30 November 2023

Ausgrid's 2024-29 Revised Proposal

Attachment 5.1: Proposed capital expenditure

Empowering communities for a resilient, affordable and net-zero future.

Ausgrid

Contents

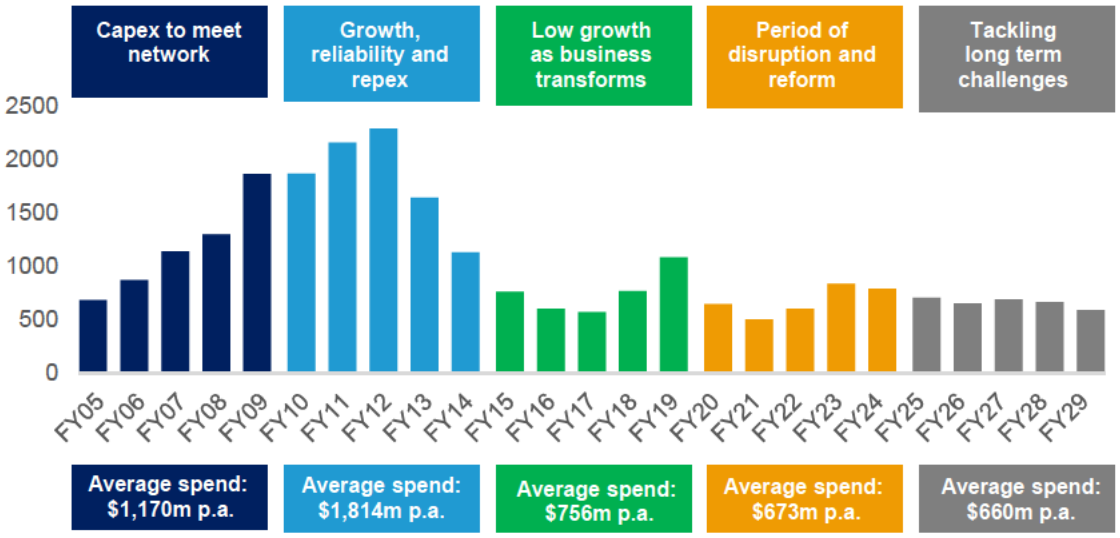
Executive summary

The 2024-29 Regulatory Control Period (**2024-29 period**) will be pivotal for our network and customers. New challenges lie ahead, including responding to climate change, protecting our network from cyber security threats, and efficiently integrating rooftop solar, batteries and electric vehicles (**EV**) into our grid.

Above all else, we need to balance the costs of how we respond to new challenges with the need to promote affordability. With the help of our customers over a process extending more than 2 years, we consider we have got this balance right.

Our capex forecast of $3,301 million[1] (real FY24) is 2% below our current 2019-24 spend.[2] For our customers, this means that their Ausgrid network service will be more climate-resilient, cyber-safe and accommodate more customer-owned renewables, for a lower level of investment than we are making today.

Figure 1 Our long-term trend in capex ($m, real FY24)



2% reduction in 'period-to-period' investment that, in addition, delivers:				
Climate resilience	**ERP replacement**	**Cyber security**	**CER augmentation**	**Innovation program**
$114m	$118m[3]	$70m[4]	$37m	$44m

[1] Includes Software-as-Service (**SaaS**) costs which we are proposing to treat as capex in the 2024-29 period.
[2] Note that Attachment 5.3 – Capex model – FY25-29 and Attachments 4.3 – PTRM for distribution and 4.4 – PTRM for transmission contain a total gross capex of $3,430 million. This is because a decision was made to change the Macquarie Park project to a contingent project after revenue and prices had been finalised. Because the project capex had been included in the final year, there is no change to revenue. However, there may be a small impact to capitalised overheads which will have an immaterial impact. We will provide an updated capex model as soon as possible after submission.
[3] Includes SaaS costs.
[4] Includes SaaS costs.

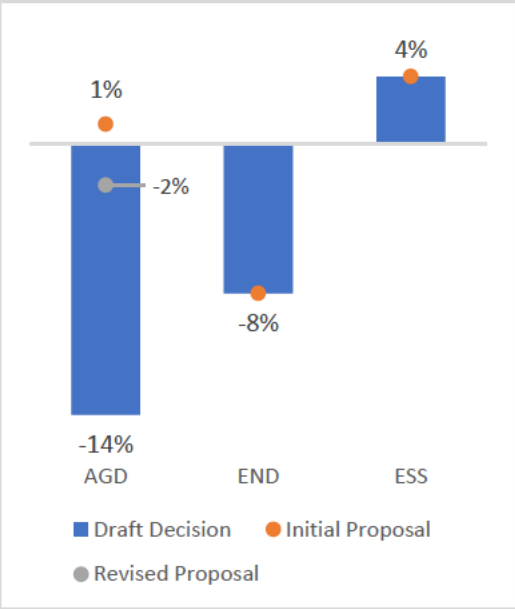
Figure 2 Summary of our response to AER's Draft Decision ($m, real FY24)

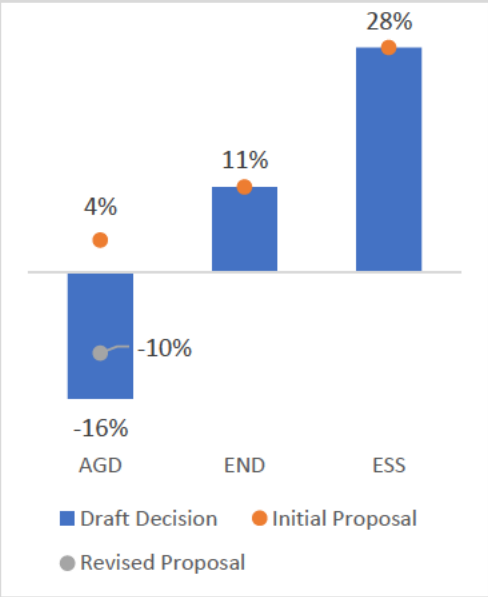
Driver	AER draft decision	Our response		Difference to our Initial Proposal
Repex	Unit costs for dedicated mains program challenged	Lower unit costs	We have updated our unit rates resulting in a $63 million reduction in our proposed dedicated mains program	▼$63m
CER augmentation	More information requested	Lower CER forecast	We have deferred part of our CER augmentation program in response to the AER's feedback, leading to a $10 million reduction to our program	▼$10m
Climate resilience	Modelling must show a clear 'causal link'	Additional analysis	Refined modelling to transparently show the causal link between proposed investment and growth in climate risk, and staged investment over multiple periods	▼$80m
Innovation	New approach to funding needs to be explored	UK's Ofgem approach	We will fund 10% of our innovation program similar to the established Ofgem approach	▼$5m
Cyber security	Security Profile 2 – Plus accepted	Upfront efficiencies	Our Revised Proposal of $70 million (incl. SaaS) is less than our Initial Proposal. This represents a 20% efficiency saving	▼$21m[5]
ERP replacement	Contingency costs not accepted and delivery risks noted	Costs and timing refined	We will still deliver the best option for customers, being a transformation of our ERP, but with no contingency. We will also deliver the project over 2 regulatory periods.	▼$31m[6]

[5] Includes SaaS costs.
[6] Includes SaaS costs.

Putting our revised proposal capex into context

Period to period percentage change in capex





Our period-to-period trend in total capex is 2% below our current period spend.

Our period-to-period trend in network capex is 10% below our current 2019-24 period spend. This is inclusive of our new areas of focus – climate resilience and CER augmentation

Affordability measures

Repex	Our forecast repex is 36% below the AER's repex model threshold.
	We are proposing a 13% period-to-period decrease in repex.
Growth	We are proposing a 16% decrease in network growth.
National electricity objective (NEO)	We have not proposed any additional funding related to the amended NEO because, consistent with the AER Guidance Note, we did not have enough time to consult with our customers.
ICT	We have updated our ERP strategy to remove a 20% contingency and defer a component of the program until the 2029-34 period.

Ausgrid

1. Introduction

Our revised 2024-29 capex forecast of $3,301 million is $168 million (5%) less than our initial forecast on a 'like-for-like' basis when SaaS costs are treated as capex.[7]

Figure 3 sets out our revised capex forecast, by driver. We accept or substantially accept key elements of the AER's Draft Decision. Where we have not accepted an aspect of the AER's Draft Decision we have provided additional analysis to support our position. We have also updated our forecasts to reflect the most recent information available.

Figure 3 Summary of our Response to the AER's Draft Decision by driver

Revised Proposal

$3,301m

over the 2024-29 period

Our revised capex is

$168m lower

than our initial proposal

We are forecasting a

2% decrease on

actual spend in the current 2019-24 period

$m, real FY24	Initial Proposal	Draft Decision	Difference to Initial Proposal	Summary of our response	Revised Proposal	Difference to Draft Decision
Replacement	1,446	1,358	(88)	Substantially accept	1,428	(18)
Network growth	190	190	0	Accept	190	0
CER augmentation	47	8	(39)	Lower forecast	37	(10)
Climate resilience	194	26	(168)	Lower forecast	114	(80)
Operational technology	68	42	(26)	Lower forecast	60	(8)
Innovation	49	0	(49)	AER feedback adopted	45	(5)
ICT	301	202	(99)	Lower forecast	273	(28)
Fleet	148	148	0	Accept	147	(1)
Property	145	145	0	Accept	145	0
Overheads	724	686	(38)	Accept	732	8
SaaS costs	157	74	(83)	Lower forecast	131	(26)
Total	**3,469**	**2,880**	**(590)**	**Lower forecast**	**3,301**	**(168)**

[7] We are proposing to treat SaaS as capex in the 2024-29 period as an affordability measure (see **Section 8**).

1.1 Our revised total capex forecast is required to achieve the capex objectives

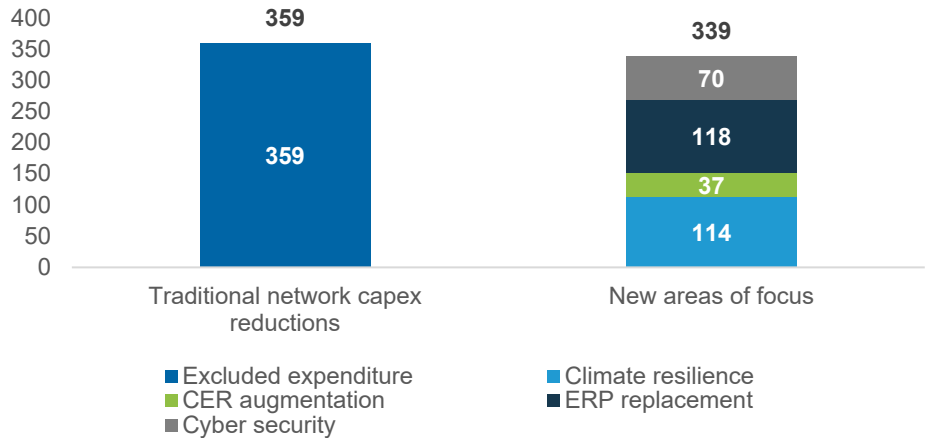
The capex objectives in the NER require the AER to consider our forecast from a total capex perspective, including in relation to the capex criteria. This involves a wholistic assessment of not just what we have included in our forecast, but also what we have excluded.

Our customers have told us that they want Ausgrid to respond to the impacts of climate change, invest in new digital technologies and find ways to efficiently and reliably integrate CER and electric vehicles into our network. These are new drivers of investment that could have led to a step change in our total capex in the 2024-29 period. Yet to support customer affordability, we have actively sought to accommodate new and emerging areas of investment by avoiding or otherwise deferring 'traditional' areas of expenditure. Proof points that demonstrate this, include:

- Period-to-period capex in our Revised Proposal is 2% lower;
- Traditional network capex (repex, network growth and OTI) will be 17% lower under our Revised Proposal compared to the current 2019-24 period; and
- Repex, which makes up 43% of our total capex, will be 13% lower under our Revised Proposal and is 36% lower than the AER's Repex Model efficiency threshold.

The efficiency of our forecast at the total level, through prudent exclusions and efficiency savings, can be quantified for illustrative purposes using top-down metrics. As noted above, our 'traditional' network capex (repex, network growth and OTI) of $1,723 million in the 2024-29 period is 17% lower than in the current 2019-24 period ($2,082 million). To put into context, this proposed period-to-period reduction in traditional areas of network investment ($359 million) is more than the combined cost of our forecast climate resilience, CER augmentation, cyber and ERP programs, as shown in **Figure 4**.

Figure 4 Reductions in traditional areas of capex versus new areas of focus



Further, we have made multiple reductions to our forecast in response to AER feedback. These reductions stretch across our total capex forecast, including a $63 million reduction to repex for lower dedicated mains unit costs, a $10 million reduction for CER augmentation and a $80 million reduction to our climate resilience program. A summary of our response to the AER's Draft Decision, with savings totalling $193 million relative to our Initial Proposal, is set out in **Figure 5**.

Figure 5 Summary of our response to the AER's draft decision

Expenditure category	Draft Decision	Our response relative to our Initial Proposal		More information
Replacement: **Dedicated mains**	The Draft Decision did not approve our dedicated low voltage (**LV**) circuit reconfiguration program. It requested more information on, among other things, the efficiency of our unit rates.	We have reduced our dedicated LV circuit reconfiguration program by $63 million after considering the AER's feedback and undertaking additional analysis ourselves. This reduction is driven by the incorporation of lower unit rates.	▼$63m *lower than Initial Proposal*	**Section 2** **Attachment 5.4 – Replacement**
CER augmentation	The AER approved $8 million for CER augmentation with a request for more information on: • Estimated curtailment; • How compliance obligations should be calculated; • Use of value of customer reliability (**VCR**) to calculate the impact of EVs; • Risks associated with network investment given uncertainty; and • Availability of lower cost solutions.	We have reduced our proposed CER augmentation expenditure to $37 million through the deferral of $10 million in solar curtailment investment into the 2029-34 period. This reflects AER feedback and updated analysis which focuses more on the impact of the integration of EVs into our network. We have sought to respond to key feedback from the AER by updating our assessment of curtailment, adopting the 2023 customer export curtailment values (**CECV**) and refined other assumptions.	▼$10m *lower than Initial Proposal*	**Section 4** **Attachment 5.7 – CER augmentation business case**
Climate resilience	The AER's Draft Decision for climate resilience substituted our Initial Proposal ($194 million) with a 'placeholder' forecast of $26 million. More information and analysis was requested on: • Causal link between the proposed investment and growth in climate risks; and • Additional options analysis to identify investments with the greatest net benefits.	We have developed an 'end to end' model that more transparently demonstrates the required causal link and helps us identify the solution that unlocks the most net benefits for customers. **Attachment 5.5** sets out a detailed checklist of our response to AER feedback. We appreciate the significant time the AER has spent with Ausgrid in helping us refine our resilience expenditure forecasting approach.	▼$80m *lower than Initial Proposal*	**Section 5** **Attachment 5.5 – Climate resilience business case**

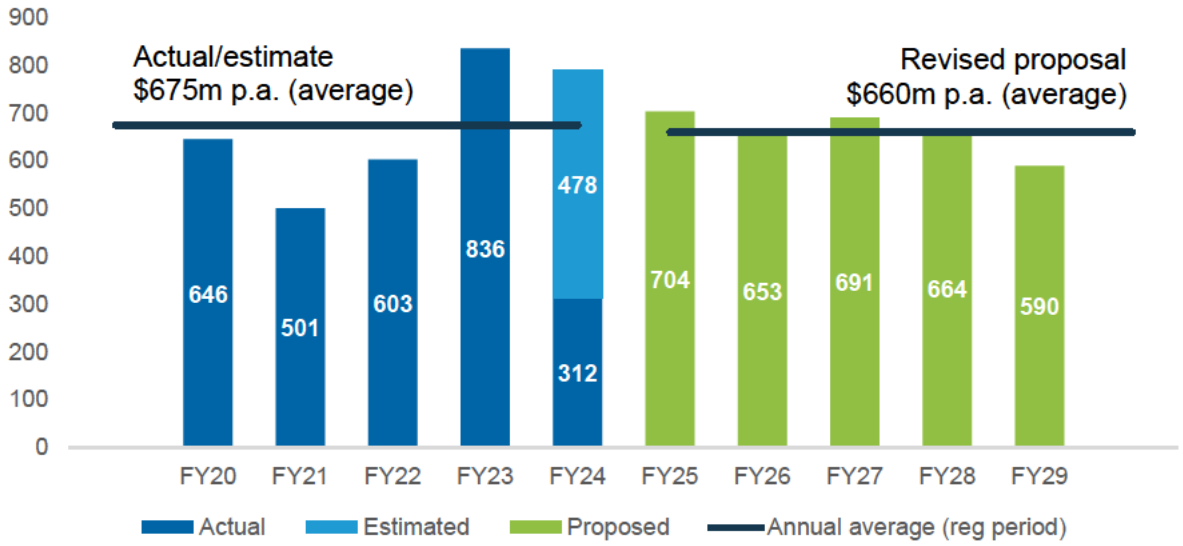
Expenditure category	Draft Decision	Our response relative to our Initial Proposal		More information
Operational technology	The AER approved $42 million out of our proposed $68 million with a request for more information on: • Driver for increase relative to historical trend; and • Alignment with cyber security regulatory obligations.	We have reduced our OT cyber security forecast by $9 million and more clearly articulated the drivers of our forecast relative to recent trend and regulatory obligations.	▼$8m *lower than Initial Proposal*	**Section 6** **Attachment 5.8.2 – Operational technology core refresh and security programs**
Innovation	The AER approved no innovation allowance as a placeholder with a request for more information on: • More detail about proposed projects; • Alternative funding mechanisms; and • Benefits associated with planned innovation projects.	We will fund 10% of our innovation program similar to an Ofgem funding model. This will provide a fair sharing of the risks, costs and benefits associated with innovation investments. We have also provided a full list of our planned projects and associated benefits.	▼$5m *lower than Initial Proposal*	**Section 6** **Attachment 5.8 – Network innovation program**
ICT	The AER approved $202 million in ICT capex with a request for more information on: • Efficiency of cyber costs; • Deliverability of enterprise resource planning (**ERP**) program; and • Reasonableness of 20% contingency for ERP investment.	We have substantially accepted the AER's feedback resulting in our Revised Proposal: • Reducing cyber security capex by $9 million; • Staging our ERP program (transformation option) over 2 regulatory periods to aid deliverability; and • Removing the 20% contingency from our ERP program forecast.	▼$28m *lower than Initial Proposal*	**Section 7** **Attachment 5.9 – Technology plan**

Our capex for each of the past regulatory years of the previous and current regulatory control period, and the expected capital expenditure for each of the last two regulatory years of the current 2019-24 period is set out in **Attachment 5.1.1 – Capex for previous, current and forecast period**.[8] The capex amounts have been treated in accordance with Ausgrid's approved CAM and does not include amounts that should have been treated as opex under Ausgrid's previously submitted capitalisation policies.

1.2 Our 2024-29 forecast is 2% lower than the current period when factoring in FY23 actual capex and FY24 year-to-date delivery

Our annual capex over the 2019-24 and 2024-29 periods is set out in **Figure 6**. It shows that Ausgrid has recovered from a period of disruption early in the 2019-24 period, when COVID-19, severe storms, a live work pause, and financial pressures slowed delivery. We have caught up through prudent delivery in FY23 that has continued into FY24 when, as at October 2023, we have achieved nearly 40% of our annual program in 33% of the time.

Figure 6 Our period to period capex is 2% lower under our Revised Proposal



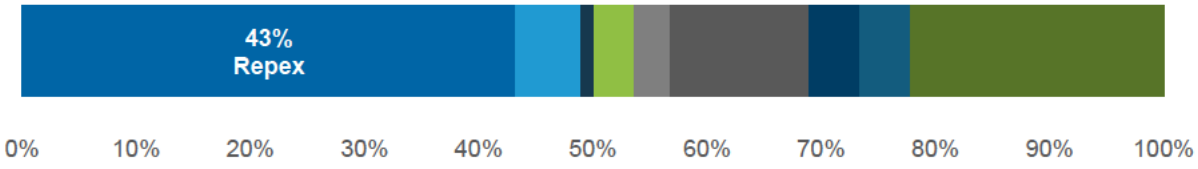
Factoring in FY23 actuals and FY24 expected delivery, our annual average investment in the 2024-29 period is set to be 2% lower than in the current period ($660m). As noted in section 1.1 above, this is driven by significant reductions to our 'traditional' network capex (repex, network growth and OTI) in the 2024-29 period compared to 2019-24. These reductions allow us to invest less than our current levels while still meeting customer expectations in terms of responding to climate change, integrating EVs and CER, and delivering the digital technologies needed to enable innovative tariffs at scale.

[8] NER cl S6.1.1(6).

2. Replacement

Our revised 2024-29 replacement expenditure (**repex**) forecast of $1,428 million represents a 13% reduction on our actual/estimated repex in the current period. This is a substantial period-on-period reduction in investment that embeds further efficiencies into a repex program that already sits 36% below the AER's Repex Model's efficiency threshold.[9]

Figure 7 Repex makes up 43% of our total capex program



Furthering the achievement of the NEO and capex objectives
Our repex forecast promotes the achievement of the NEO, as evidenced by key efficiency metrics (13% below current period spend and 36% below the AER's repex model threshold). Additional expenditure associated with substation and feeder replacement ($39 million) which was not included in our Initial Proposal will be critical to managing expected demand and maintaining the quality, reliability, and security of supply of our services, and the safety of the distribution system, in-line with the capex objectives.

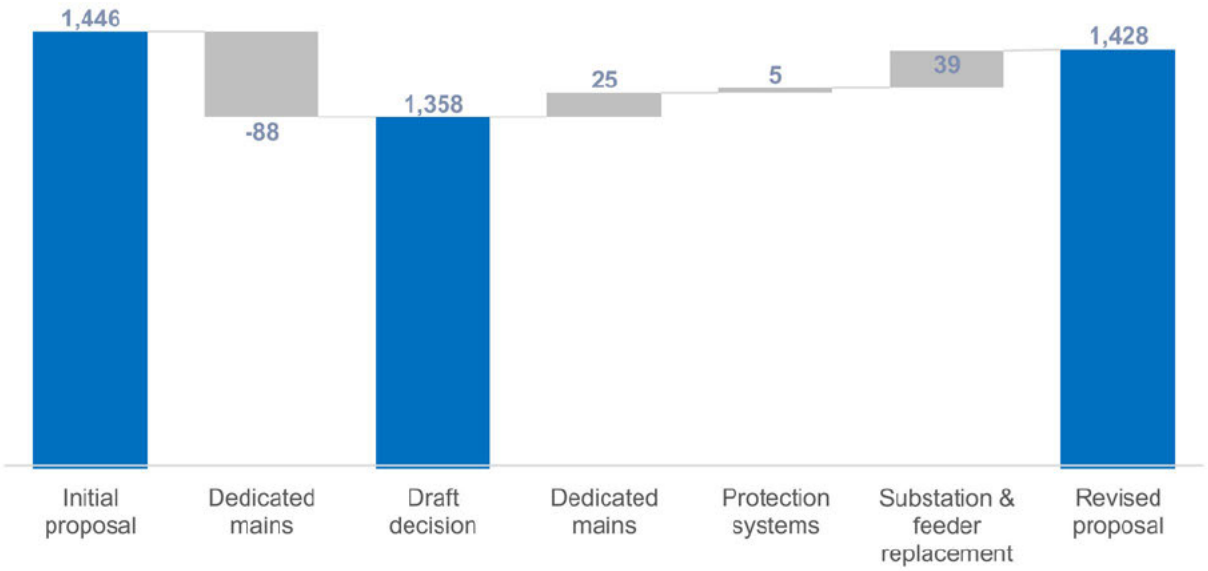
Figure 8 Our revised repex forecast is prudent and efficient

✓ Better Reset Handbook	Our proposal, at 13% below our actual/estimate in the current 2019-24 period, provides a strong indicator that our total repex forecast is efficient. We note that the AER's *Better Resets Handbook* considers 'replacement expenditure [to be] largely recurrent'[10] and that the AER 'can rely on revealed actual spend over the current period to undertake a top-down test of forecast recurrent expenditure'.[11]
✓ AER feedback	We have responded to AER feedback resulting in a 44% reduction to our forecast to reflect historical unit rates for our LV dedicated mains reconfiguration program.

[9] AER (2023) Issues Paper: Ausgrid Electricity Distribution Determination, 1 July 2024 t0 30 June 2029, p. 15.
[10] AER (2021) Better Reset Handbook, p. 21.
[11] AER (2021) Better Reset Handbook, p. 21.

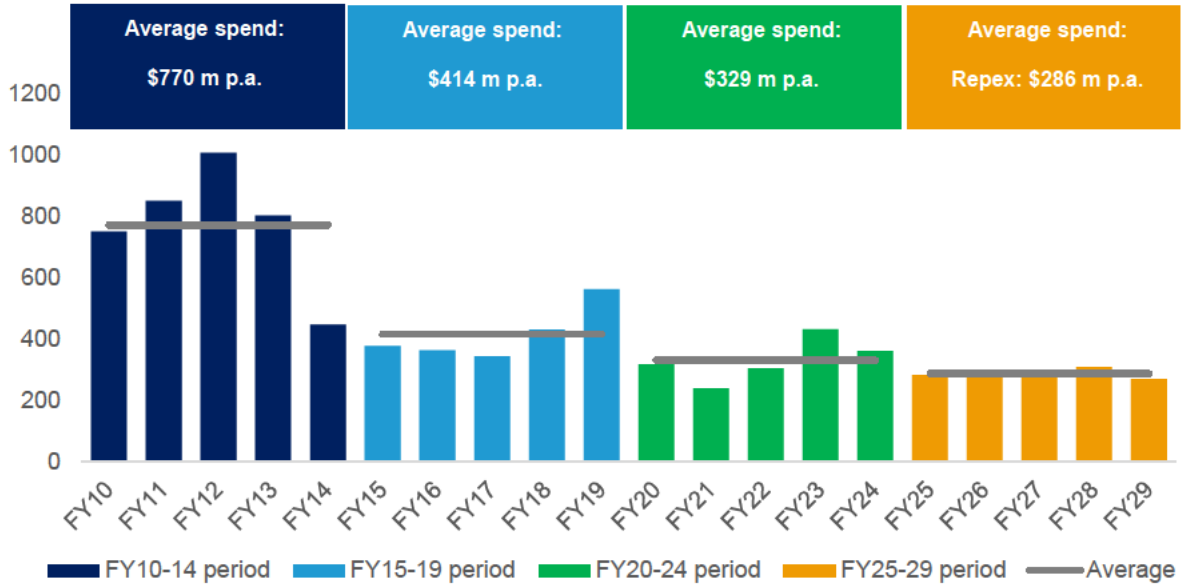
In developing our revised forecast, we have substantially accepted the AER's Draft Decision ($1,358 million) but with updates to reflect new exogenous factors and other information that have come to light. This is set out in **Figure 9** below, which shows that we have largely adopted the AER's feedback on our dedicated mains forecast while making relatively minor updates to protection systems (0.4% of total repex) and our substation and feeder replacement capex (2.7% of total repex) in-line with updated information. The largest contributor is Merewether subtransmission station (**STS**) at an increased cost of $21 million relative to the scope included in the initial proposal to include the replacement of the building. This is due to feasibility constraints in the Initial Proposal of in-situ replacement of the circuit breakers. These changes are supported by cost benefit analysis. Due to this change, the forecast allocated to the initial scope has been removed from the Revised Proposal ($3 million). The total project cost of the Merewether STS 33kV Switchgear replacement is now $24 million.

Figure 9 Our revised 2024-29 repex forecast ($m, real FY24)



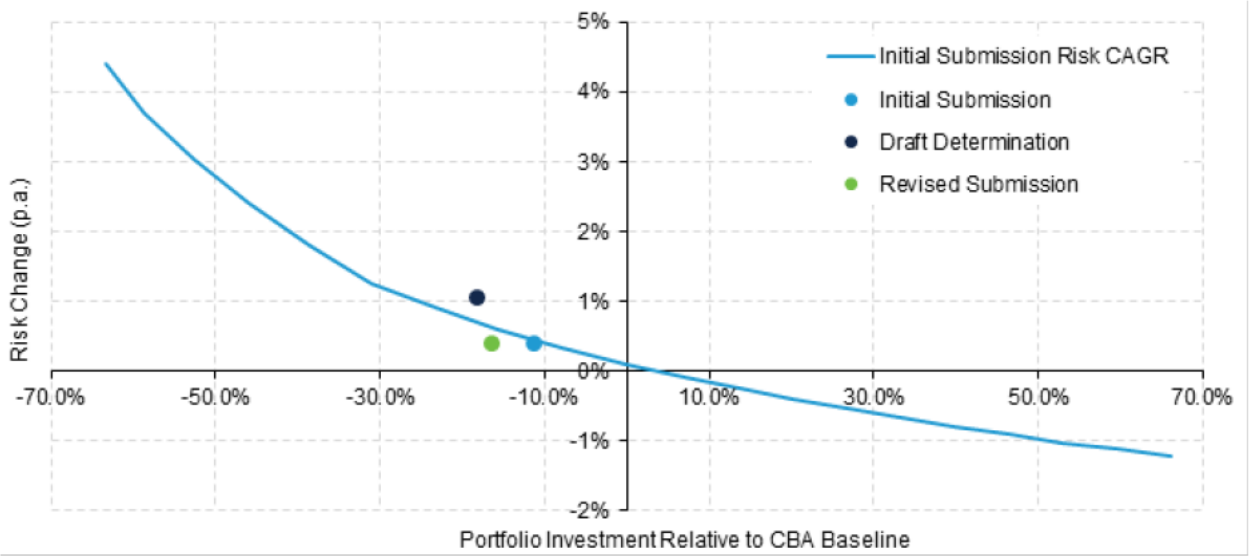
To do everything we can to promote affordability during a time of cost-of-living pressures, we have looked at ways to reduce our replacement investment. This has resulted in our 2024-29 forecast, as noted above, being 13% below our current period spend. Taking a longer-term view, our proposed annual repex ($286 million) is 31% below the previous 2014-19 period average ($414 million) and 63% below our 2009-14 average ($770 million), as shown in **Figure 10**.

Figure 10 Trend in repex over a 20-year horizon ($m, real FY24)



Investing less in the replacement of our assets, while in line with our commitment to affordability, has trade-offs. **Figure 11** shows the level of carried risks associated with our Initial and Revised Proposal and the AER's Draft Decision, represented as a compound annual growth rate (**CAGR**). It shows that our risk would grow at approximately 1% per annum under the AER's Draft Decision, or 5% in total over the 2024-29 period. This is demonstrated by an increase in asset age based on the volume of asset replacements. Our Revised Proposal would still lead to an increase in risk to the maximum level we are willing to accept, in-line with our Initial Proposal, given the feedback we have received from customers on the importance of affordability.

Figure 11 Risk change (p.a.) relative to different levels of investment



2.1 Our response to the AER's Draft Decision

The AER accepted most of our proposed forecast replacement expenditure ($1,446 million) except for our proposed dedicated LV circuit reconfiguration program ($88 million reduction). We have updated our forecast since our Initial Proposal to reflect the latest information relating to our substation / feeder replacement needs (see **Attachment 5.4 – Replacement Expenditure**).

Figure 12 What we heard and how we've responded

What we heard	How we've responded
The AER's Draft Decision challenged the efficiency of our unit rates for the dedicated LV mains reconfiguration program	While there will be upward pressure on our unit rates due to increasing complexity of the remaining scope, we have applied a lower unit rate to our forecast, which has resulted in an overall reduction to our forecast expenditure of $63 million relative to our Initial Proposal. We will continue to monitor these costs and review our approach as we complete the more complex jobs across the remaining asset base.
More information about the main driver for our dedicated LV mains reconfiguration program was requested	Ausgrid's value framework applied risk for public safety and customer reliability. The public safety risk remains a concern for Ausgrid, however, the analysis supports a larger benefit contribution from the avoided unserved energy experienced by customers, and therefore an increase in expenditure relative to the current regulatory period.
Additional analysis of alternative options relating to the reconfiguration of our dedicated LV mains	We acknowledge this gap and have provided additional information on the options we have considered (see **Attachment 5.4 – Replacement**).
Information on historical failure scenarios associated with our dedicated LV mains	Ausgrid has provided further details in its business case submitted in **Attachment 5.4 – Replacement.**

2.2 Program/project level analysis

The main drivers that have informed the development of our 2024-29 revised repex forecast are:

- Updated unit rates associated with Dedicated LV mains that addresses the feedback received as part of the AER Draft Decision ($63 million reduction);
- Incorporation of works externally driven by Transgrid requiring coordinated replacement of Ausgrid's protection schemes ($5 million additional);
- Responding to increases in the load forecast at Paddington and Drummoyne network areas driving subtransmission cable replacement forward ($13 million additional); and
- Addressing asset condition issues at Merewether STS switchroom ($21 million additional).

Our repex forecast, by program and major project, is set out in **Figure 13**. More detailed information is then set out in **Attachment 5.4 – Replacement.**

Figure 13 Our revised proposal by program ($m, real FY24)

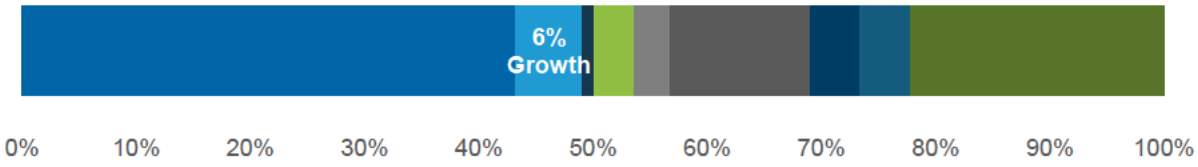
Program / project	Initial Proposal	Draft Decision	Revised Proposal
Dedicated LV Mains	143	55	80
Protection Schemes	7	7	12
132kV Feeder 202 Rozelle-Drummoyne	17	17	18
132kV Feeders 203, 204 Mason Park-Drummoyne	46	46	50
132kV Switchgear Drummoyne ZS	13	13	15
33kV Feeders Surry Hills-Paddington	-	-	6
33kV Switchgear Merewether STS	-	-	24
33kV bulk oil circuit breakers (*)	3	3	0
Other Repex projects and programs	1,217	1,217	1,223
Total Repex	**1,446**	**1,358**	**1,428**

(*) Reduced due to change in approach at Merewether STS

3. Network growth

We accept the AER's Draft Decision approving $190 million in network growth capex. In the time between lodging our Initial and Revised Proposals we received multiple connection enquiries from customer with large load requirements committed to joining our network at Macquarie Park which, once connected, will result in a new substation, to be called Wallumatta STS. We identified this change in circumstances in discussions with the AER and RCP following lodgement of our Initial Proposal and we considered including the additional capex in our network growth program in our Revised Proposal. In response to AER and RCP feedback we have decided to treat Wallumatta STS as a contingent project.

Figure 14 Network growth makes up 6% of our total capex program



Meeting the capex objectives in the NER

Our proposed network growth capex, at 16% below our current period investment, required to 'meet or manage the expected demand for standard control services' in line with the capex objectives. This expenditure is also required to maintain the quality, reliability and security supply of standard control services', as per the capex objective at NER clause 6.5.7(a)(iii), given the close relationship between meeting demand and maintaining quality, reliability and security.

Figure 15 We are proposing to accept the AER's Draft Decision ($m, real FY24)

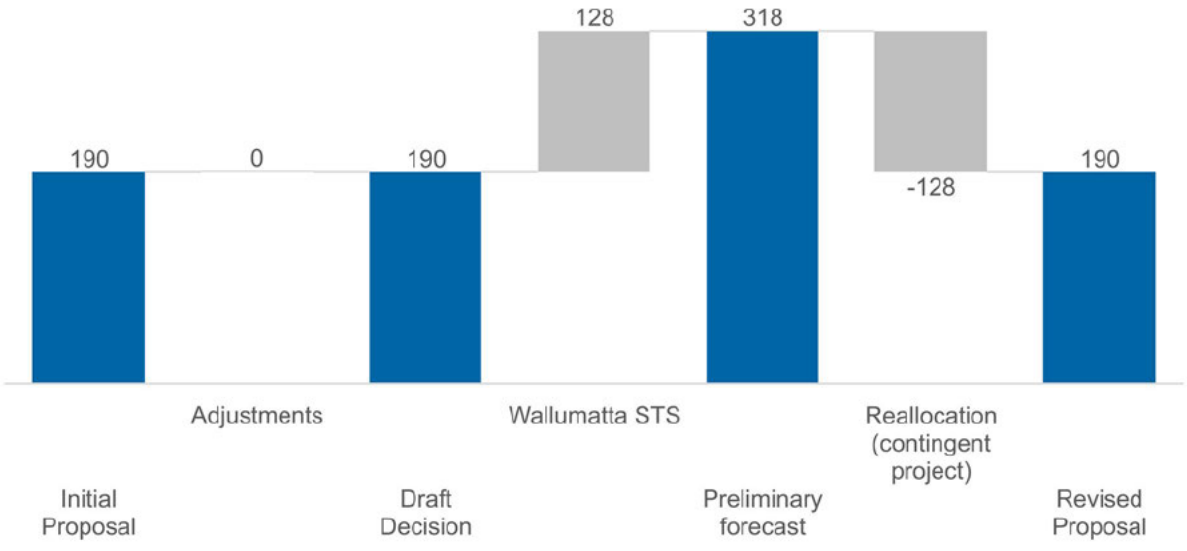
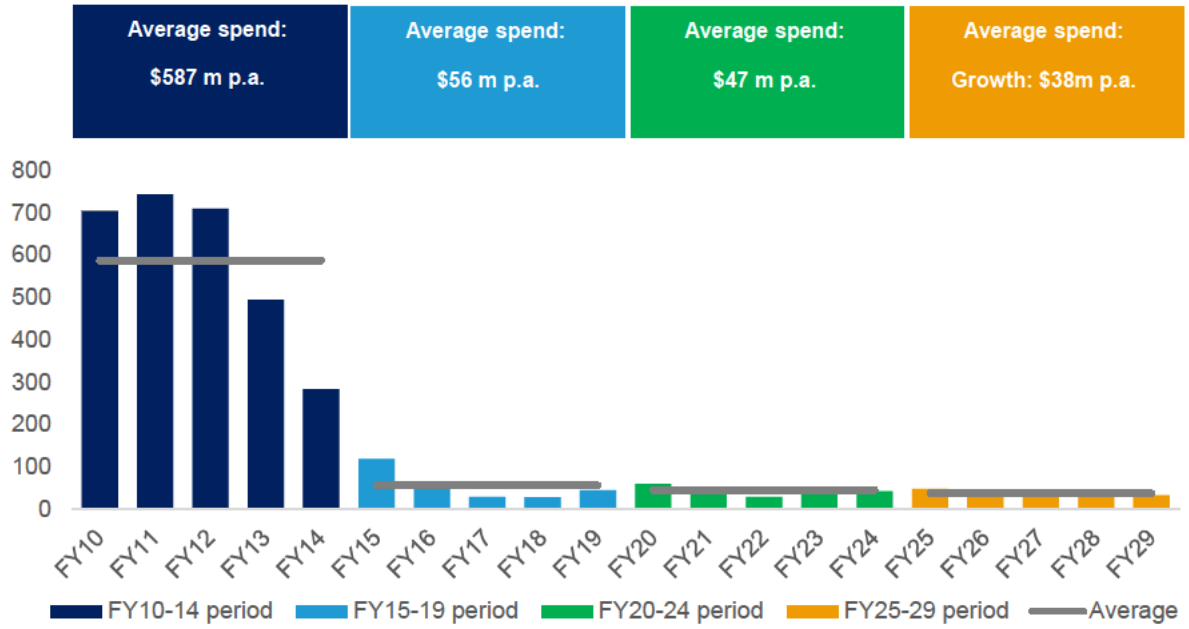


Figure 16 shows our long-term trend in network growth capex. It shows that, on average, we are proposing to invest $38 million per annum in the 2024-29 period or 16% below the current 2019-24 period level of investment. Over a longer time horizon, our forecast is significantly below historical levels in the previous 2014-19 and 2009-14 periods at $56 million per annum and $587 million per annum respectively.

Figure 16 Trend in network growth capex over a 20-year horizon ($m, real FY24)



3.1 Our response to the AER's Draft Decision

The AER accepted our initial forecast for network growth capex. The key features of the Draft Decision are noted in **Figure 17**. Since then, we have updated our forecast to reflect the latest inputs and customer connections information as outlined in the program/project level analysis in **Section 9** below and **Attachment 5.6 – Wallumatta STS Business Case**.

Figure 17 What we heard and how we've responded

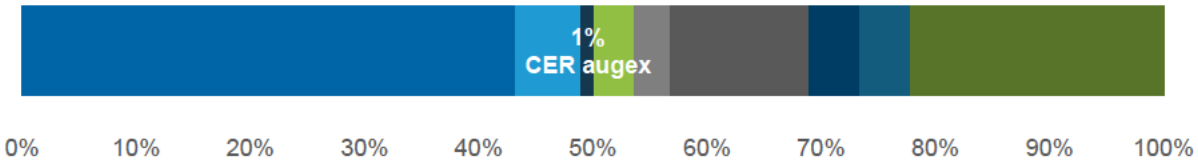
What we heard	How we've responded
Cost benefit analysis and forecast approach for Ausgrid's augex projects is robust and no material concerns were identified.	Significant load increase expected from customers with large load requirements requiring a new STS in the Macquarie Park area. The Revised Proposal includes a contingent project for a new substation to be named Wallumatta STS, for which land acquisition ($25 million), substation ($44 million) and transmission cables ($59 million) are required. Further detail is provided in **Section 9** below and **Attachment 5.6 – Wallumatta STS Business Case**.
Information provided by Ausgrid adequately supported the proposed connections expenditure.	No changes proposed in connections expenditure.

4. CER augmentation

The projected growth in CER penetration and EV load requires us to make different types of investments compared to the past, so that we meet the changing needs of our customers while maintaining network performance.

Solar, batteries and EVs are already having an adverse impact on our network performance with AER data showing that Ausgrid has among the highest levels of customers experiencing overvoltage issues in the NEM.[12] Our CER augmentation program invests with the challenges and opportunities of CER in mind by seeking to avoid inefficient curtailment of rooftop solar exports, avoiding overload and supply interruptions from increasing penetration of EVs.

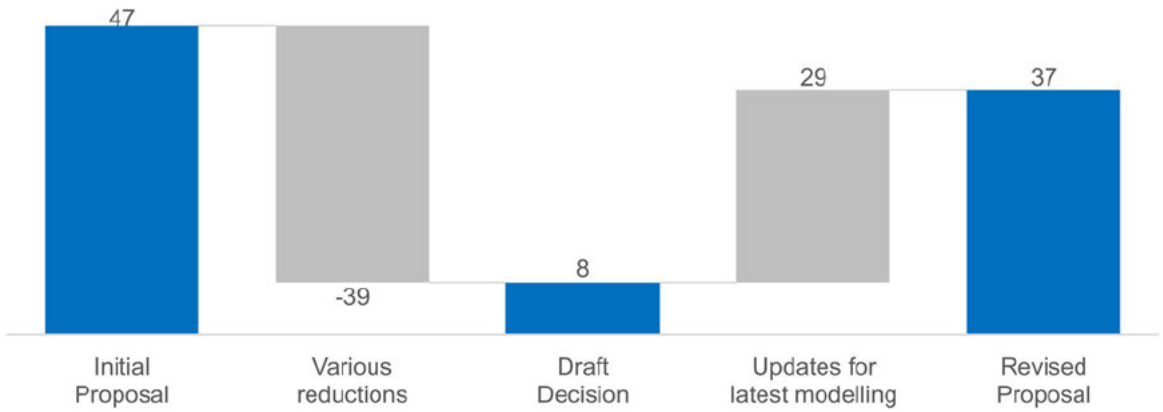
Figure 18 CER augmentation makes up 1% of our total capex program



Meeting the capex objectives in the NER

We expect significant growth in CER on our network, with 430,000 EVs and 430,000 rooftop solar systems forecast within our network area by the end of the 2024-29 period (see **Figure 20** below). By maintaining quality, reliability and security of supply, our planned CER augmentation program will be critical to furthering the capex objectives through the efficient integration of EVs and rooftop solar at a level of expenditure that reflects about 1% of our total capex.

Figure 19 Comparison to our initial forecast and Draft Decision ($m, real FY24)



[12] AER, Draft 2023 Energy Network Performance Report addendum, p.11.

As noted in **Figure 19** above, our Revised Proposal of $37 million is $10 million lower than our initial proposal but higher than the AER's Draft Decision ($8 million). In developing our revised proposal, we examined the AER's alternative forecast in its Draft Decision to determine its implications for future curtailment.

We have updated our CER uptake forecast based on the latest projection of rooftop solar, behind the meter batteries, and EV by AEMO as published in their recently published Inputs, Assumptions, and Scenarios Report (**IASR**, July 2023) for the 2023 Integrated System Plan (**ISP**). The updated numbers are shown in **Figure 20** below. The forecast number of rooftop solar and EVs has increased compared to the 2022 ISP, while the forecast number of batteries has decreased. AEMO changes are informed by recent CER uptake rates, updates for technology cost reduction and power price projections, and recent changes in emission reduction policies.

Figure 20 Forecast CER update in our network area (aligned with AEMO's Step Change Scenario)[13]

Total number on our network (% of total customers)	2022	2029	2034	2039
Rooftop solar system (% of all customers)	220,000 (12.3%)	430,000 (23.2%) ~~400,000 (21.7%)~~	550,000 (27.9%) ~~510,000 (26.3%)~~	660,000 (32.2%) ~~610,000 (30.5%)~~
Behind-the-meter batteries (% of all customers)	17,000 (0.9%)	130,000 (6.8%) ~~130,000 (6.9%)~~[14]	240,000 (12.5%) ~~320,000 (16.7%)~~	360,000 (17.7%) ~~540,000 (27.1%)~~
Electric vehicles	10,000 ~~3,000~~	430,000 ~~370,000~~	1,260,000 ~~1,110,000~~	2,160,000 ~~2,050,000~~
Flexible customer load (e.g. swimming pool pumps and electric hot water systems)	470,000	430,000	410,000	380,000
Total CER assets	**717,000** ~~**710,000**~~	**1,420,000** ~~**1,330,000**~~	**2,460,000** ~~**2,350,000**~~	**3,560,000** ~~**3,580,000**~~

4.1 Our response to the AER's Draft Decision

We have carefully considered the AER's feedback in its Draft Decision. The AER's views at this stage in the process and how we have responded are set out in **Figure 21** below.

[13] Revisions to forecasts since Figure 2.3.1 in our Initial Proposal are indicated in mark-up.
[14] 6.9% was a rounding error in the Initial Proposal.

Figure 21 What we heard and how we've responded

What we heard	How we've responded
The AER consider curtailment to be overstated by applying annualised CECV values	• Updated our assessment of curtailment and adopted CECV for peak half-hours, using the AER's most recent FY23 figures.[15] • Removed interpolation between 5-year periods and improved other assumptions including the capacity factor of typical solar units. • The net result of these changes is to reduce the estimated curtailment of rooftop solar compared to Ausgrid's Initial Proposal.
The AER and EMCa indicate 253V is a conservative trigger to calculate customer curtailment in the context of AS4777.2:2020.	• Taken steps to ensure that our reviewed modelling of curtailment is consistent with AS4777.2:2020 as supported in an independent report by the University of Wollongong.[16] • Provided further information to explain our modelling approach and the broader challenges in estimating curtailment.
The AER and EMCa were critical of using VCR to value the opportunity cost of avoiding unserved EVs noting the potential role of Evs as orchestrated load.	• Explained the role of convenience charging in driving demand compared to 'smart charging' and other forms of curtailed charging identified in AEMO's FY23 IASR[17]. • Updated our model to reflect AEMO's FY23 IASR which revised the distribution of convenience charging, a reduced impact kW per vehicle to daily maximum load but increased EV adoption.

4.2 Program/project level analysis

We have reviewed our modelling approach and input assumptions in response to the issues raised in the AER's Draft Decision. This further work has resulted in revisions to our approach and explanatory material.

4.2.1 Rooftop solar cost benefit analysis

Our Revised Proposal to efficiently integrate rooftop solar into our network in the 2024-29 period is $5 million. This represents about 0.2% of our total capex forecast. We estimate to have 430,000 rooftop solar units by FY29, which is more than double the volume compared to FY22 levels (220,000 units), as noted in **Figure 20** above.

The AER's Draft Decision questioned whether our Initial Proposal overstated the value of reducing curtailment on our network by using annualised CECVs.[18] In response we have taken on board the AER's feedback and applied peak-half hours CECVs. This has resulted in a more accurate assessment of the benefits associated with reduced curtailment.

[15] AER updated half hourly CECVs: https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/customer-export-curtailment-value-methodology/update/.
[16] Ausgrid - Att. 5.7.6 - UOW Review of Curtailment Methodology and Alignment to Australian Standards - 30 Nov 2023 – public.
[17] Australian Energy Market Operator (AEMO) 2023 Inputs, Assumptions and Scenarios Report (IASR).
[18] AER, Draft Decision: Ausgrid 2024-29 regulatory period, September 2023, p. 5-44

The Draft Decision led us to reframe our cost-benefit analysis by restating the 'do nothing/BAU' option. For our Revised Proposal we consider 'do nothing/BAU' reflects a scenario where no CER augmentation is made in the 2024-29 period. This reframing of the cost-benefit analysis is consistent with the AER's DER Integration Expenditure Guidance Note which defines the 'base case' in reference to scenario where a network 'does not implement a credible option to meet the identified need'.[19] Further, this restated base case provides a framework for testing the AER's alternative forecast for CER augmentation, being $8 million, against our revised CER augmentation proposal.

Our options analysis is set out in **Figure 22**. It is based on modelling that assesses the change in curtailment due to investment in augmentation solutions that address customer driven voltage non-compliance with AS4777. The alleviated and remaining curtailment after investment is quantified by multiplying the volume of curtailment by the CECV and emission values for the relevant year. The value of alleviated curtailment is then calculated over a 20 year time horizon (FY25 to FY44).

Figure 22 Solar integration costs and benefits ($m, real FY24)

	Capex	Net benefits
Option 1: Base case (do nothing)	$0	-
Option 2: AER alternative forecast	$2	$14
Option 3: Optimised investment	$5	$28

The 'AER alternative forecast' in **Figure 22** includes low-cost solutions to address customer driven voltage non-compliance. Aligned to AER feedback, these options include activities Ausgrid would historically use to address overvoltage, including tap changes, phase-balancing and small LV distributor upgrades. The net benefits from this option ($14 million) is less than the 'optimised investment' solution ($28 million).

We have accordingly selected the optimised investment option. It produces the highest economic highest net benefit by prioritising the most effective CER augmentation solutions available with the 2024-29 period. This involved an assessment of all solutions (tap changes and network upgrades) that were determined to be economically justified when considering the benefit to cost ratio, the annualised cost of the solution, and the annualised CECV and emissions benefit from alleviating the curtailment. We consider our options analysis to be robust and to take a cautious approach to the level of investment we expect to require.

Option 3 aligns with our customers' expectations to proactively invest in order to avoid costly, reactive network augmentation in the future. During our Voice of Community Panel engagement customers told us they planned to invest more in CER and supported a proactive approach in enabling those investments. Customers supported an investment option that would avoid the most forecast customer curtailment of rooftop solar. Even with macroeconomic cost of living

[19] AER, DER integration expenditure guidance note, June 2022, p. 17.

factors weighing more heavily on customers, they still supported CER integration investments due to their ability to support customers' desire for a net zero future.

Additionally, this CER augmentation investment will improve our networks' ability to manage overvoltage issues in our network from non-compliantly installed rooftop solar inverters by installers. This benefits both customers with and without rooftop solar, who may experience damage to their rooftop solar systems and appliances from the overvoltage issues and is likely to lead to further reactive network investment over time.

4.2.2 EV cost benefit analysis

Our Revised Proposal to integrate EVs into our network is $33 million. In FY22, we had approximately 10,000 EVs registered within our network area. Latest forecasts expect this to grow to 430,000 by the end of the 2024-29 period. Integrating these new loads in a way that maintains reliability for EV and non-EV customers will play a major role in how smooth the transition from internal combustion engine vehicles to EVs is over the coming years.

The AER's Draft Decision questioned whether using the VCR to calculate the impact of an EV outage overstated the claimed benefits from our CER integration program. Our updated modelling incorporates this feedback by quantifying the value of estimated unserved energy (**EUE**) for EV customers as zero and only applying an EUE benefit for customers affected by outages caused by EVs. This approach recognises that the EUE directly attributable to EV charging may be relatively low given that these loads have some potential to 'time-shift'.[20] Focusing just on EV charging, however, takes a narrow view of the consequences at hand. An EV related network incident can lead to a generalised loss of supply for all customers (EV and non-EV) on a feeder. The EUE associated with this does not have the same ability to time-shift as EV charging. We have therefore used VCR to quantify the impacts this generalised loss of supply for customers.

Our modelling of costs and benefits is summarised in **Figure 23**. Each option is based on an assessment of the growth in network demand caused by EVs, and the resulting risk from forecast LV network overloading. We have then calculated benefits by quantifying the risk of overloads without any investment to manage EVs on heavily loaded feeders, and multiplying that EUE by the VCR value to the loss of supply to all customers on the feeder. Consistent with the AER's Draft Decision, we have applied a VCR value of $0 for EV charging loads that have some potential to time-shift during an outage. We consider this to be a highly cautious estimate of how EV customers would value 'on-demand' charging.

Figure 23 EV integration costs and benefits ($m, real FY24)

	Capex	Avoided EUE (PV 20 years)
Option 1: Base case (do nothing)	$0	$0
Option 2: AER alternative forecast	$6	$106
Option 3: Optimised investment	$33	$379

[20] AER, Draft Decision: Ausgrid 2024-29 regulatory period, September 2023, p. 5-44.

The option that unlocks the greatest net benefits for customers is option 3. The capex associated with this option prioritises the most effective CER augmentation to reduce the risk of interruptions cause by EV take-up in the 2024-29 period. The significant benefits associated with it, reflects the broader consequences for customers on a feeder when an outage is triggered by EV charging without sufficient capacity.

During our Voice of Community Panel engagement residential customers gave us clear support for proactive investment that meets network performance expectations and provides a greater choice of low cost, zero emission energy solutions. They indicated that even if they could not make investments in CER they had aspirations to invest in CER in the future. Customers supported investment in line with those future aspirations. Option 3 meets our customers' expectations by targeting proactive investment where it is needed most, a result of our modelling approach that explored the relationship between EV ownership and key factors such as dwelling type, access to charging and wealth. As with rooftop solar investments, even with macroeconomic cost of living factors weighing more heavily on customers, they still supported CER integration investments due to its ability to support customers' desire for a net zero future.

5. Climate resilience

We have considered targeted investments in the 2024-29 period that maintain current customer and community service outcomes by enhancing the resilience of electricity distribution services in line with the projected growth in risk of disruptive climate events across the period 2024-50.

We have developed a revised forecast of $114 million, as outlined in **Figure 24**. This is more than the AER's Draft Decision ($26 million) which we understand was a 'placeholder' decision given the timing of our updated business case (July 2023) relative to our Initial Proposal. We appreciate the feedback from, and collaboration with, AER staff in the lead up to submitting our Revised Proposal. We consider this engagement has resulted in a revised climate resilience proposal that strikes the right balance and is capable of satisfying the criteria in the AER's Resilience Guidance Note and reflecting the capital expenditure criteria because it is prudent, efficient and reflects customer preferences.

Figure 24 Comparison to our initial forecast and Draft Decision ($m, real FY24)

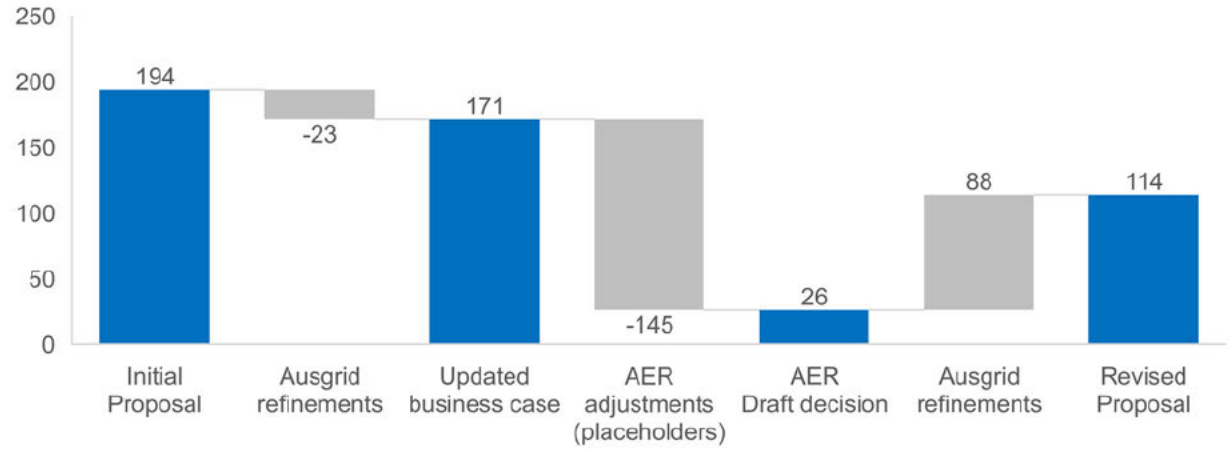
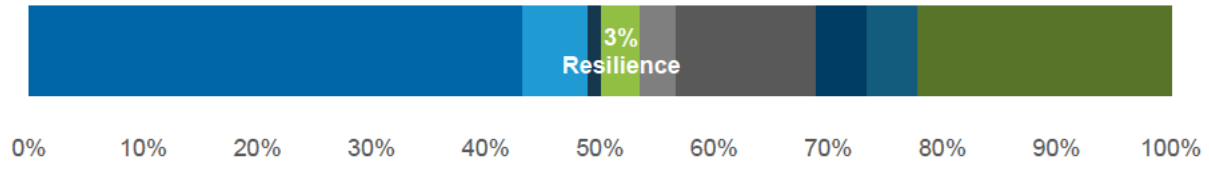


Figure 25 Climate resilience makes up 3% of our total capex program



Meeting the capex objectives in the NER

In meeting clauses 6.5.7(3)(iii)-(4) of the NER, our total capex forecast should include a level of resilience investment that allows us to maintain the quality, and security of supply of standard control services, in the face of growing climate risks.

5.1 Our response to the AER's Draft Decision

We have carefully considered the AER's feedback in its Draft Decision and have provided an updated Climate Resilience Business Case. A summary of the feedback that the AER provided and our response is set out below.

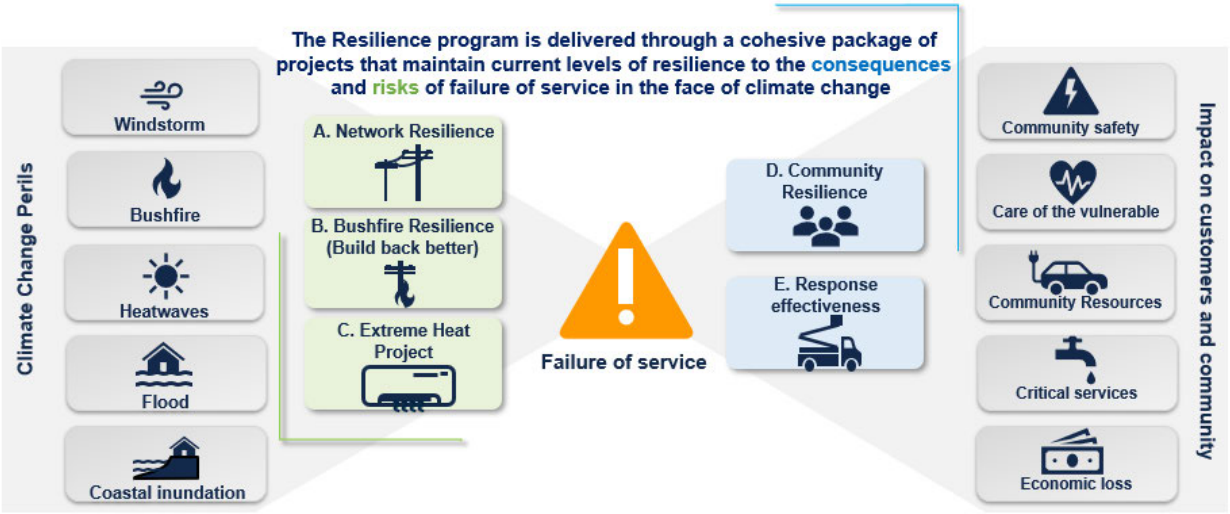
Figure 26 What we heard and how we responded:

What we heard	How we've responded
Ausgrid's weightings of climate scenarios is different to other DNSPs.	We have responded by aligning with other DNSPs and applying 100% weighting on a mid-range climate scenario RCP4.5.
Ausgrid's needs to more clearly show the causal links between climate change and the proposed investments	We have demonstrated the causal links two ways: • Top-Down model - to establish a prudent investment envelope. • An End-to-End model - This is a probabilistic model that inputs global wind climate models, simulates conductor and other related failures, and recommends investments to maintain resilience to current levels. These models, alongside others, have been provided to the AER for transparency.
Ausgrid needs to show that the proposed investments are prudent and efficient.	Ausgrid has modified the staging of our investments, taking an approach to manage the climate risk to 2050 within four regulatory periods. This has enabled us to prioritise the most efficient and prudent investments. For investments in the high voltage (**HV**) network the: • Benefits Cost Ratio - 3.14 • Net Present Value - $178.4 million Our forecast is prudent because the staging of investments in climate resilience enables our revised forecast to be $80 million lower than our Initial Proposal, whilst still ensuring that our resilience investments are keeping pace with the growth in climate risk, with models provided as evidence. In our attached business case, we have tested all proposed investments against options and provided reasons the preferred investments are proposed. It is also efficient because it unlocks the greatest net benefits for customers (benefit cost ratio of 3.14) while factoring in other considerations, such as how best to smooth our investments to mitigate bill impacts and the needs of the most vulnerable LGAs.
Affordability pressures	Ausgrid tested affordability in late October 2023, and have responded to affordability pressures by prudently staging investments within four regulatory periods. This balances customers' current affordability challenge, whilst still ensuring that our resilience investments are keeping pace with the growth in climate risk.
Stakeholder feedback from the AER's predetermination conference	We have also considered stakeholder feedback from the AER's Predetermination Conference on extreme heat resilience. Following further engagement with customers on this topic, we have included a heat resilience program in this Revised Proposal.

5.2 Program/project level analysis

In this Revised Proposal we have improved the articulation of the program logic to build clearer linkages to how each of the investments delivers on the program outcome. How our proposal fits together is set out in **Figure 27**. A high level summary of each project is also set out below, with significant more detail set out in **Attachment 5.5 – Climate Resilience Business Case**.

Figure 27 Climate resilience investments and customer outcomes



A summary about how each project has been strengthened is below:

- **The Network Resilience Project (A)** has been strengthened by providing the AER with both our top-down and end-to-end modelling, which provided transparency of the assumptions made. We have also responded to affordability concerns by staging investments within four regulatory periods enabling the most compelling climate adaptation investments to be made in this period.
- **The Bushire Resilience Project (B)** was partially endorsed by the AER's Draft Decision, and we have made it clearer in this Revised Proposal that the supporting investment in processes to enable build back better protocols are incremental costs required to deliver components that the AER previously endorsed.
- **The Extreme Heat Resilience Project (C)** has been added to the program, in response to the feedback we heard from stakeholders during the AER's Predetermination conference. We understand that some of these stakeholders may make submissions to the AER's Draft Decision and our Revised Proposal in January 2024. In these circumstances we consider it beneficial if we set out what an Extreme Heat Project would most likely encompass ahead of those submissions being lodged. The proposed Project reflects the view that electricity infrastructure needs to coexist with green infrastructure (trees) to enable urban cooling in vulnerable precincts.
- **The Community Resilience Project (D)** has been strengthened by leveraging synergies between the community designed approaches in various communities, and by establishing more evidence for the quantum of investment.

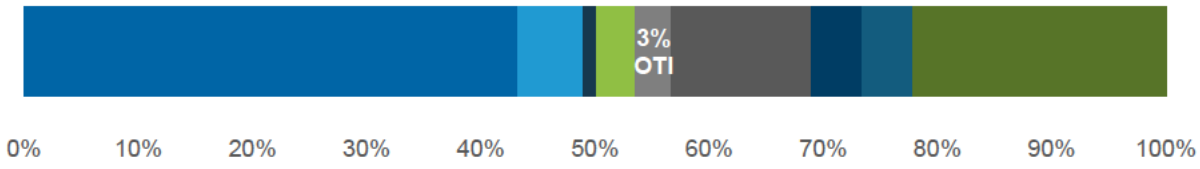
- **The Response Effectiveness Project (E)** has been strengthened through the provision of a model that quantifies the benefits to investing in Fault Detection and Location Sensors.

As the Climate Resilience Program is a new category of investment, Ausgrid has also recommended transparent performance monitoring and independent reviews, to ensure that the program delivers on its objectives to serve the long-term interests of consumers.

6. Operational technology & innovation

Our revised 2024-29 capex forecast for OTI is $105 million, which makes up 3% of our total forecast capex, as shown in **Figure 28** OTI comprises an operational technology (**OT**) component ($60 million) and an innovation component ($45 million). OT, which consists of the software and systems that monitor and control our network, is becoming increasingly critical as new technologies lead to greater automation of our network. Partnering with customers to invest in innovation allows us to keep pace with a rapidly evolving transformation of the energy system at a time of unprecedented change. In response to AER feedback, we are proposing a new way for innovation projects to be funded.

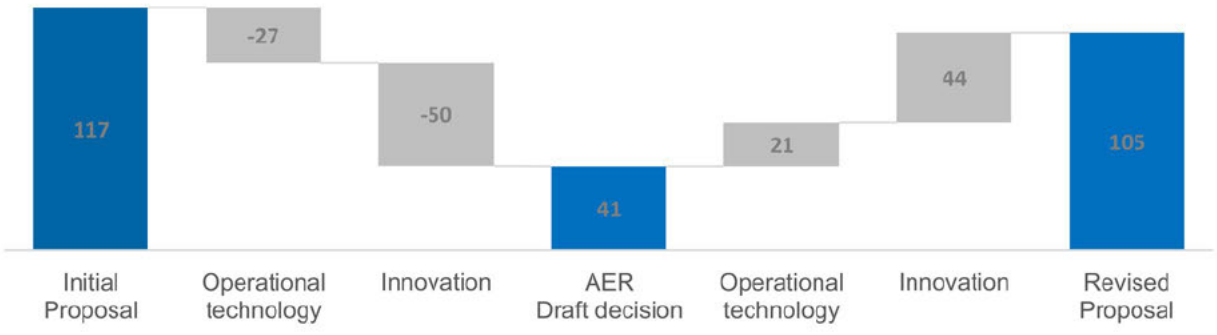
Figure 28 OTI makes up 3% of our total capex program



Meeting the capex objectives in the NER

Our OT security program will maintain reliability of services for our customers and maintain the safety and security of supply of the distribution system in response to growing cyber threats, and in doing so meet clauses 6.5.7(3)(iii) and (iv) and 6.5.7(4) of the capex objectives in the NER. We are also under a regulatory obligation under clause 1.2 of our Critical Infrastructure Licence Conditions to use 'best industry practice' in relation to our OT security. This is a ratcheting regulatory obligation which increases as 'best industry practice' evolves and should be considered when assessing the level of OT investment needed to comply with our regulatory obligations, as per clause 6.5.7(2) in the NER.

Figure 29 Comparison to our initial forecast and draft decision ($m, real FY24)



6.1 Our response to the AER's Draft Decision

We have carefully considered the AER's feedback in its Draft Decision. The AER's views at that stage in the process and how we have responded are set out in **Figure 30** below.

Figure 30 What we heard and how we've responded

What we heard	How we've responded
The AER requested more information about why our forecast expenditure for OT security is 96% higher in the 2024-29 period compared to our recent historical trend	We have reduced our OT security program by $8 million in response to the AER's feedback. This brings our forecast more into line with our recent spend. Notwithstanding, our business case (see **Attachment 5.8.2 – Operational technology core refresh and security programs**) outlines why our historical level of OT security investment is not a good indicator of our effective historical need or our future requirements. This includes factors that have slowed our OT security investment in recent years, including: • Advanced Distribution Management System (**ADMS**) rollout; and • Control Room relocation from Head Office to Silverwater. Historical OT security capex also does not reflect future needs due to: • Increasing cyber security risks; • Rise in sophistication of cyber threats; and • Additional security devices required for contemporary security solutions.
Clearer link between Ausgrid's regulatory obligations and why proposed investment is efficient and prudent	Under clause 1.2(1) of our Critical Infrastructure Licence Conditions we are required to implement industry best industry practice for managing risks associated with OT security. This is a ratcheting regulatory obligation that evolves as best practice requires an increased level of sophistication in response to more advanced cyber threats.
The AER approved no innovation allowance as a placeholder with a request for more information on: • **More detail about proposed projects** • **Alternative funding mechanisms** • **Benefits associated with planned innovation projects**	We will fund 10% of our innovation program similar to the established Ofgem approach. This will provide a fair sharing of the risks, costs and benefits associated with innovation investments. We have also provided a full list of our planned projects and associated benefits.

6.2 Program/project level analysis

We have responded to the AER's feedback on our OT security program and our planned innovation investment stream. High-level analysis is outlined below, with the detail contained in **Attachment 5.8.2 - Operational technology core refresh and security programs,**

Attachment 5.8 – Network Innovation Program and **Attachment 5.8.1 Network innovation program CBA model**.

6.2.1 OT security

Our revised OT security program of $18 million in the 2024-29 period is $8 million lower than our Initial Proposal ($26 million). This reduction reflects a rephasing of a planned Plesiochronous Digital Hierarchy multiplexer (**PDH Mux**) replacement.

At the time of our Initial Proposal, we considered our PDH Mux equipment to be at end of life with no available spare parts. Based on historical and forecast failure rates, we considered it prudent to start implementing a replacement of this asset in FY27. Since then, Ausgrid has been able to source and evaluate an alternative component replacement part from the vendor. Our laboratory tests showed backwards compatibility of components which gives an estimated two-year life extension, which would defer replacement of PDH Mux until the subsequent 2029-34 period.

We should further note that our historical spend on OT security has been artificially low. Historical spending has been influenced by specific and non-recurring circumstances that do not reflect the evolving risks we face today because of the expected and unacceptable future risk. This is explained in more detail **in Attachment 5.8.2 – Operational Technology Core Refresh and Security Programs**.

Our cyber security threats are growing. The Australian Cyber Security Centre (**ACSC**) states that approximately 76,000 incidents of cyber crime were reported in 2021-22 - one quarter of which affected entities associated with Australia's critical infrastructure. Cyber attacks increased in frequency by 13% in FY21, as reported to ACSC.

Within this context, we consider our revised forecast of $18 million for OT security required to meet the capex objectives in the NER. Given the growth in cyber security threats, our forecast will allow us to maintain existing levels of reliability, security of supply, and safety allowing us to meet clauses 6.5.7(3)(iii)-(4) of the NER. Under clause 1.2(1) of our Critical Infrastructure Licence Conditions, we are also under a regulatory obligation to implement industry best practice for OT security. The forecast we have put forward, inclusive of a $8 million reduction relative to our Initial Proposal, reflects a level of investment that will allow us to comply with that obligation.

6.2.2 Innovation

We are proposing to apply an approach similar to the established Ofgem approach to the way innovation programs are funded. This involves an arrangement where networks receive 90% of innovation funding through regulated revenue. We will then fund the remaining 10%.

We look forward to engaging with the AER in how the new innovation model will work in practice. In **Figure 31** below, we outline key features of how we expect the Ofgem model can be delivered in the Australian context. To provide the AER and others with an appropriate level of assurance, we consider the existing Regulatory Information Notice (**RIN**) process can be leveraged. Reporting arrangements could also be factored into the AER's ongoing engagement on a Regulatory Information Order (**RIO**).

Figure 31 Introducing a new way of funding innovation programs

 **How this would work**	Every year we would report our innovation expenditure in our response to AER's RIN or RIO. At the same time, our CEO would sign a declaration attesting that 10% of our actual innovation spend was funded through other means besides regulated revenue. Practically, this would require Ausgrid to not report the expenditure as capex for the purposes of rolling forward our regulated asset base next period or include the expenditure in our base year (FY28) opex.
 **What impact would this funding model have**	We would be required to fund up to $0.9 million per annum in innovation. This places appropriate incentives on our business to build a successful innovation program that unlocks service level improvements and other benefits that can be shared with customers.
 **Appropriately sized to unlock dynamic efficiencies**	Our investment program represents about 1% of our planned 2024-29 period investments. We consider this to be an appropriate level of investment to unlock dynamic efficiencies that would otherwise be lost or deferred.

7. ICT

Our ICT program aims to keep our network safe from cyber threats and unlock new capabilities, including the billing systems needed to efficiently integrate CER such as rooftop solar and EVs into our network through innovative tariffs. Inclusive of Software-as-a-Service (**SaaS**) costs, our ICT program totals $404 million over the 2024-29 period, or $273 million excluding SaaS.

We have sought to thoughtfully implement affordability measures in response to customer feedback about rising cost of living pressures. This has resulted in a 12% reduction in our proposed ICT capex relative to our initial forecast. We are also proposing to continue treating SaaS costs as capex (including SaaS). Implementing this measure, as outlined in **Figure 32** below, will lead to lower bills for customers in the 2024-29 period, in addition to promoting greater regulatory stability for opex benchmarking.

Figure 32 Promoting affordability by treating SaaS as capex

Overview

We are proposing to maintain the treatment of $131 million in SaaS costs as capex. This will result in lower bills for our customers in the 2024-29 period by recovering SaaS costs over multiple years instead of being expensed in the year they are incurred.[21]

Our proposal is an extension of an existing AER position

The International Financial Reporting Interpretations Standards (**IFRC**) has ruled that SaaS costs should be treated as opex for *accounting* purposes. However, this does not stop the AER from determining that SaaS costs should be treated as capex for *regulatory* purposes, if there are good reasons. The AER has in fact determined that, notwithstanding IFRIC's ruling, SaaS should be treated as capex for our 2019-24 period. In line with this, we propose that for the 2024-29 period the AER uses its discretion to determine that SaaS costs should continue to be treated as capex.

Promoting greater regulatory stability for opex benchmarking

The econometric models the AER uses for opex benchmarking rely on a timeseries of data extending back to 2006. Implementing a change in how SaaS costs are treated for regulatory purposes will skew this dataset by:

- Adding ICT costs to the opex dataset that have never previously been included; and
- Making some networks appear more efficient on opex benchmarking if they rolled out major ICT projects at a time when the costs were treated as capex.

For example, Ausgrid plans to replace our ERP system in the 2024-29 period. The SaaS component of this program is $59m which, if these costs are expensed, would negatively impact our opex benchmarking performance compared to other NSW networks which replaced their ERP in the 2019-24 period when the costs were treated as capex.

[21] More detail on the revenue impact over 2024-29 and 2029-34 periods is outlined in **Attachment 6.1 – Proposed Operating Expenditure**

7.1 Our response to the AER's Draft Decision

Our ICT capex forecast has changed in response to AER feedback in its Draft Decision and our proposal to maintain the treatment of SaaS costs as capex. **Figure 33** compares our revised ICT capex forecast to our initial proposal and the AER's draft decision. Including SaaS, our revised forecast ($404 million) is 12% lower than our initial forecast ($458 million) driven by reductions to our ERP, Cyber and CER programs. Our 20-year trend in ICT capex (including SaaS) is set out Figure 34.

Figure 33 Comparison to our initial forecast and draft decision ($m, real FY24)

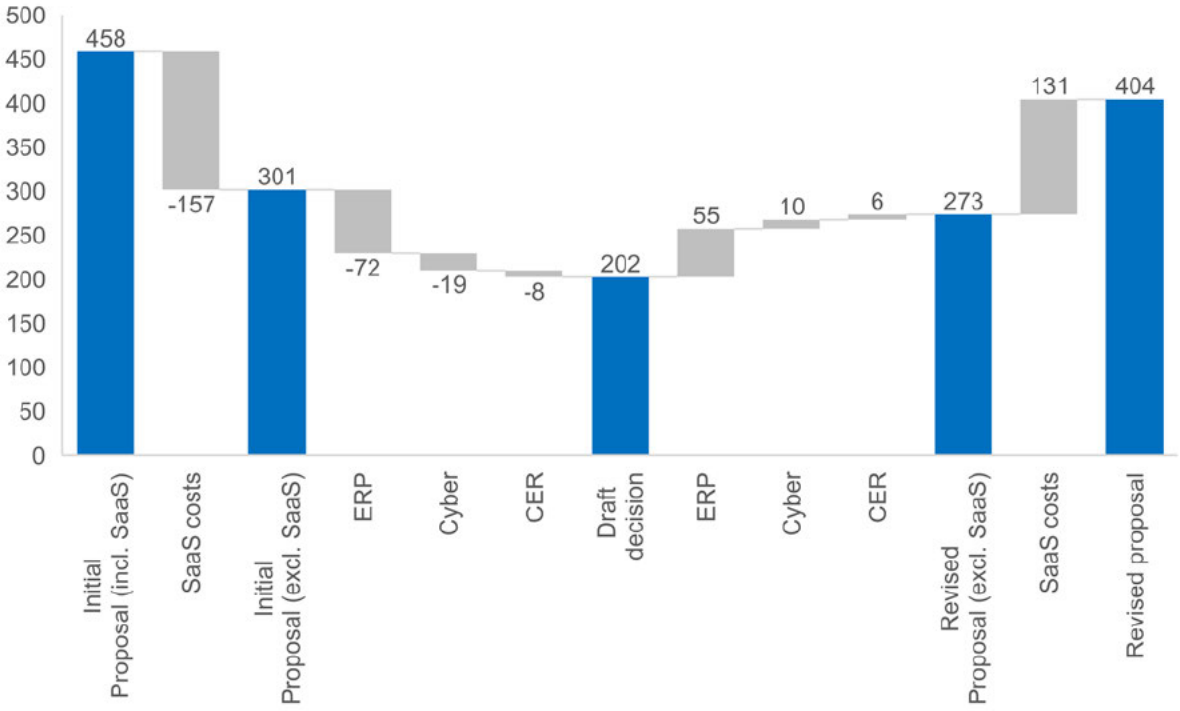
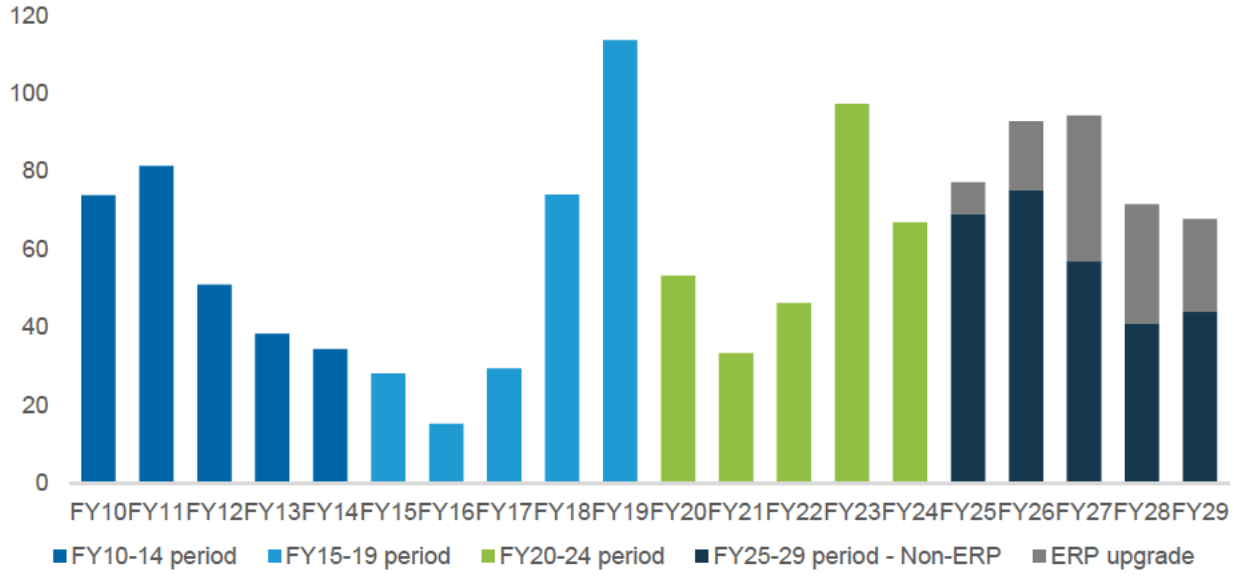


Figure 34 Trend in ICT capex ($m, real FY24)



When presenting our trend in ICT spend in **Figure 34** above we have separated out our ERP investment. This shows that our 2024-29 ICT capex, excluding our planned ERP upgrade, is 4% lower compared to our 2019-24 spend. When assessing our trend in ICT investment, it should also be noted that our ICT capex has slowed during times of uncertainty. This can be seen at the time of the long-term lease of Ausgrid (FY16). Additionally, during a time of financial pressure in FY21 we slowed investment in ICT as a prudent, yet unsustainable, measure that helped us maintain our existing credit rating.

Our ICT capex program by expenditure category is set out in **Figure 35** below. It also breaks down our forecast by BAU and non-BAU components. About 48% of our ICT capex program is made up of BAU investments while the other roughly 52% consists of 3 large projects relating to cyber security, the replacement of our ERP, and CER-related ICT.

Figure 35 Our revised proposal by program / project ($m, real FY24)

Project	Category	Initial proposal (IP)	Draft Decision	Variance	Revised Proposal	Variance to IP	Reason for difference
BAU ICT component							
GIS	Capex	14	14	-	14	-	-
	SaaS	-	-	-	-	-	-
Data & Analytics	Capex	30	30	-	30	-	-
	SaaS	-	-	-	-	-	-
ICT & Infrastructure Management	Capex	65	65	-	65	-	-
	SaaS	5	5	-	5	-	-
Minor Projects	Capex	41	41	-	41	-	-
	SaaS	18	18	-	18	-	-
Customer Information Systems	Capex	11	11	-	11	-	-
	SaaS	11	11	-	11	-	-
Subtotal	Capex	161	161	-	161	-	-
	SaaS	34	34	-	34	-	-
	Totex	195	195	-	195	-	-
Cyber, ERP and CER component							
Cyber Security	Capex	44	25	(19)	35	(9)	Evaluated program and re-prioritised initiatives.
	SaaS	47	27	(20)	35	(12)	
ERP	Capex	76[22]	4	(72)	59	(17)	Contingency removed and scope extended to FY30-34.
	SaaS	73[23]	12	(61)	59	(14)	
CER related ICT	Capex	20	12	(8)	18	(2)	Updated CBA
	SaaS	3	2	(1)	3	-	
Subtotal	Capex	140	41	(99)	112	(28)	-
	SaaS	123	41	(82)	97	(26)	-

[22] Includes an escalation error (see **Section 10**)
[23] Includes an escalation error (see **Section 10**)

Project	Category	Initial proposal (IP)	Draft Decision	Variance	Revised Proposal	Variance to IP	Reason for difference
	Totex	263	82	(181)	209	(54)	-
Total	Capex	301	202	(99)	273	(28)	-
	SaaS	157	75	(82)	131	(26)	-
	Totex	**458**	**277**	**(181)**	**404**	**(54)**	-

7.2 Program/project level analysis

The AER's Draft Decision focused on our ERP, Cyber Security and CER-related ICT programs. Our revised forecast for these programs is summarised below.

7.2.1 ERP replacement

Our revised ERP forecast substantially accepts the AER's feedback in its Draft Decision as outlined in **Figure 36** below. Adopting these changes reduces our forecast by 36% from $184m in our Initial Proposal to $118 million in our revised forecast.

Figure 36 What we heard on our ERP program and how we've responded

What we heard	How we've responded
A 20% contingency allowance should not be included in the ERP investment. **Insufficient time has been allowed for "hypercare" periods to embed the changes that the program will deliver.**	The Revised Proposal reflects the removal of the 20% contingency and phases the project over 2 regulatory periods to improve deliverability. Adopting these changes reduces our FY25-29 ERP program to $118 million (Initial Proposal $183 million) and moves $34 million (23%) into the FY30-34 period.

We have identified an escalation error in the presentation of our forecast ERP costs at the Initial Proposal stage. This error undervalued our forecast by $34 million.

Our forecast costs for the ERP program at the Initial Proposal stage should have been $183 million. This amount was included in our ERP program brief (**Attachment 5.9.b**) yet a lower amount ($150 million) was incorrectly included in **Attachment 5.9 - 2024-29 Technology Plan** and our Initial Proposal's **Attachment 5.1.b - Capex model**. We step through this error in detail (including screenshots and pinpoint references) in **Chapter 11** of this document.

We have corrected this error in our Revised Proposal. The error involved a transposition of incorrect inflation assumptions when escalating expenditure values into real FY24 dollars for our 2024-29 Technology Plan. This misstatement was then included in our Initial Proposal capex model.

7.2.2 Cyber Security

The AER's Draft Decision reduced our initial cyber security forecast by 43%, from $91 million to $52 million. In response we have reviewed the AER's findings, listened to our customers about cost of living pressures and reevaluated our costings. This has resulted in a lower

forecast ($70 million) in our Revised Proposal; however, we remain unchanged in our commitment to reach SP-3 within the 2024-29 period.

The Reset Customer Panel's (**RCP**) report on our 2024-29 revised regulatory proposal included commentary on the AER's Draft Decision for cyber security, including EMCa's advice to the AER. The RCP concluded that:[24]

> EMCa's analysis of Ausgrid's cyber security business case is deficient and has led the AER to an unbalanced decision. We support Ausgrid's revised cyber security proposal and urge the AER to consider it, along with the following key observations we have made:
>
> - Ausgrid's consumer engagement shows a clear preference for the highest security level with the AER to assess the prudent and efficient costs of achieving that protection;
> - The AER has adopted an EMCa devised standard that does not meet the same burden of proof EMCa requires from Ausgrid; and
> - EMCa's unclear advice on how Ausgrid is to consider 'scope creep' that has already occurred since the Initial Proposal.

The second dot-point above relates to EMCa's concept of 'SP-X Minus'. In its report the RCP observes that this new standard is not recognised by industry, AEMO or the relevant legislation. The RCP further note that EMCa states that SP-X Minus infers that more than 50% of the SP-X practices are in place, but not 100%. The RCP critiques this concept by pointing out that EMCa's analysis is largely based on 'judgement' with no evidence or details about why '50%' should be the metric. We understand that this reliance on 'judgement' is the basis for the RCP observing that EMCa applies a different burden of its proof to its own analysis compared to the analysis of others.

We agree with many of the RCP's findings but have developed a revised cyber security forecast that responds to the AER's Draft Decision and EMCa's fundings. This is evidenced by a $21 million reduction (including SaaS) to our forecast. A summary of what we heard at the Draft Decision stage and how we have responded is set out **Figure 37** below.

Figure 37 What we heard on cyber security and how we've responded

What we heard	How we've responded
The cost of the cyber security program requires further justification based on benchmarking analysis	We have reduced our 2024-29 proposed cyber security capex by $21 million (including SaaS costs).
The AER took a different view on the likelihood of certain cyber events occurring	We disagree with the AER's assumptions that certain cyber security consequences (lost productivity and maintenance delays) have a lower likelihood than what we modelled. These assumptions impact the total pool of risk that our analysis states we can address by investing in cyber protections. Acting on EMCa's advice the AER's Draft Decision assumed that Ausgrid could only experience lost productivity and maintenance delays if a 'black start' event occurred. This is not correct. Lost

[24] Reset Customer Panel, Report on Ausgrid's revised revenue proposal, November 2023, p. 24.

What we heard	How we've responded
	productivity and maintenance delays can occur from ***lesser*** cyber security events that have a greater likelihood of occurring than a 'black start'. Notwithstanding, our updated modelling includes: • Sensitivity analysis to test the AER's assumptions. • Updates for heightened compliance risks associated with new legislation lifting the maximum financial penalty from privacy breaches from $0.4 million to $50 million.
The AER put weight on there not being a strict regulatory requirement to fully implement SP-3	Ausgrid continues to consider SP-3 the appropriate maturity target based on the criticality of our network and the impact a cyber attack could have on our ability to fulfil our regulatory obligations as a DNSP and service our customers' We have also undertaken economic analysis which shows that SP-3 is the most efficient response given the credible cyber security threats we face and the level of risk we can reduce by reaching SP-3 maturity. We also question EMCa's advice on a SP-2+ target state. This is not an industry recognised approach to managing cyber security risks. Though the feedback we received from EMCa was generally helpful, we do not support the concept of a SP-2+ target state.

7.2.3 CER ICT

We have reduced our CER related ICT capex (including SaaS) to $21 million in the 2024-29 regulatory period, compared to our initial forecast of $23 million. A summary of what we heard in the AER's Draft Decision and how we have responded in set out in **Figure 38**.

Figure 38 What we heard on CER related ICT and how we've responded

What we heard	How we've responded
AER approved $9 million to deliver CER connections process improvements.	We have accepted the AER's Draft Decision and reduced our forecast from $11 million to $9 million in our Revised Proposal.
Dynamic services capability investments were not accepted since the CECV were not the basis of our modelling	We have re-calculated benefits based on 30-minute CECVs in line with feedback in the AER's Draft Decision.

7.2.4 Connection Process Improvements for CER

We accept the AER's Draft Decision approving $9 million in expenditure related to improving the connections process for CER customers. This includes an uplift in digital capabilities to improve customer compliance to CER technical standards and services such as dynamic connection agreements, as well as a customer education component that seeks to raise awareness of services and benefits available to customers. We have undertaken analysis that supports our Initial Proposal of $11.2 million but have chosen to accept the AER's Draft Decision given that it balances affordability with a level of expenditure that will allow us to deliver most of the benefits

we aim to achieve for customers.

7.2.5 Dynamic Service Capabilities

We have put forward $8.1 million in capex for dynamic service capabilities. This includes $1.4 million SaaS costs which were previously treated as opex in our initial proposal. The remaining $3.9 million in supporting opex is included in **Attachment 6.1 - Proposed operating expenditure**. The total investment is unchanged from our Initial Proposal.

This program of work will allow us to implement dynamic pricing and Dynamic Operating Envelopes (**DOEs**), as well as upgrade existing billing systems to support trial tariffs proposed in our Tariff Structure Statement (**TSS**).

The AER's feedback in its Draft Decision focused on the modelling of market efficiency benefits. This feedback acknowledged the importance of allowing customers to get the most out of their CER investments by enabling virtual power plant (**VPP**) participation. However, the AER requested that we explore a way of modelling market efficiency benefits through CECVs rather than wholesale price differences.

Our Revised Proposal analysis employs the following updated data and input assumptions:

- Oakley Greenwood's CECVs have been used to quantify the benefits of the shift in generation and load resulting from the optimisation, in accordance with the AER's Draft Decision.
- We have updated the prices and structure of tariffs to reflect the EA025 structure and the indicative prices proposed in our TSS.
- We have updated the projections of VPP and EV take-up, based on AEMO's 2023 Inputs Assumptions and Scenarios report.

Attachment 5.7.1 – CER Dynamic Services business case presents the updated benefits. The analysis confirms that while the benefits are lower than calculated in the Initial Proposal, they still outweigh the costs.

8. Fleet, non-network property & overheads

We have accepted the AER's Draft Decision for fleet ($147 million) and non-network property capex ($145 million). We have also applied the AER's standard approach to forecast overheads, with updates made to reflect changes in our revised forecast for direct capex.

Our internal fleet strategy has recently been updated to include a rollout of EVs in the 2024-29 period. This will come at an additional capital cost above what was included in the AER's Draft Decision. We have nonetheless chosen to accept the lower level of fleet investment in the Draft Decision.

We also accept the AER's Draft Decision ($145 million) on our non-network property forecast with no further updates. In addition, we have applied the AER's standard method to forecasting capitalised overheads, with the only updates reflecting changes in direct capex. This results in a forecast of $732 million compared to our Initial Proposal of $724 million.

Our long-term trend in property, fleet and overheads is set out in **Figure 39**. The customer benefits from our decision to self-fund the transition to EVs is also noted in **Figure 40**.

Figure 39 Non-network property, fleet and overheads ($m, real FY24)

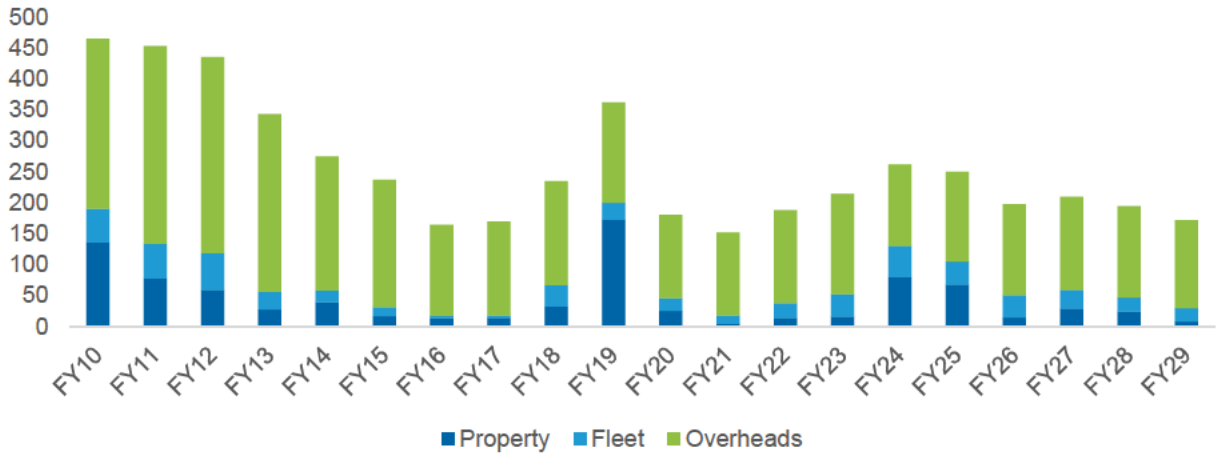


Figure 40 Impact of self-funding transition to EVs

What we've done to promote affordability

We propose to self-fund the incremental costs of transitioning to an electrified fleet in the 2024-29 period.

This will mean that customers receive, at no extra cost, a reduction in emissions from our activities which following a recent amendment to the NEO is now recognised as a market benefit.

9. Contingent project

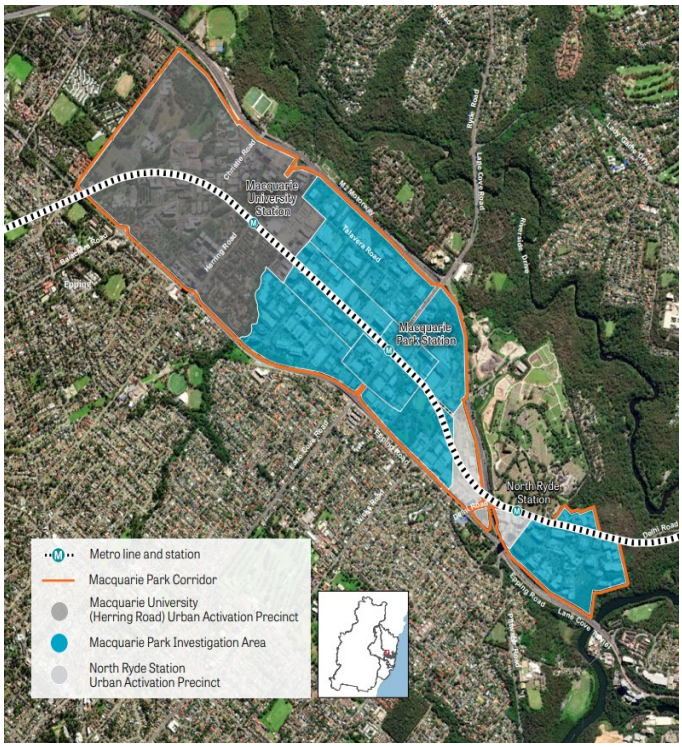
As noted in Chapter 3, we accept the AER's Draft Decision approving $190m in network growth capex but in the time between lodging our Initial and Revised Proposals we received multiple connection inquiries from customers with large load requirements committed to joining our network at Macquarie Park which, once connected, will result in a new substation, to be called Wallumatta STS . We identified this change in circumstances in discussions with the AER and RCP following lodgement of our Initial Proposal and we considered including the additional capex in our network growth program in our Revised Proposal. After careful consideration, we have decided to treat Wallumatta STS as a contingent project, as we have yet to receive a formal connection application for the new substation, although we expect this to happen early in the 2024-29 period.

We propose that capex of $128 million is included in our 2024-29 distribution determination as a contingent project for a new substation build at Macquarie Park, to be called the Wallumatta STS. This chapter, together with further supporting information set out in **Attachment 5.6 - Wallumatta STS business case** provides details of this contingent project proposal.[25]

Should the AER approve Wallumatta STS as a contingent project, we will structure the capex so that no revenue associated with the investment in recovered in the 2024-29. This is an affordability measure we outline in more detail in **Section 9.3**.

9.1 Background

The Macquarie Park area, along the northern boundary of the Carlingford area contains load arising from the Macquarie shopping centre, Macquarie University, telecommunication facilities and high density residential developments. A major contribution has come from the development of [redacted].



Ongoing developments are expected to continue in the Macquarie Park area, driven by [redacted].

[25] NER cl S6.1.3(14).

[redacted]. Recent announcements by the NSW Government[26,27] on the expansion into an innovation precinct with new jobs, homes and open space further supports the ongoing growth and development in the area, including:

- 3,060 new homes including affordable housing;
- 1,200,000m^2 of flexible commercial floorspace providing up to 23,000 additional jobs; or
- 5,040 homes through build-to-rent.

The capacity of Macquarie STS, including the third transformer unit, is expected to be fully utilised by existing committed customers by the early 2030s. However, the availability of 33kV supply points at Macquarie STS is expected to be fully utilised by existing customers from 2026. Furthermore, there are significant site limitations at the existing Macquarie STS, with no space available to expand the existing 33kV busbar.

A 33kV supply strategy, therefore, presents an opportunity to support all new [redacted] customers efficiently. The proposed 33kv supply strategy would not only meet immediate industry growth needs, but also provide options for potential future expansion capacity, provide greater flexibility to manage evolving loads in the area, and provide enduring capacity for future industry development.

9.2 Formal connection inquiries

Ausgrid has received formal connection enquiries at Macquarie Park from the following [redacted] customers requesting secured "N-1" supply:

[redacted]

These customers have indicated a preference for initial supply to be available by FY28/FY29. Each of these requests have been received during 2023, i.e. after the submission of Ausgrid's revenue proposal to the AER, with the latter request being received in October 2023.

[redacted] Ausgrid expects that formal connection applications will be submitted within the next 12 months. Ausgrid will have an obligation to make an offer of connection to these customers.

It should also be noted that interest has also been received from other [redacted] customers, who have plans to expand their [redacted] footprint in Sydney. Formal enquiries from these new customers are likely to be received in the near term.

[redacted]

[26] Macquarie Park | Planning (nsw.gov.au)
[27] Proposed Macquarie Park precinct to pave way for thousands of new homes | NSW Government

There are no spare 33kV supply points available in the area relating to these connection enquiries. If these (and following) connections materialise and timely action is taken to build a new substation to accommodate these potential new customers, Ausgrid will fail to meet the requirement to a) meet or manage the expected demand for standard control services, and b) connect customers under clause 5.2.3(d) of the NER, which include the requirements that a Network Service Provider must:

> *(1) Review and process applications to connect or modify a connection which are submitted to it and must enter into a connection agreement…*
>
> *[…]*
>
> *(6) Permit and participate in commissioning of facilities and equipment which are to be connected to its network in accordance with rule 5.8;*

9.3 Contingent project

Subject to the contingent project trigger being satisfied, the project involves:

- Acquisition of property at a location in relative proximity to the [redacted] loads;
- Construction of the new Wallumatta STS with an arrangement of three 132/33kV transformers and four busbar sections of 33kV switchgear;
- Installation of 5km, 2x132kV underground transmission cables from East Ryde Transition Point to connect feeders 92G and 92J to the New Wallumatta STS; and
- Installation of ductlines to facilitate 33kV connections into the new Wallumatta STS.

For the AER to approve capital expenditure for a proposed contingent project, certain regulatory requirements must be met. These are outlined in below, including our proposed definition for the trigger event.

9.3.1 Expenditure reasonably required to undertake the contingent project

Under clause 6.6A.1(a) of the NER, a regulatory proposal may include proposed contingent project expenditure which the electricity distributor considers is reasonably required for the purpose of undertaking the proposed contingent project. This proposed expenditure, totalling $128m, is outlined in **Figure 41** below.

Figure 41 Project Costs - New Wallumatta STS and connections (real $FY24 million)

	FY25	FY26	FY27	FY28	FY29	Post
Preferred Option	**26.0**	**9.2**	**36.0**	**46.3**	**10.3**	**127.9**
Land Acquisition	25.0	-	-	-	-	**25.0**
New STS	0.4	3.9	15.3	19.7	4.4	**43.7**
132kV Feeders	0.6	5.3	20.7	26.6	5.9	**59.1**

9.3.2 The proposal does not include expenditure for a restricted asset

We confirm that the proposed contingent project does not contain expenditure associated with a restricted asset, in satisfaction of clause 6.6A.1(a1).

9.3.3 The proposed expenditure is reasonably required to achieve any of the capital objectives

We forecast that the proposed contingent project will be reasonably required to 'meet or manage the expected demand for standard control services' and hence meets the capex objectives.[28] In the absence of approving our contingent project proposal, Ausgrid would not have a sufficient expenditure allowance to meet new demand at Macquarie Park should the proposed trigger event (see section 9.3.3) occur. This expenditure is also required to meet demand at this location to 'maintain the quality, reliability and security supply of standard control services', as per the capex objective at NER clause 6.5.7(a)(iii). This is due to the close relationship between meeting demand and maintaining quality, reliability and security.

9.3.4 Proposed contingent capex is not otherwise provided in our forecast

We can confirm that the proposed contingent project capex is not (either in part or in whole) included in our forecast expenditure for the 2024-29 regulatory period.[29]

9.3.1 Expenditure reasonably reflects the capital expenditure criteria and factors

Our options analysis set out in **Attachment 5.6 - Wallumatta STS business case** demonstrates that the proposed contingent project expenditure reflects the efficient and prudent costs of achieving the capital expenditure objectives.[30] It also includes analysis supporting that our proposed contingent project is based on a realistic expectation of demand and cost inputs, as required in the capex criteria.

Attachment 5.6 – Wallumatta STS business case also includes more detailed information about the Macquarie Park location, other information that supports the efficiency of our proposed contingent project expenditure.

9.3.2 Exceeds $30m or 5% of annual revenue in first year of 2024-29 period

Our proposed contingent project expenditure is greater than the cost threshold specified in the NER. Clause 6.6A.1(b)(2)(iii) provides that the cost threshold is the greater of $30 million or 5% of the annual revenue requirement for the DNSP for the first year of the 2024-29 regulatory

[28] NER, clause 6.6A.1(a)(1)
[29] NER, clause 6.6A.1(b)(2)(i)
[30] NER, clause 6.6A.1(b)(2)(ii)

period. Applying this test, 5% of our forecast smoothed revenue in FY25 is $90 million, which is lower than our proposed contingent project expenditure of $128 million.

9.3.3 Proposed trigger meets the requirements set out in clause 6.6A.1(c)

We propose a two-limb trigger for the Wallumatta STS contingent project:

1. A formal request from [redacted] or other [redacted] requiring connection within a timeframe that necessitates investment within the 2024-29 regulatory control period.
2. Confirmation that the proposed network solution maximises the net market benefits following completion of the RIT-D process.

We have modelled our proposed trigger on the wording that Endeavour Energy used for its proposed Western Sydney Airport contingent project. At the Draft Decision stage, the AER considered this trigger to meet the requirements in clause 6.6A.1(c) given that it was reasonably specific and capable of verification, and would generate an increase in costs to achieve the capex objectives.[31] We consider our proposed trigger, which uses similar wording, will meet the NER requirements.

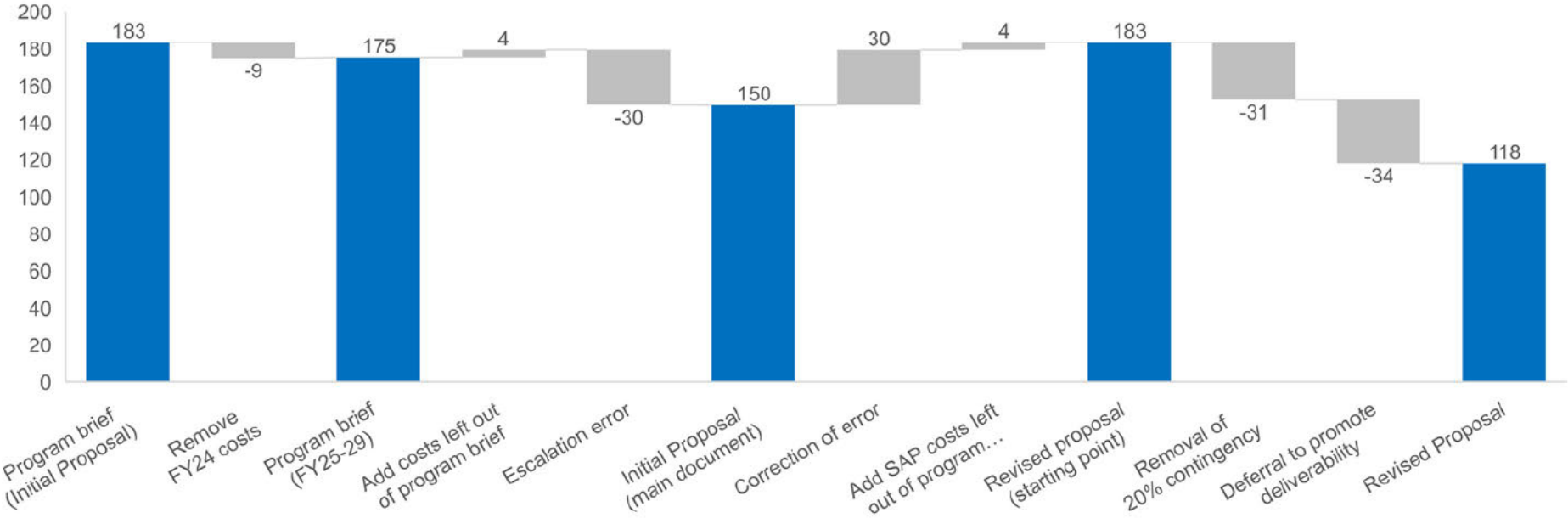
[31] AER, Draft Decision: Endeavour Energy 2019-24 regulatory period, November 2018, p. 5-119

10. ERP costings correction

In this section, we outline the difference between our Initial and Revised Proposal capex (including SaaS) for our ERP replacement program. It addresses an escalation error in our main Initial Proposal document, which was not included in the ERP program brief submitted with our Initial Proposal (**Attachment 5.9.b**). Certain SAP related costs were also left off our initial program brief (**Attachment 5.9.b**).

Explaining this error, and our correction of it, is necessary to properly outline how we have responded to the AER's Draft Decision by removing a 20% contingency ($31m) and deferring capex until the 2029-34 period to promote deliverability ($34m), as outlined in **Figure 42** and explained in more detail in **Sections 10.1** to **10.2** below.

Figure 42 Initial and revised proposal ERP capex ($ million, real FY24)



Ausgrid

10.1 Overview of error in our Initial Proposal

Our Initial Proposal applied correct escalation in our ERP program brief (**Attachment 5.9.b**) but incorrectly transcribed a lower amount in our main Initial Proposal document. For ease of reference, we have included the following below:

- **Figure 43:** a comparison of the ERP expenditure in our ERP program brief (correct escalation) and our main Initial Proposal document (incorrect escalation)
- **Figure 44**: an extract of our ERP program brief (attachment 5.9.b) showing correct escalation at the Initial Proposal stage for FY25-29 ***and*** FY24
- **Figure 45**: an extract from our main Initial Proposal document with the costings based on incorrect escalation.

Note that the extract from our ERP program brief (**Figure 44**) includes FY24 costings ($8.5 million) in the total listed amount ($183.8 million). When they are removed ($183.8-$8.5 million) the correct FY25-29 starting point at the Initial Proposal stage ($175.2 million) is calculated.

Figure 43 Comparison of ERP costings in our program brief and Initial Proposal document ($ million, real FY24)

	FY25	FY26	FY27	FY28	FY29	FY25-29
Program brief (correct escalation)	48	77	36	14	-	175
Main Initial Proposal document (incorrect escalation)	42	65	30	12	1	**150**
Difference	-6	-12	-6	-2	1	-30

Figure 44 Extract from our ERP program brief – Correct costings

Expenditure forecast	**($ million)**	**FY24[3]**	**FY25**	**FY26**	**FY27**	**FY28**	**Total**
	CAPEX	(4.3)	(24.2)	(38.6)	(17.9)	(6.9)	**(91.9)**
	OPEX	(4.3)	(24.2)	(38.6)	(17.9)	(6.9)	**(91.9)**
	Total SCS[4]	(8.5)	(48.4)	(77.3)	(35.8)	(13.8)	**(183.8)** [5]

Source: Ausgrid, *Initial Proposal: Attachment 5.9.b: ERP replacement program brief*, January 2023, p. 8.

Figure 45 Extract from our main Initial Proposal document – Incorrect costings

ERP	Capex	21	33	15	6	1	76
	SaaS opex	21	32	15	5	0	73

Source: Ausgrid, *Initial Proposal: Attachment 5.9.b: ERP replacement program brief*, January 2023, p. 8.

10.2 The basis of the transcription error

Our planned ERP replacement program will be delivered by the 'Transformation Group' within Ausgrid. The Ausgrid Transformation Group led the development of our ERP costings for the Initial Proposal and communicated their forecast to our 'ICT Group'.

In this process there was a miscommunication in the 'dollar terms' of our ERP costings. The ICT Group mistakenly assumed the costs they received from our Transformation Group were in nominal terms. As a result, they deflated the costs to a lower amount to present them in real FY24 dollars. This was an escalation error given that the costings the Transformation Group provided were in fact in real FY22 terms. The ICT Group therefore should have inflated the forecast they received by a higher amount to get to real FY24 dollars.

The mechanics of this escalation error is set out in **Figure 46**. It shows that in real FY22 terms the ERP forecast the Transformation Group developed was $155 million (Row A). To get to real FY24 terms it should have been inflated by two years of CPI (Row B) to get to a higher amount ($175m) for our Initial Proposal (Row C). This happened for our ERP program brief (**Attachment 5.9.b**) which our Transformation Group led. However, for our main Initial Proposal document an incorrect deflation (Row D) has applied to get to a false 'starting position' (Row E) of $146m.

Figure 46 Initial Proposal correct and incorrect escalation

		FY25	FY26	FY27	FY28	FY29	FY25-29
A	**ERP costs in real FY22**	43	69	32	12	-	155
B	**Correct escalator (real FY22 to FY24)**	1.131	1.131	1.131	1.131	1.131	-
C	**ERP costs in real FY24 (correct costings)**	48	77	36	14	-	175
D	**Incorrect deflator (nominal to real FY24)**	0.972	0.9445	0.919	0.893	0.893	
E	**ERP costs when FY22 assumed to be nominal (incorrect costings)**	42	65	29	14		146

There was also a further error. An additional $4 million in SAP costs was correctly added to the amount in Row E above to get our ERP forecast included in our main Initial Proposal document ($150 million). These additional SAP costs were not added to our program brief at the Initial Proposal stage (**Attachment 5.9.b**). We have added these additional SAP costs to correct for the error when calculating our Revised Proposal 'starting point' (see **Figure 42** above).