Revenue Proposal Overview
2023–28

Transgrid

People. Power. Possibilities.

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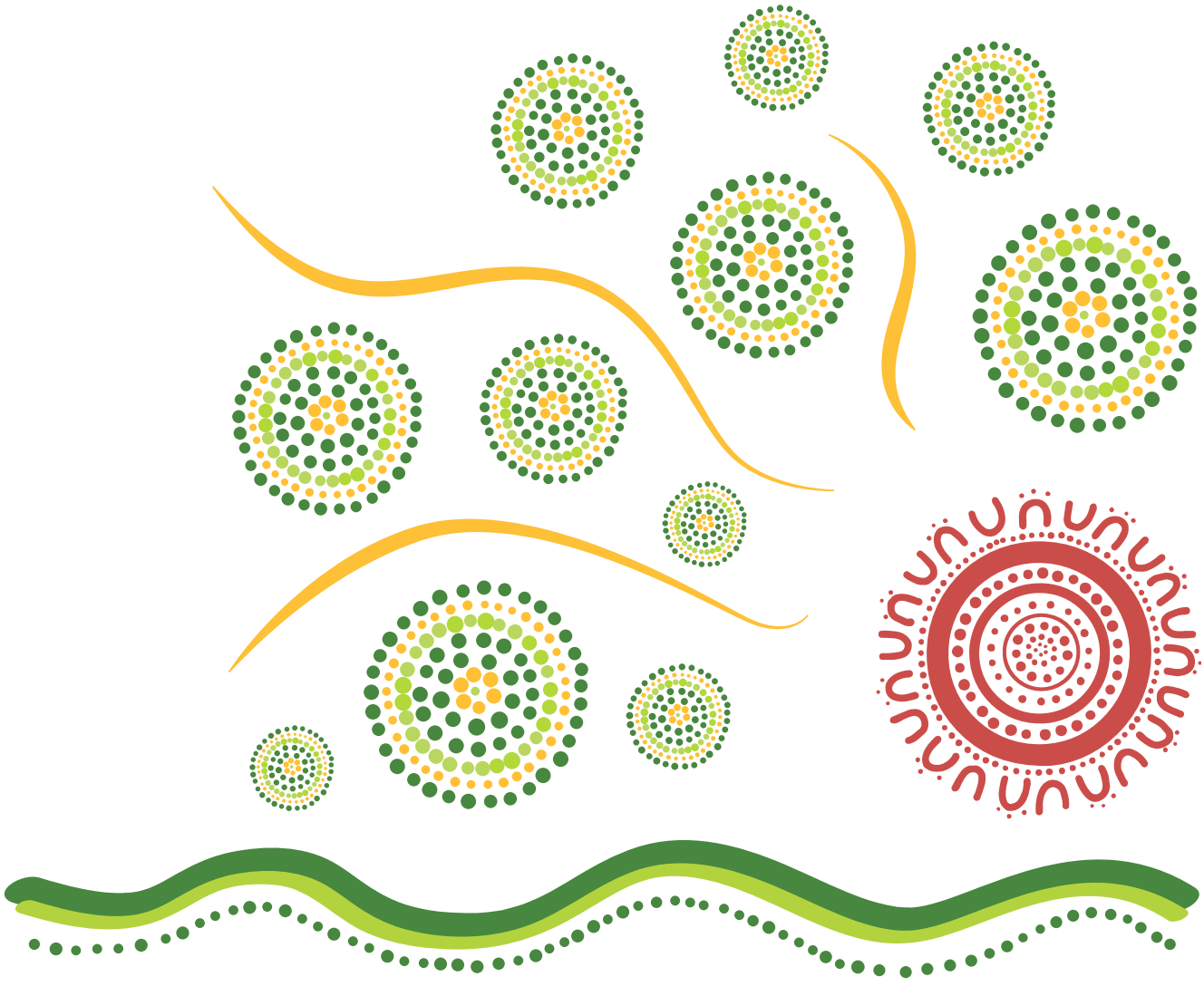
Contents

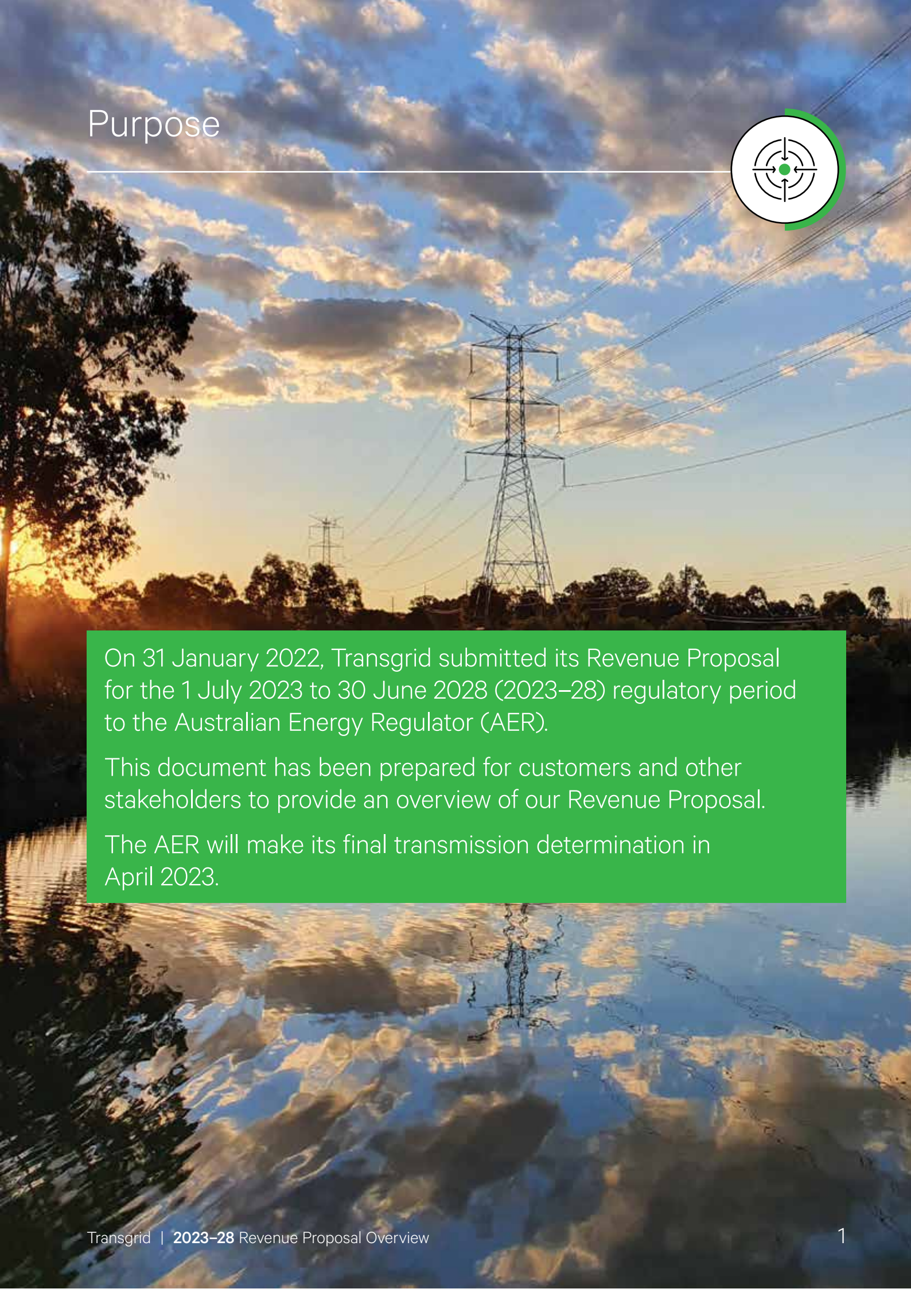
Acknowledgement of Country

In the spirit of reconciliation Transgrid acknowledges the Traditional Custodians of the lands where we work, the lands we travel through and the places in which we live.

We pay respects to the people and the Elders past, present and emerging and celebrate the diversity of Aboriginal peoples and their ongoing cultures and connections to the lands and waters of New South Wales (NSW) and the Australian Capital Territory (ACT).



Purpose



On 31 January 2022, Transgrid submitted its Revenue Proposal for the 1 July 2023 to 30 June 2028 (2023–28) regulatory period to the Australian Energy Regulator (AER).

This document has been prepared for customers and other stakeholders to provide an overview of our Revenue Proposal.

The AER will make its final transmission determination in April 2023.

Who we are and what we do

We operate the high voltage transmission network in NSW and the ACT. Our transmission network provides safe, reliable and affordable electricity supply to around 4 million customers in NSW and the ACT.[1]

Figure 1: Electricity supply chain

Generation and storage

Electricity is generated from a range of energy sources including wind, solar, hydro, coal and gas.

Grid-scale batteries are also emerging and have the potential to help maintain reliable supply during times of peak demand.

Transmission

The transmission network connects to large generators and transports electricity long distances to large directly-connected industrial customers and distribution networks that deliver it to homes and businesses.

Distribution

Distribution networks transport electricity at lower voltages to households and businesses. They also provide metering services to measure the amount of electricity being consumed.

Retail

Retailers are responsible for billing customers for the electricity they use and managing payments. There are approximately 102 electricity retailers operating in NSW and the ACT.

Customers

There are around four million electricity customers in NSW and the ACT. Increasingly our customers generate their own electricity through rooftop solar and feed surplus electricity back to the grid, impacting the traditional flow of electricity.

We are currently the only provider of prescribed transmission services in our service area. Because of this, the revenues and transmission prices that we charge are regulated by the AER to ensure that we provide our transmission services efficiently.

The AER is the economic regulator of electricity transmission services in all Australian states and territories, other than Western Australia. It applies the National Electricity Law (NEL) and National Electricity Rules (NER). Its role is to set the revenues we can recover from our customers for the efficient costs of prescribed transmission services and to approve the manner in which we can recover those revenues through our transmission prices.

The AER does this by making transmission revenue determinations for five-year periods. In May 2018, the AER made its transmission determination for our current regulatory period, 1 July 2018 to 30 June 2023 (the 2018–23 regulatory period).

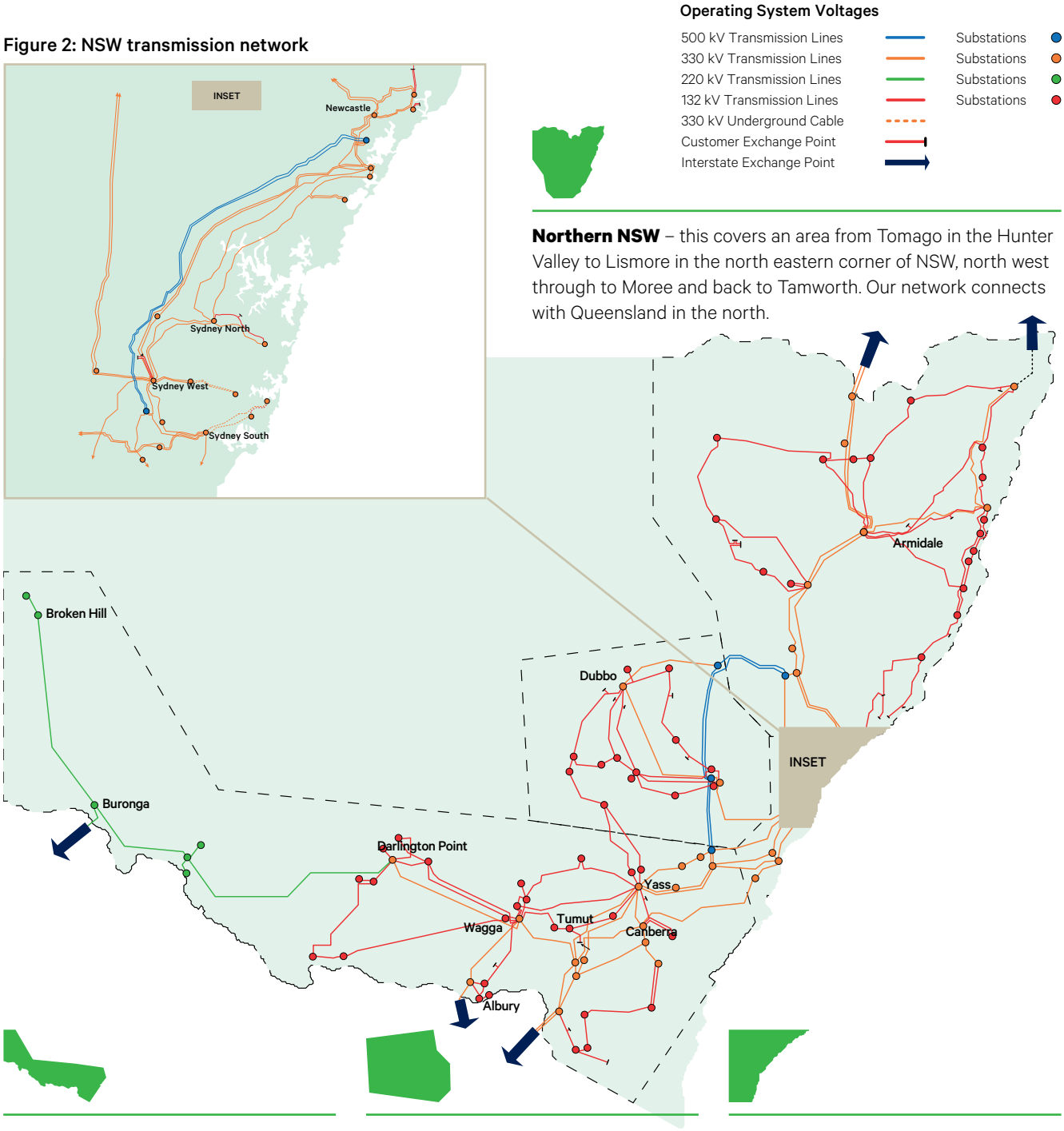
On 31 January 2022, Transgrid submitted its Revenue Proposal for the 2023-28 regulatory control period to the AER.

1 Economic Insights, AER TNSP Benchmarking Report Draft, August 2021.

Our geographic coverage

Our transmission network is at the heart of the National Energy Market (NEM) and is vital to achieving NSW and ACT's net-zero emissions target. It is essential for the connection of new low-cost renewable generation and stronger interconnection across the NEM. As shown in Figure 2 our transmission network has four geographic areas:

Figure 2: NSW transmission network



Northern NSW – this covers an area from Tomago in the Hunter Valley to Lismore in the north eastern corner of NSW, north west through to Moree and back to Tamworth. Our network connects with Queensland in the north.

Southern NSW and ACT – this covers Marulan to Wagga Wagga in the south of the State, to Albury in the far-south, and extends to Broken Hill in the far-west. This region includes Canberra, and connects with Victoria in the south, and will soon connect with South Australia once Project EnergyConnect is operational.

Central West NSW – this connects to Greater Sydney at Mt Piper and Wallerawang and extends west to Orange, Parkes and Forbes. It extends up to Wellington and Wollar where it connects to northern NSW and down to Cowra where it connects to southern NSW at Yass.

Greater Sydney – this includes the CBD of Sydney, which is a hub for economic activity, major transport infrastructure, industry and tourism, as well as the Blue Mountains, the Central Coast and Newcastle. A high level of reliability and security is needed to maintain services required for Sydney to operate as a major international city.

Our network assets and performance

We supply higher peak loads and transmit more energy annually than any other transmission network in Australia. Our transmission network comprises 95 substations, over 13,039 kilometres of high voltage transmission lines, underground cables and five interconnections between NSW and ACT and Queensland and Victoria.

Figure 3: Our assets and network performance

End use customers

About 4 million

NSW and ACT

Total network length

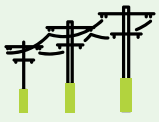
High voltage transmission line and underground cable

12,953 km of overhead transmission line up to 500kV

1,023 km	5,487 km	681 km	5,701 km	61 km
500kV	330kV	220kV	132kV	below 132kV

86km of underground cables up to 330kV

Transmission line structures



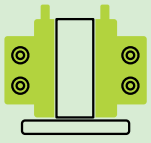
37,305 structures

15,690 steel lattice tower and pole structures

12,958 Wood pole structures

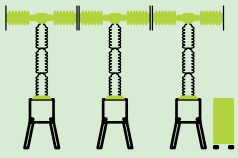
8,657 Concrete pole structures

Transmission substations

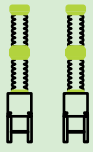


95 substations

215 power transformers



1,489 circuit breakers

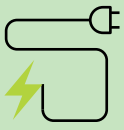


5,676 instrument transformers

Communications infrastructure

4,000 km Optical fibre

85 Telecommunication sites



Peak demand

13,700 MW

Maximum system demand[1]

11,700 MW

At end 2020-21

Annual energy

71,300 GWh

At end 2020-21

Network reliability

99.99999%

At end 2020-21

Notes: 1. Transmission system coincident maximum demand in 2020–21, which occurred on 10 June 2021.

Supporting the energy transition

Australia's energy system is undergoing a 'once-in-a-century' transformation.[2] The transition to a new energy market is happening quickly, as the cost of renewables decline, technology advances, and governments commit to decarbonisation. Australian Energy Market Operator's (AEMO's) NEM Engineering Framework Initial Roadmap, published in December 2021, finds that by 2025 the NEM could reach up to 100 per cent instantaneous renewables at times.[3]

The NSW[4] and ACT[5] Governments have both adopted a goal of achieving net zero emissions by 2050, or sooner. By 2030, the NSW Government's goal is to reduce emissions by 50 per cent against 2005 levels. By 2025, the ACT Government's goal is to reduce emissions by at least 50 per cent against 1990 levels.

We support the NSW and ACT Governments' goals of achieving net zero emissions. We are working closely with the NSW Government on its Electricity Infrastructure Roadmap, which is expected to see the development of five Renewable Energy Zones (REZs). We also plan our network to facilitate the ACT Government's net zero commitment as it develops a transition plan to decarbonise the natural gas distribution network.

As Australia's largest electricity transmission network, our infrastructure is vital to Australia's successful energy transition and achieving net zero emissions. Decarbonisation, electrification and new green industries require a significant expansion of renewable generation and associated transmission infrastructure. AEMO's Draft 2022 Integrated System Plan (ISP) finds that 'significant investment in the NEM' is needed to support the transition. In particular, AEMO has identified that 'more than 10,000 km of new transmission' is required 'to connect geographically and technologically diverse, low-cost generation and firming with the consumers who rely on it'.[6]

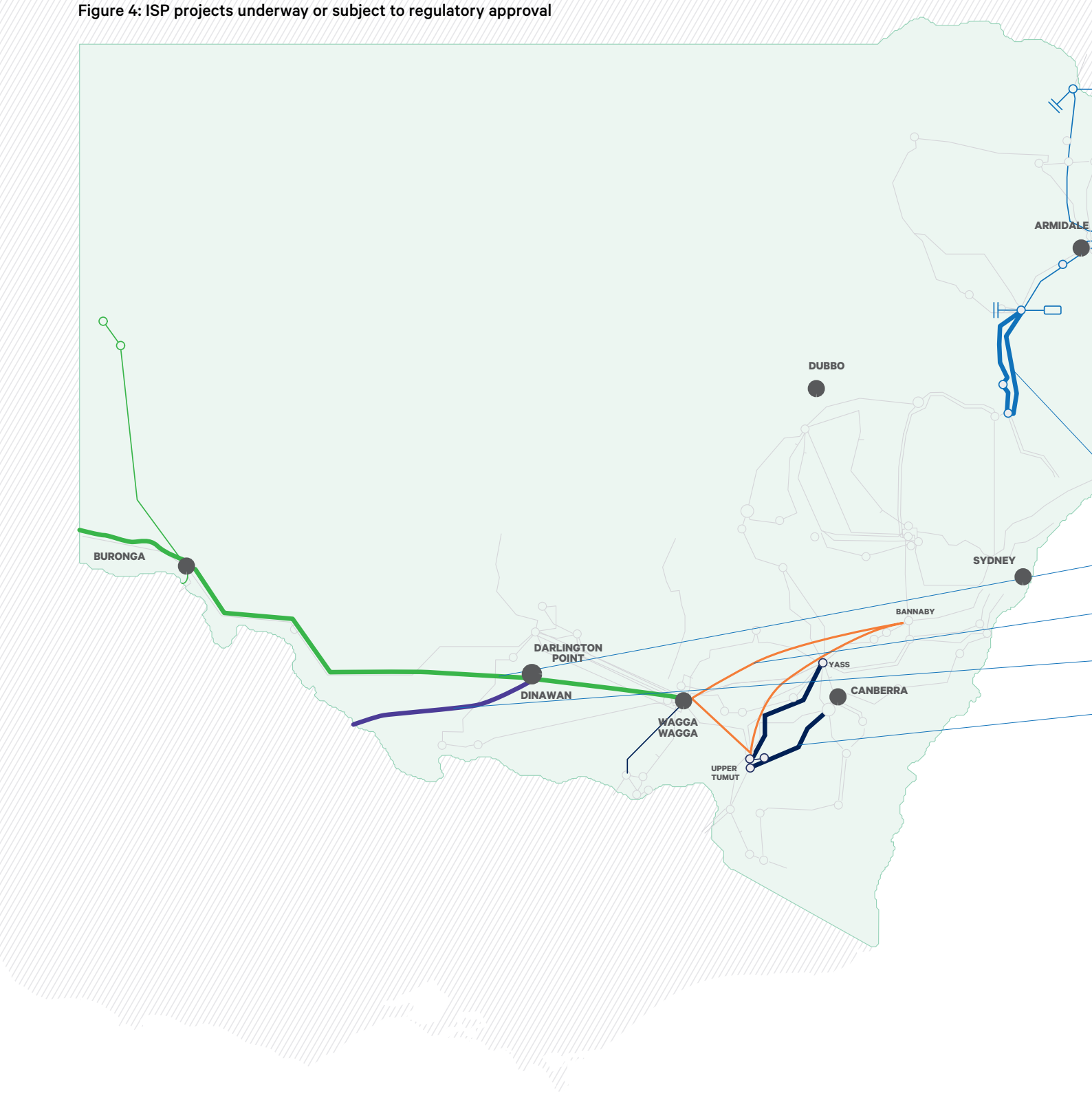
AEMO's ISP identifies the optimal development path for eastern Australia's power system to facilitate this transition to deliver the lowest cost energy solutions consistent with an electrified, low carbon future. Coordinated transmission investment based on AEMO's ISP will reduce customers' final electricity bills by helping to share reliable generation resources across the NEM, improve wholesale market competition, open-up the development of REZs and facilitate the development of large scale storage.

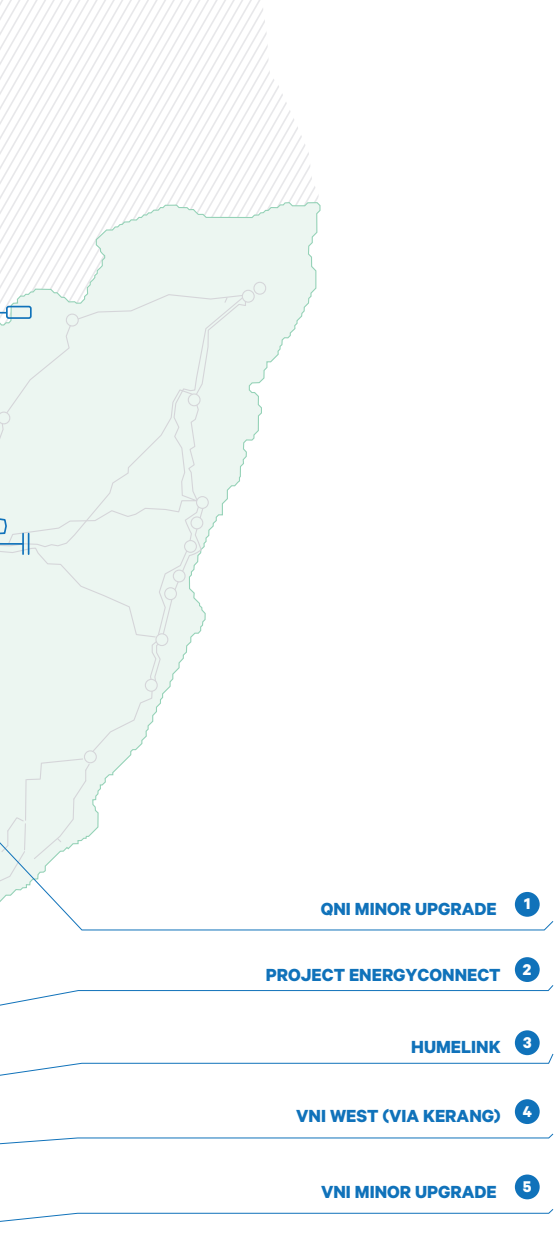
AEMO's Draft 2022 ISP finds that transmission projects on its optimal development path 'add $29 billion in value while enabling the transformation' and that these investments return '2.5 times' their cost.[7] It also finds that these investments will 'cost-effectively serve the needs of consumers, support Australia's transition to net zero emissions, and support regional employment and economic growth'. The NSW Electricity Infrastructure Roadmap sets out the 'NSW Government's plan to transform our electricity system into one that is cheap, clean and reliable'. It expects to deliver at least 12GW of new transmission capacity through its REZs, reduce carbon emissions by 90 million tonnes, create 6,300 construction and 2,800 ongoing jobs and reduce electricity bills.

We are supporting the energy transition in the current period by delivering vital upgrades and expansions to NSW's interconnectors to Queensland, Victoria and South Australia. These projects are identified in AEMO's ISP and will enable low-cost renewables to enter the market, delivering both environmental benefits and savings to our customers. Subject to regulatory approvals, we will also deliver HumeLink and the Victoria to New South Wales Interconnector (VNI) West.

2 AEMO, Draft 2022 Integrated System Plan, December 2021, p. 8
3 AEMO, NEM Engineering Framework Initial Roadmap, December 2021.
4 NSW Government – Department of Planning, Industry and Environment (DPIE) Net Zero Plan Stage 1: 2020–2030.
5 The targets, set under the Climate Change and Greenhouse Gas Reduction Act 2010.
6 AEMO, Draft 2022 Integrated System Plan, December 2021, p. 8
7 AEMO, Draft 2022 Integrated System Plan, December 2021, p. 11

Figure 4: ISP projects underway or subject to regulatory approval





1 QNI Minor Upgrade

This involves a minor upgrade to the existing QNI interconnector, boosting interstate transmission capacity and increasing power flow on existing lines. It enhances network reliability ahead of the forecast closure of Liddell power station.

2 Project EnergyConnect

This involves constructing new 330kV double circuit transmission lines, with approximately 800 MW transfer capacity that will connect SA and NSW, with an added connection to north west Victoria.

3 HumeLink

This involves new 500kV lines in an electrical 'loop' between Maragle, Wagga Wagga and Bannaby. It will open up additional capacity for new generation (primarily renewable generation) in southern NSW, increase the transfer capacity between Victoria and NSW and reduce customers' final electricity bills by improving wholesale market competition.

4 VNI West (via Kerang)

This involves a new high capacity 500kV double-circuit transmission line to connect the Western Victoria Transmission Network Project (north of Ballarat) with Project EnergyConnect (at Dinawan) via Kerang. This project will increase access to Snowy 2.0's deep storages and support new renewable energy sources particularly in the Murray River and western Victoria REZs. It will also provide system resilience to address projected coal closures and enable sharing of geographically diverse renewable energy.

5 VNI Minor Upgrade

This is the NSW component of works to upgrade the existing VNI interconnector. It is essential to manage the risk of reliability standard breaches during extreme heat conditions in Victoria, following the closure of Liddell power station.[8] The project is also expected to support the development of renewable generation and incorporates the use of SmartValves' technology that enables dynamic control of power flows.

In the 2023–28 period, we will deliver projects identified in AEMO's ISPs and the NSW Electricity Infrastructure Roadmap as they are approved, in accordance with the automatic contingent project provisions in the National Electricity Rules (NER or Rules) for Actionable ISP projects and the NSW Electricity Infrastructure Investment (EII) Regulations for REZs. We will consult with our customers and other stakeholders about these projects during their delivery phases and as they progress through their regulatory approvals. Approvals are required from AEMO, the NSW Government and the AER before we include any costs of these projects in our transmission prices.

8 AEMO, 2019 Electricity Statement of Opportunities (ESOO), p. 5.

Thanks for your contribution

The 2023–28 regulatory period will be one of profound change in the Australian energy market. The energy transition will be monumental in its impact across all sectors of our economy and community. We are grateful to our customers and other stakeholders for actively participating in the preparation of our Revenue Proposal for the 2023–2028 regulatory period, which outlines how we will meet the new service delivery challenges in a rapidly evolving operating environment. Involvement from our customers and other stakeholders has come in various forms:

- through monthly meetings with our TransGrid Advisory Council (TAC)
- participation in the independent customer research led by Forethought, and
- engagement on our Preliminary Revenue Proposal.

Transgrid Advisory Council

Our TAC has been the primary forum for engagement on our Revenue Proposal. We expanded the TAC's membership in 2021 to include a broader range of stakeholder organisations to capture more diverse views.

The TAC met monthly from June to December 2021 to address topics nominated by TAC members. Some of these meetings were targeted deep-dive workshops.[9] Industry experts presented on matters such as transmission pricing and AEMO's ISP process. We also engaged with the TAC in developing our Energy Vision,[10] which provides context for the Revenue Proposal by analysing potential future energy scenarios. The TAC provided valuable insight into the development of, and supported, our Energy Vision.

These meeting were facilitated by our Executive and Leadership team to ensure customer and other stakeholders' views were shared broadly across our business. Members of our Board attended many of the meetings as observers to receive the feedback from our TAC members.

The AER attended and participated in our TAC meetings, and so responded directly to TAC members' questions, where relevant.

After each TAC meeting, we spoke to all TAC members to invite feedback and reflections. This helped us to tailor subsequent meetings to areas reflecting their priorities and preferences.

Materials for all TAC meetings and deep-dive sessions are available on our website.

Independent customer research

We partnered with Forethought to research our customers' priorities and preferences and to test key elements of our Preliminary Revenue Proposal, which was published on 5 October 2021. This research focused on customers' immediate and likely future priorities and preferences and is important to inform our investment decisions to support the changes to Australia's energy system.

Our research comprised a three-phase program as illustrated in Figure 5. It included formal quantitative and qualitative research through online discussion boards, surveys and focus groups. The quantitative research involved a survey of 1,480 customers to understand what is most important to them regarding their relationship to energy. The outcomes of this survey were used to prioritise initiatives included in our Revenue Proposal.

9 These workshops were open to a broader range of stakeholders than our TAC, such as generators and battery owners / providers.
10 Transgrid, Energy Vision – A clean energy future for Australia, October 2021.

Figure 5: Three-phase study design

Our Preliminary Revenue Proposal

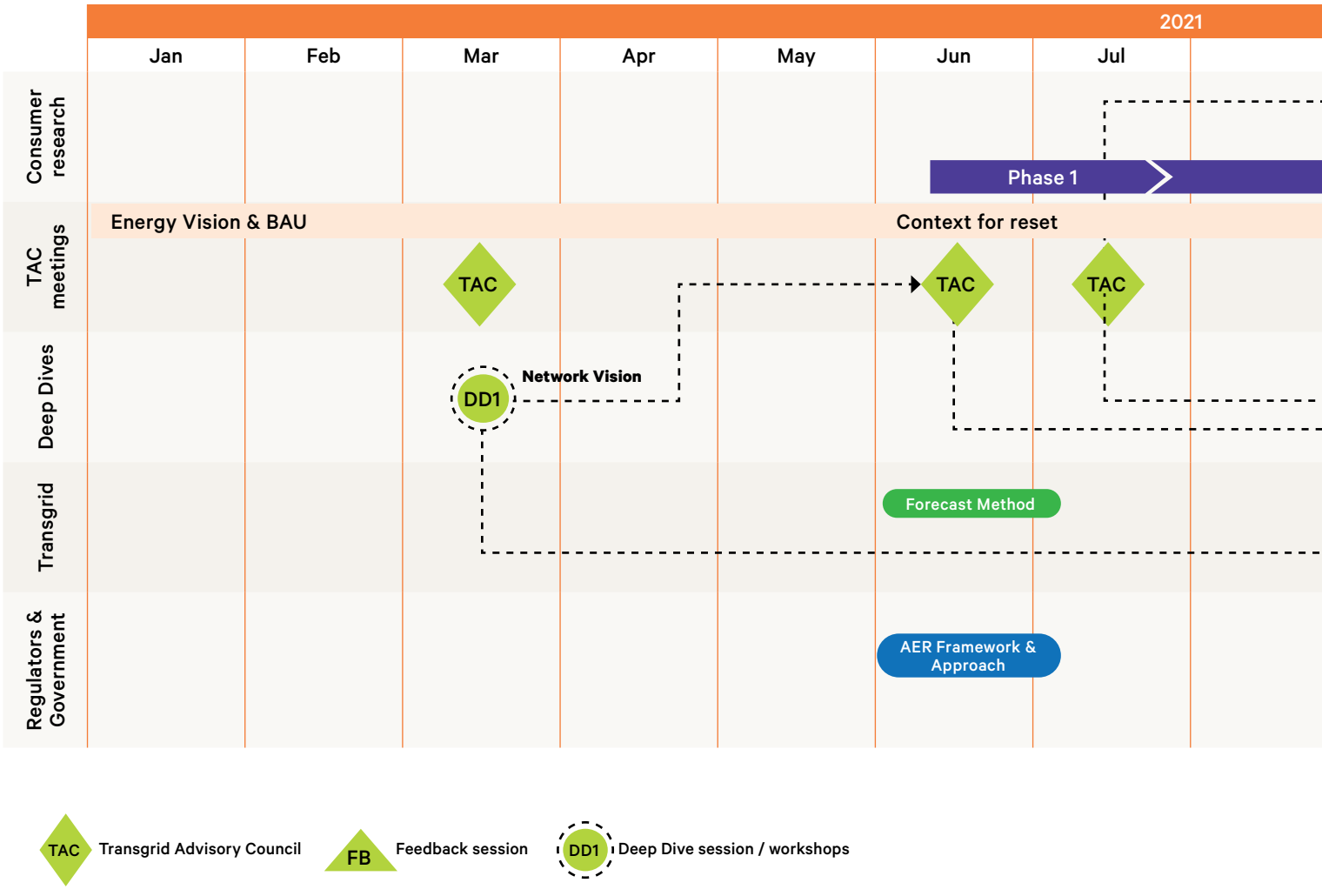
On 5 October 2021, we published our Preliminary Revenue Proposal, which set out our draft positions and proposals for the 2023–28 period and invited feedback from our customers and other stakeholders to inform our Revenue Proposal.

We met with the TAC on 5 October 2021 to discuss our Preliminary Revenue Proposal and then again on 2 November 2021 to receive members' considered views and positions. Generally, TAC members supported our proposals, including our capex and opex forecasts.

We also received feedback on the Preliminary Revenue Proposal through the online qualitative research phase of Forethought's three-phase engagement program, which occurred in late October and early November 2021.

Figure 6 shows the feedback loops that occurred in relation to our engagement on the development of our Revenue Proposal.

Figure 6: Overview of engagement activity on this Revenue proposal



TAC Transgrid Advisory Council

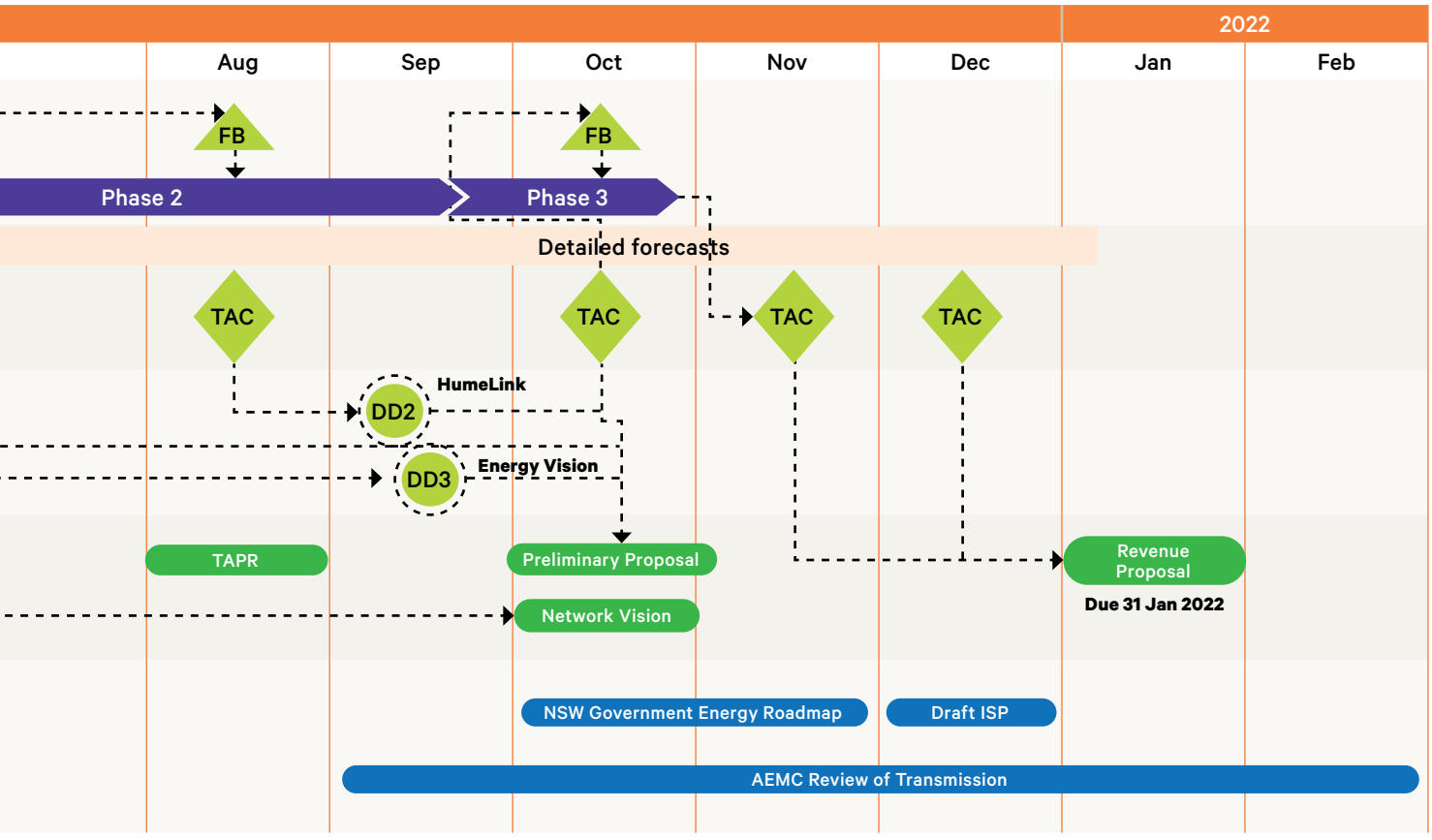
FB Feedback session

DD1 Deep Dive session / workshops

Though our consultation, our customers and other stakeholder identified the following five priority outcomes:

1. Affordability
2. Safety, security and reliability
3. Serving rapid localised demand growth
4. Supporting the energy transition, and
5. Supporting technology and innovation.

Our Revenue Proposal prioritises these outcomes for the 2023–28 period.


2022
Aug
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Phase 2
Phase 3
Detailed forecasts
TAC
TAC
TAC
TAC
HumeLink
DD2
DD3
Energy Vision
TAPR
Preliminary Proposal
Network Vision
Revenue Proposal
Due 31 Jan 2022
NSW Government Energy Roadmap
Draft ISP
AEMC Review of Transmission

The benefits of this proposal

Our Revenue Proposal will provide the following benefits to customers and other stakeholders, which are what you have told us are your highest priorities.

Affordability

Affordability is our customers' highest priority because electricity is central to Australians' quality of life and economic prosperity. Our Revenue Proposal balances the expenditure needed to maintain a safe and reliable electricity supply and to build our future network with the need to deliver real savings to customers. We are committed to doing everything we can to deliver value for money by focusing on the efficient delivery of services. From 30 June 2023 to 30 June 2028, we will deliver transmission cost savings of $19.55 per annum for residential customers and $73.05 per annum for small business customers, which in both cases is a 13.4 per cent reduction over this period.

Safety, security and reliability

Our core responsibility is to ensure that electricity is delivered safely, securely and reliably to homes and businesses in NSW and the ACT. This is challenged by the operational complexity arising from the rapid transformation of the energy system as more variable large-scale renewable generation connects to the NEM and ageing coal-fired generation retires.[11]

Our customers want us to deliver low-cost renewable energy that secures the decarbonisation objectives of the energy transition within a framework of reliability and affordability. We will achieve this in the 2023–28 period by:

- renewing and replacing ageing, obsolete and deteriorated network assets to maintain the long-term condition of our electricity network
- replacing assets with more resilient alternatives, where it is efficient, so that our network can withstand more frequent, intense and longer climate-driven extreme weather events
- aligning with the Australian and NSW Governments' new cyber and physical security obligations, and
- rolling out new Information and Communication Technology (ICT) platforms and continue to refresh or replace legacy applications and systems.

Rapid localised demand growth

We are committed to meeting residential and business customers' needs as new developments across Sydney and regional NSW drive demand growth. We need to serve strong maximum demand growth in regions such as western Sydney, north west Sydney, the North West Slopes and central and far west NSW. This strong demand growth is due to new residential, commercial, transport and data centre developments in western Sydney and the development of mining and industrial precincts in regional NSW.

11 2MW of large scale solar and wind capacity was added to the NEM in 2020, and a further 8 GW of largescale solar and wind generation is currently under construction. The pipeline is even larger – 300 generation and storage projects, totalling 55,000 MW – see https://assets.cleanenergycouncil.org.au/documents/resources/reports/clean-energy-australia/clean-energy-australia-report-2021.pdf and https://aemo.com.au/newsroom/media-release/aemo-updates-2020-esoo.

Energy transition

Our customers support the energy transition and investment that lowers emissions. More than half of residential and small-medium business customers surveyed indicated they would be willing to pay more on their bills to reduce emissions.[12]

In the 2023–28 period, we will support the energy transition through programs that:

- relieve network congestion to enable additional generation from low cost and low emission sources, and
- install voltage control devices in southern NSW, north west NSW and greater Sydney to maintain voltage levels within prescribed limits as minimum demand falls due to the increased uptake of household solar PV generation.

These programs are essential as network congestion and constraints prevent prospective renewable generation projects.

We will deliver projects in accordance with AEMO's ISPs and the NSW Electricity Infrastructure Roadmap, as they are required, which will facilitate the uptake of new low cost renewable generation. By delivering these projects we will be demonstrating our commitment to the energy transition. We will adhere to the NER automatic contingent project provisions for Actionable ISP projects and the NSW Electricity Infrastructure Investment (EII) Regulations for REZs and other projects under the NSW Electricity Infrastructure Roadmap. The costs of these projects are therefore not included in our Revenue Proposal and customers will only pay for these projects if, after public consultation, AEMO and the NSW Government determine that they are needed and their costs have been assessed as prudent and efficient by the AER.

Technology and innovation

Our customers have told us they support investment in innovation to improve affordability and address climate change, with the majority of surveyed residential customers willing to forgo savings to invest in innovation and technology to reduce emissions. In the 2023–28 regulatory period, we will continue to collaborate with industry partners, contracting suppliers, customers and other third parties to:

- leverage innovative techniques and approaches to help us increase productivity and improve customer outcomes
- identify low-cost non-network alternatives to traditional network options, including through the RIT-T process, and
- promote the creation and trial of new innovative practices to assess their suitability for broader adoption across the business.

These projects will support the delivery of new technology and innovation in the electricity market.

12 Forethought, Revenue Reset Stakeholder Engagement – Executive Report, p.7

Our forecast revenues and prices

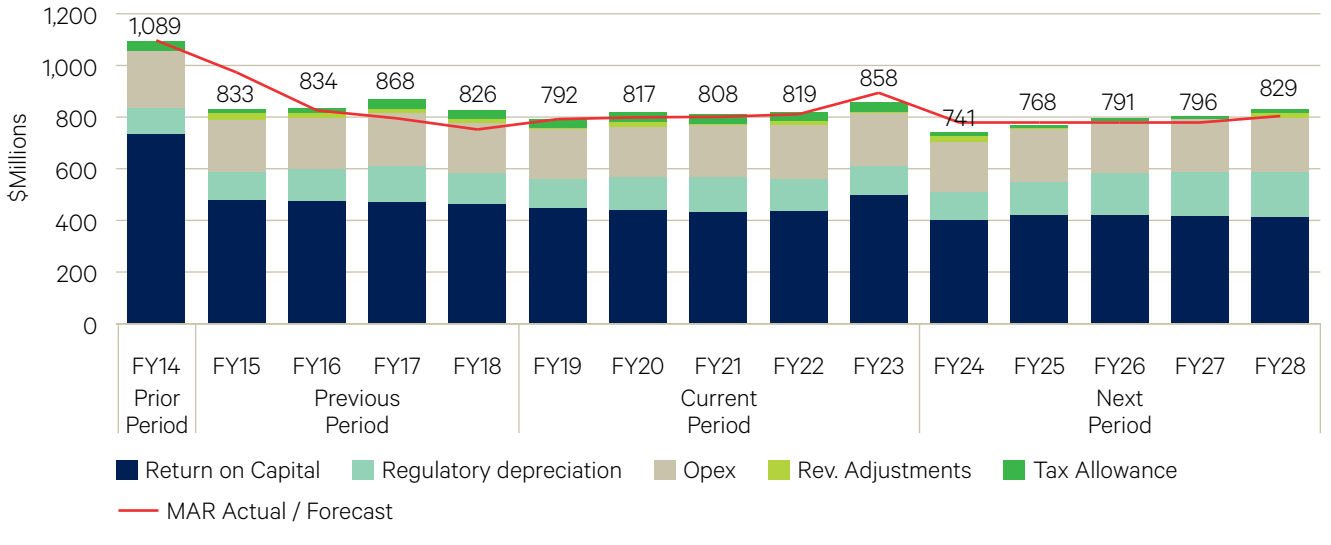
Our forecast revenue will fund our expenditure program to meet our customers' needs and maintain the reliability, security and safety of our transmission network, while supporting the energy transition. Table 1 shows the building blocks that make up our total Annual Building Block Revenue Requirement (ABBRR) of $3,925.1 million for the 2023–28 period. It also shows our Maximum Allowed Revenue (MAR), which is our smoothed revenue.

Table 1: Forecast revenue ($M, Real 2022–23)

	Total 2018–23	2023–24	2024–25	2025–26	2026–27	2027–28	Total 2023–28
Return on capital	2,254.2	400.4	419.1	420.9	416.5	410.6	2,067.6
Depreciation	601.2	108.8	129.0	160.0	167.8	177.7	743.3
Opex	1,009.1	193.8	202.8	205.2	205.5	207.7	1,015.0
Revenue adjustments[13]	47.9	22.6	4.4	(4.8)	(7.3)	18.6	33.5
Corporate income tax	181.6	15.7	13.0	9.4	13.2	14.6	65.7
ABBRR (unsmoothed revenue)	4,094.0	741.3	768.3	790.6	795.6	829.2	3,925.1
MAR (smoothed revenue)	4,096.7	779.3	779.3	779.3	779.3	804.3	3,921.6

Figure 7 shows the trends in our revenues over the 2014–18, 2018–23 and 2023–28 periods and that our estimated 2023–28 ABBRR is $168.9 million or 4.1 per cent less than our expected 2018–23 ABBRR.

Figure 7: Forecast revenue ($M, Real 2022–23)[14]



13 Revenue adjustments include carryover amounts from the EBSS and CESS, a negative adjustment for shared asset revenue, and the DMIA.
14 The values shown on the figure are the total building blocks revenue.

Our transmission revenues comprise 7 to 8 per cent of indicative residential household and small to medium business bills in NSW and ACT. The cost of our transmission services is only one component of the total retail bill that customers pay. The other bill components include generation, distribution and retail costs.

Table 2: Indicative breakdown of total retail bill – residential and small business customers

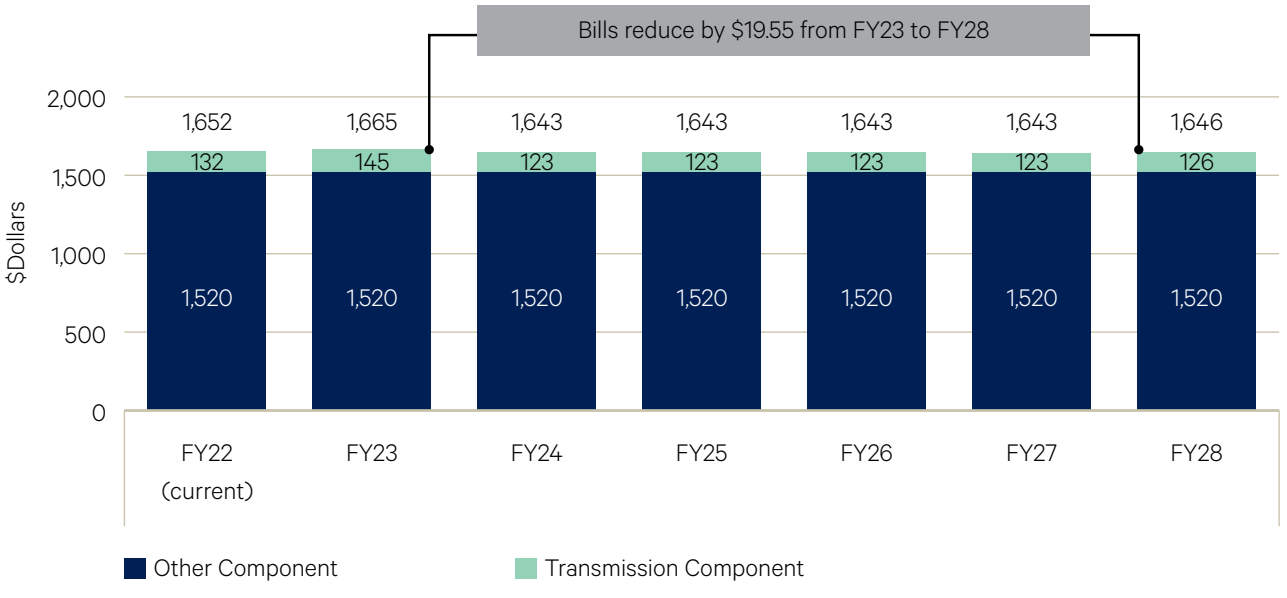
Electricity supply chain	Proportion of total bill %	
	Residential	Small business
Generation	29	28
Transmission	8	7
Distribution	28	28
Retail and other	27	28
Environmental policies	9	10

Source: ACIL Allen, Transgrid TUOS as a proportion of residential and small business electricity bills, 29 November 2021. Note: the proportion of total bill % is assumed to apply to typical annual bills for 2021–22. These may differ from those expected for 2022–23.

We use our MAR, to set our annual transmission prices. Based on our forecast MAR, we expect transmission costs to reduce over the period 30 June 2023 to 30 June 2028 by $19.55 per annum for residential customers and $73.05 per annum for small business customers, which in both cases is a 13.4 per cent reduction over this period.[15] This will help to deliver on affordability – our customers' highest priority.

Figure 8 shows the indicative household bills over the 2023–28 regulatory period and Figure 9 shows the equivalent for small business customers.

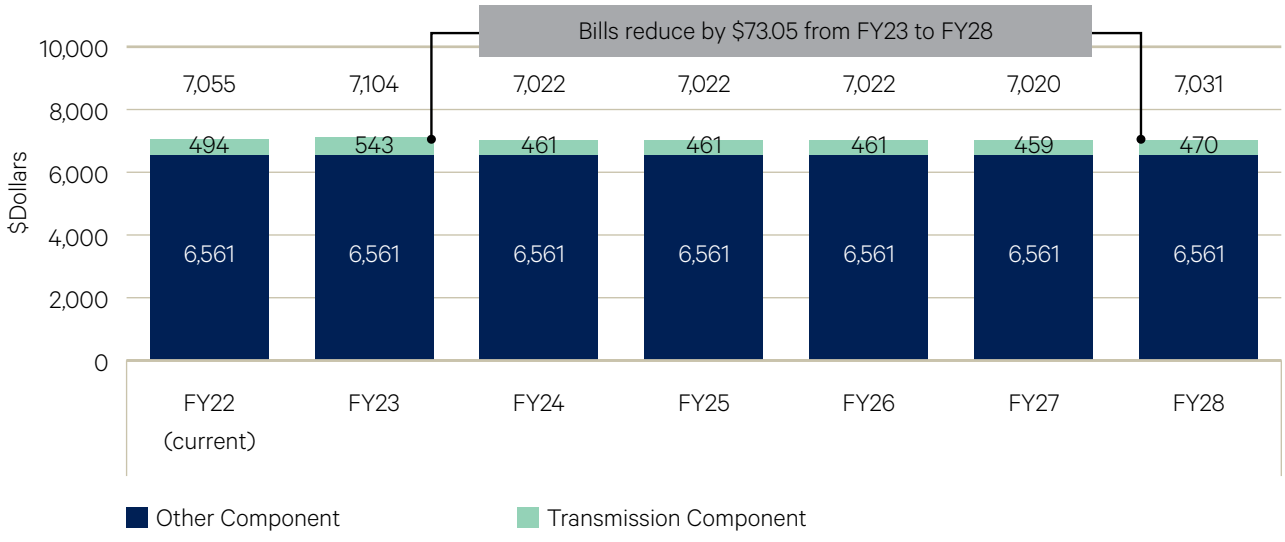
Figure 8: Indicative household bill ($, Real 2022–23)



Notes 1. The indicative bill uses average bill information published by the AER and the Australian Energy Market Commission (AEMC) and assumes that the non-transmission components of the bill stay constant in real dollars.

15 By 2027–28.

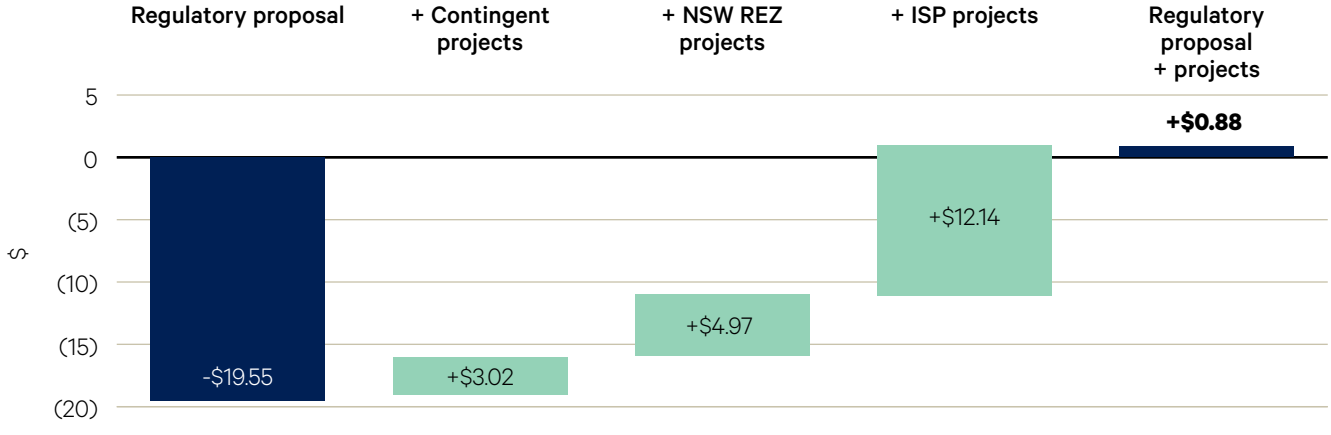
Figure 9: Indicative small business bill ($, Real 2022–23)



As noted above, our expenditure forecasts do not include the costs of projects in AEMO's ISP, the NSW Electricity Infrastructure Roadmap or our contingent projects[16]. Customers will only pay for these projects if they are approved by the relevant regulators and their costs are reflected into our transmission prices as approved by the AER. In accordance with the regulatory framework, ISP projects and NSW REZs will only proceed if they deliver net benefits to customers such that the expected savings in wholesale costs outweigh the increase in the transmission costs.

We recognise that our customers are interested in understanding the total potential transmission price impact including if these projects proceed. Figure 10 and Figure 11 show that the transmission cost savings in this Revenue Proposal will largely be offset by these projects if they proceed in the 2023–28 period.

Figure 10: Residential bill impact – transmission component ($, Real 2022–23)[17]

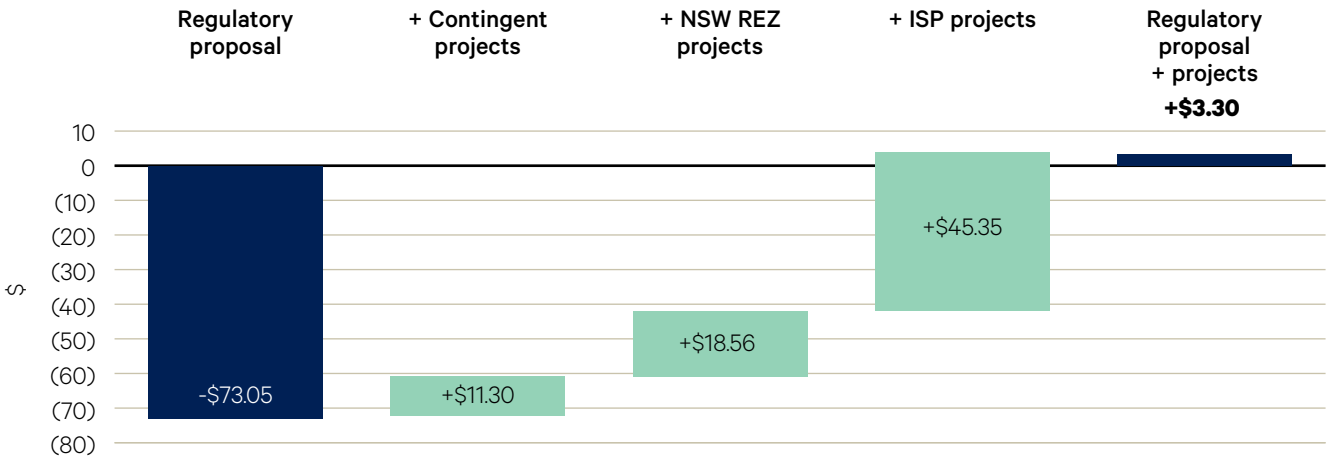


Notes: 1. The values do not sum exactly due to impact of equity raising costs. 2. The estimated impact of adding the contingent, NSW REZ and ISP projects is indicative. 3. Values are estimated annual bills for residential customers.

16 The need, timing and cost of these projects remain uncertain at the time of submitting our Revenue Proposal. Customers only pay for these projects if and when they proceed.

17 Capex for ISP projects is projected to be incurred earlier than for NSW REZ projects. As a consequence, the ISP projects would impact revenue and prices sooner.

Figure 11: Small business customers bill impact – transmission component ($, Real 2022–23)



Notes: 1. The values do not sum exactly due to impact of equity raising costs. 2. The estimated impact of adding the contingent, NSW REZ and ISP projects is indicative. 3. Values are estimated annual bills for small business customers.

Our forecast expenditure

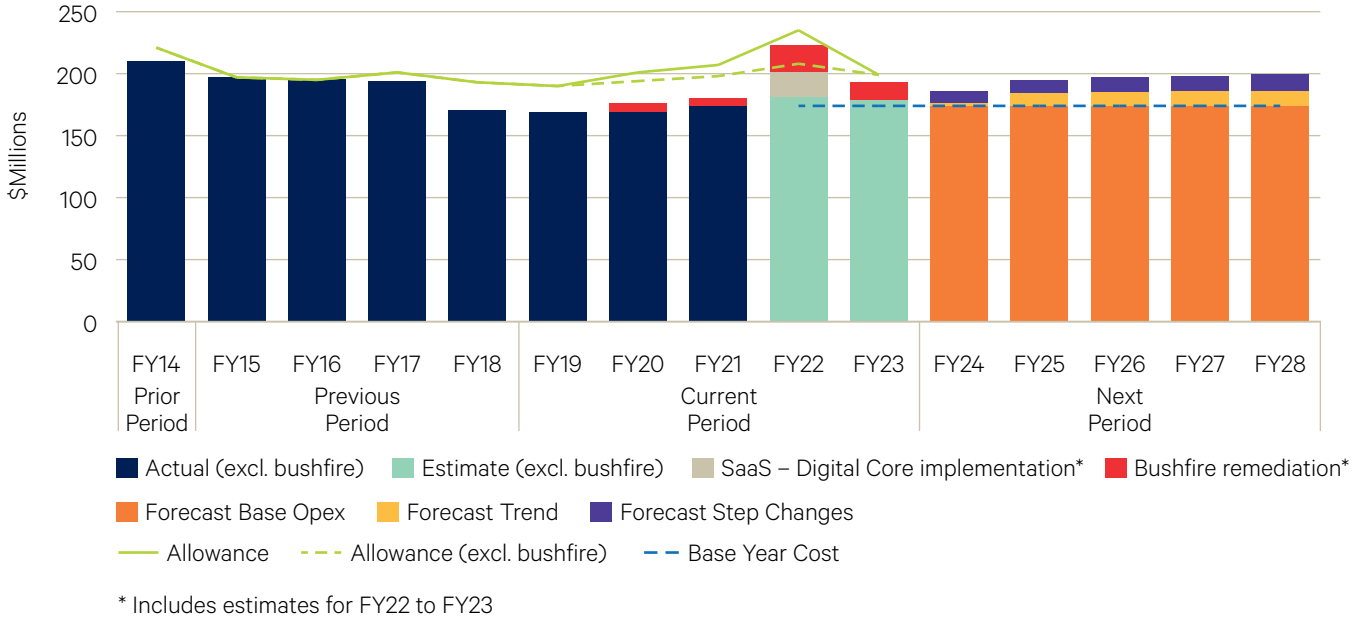
Our forecast opex

Our opex forecast for the 2023–28 regulatory period balances providing safe and reliable electricity supply, complying with new regulatory requirements, and promoting affordability for customers. We have reduced our forecast opex in response to customer feedback on our Preliminary Revenue Proposal.

Our total forecast opex for the 2023–28 regulatory period is $1,015.0 million (including debt raising costs):[18]

- We have applied the base-step-trend method to forecast our opex, which is the AER's preferred forecasting method.[19]
- We are using 2021–22 opex as the base year.[20] We estimate our base year opex to be $11.9 million below the AER's opex allowance for that year reflecting the operational efficiencies we have achieved. This will result in savings of $59.6 million[21] to our customers in the 2023–28 period (compared to our base year allowance).
- We have included step changes in our opex forecast for externally driven costs that we will incur that are not in our base year opex and are too material for us to absorb in the 2023–28 regulatory period. This opex was supported by our customers and relates to:
  - insurance premiums
  - cyber and critical infrastructure security, and
  - ISP preparatory activity.
- We have included a positive productivity growth improvement of 0.5 per cent per annum, which reduces our overall opex by around $14.3 million in the 2023–28 period.

Figure 12: Forecast opex for the 2023–28 period ($M, Real 2022–23)



* Includes estimates for FY22 to FY23

18 This includes debt raising costs of $25.7 million.
19 Transgrid, 2023–28 Expenditure Forecasting Methodology, June 2021.
20 We have removed expenditure on Bushfires from our 2021–22 opex base year.
21 Calculated by multiplying the base year underspend of $11.9 million by five years ($11.9 million x 5 years = $59.6 million).

Our forecast capex

Our forecast capex for the 2023–28 regulatory period is broadly in line with our expected capex for the current period, while ensuring we meet our customers' priorities to maintain a safe, secure, reliable and resilient network that supports the changing energy system and increased localised demand. We have reduced our forecast capex in response to customer feedback on our Preliminary Revenue Proposal to deliver on affordability – our customers' highest priority.

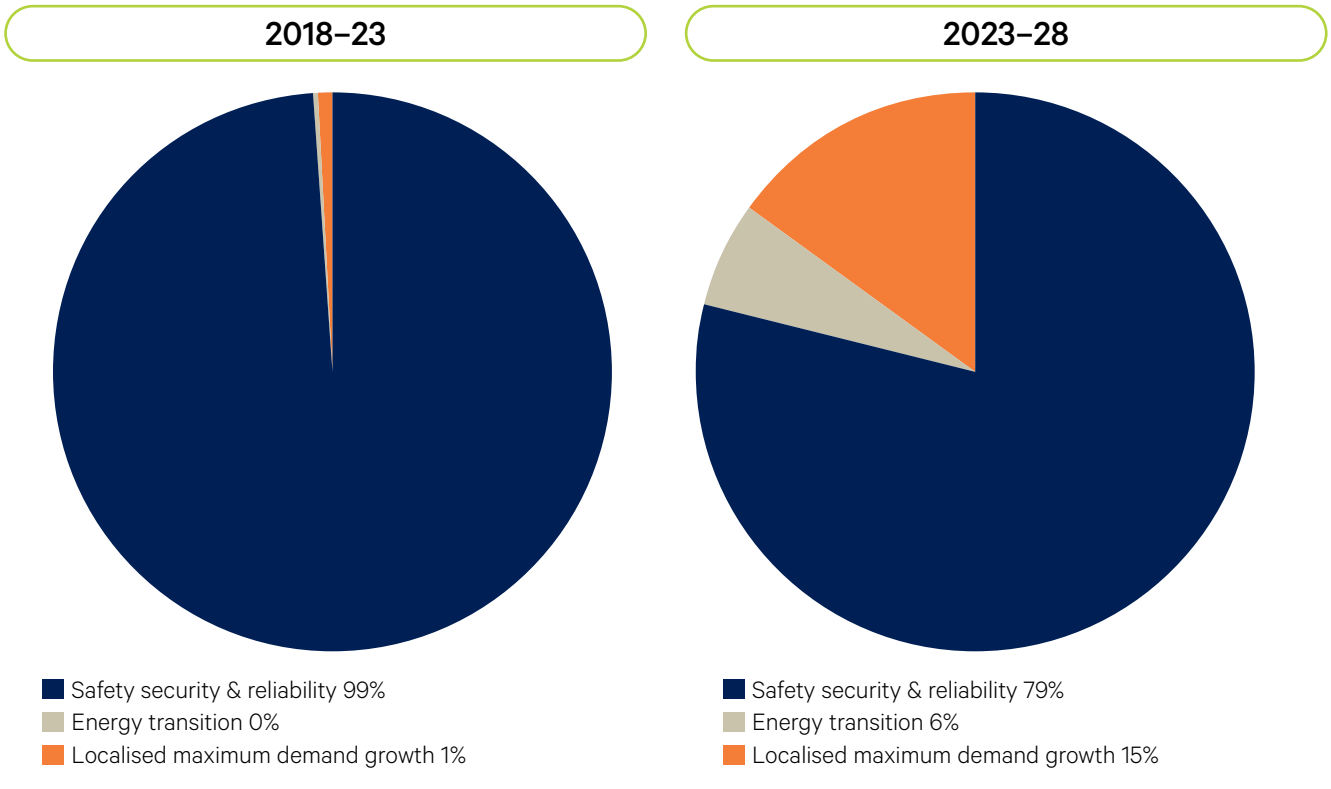
Our 2023–28 forecast capex is $1,368.5 million (excluding pre-approved forecast capex for Project EnergyConnect), which is $23.0 million or 1.7 per cent higher than our estimated capex of $1,345.6 million (excluding expenditure on ISP Projects),[22] for the 2018–23 regulatory period. Figure 13 compares the composition of our capex between the 2018–23 and 2023–28 regulatory periods. It shows that, whereas capex in the 2018–23 regulatory period was almost entirely driven by safety, security and reliability needs, in the 2023–28 regulatory period, 15 per cent of capex will address localised maximum demand growth and 6 per cent will support the energy transition.

Our 2023–28 forecast capex has been independently reviewed for consistency with good industry practice. These reviews support our forecast capex as being prudent and efficient.

Given the economic effects of the COVID-19 pandemic are still highly uncertain, we have not included any costs associated with the long-term impacts in our capex forecasts. We will continue to assess the impact of the COVID-19 pandemic on our proposed 2023–28 capital program and will incorporate any changes arising from the pandemic's effects in our Revised Revenue Proposal.

Our forecast capex does not include the costs that we may incur if we are required to ready our network for 100 per cent renewables by 2025.[23] We are currently examining the nature and scope of these costs and will work closely with AEMO, our industry peers and our customers to understand and quantify the investment required to facilitate an orderly transition towards this future state. Subject to this work, we propose either to include the forecast costs, or a further cost pass through event, in our Revised Revenue Proposal.

Figure 13: Capex composition for the 2018–23 and 2023–28 periods



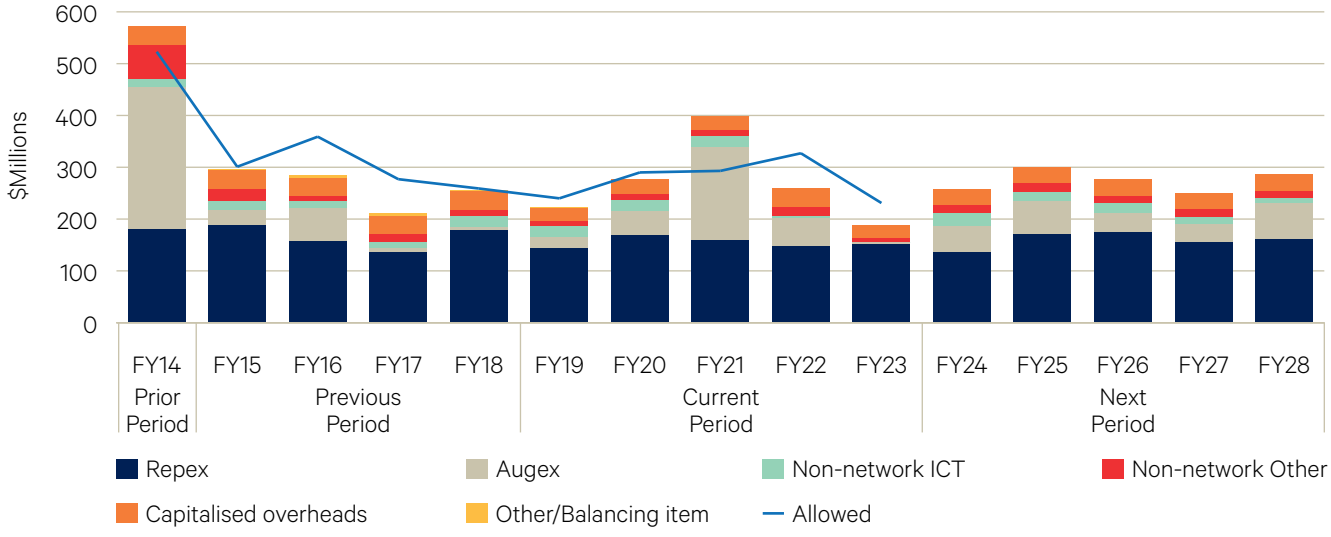
22 Excluding our expenditure of $1,769.2 million on actionable ISP Projects approved by the AER as contingent projects for the 2018–23 regulatory period (i.e. Project EnergyConnect, QNI minor and VNI minor).

23 AEMO, NEM Engineering Framework Initial Roadmap, December 2021. This finds by 2025 the NEM could reach up to 100 per cent instantaneous renewables at times.

In May 2021, the AER published its Determination for Project EnergyConnect, which approved total capex of $2,008.0 million[24] for the 2018–23 regulatory period. Project delays mean that this Project's delivery date is now anticipated to be 2024–25. As a result, we expect to spend $532.8 million of the approved capex for this Project (pre-approved forecast capex) in the 2023–28 period. We will add this pre-approved capex to our forecast for the first two years of the 2023–28 period. We are committed to delivering this Project in line with the total approved capex allowance of $2,008.0 million and are not seeking any additional capex for this Project in this Revenue Proposal.

Figure 14 details the breakdown of our 2023–28 forecast capex by sub-category, excluding pre-approved capex and compares this with our capex over the 2018–23 period. To aid comparison, we have excluded our expenditure of $1,769.2 million on actionable ISP Projects approved by the AER as contingent projects for the 2018–23 regulatory period (i.e. Project EnergyConnect, QNI minor and VNI minor).

Figure 14: Forecast capex for the 2023–28 period, excluding pre-approved forecast capex, ISP Projects and NSW Electricity Infrastructure Roadmap projects ($M, Real 2022–23)



24 Excluding equity raising costs.

- Our Replacement capex (Repex) forecast of $797.6 million is the largest component (58.3 per cent) of our total capex forecast and will increase slightly (3.6 per cent) above our 2018–23 expenditure to deliver a safe and reliable network as our network ages and condition-related issues increase. We will also:
  - invest to enhance our cyber and physical security capability and respond to the changing generation mix, and
  - focus on climate change and network resilience to maintain our network safety, reliability and security during extreme climate events.
- Our Augmentation capex (Augex) forecast of $253.6 million contributes 18.5 per cent of our proposed total capex and is about 16.9 per cent lower than our estimate for 2018–23. Our 2018–23 Augex included Powering Sydney's Future, which is expected to cost $235.2 million and is nearing completion. The key drivers of our 2023–28 forecast Augex are:
  - addressing rapid localised load growth and spot loads in certain regions including central west and western Sydney, which if not addressed, will lead to the network in those areas not complying with NER voltage stability and thermal limits and Independent Pricing and Regulatory Tribunal's (IPART's) reliability standards, and
  - maintaining compliance with voltage stability which is being impacted by decreasing minimum demand as household solar PV generation increases.
- Our Non-network ICT capex forecast of $86.9 million is 29.1 per cent higher than our estimate for the current period, and will enable us to rollout new technology and continue to refresh or replace legacy applications and systems at the end of their lives.
- Our Non-network Other capex forecast (property, fleet, plant and equipment) of $71.4 million is 22.1 per cent higher than our estimate for the current period as we continue to provide safe, compliant and productive offices and depots to support the increase in our network operations activity and invest to maintain the suitability and safety of our fleet, plant and equipment.
- Our capitalised overheads forecast of $159.0 million is 10.2 per cent higher than our estimate for the current period to enable us to deliver a larger capital works program.

Managing our risks

The 2023–28 regulatory period will be one of profound change in the Australian energy market and our Revenue Proposal outlines how we will meet the new service delivery challenges in a rapidly evolving operating environment.

The following are key risks associated with our Revenue Proposal, although we do not purport these to be a comprehensive list of all of our potential risks in the 2023–28 regulatory period:

- **AEMO's ISPs and the NSW Electricity Infrastructure Roadmap** – we will deliver projects in accordance with AEMO's ISPs and the NSW Electricity Infrastructure Roadmap, as they are required, which will facilitate the uptake of new low cost renewable generation. The costs of these projects are therefore not included in our expenditure forecasts in this proposal and customers will only pay for these projects if, after public consultation, AEMO and the NSW Government determine that they are needed and their costs have been assessed as prudent and efficient by the AER.
- **Projects currently undergoing a RIT-T** – we have not included in our forecast capex projects that are the subject of current Regulatory Investment Tests for Transmission (RIT-Ts) where the preferred option has not yet been identified. We will update our capex forecasts for the preferred options, as appropriate, in our Revised Revenue Proposal, where the outcomes are known by that time.
- **100 per cent renewables by 2025** – our Revenue Proposal does not include costs associated with 100 per cent renewables by 2025. We are currently examining the nature and scope of costs that we may incur to ready our network for this future state.[25] We will engage with our customers and other stakeholders about this matter over the coming months and may include either some costs, or a further cost pass through event, in our Revised Revenue Proposal.
- **Real material cost escalation and COVID costs** – our Revenue Proposal does not include:
  - a real increase in materials costs in our expenditure forecasts although, like AEMO, we forecast that the cost of materials will increase at a rate faster than CPI, and
  - any cost impacts associated with the long term effects of the COVID-19 pandemic given that the economic effects are still highly uncertain.

  We will revisit these matters in consultation with our customers and other stakeholders over the coming months.
- **Innovation initiatives** – at this stage, we have not included in our Revenue Proposal any specific innovation expenditure. We will continue to engage with customers and other stakeholders about innovation initiatives and whether they should be reflected in our Revised Revenue Proposal.

25 AEMO, NEM Engineering Framework Initial Roadmap, December 2021. This finds by 2025 the NEM could reach up to 100 per cent instantaneous renewables at times.

Next steps

We welcome customers and other stakeholders' views on this Revenue Proposal. Please share your views with us by:

- Email us at: revenue.reset@transgrid.com.au
- Calling us on: 02 9284 3431

Figure 15: Next steps

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