evoenergy

Attachment 1: Capital expenditure

Regulatory proposal for the ACT electricity distribution network 2024–29

January 2023

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1.1. Overview

This attachment explains Evoenergy's forecast capital expenditure (capex) for standard control services (SCS) over the 2024–29 regulatory control period. Capex is any expenditure that has been included in the regulatory asset base and either:

- relates to the purchase or construction of a new asset;
- increases the functionality of an existing asset; and
- extends the service life of the asset.

This attachment includes the amounts Evoenergy is proposing to spend, how it developed the forecast and how this expenditure meets the future needs and expectations of customers, and the requirements of the National Electricity Rules (NER).

Evoenergy's proposed net capex for the 2024–29 regulatory period is $521 million ($2023/24). The components of our proposed capex are summarised in Table 1. A range of inter-related factors has driven Evoenergy's capital investment requirement for the 2024–29 regulatory period:

- **Consumer expectations:** the desire by consumers for Evoenergy to maintain reliability, affordability, take action towards achieving a net-zero future and play a key role in enabling distributed energy resources. These expectations have helped shape our investment program.
- **Robust growth of our region**: the Australian Capital Territory (ACT) was the fastest growing state or territory between the 2016 and 2021 national census[1]. The strong growth of our region is driving customer-initiated work and the need to augment our network.
- **ACT Government's net zero 2045 commitment**: ahead of net zero emissions by 2045, it is crucial that the significant changes in our network required for a net zero emissions future happen responsibly and incrementally over the intervening regulatory periods. In conjunction with a consultant consortium, Evoenergy has developed a dedicated Net Zero Model (NZM) to help guide capex investment decisions during this unprecedented transition.
- **Condition of our assets**: while we have looked for opportunities to extend the useful life of assets based on their condition, to maintain the reliable services our customers desire, we will need to replace assets that are no longer fit for purpose.
- **Emerging technologies such as Distributed Energy Resources (DER)**: emerging technologies are significantly changing the electricity landscape. As consumers increasingly generate, store and export their own electricity back onto the grid, our network must adapt accordingly. We will invest to facilitate this ongoing transformation in the electricity landscape.

These factors are covered in more detail throughout this attachment.

[1] Australian Bureau of Statistics 2021, *Snapshot of Australia.* Available at: https://www.abs.gov.au/statistics/people/people-and-communities/snapshot-australia/latest-release#:~:text=ACT%20had%20the%20fastest%20growth,in%20the%20rest%20of%20Australia

Table 1 Evoenergy capex program by category ($ million, June 2024)

	2024/25	2025/26	2026/27	2027/28	2028/29	Total
Replacement	20.4	21.8	23.8	25.7	25.8	117.6
Customer initiated	24.2	23.3	24.3	24.1	26.6	122.5
Augmentation	23.8	24.7	33.5	41.4	45.8	169.3
Reliability & Quality	3.6	2.1	2.0	2.4	2.2	12.3
Non-network	12.7	14.5	11.1	12.8	17.0	68.1
Capitalised overheads	14.8	15.0	17.2	19.5	21.1	87.6
Gross capex	**99.5**	**101.5**	**111.9**	**126.0**	**138.7**	**577.5**
Capital contributions	(10.3)	(10.0)	(10.4)	(10.4)	(11.4)	(52.6)
Disposals	(1.1)	(1.2)	(0.6)	(0.6)	(0.6)	(4.2)
Net capex	**88.0**	**90.2**	**100.9**	**115.0**	**126.7**	**520.8**

Note: individual numbers may not sum to total due to rounding.

The proposed capex for the 2024–29 regulatory period reflects a holistic assessment of the different investment drivers listed above. For example, investing heavily in the network for net zero by 2045 and DER-enablement in the 2024–29 regulatory period would meet consumer expectations in respect of action towards a net zero emissions future and facilitating emerging technology. However, if this investment is made substantially before it is needed to meet demand on the network (and in a time of higher inflation), it could strain against consumer's desire for affordability. Our consumer engagement has indicated that consumers support our approach in this respect, strongly endorsing our net zero cognisant capex program.

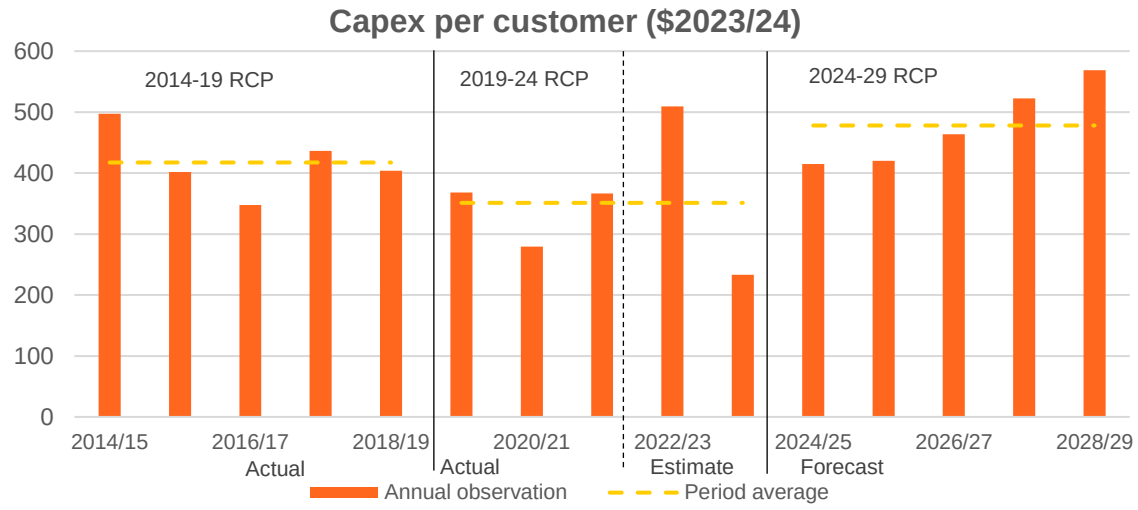
The capital investment outlined in this attachment has been carefully balanced in terms of competing priorities. In our capex program, we have invested proactively, reflecting the future direction of our network as we move towards higher electrification of energy requirements currently provided by natural gas and transport amid the push for net zero emissions in the ACT. Under investing in the network would come with its own risks such as the need for large 'catch up' investment programs in future regulatory periods, which could be problematic in terms of deliverability and cost.

Evoenergy, like other Distribution Network Service Providers (DNSPs), must invest proactively at a time of unheralded change in our energy industry as we move towards net zero.

Evoenergy's proposed capex and tariff reforms are also interlinked. With the ongoing uptake of solar, Evoenergy must plan to manage increased levels of reverse power flows onto the ACT electricity network. Introducing a solar soak charge in key residential network tariffs aims to encourage the absorption of some of those reverse power flows, thereby limiting the need for additional capital and network maintenance expenditure. It is important to note, though that 'limiting' indicates that there is still a need for capex in certain circumstances, despite tariff reform. More detail on Evoenergy's tariff design is contained in the Tariff Structure Statement (Attachment 7).

While Evoenergy's program involves an uplift in capex compared to the 2019–24 regulatory period,[2] given the strong growth in customers on our network, the increase on a per customer basis[3] is not as large an increase, as shown in Figure 1. Given Evoenergy benchmarks strongly on this measure compared to other DNSPs, the increase in capex per customer can be supported in this competitive context.

Figure 1 Evoenergy capex per customer ($2023/24)



As shown in Table 2, the forecast uplift in the program (32 per cent in gross terms and 42 per cent in net terms) has largely been driven by an increase in augmentation expenditure as we increase the capacity of our network. In turn, this is driven by the robust growth of our local region combined with the need to meet increasing demand as the ACT moves to electrify transport and the gas network as we steer towards net zero emissions by 2045.

[2] Evoenergy provides an analysis of the 2019–24 period capex (actual versus allowance) at *Appendix 1.1: 2019–24 Period Capital Expenditure*.
[3] Calculated as actual/forecast annual (net) capex, scaled to $2023/24, divided by the number of customers.

Table 2 Capex program comparison to the 2019–24 regulatory period ($2023/24)

Category	EN19 allowance	EN24 proposed	Change ($ m)	Change (%)
Replacement	107.3	117.6	10.3	9.6%
Customer initiated	123.8	122.5	-1.3	-1.0%
Augmentation	64.2	181.6	117.5	183.1%
Non-network	65.4	68.1	2.7	4.1%
Capitalised overheads	77.6	87.6	10.1	13.0%
Gross capex	**438.3**	**577.5**	**139.3**	**31.8%**
Cap cons	(69.7)	(52.6)	-17.1	-24.5%
Disposals	(1.4)	(4.2)	2.8	207.5%
Net capex	**367.3**	**520.8**	**153.5**	**41.8%**

1.1.1. Structure of this document

The remainder of this document is structured as follows:

1.2. Policy and operational environment — this section provides a summary of key policies and operational trends affecting Evoenergy and its investment needs.

1.3. Consumer expectations — this section summarises what we heard from consumers in the consultation process which shaped our capex forecast.

1.4. Our planning process — this section summarises how Evoenergy plans for and determines our require capex needs.

1.5. Forecasts, methodology and assumptions — this section summarises Evoenergy's capex forecasting methodology and the key assumptions used in developing the capex forecast for the 2024–29 regulatory period.

1.6. Replacement expenditure (repex) — this section summarises our recent historical repex and our forecast for the 2024–29 regulatory period.

1.7. Augmentation expenditure (augex) — this section summarises our recent augex and our forecast for the 2024–29 regulatory period.

1.8. Connections expenditure — this section summarises our recent historical connections expenditure (a function of gross connection expenditure and capital contributions) and our 2024–29 regulatory period forecast.

1.9 Non-network expenditure — this section summarises our recent historical non-network expenditure and our 2024–29 regulatory period forecast.

1.10 Capitalised overheads — this section summarises our recent historical connections expenditure (a function of gross connection expenditure and capital contributions) and our forecast for the 2024–29 regulatory period.

1.11 Capex standard control transmission services — this section provides a description and forecast of the 2024–29 capex forecast related to dual function assets or transmission services.

1.12 Capital contributions — this section outlines forecast capital contributions for the 2024–29 regulatory period

1.13 Summary of forecast capex – this section provides a summary of Evoenergy's proposed net capex for the 2024–29 regulatory period

Unless otherwise stated, dollar figures through this document are expressed in real June 2024 dollars, exclusive of overheads.

1.2. Policy and operating environment

The capex program has been developed at a time of rapid change and heightened uncertainty in the energy industry, reflecting factors such as changing energy policy, continued rapid growth in distributed energy resources (DER) and volatility in electricity and commodity prices amid broader global geopolitical issues. This section discusses these relevant themes to Evoenergy's proposed capex program for the 2024–29 regulatory period.

1.2.1. Net zero emissions policy

The ACT Government has legislated for net zero emissions by 2045 at the latest, including setting interim targets to reduce emissions (from 1990 levels) by:

- 40 per cent in 2020;
- 50-60 per cent in 2025;
- 65-75 per cent in 2030; and
- 90-95 per cent in 2040.

Evoenergy is at the forefront of the national energy transition, and faces a set of regulatory, technical, social and commercial challenges without precedent in the Australian market. This has large and direct implications for Evoenergy's proposed capex program for upcoming and subsequent regulatory periods. The Australian Energy Market Operator (AEMO), in its 2022 Integrated System Plan (ISP)[4] highlighted the enormity of the required changes for the National Energy Market (NEM) to reach net zero by 2050. Under the 'step change' scenario, the following changes occur in this highly complex and rapid national energy transformation:

- **Storage capacity** to increase by a factor of 30.
- **Grid-scale wind and solar** to increase 9-fold.
- **Distributed solar PV** to increase 5-fold.
- **Electricity usage from the grid** to nearly double.
- **Coal generation** to be **60 per cent retired by 2030** and **100 per cent by 2043**.

The ACT Government has set clear expectations for an accelerated uptake of zero emission electric vehicles (ZEVs) as captured in the ACT's Zero Emissions Vehicles Strategy 2022–30. The strategy sets out a range of actions to accelerate the uptake of ZEVs, including commitments to phase out sales of new light internal combustion engine vehicles by 2035, and roll out more charging stations to ensure that there are at least 180 publicly available stations by 2025.

This Strategy was followed by the release of the ACT Government's Powering Canberra: Our Pathway to Electrification Position Paper in August 2022,[5] which sets out the intention to pursue an electrification pathway, and to take action to phase out the use of fossil fuel gas. The paper outlines several steps to progress the transition, including:

- Regulation to prevent new gas connections in greenfield residential and urban infill developments, commencing in 2023.
- Delivery of education and engagement programs to encourage consumers to transition to efficient electric appliances.
- Development of an integrated energy plan by 2024, which will set a whole-of-system plan to transition and optimise the ACT energy system.

The paper is also accompanied by information about the ACT Government's modelling of transition options that has informed its policy positions.

Evoenergy's net zero modelling

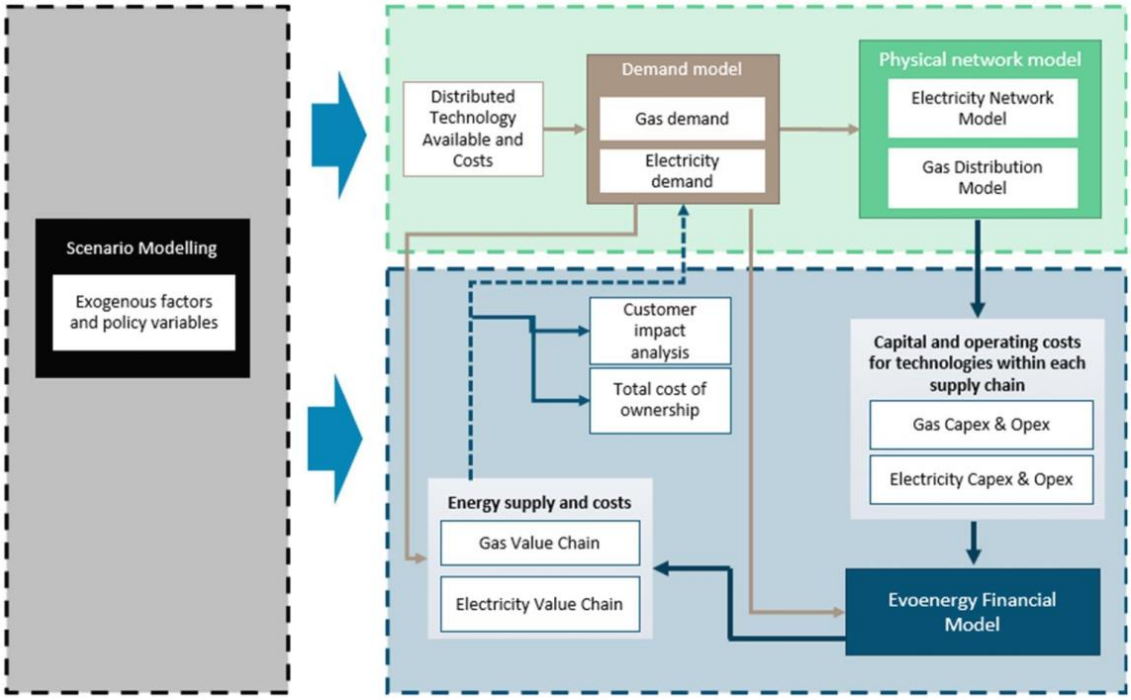
These policies (and accompanying strategies) have had major ramifications for the need to invest capital in our network, as we cater for increased electrification. To that end, Evoenergy engaged Marsden Jacobs Associates to develop a dedicated NZM.

Evoenergy's NZM enables a data driven approach to consider the impacts of a net zero transition on our electricity and gas networks. It acts as a compass and provides ongoing analysis of the potential impacts, trade-offs and costs and benefits of different strategies to inform our strategy and long-term planning. The model is built to be flexible and can be continuously updated and maintained as new material information comes to light. The model is presented in Figure 2.

[4] AEMO 2022, *2022 Integrated System Plan*. Available at: https://aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2022-integrated-system-plan-isp.
[5] ACT Government 2022, *Powering Canberra: Our Pathway to Electrification, ACT Government Position Paper*. Available: https://www.climatechoices.act.gov.au/__data/assets/pdf_file/0009/2052477/Powering-Canberra-Our-Pathway-to-Electrification-ACT-Government-Position-Paper.pdf.

The NZM has been built in consultation with the ACT Government and their consultants, GHD, to share data and compare assumptions used to inform the ACT Government's electrification pathway decision. The modelling in turn relied on work undertaken by other reputable bodies. For instance, Commonwealth Scientific and Industrial Research Organisation's (CSIRO) EV projections and charging profiles produced as part of AEMO's Inputs, Assumptions and Scenarios process.

Figure 2 Evoenergy NZM design



Until recently, Evoenergy's NZM focussed on two pathways to net zero:

- **Full electrification**: providing energy services through electricity network only (decommissioning the gas network)
- **Partial electrification + green gas**: supplying electricity and emissions neutral green gas through the electricity and gas networks to meet consumer energy needs.

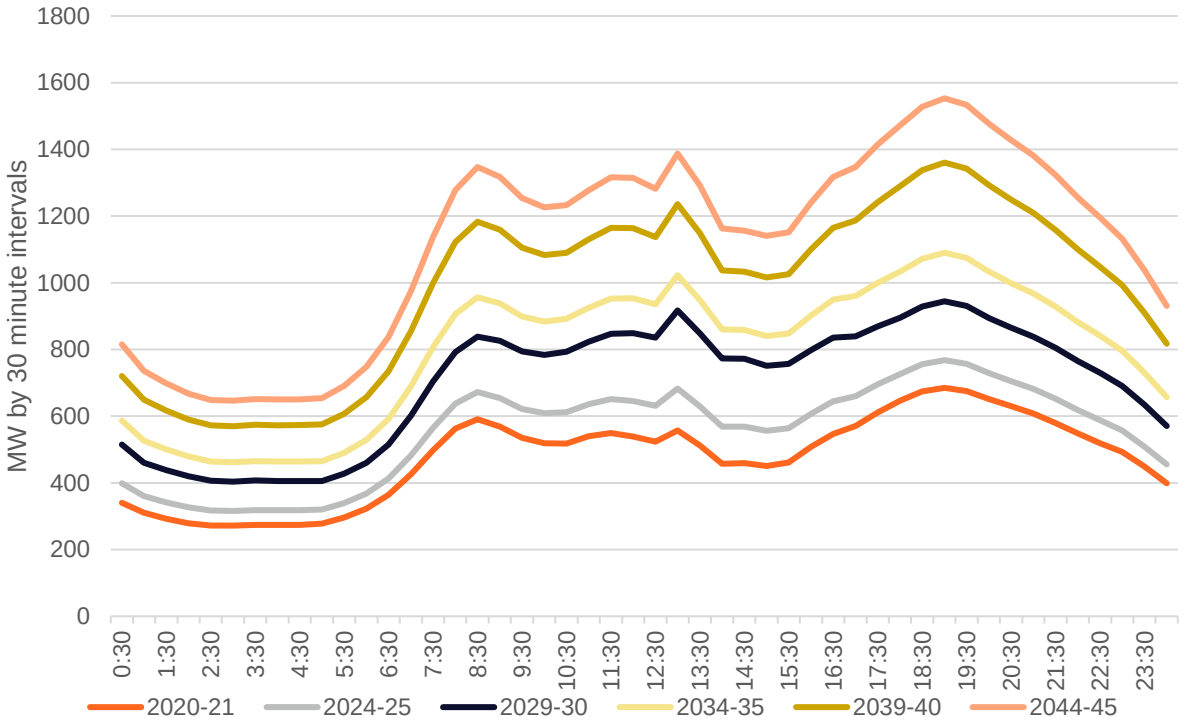
However, since the release of our Draft Electricity Distribution Network Determination 2024–29 (EN24) plan in August 2022,[6] the ACT Government decided to pursue the full electrification pathway. We have subsequently aligned our forecasts accordingly to focus on the full electrification pathway. The NZM has guided proposed capex for the 2024–29 regulatory period, and is a key driver behind the proposed uplift in our augmentation program.

A primary finding of the net zero modelling is that by 2045 winter peak electricity demand will be approximately 2.25 times higher than current peak demand. This increase is primarily caused by the uptake of EVs combined with the electrification of gas demand.

Figure 3 shows the change in the winter peak demand profile over the period to 2045. Peak demand is forecast to occur in the evening period and is forecast to increase to almost 1600MW by 2044/45. For context, at the whole system level, in 2021/22, the summer and winter peaks were 440MW and 685MW, respectively. This highlights the profound changes the net zero by 2045 target will have on Evoenergy's network moving forward.

[6] Which contained a net capex program of $425 million.

Figure 3 Forecast winter peak demand (10% probability of exceedance level)



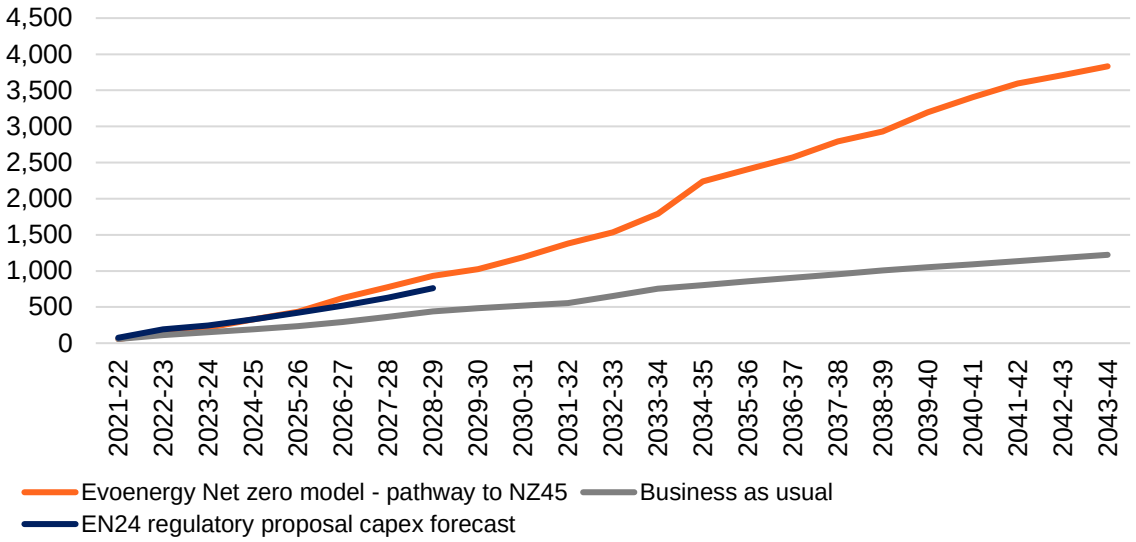
Notably, the increase in maximum demand occurs largely in our existing areas as our existing customers electrify. The increase in demand in existing areas is further compounded by ongoing development in these areas. The ACT is Australia's fastest growing jurisdiction with a planning policy aiming for 70 per cent infill.

To manage the expected increase in peak demand we are undertaking a suite of measures, as outlined in the Tariff section of the regulatory proposal and the accompanying tariff structure statement (TSS) proposal.

Despite these measures, due to the sheer scale of the increased load moving to our electricity network and the ongoing growth in existing areas reinforcement, or reshaping, of our existing network is unavoidable. In particular, the 11 kV feeders connect our zone substations to each suburb and the zone substations themselves.

Over the period to 2045 this additional reinforcement will cost $3–3.4 billion. The NZM indicates that to achieve net zero by 2045, over the 2024–29 period we would require a capex program in the order of ~$743 million, or about a quarter of the total investment required. It is important to note that the proposed 2024–29 capex program is only informed by the net zero model, but not based on it. Our proposed program is lower than the amount listed above, reflecting our assessment of which level of investment best meets competing priorities.

Figure 4 NZM forecast capex to achieve net zero by 2045 ($ million, June 2024)



Following the ACT Government policy announcements on electrification and ZEVs, the NZM was updated to contemplate three scenarios:

1. **Scenario A Realistic base case scenario (June 2022)**: assumes a conservative ACT Government zero emission EV uptake projection and minimal gas conversion. It is based on the ACT Government 2022–30 EV strategy, however, it does not achieve net zero emissions by 2045.
2. **Scenario B Realistic ad hoc electrification scenario (September 2022)**: assumes ad hoc gas conversion pace and optimistic ACT Government zero emission EV uptake targets. It is based on the ACT Government 2022–30 EV strategy, however, does not achieve net zero emissions by 2045.
3. **Scenario C High scenario Full Electrification (October 2021)**: assumes gas conversion rate and zero emission EV uptake higher than ACT Government forecasts for Scenario B. This scenario assumes future changes in policy settings to ensure the ACT achieves net zero emissions by 2045.

Evoenergy used findings from Scenario B in September 2022 to inform the proposed capital program for the 2024–29 regulatory period. This was the most appropriate to reflect current policy settings and recent trend data.

Key findings of Scenario B (ad hoc electrification) in September 2022:

Peak electricity demand in the ACT is forecast to increase from 659MW to 823MW over the study period (2020/21 to 2033/34), which is a 25% increase while electricity consumption increases by 12%.

Electricity customer numbers are forecast to increase by 26,407 from 2020/21 to 2033/34. Cumulative capex in the Evoenergy electricity distribution network is estimated to be $1,223 million by 2033/34, mainly driven by population growth (i.e., new substations and feeders) and end-of-life asset replacement.

For more detail on the NZM methodology and results, refer to Appendix 1.4.

1.2.2. Growth in distributed energy resources

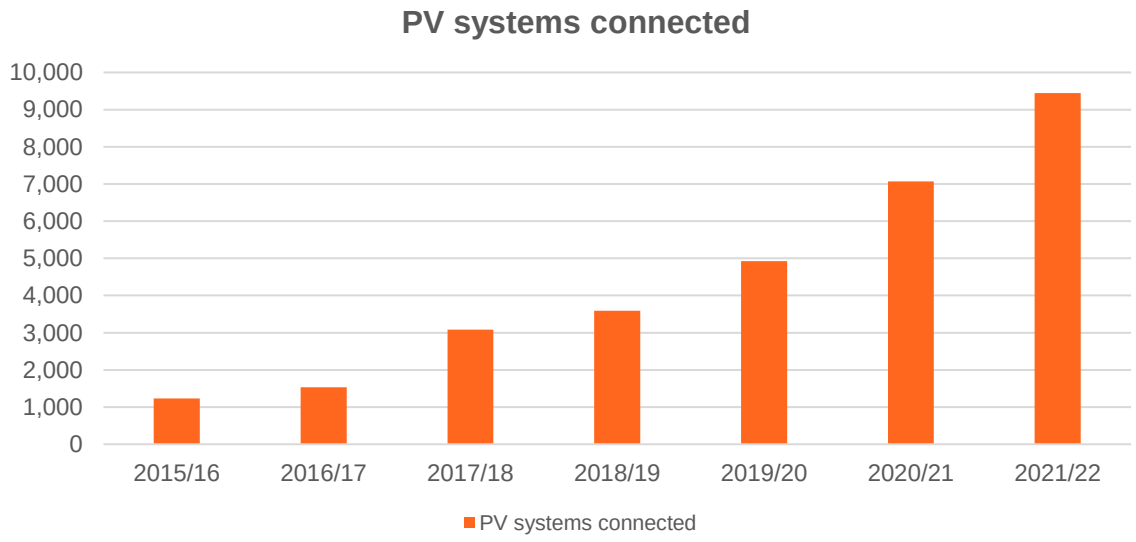
DER are consumer owned devices that, as individual units, can generate or store electricity or have the 'smarts' to manage energy demand. Examples of DER include:

- Rooftop solar photovoltaic (PV) units;
- Wind generating units (at residential or commercial premises);
- Battery storage; and
- ZEVs.

The NEM was designed and operated under the premise of large-scale, centrally generated, and dispatched energy transmitted to end users across the country. Recently, this has been changing in the ACT and, more broadly, across the NEM. One clear theme that has emerged is that no matter the rate of change, central generation and passive consumption are no longer the norms for the NEM.

The ACT is already seeing a consumer-led increase in the uptake of DER. This is driven by changing preferences for how consumers use energy, increased awareness of environmental sustainability, and market factors, such as cost savings for using solar PV amid higher electricity prices and government incentives. Figure 5 shows the number of solar PV systems installed each year has increased strongly since 2015/16. This trend is forecast to continue, with PV capacity forecast to increase from 267MW in 2021/22 to 422MW by the end of the upcoming regulatory period in 2028/29, a 58 per cent increase. Similarly, behind-the-meter storage (batteries), is forecast to increase from 23MW in 2021/22 to 58MW in 2028/29, a 152 per cent increase.[7]

Figure 5 PV systems connected in the ACT



Source: Evoenergy Regulatory Information Notice data.

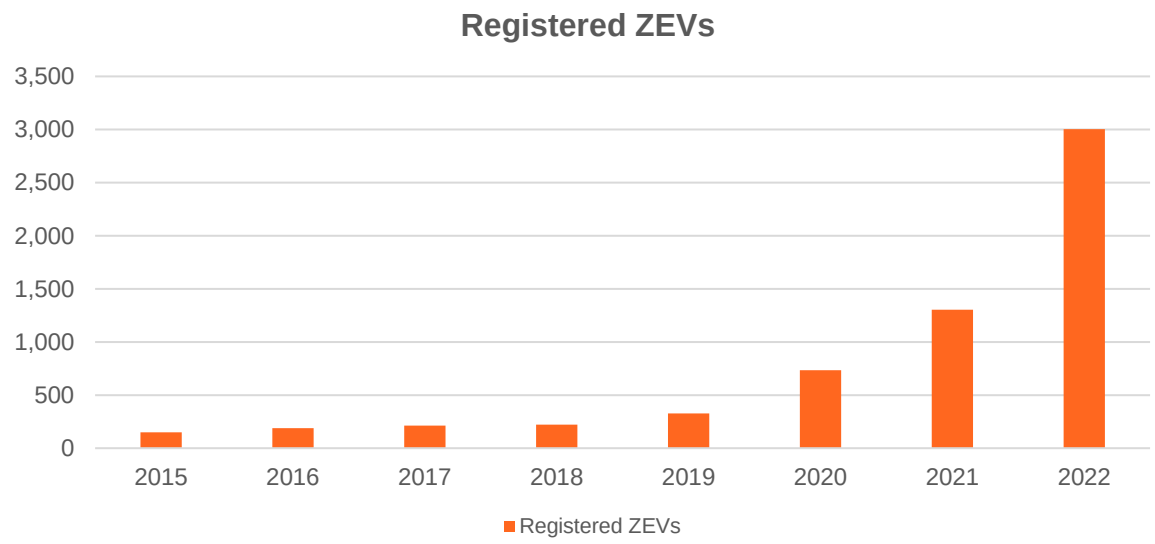
The continued growth in DER will significantly affect our network by disrupting its traditional 'one-way' energy flow structure, with energy flowing from the network to consumers. As the network becomes increasingly 'two-way' in nature, with energy also flowing back to the network from consumers, we must invest to ensure consumers are safely able to export back onto the network. This is known as DER integration expenditure. The technical challenges associated with DER and its influence on

[7] These assumptions are from the revised ad hoc electrification scenario of the Net Zero Model and have also informed Evoenergy's volume (energy consumption) forecasts.

asset management and network planning are discussed in *Appendix 1.2: Asset Management* and, more fully, in the DER-integration business case[8] and the DER Integration Strategy.[9]

We must also invest in our network to facilitate the effective functioning of EVs, including both passenger and commercial vehicles and buses. Figure 6 shows the rapid increase in registered ZEVs in the ACT, with the increase particularly pronounced since 2019.[10]

Figure 6 Registered ZEVs in the ACT



Source: ACT Government.

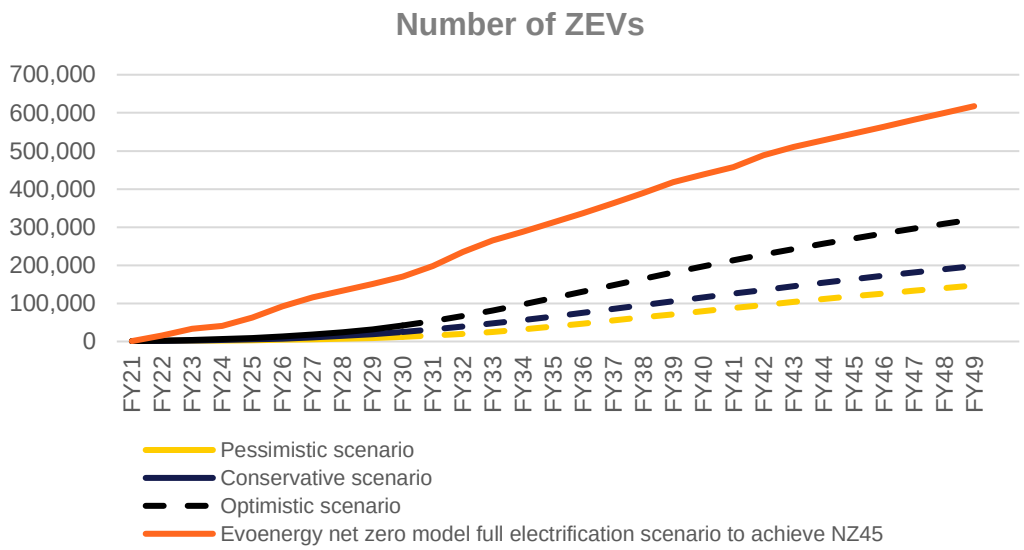
The ACT Government has set ambitious targets for the uptake of ZEVs in its Zero Emissions Vehicles Strategy 2022–30, namely a sales target of 80–90 per cent of new sales by 2030. The uptake of EVs is being encouraged by the ACT Government through a range of initiatives:

- Provide two years of free registration for battery electric and hydrogen fuel cell EVs and investigate the potential for future reforms;
- Provide stamp duty exemption for new zero emission ZEVs;
- Offer $15,000 zero-interest loans for ZEVs, charging equipment, and installation;
- Introduce incentives to encourage the uptake of electric bikes, scooters, motorbikes and trikes; and
- Expand the stamp duty exemption to include used EVs.

Amid the ACT Government's Zero Emissions Vehicles Strategy, the number of EVs in the ACT is forecast to continue to increase. Under the NZM, Evoenergy has aligned its EV forecast with the optimistic scenario forecast by Deloitte Access Economics for the ACT Government. We note that new vehicle sales are currently sitting at 9.5 per cent of new vehicles, which is ahead of the optimistic scenario.[11]

[8] Appendix 2.5.
[9] Appendix 1.5.
[10] ACT Government 2022, *Cars and vehicles,* 2022 observation as at end December. Available at: https://www.climatechoices.act.gov.au/transport-and-travel/cars-and-vehicles
[11] In the optimistic scenario, zero emission vehicles were assumed to reach 8.62% and 12.02% of new vehicle sales in 2022/23 and 2023/24 respectively. Deloitte Access Economics' modelling is available in the ACT Government document, *Electric Vehicle Charging Outlook for the ACT Guidance for industry* (December 2021). Available at: < https://www.environment.act.gov.au/__data/assets/pdf_file/0007/1914802/electric-vehicle-charging-outlook-for-the-act-industry-guidance-2021.pdf >.

Figure 7 Zero emission vehicle roll-out scenarios



Source: Deloitte analysis for ACTG, Evoenergy analysis.

To cater to this substantial change in transport, Evoenergy will need to invest in the network to facilitate the higher electricity demand associated with charging, particularly at peak times. This is discussed in more detail in section 1.7 and Appendix 1.4.[12] Given the associated technical challenges, the continued growth in DER has also necessitated capex related to reliability and quality. These technical challenges are discussed in Appendix 1.6.[13]

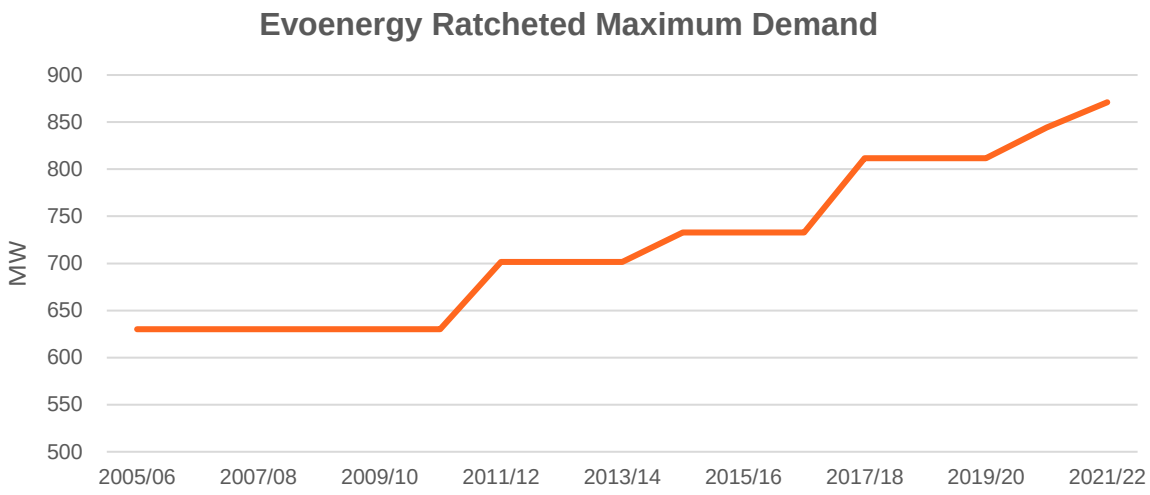
1.2.3. Evoenergy's role in a rapidly growing ACT community

The ACT is growing quickly. It was the fastest growing state or territory between the 2016 and 2021 National Census. In the 2021 Census, the number of ACT residents was 454,000, up from 397,000 in 2016. And 50 years ago, in 1971, the Census counted just 137,000 people. We have an increasing and evolving role in providing electricity network services to the local community.

Evidence of our growing network can be seen in our growing customer numbers over time as well as our ratcheted maximum demand (RMD)[14] (Figure 8). In fact, Evoenergy has experienced the largest increase in customers and RMD of all networks regulated by the AER in the last decade and since the beginning of benchmarking data in 2006. Over the 16 years shown in Figure 8, the RMD has increased by a sizable 38 per cent or an annual average growth rate of two per cent.

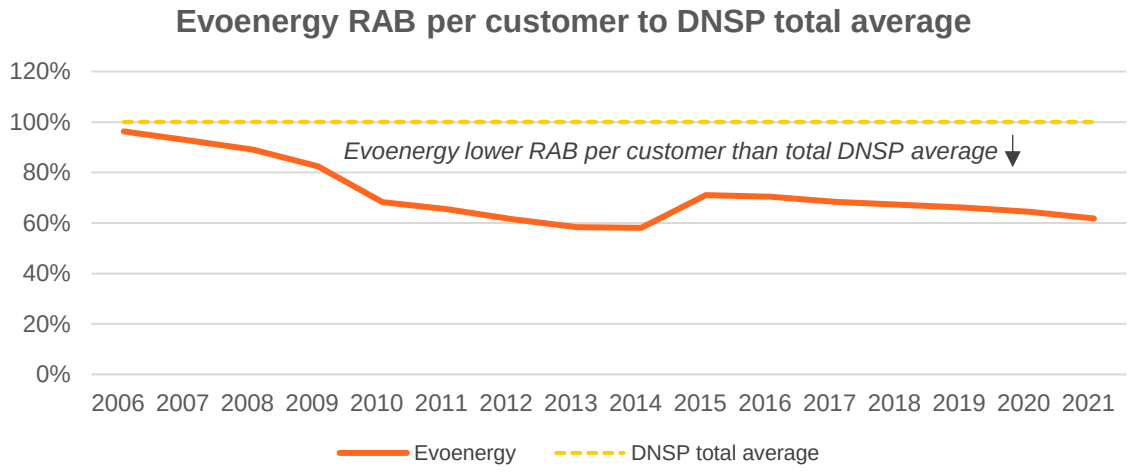
[12] *Appendix 1.4: Marsden Jacobs Associates, Evoenergy Net Zero Modelling Journey – Supplementary EN24 information for the AER.*
[13] *Appendix 1.6: Evoenergy Quality of Supply Strategy.*
[14] The highest non-coincident delivered maximum demand in the relevant year.

Figure 8 Evoenergy RMD 2005/06–2021/22 (MW)



Despite this strong growth on our network, our historical capex has been relatively restrained compared to other DNSPs. Figure 9 shows that Evoenergy's regulatory asset base (RAB) per customer is substantially below the DNSP total average, as represented by the 100% line.[15]

Figure 9 Evoenergy RAB per customer relative to DNSP total average



Similarly, Evoenergy's capex per customer[16] has been consistently below the DNSP total average (the 100% line), consistently spending at least 20 per cent lower capex per customer than the DNSP total average. This is shown in Figure 10.

[15] AER 2022, *Electricity Network Performance Report 2022*. Variable calculated as RAB divided by customer numbers.
[16] AER 2022, *Electricity Network Performance Report 2022*. Variable calculated as annual actual capex divided by customer number in the same year. Actual capex is net capex, i.e., gross capex less capital contributions and disposals.

Figure 10 Evoenergy capex per customer relative to DNSP total average

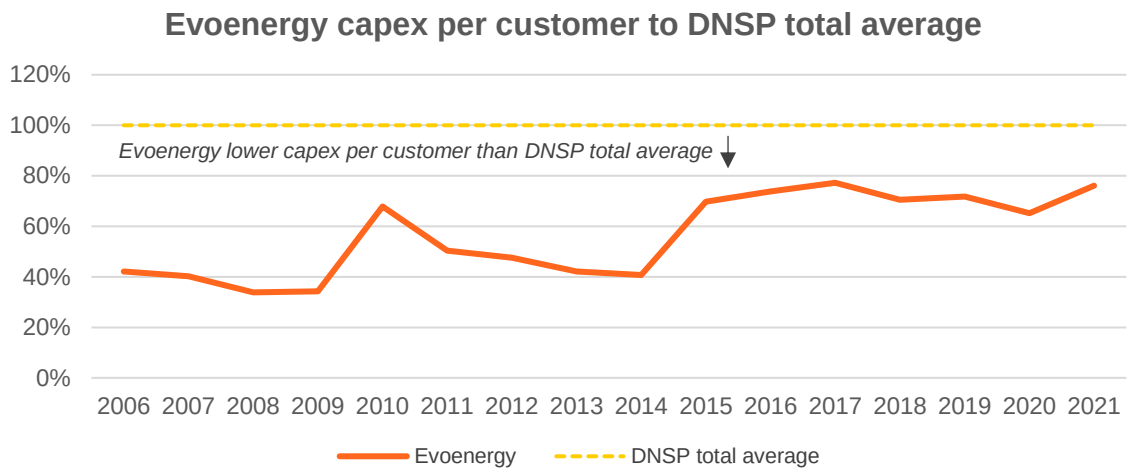
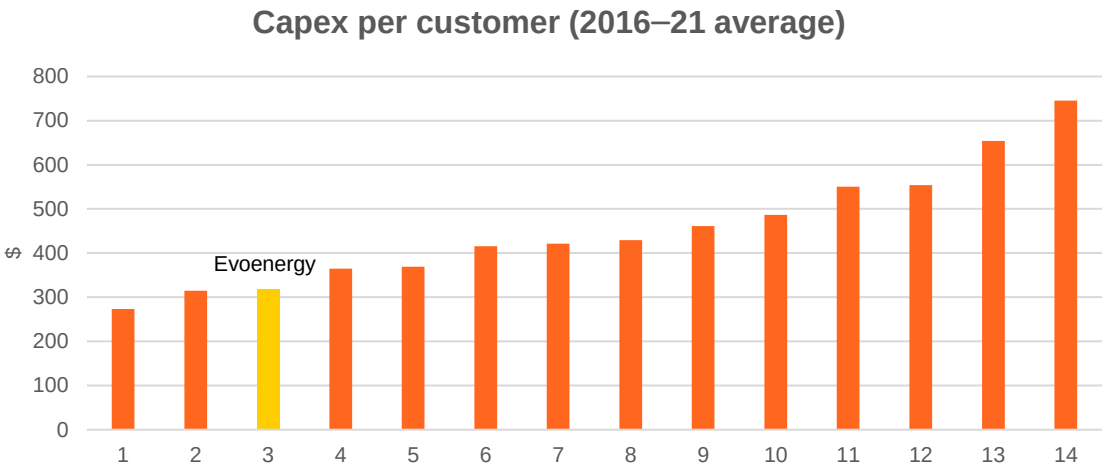


Figure 11 shows Evoenergy has ranked third lowest across DNSPs in terms of actual (net) capex per customer over the past five years of data, from 2016 to 2021.

Figure 11 Capex per customer across DNSPs (2016–21 average)



Moreover, the ACT's robust growth is forecast to continue into the future.[17] The growth of the ACT region has a direct and important effect on our capex during the 2024–29 regulatory period. While Evoenergy has historically run a very lean capex program, the rapid growth of our region, combined with significant policy change towards electrification, has necessitated an increase in our capex program, specifically in augmentation related capex.

[17] This has been explored in more detail in relation to Evoenergy's customer and volume forecasts discussed in *Appendix L: Volume and customer number forecast*.

1.2.4. ACT Government Planning

In 2018, the ACT Government published an updated Planning Strategy. In short, the strategy presents a vision for a liveable and sustainable city, achieved through a focus on urban intensification when it comes to land planning. Urban intensification refers to development within the existing urban footprint.

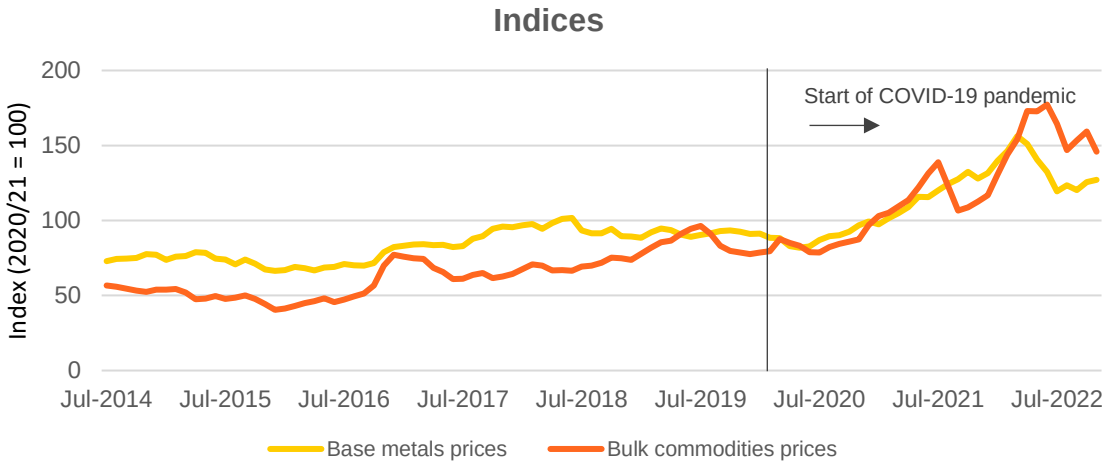
The planning strategy presents a target ratio of 70/30 for urban infill to greenfield development for new residential development in the ACT. This has important implications for the electricity network, particularly the need to bolster electricity infrastructure in existing urban areas as they see growth in demand due to urban infill. This has been a driver of components our augex program, notably high voltage (HV) feeder projects, as discussed in more detail in section 1.7.

Post the 2018 Planning Strategy, draft district strategies have been developed for the ACT's nine districts: Belconnen, East Canberra, Gungahlin, Inner North and City, Inner South, Molonglo Valley, Tuggeranong, Weston Creek, and Woden. The strategies will capture the special character of Canberra's districts and outline their future planning directions. Community consultation on the draft district strategies is open until 14 February 2023.

1.2.5. Volatility in commodity prices and higher inflation

In response to post COVID-19 fiscal and monetary stimulus and, more recently, global geopolitical tensions (the Russia-Ukraine war) and supply chain disruptions, there has been a general sharp rise in commodity prices (see Figure 12). This has implications both directly for electricity prices (e.g., through higher fuel prices for coal or natural gas) and also for the inputs we need to build our infrastructure (e.g., steel, copper, timber).

Figure 12 Base metals and bulk commodities price indices (2020/21 = 100, $AUD)



Source: Reserve Bank of Australia.

Higher commodity prices have fed into a broader acceleration in inflation, with annual inflation increasing to its highest rate in many years. Increased labour shortages amid a low unemployment rate have also contributed to higher inflation. In turn, higher inflation has led to sizable cash rate increases by the Reserve Bank of Australia (RBA) during 2022. This introduces uncertainty into the economic growth and inflation outlook as it remains to be seen how the economy will react to the first tightening cycle in over a decade.

Evoenergy has considered recent and forecast changes in labour and commodity prices in developing its capex program. Forecast commodity and labour prices were included in a broader cost escalation undertaken by BIS Oxford Economics, which is contained in Appendix 1.7.[18]

As well as the cost of commodity prices, labour shortages/supply chain disruptions and resultant backlogs in orders for goods presents a potential challenge for our capex program from a deliverability perspective. Deliverability has been an important consideration as we have developed our capex program for the upcoming regulatory period. More detail on deliverability is contained in Appendix 1.8.

1.3. Consumer expectations

In preparing our electricity network regulatory proposal for the 2024–29 regulatory period, we made engaging with the community our focus. We have spent time with local energy consumers in a variety of ways to learn what they value most in the services we provide, and how we prepare for and respond to the energy challenges and opportunities brought about by the energy transition.

During the initial phases of our engagement program (including community panels and workshops as well as quantitative surveys) six key values emerged. Consumers told us that they want Evoenergy to:

- Maintain reliability and balance decisions with costs;
- Play our role in energy affordability;
- Take action towards achieving a net zero future;
- Enable increased customer and distributed energy resources;
- Ensure network tariffs are fit for future users of the network; and
- Play a bigger role in communicating and informing the community.

Insights relevant to our capital expenditure forecast grouped by key value are set out in Table 3. More detail on our broader program of consumer engagement is contained in section 3 of the EN24 regulatory proposal.

Table 3 Consumer values and the influence on our proposal

Consumer values	How this has influenced our 2024–29 capex program
Maintain reliability but make decisions that balance this with cost.	• Our capex program includes a repex program ($118 million) and reliability and quality spend ($12 million) that Evoenergy believes will maintain our strong performance in terms of reliable electricity services. • At the same time these programs are of a similar magnitude to the allowance for the current regulatory period ($107 million and $7 million respectively), indicating Evoenergy has focused on ensuring continued reliability, but not at an excessively large cost to our customers.
Play our role in energy affordability	• Our program has balanced the need for an uplift in capex for a net zero future in our growing ACT region against the cost of living pressures being faced in our community and more broadly. • We have presented a capex program that, on a per customer basis, is not markedly higher than previous regulatory periods, yet still proactively invests for the ACT to be at the forefront of the net zero transition. • Most capex categories are similar to the current regulatory period in terms of spend, with the need to expand and grow our network (augex) the only

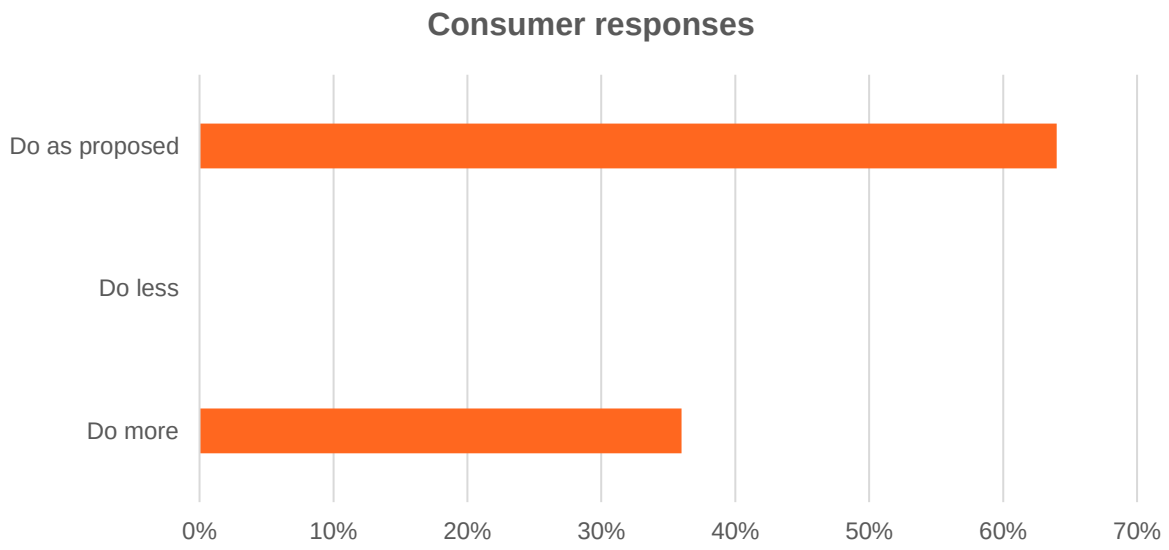
[18] BIS Oxford Economics 2022, *Electricity-related Labour Escalation Forecasts to 2028/29.*

	category with a major increase. We view that as a necessary increase as discussed in this Attachment.
Take action towards achieving a net zero future.	• Our proposal reflects a pace of investment that matches the current information available about the expected speed of the transition. We will continue to monitor consumer trends and policy direction and will adjust our forecast as required. • Evoenergy has commissioned specialist independent modelling (the NZM) to help inform our investment needs in the 2024–29 regulatory period and subsequent regulatory periods. • We're proposing an uplift in capex to make additional investment in the network required to prepare for increased demand from EV uptake and electrification (on what we consider to be the most realistic trajectory), while balancing the need to play our role in energy affordability. This is largely made up of increased investment in zone substation and high voltage feeders driving our $169 million augex program. • We are leading by example by proposing to transition Evoenergy's vehicle fleet to zero emission vehicles.
Play a key role in enabling distributed energy resources	• Our capex program has been developed with a cognisance of the ongoing increase DER and Evoenergy's evolving role as a Distribution System Operator (DSO), as captured in the DER integration step change business (Appendix 2.5) case and DER Integration Strategy (Appendix 1.5) • Our capex program contains targeted investments to support the continued growth of DER and our ongoing transition to being a DSO.

Throughout the engagement process, Evoenergy received support for its capex program in pursuit of readying the network for Net Zero. In community panel 5,[19] Evoenergy asked consumers '*Do you think the capex program is appropriate to support net zero by 2045? Should Evoenergy: Do more/less/as proposed?'.* Results are shown in Figure 13, with the majority of consumers (64 per cent) supporting doing as proposed, with 36 per cent wanting a higher capex program. Importantly, no consumers thought Evoenergy should 'do less'. This indicates a cognisance from consumers of the importance of significant capital investment in light of the net zero by 2045 commitment.

[19] Held on 25 June 2022. It should be noted at the time of the Draft Plan, Evoenergy's proposed (net) capex program ($2023/24) was $425 million. It was subsequently revised higher considering ACT Government announcements. These announcements related to the Zero Emissions Vehicle Strategy and the pathway to electrification announcement, are both discussed in section 1.2. These announcements led to an upgrade in demand-driven augex in our proposed capex program, most notably through increased EV uptake.

Figure 13 Consumer response to support for capex program to prepare for net zero



While the community panel was supportive, only 57 per cent considered that the proposed investment would provide for current and future needs regarding a move to full electrification. The remaining 43 per cent considered that more information was needed as there were too many uncertainties.

Consumers remained supportive of Evoenergy's revised higher capex program ($516 million at the time)[20] amid the energy transition in Community Panel 7,[21] with 100 per cent of attendees supporting the change. However, as with the earlier discussion uncertainty was again a key theme.

Feedback on the revised capex forecast included:

- There is still so much uncertainty in the future.
- There needs to be an increase in funding in response to the demand challenges.
- Evoenergy will need to ensure that there is enough contingency and flexibility in the modelling to be responsive given the fast-changing environment.
- Some concern that the potential for technological transformation remains underestimated.

When asked to identify any risks, or should the forecast be different from the modelling, panel members noted:

- Potential for bigger or smaller gaps in the investment required and the impact on energy bills if additional funding is required.
- Insufficient action and investment in the short term could mean responding to issues in the future more expensive.
- Significant underfunding will impact consumer confidence in changing to EVs and will lead to a lower uptake.
- The risk depends on what people can afford, for example, EVs or solar or installing more efficient home appliances (heating, cooling).

[20] Updates to inflation forecasts and minor changes to projects led to a further slight increase in net capex to the amount contained in this Attachment, i.e., $521 million.
[21] Held on 31 October 2022. This was the final Community Panel session held before the regulatory submission.

For instance, our community panel was asked their thoughts on the shift in Evoenergy's EV uptake forecasts between the Draft EN24 plan and the EN24 regulatory proposal, that is, shifting from the base case EV uptake to the optimistic case forecast by Deloitte for the ACT Government.[22] Some consumer responses are listed below, reflecting the significant uncertainty around how the EV transition will play out. Some thought forecasts were pessimistic, while others thought they may have been optimistic, for instance, if alternatives such as public transport or active travel were taken up more than expected.

Consumer panel responses on the EV forecast:

- Affordability and incentives are definitely going to be a factor in enticing customers.
- Do the EV uptake forecasts consider that some households will downgrade from two cars to one car, and instead use public transport and active travel more?
- Uptake assumptions seems to me very optimistic considering the general financial situation.
- The uptake will depend on the affordability of EVs. The uptake may even be more optimistic or worse than the pessimistic forecast.
- That it was obviously going to happen, with car makers saying they are converting to EV and the direction of Europe.
- I'm surprised at the low number of projected uptake of EVs especially when petrol and gas vehicles are being phased out.

[22] Refer to Figure 7 above.

Our engagement program also included quantitative surveys to complement our deliberative engagement. The survey included intentions around electrification including moving away from gas, purchasing an EV and the associated timelines. For instance, 80 per cent of Canberrans intending to buy an EV will make their purchase within the next five years.[23] This amounts to 26 per cent of the local population intending to purchase an EV within the next five years. While not directly relied upon these insights indicated that there is likely to be a rapid increase in EV uptake.

Through the community panel process, members came to understand Evoenergy's drivers of capex for the different categories, our historic spend (in the 2014–19 and 2019–24 regulatory periods) and our proposed program for the 2024–29 regulatory period. We discussed our proposed capex program would be an increase and explained the reasons for the uplift, of which net zero was a key driver. This included presentation of the likely bill impacts of our regulatory proposal. Consumers were cognisant of the enormity of the net zero transition and supported our program, noting its unavoidable uncertainties.

During the 2024–29 regulatory period, consumers will benefit from our capital investment in the network through an electricity service that is:

- **Reliable**: Evoenergy is one of the most reliable DNSPs in Australia according to the AER's Regulatory Information Notice (RIN) data.[24]
- **Safe and secure**: our network is both safe for our customers and secure from external influence.
- **High quality**: delivering consumers with a stable sinusoidal waveform free of distortion, within voltage and frequency tolerances. We proactively monitor and invest to ensure we supply the electricity that our customers need.
- **Future focused**: we are adapting to new technologies, such as DER, as well as the ACT Government's net zero emissions target by 2045.

1.4. Our planning process

Evoenergy's capex program has been developed with our well-established capital investment planning processes. Appendix 1.2 details how our Asset Management System (AMS) contributes to developing prudent and efficient capital expenditure. This section provides a summary of our planning process as it relates to capex.

1.4.1. Our Asset Management System

Evoenergy has a well-established AMS and is certified for compliance with the ISO55001 Asset Management Standard. Our AMS system supports strategic decision making and the development of capex and opex forecasts. The system has been used for creating investment plans that are submitted annually to executive management for endorsement.

The AMS continues to evolve to ensure planning methodologies remain prudent and efficient, including adopting principles from the AER industry practice application note (Asset Replacement Planning 2019).

Within the AMS, a key tool is Evoenergy's Asset Investment Optimisation (AIO) tool, also known as PowerPlan. The AIO tool is integrated with Evoenergy's operational technology to enable data-driven forecasting processes. The asset register is sourced from the asset database and Geospatial Information System (GIS), forming the foundation of the bottom-up forecast. Asset lifecycle models

[23] EN24 'Have your Say' survey results, 718 respondents answered questions related to EVs.
[24] Evoenergy's reliability performance is discussed more fully in the Network Reliability Strategy contained at Appendix 1.14.

are applied to the assets to create Asset Portfolio Strategies (APS) which detail required capex and opex forecasts, a program of work, and projected future asset health and risk.

Network augmentation investments are also registered in the AIO tool. This allows for optimised and prioritised investments while facilitating integrated planning processes where asset replacement and maintenance plans are accessible and visible to network capacity planners.

Ultimately, this tool develops and consolidates investment plans for 30 years including the current and upcoming regulatory control periods. This information identifies capex and opex forecasts for each asset and network investment category.

1.5. Forecasts, methodology and assumptions

This section explains Evoenergy's approach to capex forecasting, consistent with the capex objectives and factors set out in the Rules and the AER Guidelines. Clauses 6.8.1A of the Rules require Evoenergy to inform the AER of the methodology it proposes to use to prepare the forecasts of capex and opex that form part of its regulatory proposal at least 24 months before the expiry of a distribution determination that applies to the DNSP.[25]

Evoenergy's expenditure forecasting methodology was submitted to the AER on 30 June 2022. The methodology was prepared in accordance with the AER's guidelines.

The subsections that follow provide forecasts for each of Evoenergy's capex categories and a discussion of the particular assumptions and methodologies adopted for each category.

1.5.1. AER capex categories

Evoenergy notes the high-level capex categories specified by the AER in the Reset RIN, but has presented its capex forecasts in this proposal in categories consistent with its own internal reporting and forecasting processes. This is shown in Table 4.

Table 4 Capex category concordance (AER RIN and capex categories)

AER RIN categories	Evoenergy capex categories
Replacement	• Asset renewal/replacement
Augmentation	• Augmentation
Reliability and quality	• Reliability and quality improvements
Connection and customer-driven	• Customer initiated capex
Non-network	• Non-system assets • Network IT • Corporate Services Business Support

[25] Clause 6.8.1A(b)(1) of the Rules requires a DNSP to submit its forecasting methodology at least 24 months before the expiry of a distribution determination.

Capitalised network overheads	• Capitalised network overheads
Capitalised corporate overheads	• Capitalised corporate overheads

The AER's Standardised SCS Capex Model also contains an additional breakdown of capex, which is as follows ('AER categories'):

- replacement;
- DER capex;
- augmentation;
- connections;
- ICT capex;
- property capex;
- fleet capex;
- other non-network capex; and
- capitalised overheads.

This breakdown contains some additional granularity compared to the AER RIN categories listed in the Table above.[26]

1.5.2. Evoenergy's expenditure forecasting methodology

Evoenergy's most recently published expenditure forecasting methodology (EFM) covered, *inter alia*, our proposed approach to forecasting capex during the 2024–29 regulatory period. Evoenergy uses a combination of zero-based, top-down and base-year approaches when forecasting capex.

The zero-based method comprises a bottom-up development of the capex program, based on the individual projects required. The actual unit rates used by Evoenergy in constructing project costs are detailed in individual project justifications and asset portfolio strategies. Expenditure forecasts are then escalated throughout the regulatory period in line with appropriate cost escalation factors (section 1.5.3).

Both the key unit rates and the cost escalation factors have been developed with the assistance of independent consultants and in the case of unit rates, verified by external experts.

Evoenergy's key asset management processes, forecasting models and demand assumptions have been reviewed internally, and independently verified to ensure that the capex forecasts contained in this proposal are free of error and reasonably reflect efficient costs. In certain cases, capex is based on a tendering process to secure the lowest lifecycle costs for Evoenergy in accordance with the Evoenergy procedure for purchasing of goods and services. Historical and forecast expenditures presented in this attachment (and relevant appendices) do not include margins referable to arrangements that do not reflect arm's length terms, or expenditure that should have been treated as opex in accordance with Evoenergy's capitalisation policy.

Evoenergy's specific forecasting approach for different capex categories is discussed in the following subsections.

[26] For instance, it breaks down non-network capex into ICT, Property, Fleet and Other. It also includes DER as a standalone capex category. In populating the AER's Standardised Capex Model, Evoenergy has provided its proposed capex program for the 2024–29 period by this breakdown as well. This is shown in section 1.13 below.

1.5.3. Input cost escalation

To account of the fact that different cost inputs (such as labour or materials) may change at a rate different from broader inflation (CPI) during the 2024–29 regulatory period, Evoenergy obtained forecasts of relevant cost escalation forecasts by independent consultant, BIS Oxford Economics. A key forecast is that of wage price inflation (WPI).

As outlined in section 1.2.5., Evoenergy has developed its capex forecast at a time of substantial commodity price volatility and higher inflation than seen in many years, prompting the RBA to increase the official cash rate swiftly. Similar actions have occurred by overseas central banks, raising concerns over broader economic growth and how sticky inflation will be. In one case, central bank tightening could lead to recession and falling commodity prices, while alternatively, if inflation is entrenched, commodity prices could continue to rise. The bottom line is that it is a time of heightened uncertainty that makes forecasting inflation and cost escalation factors more difficult than a time of low and stable inflation.

The report and cost escalation factors BIS Oxford Economics developed are appended in Appendix 1.7.

In applying these factors, Evoenergy applied its judgment as to how they should be applied in the AER's Standardised Capex model. Under this model, there are three cost categories where cost escalation factors are applied:

1. Internal labour;
2. Contract labour; and
3. Non-labour.

Evoenergy has concorded the consultant forecasts to these cost categories as shown in Table 5.

Table 5 Evoenergy cost escalation concordance

Standardised capex model category	Real cost escalation factor applied
Internal labour	EGWWS[27] WPI – ACT
Contract labour	Construction WPI – ACT
Non-labour	Zero

[27] Electricity, Gas, Water and Waste Services.

Evoenergy has decided not to apply real cost escalation to the 'non-labour' category, which captures materials. This decision was due to the following factors:

- **Concordance difficulty**: the AER's standardised capex model requires one series for 'non-labour'. However, the consultant provided a range of series relevant to non-labour costs, both raw commodities (e.g., crude oil, copper, aluminium) and also relevant producer price indices (e.g., steel beams and sections, concrete, cement and sand, etc). With these different forecasts, Evoenergy would have to somehow weight these different forecasts to derive a single 'non-labour' cost escalation factor. This factor would apply to the different projects in the standardised capex model. In turn, that would be problematic as different capex projects would utilise different amounts of materials, depending on their individual nature.
- **AER precedent**: in recent history, the AER has historically applied zero real change for material costs, i.e., forecasting that they move in line with broader inflation (CPI). In general, this is a reasonable assumption.

Based on these challenges, Evoenergy decided to apply a zero non-labour real cost escalation factor for the 2024–29 regulatory period was most prudent and transparent. A summary of applicable cost escalation factors is shown below in Table 6. Real growth in wages (i.e., above the rate of inflation) averages 0.82% per annum for internal labour and 0.86% per annum for contract labour during the 2024–29 regulatory period.

Table 6 Real cost escalation factors 2024–29 regulatory period (%)

	2024/25	2025/26	2026/27	2027/28	2028/29	Average
Internal labour	1.06	0.94	0.76	0.51	0.83	**0.82**
Contract labour	1.18	1.10	0.84	0.45	0.76	**0.86**
Non-labour	0.00	0.00	0.00	0.00	0.00	**0.00**

These cost categories apply to each project entered into the model and require input weights for each project. That is, what proportion of a given project's cost relates to internal labour, contract labour and non-labour. These weights have been developed by Evoenergy based on historical data over the past five years on analogous projects.

1.6. Replacement expenditure (repex)

Proposed repex for the EN24 regulatory proposal ($2023/24): $118 million.

Share of net capex for EN24 regulatory proposal: 23 per cent.

Replacement expenditure (repex) is expenditure to replace and renew Evoenergy's existing assets. As our assets age, they become less reliable and more costly to maintain. Therefore, at some point, these assets must be replaced to comply with our regulatory obligations, particularly regarding network reliability and safety. For example, safety and reliability concerns drive projects such as the ongoing wooden pole replacement program and the proposed underground cable replacement program.

Evoenergy's proposed repex program for the 2024–29 regulatory period is $118 million. In constant dollar terms, this is a relatively small increase on our current period allowance of $107 million and forecast current period spend of $95 million. Figure 14 shows our forecast repex in the context of the 2014–19 and 2019–24 regulatory periods. Our proposed program is a slight increase in actual repex in these two periods. This reflects the current state of our assets, necessitating an increase in repex to maintain the reliable electricity supply our customers require.

Figure 14 Actual/forecast repex across regulatory periods ($ million, $2023/24)

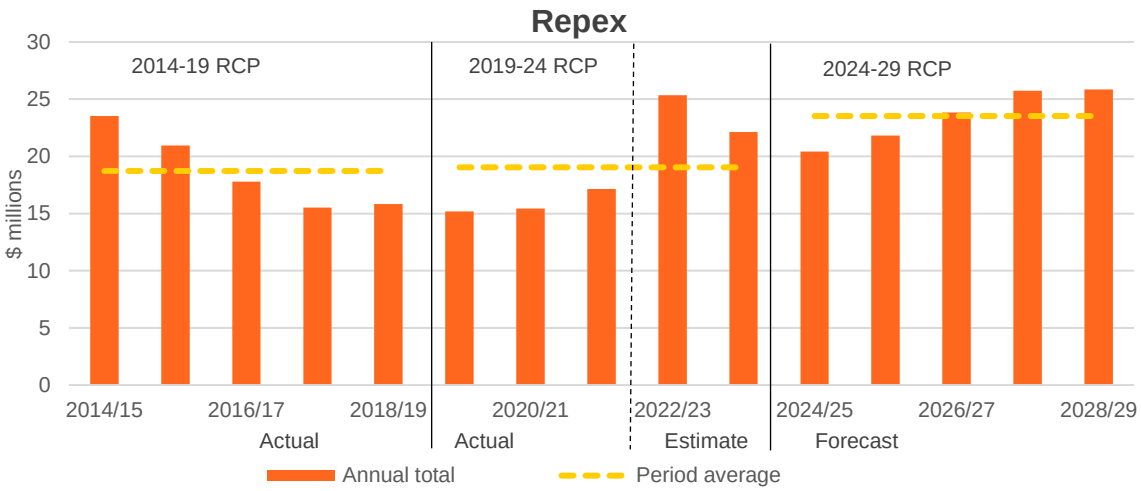


Table 7 Repex forecast ($ million, June 2024)

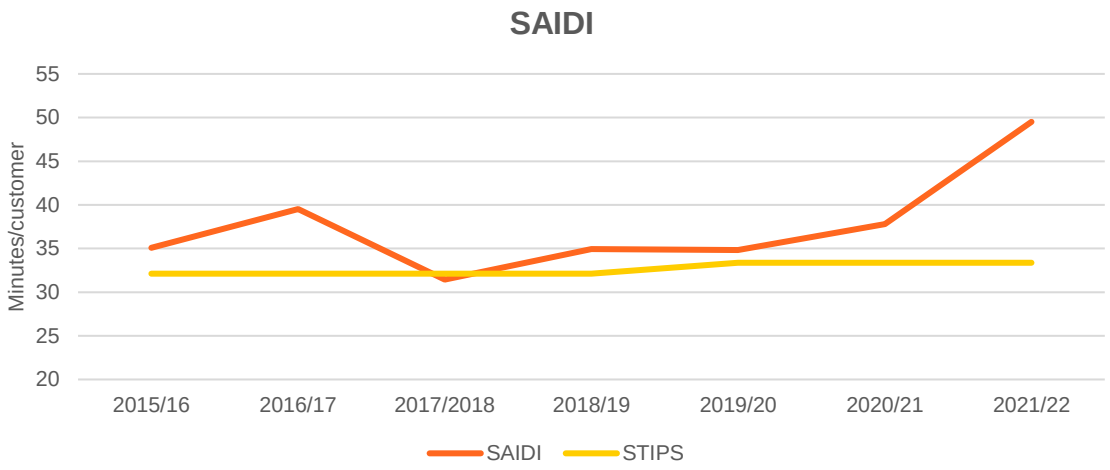
	2024/25	2025/26	2026/27	2027/28	2028/29	2024–29 Total
Total	20.4	21.8	23.8	25.7	25.8	**117.6**

Note: individual numbers may not sum to total due to rounding.

Evoenergy has consistently been one of the most reliable Australian network operators historically, as measured by metrics such as System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI).[28] However, Evoenergy saw a deterioration in SAIDI performance in 2021/22, as shown in Figure 15, which also shows Evoenergy's Service Target Performance Incentive Scheme (STPIS) levels. The SAIFI performance showed a similar deterioration.[29] This worsening in reliability performance reflected a range of factors as discussed in the Network Reliability Strategy.[30] It also highlights that Evoenergy's strong historical performance in terms of reliability is not guaranteed. As assets in our network age, some of which are reaching the end of life for the first time — such as zone substation power transformers and switchgear, zone switchboards, and transmission lines[31] — it is essential we continue to invest to meet regulatory obligations and customer expectations.

Amid the move to electrification, the reliability of supply takes on heightened importance, as alternative energy sources will no longer be available to fill the void. For example, if the electricity supply is down, an EV owner may not be able to run their car, as they could have if they had a petrol car (and spare fuel).

Figure 15 Evoenergy unplanned SAIDI performance (2015/16–2021/22)



Evoenergy's repex is driven by an assessment of risk, which is a function of:

- **Asset condition (health)**: where deterioration of the physical state of assets result in increasing probability of failure, maintenance costs, or safety hazards.
- **Criticality**: the relative importance of reliable asset operation, as measured by the consequences of failure or insufficient functionality.

Evoenergy provides a full description of how the repex program is determined in Appendix 1.2, specifically section 3. In short, Evoenergy's repex program is determined in its broader asset investment optimisation process. Evoenergy applies risk-based methodologies to develop its repex program on a bottom-up basis.

[28] Refer to *Appendix 1.14: Network Reliability Strategy* for a fuller discussion.
[29] Not shown visually, refer to *Appendix 1.14: Evoenergy Network Reliability Strategy* for further detail; Figure 5 shows SAIFI performance.
[30] *Appendix 1.14: Network Reliability Strategy* for a fuller discussion.
[31] These are high-cost long life assets approaching end of life for which Evoenergy has no historical replacement cost.

We provide an assessment of how our repex forecast compares to the AER's repex model and a more detailed breakdown of the replacement forecast into different asset categories (zone substations, secondary systems, overhead assets and ground assets) in the sections below.

1.6.1. Assessing our forecast using the AER's repex model

Evoenergy has assessed its forecast replacement capital expenditure using the AER's repex model, consistent with the AER's preferred approach. This approach allowed us to cross-check and validate our own repex forecast (developed on a bottom-up basis) against one developed using a top-down predictive methodology which takes into account benchmark unit costs and asset lifespans from other DNSPs.

The AER Repex model is most suitable for asset types with moderate to large asset populations with relatively similar replacement practices such as poles and is referred to as modelled repex. The model is less suitable for assets with small populations or diverse replacement practices such as SCADA assets which are not modelled and referred to as unmodelled repex.

Modelled repex includes poles, pole tops, overhead conductors, underground cables, service lines, transformers and switchgear. Unmodelled repex includes SCADA, network control and protection systems.

The model produces four repex forecasts to set a threshold to compare Evoenergy's forecast against, analysing interrelationships between replacement cost and asset lives for network assets. For 2024-29 the AER repex model threshold is $99.4 million.[32] Our proposed repex forecast in 2024-29 is $91.1 million for modelled repex which is $8.3 million less expenditure compared to the AER repex model threshold.

While this top-down testing is a useful check, Evoenergy makes replacement decisions based on risk as a function of asset condition and criticality. Further information is provided in Asset Portfolio Strategies.

Unit costs

Evoenergy engaged CutlerMerz to undertake a unit cost comparison of asset replacement costs. The comparison reviewed unit costs from the AER repex model comparing Evoenergy historical and forecast cost against the NEM median. For most asset categories, the comparative unit rate adopted in the model is the NEM median being less than Evoenergy historical and forecast costs.

This section discusses nuances with respect to Evoenergy's network and asset replacement unit costs.

Evoenergy's network has challenging attributes to negotiate with respect to the reticulation framework of the low voltage (LV) network, density of vegetation throughout the region of Canberra, and the sparsity of the Transmission network feeding local demand.

A large percentage of the Evoenergy LV network is distributed to the customer base via backyard overhead reticulated framework, which is logistically more challenging and subsequently more expensive compared to networks accessible from the street or rural locations. Backyard overhead reticulation incurs additional labour costs, including larger crew sizes required to safely resource and coordinate works over yard fences, costs to inform customers of required property access, and the additional labour required to scope each yard when planning asset replacement works. Additional capital costs incurred to replace assets located in backyard reticulated locations include the use of scaffolding to access poles in locations where machinery cannot access. The use of more expensive

[32] This is the amount per Scenario II as shown in Figure 1 of *Appendix 1.9: Repex Model Results*.

lightweight-fibreglass poles in place of concrete poles, and use of cranes to install concrete poles where machinery or fibreglass poles are not suitable.

Canberra has a high density of vegetation throughout the region, and given that the city is surrounded by bushland, consideration must be made to control for the for the high risk of bushfire in the case of asset failure. LV overhead distribution mains are regularly replaced with equivalently rated 4-Core Aerial Bundled Cable (ABC) in locations where vegetation growth encroaches on the mains.

Evoenergy has low populations of transmission assets (66kV and above) where replacement works are non-recurring and infrequent. As such there is less opportunity to gain efficiency through economies of scale asset replacement for these asset categories.

Comparing comparative unit costs for asset categories in the AER repex model, the following is noted:

- Evoenergy's pole replacement practice for wooden poles is non like for like and are replaced with concrete or composite poles. This practice leads to the installation of a higher quality asset (with longer service life potential) however have higher up-front cost;
- Evoenergy's replacement volumes for linear assets (underground cables and overhead conductors) are small in most years. Asset class strategies for underground cables and overhead conductors replace assets to reinstate after failures or defects. Historical and forecast costs reflect costs to replace small sections opposed to long sections in the order of kilometres. Evoenergy's unit rates therefore do not capture efficiencies gained through replacing longer sections of underground cable and overhead conductor when normalised to 1 kilometre unit rates in the comparison;
- Evoenergy's transformer unit costs are comparable to the NEM median in most categories excluding pole and kiosk mounted transformers were Evoenergy costs are higher. For these categories Evoenergy replaces complete substation including the structure, switchgear, and transformer where all costs are captured in this category and higher costs when compared to other distributors. Conversely, as a result Evoenergy's switchgear costs are lower compared to NEM median unit costs in most categories; and
- In the switchgear category, Evoenergy costs are comparably higher than the NEM median for circuit breakers (66kV and above) as Evoenergy has less opportunity to gain efficiencies through economies of scale due to the low population of these assets and non-recurring infrequent asset replacement.

More detail on CutlerMerz's application of the AER's repex model to Evoenergy's repex program and unit cost comparison is attached at Appendix 1.9.

1.6.2. Overhead assets

Evoenergy's overhead asset portfolio is comprised of a diverse range of infrastructure. This ranges from ageing timber poles through to overhead switchgear and pole mounted substations. These form eight asset classes. The following asset classes are included within this portfolio:

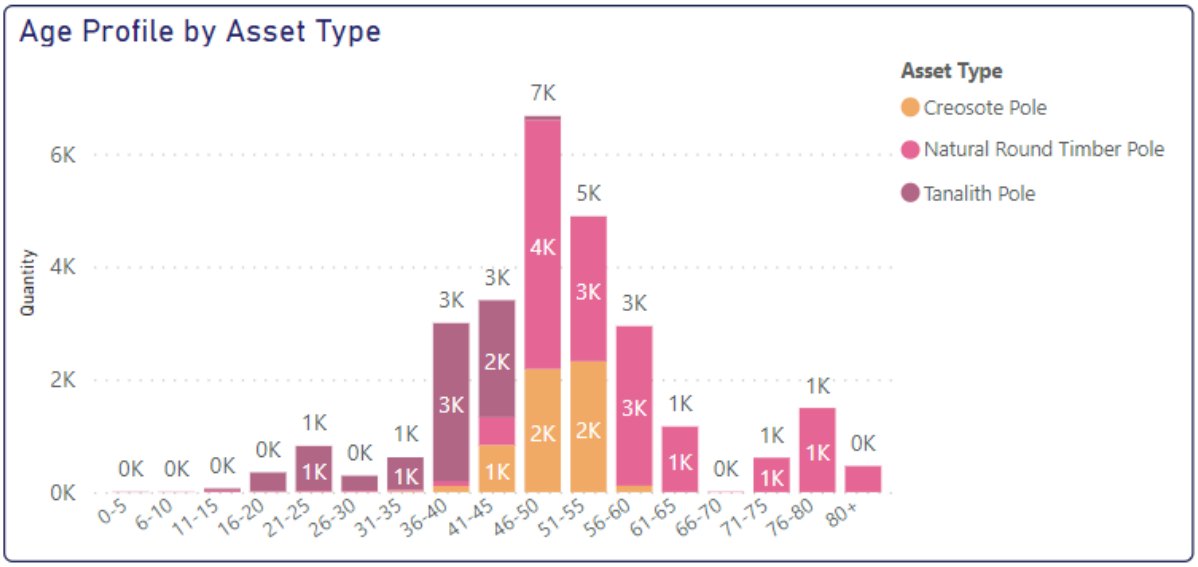
- poles;
- pole substations;
- transmission line structures;
- overhead services;
- overhead distribution lines;
- overhead transmission lines;
- pole hardware; and
- overhead switchgear and automation.

Asset objectives, key risks and opportunities are explored in the Overhead Asset Portfolio Strategy,[33] drawn from Evoenergy's Asset Management Policy, Strategic Asset Management Plan, and the Asset Risk Value Framework. This is used to determine the optimal strategy and program of work investment for the assets.

As summarised in the Overhead Asset Portfolio Strategy, a key component of repex during the 2024–29 regulatory period will be the ongoing pole replacement program. A key challenge within the poles asset class is the rapidly ageing profile of natural timber poles. Evoenergy has three types of timber poles; tanalith, natural round and creosote. As shown in Figure 16, the age profile of distribution timber poles shows an ageing population of 14,240 poles above 40 years old with an average age of 57 years. More than 3,293 poles are above 80 years old and in poor condition requiring replacement to control the risk of failure.

[33] *Appendix 1.10: Asset Portfolio Strategy: Overhead Assets*.

Figure 16 Asset age profile chart (as at July 2022) – timber support structures



While activities such as reinforcement or staking prolong the life of these assets, replacements must occur to maintain Evoenergy's high safety and reliability standards. As all poles are replaced with concrete or fibreglass, replacements have the added benefit of a longer life and greater resilience to bushfires and extreme weather events.

Condition monitoring of poles is carried out to detect timber poles with rapid condition deterioration are replaced before functional failure and assets which deteriorate slowly remain in service while they meet performance criteria. An increasing rate of non-destructive testing of pole strength will continue, with a view to eradicating the use of destructive testing techniques if proven to be successful.

Planned refurbishment typically extends service life by an average of 8–15 years. Poles are refurbished when the minimum criteria for below ground wall thickness is reached and when the serviceability criteria is met for wall thickness at above ground.

Pole replacement is required when poles fail to meet minimum service criteria. This reduces the risk of functional failure. There are three circumstances in which a pole may be identified for replacement:

1. Pole is non-refurbished and fails the serviceability criteria for below ground wall thickness and serviceability criteria for above ground.
2. Pole is refurbished (staked or nailed) and fails the serviceability criteria for above ground.
3. Economic to replace – pole top components in poor condition and it is more economically efficient to bring forward the pole replacement to combine pole top works in one activity.

Evoenergy is forecasting it will replace 1,955 distribution timber poles (planned age replacement) in the 2024–29 regulatory period at the cost of $31.3 million ($2022/23). It also has 40 transmission pole planned replacements at a forecast replacement cost of $2.2 million ($2022/23).

There is a range of smaller asset replacement and refurbishment programs outlined in the Overheads Asset Portfolio Strategy.

1.6.3. Zone substation assets

Evoenergy's zone substation asset portfolio includes a diverse range of electrical equipment. It comprises all zone substation primary equipment across multiple voltage levels and some auxiliary equipment. Equipment is supported by and housed within structural infrastructure such as buildings and associated facilities, which also form part of this asset portfolio.

Zone substations are the main 'nodes' of Evoenergy's electricity network where transmission or sub-transmission voltage levels are typically stepped down to high voltage (HV) distribution level for downstream reticulation to end consumers.

The following six asset classes are included within this portfolio:

- zone substation 132kV and 66kV switchgear;
- zone substation auxiliary AC and generators;
- zone substation transformers;
- zone substation 11kV switchboard assembly;
- zone substation site and structures; and
- zone substation reactive plants.

Asset objectives, key risks and opportunities are explored in the Zone Substation Assets Asset Portfolio Strategy,[34] drawn from Evoenergy's Asset Management Policy, Strategic Asset Management Plan, and the Asset Risk Value Framework. This is used to determine the optimal strategy and program of work investment for the assets.

Evoenergy's Asset Portfolio Strategy for Zone Substation Assets extracts Evoenergy's program of works for zone substation assets during the 2024–29 regulatory period in the context of its broader asset management system. An important project in the 2024–29 regulatory period is the Latham Zone Substation 11kV switchboard replacement (worth an estimated $4.3 million), as detailed in the portfolio strategy.[35]

Latham Zone Substation Switchboard Replacement

Latham zone substation was commissioned in 1971 and supplies more than 25,000 consumers in the Belconnen district. The original oil filled 11kV indoor metal clad switchgear remains in service and is approaching the end of its economic service life.

This 11kV switchgear is increasing in risk to Evoenergy, our consumers and the community. The switchgear contains oil-filled circuit breakers designed prior to the 1970s which have a history of breakdowns causing unplanned outages to consumers. The condition of these assets continues to deteriorate resulting in increasing risk to the health and safety of Evoenergy staff, and the reliability of supply to consumers.

It is proposed to replace one 11kV switchboard at Latham Zone substation with a modern equivalent in the 2024–29 regulatory period. The second switchboard is planned to be replaced in the subsequent 2029–34 regulatory period.

[34] *Appendix 1.11: Asset Portfolio Strategy: Zone Substation Assets*.
[35] An analogous project is planned at the Wanniassa Zone substation, which has not been produced here to avoid duplication.

Another significant project in this asset class is replacement of the No. 2 transformer at Telopea Park, with a forecast cost of $3.4 million ($2022/23). Approximately 40 per cent of all Evoenergy power transformers are older than the stated service life and are displaying signs of insulation deterioration. This project aims to proactively replace one of the lowest health-score power transformers within our network. The purpose is to upgrade the security of supply at one of the most critical zone substations.

1.6.4. Ground assets

Evoenergy's ground asset portfolio includes a diverse range of electrical assets. It consists of buried linear infrastructure (underground cables), discrete pieces of electrical equipment such as transformers, circuit breakers and ring main units (RMUs), and metallic conductors attached to such electrical assets for protection earthing. With an exception for underground transmission cables, all energised assets in this portfolio operate at distribution (both high and low) voltage levels. These assets are installed either on the ground surface or buried in the ground.

To summarise, the following asset types are contained in the ground asset portfolio:

- ground mounted transformers;
- distribution substation/switching station sites;
- ring main units;
- distribution HV switchboard assemblies;
- distribution LV switchboard assemblies;
- low voltage pillars;
- HV and LV pits; and
- point of entry (POE) cubicles and distribution boxes.

Asset objectives, key risks and opportunities are explored in the Ground Assets Asset Portfolio Strategy,[36] drawn from Evoenergy's Asset Management Policy, Strategic Asset Management Plan, and the Asset Risk Value Framework. This is used to determine the optimal strategy and program of work investment for the assets.

Evoenergy's asset portfolio strategy for ground assets extracts Evoenergy's program of works for ground assets during the 2024–29 regulatory period in the context of its broader asset management system. The repex program from ground assets comprises a large number of generally smaller cost replacements.

During the 2024–29 regulatory period, Evoenergy plans to replace some of the existing assets by delivering the following projects:

- replacement program of padmount and kiosk type distribution substations;
- replacement program of distribution HV and LV switchboard assemblies in chamber substations;
- replacement of the Henley and Pregnant Column type LV pillars; and
- replacement program of HV and LV circuit breakers.

[36] *Appendix 1.10: Asset Portfolio Strategy: Ground Assets.*

1.6.5. Secondary systems

Secondary systems support operation of the primary network assets. Compared to other asset portfolios, the Secondary systems asset portfolio is relatively low value, but is critical for the safe and reliable operation of the network.

There are five key asset classes within this asset portfolio:

1. **Auxiliary DC supply systems**: the function of an auxiliary DC power system in a substation is to provide a reliable and independent source of power for protection, control, monitoring and communications functions at the station
2. **Protection systems**: which enable fault clearing, isolation and protection of network equipment and enhance safety of operations.
3. **Supervisory Control and Data Acquisition (SCADA) systems**: which enables network operation, control or switching, monitoring and data acquisition
4. **Communications systems**: which supports network protection, SCADA, telephony, video and corporate data services
5. **NEM metering**: a portion of Evoenergy's distribution network performs as a sub-transmission function, providing support to TransGrid's 330kV network, known as dual function assets, as defined in the NER. NEM metering is installed in Evoenergy's 132/11 kV zone substations.[37]

While many of these assets are in zone substations, secondary systems assets can be found throughout the network. This asset portfolio enables to Evoenergy to monitor and operate the network.

Asset objectives, key risks and opportunities are explored in the Secondary Systems Asset Portfolio Strategy,[38] drawn from Evoenergy's Asset Management Policy, Strategic Asset Management Plan, and the Asset Risk Value Framework. This is used to determine the optimal strategy and program of work investment for the assets.

Investment in Protection Systems forms a major component of the forecast repex spend for Secondary Systems during the 2024–29 regulatory period. More detail on the program of work is contained in Appendix 1.13.

[37] These Type 3 meters provide transmission metering feeding into the AEMP Market Settlement and Transfer Solution (MSATS) system. The meter data allows the reconciliation of transmission energy purchases and gives an indication of aggregate network losses.
[38] *Appendix 1.13: Asset Portfolio Strategy: Secondary Systems*.

1.7. Augmentation expenditure (augex)

Proposed augex for the EN24 regulatory proposal ($2023/24): $169 million.

Share of net capex for the EN24 regulatory proposal: 33 per cent.

Augmentation expenditure (augex) enlarges our network and its capacity to distribute electricity (demand driven) or improves the quality or capability of the distribution network. Table 8 provides Evoenergy's forecast augex during the 2024–29 regulatory period on a year by year basis.

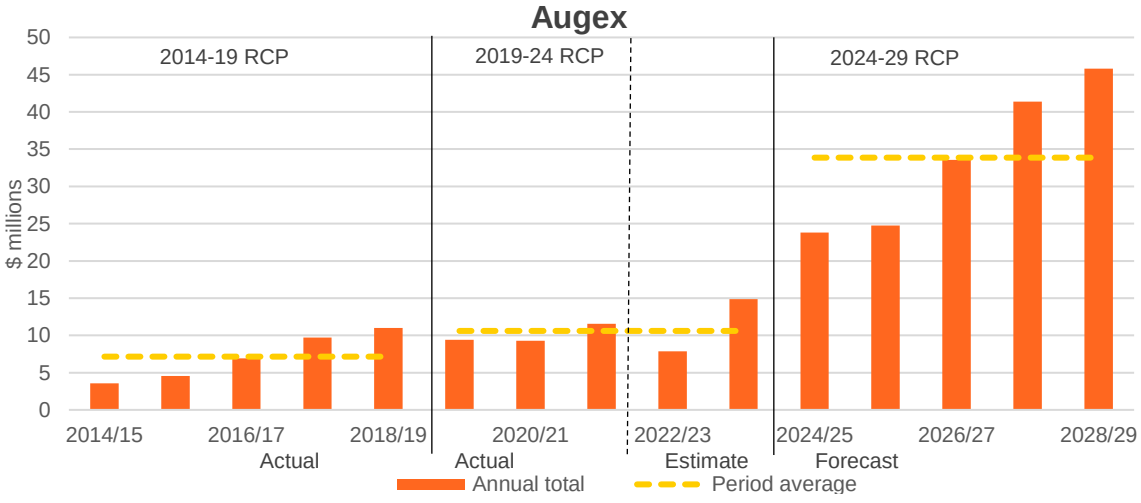
Table 8 Augmentation expenditure forecast ($ million, June 2024)

	2024/25	2025/26	2026/27	2027/28	2028/29	2024–29 Total
Demand driven	22.3	23.3	32.4	39.9	43.7	**161.5**
Secondary systems	1.5	1.5	1.2	1.5	2.1	**7.8**
Total augex	23.8	24.7	33.5	41.4	45.8	**169.3**

Note: individual numbers may not sum to total due to rounding.

Evoenergy's proposed augex program for the 2024–29 regulatory period is $169 million. This is a substantial increase from our current period regulatory allowance of $57 million and forecast spend of $49 million. Figure 17 shows our forecast augmentation capex in the context of the 2014–19 and 2019–24 regulatory periods.

Figure 17 Actual/forecast augmentation capex across regulatory periods ($ million, $2023/24)



However, unlike these periods, Evoenergy's proposed augex program for the 2024–29 contains significant capex aimed at positioning our network for the transformational challenge of Net Zero (recall Section 1.2) while also addressing existing and emerging capacity constraints from the strong growth of the ACT region (recall Section 1.2).

Our augex reflects two different drivers:

- **Demand-driven augex**: expenditure required due to forecast growth in the maximum demand of our customers
- **Non demand-driven augex**: augmentation expenditure reflects other factors than demand growth, including power quality issues and regulatory compliance obligations.

1.7.1. Demand-driven augex

This section considers the large demand-driven portion of Evoenergy's augex program. This forecast has been derived from a combination of top-down and bottom-up approaches. The top-down component comes from the NZM, which has provided a provisional guide for the levels of demand-driven augex required. The top-down forecast has then been validated through bottom-up forecasts which reflect Evoenergy's well-established network planning process as summarised in Appendix 1.2, section 4.[39] Evoenergy uses a risk-based approach in this respect, focusing on economically efficient investments; where the present value of benefits exceeds the present value of costs.

At the heart of this process is ensuring that Evoenergy has adequate supply in place to meet future demand. Our demand forecasting process is crucial in identifying where we need to upgrade our network and by when.

Key factors affecting the demand on our network during the 2024–29 regulatory period include:

- **Increased electrification**: the steady push to net zero by 2045, the related decline in the gas network, and the forecast increase in the number of ZEVs in the ACT increases demand on our network.
- **Organic growth**: the ACT continues to attract residents at a strong rate. Our region was the fastest growing state or territory between the 2016 and 2021 National Census. Our growing pool of consumers drives electricity demand from households, government and businesses.
- **Increased infill**: consistent with the ACT Government's 2018 Planning Strategy, our region has seen increased urban infill. That is, development within the existing urban footprint. This densification has necessitated us upgrading electricity infrastructure to maintain required service levels.

These factors have been discussed in section 1.2 and captured in Evoenergy's Network Development Plan, contained in Appendix 1.16.[40] A key focus of this planning process is to ensure a sufficient level of supply for key components of our network, including sub-transmission lines, substations and distribution lines.

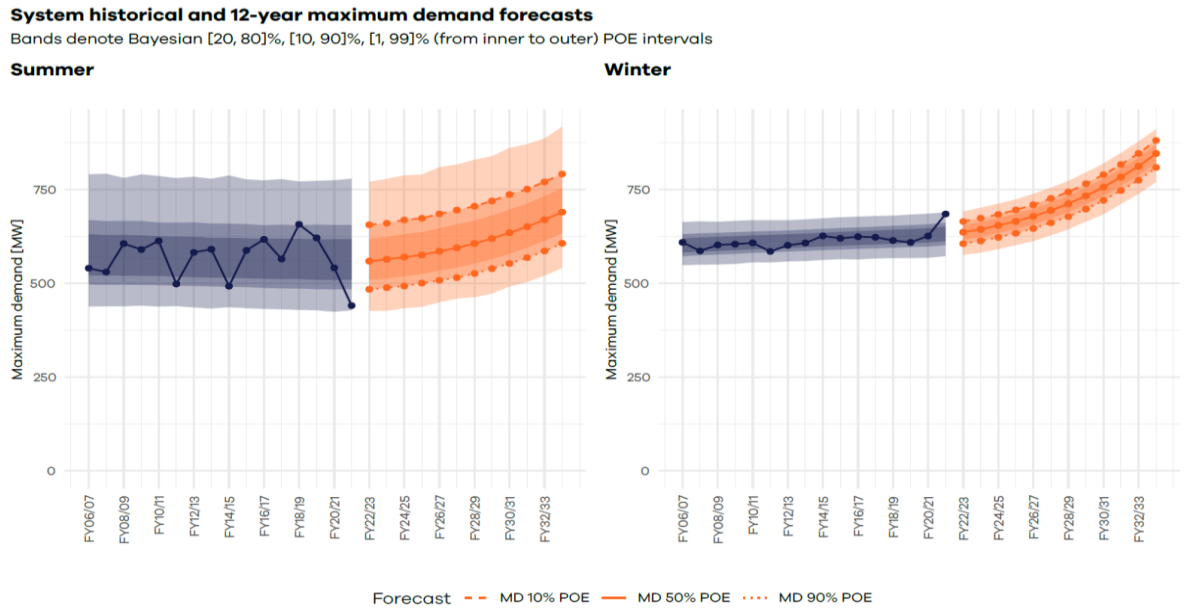
[39] Explored more fully in *Appendix 1.16: Evoenergy Network Development Plan*.
[40] Evoenergy Network Development Plan. It is also discussed in more general terms in section 4 of *Appendix 1.2: Asset Management*.

Figure 18 shows Evoenergy's forecast of system maximum demand at different levels of probability of exceedance: *10/50/90*.

A **probability of exceedance of 10** indicates there is a 10 per cent probability that actual demand will exceed the forecast, which is a more optimistic/higher increase than the base case of a **probability of exceedance of 50**. Conversely a **probability of exceedance of 90** indicates a 90 per cent probability that actual demand will be higher than the forecast. In simple terms, a **probability of exceedance of 10 and 90** act as upper and lower bounds respectively to a base case forecast of demand.

As can be seen, Evoenergy forecasts that peak demand will grow on our network during the 2024–29 regulatory period. Over the ten year period from 2023, the summer peak demand is forecast to increase by 16 per cent and the winter peak demand by 23 per cent. All else equal that indicates we will need to invest in our network to ensure we are able to meet the level of demand on our system.[41]

Figure 18 System peak demand forecast for summer and winter



While system demand is an important metric, our demand-driven investment needs are often determined at a more localised level (e.g., zone substations, feeders or distribution substations). Evoenergy's demand forecasting methodology extends to the zone substation level.

Forecasts provide seasonal maximum demand (as apparent power in MVA) for the zone substations of Belconnen, City East, Civic, East Lake, Fyshwick, Gilmore, Gold Creek, Latham, Telopea Park, Theodore, Wanniassa, and Woden.

The forecasting horizon is 12 years and, therefore, effective for determining our investment needs for the 2024–29 regulatory period. The peak demand forecast for individual zone substations identified several existing and emerging constraints. The zone substations forecast is discussed in detail in Evoenergy's publicly available 2022 Annual Planning Report as well as *Appendix 1.16: Network Development Plan*.

[41] More detail on the demand forecasts is contained in *Appendix 1.16: Network Development Plan.*

Based on our demand forecasting process and the bespoke modelling undertaken for the related ACT Government policy of net zero by 2045,[42] it is necessary to undertake a range of augmentation projects in the 2024–29 regulatory period. Evoenergy has undertaken business cases to justify the prudency and efficiency of these projects. Evoenergy presents key augmentation projects by asset type in the sections that follow. We also note that ACT Government policy around measures to achieve net zero is dynamic and may change significantly during the 2024–29 regulatory period. For this reason, Evoenergy engaged an independent consultant to develop an appendix addressing capex under uncertainty.[43]

1.7.2. Capex under uncertainty

To address uncertainty around the speed of the energy transition and its impact on demand on our network during the 2024–29 regulatory period, the AER's determination will ideally facilitate the ability for Evoenergy to submit a further proposal to vary our capex during the regulatory period, where we are able to provide compelling evidence that this is required.

Evoenergy has proposed a contingent project that would be triggered where evidence emerges that the speed of the energy transition, in particular the uptake of EVs and electrification, is greater than assumed in the capex forecasts put forward in this regulatory proposal, where this consequently requires us to undertake a material program of works during the regulatory period.

Evoenergy has therefore included a contingent project for the 2024–29 regulatory period, as summarised in Table 9. Further information on this contingent project and the basis for its inclusion is discussed in *Appendix D: Capex under uncertainty*.

Table 9 Proposed contingent project 2024–29 regulatory period

Project	Estimated cost ($ m)	Trigger event
Program of substation and feeder works	100-150	Observed EV take-up, independent projections of future sales and observed garaging locations differ substantially from those assumed in Evoenergy's demand forecasts; and/or Recorded demand at one or more of Evoenergy's substations is within 90 per cent of the peak demand (N-1) capability of that/those substations for at least four consecutive half hour periods, or peak demand forecast to exceed the emergency rating within the next five years; and Successful completion of a RIT-D that identifies network expenditure as the option or part of the option that maximises net market benefits to consumers

The following sections discuss the demand-driven augex projects which have been included in Evoenergy's capex proposal.[44]

[42] Refer to *Appendix 1.4: Marsden Jacobs Associates, Evoenergy Net Zero Modelling Journey – Supplementary EN24 information for the AER*.
[43] This engagement has been included as *Appendix D: Capex* under uncertainty to the EN24 regulatory proposal.
[44] For clarity, none of the below projects are contingent projects, but are included in Evoenergy's EN24 regulatory proposal.

1.7.3. Zone substation projects for the 2024–29 regulatory period

Key zone substation projects proposed for the 2024–29 regulatory period are summarised in Table 10. The Curtin and Mitchell zone substations are supported by the Net Zero business case contained in Appendix 1.17, while the Strathnairn and Molonglo projects are supported by standalone project justification reports (PJRs) at Appendix 1.18 and 1.19.

Table 10 Zone substation projects 2024–29 regulatory period

Project	Cost ($ million)*	Description
Molonglo	11.2	Evoenergy proposed to invest $11 million into Molonglo Zone Substation to address the ongoing growth in the region. This project had been canvassed in our 2019–24 regulatory submission. It was originally intended to deliver the substation in three stages, with stage 1 to be delivered in the 2019–24 regulatory period. Stage 2 and 3, involving the installation of 30/55 MVA power transformers and associated switchgear on the substation site were to be deferred by a network scale battery. In the 2024–29 regulatory period, Evoenergy is proposing to complete the remaining works for stage 2 (including the transformer installation) and deliver stage 3 of the proposed Molonglo Zone Substation.
Strathnairn	19.0	This zone substation will be required to service the Ginninderry development, which straddles the ACT-New South Wales border. Ginninderry will have 11,500 dwellings when complete and will be a significant distance from existing infrastructure. The development will have no gas connections.
Curtin	19.3	Evoenergy has identified the Curtin zone substation as being necessary due to the effect of intensification around the next stage of Light Rail 2B to Woden, conversion of horse paddocks in Curtin to an embassy precinct and net zero related demand on our network requiring future load transfers from Woden and Telopea Park Zone Substations.
Mitchell	2.2	Towards the end of the 2024–29 regulatory period, Evoenergy is proposing to spend around $2 million on the Mitchell zone substation. This project will be utilised to provide supply to meet growth in Mitchell and North Canberra, including net zero related demand on our network requiring future load transfers from City East Zone Substation (providing relief to this substation).

Sources: Appendices 1.17, 1.18 and 1.19.

1.7.4. Distribution feeder projects for the 2024–29 regulatory period

Evoenergy will invest significantly in 11kV distribution feeders (feeders) in urban infill areas to address forecast capacity constraints. Our proposed capex program includes feeder projects as summarised below in Table 11. These projects are supported by the business case in Appendix 1.15, with the exception of the net zero related feeder projects, which are supported by Appendix 1.17.

Table 11 Key HV feeder projects 2024–29 regulatory period

Project	Cost ($ m)[45]	Description
City East to Braddon	3.4	New 11kV feeder to address growth in demand from planned high-density redevelopment of car-parking site in the Canberra CBD.
East Lake to Kingston	1.0	New 11kV feeder to address growth in demand from planned high density commercial and residential developments in the Kingston foreshore area and the redevelopment of former switching station.
Civic B13 S63 Supply to CBD Section	3.7	New 11kV feeder from the Civic Zone Substation to Knowles Place Canberra CBD to accommodate increase in load from several large developments in the area.
East Lake ZS to Fyshwick Sec 38	1.6	New 11kV feeder to accommodate increase in load from the planned high-density redevelopment of the Section 38 site in Fyshwick.
Civic Zone Substation to Lyneham	5.3	New 11kV feeder to provide sufficient capacity to supply anticipated load growth in Lyneham area, including from conversion of the existing Canberra racing club to commercial and residential precincts.
Woden Zone Substation to Diplomatic Development (Curtin)	5.3	New 11kV feeder to meet forecast load growth from the planned development on Block 4 and 5 in Curtin for embassies.
Woden Zone Substation to Woden Town Centre	4.1	New 11kV feeder to meet forecast load growth from continued growth of Woden area redevelopment of the Hellenic Club and the CIT Woden development.

[45] Direct escalated cost in $2023/24 per the AER's standardised capex model.

East Lake Zone Substation to Fairbairn	1.6	New 11kV feeder to meet forecast load growth from several commercial developments in the Fairbairn area near Canberra Airport.
Supply to Hume	2.3	New 11kV feeder from the Gilmore Zone Substation to meet growing demand from the industrial precinct at Hume, including the New West Industry Park.
Supply to Greenway	2.8	New 11kV feeder from the Wanniassa Zone Substation to Tuggeranong Mixed Developments.
City East Zone Substation to CBD S3 and 37	5.0	New 11kV feeder from the Civic Zone Substation to Sections 3 and 37. The project is driven by the need to supply the new University of New South Wales (UNSW) Canberra City Campus.
Supply to Gungahlin	5.2	New 11kV feeder from the Gold Creek Zone Substation to Manning Clark Crescent Gungahlin to meet demand from continued growth in high density residential and commercial development.
Net zero by 2045 driven feeders	34.7	Through the NZM, Evoenergy has determined a range of additional feeders will be required due to the forecast uptake of EVs, having had consideration to different forecast uptake rates across suburbs. These feeders include supply to Braddon, Watson, Ainslie, Campbell, Franklin, Garran/Red Hill, Phillip and to the Canberra CBD (three separate feeders).

1.7.2. Secondary systems augex

Evoenergy's augex program also includes around $7.8 million for secondary systems augex during the 2024–29 regulatory period. These investments have been forecast on a bottom-up basis. This expenditure is similar to the allowance Evoenergy had for this category in the 2019-24 regulatory period ($7.2 million in $2023/24).

The proposed investment reflects investment in a collection of smaller projects, on zone substation station control and $1.4 million of expenditure on SCADA communications control.[46] As outlined in the Secondary Systems Portfolio Strategy, Evoenergy is aiming to increase SCADA penetration at the distribution substation level. As at 2022, Evoenergy has 2,534 padmount substations, with 39 of them having SCADA monitoring and control capability. The goal is to achieve and maintain 20 per cent of distribution substations with SCADA capability, enabling accurate state estimation in ADMS and ensuring adequate management of network load, power quality, and DER on a low voltage level.

Overall, these investments in secondary systems are vital to ensuring effective monitoring of our distribution assets and our obligations to maintain adequate quality of supply.

[46] For further detail, refer to the augex projects described in *Appendix 1.13: Evoenergy Asset Portfolio Strategy: Secondary System Assets*.

1.7.2. Reliability and quality improvements

Proposed reliability and quality capex for the EN24 regulatory proposal ($2023/24): $12 million.

Share of net capex for the EN24 regulatory proposal: 2 per cent.

Reliability and quality capex is required for Evoenergy to meet its reliability standards in accordance with its distribution licence and the capex objectives under the Rules.[47] It comprises a smaller share of our proposed capex program during the 2024–29 regulatory period, at $12 million over the five year period, or two per cent of the total proposed (net) capex program.

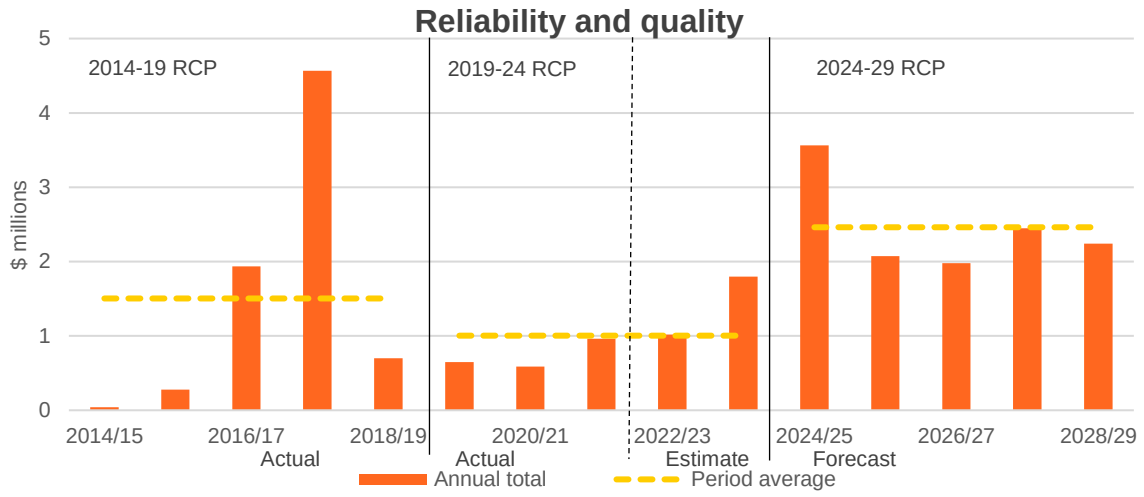
Table 12 Reliability & Quality capex forecast ($ million, June 2024)

	2024/25	2025/26	2026/27	2027/28	2028/29	2024–29 Total
Annual total	3.6	2.1	2.0	2.4	2.2	**12.3**

Note: individual numbers may not sum to total due to rounding.

Evoenergy is forecasting an increase in reliability and quality capex on top of the 2019–24 regulatory period (allowance: $7 million, and forecast actual spend: $5 million), reflecting the rapid uptake of DER on our network (as discussed in section 1.2) and more fully in the DER Integration Strategy.[48] This has necessitated strategic capex investments to maintain the quality of supply. The investment forecast has been derived from a bottom-up, zero-based approach. Key investments are discussed below.

Figure 19 Actual/forecast reliability and quality capex across regulatory periods ($ million, $2023/24)



[47] Rules, cl 6.5.7(3).
[48] Contained at Appendix 1.5.

The top five largest projects under this capex category are listed below in Table 13, with a brief accompanying description of the investment driver. There are also a number of voltage regulation upgrade projects (six) at zone substations, each with a project cost in the vicinity of $200–300,000.

Table 13 Top five reliability and quality projects 2024–29 regulatory period

Project	Cost ($ million)	Description
Distribution Network Monitoring	2.0	Investment to help facilitate the growth of DER and manage quality of supply.
QoS Network Augex (DER)	1.7	Where necessary Evoenergy will augment the network to facilitate two-way energy flows while maintain quality of supply.
Grid scale community battery	2.0	Evoenergy's ownership of the Battery Energy Storage System (BESS) unit will assist business sustainability targets and support ACT governments Net Zero targets. It is anticipated that a BESS located at Greenway Depot would allow the deferral of a HV feeder augmentation and the ultimate removal of a backup diesel generator provided for the Control Room.
UG Feeder reliability improvements	2.2	Provide remote control switching points in the underground HV network to address deteriorating reliability.
Covered HV conductor	1.5	Covered electrical conductor (overhead wire) is generally protected from vegetation contact and less likely to fail or cause a network interruption compared to a bare conductor. Priority will be given to bushfire prone areas to reduce this risk

Note: cost relates to direct escalated cost during 2024–29 regulatory period ($2023/24).

Under the Rules, Evoenergy has the obligation to maintain and control the quality of supply through the distribution and transmission networks within its area of operation. With the increasing penetration of micro-generators such as PVs, the introduction of fixed batteries and EV batteries on the network, there is an increasing need to extend network monitoring to lower levels of the network to maintain existing levels of reliability.

The presence of PVs, introducing two-way flows onto the network, has already been shown to have adverse direct consumer impacts caused by excessive voltage rise, thermal overload of LV feeders, harmonic saturation and load balancing issues on distribution feeders. To address this, monitoring will need to occur at lower levels within the electricity network than has previously been the case in the Evoenergy network. Rapid detection, isolation and control of power quality incidents will be necessary to prevent localised damage to customer appliances or premises, to protect Evoenergy network assets from damage, and to ensure public and staff safety. These factors are considered in Evoenergy's *Quality of Supply Strategy*, which is contained in Appendix 1.6.

Evoenergy's program of work for reliability and quality improvements is more fully captured in the *Secondary Systems Asset Portfolio Strategy* contained at Appendix 1.13.

1.8. Connections expenditure

Proposed connections expenditure for the EN24 regulatory proposal ($2023/24): $123 million.

Share of net capex for the EN24 regulatory proposal: 24 per cent.

Net connections share of net capex for the EN24 regulatory proposal ($2023/24): 13 per cent.

Connections expenditure is the expenditure required to establish new connection assets and upgrades to existing connection assets necessary to meet customer connection requests. Customer connections capital works is dominated by land releases for development by residential, commercial and industrial customers. It also provides for large spot loads that are known and considered definite or likely. The continued growth of the ACT region will drive connections expenditure in the 2024–29 regulatory period.

Evoenergy's gross capex on connections is offset by customer contributions to the works to yield net connections capex.[49] Table 14 provides this breakdown, with forecast gross connection capex of $123 million during the 2024–29 regulatory period, capital contributions of $53 million and therefore net connections expenditure of $70 million.

Table 14 Connections expenditure forecast ($ million, June 2024)

	2024/25	2025/26	2026/27	2027/28	2028/29	2024–29 Total
Gross connections	24.2	23.3	24.3	24.1	26.6	**122.5**
Capital contributions	10.3	10.0	10.4	10.4	11.4	**52.6**
Net connections expenditure	13.9	13.3	13.8	13.7	15.2	**69.9**

Note: individual numbers may not sum to total due to rounding.

This section should be read in conjunction with Appendix 1.21 which is Evoenergy's dedicated Customer Initiated Works (CIW) report. The CIW report provides a breakdown of historic/forecast capex by category of customer connection and a more detailed discussion of forecast drivers as well as relevant policy factors.

Figure 20 shows Evoenergy's forecast of gross connections capex during the 2024–29 regulatory period, relative to prior regulatory periods, in constant dollar terms. Broadly speaking, Evoenergy's forecast gross connections capex is similar to the preceding two regulatory periods shown. It is lower than forecast actual connections capex for the 2019–24 regulatory period ($164 million) which had some large, unexpected connections expenditures that are expected be more 'one off' in nature. Our

[49] Customer contributions are separately considered in section 1.12 but are extracted here for completeness.

forecast gross connections capex is very close to the regulatory allowance for the 2019–24 regulatory period in $2023/24 ($124 million).

Figure 20 Actual/forecast gross connections capex across regulatory periods ($ million, $2023/24)

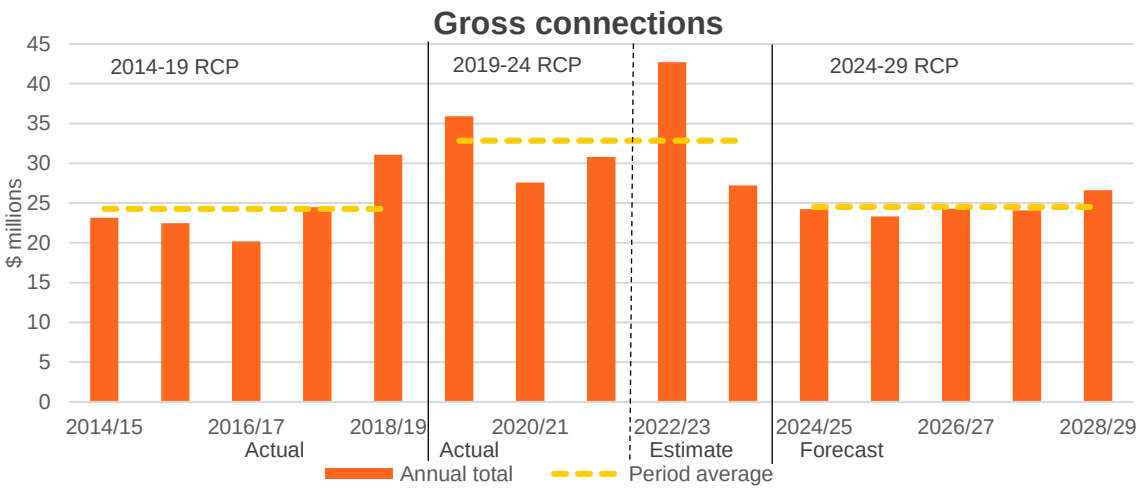
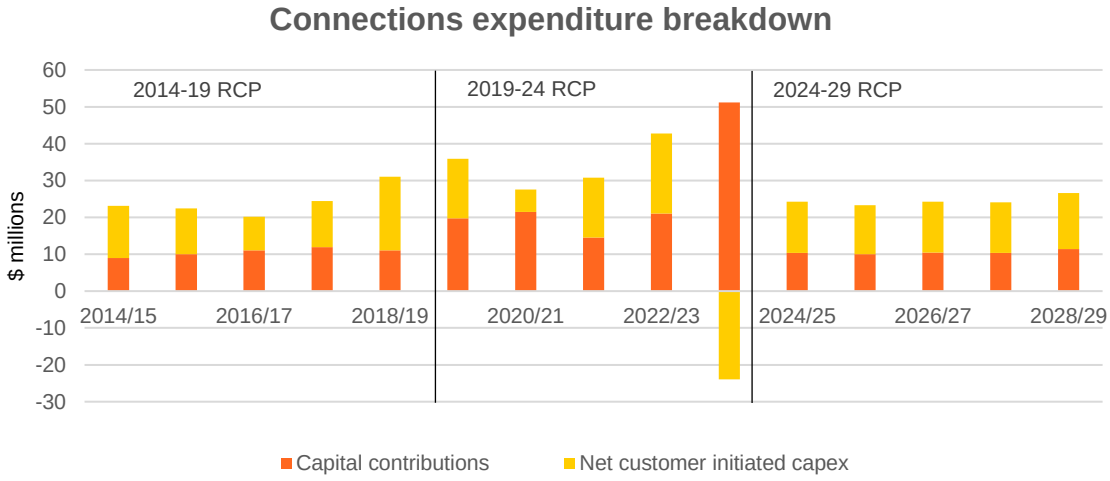


Figure 21 shows the breakdown of gross connections capex between capital contributions and the residual (net customer capex). As can be seen, capital contributions are forecast to be a significant share of gross expenditure, averaging 43 per cent of total expenditure during the 2024–29 regulatory period.

Figure 21 Disaggregated connections capex across regulatory periods ($ million, $2023/24)



1.8.1. Components of connections expenditure

This section disaggregates Evoenergy's forecast connections capex into different types of connections expenditure. Table 15 shows Evoenergy's forecast of connections capex by component.

Table 15 Forecast gross customer-initiated capex ($ million, June 2024)

	2024/25	2025/26	2026/27	2027/28	2028/29	2024–29 Total
Services	3.5	3.5	3.5	3.6	3.6	**17.7**
New urban development	6.1	5.2	4.7	4.4	3.5	**23.8**
Urban infill	8.3	8.3	9.7	9.7	13.1	**49.1**
Commercial and industrial developments	6.0	6.0	6.1	6.1	6.1	**30.3**
Special customer requests	0.2	0.2	0.2	0.2	0.2	**1.1**
Rural developments	0.1	0.1	0.1	0.1	0.1	**0.5**
Total	**24.2**	**23.3**	**24.3**	**24.1**	**26.6**	**122.5**

Note: individual numbers may not sum to total due to rounding.

New services

The new services category of expenditure covers supply and installation of overhead or underground services for new domestic residential installations where the load is less than or equal to 100 Amps and the service can be connected to existing LV mains reticulation without modification to the LV mains.

Evoenergy is forecasting $17.7 million of connection capex related to services during the 2024–29 regulatory period. This category has been forecast based largely on the new level of greenfield development, which requires these connections after reticulation.

New urban development

New urban development projects involve establishment of the initial electricity network reticulation infrastructure for land within urban areas not previously reticulated/serviced. It is applicable to both residential and commercial/industrial estates.

Evoenergy is forecasting $23.8 million of connection capex related to new urban development. This category has been forecast based on a range of factors, as outlined in *Appendix 1.21: Customer Initiated Works*. The forecast for new urban work is declining reflecting the relative lack of new

greenfield development relative to urban infill, consistent with the ACT Government's 2018 Planning Strategy.

Urban infill

Urban infill is defined as the use of land within a built-up area for further construction, especially as part of a community redevelopment or growth management program. It focuses on the reuse and repositioning of obsolete or underutilised buildings and sites. Redevelopment or land recycling is development that occurs on previously developed land. Infill buildings are constructed on vacant or underutilised property or between existing buildings. Typically, these projects result in density intensification with a subsequent increased load on the network requiring network augmentation.

Evoenergy is forecasting $49.1 million of connection capex related to urban infill projects. This category has been forecast based on a range of factors as outlined in *Appendix 1.21: Customer Initiated Works*. The forecast for new urban infill is increasing during the 2024–29 regulatory period, reflecting the prominence of urban infill relative to new greenfield development, consistent with the ACT Government's 2018 Planning Strategy.

Commercial and industrial

Commercial and industrial projects involve the network connection (and associated network extension works) required for new commercial development, industrial development, or redevelopments within established areas that already have reticulated services (i.e., the HV and/or LV).

Evoenergy is forecasting $19.5 million of connection capex related to commercial and industrial developments and an additional $10.8 million of capex for major projects in the same category (total: $30.3 million). This category has been forecast based on a range of factors as detailed in *Appendix 1.21: Customer Initiated Works*.

Special customer requests

Special customer request works undertaken by Evoenergy involve small to moderate expenditures and are typically identified through direct approaches from developers, government developers, government departments, telecommunications providers and members of the public.

Evoenergy is forecasting $1.1 million of connection capex related to special customer requests. This category is a small component of connections capex and has been forecast based on historic averages.

Rural developments

Rural development projects involve establishment of the electricity network reticulation infrastructure for rural land not previously reticulated/serviced or individual rural customers/loads, and is applicable to residential, agricultural and commercial/industrial customers.

Evoenergy is forecasting $0.5 million of connection capex related to rural developments. This category is a small component of connections capex and has been forecast based on historic averages.

1.9. Non-network expenditure

Proposed non-network capex for the EN24 regulatory proposal ($2023/24): $68 million.

Share of net capex for the EN24 regulatory proposal: 13 per cent.

Non-network capex relates to assets that are used to support the operation of our network and delivery of standard control services to customers. Non-network expenditure is grouped into four separate categories:

- information and communications technology (ICT) and equipment;
- motor vehicles;
- property; and
- other non-network (including corporate services business support).

Evoenergy provides a disaggregation of non-network capex into these components in the sections below, reflecting their different nature and drivers. Table 16 provides a summary of the forecast non-network capex during the 2024–29 regulatory period. Evoenergy's forecast of $68 million is slightly higher than our 2019–24 period allowance of $65 million ($2023/24), but lower than our forecast actual non-network capex spend during 2019–24 of $90 million.

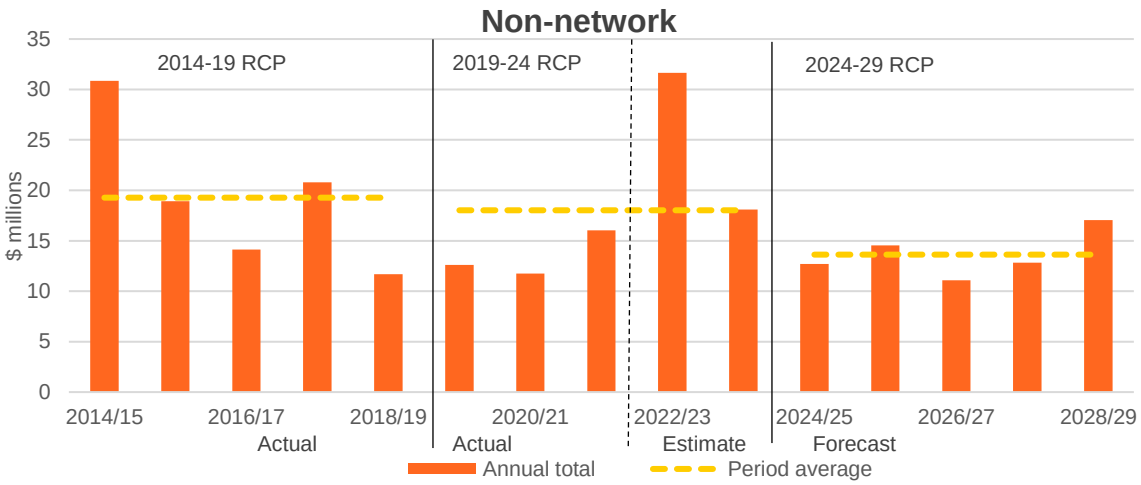
Table 16 Non-network capex forecast ($ million, June 2024)

	2024/25	2025/26	2026/27	2027/28	2028/29	2024–29 Total
ICT	6.5	7.2	6.9	8.7	9.8	39.0
Motor vehicles	4.0	2.8	2.4	2.2	2.5	13.8
Property	0.6	0.6	0.6	0.6	0.6	2.9
Other	1.8	2.8	1.6	1.5	4.5	12.3
Total	**12.9**	**13.4**	**11.4**	**13.0**	**17.5**	**68.1**

Note: individual numbers may not sum to total due to rounding.

Figure 22 shows our forecast non-network capex in the context of the 2014–19 and 2019–24 regulatory periods. Our proposed program is forecast to be slightly smaller than previous periods. The reduction is largely driven by a fall in forecast property capex, with spending on components such as motor vehicles (fleet) and ICT similar to the 2019–24 regulatory period. These diverse components of non-network capex are discussed in more detail in the below sections.

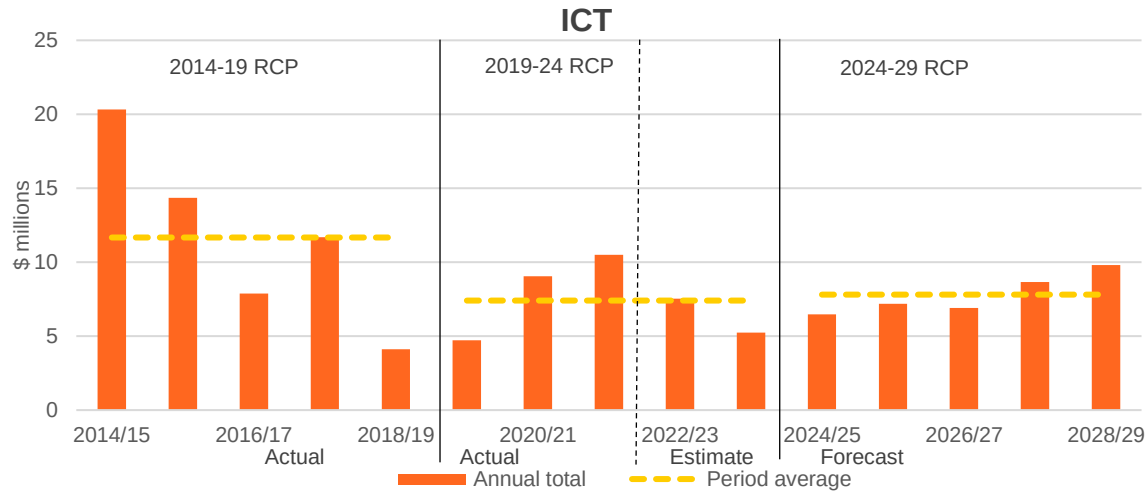
Figure 22 Actual/forecast non-network capex across regulatory periods ($ million, $2023/24)



1.9.1. Information technology and communications

ICT is a key component of Evoenergy's non-network capex forecast, accounting for 57 per cent of non-network capex during the 2024–29 regulatory period.

Figure 23 Actual/forecast ICT capex across regulatory periods ($ million, $2023/24)



Our program for network ICT is the largest component of non-network capex (at $39 million). Network ICT plays a crucial role in supporting the efficient delivery of services to customers, by providing the platforms to support a wide range of activities such as real-time monitoring and control of the network, interactions with customers and other market participants, planning and management, recording and reporting, corporate support, and compliance obligations.

Evoenergy has developed a dedicated ICT plan[50] (the Technology Plan) which provides the rationale and forecasting methodology for its proposed ICT capex during the 2024–29 regulatory period. The Technology Plan describes how our investments will respond to customer expectations, integrate our technology flexibly with stakeholders, simplify our technology landscape and strengthen our technology foundations. This will ensure our distribution system and the distribution services we provide will elevate customer experience, optimise our assets and networks, build our net zero carbon future, deliver efficient and targeted investment, and support a sustainable business to energise our evolving community.

1.9.2. Evoenergy IT responsibilities

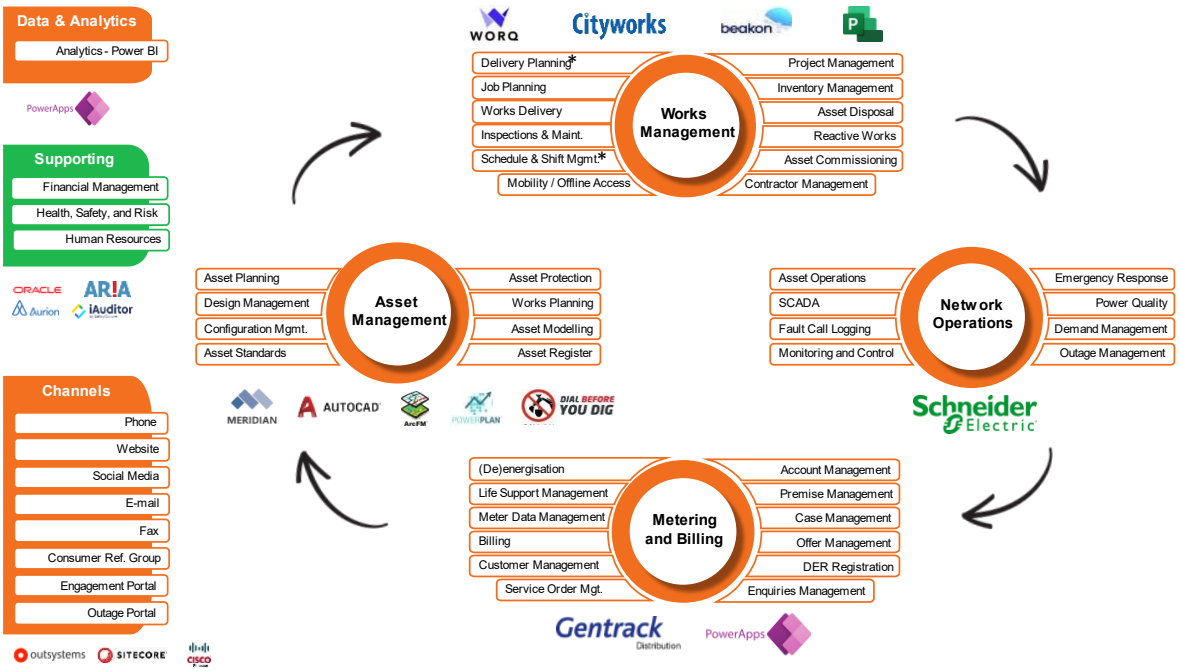
The Evoenergy IT Group is responsible for investment, replacement and support of Evoenergy Operational Technology (OT) systems, as illustrated in Figure 24. Evoenergy IT Group is responsible for providing specific application support in the following areas:

- **Works management:** Technology capabilities to support the planning, scheduling, shift management and execution of work related to reactive works, inspections, inventory management, asset commissioning and disposal. Current applications include Cityworks, Worg, Beakon and the Microsoft project.
- **Network operations:** Technology capabilities to support asset operations, emergency management, and system operations. Current applications include: Schneider Electric solution.
- **Metering and Billing:** Technology capabilities to support meter reading and billing for residents. Current applications include: Gentrack Distribution, Velocity and PowerApps.
- **Asset Management:** Technology capabilities to support the management of assets through the asset lifecycle and the management of asset information. Current applications include: Meridian, Autcad, ArcFM (GIS), Cyme, PowerPlan and PSS Sincal.
- **Channel Management:** Technology capabilities to support the management of phone, website, social media, e-mail, fax channels. Current applications include: Outsystems, Sitecore and Cisco Finesse.
- **Data and Analytics:** Technology capabilities to support the management of data for operational and analytical uses. Current applications include: PowerApps.

An illustration of the current state architecture as it relates to Evoenergy IT is shown in Figure 24.[51]

[50] Contained at Appendix 1.22.
[51] Within the Evoenergy business (separate to Evoenergy IT), there are several groups which provide support for specific operational technology within the environment such as ADMS and some energy network monitoring systems.

Figure 24 Current State Application Architecture



In addition to these capability areas, the Evoenergy IT Group manages IT project delivery and program management, and provides primary support for Evoenergy websites.

1.9.3. Industry trends

The global climate agenda is driving unprecedented change across all sectors of the economy in pursuit of decarbonisation targets. The energy sector is at the forefront of this decarbonisation journey as it is both a significant carbon emitter and a key enabler for decarbonisation across all other sectors of the economy. The energy sector will experience revolutionary change in the coming decades. Distribution businesses will need to decentralise and adopt DSO capabilities that enable coordination of distributed customer-owned generation as network-wide demand scales significantly higher with electrification and customer expectations rise.

As an energy provider, Evoenergy will need to be a first mover in energy transition to meet customer expectations and enable decarbonisation in transport, constructions, waste, land use and other sectors.

The factors driving business change, listed below, are affecting customer expectations for service standards, our asset base and net zero augmentation, and our workforce capability and experience:

- **Net Zero by 2045**: ACT Government target and legislation to achieve net zero greenhouse gas emissions by 2045, and associated interim targets.
- **Transition to DSO role**: the introduction of a DER drives a shift in services required from a DNSP.
- **Cyber security threats**: while we are progressing well towards meeting cyber security obligations, threats will remain. As we start to open our systems up to new stakeholders, new threats will be introduced.
- **Climate change**: long-term trends in the average pattern of weather in the ACT and beyond will continue to change in the coming ten years.

Evoenergy not only needs to respond to these drivers and their direct impact on the business, but also needs to address where these drivers may affect other market participants behaviour. In developing the Technology Plan, Evoenergy has taken a prudent approach to investing to manage the impact of these drivers.

1.9.4. 2024–29 regulatory period ICT program and roadmap

The IT programs proposed for the 2024–29 regulatory period cover Evoenergy's strategic technology goals.[52] Aligning with feedback from our customers, our technology programs seek to minimise adverse pressure on energy affordability and maintain our current levels of network reliability by leveraging existing core solutions and reducing the risk inherent with significant system changes.

The programs and target application architecture have been developed with the following guiding principles:

- Cyber security is at the forefront of our decisions and actions. We will be secure by design in our processes and our technology.
- Modernising our core systems, where possible, will be achieved through the upgrade paths, provided by the vendors of our existing product suite.
- We will utilise cyclical upgrades to review what capabilities are delivered by our systems to determine whether there is a benefit to re-factoring which systems are used to support our business processes. This will require a close alignment between the architecture of business and technology.
- As we look to achieve scale through partnerships with external vendors, we will ensure that supply chain risks associated with such a strategy are carefully considered and monitored appropriately.
- Our transition to a digital utility will be achieved through evolution not revolution.
- Our technology will make us 'easy to do business with' — internally and externally.

Table 17 provides a summary of Evoenergy's ICT capex forecast for the 2024–29 regulatory period, broken down by program and also whether the expenditure is recurrent or non-recurrent in nature.[53] The ICT capex forecast contained in the Technology Plan has a slightly broader definition than the AER category 'ICT capex' as it includes elements of corporate services business support and non-system assets (purchases of computers) which are classified as 'other non-network capex' in the AER's standardised capex model. This explains why the Technology Plan forecast is higher than the $39 million presented per the AER's standardised capex model.[54]

[52] The four strategic technology goals are 'respond to the customer', 'flexibly integrate with stakeholders', 'simplify technology landscape' and 'strengthen technology foundations'. For more detail refer to section 4.2 of the Technology Plan at Appendix 1.22.
[53] For more detail on these definitions, refer to the Technology Plan at Appendix 1.22. The Technology Plan also contains further detail on the purpose of non-recurrent expenditure 'new', 'comply' or 'maintain' and recurrent expenditure 'base' or 'step'.
[54] The ICT capex in the standardized capex model refers to non-network IT, while ICT capex for the purposes of the Technology Plan includes non-network IT but also some components of corporate services business support (IT equipment). At the overall non-network capex level, these changes cancel out, that is, they are compositional only.

Table 17 2024–29 regulatory period ICT capex forecast ($ million, June 2024)

IT programs	Non-recurrent	Recurrent	Total
Customer engagement	0.3	0.7	1.0
Network operations	4.8	3.3	8.1
Metering and billing	5.9	2.5	8.4
Asset Management	11.4	2.3	13.7
Works Management	5.6	1.8	7.4
Supporting	0	0.7	0.7
Critical Hygiene	0	8.1	8.1
Total	**28.0**	**19.4**	**47.4**

Note: individual numbers may not sum to total due to rounding.

Supporting business cases for these investments are contained at Appendix 1.23: In short, the investments are summarised in Table 18 and discussed below.

Table 18 Costs for each ICT investment brief ($ million, June $2024)

Investment Briefs	Cost
IT - Recurrent	$19.3
GIS Platform	$10.2
CityWorks	$6.5
Velocity	$8.5
Digital Twin	$0.8

Other Non-Recurrent	$2.0

Note: the DER integration business case costs and benefits above are predominantly opex in nature. The capex component is discussed below.

ArcGIS (platform)

The Geospatial Information Systems (GIS) Platform provides Evoenergy with the capability to store geospatial data and geographically map and model its assets. Evoenergy currently operates Schneider Electric's ArcFM GIS platform, which is a utility specific application built on top of Esri's ArcGIS software. The platform integrates with the other key systems providing Evoenergy with the ability to accurately perform critical functions such as dispatching, troubleshooting, engineering, planning and reporting on assets. The GIS platform is critical to the asset management system platform (PowerPlan), billing and market systems platform/customer resource management platform (Velocity), works planning (Cityworks) and the ADMS. The preferred option under the business case was Option 3 – Full Upgrade. This option will maintain the GIS ensuring it is on a long-term supported platform and remains fit for purpose.

CityWorks

CityWorks is the works management system used by Evoenergy to effectively manage and plan works and enable the effective management of assets on its network. This includes task management, asset management, risk assessment and project management. Asset management is a business critical function and Cityworks is vital in providing Evoenergy with the capability to effectively manage its network. Emergency response works (which pass through the Cityworks system) are mission critical. Under the business case, the preferred option was for Evoenergy to proceed with Option 3 – Full Upgrade. This option will allow Evoenergy to upgrade the Cityworks platform to its most current platform, ensuring continued compatibility with the GIS and PowerPlan platforms.

Digital Twin

Energy companies can utilise digital twin capabilities across various areas of their businesses as they relate to asset management, to create virtual representations of physical assets or systems before they are even built or deployed. Evoenergy's ICT capex program includes $0.8 million of capex for Digital Twin Platform Implementation and Updates. This investment will deliver a virtual representation of full or component parts of Evoenergy networks to enable scenario testing and simulation of specific events or strategies.

Velocity

Evoenergy currently uses the Velocity platform for its billing functions and additionally for some Customer Resource Management (CRM) processes. As a result, this is a business-critical operation function for Evoenergy and a vital component in the cash flow process. Evoenergy considered a range of options under the business case for this product. The recommended option was Option 3 – Full Upgrade. This option will allow Evoenergy to upgrade the current Velocity platform to a more modern version. This will ensure the platform is optimal for Evoenergy's purposes and also ensures compatibility with other platforms.

Other non-recurrent

Evoenergy has developed a business case for ICT capex for non-recurrent (other). This comprises projects that are categorised as non-recurrent but individually have a forecast capital cost of less than $1 million. More detail on these investments and the supporting rationale is contained in the business case in *Appendix 1.23: ICT capex investment briefs*.

Recurrent ICT capex

Evoenergy has developed a business case for recurrent ICT capex, with a cost of $19 million. This covers investments across the IT space that are primarily for maintaining existing ICT services, functionalities, capability and/or market benefits that repeat at least once every five years. The investments include ongoing hardware refreshes, software system upgrade costs, and any other ICT expenditure that is incurred periodically on a five year or less basis. More detail on these investments and the supporting rationale is contained in the business case at Appendix 1.23.

Separate to Appendix 1.23 ICT capex investment briefs, relevant ICT capex is captured in the DER integration step change business change (Appendix 2.5) and separate ADMS business cases, contained in Appendix 1.24 and 1.25. These are discussed below.

DER integration

Evoenergy is seeing a significant uptake of DER including rooftop solar PV, behind-the-meter (BTM) battery energy storage systems and EVs. Growth in DER is forecast to continue meaning that the Evoenergy network will increasingly face two-way energy flows. As discussed in *Appendix 1.2: Asset Management*, this can bring technical issues and challenges, principally voltage issues. To better integrate DER, Evoenergy will need to transition towards gaining capability that will better integrate these emerging technologies.

These enabling capabilities include:

- **Network visibility**: increasing the level of visibility in the network, particularly in the LV parts of the network, to enable data-driven planning, forecasting and decision making and compliance monitoring on customers and network performance. This will improve existing business functions and efficiency in network investment.
- **Network operation**: capability to implement and communicate dynamic operations to DER customers and aggregators and shift away from only offering static export limits. Dynamically communicating and allocating network capacity to DER customers through dynamic operating envelopes (DOEs) will support our control systems to manage and operate the network and unlock value for customers.
- **Enabling projects**: proactively resolving forecast network constraints and alleviating customer curtailment through trialling innovate technologies and targeting investment in the network where it makes sense to do so from an economic perspective based on avoided curtailment. This avoids the need to reactively address issues as they arise and enables and encourages additional DER to actively participate in the network.

The DER integration business case[55] evaluated three options:

1. Base case;
2. DER readiness; and
3. Rapid transition.

After consideration of costs and benefits, the preferred option was Option 2 – DER readiness. Most of the spending for DER integration is opex in nature. Therefore, this business case has been appended to the Opex attachment at Appendix 2.5, however it does include a capex component. The capex component is forecast at around $5.5 million and is dominated by capex on a community battery and on IT systems for DOE/Virtual Power Plant (VPP) integration. The Technology Plan includes the capex associated with enabling the IT solutions ($2.4 million) in support of the overall proposed investment in DER integration. As such the capex investment is only required to the extent the broader business case proceeds as proposed.

[55] Appendix 2.5.

ADMS

Evoenergy has developed two business cases for proposed investment in the ADMS during the 2024–29 regulatory period. These business cases are for enhancements to the ADMS as well as a future upgrade. Since they are different investments, they have been separately scoped in different business cases.

The *ADMS enhancements business case* is contained in *Appendix 1.24*. The need for this investment is driven by forecast growth in DER and electricity demand. These factors will create several network issues including:

- need for augmentation for DER (or applying constraints on generation);
- increasing quality of supply issues on the network; and
- increased requirement for load growth augmentation.

The emergence of community and larger batteries also creates opportunities for non-network solutions. In some cases, these opportunities can be exploited with the existing ADMS, but enhancements may offer the potential to do this more efficiently. The enhancements scoped in this business case covers small investments in ADMS which will deliver benefits in the short to medium terms to mitigate some of the challenges. This business cases finds that the option of ADMS enhancements provides a positive net present value, with a cost of around $3.05 million.

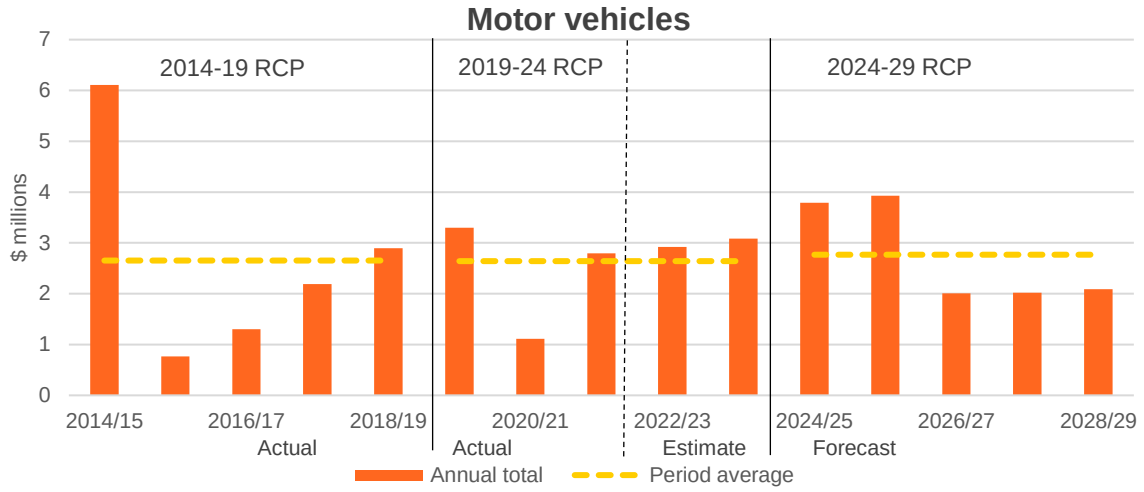
The *ADMS upgrades business case* is contained in *Appendix 1.25*. The ADMS is a critical system delivering many benefits to Evoenergy's customers. It is therefore important to ensure that regular updates and replacements are undertaken to remain current and supported. Several options were considered for the upgrade strategy to the ADMS with all options assuming that the ADMS and hardware/comms were upgraded concurrently. The business case options were evaluated on a review of options rather than a financial justification for the upgrade. The upgrade is not intended to delivery any enhancements to functionality, but instead has a focus on risk reduction and ensuring critical infrastructure remains supported. The recommended option was Option 2 which was to undertake the design work for the upgrade in 2028/29 and purchase and install the hardware. This option would allow an upgrade to the system in the first year of the 2029–34 regulatory period.

Overall, Evoenergy's proposed ICT capex program for the 2024–29 regulatory period will support the continued effective functioning of Evoenergy in meeting the needs of our customers.

1.9.6. Fleet

Evoenergy's forecast capex for fleet (also reported as motor vehicles) during the 2024–29 regulatory period is $14 million, which comprises 20 per cent of the total non-network capex program.

Figure 25 Actual/forecast motor vehicles capex across regulatory periods ($ million, $2023/24)



Motor vehicles allow personnel and specialised tools and equipment to travel around our distribution area to perform emergency fault response, repair, maintenance, inspection and construction activities. Our fleet assets are crucial to enabling us to deliver standard control services to customers and are particularly important in the context of Evoenergy maintaining the safety and reliability of our network.

Evoenergy is in the process of transitioning its fleet from traditional internal combustion engine (ICE) vehicles to ZEVs, which influences the amount of capex required for fleet.

Using current fleet replacement prices as the base, the following increase has been applied to allow for the higher upfront capital costs associated with EVs for forecasting purposes:

- heavy vehicles replacement price increased on average by 25 per cent; and
- light commercial vehicles replacement price increased on average by $20,000 (in $2021/22).

Consumer feedback on fleet transition

We asked our community panel whether Evoenergy should replace fleet vehicles with EVs in 2024–29, even if they are more expensive than petrol diesel vehicles.

A majority (64 per cent) answered 'yes'. Nine per cent answered 'no', and 27 per cent answered 'unsure'. As a result, consumers are generally supportive of our proposed fleet capex.

It is worth noting that while there are currently higher upfront costs for EVs, there may be savings in running costs. As a result, the higher capex may be offset by lower opex, such as paying for fuel or higher annual maintenance costs. In addition, there is a compliance related driver of this program as at some point in the future, Evoenergy will likely no longer be able to register new ICE vehicles. The ACT Government's *Zero* Emissions Vehicles Strategy 2022–30 targeting the phasing out of ICE vehicles from 2035, with new sales being prohibited after that date.

1.9.7. Property

Evoenergy's forecast capex for property during the 2024–29 regulatory period is $3 million, which comprises 4 per cent of the total non-network capex program.

Our buildings and property capex forecast includes expenditure on buildings and fixed furnishings at depots and corporate offices. At around $0.6 million per annum, this is a relatively small component of Evoenergy's non-network capex forecast. The Greenway Depot Properties program comprises the largest component of forecast capex for the 2024–29 regulatory period. This capex is largely maintenance in nature and is a major step down on the larger property capex in the 2019–24 regulatory period, with forecast actual spend of $22 million.

1.9.8. Other non-network

This category of capex covers expenditure on non-network assets other than those contained in the categories discussed above. For example, it includes corporate services business support, which includes capex on software and hardware. Evoenergy forecasts that capex on corporate services business support will total $7.5 million during the 2024–29 regulatory period. Key components here are the Non-System Assets program and the purchasing of computing equipment.

1.10. Capitalised overheads

Proposed capitalised overheads for the EN24 regulatory proposal ($2023/24): $88 million.

Share of net capex for the EN24 regulatory proposal: 17 per cent.

Capitalised overheads are Evoenergy's share of corporate costs which are recovered through the Fixed Price Servicing Charge (FPSC). The FPSC is an annual charge issued by ActewAGL Corporate for the shared corporate services provided to Evoenergy, ActewAGL and Icon Water. It covers a range of services such as the CEO, human resources, facilities management, legal, regulatory affairs and technology, among others.

1.10.1. Methodology for capitalised overheads

All corporate costs are recovered via the FPSC and are allocated to each of the businesses based on a series of cost attributions using relevant activity drivers. Evoenergy has forecast its capitalised overheads based on a historical ratio of the FPSC to its total proposed expenditure (totex). Our totex is the sum of both our capex and opex. For the purposes of forecast capex in the 2024–29 regulatory period, capitalised overheads have been forecast solely on the basis corporate overheads.

1.10.2. Forecast capitalised overheads

Evoenergy's forecast for capitalised overheads is shown in Figure 26 and is broadly similar to the prior two regulatory periods shown. The forecast increase in capitalised overheads in the latter two years of the 2024–29 regulatory period is relative to the size of the program in these years, which increased with an uplift in augmentation and connections capex.

Figure 26 Actual capitalised overheads capex across regulatory periods ($ million, $2023/24)

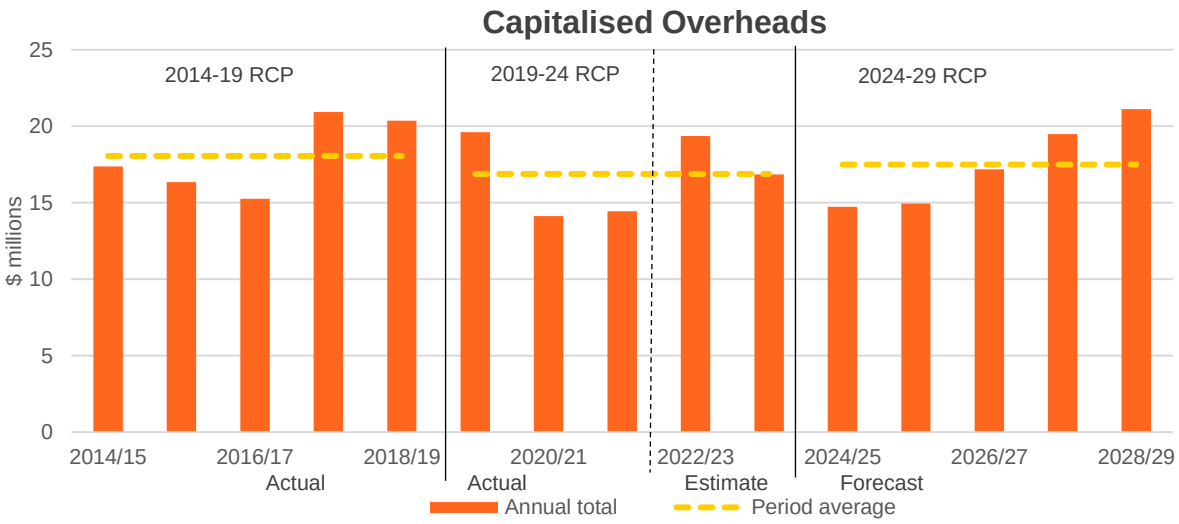


Table 19 Capitalised overheads forecast ($ million, June 2024)

	2024/25	2025/26	2026/27	2027/28	2028/29	2024–29 Total
Annual total	14.8	15.0	17.2	19.5	21.1	**87.6**

Note: individual numbers may not sum to total due to rounding.

1.11. Standard Control Transmission Services capex

The AER in its Framework and Approach final decision stated that it would apply transmission pricing rules to Evoenergy's dual function assets (DFA) in the 2024–29 regulatory period. DFA are parts of the distributor's network that operate in a way that supports the transportation of electricity over the higher voltage transmission network. Specifically, the Rules define as a dual function: *Any part of a network owned, operated or controlled by a Distribution Network Service Provider which operates between 66 kV and 220kV and which operates in parallel, and provides support to, the higher voltage transmission network.*

The Rules allow distributors to address DFA in a distribution determination to avoid the need for separate transmission revenue proposals. In making its decision on Evoenergy's revenue requirement for the 2024–29 regulatory period, the AER will determine separate average revenue caps to apply (with different X-factors) for the transmission and distribution portions for Standard Control Services (SCS).

Consequently, the allocation of capex to transmission standard control services has been netted from total capex to yield capex for distribution standard control services.

Forecast net capex allocated to Evoenergy's transmission assets in the 2024–29 regulatory period is $61 million and set out in Table 20. In terms of assets, the key components are sub-transmission overhead assets and zone substations, followed by IT and communications. A collection of smaller asset classes account for the remaining share of capex.

Evoenergy's forecast transmission capex mainly relates to a range of different projects, where the asset base is split between distribution and transmission. It also includes replacement capex of around $5 million for transmission structures exclusively.

Table 20 Capex allocated to Evoenergy's transmission assets ($ million, June 2024)

	2024/25	2025/26	2026/27	2027/28	2028/29	2024–29 Total
Transmission overhead	1.5	1.5	1.9	2.3	6.7	13.8
Zone substation	6.2	8.4	5.8	6.4	7.2	34.0
IT and comms	1.2	1.3	1.4	1.7	2.0	7.6
Other	1.2	1.4	0.8	0.8	1.4	5.5
Total	**10.0**	**12.6**	**9.9**	**11.3**	**17.2**	**61.0**

Note: individual numbers may not sum to total due to rounding.

1.12. Capital contributions

Under Chapter 5A of the Rules and in accordance with the AER's *Connection charge guidelines for retail electricity customers* (the AER guidelines), an electricity distributor may require a reasonable capital contribution towards the cost of an extension or augmentation of the electricity network necessary for providing a connection service to a customer. Charges may also apply for relocations (not related to connections), in accordance with the *Electricity Networks Capital Contributions Code (ACT)* (the Code).

Evoenergy's customer initiated capital works plan provides the basis for determining when capital contributions are likely to apply. Capital contributions are determined in accordance with Evoenergy's connection policy which is contained at Appendix K.

Forecast capital contributions are based largely on relativities based on historical levels of capital contributions for each category of customer-initiated capex. Evoenergy has forecast the level of capital contributions for the 2024–29 regulatory period as per Table 21.

Table 21 Forecast capital contributions 2024–29 ($ million, June 2024)

	2024/25	2025/26	2026/27	2027/28	2028/29	2024–29 Total
Capital contributions	10.3	10.0	10.4	10.4	11.4	**52.6**

Note: individual numbers may not sum to total due to rounding.

1.13. Summary of forecast capex

In summary, Evoenergy's proposed capex program for the 2024–29 regulatory period presents the level of expenditure considered necessary to meet our regulatory obligations and to invest in a network at a time of unheralded change in the energy supply mix as we move towards net zero emissions by 2045. Our program reflects our well-established prudent approach to asset management and network planning, with a view to the net zero transition required. Our non-network capex prevents a more stable profile compared to previous regulatory periods. Our proposed program, as contained in the standardised capex model, is summarised below in Tables 22 (AER categories) and 23 (Evoenergy categories).

Table 22 Forecast capex (AER categories) 2024–29 ($ million, June 2024)

	2024/25	2025/26	2026/27	2027/28	2028/29	2024–29 Total
Replacement	20.4	21.8	23.8	25.7	25.8	117.6
DER capex*	0.0	0.0	0.0	0.0	0.0	0.0
Augmentation	27.4	26.8	35.5	43.8	48.1	181.6
Connections	24.2	23.3	24.3	24.1	26.6	122.5
ICT capex	6.5	7.2	6.9	8.7	9.8	39.0
Property capex	0.6	0.6	0.6	0.6	0.6	2.9
Fleet capex	3.8	3.9	2.0	2.0	2.1	13.8
Other non-network	1.8	2.8	1.6	1.5	4.5	12.3
Capitalised overheads	14.8	15.0	17.2	19.5	21.1	87.6
Total Gross Capex	**99.5**	**101.5**	**111.9**	**126.0**	**138.7**	**577.5**
Less cap cons	10.3	10.0	10.4	10.4	11.4	52.6
Less disposals	1.1	1.2	0.6	0.6	0.6	4.2
Total Net Capex	**88.0**	**90.2**	**100.9**	**115.0**	**126.7**	**520.8**

Notes: individual numbers may not sum to total due to rounding. DER capex has been subsumed into augex and ICT capex for the purposes of this table. Per the DER integration business case (Appendix 2.5), DER capex for the 2024–29 regulatory period is forecast to be $5.5 million (see Table 18 of that Appendix).

Table 23 Forecast capex (Evoenergy categories) 2024–29 ($ million, June 2024)

	2024/25	2025/26	2026/27	2027/28	2028/29	2024–29 Total
Augmentation	23.8	24.7	33.5	41.4	45.8	169.3
Asset renewal/replacement	20.4	21.8	23.8	25.7	25.8	117.6
Network IT systems	6.5	7.2	6.9	8.7	9.8	39.0
Non-system assets	5.3	5.5	3.6	3.6	3.6	21.6
Customer initiated	24.2	23.3	24.3	24.1	26.6	122.5
Reliability and quality	3.6	2.1	2.0	2.4	2.2	12.3
Corporate services business support	0.9	1.9	0.6	0.6	3.6	7.5
Capitalised overheads	14.8	15.0	17.2	19.5	21.1	87.6
Total Gross Capex	**99.5**	**101.5**	**111.9**	**126.0**	**138.7**	**577.5**
Less cap cons	10.3	10.0	10.4	10.4	11.4	52.6
Less disposals	1.1	1.2	0.6	0.6	0.6	4.2
Total Net Capex	**88.0**	**90.2**	**100.9**	**115.0**	**126.7**	**520.8**

Note: individual numbers may not sum to total due to rounding.

Abbreviations

Abbreviation	Meaning
AEMC	Australian Energy Market Commission
ADMS	Advanced Demand Management System
AER	Australian Energy Regulator
AIO	Asset Investment Optimisation
AMS	Asset Management System
APS	Asset Portfolio Strategy
CPI	Consumer Price Index
CRM	Customer Resource Management
DER	Distributed Energy Resources
DFA	Dual Function Assets
DNSP	Distribution Network Service Provider
DOE	Dynamic Operating Envelope
DSO	Distribution System Operator
EFM	Expenditure Forecasting Methodology
EGWWS	Electricity, Gas, Water and Waste Services
EV	Electric Vehicles
FPSC	Fixed Price Servicing Charge

HV	High voltage
ICE	Internal Combustion Engine
ICRC	Independent Competition and Regulatory Commission
ICT	Information and Communications Technology
LV	Low voltage
MVA	Mega Volt Ampere
MW	Mega Watt
NEM	National Electricity Market
NZM	Net Zero Model
OT	Operating Technology
POE	Point Of Entry
QoS	Quality of Supply
RCP	Regulatory Control Period
RIN	Regulatory Information Notice
RIT-D	Regulatory Investment Test for Distribution
RIT-T	Regulatory Investment Test for Transmission
RMU	Ring Main Units
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index

SCADA	Supervisory Control and Data Acquisition
SCS	Standard Control Services
STPIS	Service Target Performance Incentive Scheme
VPP	Virtual Power Plant
ZEVs	Zero Emission Electric Vehicles