity prices and the timing of new build and retirement of generation assets
- Changes in demand growth, such as the uptake and use of Consumer Energy Resources (CER)*
- Updates in network costs following revenue determinations
- Changes to Government policy, such as those related to jurisdictional schemes
- Unforeseen changes in the electricity system.

The prices and costs we present in this report are specific to a typical or representative consumer. This report is not designed to predict your household bill.

Consumer Energy Resources (CER) are consumers' resources that can either generate, store, or be flexible in when they consume electricity in response to external signals. They include solar panels, batteries, and modern water heaters or air conditioners.

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Executive summary

Summarises the key results and implications of our price outlook

November 2024

Prices are projected to fall over the next decade, if investment is efficient and policy well coordinated

1 *Residential electricity costs are projected to decline*

Residential electricity prices are modeled to fall by about 13% over the next 10 years, under our base case.

This is an average across the regions in the National Electricity Market (NEM). It does not include Western Australia and the Northern Territory.

Most of the reduction is projected to occur in the next few years, driven by an anticipated increase in renewable generation in AEMO's system plan.

2 *Electrification should reduce household energy costs*

While electrification of household appliances and vehicles can increase a household's electricity costs, they also avoid spending on fuel and gas.

Overall, electrification is projected to reduce average household energy costs by nearly $1,000 per year, or by almost 20% of current spending on energy, by the end of the 10-year outlook under our base case. These reductions do not include costs incurred to purchase electric appliances and vehicles.

3 *Households with CER will benefit most*

A household who fully electrifies could reduce their energy expenditure by 70%.

While consumers need to weigh these savings against the costs of electrifying vehicles and appliances, we project large energy cost savings for consumers who purchase an EV, solar panels, or switch off gas.

Ensuring all households are able to electrify would promote an equitable energy transition.

4 *Effective integration of CER would reduce costs*

If the electricity demand from Electric Vehicles and other 'Consumer energy resources' is not well coordinated, it could increase electricity bills for all households by almost $100 per year.

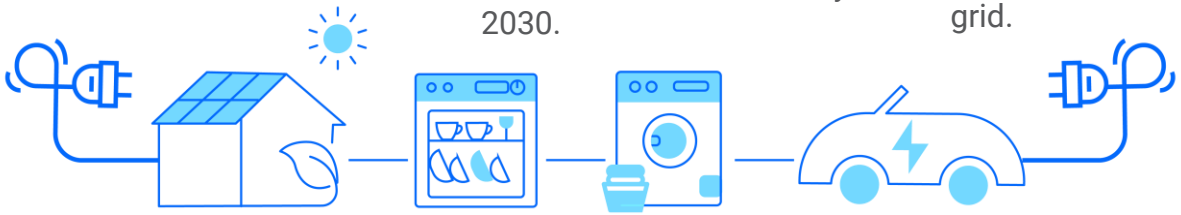
The National Consumer Energy Resources Roadmap is progressing the effective integration of CER, and the AEMC is delivering a number rule changes and reviews, including the accelerated rollout of smart meters by 2030.

5 *Delays to renewables would increase costs*

Delaying the connection of renewable generation and transmission into the market would put upward pressure on residential electricity costs.

This is particularly true for wind generation because it diversifies the supply portfolio.

Consumers would benefit from an ongoing focus on efficient investment and timely connections to the grid.

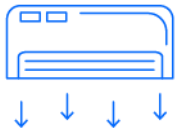


Our projections highlight three actions to ensure households benefit from electrification

1 *Efficient investment in critical resources*

- Our analysis highlights the importance of timely and efficient investment in connecting renewable generation and transmission to the market, as electricity demand increases with electrification.
- We found that the largest benefits were for connecting wind generation because it offers diversification benefits compared to other generation types.
- While the investment pipeline remains healthy, previous AEMC analysis has highlighted that the rate at which announced projects move to the commissioning stage is low.
- Initiatives underway to address the barriers to new supply include the recent AEMC rule change to speed up the process of connecting new generation to the grid, and recent Commonwealth and state initiatives to improve the efficiency of planning and environmental approval processes.

2 *Effective integration of CER*



- Ensuring the new demand from electrification is managed well requires the coordinated use of Consumer Energy Resources (CER) such as electric heat pumps and EVs.
- By allowing consumers to draw electricity when it's cheapest, we found that effective CER integration would lower electricity purchase costs for all households by reducing the need for network investments and the risk of spikes in wholesale prices.
- To effectively integrate CER into the market, the AEMC is delivering a number of rule changes and reviews, including the accelerated rollout of smart meters by 2030, and the review *Electricity pricing for a consumer-driven future*, which aims to promote flexibility for consumers to use energy more efficiently and save money on their bills.
- The National Consumer Energy Resources (CER) Roadmap outlines how governments will enable CER's vast potential to lower bills, improve reliability and cut network costs.

3 *Address electrification barriers for all households*

- Household energy costs are projected to be lower for consumers who electrify. While Australians continue to take up solar PV, batteries, EVs and other forms of CER at rapid rates, not all consumers will be able to invest in CER in the next five-10 years due to barriers which include: renting; living in a dwelling, such as an apartment, without access to rooftop PV; or not having the access to, or the ability to install, an EV charger.
- The households who cannot electrify are likely to face higher energy costs.
- To promote an equitable transition, policymakers should ensure the broadest spectrum of households can take advantage of solar and batteries, and can access a range of EV charging options.
- Addressing the inequities and barriers to electrification may become increasingly important as more households rent and/or live in apartments.

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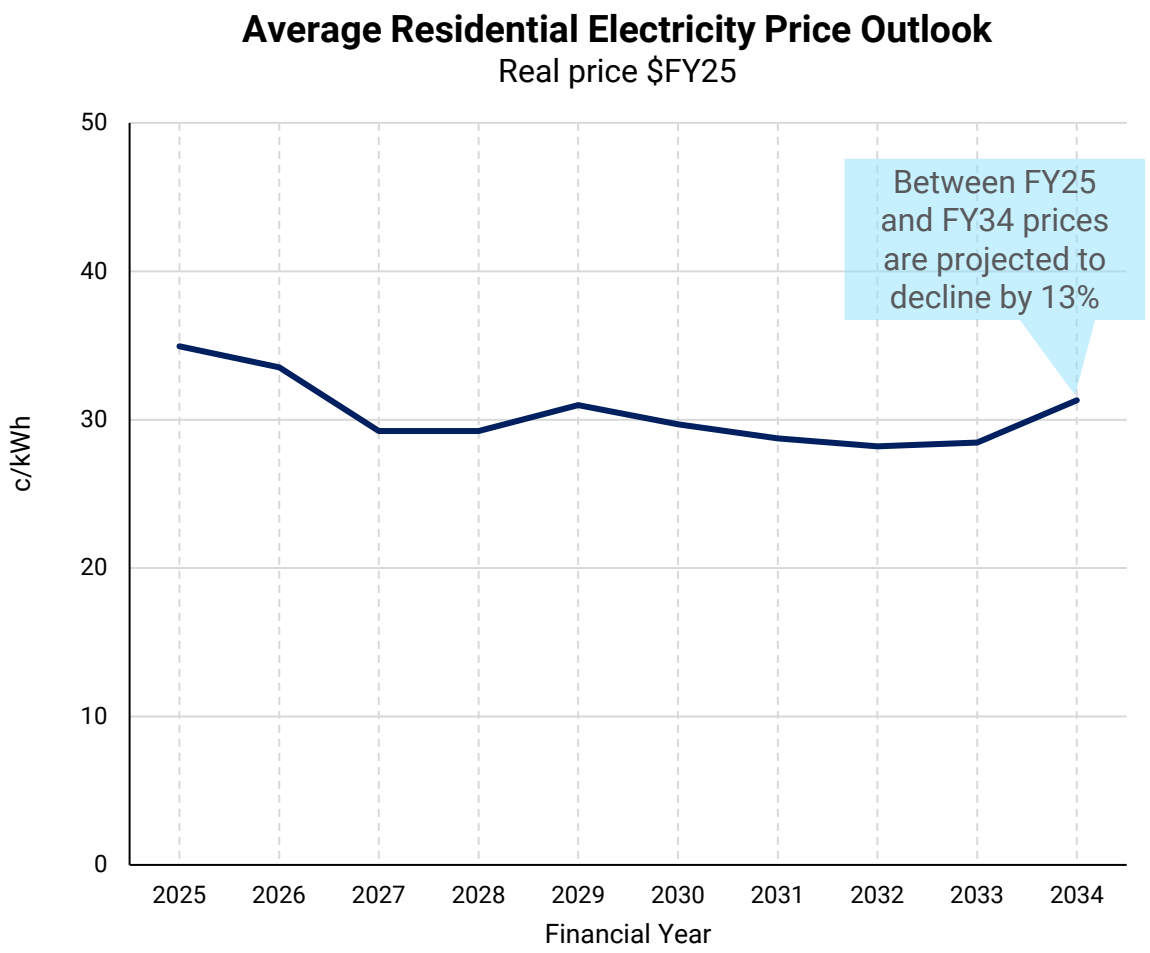
Australian Energy Market Commission

National trends

Shows the price outlook for the NEM, including the breakdown by cost component

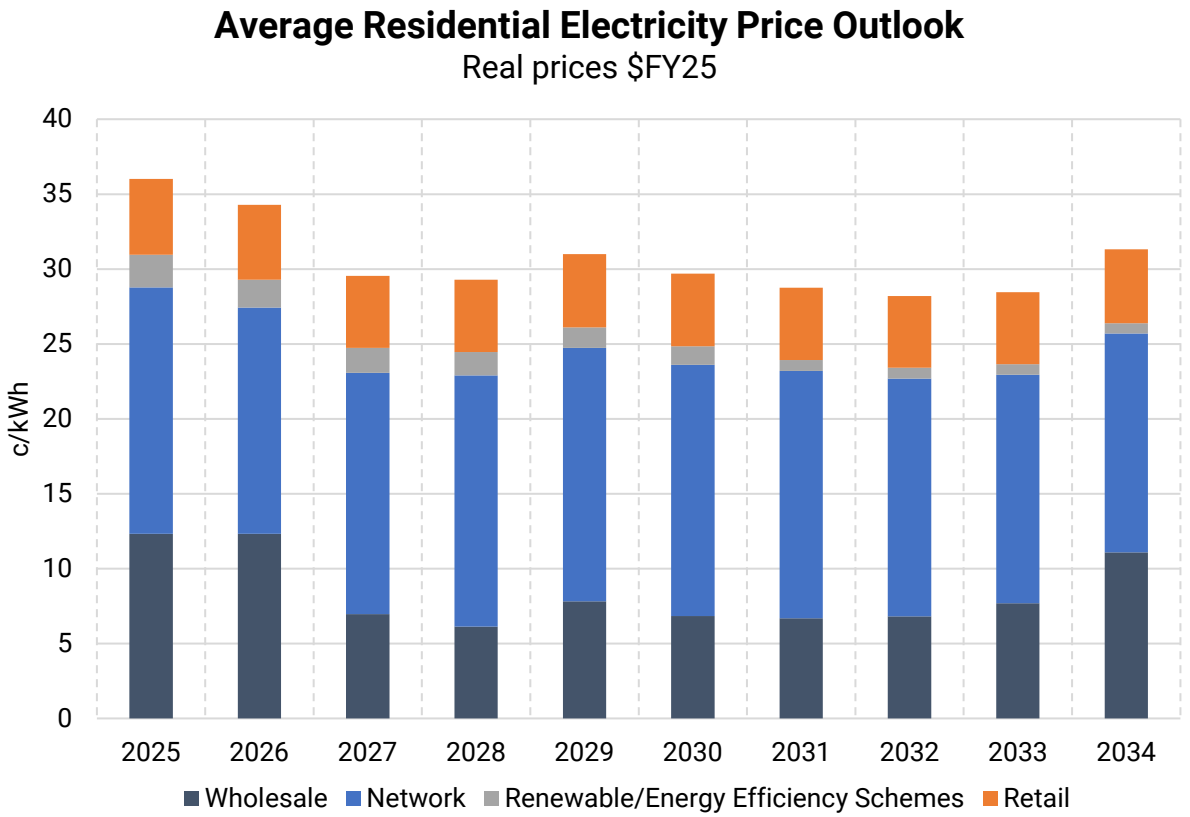
November 2024

Average residential electricity prices are projected to decline over the next 10 years



- On a national basis, residential electricity prices are modelled to fall by 13% (about 5c/kWh) over the next 10 years under our base case.
- Prices initially drop from their current levels as the projected new renewable energy supply from the Final 2024 ISP connects to the grid.
- They remain at these lower levels over most of the horizon, with large coal station retirements in the late-2020s not projected to have a sustained impact on residential prices.
- Despite significant network investment over the forecast period, the impact on residential prices is reduced by increased levels of consumption as households electrify.
- Prices are projected to rise somewhat in the final years of the outlook. This reflects a narrowing wholesale supply-demand balance: increased demand from commercial and residential electrification, as well as gas-powered generation supply constraints and coal retirements.
- As outlined in the methodology paper, our outlook includes the costs of Government schemes that are recovered from residential bills. It does not include costs that are funded by the broader taxpayer base, as these are not reflected in bills.
- Modelling results are generally consistent across states (see *Section 7 - Jurisdictional results* below).

All cost components are projected to decrease over the next 10 years



- Total price fall of 13%
- Wholesale prices decrease by 10%
- Regulated network prices decrease by 11%
- Retail costs fall by 3%

Network costs are the largest cost component, representing about half of residential electricity costs:

- Network prices are projected to fall by about 11% over the outlook, with an increase in residential demand countering the higher levels of network investment recovered from residential customers over the 10-year horizon.

Wholesale costs represent 30-40% of costs and are the most variable. Changes in the supply-demand balance in the wholesale market drive most of the year-to-year movements in the price outlook:

- Wholesale prices – which account for hedging by retailers – are projected to decrease by around 10% overall.
- Most of the decline from recent elevated levels occurs in the first half of the horizon.
- Prices rise in the last few years of the horizon, reflecting a tighter supply-demand balance.

Other costs typically represent about 15-20% of costs, and include the costs of renewable/energy efficiency schemes, retail and metering:

- Renewable/energy efficiency schemes costs are expected to fall significantly over the outlook as a number of current schemes expire in 2030.
- Retail and metering costs remain relatively flatter but do also decrease slightly.

Note: Results by Financial year; Network costs include jurisdictional scheme pass-through costs; Wholesale costs account for hedging by retailers.

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Scenarios

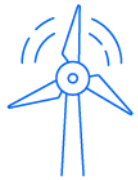
Shows the impact of changes to critical supply and demand side cost drivers

November 2024

We modelled supply and demand scenarios

We modelled a number of different scenarios to understand the impact that changes to different cost drivers would have on the overall trends in network and wholesale costs. These scenarios were developed by considering what factors could be influenced by policy or AEMC rule changes over the 10-year outlook, whilst considering scenarios that were more feasible to model.

Supply-side delay scenarios



Wind and transmission:
The connection of new wind farm builds in Renewable Energy Zones, and selected transmission projects, are delayed by 12 months.

Hydro and battery storage:
12-month delays to the majority of new grid-scale battery projects, and the Snowy 2.0 and the Borumba Hydro Schemes.

Demand-side scenarios

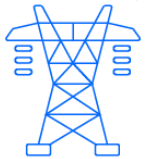
Sub-optimal CER orchestration:
Demand from EV charging is not spread across the day but concentrated in the evening peak.

Faster electrification:
An additional 10TWh of electrification demand in each year from FY27 (equivalent to a ~5% increase in total demand).

Slower electrification:
A delay in electrification demand as forecast by the ISP by 12 months.

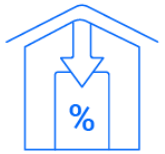
Results presented in the 'Energy Wallet' section

Network related scenarios



Higher network investment:
The rate of replacement capital expenditure is doubled after the current AER determination periods.

Higher interest rates:
Interest rates are 1% higher over the next decade.

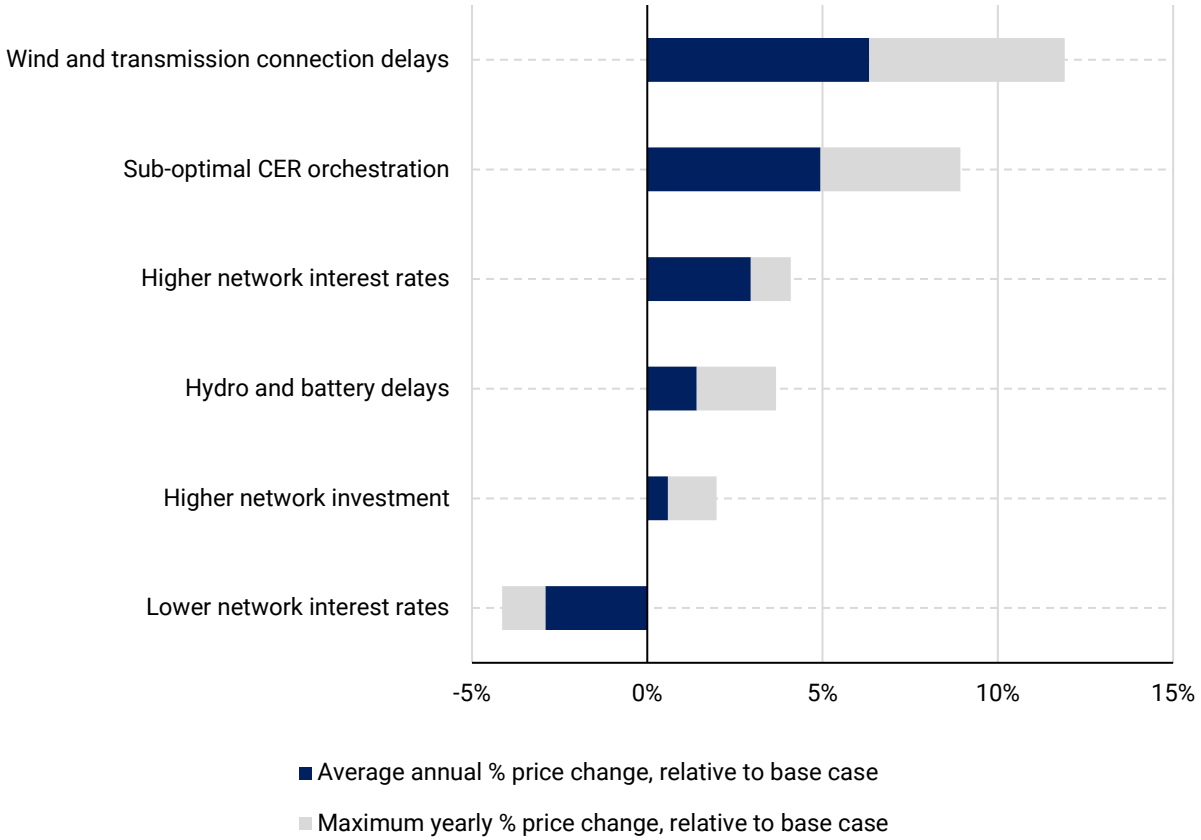


Lower interest rates:
Interest rates are 1% lower over the next decade.

Wind and transmission delays, and demand side changes, had the largest overall impact on prices

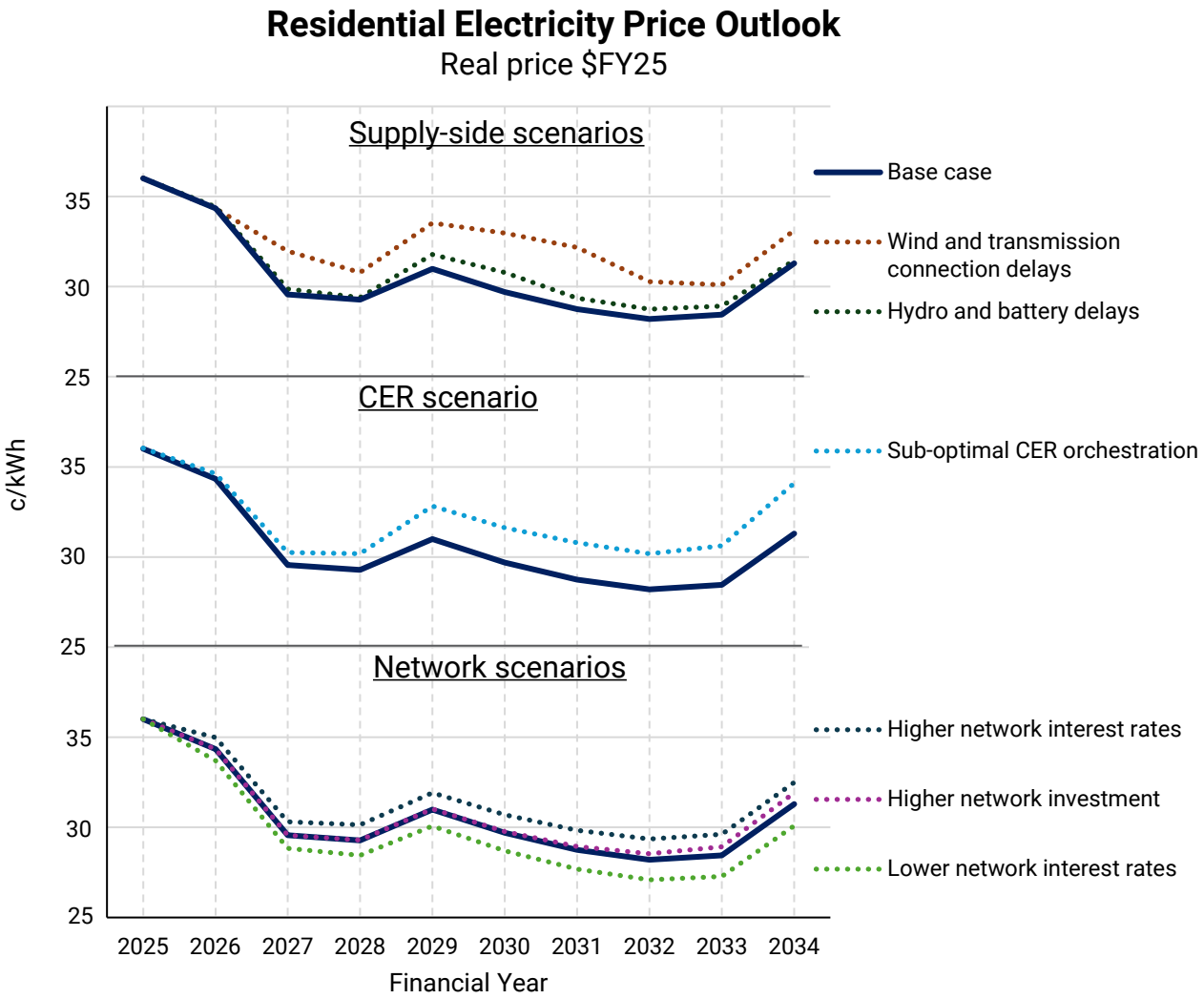
Residential Price Outlook - Scenario analysis

Annual percentage price impact, relative to base case; Real $24-25



- The chart shows the impact of each scenario on residential electricity prices. It plots the average percentage change in prices under each scenario, compared to the base case. The solid bars plot the average annual impact over the 10 years, and the grey bars reflect the maximum price impact for an individual year.
- The wind and transmission connection delay scenario had the most significant price impact, demonstrating the critical importance of wind in the transition in diversifying the electricity supply portfolio.
- Sub-optimal CER orchestration produced the second highest price impact, demonstrating that when electricity is consumed during the day (the load profile) can have a large impact on prices.
- The higher and lower interest rates scenarios highlight how impactful changes in interest rates can be to network costs.
- The higher network investment scenario suggests that uncertainty over future network capital investment is not projected to significantly impact prices over the next 10 years.
- The Energy Wallet section below presents the results of our faster and slower electrification scenarios. This is because changing the rate of electrification by households would also impact their overall energy expenditure.

Overall price trends are similar across scenarios



- This chart presents the impact of the scenarios on average residential electricity prices over the 10-year horizon.
- The price outlook across the horizon is generally robust across all scenarios. After an initial drop over the first three years, prices generally remain relatively flat over the middle of the horizon years, before rising in the last years.
- This suggests that the underlying price trend is relatively robust, and a result of the overall supply-demand balance rather than any individual factors.
- Over the horizon, the wind and transmission delays, and sub-optimal CER orchestration scenarios have the largest impacts on residential prices.
- Prices are higher in the middle of the horizon under the wind and transmission delays scenario, with the transmission delays modelled in this scenario pushing up prices in this period.
- The less coordinated CER integration scenario drives both higher levels of network investment and a tighter demand-supply balance in the wholesale market. By comparison to the other scenarios, the costs of higher network investment cumulate more gradually which means that the demand-side scenarios have a slightly greater impact on prices in the final years of the horizon.

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Energy wallet analysis

Shows how expenditure on total energy would change over the horizon, and highlights potential equity issues

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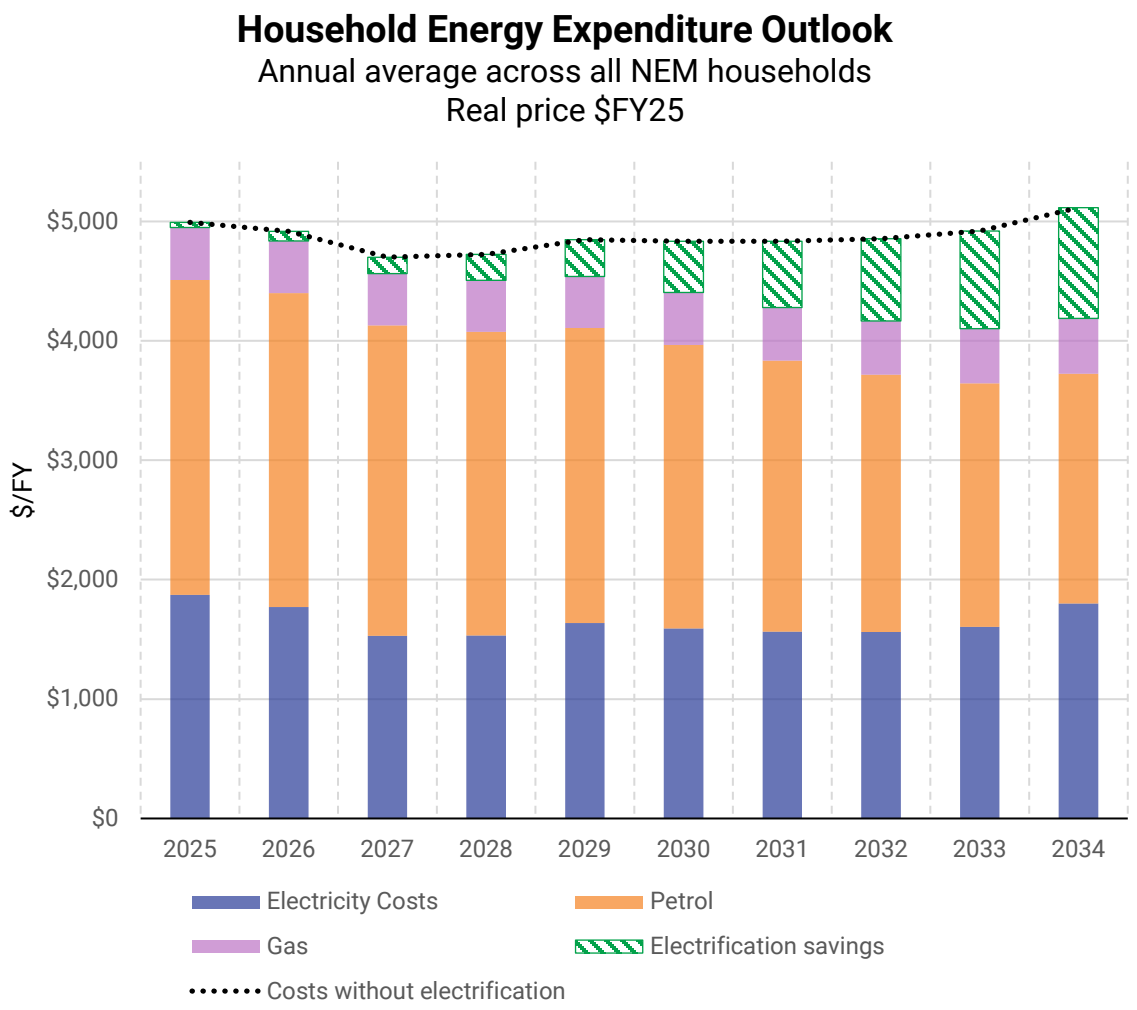
Average household energy spending is projected to fall with electrification of transport and heating

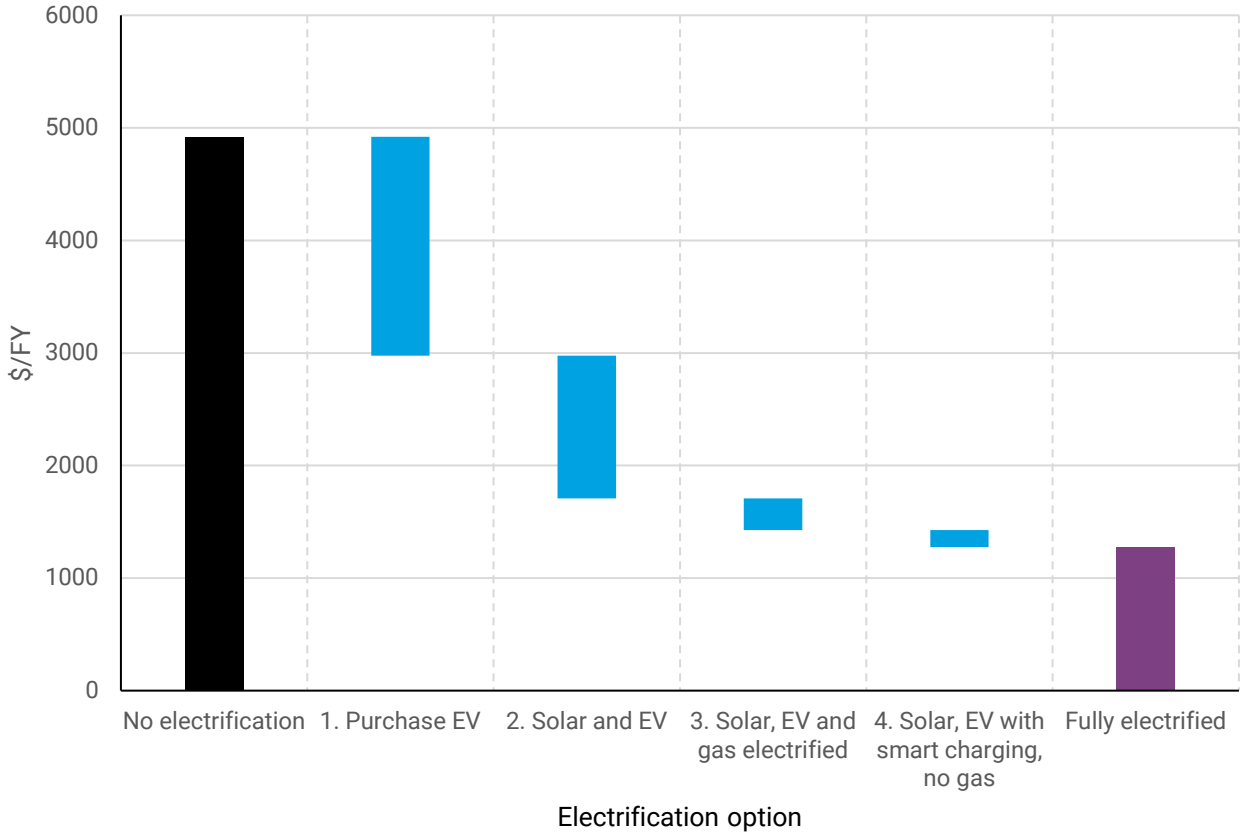


- Electricity bills are only one part of a household's energy spend. Most households also consume fuel for transport and gas for heating and cooking.
- Although a household's electricity usage may increase as they electrify, they avoid gas and fuel costs.
- We projected how electrification might impact household energy costs.
- We calculated average household spending on energy based on the rate of electrification in AEMO's latest system plan and our electricity price outlook.
- This analysis shows that – if policy and investment are effective and efficient – average household spending on energy will fall as households electrify.
- By the end of the 10-year outlook, electrification is projected to reduce average household energy costs by nearly $1,000 per year, or by almost 20% of current spending on energy.
- This chart does not account for up-front costs a household might incur to electrify, as these will vary for individual households.
- This chart only considers the results on average, based on the rate of electrification that is modelled in AEMO's ISP – over time, the costs for consumers will vary based on their individual energy needs and the extent to which they have electrified.

A household who fully electrifies could reduce their annual energy expenditure by 70%

Typical energy cost savings if a household electrified today

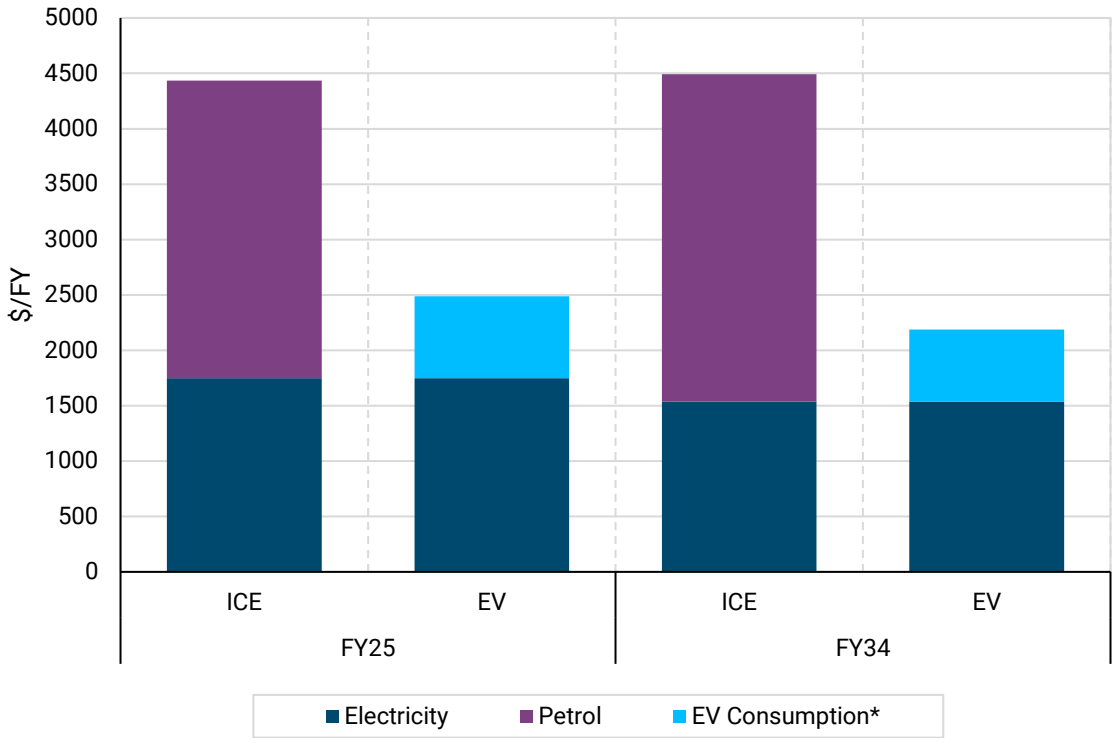
A household with annual electricity consumption of 3,900 kWh, real $FY25



- We modelled a typical household's spending on energy as they electrify, if they made a range of different electrification investments or changed how they consume electricity.
- Starting with a household with 'no electrification' – electricity and gas at home, and driving an Internal Combustion (ICE) vehicle – we modelled annual energy costs if that household:
  1. Purchases an Electric Vehicle (EV)
  2. Installs rooftop solar
  3. Switches their gas appliances to electric ones, and
  4. Charges their EV during the day when electricity is cheaper
- If a household is able to take advantage of all four electrification actions today, they could reduce their energy expenditure by more than 70% – from about $5,000 to under $1,500 a year.
- The savings are projected to increase slightly over the 10-year outlook, to be nearly 80% of household energy costs in 10 years' time. This is because gas costs are projected to increase with falling customer numbers.
- This analysis does not account for a household's up-front costs to electrify. Instead, it highlights the benefits of electrification to:
  - Inform consumers' future decisions as they consider replacing vehicles and appliances.
  - Emphasise the importance of ensuring the broadest range of households can take advantage of electrification. This includes renters, households who live in apartments, and financially vulnerable households.

Households with EVs are projected to have significantly lower energy costs

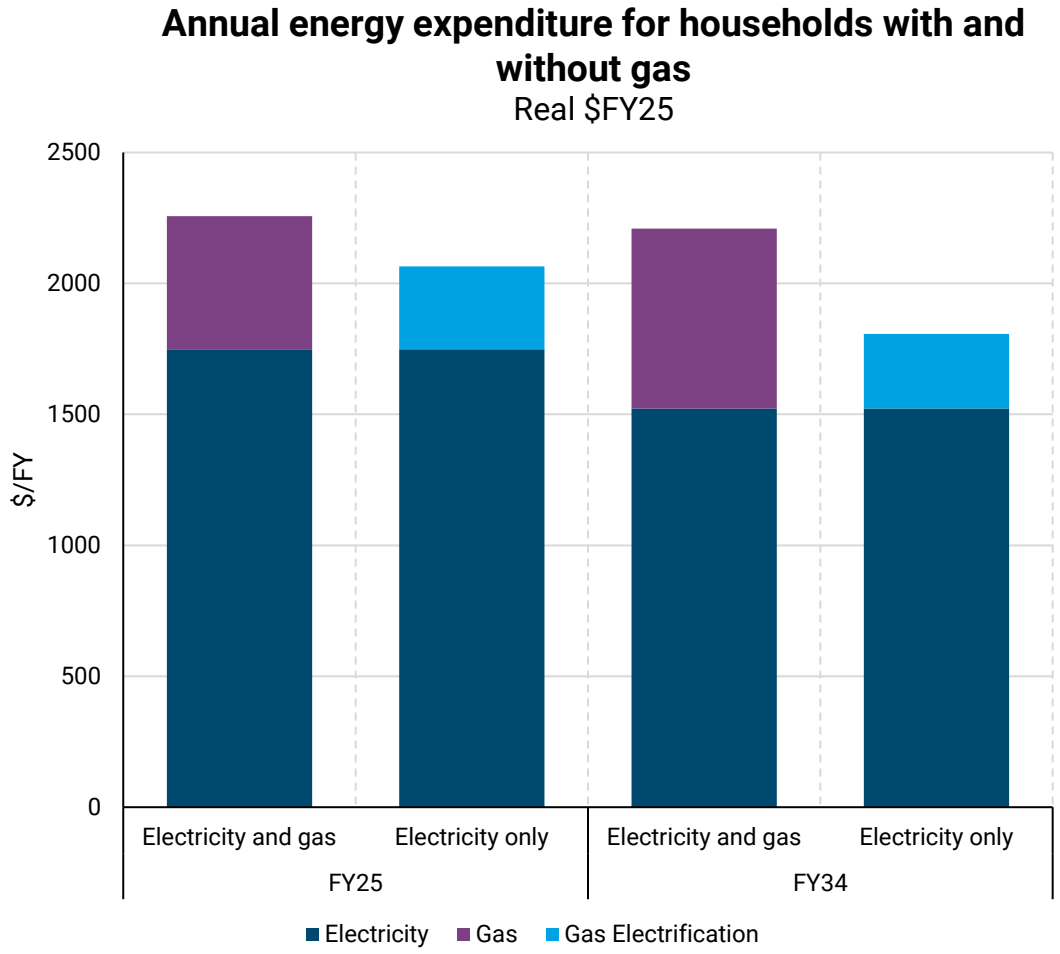
Annual energy expenditure for EV and non-EV households
Real $FY25



* Assumes a household adopts a 'convenience' charging profile.

- EV owners are projected to have significantly lower energy costs compared to households which own ICE vehicles.
- We analysed the energy costs for a household that drives the average amount each year depending on whether they drive an EV or an ICE vehicle.
- The energy cost savings for an EV are around $2,000 per year and are projected to be relatively stable over the outlook.
- These cost savings do not rely on a consumer having to fully optimise their charging to low price periods. The electricity costs of running an EV have been calculated on the basis that the household charges their vehicle when it is convenient to them, rather than only during the day when electricity costs are low.
- These costs only consider energy costs. They do not model the differences in vehicle purchase and running costs (e.g. servicing and insurance).
- Households looking to switch also need to fund the upfront costs to purchase an EV. That said, as EV penetration increases, the cost difference between petrol and electric vehicles, particularly in the used car market is projected to fall.
- The large potential savings highlight that access to EV charging is needed for households to realise these cost savings.
- Access to a range of charging options including lower-cost options will become increasingly important for consumers who cannot easily charge an EV at home.

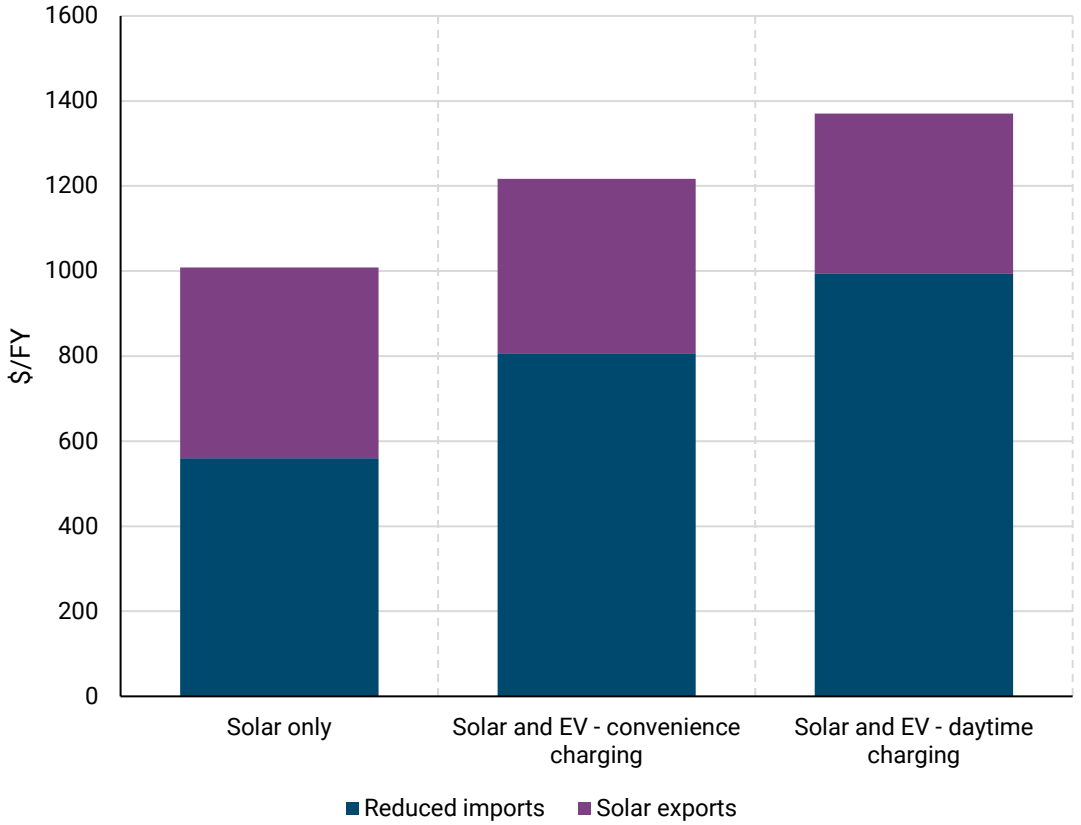
Switching off gas appliances further reduces household energy costs



- A household who switches off gas is also projected to realise significant energy cost savings.
- This chart calculates the energy expenditure of a typical household with electricity and gas, and compares it to the same household if it electrified its gas consumption (shown by the light blue bars).
- While the savings are smaller than EV electrification, they are projected to increase over time, rising from about $200 per year in 2025 to $400 per year in 2034.
- Most of the modeled savings are from avoided connection charges. Households may see additional savings if they are able to replace gas appliances with the most efficient electric alternatives.
- The savings are projected to increase because gas network costs are projected to be split across a shrinking customer base.
- While there are year-to-year differences, the overall trend is consistent across different states – a material and growing cost saving over time.
- As with the rest of this analysis, this chart only considers per unit energy costs, and does not the model upfront costs of switching appliances.
- The energy cost savings from switching off gas are projected to increase over time. Households with a preference for gas appliances, or those who are unable to fund the costs of switching off gas, may face increased energy costs.

Households who can install rooftop solar are projected to see significantly lower energy costs

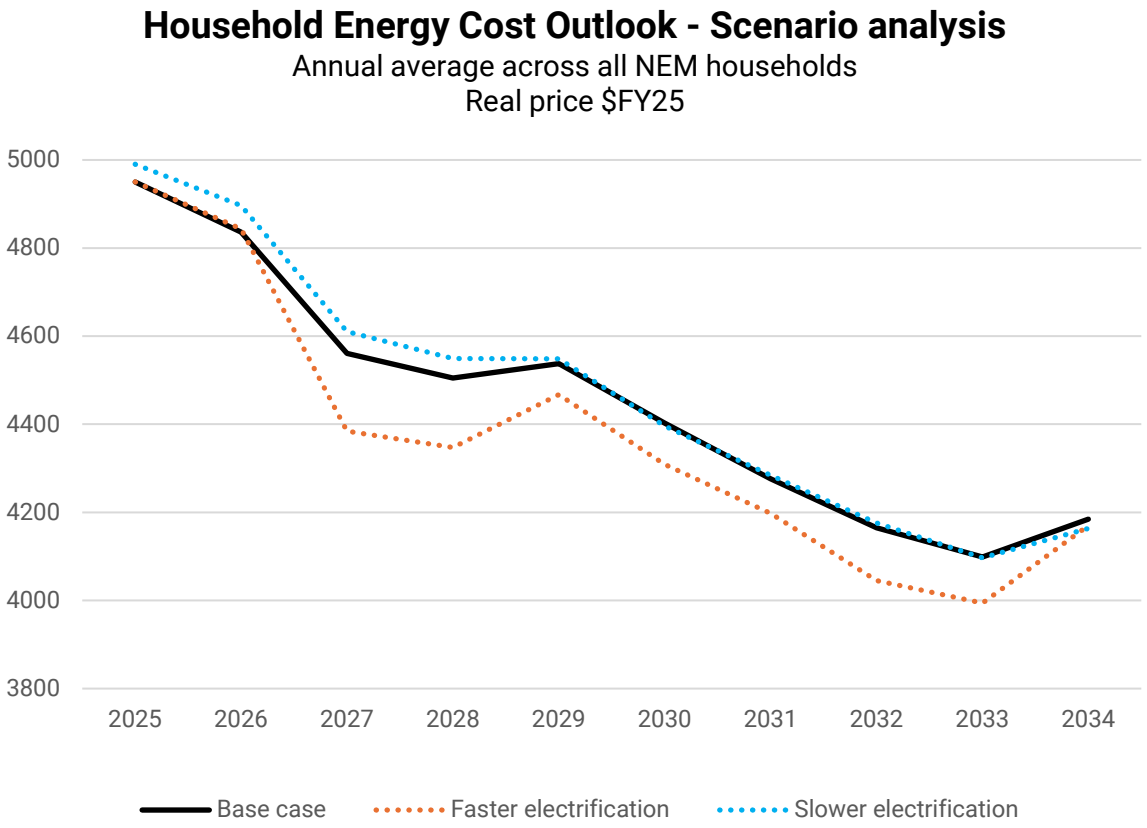
Annual electricity savings from installing a 7kW solar system ($)
NEM average



- We also estimated the available cost savings for a household that can install a 7kW solar system, under three scenarios:
  1. Installing a solar system only*
  2. Installing solar with an EV that is charged when it is most convenient for the household
  3. Installing solar and charging an EV during the day when electricity costs are lower, and solar output is highest.
- A typically-sized solar system could reduce electricity costs by $1000 per year.
- The electricity cost savings of installing solar are higher still if a household also has an EV. These savings are additional to the fuel cost savings of an EV.
- The savings include revenue from feed-in-tariffs, which account for about 45% of the savings for a stand-alone solar system, and about 30-35% of the savings when solar is paired with an EV.
- It highlights the importance of supporting the broadest spectrum of households to take advantage of solar.
- It shows that there are significant savings available, even for households unable to take advantage of when they charge their vehicles. Consumers can still benefit without having to actively engage in the market.

* Note that this analysis does not include the capital and installation costs of a 7kW system which are typically between $6,000 - $10,000

Faster electrification could lower energy costs if well-managed



- As outlined on slide 14, we considered two scenarios to model the impact of a faster, and a slower, rate of electrification to what is projected in the ISP.
- This chart projects how these scenarios would impact household energy costs.
- The faster electrification scenario, which models an increase in demand from 2027, is projected to reduce overall household energy costs. While a faster rate of electrification would increase electricity costs as households consume more electricity, this is more-than-offset by the savings they would make by avoiding fuel and gas costs as they electrify more quickly.
- The slower electrification scenario, which delays household electrification demand by one-year, showed a slight increase in household energy costs.
- These scenarios may underestimate the benefits of faster electrification. As outlined in our methodology paper, both scenarios were modelled as an unanticipated demand increase without a change in generation investment. In reality, faster electrification may be met with increased generation investment over time. Our scenario may therefore underestimate the energy cost savings from faster electrification, particularly in the later years of the outlook when the savings are projected to be smaller. Conversely, we would expect that a slower rate of electrification would be met with lower supply, and a larger increase in energy costs in the later years of the outlook due to supply headroom.
- This highlights the importance of removing barriers to entry for new generation, e.g. speeding up planning and connections processes, to ensure that investment can come online in response to increased electricity consumption. Removing these barriers would ensure the benefits of electrification to households do not erode over time.
- The analysis also reinforces the benefits of removing the barriers to electrification, and a need for Government policy to ensure all households can electrify – in order to achieve, or even exceed, the rate of electrification projected in the ISP.

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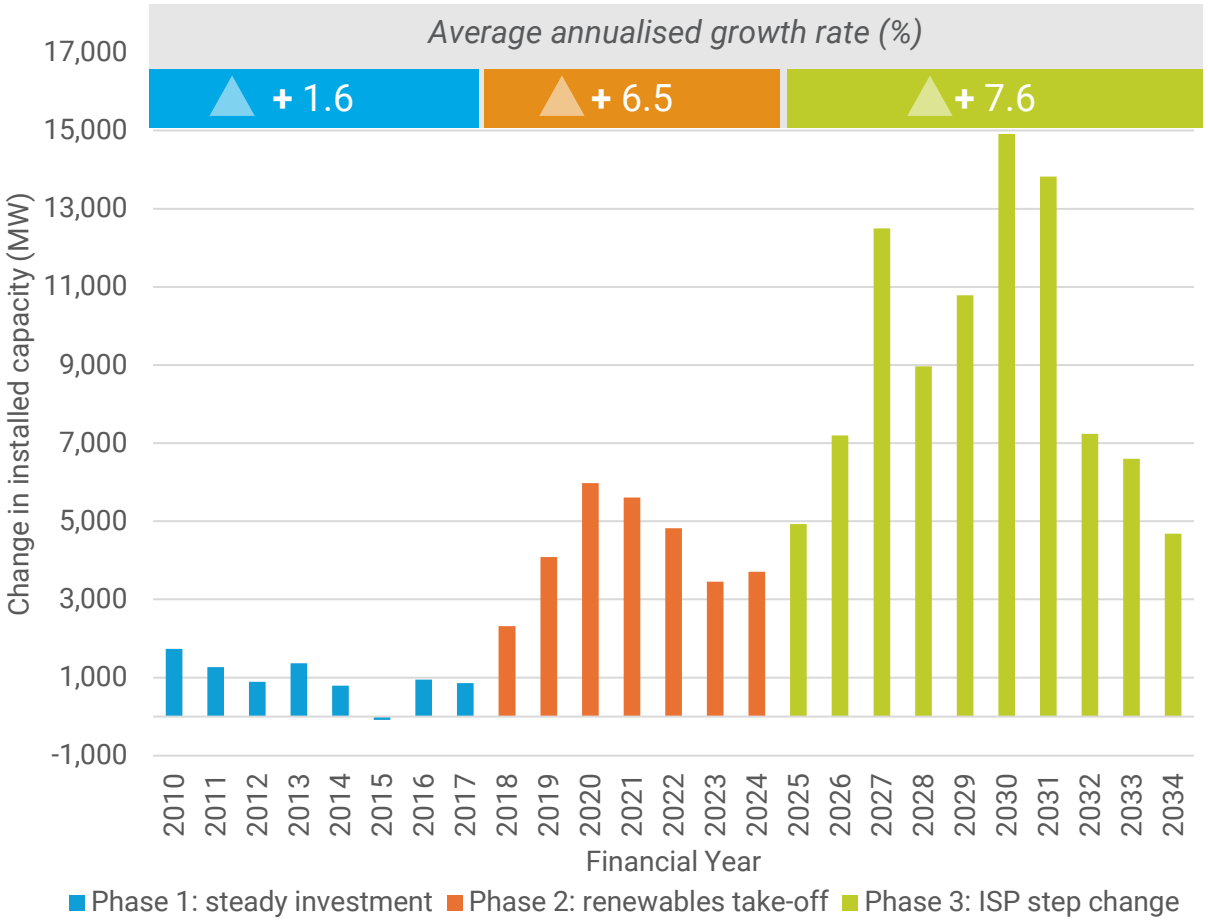
Policy implications

Outlines the actions that could lead to lower household electricity and energy costs, and ensure an equitable energy transition for consumers

November 2024

Timely and efficient investment is needed to ensure a smooth transition

Change in NEM installed generation capacity
MW, including rooftop PV



- Our central case, which projects a decline in electricity prices, assumes that generation enters the system at the levels set out in AEMO's 2024 ISP.
- Scenario analysis shows that delays to this schedule could put upward pressure on prices. The wind delay scenario highlight that per-unit prices could increase if generation assets are not built in time to keep up with demand growth.
- The ISP Step Change scenario requires an average annualised growth rate in installed capacity (including rooftop PV) of 7.6% over the next decade, which is approximately 1 percentage point higher than the historical growth rate that has been delivered since 2017-18.
- Previous AEMC analysis has shown that while the investment pipeline remains healthy, the rate at which announced projects move to the commissioning stage is low and could pose a threat to future reliability of the system.
- Removing barriers to entry and minimising the time it takes to connect new supply to grid are important to ensure that generation assets are built when and where they are needed. Recent rule changes to accelerate grid connections for renewable energy projects, and to ensure transmission networks can finance the timely delivery of major projects, are aimed at addressing these barriers.

Ensuring households can utilise CER effectively would promote lower costs for all consumers

Effective integration of CER plays a critical role

- Our results highlight the importance of ensuring a smooth uptake and use of Consumer Energy Resources in the future power system.
- Energy wallet analysis shows that households who can purchase CER could enjoy significantly lower energy costs compared to those who cannot. And those who take advantage of 'flexible loads' – by optimising when they charge an EV, for example – can enjoy additional savings.
- Our CER scenario highlights the importance of a smoother load profile for the system as a whole. The effective use of CER can lower system costs for all households by reducing the need for additional network investment to meet peak demand, and reducing the risk of spikes in wholesale prices.
- Governments and the AEMC are progressing a number of initiatives to successfully integrate CER into the NEM, which is part of the Commonwealth Government's CER roadmap.
- The AEMC has recently released a consultation paper, *Electricity pricing for a consumer-driven future*, exploring how improvements in electricity products, services and prices would promote flexibility for consumers to use energy more efficiently and save money on their bills.

Ensure households can electrify

- We found that there could be large potential savings for households who purchase an EV or install solar panels.
- This could create a divergence in household energy costs between consumers who can, and those who cannot, electrify, which highlights the importance of addressing household barriers to electrification.
- Ensuring all households have options to electrify requires addressing the varied barriers that face individual consumers. These include, but may not be limited to, being able to afford new appliances or vehicles.
- Policymakers should prioritise addressing these barriers. They could become more important over time if more households live in apartments and/or rent in the future.
- The AEMC's recently released strategic vision highlights four policy areas that guide the AEMC's work in delivering a consumer-focused net zero energy system:

  1. Understanding consumer behaviours and preferences
  2. Fostering rapid electrification of vehicles
  3. Considering the regulatory framework for gas and
  4. Understanding the impact of a changing climate on the energy system.

Price Trends 2024

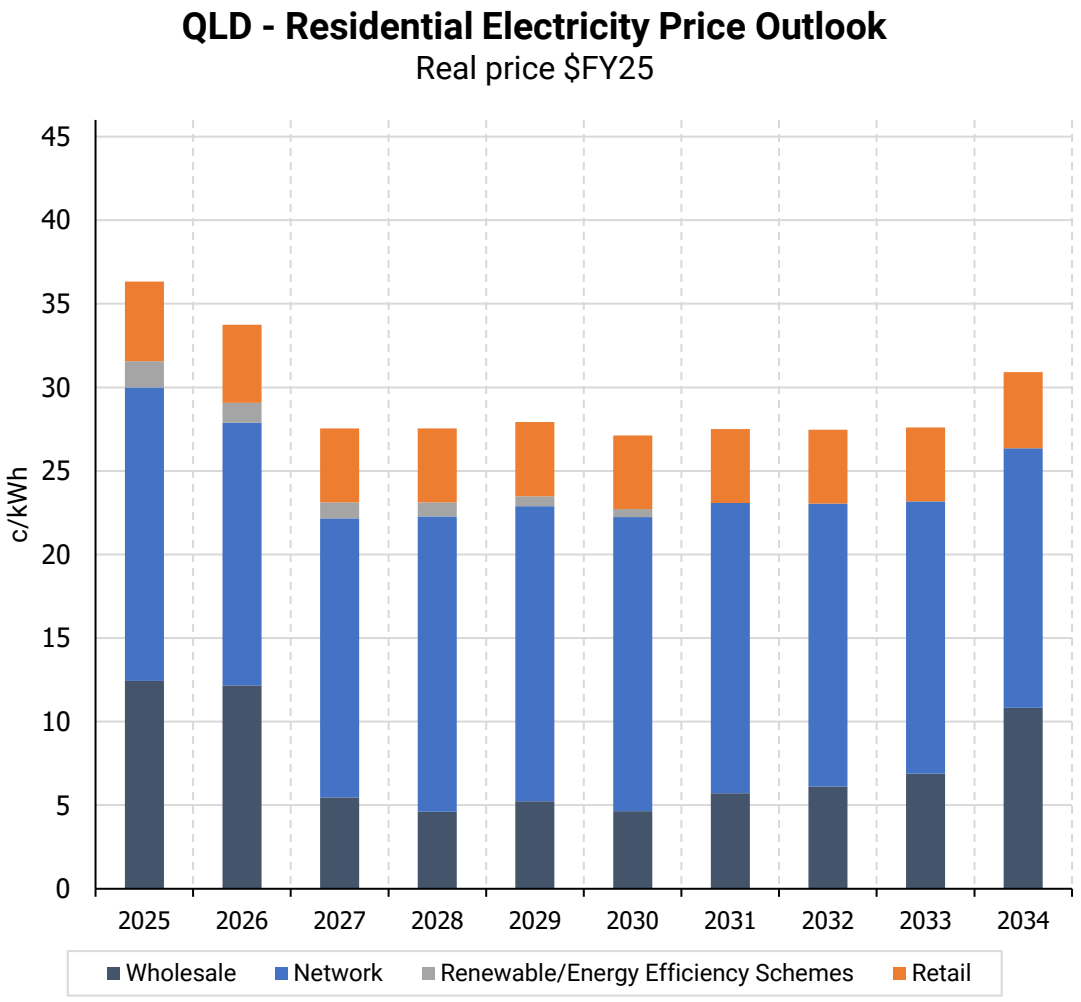
Australian Energy Market Commission

Jurisdictional results

Shows the price outlook for each jurisdiction and highlights key cost drivers

November 2024

Queensland prices show a similar trend to the national results



Main cost drivers:

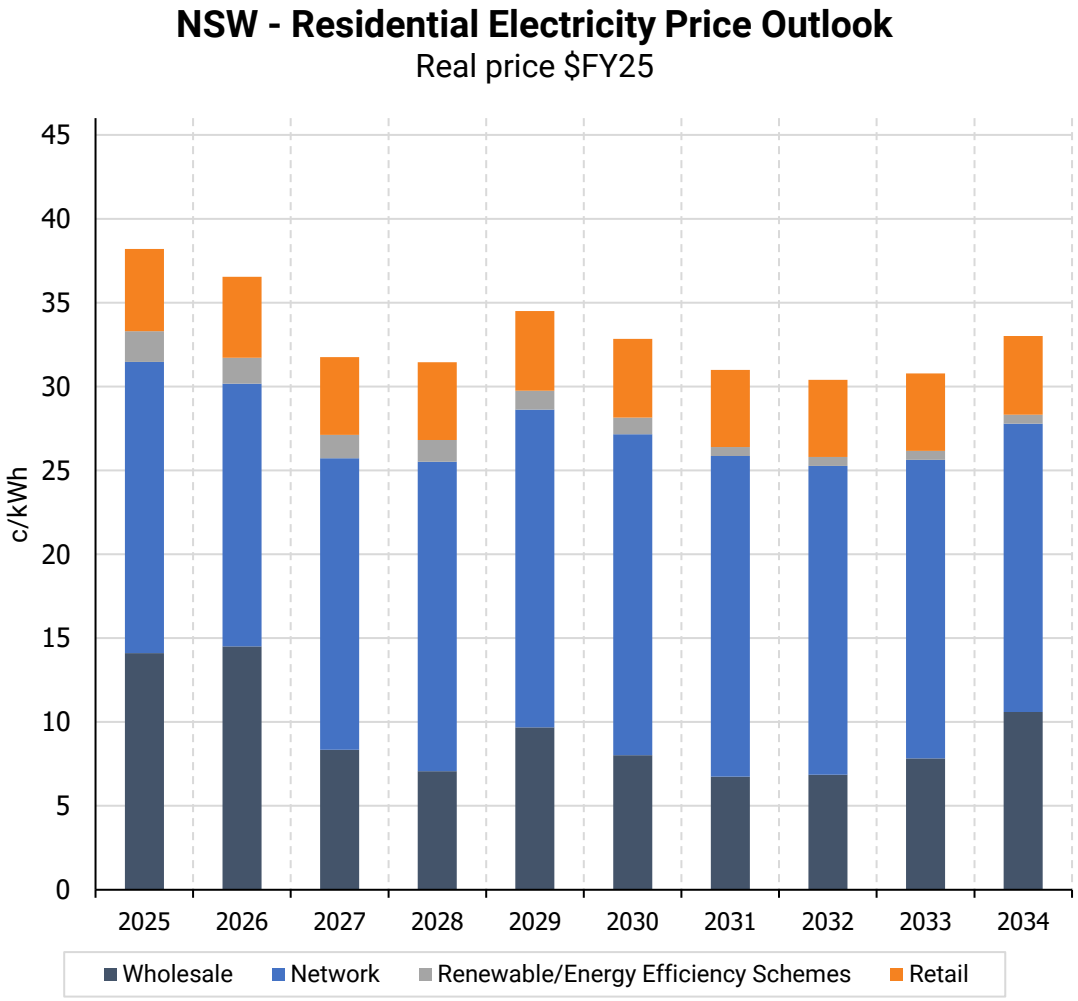
- Prices in Queensland are projected to closely follow national trends, with prices projected to fall by 15% over the outlook.
- There is slightly more upwards pressure on wholesale prices towards the end of the horizon.
- This reflects greater overall capacity of coal retirements (4.4GW from FY30 to FY34) and gas-powered-generation supply constraints which put particular pressure on QLD as the region is not as interconnected as other regions.
- Scenario analysis also shows that the Borumba QEJP scheme is critical in this period, as delaying the project by 12 months could increase wholesale spot prices in Queensland by up to 70% in FY31.
- Network costs decrease at a similar level compared to the national average.

Cost stack trends over the horizon:

- ▼ Total price fall of 15%
- ▼ Wholesale prices decrease by 1-2c/kWh
- ▼ Regulated network prices decrease by about 2c/kWh
- ▼ Retail costs fall slightly

NSW prices follow national trends closely

Though wholesale and network costs are temporarily higher in the middle of the horizon



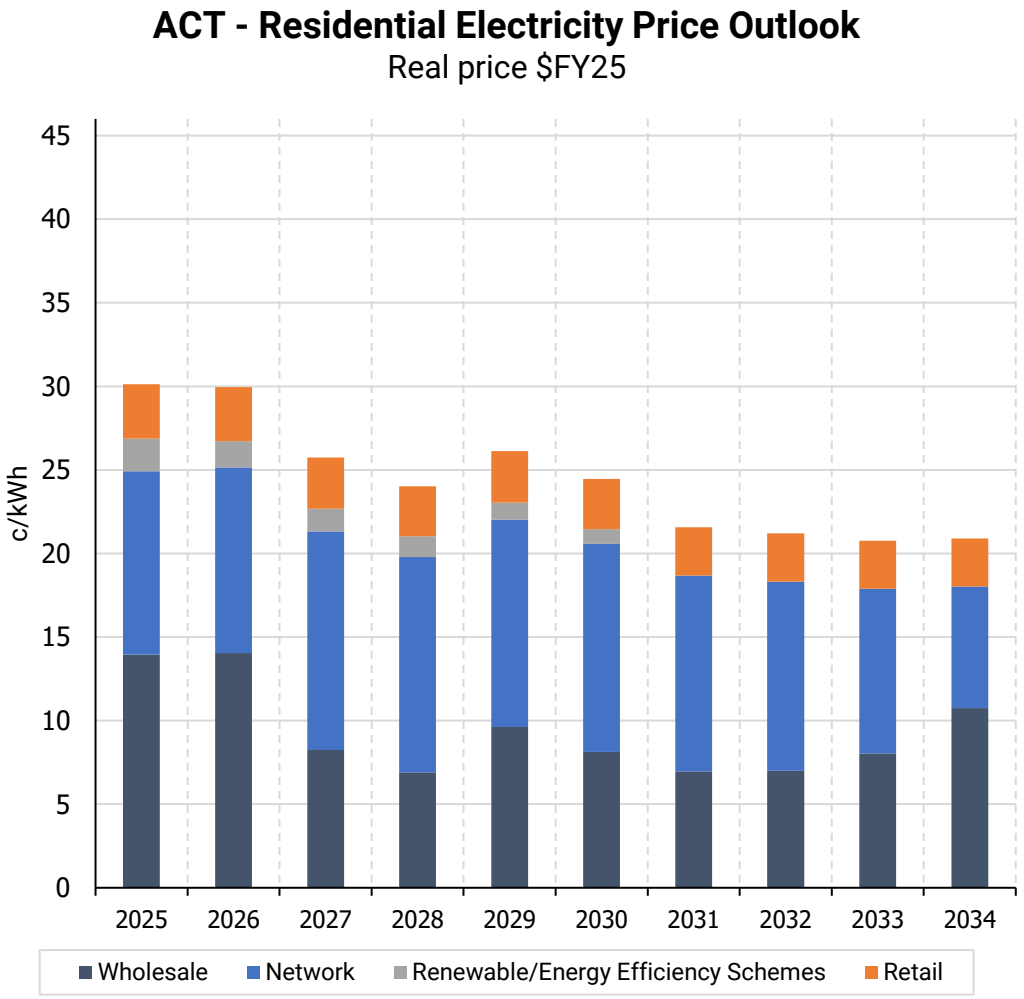
Main cost drivers:

- Prices in NSW generally follow national trends, with all cost components projected to fall slightly over the 10-years.
- Prices are temporarily higher in the middle of the horizon, which largely reflects the short-term impacts of coal retirements.
- While wholesale prices generally follow national trends:
  - The retirement of Vales Point (1.3GW) in FY29 contributes to a temporary rise, although prices would be below current prices
  - The extension of Eraring's retirement from FY26 to FY28 keeps prices lower over this period, which partially magnifies the subsequent increase.
- The costs of the NSW Electricity Roadmap – which are funded through network revenues – are not projected to result in higher network costs over the 10-year outlook.

Cost stack trends over the horizon:

- ▼ Total price fall of 14%
- ▼ Wholesale prices decrease by 3-4c/kWh
- ▶ Regulated network prices are broadly flat
- ▼ Retail costs decrease slightly

ACT price trends largely follow NSW, but network costs are lower



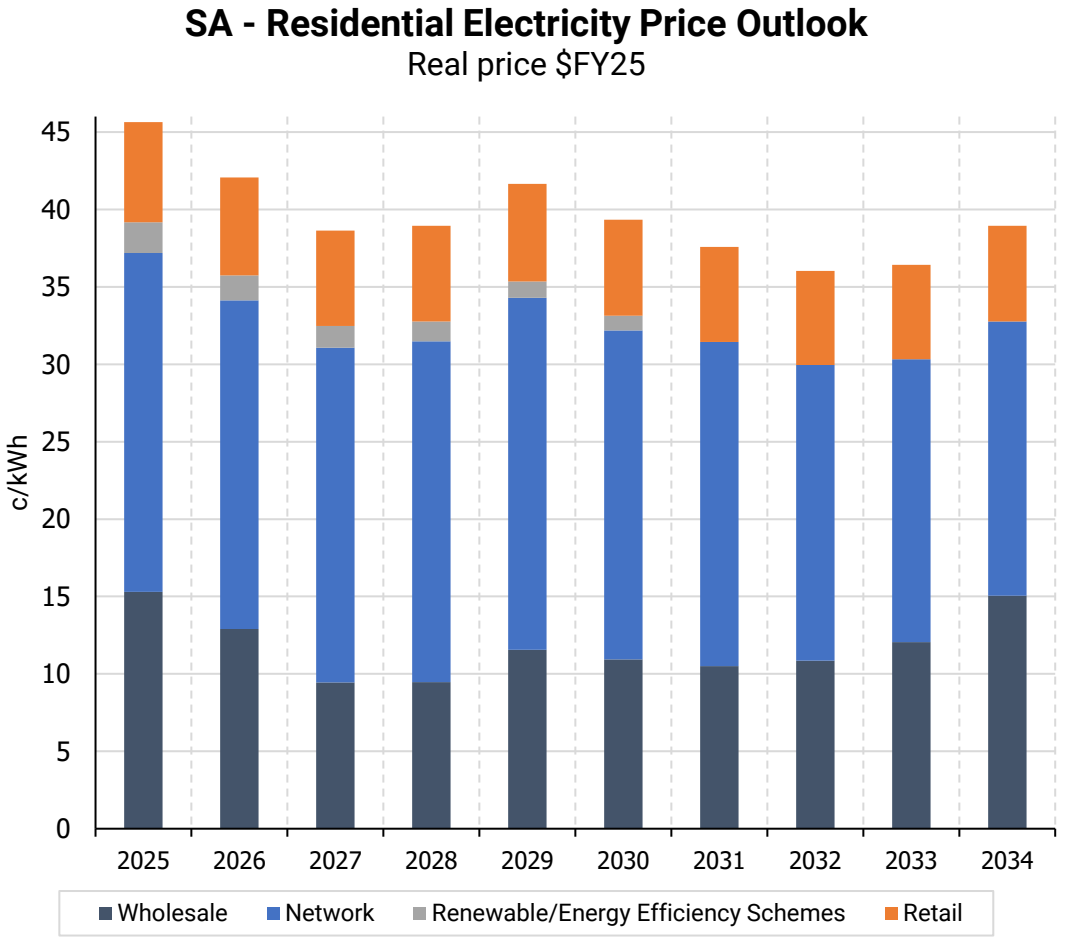
Main cost drivers:

- Prices in ACT are projected to decline by more than the national trend, with all cost components falling.
- Wholesale prices follow NSW because spot wholesale prices are the same across the two jurisdictions.
- Higher wholesale prices in the middle of the horizon correspond with the closure of Vales Point and Bayswater.
- Network prices fall significantly, but the year-to-year movements mostly reflect the ACT Large Feed-in-Tariff (FiT) scheme which passes through the Network cost stack and counters movements in wholesale prices.
- Under the scheme, when wholesale prices are low, generators are paid additional revenue through network charges, but when they are high, some of this revenue is returned to customers through lower network costs.
- The scheme costs are high in the middle of the horizon and represent up to 25% of total costs.
- By the end of the horizon higher wholesale prices are balanced by the revenue generated from this scheme, contributing to an overall drop in prices.

Cost stack trends over the horizon:

- ▼ Total price fall of 31%
- ▼ Wholesale prices decrease by about 3c/kWh
- ▼ Regulated network prices decrease by about 4c/kWh
- ▼ Retail costs fall by 11%

South Australian prices follow national trends, with a projected decline of 15%, but remain slightly higher than the national average



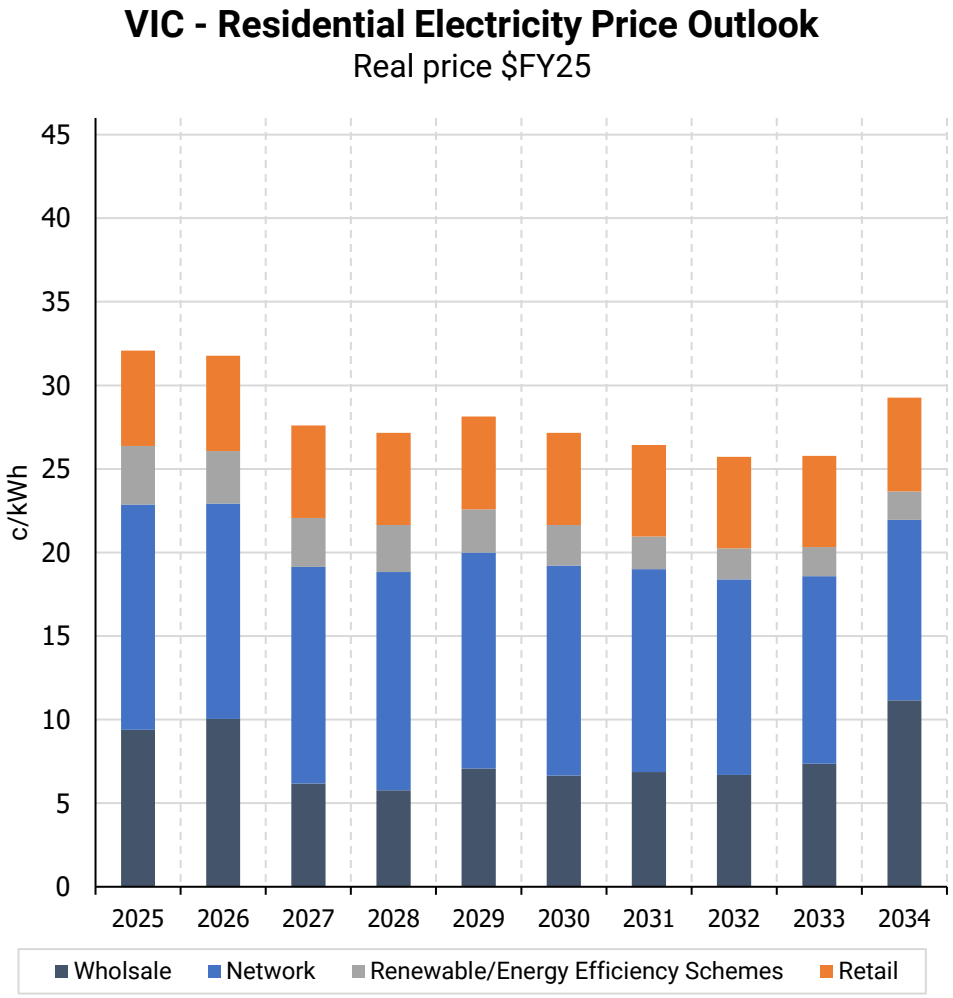
Main cost drivers:

- Prices in South Australia broadly follow national trends, but remain above the national average as wholesale costs are projected to stay elevated relative to other regions.
- Wholesale prices remain higher compared to other regions due to higher costs that retailers incur to hedge 'spot' wholesale prices. This reflects lower levels of liquidity in the South Australian contract market. Note that these issues may potentially be reduced/resolved with more interconnection from the completion of Project Energy Connect in 2027. However, our modeling assumed this contracting 'premium' remains constant over the outlook due to limited information.
- The increase in wholesale prices towards the end of the horizon is more pronounced in South Australia. Gas-powered-generation supply constraints have a larger price impact as gas is the only source of dispatchable capacity in the region.
- South Australia is also projected to have falling transmission and distribution costs.

Cost stack trends over the horizon:

- ▼ Total price fall of 15%
- ▶ Wholesale prices are broadly flat
- ▼ Regulated network prices decrease by about 4c/kWh
- ▼ Retail costs fall slightly

Victorian prices are projected to be stable and broadly mirror national trends



Main cost drivers:

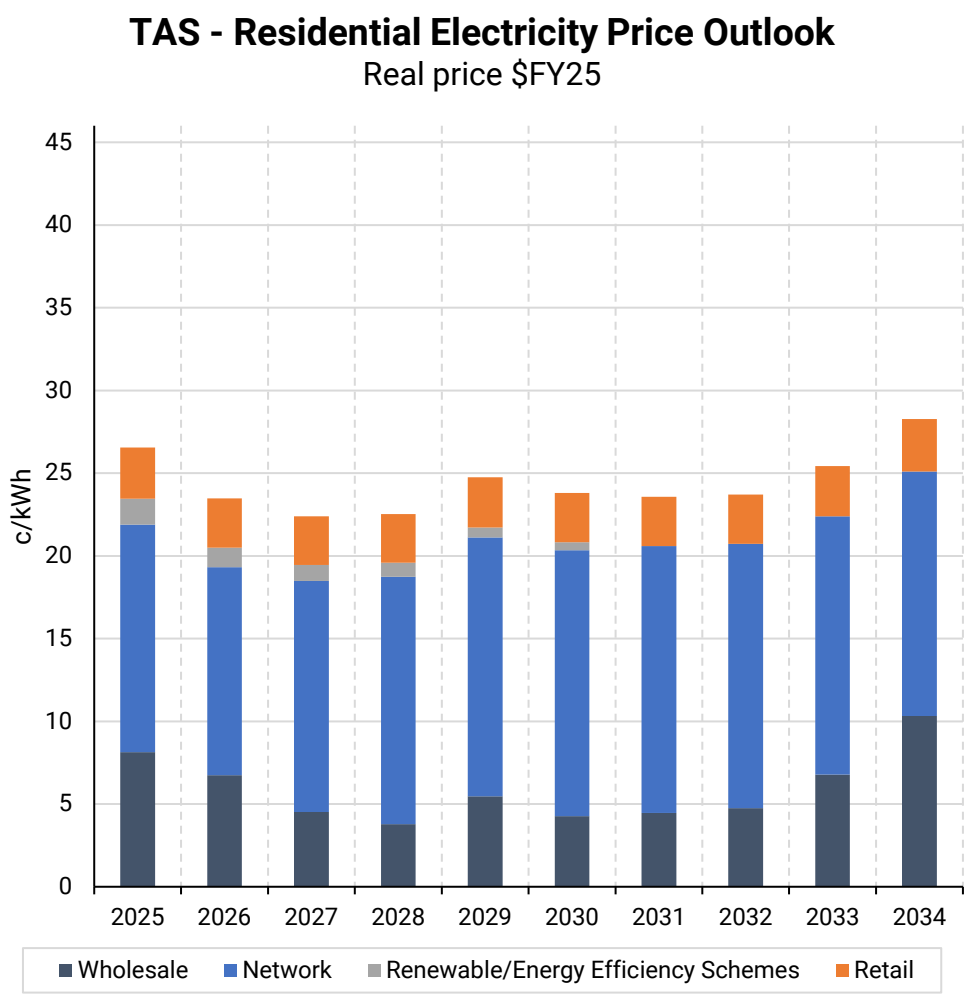
- Prices in Victoria are projected to fall by 9% over the outlook, with prices remaining below the national average.
- Victoria is also projected to have the largest increase in demand due to electrification.
- A higher rate of electrification should place downwards pressure on Victorian household energy costs.
- Movements in wholesale costs generally follow national trends.
  - The impact of coal closures (Yallourn Power Station in FY29 and Loy Yang A in FY34) and modeled supply constraints for gas-powered-generation are not expected to have prolonged and sustained periods of high electricity prices.
- Network costs remain slightly lower than the national average.
  - Our network cost projections include the operating and capital expenditure forecasts from Victorian DNSPs' 2026-2031 Draft Revenue Proposals released in recent months.

Cost stack trends over the horizon:

- ▼ Total price fall of 9%
- ▲ Wholesale prices increase by 1–2c/kWh
- ▼ Regulated network prices decrease by 2-3c/kWh
- ▼ Retail costs fall slightly

Tasmanian costs are the lowest of all NEM regions

But show a larger increase in costs towards the end of the horizon



Main cost drivers:

- While electricity prices are projected to remain lower on a 'per unit' basis in Tasmania, compared to the national trends there is more upward pressure on prices towards the end of the 10-year horizon.
- Tasmania has the slowest rate of electrification among NEM regions, highlighting a potential policy opportunity to lower consumers' overall energy expenditure.
- Wholesale prices closely generally follow the trends in Victoria, though are lower due to the large share of hydropower.
- The introduction of Marinus Link contributes to prices in Tasmania aligning more closely with those in Victoria.
- Network prices are projected to rise slightly over the outlook. Note that we have:
  - Modelled the costs of Marinus Link with a 50/50 split between Tasmania and Victoria.
  - Not included any cost impacts stemming from the potential conversion of Basslink from a market service to a prescribed transmission service.

Cost stack trends over the horizon:

- ▲ Total price rise of 6%
- ▲ Wholesale prices increase by about 2c/kWh
- ▲ Regulated network prices increase by about 1c/kWh
- ▲ Retail costs increase slightly

Price Trends 2024

Australian Energy Market Commission

Electricity cost components

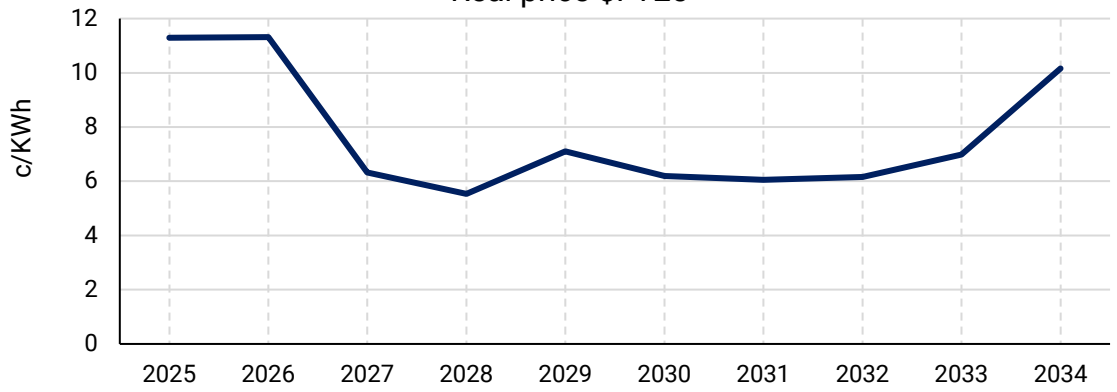
Analyses the movements in cost components, under the base case and the scenarios

November 2024

Wholesale prices are projected to fall initially, but rise toward the end of the horizon as demand increases and supply conditions tighten

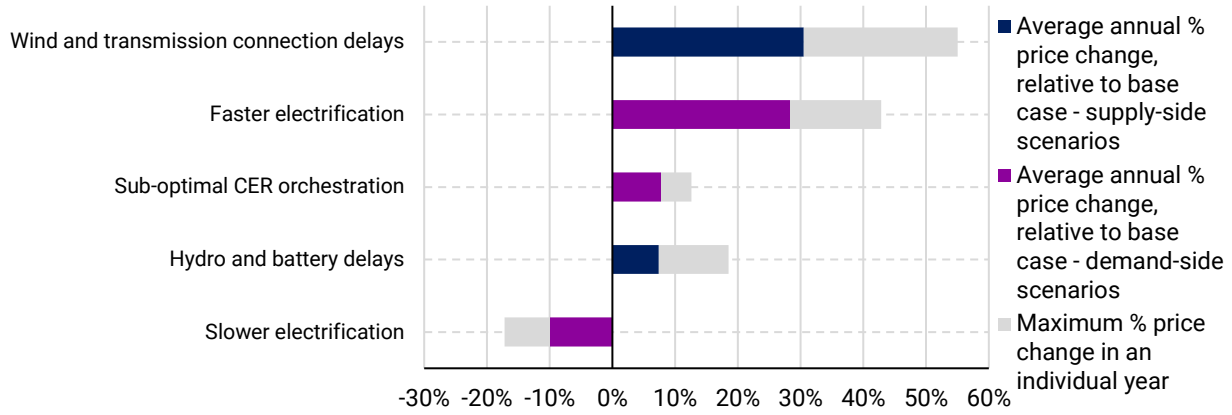
Wholesale costs

Volume weighted average wholesale costs, Real price $FY25



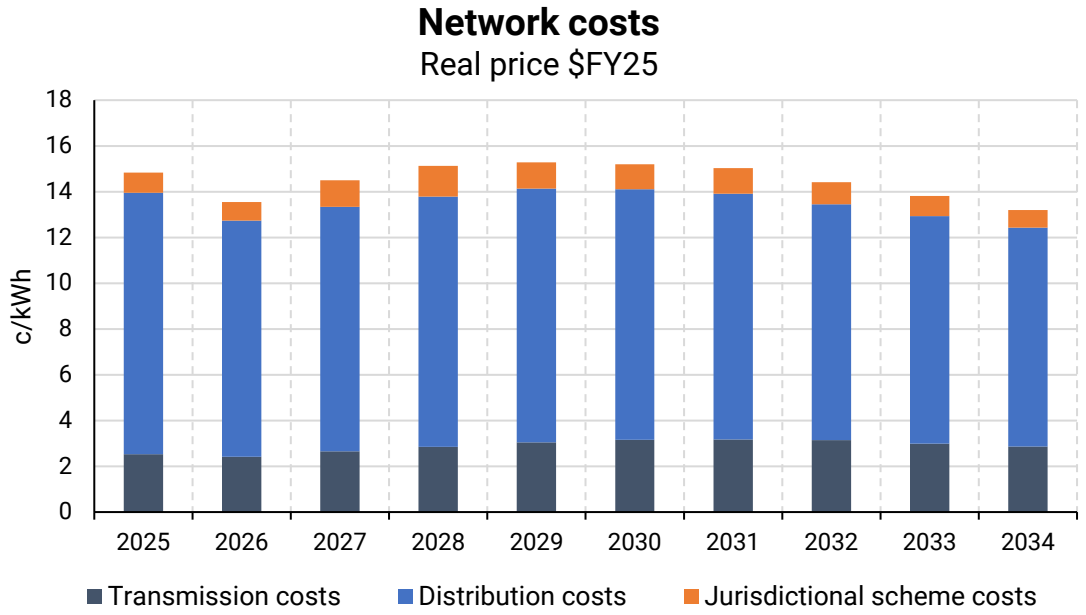
Wholesale costs - Scenario analysis

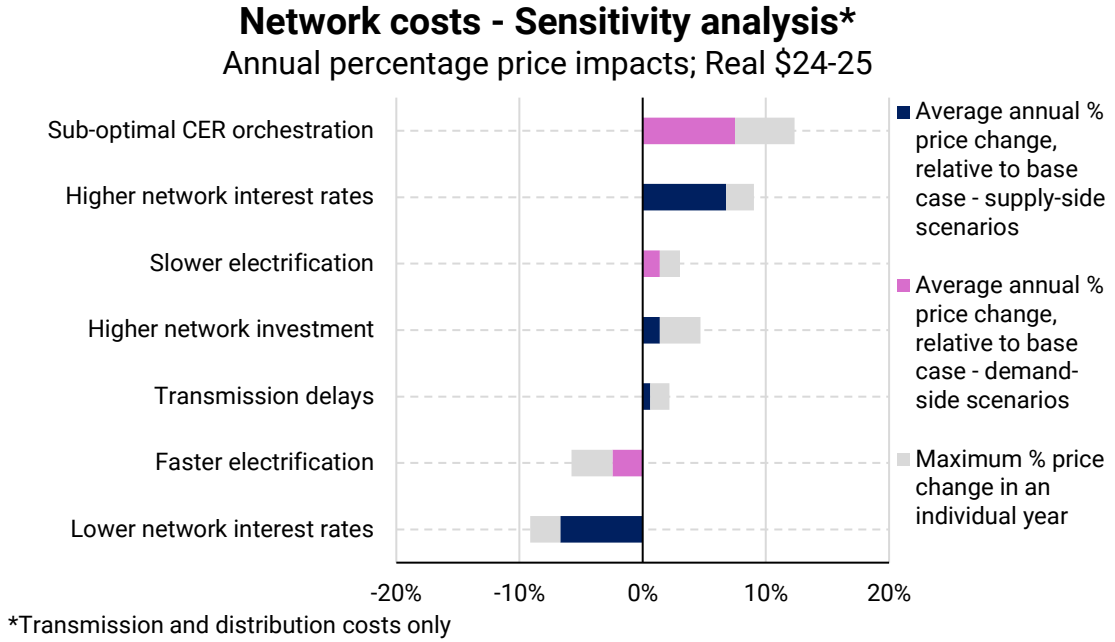
Annual percentage price impacts, Real $24-25



- Wholesale prices are projected to fall by about 10% over the horizon.
- There is a steep drop in from FY26 to FY27, driven by:
  - a large renewable buildout in FY27 according to the Step Change ISP scenario, with 6.5GW of new wind farms and 4GW of solar (including rooftop PV) entering the grid, adding additional capacity with zero fuel costs
  - meanwhile there are no coal exits, meaning that the gap between supply and demand grows larger, leading to lower costs generators setting prices
  - the contracting market overlay exacerbates this drop significantly, as higher contract prices locked in between FY23 and FY25 start to roll off.
- The slight uptick in FY29 is coincident with the closure two coal plants – Vales Point in NSW (1.3GW) and Yallourn in Victoria (1.4GW).
- The rise in prices at the end of the horizon are driven by a combination of further large coal closures and gas-powered generation constraints which are especially tight in this period.
- The wind and transmission connection delay scenario had the highest impact on wholesale prices.
  - This reflects the critical importance that wind plays in a system transitioning to renewables since wind resources have diversification benefits, and can provide low-cost generation in higher demand periods such as evening peak.
- The faster electrification scenario had a similarly high impact on wholesale prices, reflecting the fact even a 5% increase in demand, when not anticipated, can push dispatch outcomes up and use higher-cost generation resources. Note the figure captures only the per-unit price impact (see page 23 for electrification impact on the total household energy costs).
- Storage also plays an important role in wholesale outcomes, with delays in the Snowy 2.0 and Borumba hydro schemes adding 22% and 70% to spot wholesale prices in NSW and QLD respectively during these delay periods (note these are unhedged spot market prices).

Higher consumption is projected to offset an increase in network investment





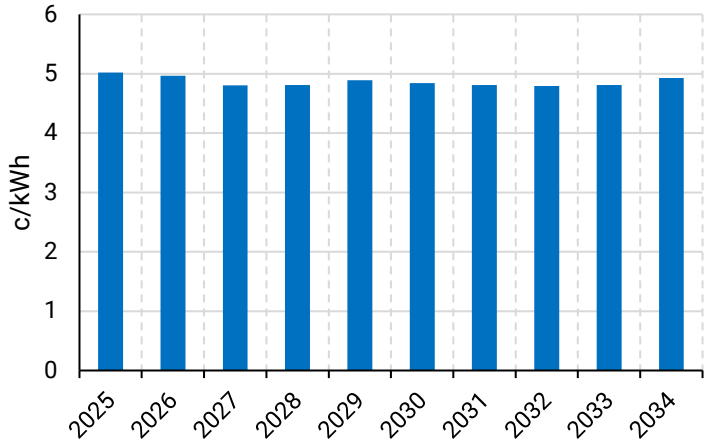
*Transmission and distribution costs only

- Network prices are projected to fall slightly over the 10-year outlook, as a 23% increase in residential consumption offsets an increase in both transmission and distribution investment.
- Despite a significant transmission buildout in the forecast period, the impact on residential prices is also reduced because transmission costs are a small share of residential customer bills.
- NSW electricity roadmap costs, which are recovered through network charges, are the largest jurisdictional scheme cost.

- The sub-optimal CER orchestration scenario had the largest impact on network prices. This is because it increases peak demand, which drives additional network investment, despite no additional electricity consumption over the year.
- By contrast, a faster rate of electrification would have a smaller impact on network prices – because an increase in consumption offsets the additional investment required, meaning that per unit costs are broadly unchanged.
- The network interest rate scenarios highlight that network prices are sensitive to changes in interest rates.

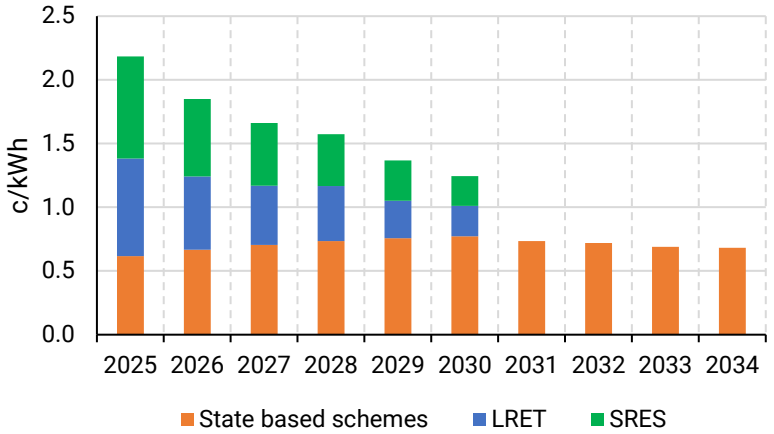
Retail and metering costs are projected to be flat while renewable/energy efficiency schemes costs are falling

Retail costs
Real price $FY25



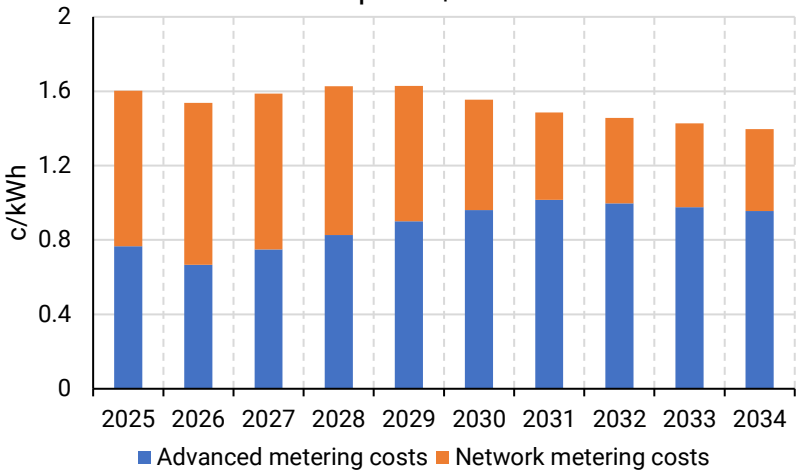
- Retail costs include operating costs, provisions for bad and doubtful debt, and retail margins.
- These are projected to be broadly stable over the 10-year horizon.

Renewable/Energy Efficiency Schemes costs
Real price $FY25



- Renewable and energy efficiency schemes costs include the costs for retailers under: the Small-scale Renewable Energy Scheme (SRES), the Large-scale Renewable Energy Target (LRET), as well as a number of state-based schemes.
- These costs are expected fall over the outlook, as a number of schemes are set to expire in 2030.
- Potential costs from the future Renewable Electricity Guarantee of Origin (REGO) were not modelled as the scheme is voluntary.

Metering costs*
Real price $FY25



* Victorian metering costs are included in network metering costs.

- Our metering costs projections incorporate the roll-out of smart meters by 2030.
- While costs are projected to increase slightly initially, as legacy accumulation meters are replaced, these costs are stable over the horizon.
- A coordinated roll-out of smart meters would have a range of wider benefits, which include supporting the effective use of CER.

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