

Draft Decision

Power and Water

Electricity Distribution

Determination 2024 to 2029

(1 July 2024 to 30 June 2029)

Attachment 6

Operating Expenditure

September 2023

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Inquiries about this publication should be addressed to:

Australian Energy Regulator
GPO Box 3131
Canberra ACT 2601
Tel: 1300 585 165

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6 Operating expenditure

Operating expenditure (opex) refers to the operating, maintenance and other non-capital costs incurred in the provision of standard control services. Forecast opex for standard control services is one of the building blocks we use to determine a service provider's total regulated revenue requirement.

This attachment outlines our assessment of Power and Water Corporation's (PWC) proposed opex forecast for the 2024–29 regulatory control period.

6.1 Draft Decision

Our draft decision is not to accept PWC's proposed opex forecast of \$415.3 million (\$2023–24) for the 2024–29 regulatory control period.¹ This is because we are not satisfied that it reasonably reflects the opex criteria, having regard to the opex factors.²

Our draft decision is to include our alternative estimate of total forecast opex of \$364.4 million (\$2023–24) for PWC. This draft decision is:

- \$50.9 million (\$2023–24) or 12.3% lower than PWC's proposal for the 2024–29 regulatory control period
- \$53.3 million (\$2023–24) or 12.8% lower than PWC's actual (and estimated) opex in the 2019–24 regulatory control period
- \$36.9 million (\$2023–24) or 9.2% lower than the opex forecast we approved in our final decision for the 2019–24 regulatory control period.³

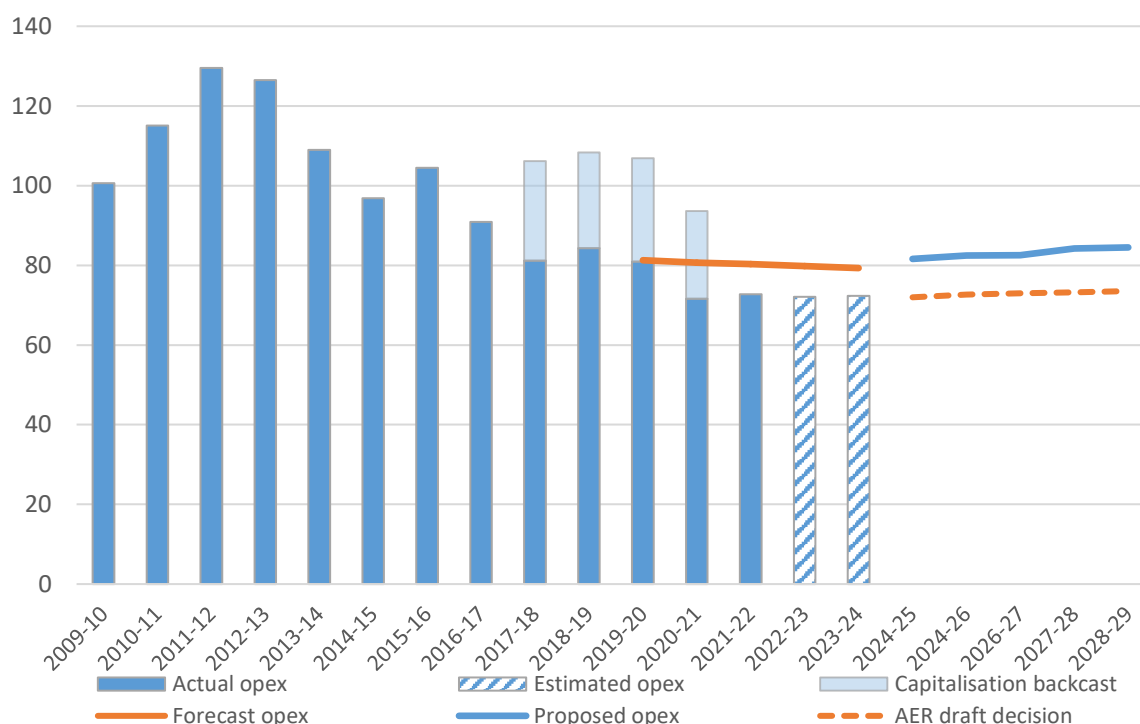
Figure 6.1 compares the opex forecast we approve in this draft decision for the next regulatory control period to PWC's proposal, the forecasts we approved for the current regulatory control period and PWC's actual and estimated opex across this current period. PWC's total opex over the period 2009–19 when PWC was regulated by the Northern Territory (NT) Utility Commission is also shown.

¹ PWC, *Attachment 9.03, 2024–29 SCS Opex Model*, 31 January 2023.

² NT NER, cl. 6.5.6(c) and cl. 6.5.6(e).

³ Due to a change PWC made effective from 1 July 2021 to the way it capitalises network and corporate overheads, PWC's actual and estimated opex and the opex we forecast for the 2019–24 regulatory control period are not reported on a like for like basis with its forecast for the 2024–29 regulatory control period - the capitalisation back cast needs to be taken into account. In addition, the opex we approved in our last decision is not reported on a like for like basis with PWC's opex forecast. See the note in Figure 6.1 and Section 6.4.1.1 for more information.

Figure 6.1 Historical and forecast opex (\$million, 2023–24)



Source: PWC, Regulatory accounts, AER Power and Water 2019–24 Post-tax revenue model; AER analysis Note: In June 2021, under its existing Cost Allocation Method, PWC changed its capitalisation approach to reallocate a higher proportion of corporate and network overheads opex to direct opex and capital project-related capex. PWC’s reported opex for 2021–22, its estimated opex for 2022–23 and 2023–24, and its opex forecast for the 2024–29 regulatory control period are based on this approach. To provide an opex time series that could be used to compare historical and forecast opex on a like-for-like basis, PWC created a back cast of its actual opex from 2017–18 to 2020–21 on the same basis. The AER’s opex forecast for the 2019–24 period is not on a like-for like basis with PWC’s reported, estimated and proposed opex from 2021–22 onwards as we do not have sufficient information to adjust our 2019–24 forecast to account for PWC’s change to its capitalisation policy. The AER did not provide an opex forecast for the 2009–2019 regulatory control period as PWC was regulated by the NT Utility Commission.

Table 6.1 sets out PWC’s opex proposal, our alternative estimate for the draft decision and the differences between these forecasts.

Table 6.1 Comparison of PWC’s opex proposal and our draft decision (\$million, 2023–24)

	PWC’s proposal	AER draft decision	Difference
Base opex (reported in \$2022)	366.7	361.4	-5.3
Price growth	-0.7	0.4	1.0
Output growth	2.8	2.6	-0.1
Productivity growth	-9.1	-8.9	0.1
Total trend	-7.0	-5.9	1.0
Cyber security	4.4	4.4	-

	PWC's proposal	AER draft decision	Difference
Regulatory obligations	6.0	–	–6.0
Cloud migration	4.0	–	–4.0
Operational Technology capability uplift	18.8	–	–18.8
Future network	14.1	1.1	–13.1
Insurance premium	4.9	–	–4.9
Total Step changes	52.2	5.5	–46.7
Category specific forecasts	–	–	–
Total opex (excluding debt raising costs)	412.0	361.0	–51.0
Debt raising costs	3.3	3.5	0.1
Total opex (including debt raising costs)	415.3	364.4	-50.9
Percentage difference to proposal			–12.3%

Source: PWC, *Attachment 9.03 2024–29 SCS Opex Model*, 31 January 2023; AER analysis.

Note: Numbers may not add up to total due to rounding. Differences of '0.0' and '-0.0' represent small variances and '-' represents zero.

The following factors have contributed to our lower alternative total opex forecast:

- we have updated PWC's opex amount in the base year (2021–22) from \$73.3 million⁴ (\$2023–24) to \$72.3 million (\$2023–24) in line with our standard approaches, decreasing our alternative estimate by \$5.3 million (\$2023–24) over the next regulatory control period. These updates included:
 - removing a demand management incentive allowance (DMIA) amount of \$0.4 million (\$2023–24), which PWC inadvertently included (it is not included in our opex forecast).⁵ This decreases our alternative estimate by \$1.9 million (\$2023–24) over the next regulatory control period
 - removing movements in provisions of \$0.1 million (\$2023–24)⁶ in line with our standard approach. This decreases our alternative estimate by \$0.3 million (\$2023–24) over the next regulatory control period
 - using the latest inflation forecasts published by the Reserve Bank of Australia. We consider these inflation forecasts are the best forecast possible in the circumstances because they are the most up-to-date information available at the time.

⁴ PWC, *Attachment 9.03 2024–29 SCS Opex Model*, 31 January 2023.

⁵ PWC, Response to AER information request, *PWC – AER Information request IR016 – DMIA/DMIS and Movement in provisions; Insurance step change; Regulatory Obligation step change; Essential System Services*, 21 June 2023, Q.1, p. 2.

⁶ PWC, *Attachment 9.03 2024–29 SCS Opex Model*, 31 January 2023.

- We have not included, or included a reduced amount, for 5 of the 6 step changes proposed by PWC,⁷ which reduced our alternative estimate by \$46.7 million (\$2023–24) over the next regulatory control period compared to PWC’s total opex proposal. This largely reflects that at this stage we do not have sufficient information to establish the prudence and / or efficiency of these step changes, and that we are seeking further information in PWC’s revised proposal. Specifically:
 - We have not included the proposed \$18.8 million (\$2023–24) operational technology (OT) capability uplift step change⁸ in our alternative estimate, because PWC has stated that it is re-evaluating the business case and will provide updated information in its revised proposal.⁹ This decreased our alternative estimate by \$18.8 million (\$2023–24) over the next regulatory control period.
 - We have not included the proposed \$6.0 million (\$2023–24) regulatory obligation step change,¹⁰ the \$4.9 million (\$2023–24) insurance premium step change¹¹ or the \$4.0 million (\$2023–24) cloud migration step change.¹² While we agree that some additional level of funding in these areas may be prudent, we do not yet have sufficient information to fully determine this and an efficient estimate. We are seeking additional information from PWC in its revised proposal on each of these step changes to enable us to assess their prudence and efficiency. This decreases our alternative estimate by \$14.9 million (\$2023–24) over the next regulatory control period.
 - We have included \$1.1 million (\$2023–24) of the proposed \$14.1 million (\$2023–24) future network step change in our alternative estimate.¹³ This is to improve inverter compliance, as we consider this to be a more prudent and efficient option for enabling higher static export limits than the dynamic operating environment (DOE) related expenditures proposed by PWC. We have not included the DOE-related components as these are dependent on proposed DOE-related capex, which (as noted in Attachment 5 - Capex) we are proposing to not accept. We have also not included the non-DOE related components of this step change (related to stakeholder engagement, network planning and connections activities), because while we agree that some additional level of resourcing in these areas may be prudent, we do not have sufficient information to determine an efficient estimate. We are seeking additional information on these components in PWC’s revised proposal to allow further assessment. This decreased our alternative estimate by \$13.1 million (\$2023–24) over the next regulatory control period.

Table 6.2 provides our assessment of PWC’s proposal against the opex expectations in the Better Resets Handbook.¹⁴

⁷ PWC, *Attachment 9.02 Opex Step Changes*, 31 January 2023.

⁸ PWC, *Attachment 9.02 Opex Step Changes*, 31 January 2023, pp. 20–22.

⁹ PWC, Response to information request, *IR#011 Follow up questions from NT On-site*, 28 June 2023, Question 6, Operational Technology Uplift Project Update, p. 2.

¹⁰ PWC, *Attachment 9.02 Opex Step Changes*, 31 January 2023, pp. 6–13.

¹¹ PWC, *Attachment 9.02 Opex Step Changes*, 31 January 23, pp. 14–17.

¹² PWC, *Attachment 9.02 Opex Step Changes*, 31 January 23, pp. 18–19.

¹³ PWC, *Attachment 9.02 Opex Step Changes*, 31 January 2023, pp. 23–27.

¹⁴ AER, *Better Resets Handbook*, 9 December 2021, pp. 24–29.

Table 6.2 Assessment of proposal against Better Reset Handbook opex expectations

Opex expectations	Our view about how the expectations have been met
1. Opex forecasting approach	PWC met this expectation. It applied our standard base-step-trend forecasting approach to forecast opex and the opex used in the efficiency benefit sharing scheme (EBSS).
2. Base opex	PWC met this expectation. It used its most recent year of audited actual opex as its base year (2021-22), and provided analysis to support its claim that its base year is not materially inefficient.
3. Trend	PWC met this expectation. It broadly applied our standard approaches for its price, output and productivity growth forecasts. Where data was not available, PWC has committed to adopt our standard approach in its revised proposal.
4. Step changes	PWC did not meet this expectation. It included 6 step changes in its proposal, did not provide clear justifications for the prudence or efficiency of a number of these, and did not consult with customers on these.
5. Category specific forecasts	PWC met this expectation. PWC only proposed debt raising costs as a category specific forecast and has applied our standard forecasting approach.
6. Genuine consumer engagement on opex proposals	PWC did not meet this expectation. While some early engagement was undertaken on a 'Draft Plan', significant changes were subsequently made that materially increased its opex (i.e. 6 new step changes) which were not consulted on.

Source: AER analysis

6.2 Power and Water's proposal

PWC's proposal applied a "base-step-trend" approach to forecast opex for the 2024–29 regulatory control period,¹⁵ consistent with our standard approach.

In applying our base step trend approach to forecast opex, PWC:¹⁶

- used reported opex in 2021–22 of \$73.3 million (\$2023–24) as the base from which to forecast for the year, or \$366.7 million (\$2023–24) over the next regulatory control period)
- did not add an estimate of the difference between the base year opex and the opex it will incur in the final year of the current regulatory control period (i.e. a final year increment)
- applied its overall rate of change forecast to its base year opex, decreasing opex by \$7.0 million (\$2023–24). This included:
 - output growth (\$2.8 million (\$2023–24))

¹⁵ PWC, *Attachment 9.03 2024-29 SCS Opex Model*, 31 January 2023.

¹⁶ PWC, *Attachment 9.03 2024-29 SCS Opex Model*, 31 January 2023.

- price growth (–\$0.7 million (\$2023–24))
- productivity growth (–\$9.1 million (\$2023–24))
- added 6 step changes totalling \$52.2 million (\$2023–24) for:
 - cyber security (\$4.4 million (\$2023–24))
 - regulatory obligations (\$6.0 million (\$2023–24))
 - cloud migration (\$4.0 million (\$2023–24))
 - OT capability uplift (\$18.8 million (\$2023–24))
 - future network (\$14.1 million (\$2023–24))
 - insurance premium (\$4.9 million (\$2023–24))
- added \$3.3 million (\$2023–24) of debt raising costs to arrive at a total opex forecast of \$415.3 million (\$2023–24) over the 2024–29 regulatory control period.

Table 6.3 PWC’s proposed opex for the 2024–29 period (\$million, 2023–24)

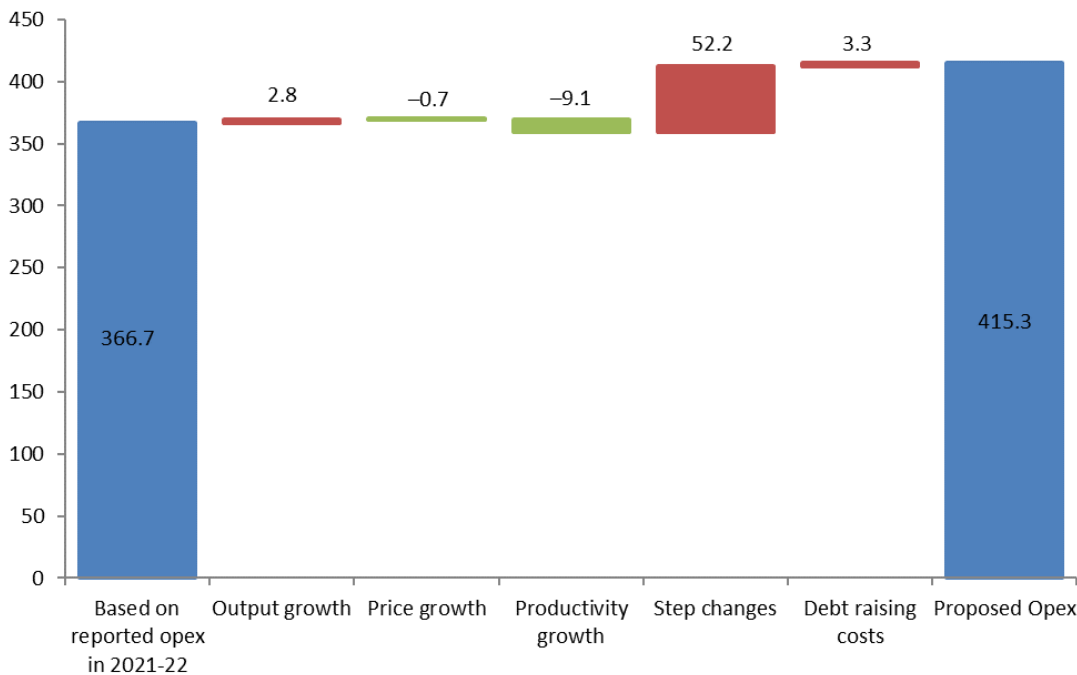
	2024– 25	2025– 26	2026– 27	2027– 28	2028– 29	Total
Total Opex, excluding debt raising costs	81.0	81.8	81.9	83.5	83.8	412.0
Debt raising costs	0.6	0.7	0.7	0.7	0.7	3.3
Total Opex, including debt raising costs	81.6	82.5	82.6	84.2	84.5	415.3

Source: PWC, *Attachment 9.03 2024-29 SCS Opex Model*, 31 January 2023; AER analysis.

Note: Numbers may not add up to total due to rounding. Differences of '0.0' and '-0.0' represent small variances and '-' represents no variance.

Figure 6.2 shows the different components that make up PWC’s opex forecast for the 2024–29 period.

Figure 6.2 PWC’s proposed opex (\$million, 2023–24)



Source: PWC, *Attachment 9.03 2024-29 SCS Opex Model*, 31 January 2023; AER analysis.

Note: Numbers may not add up to total due to rounding. Differences of '0.0' and '-0.0' represent small variances and '-' represents no variance.

PWC’s total opex forecast of \$415.3 million (\$2023–24) for the 2024–29 period is \$14.0 million (\$2023–24), or 3.5%, higher than the amount we determined in our 2019–24 decision for PWC, and \$45.6 million (\$2023–24), or 12.3%, higher than its actual / estimated spend over the 2019–24 regulatory control period.¹⁷

6.2.1 Stakeholder views

We received three submissions on PWC’s proposal that discussed opex issues.

We have taken these submissions into account in developing the positions set out in this draft decision. Table 6.4 summarises the stakeholder issues raised in the submissions in relation to opex.

Table 6.4 Submissions on PWC’s 2024–29 opex proposal

Stakeholder(s)	Issue	Description
Jacana Energy	Base opex	Jacana Energy expressed concern that recent reductions in PWC’s opex were primarily driven by the capitalisation of overheads and questioned the efficiency of PWC’s base

¹⁷ This comparison of PWC’s actual/estimated opex for the 2019–24 regulatory control period and its proposed opex for the 2024–29 regulatory control period is on a like-for-like basis, removing the higher proportion of corporate and network overhead costs in line with the new approach adopted by PWC from 1 July 2021. The comparison of PWC’s actual/estimated opex for the 2019–24 regulatory control period with the AER opex forecast we approved for the 2019–24 period is not on a like-for-like basis as we currently do not have sufficient information to adjust our forecast to account for PWC’s change to its capitalisation policy. See the note in Figure 6.1 and Section 6.4.1.1 for more information.

Stakeholder(s)	Issue	Description
		opex. Jacana Energy supported the AER including PWC in its benchmarking to ensure its opex aligns with its peers and customers pay no more than necessary. ¹⁸
Jacana Energy, Territory Generation, AER’s Consumer Challenge Panel 27 (CCP27)	Step changes	<p>Jacana Energy noted that the step changes, particularly Future Network (consumer energy resources (CER) enablement), will be vital to achieve the NT’s renewable generation targets and to deliver cheaper, cleaner and secure electricity.¹⁹ Similarly, Territory Generation supported part of the Future Network step change (particularly the DOE component).²⁰ However, Jacana Energy expressed concern that PWC had not engaged with its customers or industry on the step changes generally, particularly given their technical nature, size, and that some relate to regulatory obligations that PWC has been aware of for some time. It considered stakeholders had not been given the opportunity to identify concerns, particularly related to affordability. It also noted that PWC has not demonstrated the merits of the step changes, particularly those related to new regulatory obligations, and why associated costs cannot be funded from PWC’s current opex.²¹</p> <p>CCP27 stated that it has not observed PWC undertake any in-depth stakeholder engagement on the 6 step changes, highlighting that these were not part of the early engagement PWC undertook on its Draft Plan. CCP27 noted that it expects PWC to engage fully on the step change drivers and costs to inform its revised proposal.²²</p>
Territory Generation	Potential future essential system services costs	Territory Generation noted that, subject to the outcome of an ongoing NT Government review, there may be some costs for essential system services, currently provided by the network operator but not paid for by PWC, that may need to be included in PWC’s opex forecast. ²³

¹⁸ Jacana Energy, *Submission 2024–29 Electricity Determination Power and Water Corporation*, May 2023, p. 7.

¹⁹ Jacana Energy, *Submission 2024–29 Electricity Determination Power and Water Corporation*, May 2023, p. 7.

²⁰ Territory Generation, *Submission 2024–29 Electricity Determination Power and Water Corporation*, May 2023, pp. 2–3.

²¹ Jacana Energy, *Submission 2024–29 Electricity Determination Power and Water Corporation*, May 2023, pp. 7–8.

²² CCP27, *Advice to the AER Power and Water Corporation Electricity Distribution Revenue Proposal (2024–29)*, 10 May 2023, p. 18.

²³ Territory Generation, *Submission 2024–29 Electricity Determination Power and Water Corporation*, May 2023, pp. 1–2.

6.3 Assessment approach

Our role is to decide whether to accept a business's total opex forecast. We are to form a view about whether a business's forecast of total opex 'reasonably reflects each of the opex criteria'.²⁴ In doing so, we must have regard to the opex factors specified in the National Electricity Rules – Northern Territory (NT NER).²⁵

The Expenditure forecast assessment guideline (the Guideline), together with an explanatory statement, sets out our assessment approach in detail.²⁶ While the Guideline provides for greater regulatory predictability, transparency and consistency, it is not mandatory. However, if we make a decision that is not in accordance with the Guideline, we must state the reasons for departing from the Guideline.²⁷

Our approach is to assess the business's forecast opex over the regulatory control period at a total level, rather than to assess individual opex projects. To do so, we develop an alternative estimate of total opex using a 'top-down' forecasting method, known as the 'base-step-trend' approach.²⁸ We compare our alternative estimate with the business's total opex forecast to form a view on the reasonableness of the business's proposal. If we are satisfied the business's forecast reasonably reflects the opex criteria, we accept the forecast.²⁹ If we are not satisfied, we substitute the business's forecast with our alternative estimate that we are satisfied reasonably reflects the opex criteria.³⁰

In making this decision, we take into account the reasons for the difference between our alternative estimate and the business's proposal, and the materiality of the difference. Further, we must take into consideration interrelationships between opex and the other building block components of our decision.³¹

Figure 6.3 summarises the 'base-step-trend' forecasting approach.

²⁴ NT NER, cl. 6.5.6(c).

²⁵ NT NER, cl. 6.5.6(e).

²⁶ AER, *Expenditure forecast assessment guideline, Explanatory Statement*, August 2022, pp. 6–7.

²⁷ NT NER, cl. 6.2.8(c).

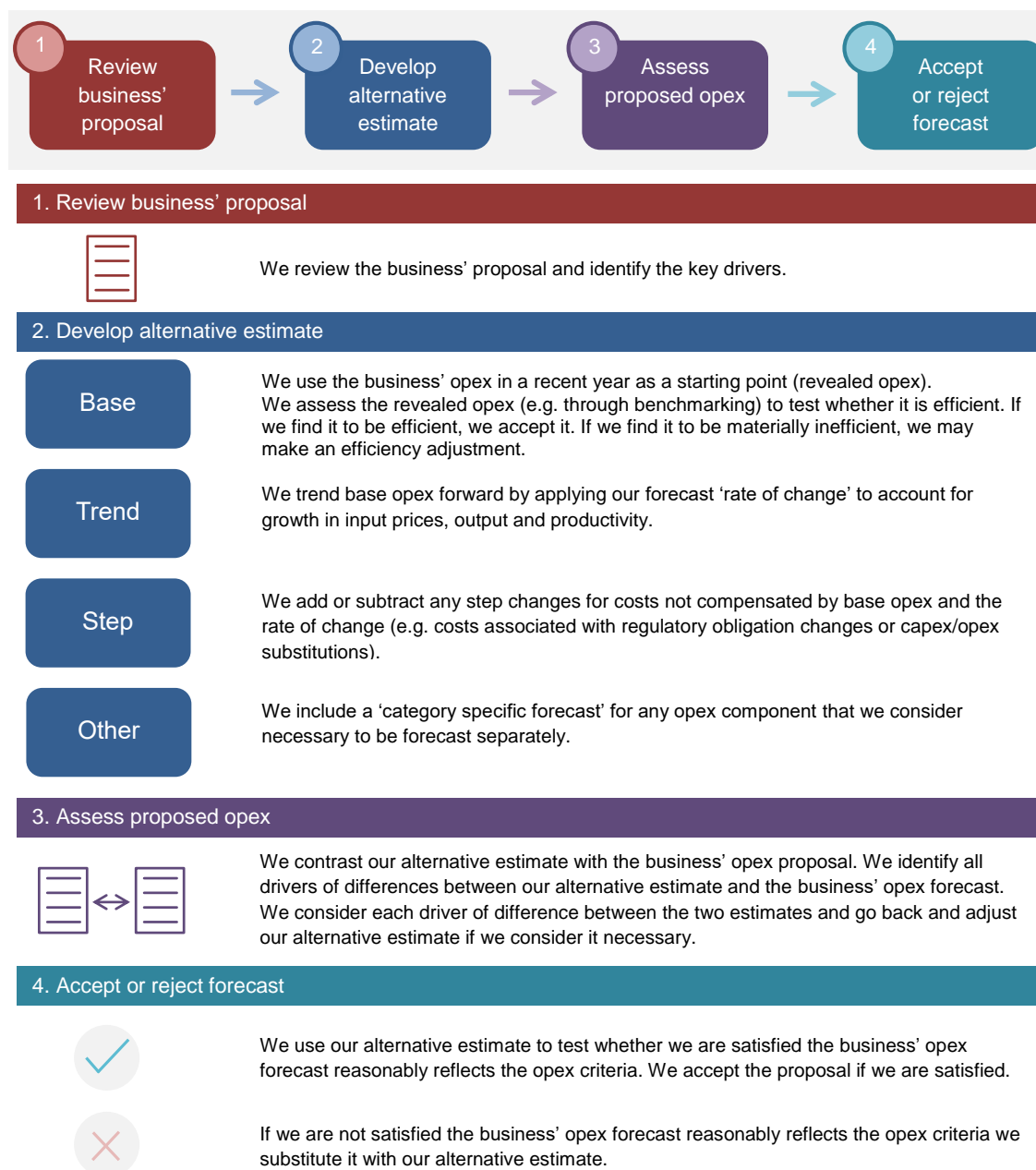
²⁸ A 'top-down' approach forecasts total opex at an aggregate level, rather than forecasting individual projects or categories to build a total opex forecast from the 'bottom up.'

²⁹ NT NER, cl. 6.5.6(c).

³⁰ NT NER, cl. 6A.5.6(d).

³¹ NEL, s. 16(1)(c).

Figure 6.3 Our opex assessment approach



6.3.1 Interrelationships

In assessing PWC's total forecast opex, we also take into account other components of its proposal that could interrelate with our opex decision. The matters we considered in this regard included:

- the impact of cost drivers that affect both forecast opex and forecast capital expenditure (capex). For instance, forecast labour price growth affects forecast capex and our forecast price growth used to estimate the rate of change in opex
- the approach to assessing the rate of return, to ensure there is consistency between our determination of debt raising costs and the rate of return building block
- the outcomes of PWC engagement with consumers and stakeholders in developing its proposal and any feedback we have had.

6.4 Reasons for draft decision

We do not accept PWC’s proposed opex forecast of \$415.3 million (\$2023–24), including debt raising costs, for the 2024–29 regulatory control period because we are not satisfied that it reflects the opex criteria, having regards to the opex factors.³²

Our draft decision is to include our alternative total opex forecast of \$364.4 million (\$2023–24). This is \$50.9 million, or 12.3%, lower than PWC’s forecast. We are satisfied our alternative estimate of total forecast opex for PWC reasonably reflects the opex criteria.

Table 6.1 above sets out PWC’s proposal, our alternative estimate that is the basis for the draft decision, and the difference between our draft decision and the proposal.

The main drivers for the differences are also set out in Section 6.1 and we discuss each of the components of our alternative estimate, and our assessment of PWC’s proposal below. Full details of our alternative estimate are set out in our opex model, which is available on our website.

6.4.1 Base opex

This section provides our view on the prudent and efficient level of base opex that we consider PWC would need for the safe and reliable provision of electricity services over the 2024–29 regulatory control period. We discuss the choice of base year in section 6.4.1.1 and set out our analysis of the efficiency of base year opex in section 6.4.1.2

6.4.1.1 Proposed base year

PWC proposed a base year of 2021–22 and base year opex of \$73.3 million (\$2023–24), or \$366.7 million (\$2023–24) over the next regulatory control period.³³ PWC stated that it selected 2021-22 as its base year as it was the most recent year of audited actual opex and it reflects the revealed costs of providing its services.³⁴

We have updated PWC’s base opex amount for 2021–22 from \$73.3 million (\$2023–24) to \$72.3 million (\$2023–24). This is due to:

- the removal of a DMIA amount of \$0.4 million (\$2023–24), which PWC inadvertently included (it is not included in our opex forecast)³⁵
- the removal of movements in provisions of \$0.1 million (\$2023–24)³⁶
- the use of the latest inflation forecasts.

PWC noted that its base year was reported under a new capitalisation approach that, under its existing Cost Allocation Method, allocates a higher proportion of corporate and network

³² NT NER, cl. 6.5.6(c) and cl. 6.5.6(e).

³³ PWC, *Attachment 9.03 2024-29 SCS Opex Model*, 31 January 2023.

³⁴ PWC, *Attachment 9.01 Operating Expenditure*, 31 January 2023, p. 8.

³⁵ PWC, Response to AER information request, PWC, *AER Information request IR016 - DMIA/DMIS and Movement in provisions; Insurance step change; Regulatory Obligation step change; Essential System Services*, 21 June 2023, Q.1, p. 2.

³⁶ PWC, *Attachment 9.03 2024-29 SCS Opex Model*, 31 January 2023.

overheads opex to direct opex and capital project-related capex.³⁷ PWC stated that it adopted this new approach to more accurately allocate its corporate and network overhead resources to maintenance activities and capital projects,³⁸ and to move its treatment of overheads closer to approaches used by other distribution network service providers (DNSPs).³⁹

To consider the appropriateness of 2021–22 as a base year, we have considered the impact on opex of the new approach to capitalisation and allocation of overheads. In Figure 6.1, PWC’s reported opex for 2021–22, its estimates for the remainder of the current regulatory control period and its opex forecast for the 2024–29 regulatory control period, are based on this new approach to capitalisation and allocating overheads. To provide an opex time series that would allow a comparison of historic and forecast opex on a like-for-like basis, PWC back cast 4 years of its actual opex from 2017–18 to 2020–21 using this new capitalisation and overhead allocation approach.⁴⁰ Figure 6.1 shows the significant amount of overhead opex that would have been capitalised in these years if the new approach had been in effect (the top of the bars shaded light blue).

We have reviewed the information PWC provided on its new approach to capitalisation and allocating overheads, including the back cast of historic opex data shown in Figure 6.1. We consider PWC has provided sufficient evidence to verify that its capitalisation approach, which significantly reduces its reported opex in its base year compared to earlier years, complies with its existing AER-approved Cost Allocation Method and accounting standards, and that its approach is more closely aligned with approaches used by a number of other (but not all) DNSPs. Our analysis shows that the overall cost impact of the new capitalisation approach is neutral in terms of total expenditure (i.e. the reduction in opex is offset by a corresponding increase in capital expenditure). We also accept that the 4 years of back cast data 2017–18 to 2020–21) provided by PWC is consistent with its new cost allocation approach, and so we have used this, together with the base year opex in 2021–22, to consider the reasonableness of the base year and undertake our assessment of base year efficiency.

Overall, we consider 2021–22 is an appropriate base year. This is because it is based on actual opex, reflects PWC’s new approach to capitalisation and allocation of overheads, and therefore is likely to be representative of the base opex required for the next regulatory control period.

We note that PWC stated in its proposal that it may change its proposed base year from 2021–22 to 2022–23 in its revised proposal, particularly as it expects the later year will more fully reflect the opex savings it expects to achieve from efficiency programs it is undertaking.⁴¹ As noted above, the AER believes 2021–22 is an appropriate choice for base year and it does not see a need for a change. If PWC were to propose an alternative base year in its revised proposal, it would need to provide substantial reasoning and evidence to

³⁷ PWC, *Attachment 9.01 Operating Expenditure*, 31 January 2023, pp. 9–10.

³⁸ PWC, *Attachment 9.01 Operating Expenditure*, 31 January 2023, p. 1.

³⁹ PWC, *Attachment 9.01 Operating Expenditure*, 31 January 2023, p. 10.

⁴⁰ PWC, *Attachment 9.01 Operating Expenditure*, 31 January 2023, p. 1.

⁴¹ PWC, *Attachment 9.01 Operating Expenditure*, 31 January 2023, p. 8.

justify the change, including clearly demonstrating how ongoing opex savings have flowed through to lower opex. A new base year, if representing a higher level of opex than reported in 2021–22, would also be subject to an updated efficiency assessment.

6.4.1.2 Efficiency of PWC's opex

PWC stated that its base year is efficient because it reflects recent cost savings from a range of efficiency initiatives it has been undertaking, noting that these are in addition to reductions due to its new approach to capitalisation and allocating overhead costs. PWC also noted that its base year level of opex is less than the efficient forecast that the AER determined in its previous decision for the current period.⁴²

As summarised in section 6.3, and in the Guideline, our preferred approach for forecasting opex is to use a revealed cost approach.⁴³ This is because opex is largely recurrent and stable at a total level. Where a distribution business is responsive to the financial incentives under the regulatory framework, the actual level of opex it incurs should provide a good estimate of the efficient costs required for it to operate a safe and reliable network and meet its relevant regulatory obligations. However, we do not rely on the assumption that the business's revealed opex is efficient. We examine the trend in opex and use our top-down benchmarking tools, and other assessment techniques, to test whether the business is operating efficiently historically and particularly in the base year.

As shown in Figure 6.1, PWC's total reported opex trend (without removing the capitalisation back cast) was significantly higher over the period 2017–18 to 2019–20 before decreasing in 2020–21 and again in 2021–22, PWC's proposed base year. In the first two years of the current regulatory control period, PWC's total reported opex was \$25.6 million (\$2023–24), or 31.5%, higher than our forecast in 2019–20, and \$13.0 million (\$2023–24), or 16.1%, higher in 2020–21. Total reported opex has trended downward since 2018–19 (the last year of the previous regulatory control period), decreasing by \$35.6 million (\$2023–24), or 32.9%, from \$108.3 million (\$2023–24) in 2018–19 (the last year of the previous regulatory control period) to \$72.7 million (\$2023–24) in 2021–22, (PWC's proposed base year) which is \$7.6 million or 9.5% lower than our forecast.

As can be seen in Figure 6.1, the majority of this trending decrease in opex was due to the change PWC made in 2021–22, its base year, to increase the proportion of overheads costs it capitalises (the top of the bars shaded light blue). However, our analysis also shows that a reasonable proportion of the decrease in opex over this period (\$11.6 million or 10.7% of total reported opex) was due to cost reductions not attributable to the capitalisation changes.

PWC stated that these reductions were achieved as a result of targeted efficiency initiatives it had been undertaking since its last regulatory determination, noting that since 2017–18, opex components such as maintenance, vegetation management and non-network costs have

⁴² PWC, *Attachment 9.01 Operating Expenditure*, 31 Jan 23, pp. 8–9. It is uncertain how much the fact that PWC's base year opex of \$73.3 m (\$2023–24) is less than the AER's efficient opex forecast for 2021–22 of \$81.0 m (\$2023–24) can be used to support a conclusion of base year efficiency as the AER's opex forecast for the 2019–24 period was not formulated on a like-for like basis with PWC's base year due to PWC's recent capitalisation change. As a result, this information has not been a material factor in informing our conclusion that PWC base year opex is relatively efficient.

⁴³ AER, *Expenditure forecast assessment guideline – distribution*, 1 August 2022, p. 24.

been constant or trending downwards due to its efforts to improve efficiency. PWC further noted that it expects additional efficiency to be revealed over time and considered it will be able to sustain these lower levels of opex over the remainder of this regulatory control period and into the next.⁴⁴

This revealed costs trend analysis indicates that while PWC's historic opex experienced significant increases over the 2017–20 period, raising questions around its level of operating efficiency, the very recent cost savings PWC has achieved in the current regulatory control period (and that are not attributable to the capitalisation change) show a significant reduction, suggesting an improvement in efficiency and supporting a finding that base year opex is relatively efficient.

This view was affirmed by supplementary partial performance indicator (PPI) benchmarking analysis undertaken by the AER using the back cast data provided by PWC. The PPI analysis, based on 5-year opex average costs covering the period 2017–22, showed that while PWC still had higher average operating costs relative to most DNSPs, the more recent reductions in total opex and savings in some specific opex categories (i.e. vegetation management, emergency response and non-network costs) indicate improved efficiency relative to other DNSPs. We note that PWC is not part of the AER's *Annual Benchmarking Report* for distribution networks, so this tool is not available for use in this assessment.

We note and agree with the point raised by Jacana Energy in its submission that the recent reductions in PWC's reported opex are primarily driven by the capitalisation of overheads, and we acknowledge the concern that this raises about the efficiency of PWC's base opex as a result. However, we consider the recent reductions in opex driven by cost savings from PWC's efficiency initiatives (that are in addition to the reductions due to the capitalisation change) are of sufficient magnitude to represent a material improvement in PWC's relative operating efficiency, and support a finding that PWC's base year is relatively efficient. As a result, for this draft decision we have used PWC's base year opex in our alternative estimate.

6.4.2 Adjustments to base year opex

PWC did not propose any adjustments to its base opex. We agree with this.

6.4.2.1 Final year increment

Our standard practice for calculating final year opex when the EBSS is in place, is to add the estimated change in opex between the base year (2021–22) and the final year (2023–24) of the current regulatory control period to the base year opex amount.⁴⁵

In the current regulatory control period, PWC does not have an EBSS in place. The final year increment aligns the EBSS and opex calculations. However, in the absence of an EBSS in this regulatory control period, it is not necessary to calculate the final year increment. This is consistent with PWC's proposal and the approach we have applied to other DNSP's prior to applying an EBSS.

⁴⁴ PWC, *Attachment 9.01 Operating Expenditure*, 31 January 2023, p. 8.

⁴⁵ AER, *Expenditure forecast assessment guideline – distribution*, August 2022, pp. 24–25.

6.4.3 Rate of change

Generally, having determined base opex and calculated final year opex by adding a final year increment, we trend final year opex forward to account for the forecast growth in prices, output and productivity over the next regulatory control period. We refer to this as the rate of change.⁴⁶ However, as noted above, where the EBSS is not in place, we do not apply a final year increment to generate final year opex and instead apply the rate of change directly to its base year opex. This is the approach PWC has used, applying the rate of change to its 2021–22 base year opex.

PWC largely applied our standard approach to forecasting the rate of change. It proposed:

- **Price growth:** to apply the standard firm-specific labour and non-labour input price weightings using only its BIS Oxford Economics' Northern Territory wage price index (WPI) growth forecast. It also added the legislated superannuation guarantee increases to its labour price growth forecasts.⁴⁷ PWC stated at our on-site visit that it did not use the average of two WPI growth forecasts (from its consultant and ours) as there was no recent AER NT-specific forecast available, but indicated it would adopt our standard approach in its revised proposal.
- **Output growth:** to apply the weights from our four econometric models from the *2021 Annual Benchmarking Report*.⁴⁸
- **Productivity growth:** to use our 0.5% per year productivity growth forecast.⁴⁹

The rate of change proposed by PWC contributed $-\$7.0$ million ($\$2023-24$), or -1.7% , to PWC's total opex forecast of $\$415.3$ million ($\$2023-24$). This equates to base opex decreasing by an average 0.2% each year. We have included a rate of change in our alternative estimate that decreases base opex by an average 0.1% each year in our draft decision.

We compare PWC's and our alternative estimate forecasts in Table 6.5, and the reasons for the differences are set out below.

Table 6.5 Forecast annual rate of change in opex, %

	2022– 23	2023– 24	2024– 25	2025– 26	2026– 27	2027– 28	2028– 29
PWC's proposal							
Price growth	-2.2	-0.1	1.0	0.9	0.4	0.3	0.4
Output growth	0.4	0.5	-0.9	0.4	0.4	0.4	0.4
Productivity growth	0.5	0.5	0.5	0.5	0.5	0.5	0.5

⁴⁶ AER, *Expenditure forecast assessment guideline – distribution*, August 2022, pp. 24–25.

⁴⁷ PWC, *Attachment 9.01 Operating Expenditure*, 31 January 2023, p. 15.

⁴⁸ PWC, *Attachment 9.01 Operating Expenditure*, 31 January 2023, p. 14; *Attachment 9.03 2024-29 SCS Opex Model*, 31 January 2023

⁴⁹ PWC, *Attachment 9.01 Operating Expenditure*, 31 January 2023, p. 16.

	2022– 23	2023– 24	2024– 25	2025– 26	2026– 27	2027– 28	2028– 29
Rate of change	-2.2	-0.2	-0.4	0.8	0.3	0.1	0.3
AER alternative estimate							
Price growth	-2.1	0.2	0.7	0.8	0.5	0.5	0.6
Output growth	0.4	0.4	-0.9	0.4	0.4	0.4	0.4
Productivity growth	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Rate of change	-2.1	0.1	-0.6	0.7	0.4	0.3	0.4
Difference	-0.1	-0.3	0.3	0.1	-0.1	-0.2	-0.1

Source: PWC, *Attachment 9.01 Operating expenditure*, p. 14; AER analysis.

Note: Numbers may not add up to totals due to rounding. Amounts of '0.0' and '-0.0' represent small non-zero values and '-' represents zero.

6.4.3.1 Forecast price growth

PWC proposed an average annual price growth of 0.1% from the base year, which decreased its total opex forecast by \$0.7 million (\$2023–24).⁵⁰ We have used real average annual price growth of 0.2% in our alternative estimate of total opex. This increases our total opex alternative estimate by \$0.4 million (\$2023–24).

Both we and PWC forecast price growth as a weighted average of forecast labour price growth and non-labour price growth by:

- Applying a forecast non-labour real price growth rate of zero.
- Applying the same weights to account for the proportion of opex that is labour and non-labour, 59.2% and 40.8%, respectively.

The key difference between our real price growth forecasts and PWC's is that we have used our standard approach of an average of two WPI growth forecasts for the utilities industry in the Northern Territory. We have used forecasts from PWC's consultant, BIS Oxford Economics, and from our consultant KPMG.⁵¹ In contrast, PWC used one forecast only, from its consultant BIS Oxford Economics, in the absence of recent AER sourced Northern Territory WPI forecast.⁵²

Table 6.6 compares our forecast labour price growth with PWC's proposal.

⁵⁰ The \$0.7 million (\$2023–24) decrease in the total opex forecast was driven by -2.2% annual price growth in 2022-23.

⁵¹ KPMG, *Wage Price Index Forecasts, Report 3, Australian Energy Regulator*, 28 July 2023.

⁵² PWC, Response to AER information request, *PWCIR#008 – Base, Trend, Step changes*, 6 April 2023, pp. 12–13.

Table 6.6 Forecast labour price growth, %

	2022– 23	2023– 24	2024– 25	2025– 26	2026– 27	2027– 28	2028– 29
PWC's proposal							
AER consultant	-	-	-	-	-	-	-
BIS Oxford Economics	-4.2	-0.7	1.2	1.0	0.7	0.4	0.7
Superannuation guarantee increases	0.5	0.5	0.5	0.5	-	-	-
Forecast labour price growth	-3.7	-0.2	1.7	1.5	0.7	0.4	0.7
AER's alternative estimate							
KPMG	-3.8	0.3	0.3	0.8	1.1	1.2	1.2
BIS Oxford Economics	-4.2	-0.7	1.2	1.0	0.7	0.4	0.7
Average	-4.0	-0.2	0.8	0.9	0.9	0.8	1.0
Superannuation guarantee increases	0.5	0.5	0.5	0.5	-	-	-
Average, including superannuation guarantee increases	-3.5	0.3	1.3	1.4	0.9	0.8	1.0
Overall difference	0.2	0.5	-0.4	-0.1	0.2	0.4	0.2

Source: BIS Oxford, PWC, *Attachment 2.02 Labour Escalation Forecast to 2028-29*, November 2022; KPMG, *Wage Price Index Forecasts, Report 3, Australian Energy Regulator*, 28 July 2023; AER analysis.

Note: Numbers may not add up to totals due to rounding. Values of '0.0' and '-0.0' represent small non-zero amounts and '-' represents zero.

We will receive updated labour price growth forecasts for the purpose of our final decision, and will update our price growth forecasts in the final decision to reflect this update.

6.4.3.2 Forecast output growth

PWC proposed average annual output growth of 0.2% from the base year, which increased its proposed opex forecast by \$2.8 million (\$2023–24). We have also forecast average annual output growth of 0.2%. This increases our alternative estimate of total opex by \$2.6 million (\$2023–24). The \$0.2 million (\$2023–24) difference between forecast output growth values arises from the application of 0.2% per annum to different base amounts, \$72.3 million (\$2023–24) in our alternative estimate versus PWC's proposal of \$73.3 million (\$2023–24).

We and PWC have forecast output growth by:

- Forecasting the growth rates for three outputs (customer numbers, circuit line length, and ratcheted maximum demand).

- Calculating four weighted average overall output growth rates using the output weights from the 4 econometric opex cost function benchmarking models in the AER's Annual Benchmarking Report for distribution. PWC applied weights from the *2021 Annual Benchmarking Report*, while we used updated weights from the more recent *2022 Annual Benchmarking Report*.
- Averaging the 4-model specific weighted overall output growth rates.

We discuss these below.

6.4.3.2.1 Forecast growth of the individual output measures

We are satisfied that PWC's forecast of the growth in customer numbers, circuit length and ratcheted maximum demand are realistic. Specifically:

- **Customer numbers:** PWC proposed customer numbers based on forecasts by its consultant Energeia,⁵³ which we have reviewed and validated. Its forecast average annual growth rate of 0.3% is largely consistent with its historical growth rate.
- **Circuit length:** PWC forecast circuit length growth using an approach consistent with that adopted by the AER in its final decision for PWC for the 2019–24 regulatory control period.⁵⁴ Its forecast average annual growth rate of 0.3% is below its historical growth rate.
- **Ratcheted maximum demand:** PWC forecast ratcheted maximum demand based on its historic peak demand. The Australian Energy Market Operator (AEMO) is not forecasting demand to surpass its historic peaks in the 2024–29 regulatory control period, supporting PWC's approach of there being no growth in ratcheted maximum demand. We discuss our maximum demand forecasts further in Attachment 5 - Capex.

Table 6.7 Forecast growth in individual output measures, %

	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
PWC's proposal and AER alternative estimate							
Customer numbers	0.8	0.7	-1.8	0.7	0.7	0.7	0.7
Circuit length	0.4	0.7	0.3	0.2	0.3	0.2	0.2
Ratcheted maximum demand	-	-	-	-	-	-	-

Source: PWC, *Attachment 9.01 Operating expenditure*, 31 January 2023, p. 15; AER analysis.

Note: Numbers may not add up to totals due to rounding. Values of '0.0' and '-0.0' represent small non-zero amounts and '-' represents zero.

6.4.3.2.2 Output weights

The output weights that we have used in our alternative estimate are set out in Table 6.8. These are different to those proposed by PWC because, as noted above, we have used our

⁵³ PWC, *Attachment 11.06 Energeia Energy Forecast Report*, 31 Jan 23, p. 20.

⁵⁴ PWC, *Attachment 0.07 2024–29 Proposal Table and Charts Models*, 31 January 2023.

most recent *2022 Annual Benchmarking Report* for distribution and PWC used weights from the earlier *2021 Annual Benchmarking Report*.

Table 6.8 Output weights, %

	Cobb-Douglas SFA	Cobb Douglas LSE	Translog LSE	Translog SFA	AER alternative estimate average	PWC's Estimate average
Customer numbers	43.1	60.9	45.1	47.6	49.2	49.5
Circuit length	10.8	15.7	17.2	8.4	13.0	14.4
Ratcheted maximum demand	46.1	23.4	37.6	43.9	37.8	36.2

Source: AER, *Annual Benchmarking Report Electricity distribution network service providers*, November 2022, AER analysis.

Note: Amounts of '0.0' and '-0.0' represent small non-zero values and '-' represents zero.

We will publish our *2023 Annual Benchmarking Report* for distribution in late November 2023. In our final decision, we will update our output growth rate forecasts to reflect the output weights in the *2023 Annual Benchmarking Report*. Full details of our approach to forecasting output growth are set out in our opex model, which is available on our website.

6.4.3.3 Forecast productivity growth

PWC proposed average productivity growth of 0.5% per year. We have forecast the same average productivity growth of 0.5% per year, which reflects our standard approach. This decreases our alternative opex estimate by \$8.9 million (\$2023–24) over the regulatory control period, which is slightly different to the decrease proposed by the PWC of \$9.1 million. This is because in our alternative estimate we are applying productivity growth to slightly lower opex in the base year.

6.4.4 Step changes

In developing our alternative estimate for the draft decision, we include prudent and efficient step changes for cost drivers such as new regulatory obligations or efficient capex / opex trade-offs. As we explain in the Guideline for electricity, we will generally include a step change if the efficient base opex and the rate of change in opex of an efficient service provider does not already include the proposed cost for such items, and they are required to meet the opex criteria.⁵⁵

PWC's proposal included 6 step changes totalling \$52.2 million (\$2023–24), or 12.6% of its proposed total opex forecast.⁵⁶ These are shown in Table 6.9 along with our alternative estimate for the draft decision, which is to include step changes totalling \$5.5 million (\$2023–24), being \$46.7 million (\$2023–24) lower than PWC's proposal. Our lower alternative estimate is due to not including the regulatory obligation, insurance costs, cloud migration,

⁵⁵ AER, *Expenditure forecast assessment guideline for electricity – distribution*, August 2022, p. 26.

⁵⁶ PWC, *Attachment 9.02 Opex step changes*, 31 January 2023.

and operational technology capability uplift step changes, and only part of the future network step change in our alternative forecast as we either do not consider the costs associated with these step changes are prudent or efficient, or we do not have sufficient information available at present to determine prudence and efficiency. We discuss this in detail below, including the information that we consider PWC should provide in its revised proposal in order to better substantiate those step changes where we do not consider sufficient information is available.

Table 6.9 PWC’s proposed step changes and the AER’s alternative estimate for the draft decision (\$million, 2023–24)

Step change	PWC’s proposal	AER’s alternative estimate	Difference
Cyber security	4.4	4.4	–
Regulatory obligations	6.0	–	–6.0
Insurance costs	4.9	–	–4.9
Cloud migration	4.0	–	–4.0
Operational technology capability uplift	18.8	–	–18.8
Future network	14.1	1.1	–13.1
Total step changes	52.2	5.5	–46.7

Source: PWC, *Attachment 9.02 Opex step changes*, 31 January 2023; AER analysis.

Note: Numbers may not add up to totals due to rounding. Values of '0.0' and '-0.0' represent small non-zero amounts and '-' represents zero.

Jacana Energy noted in its submission that the step changes, particularly related to the Future Networks costs, will be vital to achieve the NT’s renewable generation targets and to deliver cheaper, cleaner and secure electricity.⁵⁷ Similarly, Territory Generation supported part of the Future Networks step change (the dynamic operating environment component).⁵⁸ However, Jacana Energy expressed concerned that:

- PWC has not engaged with its customers or industry on the step changes, particularly given their technical nature, size, and that some relate to regulatory obligations that PWC has been aware of for some time. It considered stakeholders had not been given the opportunity to identify concerns, particularly related to affordability.

⁵⁷ Jacana Energy, *Submission 2024-29 Electricity Determination Power and Water Corporation*, May 2023, p. 7.

⁵⁸ Territory Generation, *Submission 2024-29 Electricity Determination Power and Water Corporation*, May 2023, pp. 2–3.

- PWC has not demonstrated the merits of the step changes, particularly those related to new regulatory obligations, and why associated costs cannot be funded from PWC's current opex.⁵⁹

Similarly, CCP27 stated that it has not observed PWC undertake any in-depth stakeholder engagement on the 6 step changes, highlighting that these were not part of the early engagement PWC undertook on its Draft Plan. CCP27 noted that it expects PWC to engage fully on the step change drivers and costs to inform its revised proposal.⁶⁰

While noting the early engagement PWC undertook on its Draft Plan, we agree with Jacana Energy's and CCP27's concerns regarding the lack of stakeholder engagement on the 6 step changes that were subsequently included in PWC's proposal. We raised this issue with PWC during our discussions on its proposal, and PWC indicated it will undertake engagement with customers on its step changes in developing its revised proposal.⁶¹ As part of our assessment for the final decision, we will consider the engagement process PWC undertakes on its step changes, the stakeholder views expressed, and how PWC responds to these views in developing its revised proposal. The AER is particularly keen to understand how PWC considers and balances stakeholder views on cost and affordability against the expected benefits of the step changes.

We also note Jacana Energy's concern that PWC has not demonstrated the merits of the step changes, or why the proposed costs cannot be funded from PWC's current opex. Our assessment of each step change, as outlined below, has considered these issues as part of our prudence and efficiency tests. We have considered the information PWC has provided to justify the need for (or prudence of) any proposed additional costs, and the efficiency of these costs, including by verifying that the costs are not already in PWC's base year opex. Where we have determined we do not have sufficient information to test the prudence and efficiency of any proposed incremental costs, we have outlined what additional information we are seeking from PWC in its revised proposal to enable us to undertake these assessments.

6.4.4.1 Cyber security step change

PWC proposed a step change of \$4.4 million (\$2023–24), with an associated \$11.5 million (\$2023–24) in capex, for cyber security and critical infrastructure concerns over the 2024–29 regulatory control period. This relates to uplifting its cyber security maturity to achieve Security Profile 2 (SP–2) as defined in the Australian Energy Sector Cyber Security Framework (AESCSF). This will allow PWC to comply with the *Security of Critical Infrastructure Act 2018* (Cwth), including the *Security Legislation Amendment Critical Infrastructure Act 2021*⁶² and the *Security Legislation Amendment (Critical Infrastructure*

⁵⁹ Jacana Energy, *Submission 2024-29 Electricity Determination Power and Water Corporation*, May 2023, pp. 7–8.

⁶⁰ CCP27, *Advice to the AER Power and Water Corporation Electricity Distribution Revenue Proposal (2024–29)*, 10 May 2023, p. 18.

⁶¹ PWC, Response to AER information request, *IR011 Follow up questions from NT On-site*, 10 May 2023, Q.11.14, p. 11.

⁶² Australian Government, *Security Legislation Amendment (Critical Infrastructure) Act 2021*, December 2021.

Protection) Act 2022.⁶³ We have included a placeholder amount of \$4.4 million (\$2023–24) for the cyber security step change in our alternative estimate of total forecast opex for the draft decision. This amount is consistent with the cost proposed by PWC.⁶⁴

We have included a placeholder amount as this step change is subject to further assessment pending PWC providing additional information in its revised proposal. While we are satisfied that PWC has demonstrated that the proposed step change is prudent, it has not provided sufficient information to demonstrate the efficiency of the proposed costs. However, due to the unique circumstances surrounding the *Security of Critical Infrastructure Act*, we have been limited in the engagement we could undertake with PWC. We therefore consider it appropriate to provide PWC an extended opportunity to provide this information. In its revised proposal, we expect PWC to provide information that satisfactorily demonstrates that the proposed step change is both prudent and efficient. This approach is consistent with our position on the associated cyber security capex in Attachment 5 - Capex.

Table 6.10 PWC’s cyber security step change (\$million, 2023–24)

	2024–25	2025–26	2026–27	2027–28	2028–29	Total
PWC’s proposal	0.7	0.9	0.9	0.9	0.9	4.4
AER alternative estimate	0.7	0.9	0.9	0.9	0.9	4.4
Difference	–	–	–	–	–	–

Source: PWC, *Attachment 9.02 Opex Step Changes*, 31 January 2023, p. v; AER analysis.

Note: Numbers may not add up to totals due to rounding. Values of '0.0' and '-0.0' represent small non-zero amounts and '-' represents zero.

The AESCSF provides guidance to the energy sector to uplift cyber security maturity and increase the sector’s cyber resilience. It further provides for a self-assessment framework for measuring cyber security maturity levels against eleven domains. These domains represent groupings of cyber security practices that cover a broad range of areas such as risk management, event and incident response and external party practices such as supply chain and external dependencies management.⁶⁵

To develop this step change, PWC engaged Ernst & Young to complete a review against the AESCSF, and other cyber security standards.⁶⁶ PWC considered that the combination of the threat landscape and the obligations under the amended SoCI Act and its associated Bills, mean that PWC's current cyber security maturity level is below the prudent required level.⁶⁷ Therefore, PWC assessed five options to determine the approach to bridge the maturity gap

⁶³ Australian Government, *Security Legislation Amendment (Critical Infrastructure Protection) Act 2022*, April 2022.

⁶⁴ PWC, *Attachment 9.02 Opex Step Changes*, 31 January 2023, p. v.

⁶⁵ AEMO, *Australia Energy Sector Cyber Security Framework quick reference guide*, AEMO website, accessed 26 May 2021.

⁶⁶ PWC, *Attachment 8.72, ICT Cyber Security Baseline*, 31 January 2023, p. 3.

⁶⁷ PWC, *Attachment 8.72, ICT Cyber Security Baseline*, 31 January 2023, p. 2.

and uplift its cyber security maturity, including two options it considered non-credible, and three credible options to uplift to SP–2 maturity.⁶⁸

In terms of the three options to uplift to SP–2 maturity, PWC considered Option 1 (Blended resourcing model) as its preferred strategy to uplift to SP–2 maturity.⁶⁹ This option would provide PWC with the flexibility to utilise a mix of internal and external resources.

We consider it prudent for PWC, as a DNSP, to uplift its cyber security and achieve SP–2 maturity. Our assessment considered information received through PWC’s proposal, an information request, and an onsite workshop. In this information, PWC also provided details on its self-assessment, including the report by Ernst & Young.⁷⁰

We are satisfied that the information provided satisfactorily demonstrated that a level of investment is prudent to achieve SP–2 maturity. However, we are not satisfied that sufficient information was provided to demonstrate that the proposed costs are efficient. Specifically, PWC did not demonstrate how the proposed projects and forecast costs directly relate to bridging the identified maturity gaps, or how the forecast costs were estimated, including what inputs and input costs were used.

For the reasons outlined above, and consistent with our position on the associated capex in Attachment 5, we have included a placeholder amount of \$4.4 million (\$2023–24) for the cyber security step change in our alternative estimate for the draft decision. However, we seek additional and clarifying information from PWC in its revised proposal to establish the efficiency of the proposed costs including:

- a description of the proposed actions to address the maturity / capability gaps identified between its current level of cyber maturity and the level required to achieve SP–2 maturity across each of the eleven domains under the AESCSF framework
- linking / mapping of each of the above proposed actions to the respective individual costs required to undertake the actions
- details of the costs related to each proposed action, including the basis for these costs (e.g. relevant inputs, calculations, assumptions and sources) and how they were estimated, such as the number of labour-days or license fee.
- information which demonstrates the efficiency of cost inputs, e.g. through market testing or other independent expert reports.

6.4.4.2 Regulatory obligations step change

PWC proposed a step change of \$6.0 million (\$2023–24) to comply with a range of existing and new regulatory obligations over the 2024–29 regulatory control period.⁷¹ Our alternative estimate for the draft decision does not include PWC’s forecast amount for the regulatory

⁶⁸ PWC, *Attachment 8.72, ICT Cyber Security Baseline*, 31 January 2023, pp. 12–18.

⁶⁹ PWC, *Attachment 8.72, ICT Cyber Security Baseline*, 31 January 2023, p. 19.

⁷⁰ PWC, *Response to AER information request, IR#007 Cyber Security Step Change – Confidential*, 6 April 2023.

⁷¹ PWC, *Attachment 9.02 Opex step changes*, 31 January 2023, pp. 6–13.

obligation step change, which as a result is \$6.0 million (\$2023–24) lower than PWC’s proposal.

We have not included this step change in our draft decision as we do not consider that the proposed expenditure is likely to be prudent and efficient, and we do not have sufficient information to determine an alternative estimate. We are seeking additional information from PWC in its revised proposal on this step change.

Table 6.11 PWC’s regulatory obligations step change (\$million, 2023–24)

	2024–25	2025–26	2026–27	2027–28	2028–29	Total
PWC’s proposal	1.1	1.4	1.1	1.3	1.0	6.0
AER alternative estimate	–	–	–	–	–	–
Difference	–1.1	–1.4	–1.1	–1.3	–1.0	–6.0

Source: PWC, *Attachment 9.02 Opex Step Changes*, 31 January 2023; AER analysis.

Note: Numbers may not add up to totals due to rounding. Values of '0.0' and '-0.0' represent small non-zero amounts and '-' represents zero.

In its proposal, PWC stated the drivers of this step change included the need to build new systems and capabilities to improve compliance with existing regulatory obligations under the NT NER and NT-specific frameworks, as well as to understand and prepare for new regulatory obligations which will apply in the next regulatory control period. It noted this included the need to begin to undertake Regulatory Investment Tests for transmission / distribution (RIT-T / Ds).⁷² Each component of the \$6.0 million (\$2023–24) regulatory obligation step change is summarised in Table 6.12.

Table 6.12 Opex components of the regulatory obligation step change

Component	Activities and associated costs over the 2024-29 regulatory control period
NT NER regulatory engagement and management \$2.4 million (\$2023–24)	2 full time equivalent (FTE) staff to review changes to the NT NER, lead engagement with key stakeholders, continue to monitor ongoing compliance including ring-fencing obligations and uplift capability across the business.
Maintaining Network Technical Code (NTC) \$1.9 million (\$2023–24)	1 FTE to maintain the NTC and update it for changes arising from NT Government policy and changes to the NER, plus \$0.5 million (\$2023–24) in professional consulting fees to conduct two reviews of NTC.
Management and coordination of consultation and regulatory investment tests \$1.6 million (\$2023–24)	1 FTE to develop new capabilities to comply with its RIT-T / Ds requirements including stakeholder engagement, market benefits tests and procurement of non-network solutions, plus \$0.3 million in professional consulting fees to develop systems and processes that draw from good practice in other jurisdictions and build internal capabilities.

⁷² PWC *Attachment 9.02 Opex step changes*, 31 January 2023, p. 6.

Source: PWC, *Response to information request, Response to AER information request, IR011 Follow up questions from NT On-site*, 3 May 2023, Q.1.5 Step changes Model.

On the 'NT NER Regulatory engagement and management' and 'Maintaining network technical code' components of the step change, PWC stated that it requires the 3 additional FTEs and \$0.5 million (\$2023–24) for professional support services to allow it to begin to update the NT Technical Code (NTC) to reflect updates to the NT NER while also starting to engage with the NT NER rule change process.⁷³

PWC noted that when transitioning to the NER in 2019, the NT Government indicated it would adopt relevant provisions of the NT NER Chapter 5 and 5A as the NT's binding technical standards replacing the NTC. This meant that while PWC would need to begin engaging with NT NER rule change processes in the current regulatory control period, it would no longer need to also maintain the NTC (i.e. update it for NT NER rule changes). PWC stated that as the NT government has not yet adopted the relevant Chapter 5 and 5A provisions, and is unlikely to do so in the next regulatory control period, it requires additional resources to manage its NT NER obligations while continuing to maintain the NTC over the next regulatory control period. PWC also noted that due to resourcing constraints, it has not been able to engage with NT NER rule change processes over the current regulatory control period, or update the NTC for these rule changes, resulting in a backlog of NTC updates. PWC stated that the additional resourcing will allow it to address the backlog of updates to the NTC.⁷⁴

PWC noted that as there is only a 'minimal level of regulatory compliance expenditure' in its base year, and its trend growth is negative, the rate of change applied to its base year will not be sufficient to fund these additional regulatory compliance activities in the next regulatory control period.⁷⁵

To allow us to assess the prudence of this additional resourcing, we sought information on what regulatory compliance activities PWC has undertaken over the current regulatory control period and the associated expenditures incurred. PWC advised that it does not separately capture regulatory compliance expenditure,⁷⁶ but that it currently has 4 FTEs dedicated to regulatory functions, and that additional FTEs and consulting advice have been added over the current period to work on its 2024–29 revenue proposal.⁷⁷ PWC noted that some of the associated costs, which are non-recurrent, were incurred in its 2021–22 base year.⁷⁸

⁷³ PWC, *Response to AER information request, IR011 Follow up questions from NT On-site*, 3 May 2023, Q1.5 Step changes Model.

⁷⁴ PWC, *Response to AER information request, IR011 Follow up questions from NT On-site*, 3 May 2023, Q1 Regulatory Step Change, pp. 1–9.

⁷⁵ PWC, *Attachment 9.02, Opex step changes*, 31 January 2023, p. 12.

⁷⁶ PWC, *Response to AER information request, IR011 Follow up questions from NT On-site*, 6 April 2023, Q14 Regulatory Step Change, p. 18.

⁷⁷ PWC, *Response to AER information request, IR011 Follow up questions from NT On-site*, 3 May 2023, Q1 Regulatory Step Change, p. 4.

⁷⁸ PWC, *Response to information request, IR011 Follow up questions from NT On-site*, 3 May 2023, Q1 Regulatory Step Change, p. 4.

We agree that as long as PWC continues to be subject to the dual requirements of engaging with NT NER rule changes, while also maintaining the NTC, some additional level of resourcing is likely to be prudent. However, we do not agree that the proposed level of additional resourcing (3 additional FTEs and \$0.5 million (\$2023–24) for professional support services) is likely to be necessary or efficient.

PWC's maintenance of the NTC has been a long-standing and ongoing regulatory obligation, and as such, activities associated with managing and updating the NTC are likely already funded at some level through PWC's existing opex and included in its base opex. Consequently, we have not included the proposed additional funding of one FTE and \$0.5 million (\$2023–24) for professional support services in our alternative forecast for this step change.

PWC's reported opex, including its base year, also likely includes costs for a range of regulatory engagement and management activities through its participation in regulatory processes, reviews and resets, including preparation of this proposal. As a result, we believe PWC's NT NER regulatory engagement and management requirements are likely already funded to some level through its existing opex and base opex. However, given that the assumed adoption of Chapter 5 and 5A provisions in the current regulatory control period has not occurred, we believe the ongoing dual requirement to engage on and manage NT NER and NTC obligations does impose an additional and unexpected regulatory burden on PWC. Based on the information we currently have, we assess the likely efficient level of incremental resourcing required to manage these dual obligations to be one additional FTE.

On the 'Management and coordination of consultation and regulatory investment tests' component of the step change, PWC stated it required one additional FTE and \$0.3 million (\$2023–24) in professional support services to begin to undertake RIT-T/Ds in the next regulatory control period.⁷⁹ PWC stated that since the NT NER RIT-T/D requirements came into effect in 2020, it was effectively exempted from having to complete RIT-T/Ds in the current regulatory control period.⁸⁰ PWC noted that as it has not undertaken any RIT T/Ds in the current regulatory control period, these costs are not included in its 2021–22 base year opex. As a result, it is seeking additional resourcing to enable it to begin undertaking this function in the next regulatory control period.⁸¹

We recognise that PWC will need to begin undertaking RIT-T/Ds in the next regulatory control period. We note that while the AER provided PWC with additional resources in its previous revenue determination to meet certain new regulatory obligations under the NT NER, including the undertaking of RIT-T/Ds, as PWC did not undertake any RIT T/Ds in the current period its base year opex does not include expenditure for these additional activities. However, given the limited information available on the type and quantity of compliance costs in PWC's reported opex and its base year, and the likely resourcing burden from this new

⁷⁹ PWC, Response to AER information request, PWC, *IR011 Follow up questions from NT On-site*, 3 May 2023, Q1.5 Step changes Model.

⁸⁰ PWC, *Attachment 9.02, Opex step changes*, 31 January 2023, p. 11, notes 'Clause 11A.1(5) of the NT NER excludes projects reviewed by AER in making its regulatory determination for the current period and projects where an equivalent regulatory investment test was undertaken before 1 July 2019.'

⁸¹ PWC, *Response to AER information request, IR011 Follow up questions from NT On-site*, 6 April 2023, Regulatory Step Change, Q.11, p. 16.

regulatory requirement (i.e. the expected number of RIT T/Ds PWC will likely undertake next regulatory control period), we are unable to determine the need for and efficient level of additional funding.

Given the above, while we agree that some additional level of regulatory compliance resourcing is likely prudent in the next regulatory control period, we have not included an alternative estimate for this step change and seek further information from PWC in its revised proposal. On prudence, as the need for additional resourcing to manage both its NT NER and NTC obligations depends on the NT Government not adopting Ch 5 and 5A provisions during the 2024–29 regulatory control period, we seek confirmation from PWC in its revised proposal that it will continue to face these obligations in the next regulatory control period (i.e. that is, that the NT Government does not intend to adopt adoption of Ch 5 and 5A provisions). In addition, we seek an estimate of the number of RIT T/Ds PWC will likely undertake next regulatory control period.

We also seek further information from PWC on its current level of regulatory compliance resourcing (i.e. an organisational structure with position descriptions, including details of staff responsibilities), and a description of the regulatory compliance activities and costs included in its reported opex for this regulatory control period, including its base year. This information will allow us to confirm what level of incremental resourcing is needed to allow PWC to meet its regulatory obligations, while also ensuring that these costs are not already accounted for in PWC’s base year or through PWC’s forecast output growth rate.

6.4.4.3 Insurance premiums step change

PWC proposed a step change of \$4.9 million (\$2023–24) for insurance costs over the 2024–29 regulatory control period.⁸² This relates to expected increases in insurance premiums. Our alternative estimate for the draft decision does not include a forecast for insurance premium increases, and as a result is \$4.9 million (\$2023–24) lower than PWC’s proposal.

We have not included this step change in our alternative estimate as we do have sufficient information to assess whether the forecast expenditure is prudent and efficient. We seek additional information, as set out below, from PWC in its revised proposal.

Table 6.13 PWC’s insurance premiums step change (\$million, 2023–24)

	2024–25	2025–26	2026–27	2027–28	2028–29	Total
PWC’s proposal	0.7	0.8	1.0	1.1	1.3	4.9
AER alternative	–	–	–	–	–	–
Difference	0.7	0.8	1.0	1.1	1.3	4.9

Source: PWC, *Attachment 9.02 Opex Step Changes*, 31 January 2023; AER analysis.

Note: Numbers may not add up to totals due to rounding. Values of '0.0' and '-0.0' represent small non-zero amounts and '-' represents zero.

PWC’s step change forecast was based on the increase in its insurance renewal costs between 2021–22 and 2022–23, escalated to the next regulatory control period using

⁸² PWC, *Attachment 9.02 Opex Step Changes*, 31 January 2023, p.14.

forecast changes in insurance premiums used by Victorian DNSPs in their 2021–26 revenue proposals (which the AER agreed with at that time).⁸³ PWC did not provide supporting evidence on why it considered its insurance costs would likely increase over the 2024–29 regulatory control period at a similar rate to forecasts made for Victorian DNSPs over the 2021–26 regulatory control period.

Consistent with our standard approach for assessing this type of step change, we requested that PWC provide an independent forecast (e.g. an insurance broker’s quote or a consultant’s report) of the expected changes in its insurance premiums out to the end of the next regulatory control period. PWC notified us that this could not be provided in time for the draft decision,⁸⁴ but advised that it will provide an updated forecast for this step change with the requested supporting documentation in its revised proposal.⁸⁵

We have not included this step change of \$4.9 million (\$2023–24) in alternative forecast for the draft decision, and we are seeking the above additional information from PWC to substantiate this step change in its revised proposal.

6.4.4.4 Cloud migration step change

PWC proposed a step change of \$4.0 million (\$2023–24) for cloud migration over the 2024–29 regulatory control period.⁸⁶ This relates to shifting various Information Technology (IT) systems that are at ‘end of life’ or no longer supported by vendors to the cloud. Our alternative estimate for the draft decision does not include a forecast for the cloud migration, which means it is \$4.0 million (\$2023–24) lower than PWC’s proposal.

We consider it prudent for PWC to maintain vendor supported software solutions for any necessary IT capabilities, and agree that a step change of some amount may be required to fund the migration of the identified IT capabilities to the cloud. However, we have not included this step change in our alternative estimate as we consider the proposed cloud solutions have not been satisfactorily demonstrated to be prudent and efficient. We seek further information from PWC in its revised proposal to inform our assessment of these costs for the final decision.

Table 6.14 PWC’s cloud migration step change (\$million, 2023–24)

	2024–25	2025–26	2026–27	2027–28	2028–29	Total
PWC’s proposal	0.8	0.8	0.8	0.8	0.8	4.0
AER alternative estimate	–	–	–	–	–	–
Difference	0.8	0.8	0.8	0.8	0.8	4.0

⁸³ PWC, *Attachment 9.02 Opex Step Changes*, 31 January 2023, pp.14–15.

⁸⁴ PWC, Response to AER information request, *PWC - AER Information request IR016 - DMIA/DMIS and Movement in provisions; Insurance step change; Regulatory Obligation step change; Essential System Services*, 21 June 2023, Q.3, p. 3.

⁸⁵ PWC, Response to AER information request, *PWC - AER Information request IR016 - DMIA/DMIS and Movement in provisions; Insurance step change; Regulatory Obligation step change; Essential System Services*, 21 June 2023, Q.4, p. 4.

⁸⁶ PWC, *Attachment 9.02 Opex Step Changes*, 31 January 2023, p.18.

Source: PWC, *Attachment 9.02 Opex Step Changes*, 31 January 2023; AER analysis.

Note: Numbers may not add up to totals due to rounding. Values of '0.0' and '-0.0' represent small non-zero amounts and '-' represents zero.

PWC proposed shifting IT systems that it had identified as being at of 'end of life' or no longer supported by vendors to the cloud.⁸⁷ In response to information requests, PWC provided additional information on the types of IT capabilities it proposed to establish on the cloud, and the associated costs for each of these capabilities.⁸⁸

In recent decisions for other networks, we have included, in our alternative estimate, step changes to replace critical IT applications that are reaching end-of-life or needing upgrades with cloud-based services where there is an efficient capex-opex trade-off.⁸⁹ In these instances, robust analysis was provided to demonstrate clearly that the proposed option was needed, and was the most efficient solution with increased opex being offset by capex savings.

The majority of the expenditures in this step change related to the replacement of its existing revenue management system (RMS) with a 'Meter to Cash' project.⁹⁰ PWC stated that this 17-year-old legacy RMS system needed to be replaced as it had reached the end of its technical life, and the available solutions for replacement systems were all cloud-based.⁹¹ We consider that PWC has not provided sufficient supporting information and documentation to enable us to reasonably establish the prudence and efficiency of the proposed cloud migration step change. In particular, while PWC outlined the replacement of its RMS, we do not have a clear understanding of which other IT systems, or components of systems, PWC believes are at 'end of life' or the appropriate documentation to establish the basis for these determinations. We also do not have sufficient information to assess the efficiency of the proposed cloud-related costs.

To enable us to assess this step change for the final decision, we seek in PWC's revised proposal further information that will allow us to be satisfied with the prudence and efficiency of the step change. We would expect this to be in the form of a business case and include:

- a description mapping which current IT systems (or components of current systems) PWC is proposing to replace with the IT capabilities listed in its cloud migration step change
- an explanation of why these existing systems need replacing, including evidence from current system suppliers that the systems are end of life or no longer supported (i.e. vendor road maps or other advice, including forecast timeframes)
- evidence of the options PWC considered to replace these systems, including costings of options, net present value and benefit-cost analysis that clearly demonstrated the

⁸⁷ PWC, *Attachment 9.02 Opex step changes*, 31 January 2023, p. 19.

⁸⁸ PWC, *Response to AER information request, PWC, IR011 Follow up questions from NT On-site*, 3 May 2023, Q. 1.5 Step changes Model.

⁸⁹ For example, AER, *Final Decision, AusNet Services Distribution Determination 2021–26, Attachment 6 Operating expenditure*, April 2021, pp. 49–51; AER, *Final Decision, Powercor Distribution Determination 2021–26, Attachment 6 Operating expenditure*, April 2021, pp. 35–36.

⁹⁰ PWC, *Response to AER information request, IR018 Cloud Migration step change*, 30 June 2023, p. 3.

⁹¹ PWC, *Response to AER information request, IR018 Cloud Migration step change*, 30 June 2023, pp.3–4.

preferred option is efficient. This analysis should also clearly set out the capital expenditure that will be avoided as a result of the investment in the cloud solutions

- details of how PWC developed the cost estimates for each component of the proposed step change, including whether based on a competitive tendering process, other external advice or internal estimates.

On this basis, we have not included PWC’s proposed cloud migration step change of \$4.0 million (\$2023–24) in our alternative estimate for the draft decision.

6.4.4.5 Operational technology capability uplift

PWC proposed a step change of \$18.8 million (\$2023–24), with an associated \$21.6 million (\$2023–24) in capex, for operational technology capability uplift over the 2024–29 regulatory control period.⁹² This relates to implementing a range of IT-related systems to improve its network operations capabilities. Our alternative estimate for the draft decision does not include the forecast amount, which as a result is \$18.8 million (\$2023–24) lower than PWC’s proposal.

We have not included this step change in our alternative estimate, as PWC has indicated it is reevaluating the business case on which this step change is based and will provide updated information in its revised proposal.

Table 6.15 PWC’s OT capability uplift step change (\$million, 2023–24)

	2024–25	2025–26	2026–27	2027–28	2028–29	Total
PWC’s proposal	4.0	4.0	2.8	4.0	4.0	18.8
AER alternative estimate	0.0	0.0	0.0	0.0	0.0	0.0
Difference	–4.0	–4.0	–2.8	–4.0	–4.0	–18.8

Source: PWC, *Attachment 9.02 Opex Step Changes*, 31 January 2023; AER analysis.

Note: Numbers may not add up to totals due to rounding. Values of '0.0' and '-0.0' represent small non-zero amounts and '-' represents zero.

In its proposal, PWC stated that the drivers for the OT capability uplift opex included improving its network operations capabilities, better managing existing levels and growth of consumer energy resources and renewables, and bringing its systems up to industry standards.⁹³ PWC provided a business case in support of the proposed opex and capex, which is part of a longer-term OT capability uplift program PWC commenced in 2019.⁹⁴ The opex in this step change is largely driven by, and contingent on the capex, and we jointly reviewed the proposed expenditures in undertaking our assessment.

In May 2023, PWC notified the AER that it had ‘rescoped’ the OT capability uplift project so that the drivers had changed to become ‘ensuring the safety of PWC people and the community, security and reliability of the power system consistent with its licence obligations,

⁹² PWC, *Attachment 9.02 Opex Step Changes*, 31 January 2023, pp. 20–22.

⁹³ PWC, *Attachment 9.02 Opex Step Changes*, 31 January 2023, p. 20.

⁹⁴ PWC, *Attachment 8.74 – Operating Model (Capability Uplift Project)*, , 31 January 2023.

and supporting regulatory instruments'.⁹⁵ PWC's original business case did not refer to any safety, reliability, or compliance obligation gaps in its performance, or refer to safety, reliability, or compliance obligations as drivers of the proposed OT uplift expenditures. PWC subsequently advised the AER that it will resubmit a revised business case, along with an updated expenditure proposal for the OT capability uplift, as a part of its revised proposal.⁹⁶

On this basis, and consistent with the capex position in Attachment 5, we have not included this step change of \$18.8 million (\$2023-24) in our alternative estimate. In developing its revised business case, we ask PWC to clarify the drivers of, and need for, any OT capability uplift expenditure, the options considered to meet any gaps in current capabilities, and to provide supporting information including a detailed cost estimate for the project.

6.4.4.6 Future network step change

PWC proposed a step change of \$14.1 million (\$2023–24), with an associated \$13.2 million (\$2023–24) in capex, for enablement of CER over the 2024–29 regulatory control period.⁹⁷ This step change relates to the implementation of dynamic operating environments (DOEs) (linked to the proposed capex), improved inverter compliance and additional FTEs to undertake CER-related stakeholder engagement, network planning related to new / emerging technologies and large-scale renewable connections. Our alternative estimate for the draft decision is to include a forecast of \$1.1 million (\$2023–24) for future network related activities, which is \$13.1 million (\$2023–24) lower than PWC's proposal.

We have included the \$1.1 million (\$2023–24) for improved inverter compliance as we consider this activity to be a more prudent and efficient option for enabling higher static export limits than the DOE-related expenditures proposed by PWC. We have not included the other DOE-related components of this step change in our alternative estimate, as these costs are dependent on the proposed DOE-related capex, which (as set out in Attachment 5 - Capex) we are proposing to not accept. We have also not included the non-DOE related components of this step change in our alternative estimate, as we do not have sufficient information to assess their prudence and efficiency. We seek additional information on these components in PWC's revised proposal to allow a fuller assessment.

Table 6.16 PWC's future network step change (\$million, 2023–24)

	2024–25	2025–26	2026–27	2027–28	2028–29	Total
PWC's proposal	2.3	2.0	3.2	3.3	3.4	14.1
AER alternative estimate	0.2	0.2	0.2	0.2	0.2	1.1
Difference	-2.1	-1.8	-2.9	-3.0	-3.2	-13.1

Source: PWC, *Attachment 9.02 Opex Step Changes*, 31 January 2023; AER analysis.

⁹⁵ PWC, *Response to AER information request, IR011 Follow up questions from NT On-site*, 10 May 2023, Question 6, Operational Technology Uplift Project, p. 5.

⁹⁶ PWC, *Response to information request, IR011 Follow up questions from NT On-site*, 28 June 2023, Question 6, Operational Technology Uplift Project Update, p. 2.

⁹⁷ PWC, *Attachment 9.02 Opex Step Changes*, 31 January 2023, pp. 23–27.

Note: Numbers may not add up to totals due to rounding. Values of '0.0' and '-0.0' represent small non-zero amounts and '-' represents zero.

PWC stated the drivers of this step change include the expansion of rooftop solar and new large scale renewable sources it expects to connect to the network as a result of the NT Government’s 50% renewables energy target by 2030.⁹⁸ Each component of the \$14.1 million (\$2023–24) future networks step change is summarised in Table 6.17. Approximately half the opex of this step change (\$6.7 million (\$2023–24)), along with \$13.2 million (\$2023–24) in capex, was proposed to implement DOEs to accommodate a forecast increase in the uptake of roof top solar and address minimum demand events. These expenditures were supported by a business case,⁹⁹ our assessment of which is discussed in detailed in Attachment 5 - Capex. The other half of the opex in this step change was related to 3 components not explicitly related to the DOE option, which were proposed to fund operational activities PWC stated it also needs to facilitate and integrate CER and larger-scale DER.

Table 6.17 Opex components of the future network step change

Component	Activities and associated costs over the 2024-29 regulatory control period
DOE-related opex to manage minimum demand \$6.7 million (\$2023–24)	GridQube to develop a network state estimation capability to understand and dynamically export manage constraints – \$3.3 million (\$2023–24)
	Implementation and integration of the DOEs to support communications with customer inverters – \$2.5 million (\$2023–24)
	Improve PWC’s existing DER register – \$100K p.a. from 2026–27 – \$0.30 million (\$2023–24)
	Improve low voltage inverter compliance through ‘proactive support for installation and compliance processes’ - \$0.2 million (\$2023–24) p.a. from 2026–27 – \$0.6 million (\$2023–24)
Stakeholder engagement and change management \$3.4 million (\$2023–24)	2 FTEs to undertake DER-related ‘stakeholder consultation and business change management work’ related to the development of business and network DER capabilities, plus \$1.0 million (\$2023–24) (\$0.2 million (\$2023–24) p.a.) in professional consulting fees to build PWC’s engagement capacity.
Network planning and system support services \$2.4 million (\$2023–24)	2 FTEs to undertake ‘network flow modelling’ to understand how new and emerging technologies interact with PWC’s energy system, plus \$0.5 million (approx. \$0.1 million (\$2023–24) p.a.) in professional consulting fees to advise on how large batteries, electric vehicles, climate change and government policy will affect network operating conditions.

⁹⁸ PWC, *Attachment 9.02 Opex Step Changes*, 31 January 2023, p. 23.

⁹⁹ PWC, *Attachment 8.61 DER CAPEX Dynamic Operating Envelopes (Hosting Capacity)*, 31 Jan 23.

Component	Activities and associated costs over the 2024-29 regulatory control period
Supporting large scale renewables connections \$1.6 million (\$2023–24)	1 FTE to improve the large-scale connection processes, including by defining a fit-for-purpose connection process to manage the commissioning of higher volumes of variable renewable generators and energy storage, plus \$0.25 million (\$2023–24) in professional consulting fees to build PWC’s connections-related capacity.

Source: PWC, Response to information request, *IR#011 Follow up questions from NT On-site*, 3 May 2023, Qu.1.5 Step changes Model.

DOE-related component of the Future Networks step change

In undertaking our assessment, we jointly reviewed the proposed DOE capex and related opex from this step change.

On the GridQube and implementation and integration costs, these costs are largely dependent on the proposed DOE-related capex, which as noted in Attachment 5, we are proposing to not accept. We assessed the proposed opex with the proposed capex and found that PWC did not undertake a sufficiently thorough analysis of hosting capacity to demonstrate the proposed investment need. PWC did not consider alternative credible investment options, including improvements in inverter compliance in its analysis. For these reasons, we do not accept the majority of the proposed DOE-related CER expenditure, including these components of this step change.

On the DER register costs, we note that PWC already captures the relevant data, and maintains a DER register, and so is already funded for this activity through its base opex. On this basis, we have not included this component of the step change in our alternative forecast and seek additional information in PWC’s revised proposal on why it considers it must incur these additional costs, what activities they will fund, and why they are efficient and not already accounted for by its trend adjusted base year opex.

On the inverter compliance costs, consistent with our capex assessment in Attachment 5 - Capex, we consider that PWC undertaking actions to improve inverter compliance is a more immediate and cost-effective approach to integrating CER than the DOE-related expenditures being proposed. As a result, we have included \$1.1 million (\$2023–24) in our alternative estimate for this step change, which reflects an amount of \$0.2 million (\$2023–24) p.a. from the first year of the next regulatory control period, 2024–25, rather than from 2026–27 as proposed by PWC in its DOE business case.¹⁰⁰

Other components of the Future Network step change

We have also reviewed the three opex components of this step change not explicitly linked to the DOE proposal. Our assessment of each is summarised below.

- On the stakeholder engagement and change leadership costs, we note that PWC already undertakes stakeholder consultation, including on CER-related and large-scale

¹⁰⁰ PWC, Response to information request, *IR#011 Follow up questions from NT On-site*, 3 May 2023, Q.1.5 Step changes Model.

DER issues, and so is already funded at some level for these activities through its base opex. PWC also did not identify what specific additional engagement and management activities this resourcing would enable, or what new obligations or need was driving a step up in CER and DER-related engagement costs in the next regulatory control period relative to its business-as-usual activities.

- On the network planning and system support services costs, PWC has not provided sufficient information on what additional planning capabilities this incremental resourcing would deliver, and why these capabilities will be required in the next regulatory control period. Based on the available information, this component of the step change appears related to undertaking additional network analysis driven by CER growth and large-scale DER. Typically, we consider that this type of network planning is an existing business function that would already be funded for through PWC's current expenditures. To the extent this component of the step change relates to increasing planning costs associated with network expansion, this is typically funded through the output growth factor in the rate of change applied to PWC's base opex.
- On supporting large scale integration of renewables, PWC has not sufficiently described what actions this additional resourcing would fund or the need for an uplift in this type of resourcing. We consider that connections processes, including for CER and large-scale DER, is an existing business function that PWC already undertakes and is funded for at some level through its current expenditures. To the extent the PWC is seeking additional funding to manage the forecast growth in CER and large-scale DER connection applications over the 2024–29 regulatory control period, this is potentially funded through the output growth factor in the rate of change applied to PWC's base opex.

On these bases, we have not included these 3 components in our alternative estimate for this step change.

As noted above, two submissions made comments directly related to this step change. Jacana Energy noted that the Future Network step change will be 'vital to achieving the NT's renewable generation targets and to deliver cheaper, cleaner and secure electricity',¹⁰¹ while Territory Generation supported the DOE component step change.¹⁰² However, Jacana Energy also expressed concern that PWC had not engaged with its customers on any of the step changes, particularly regarding the impacts on affordability, or demonstrated the merits of the proposals or why the associated costs cannot be funded from PWC's current opex.¹⁰³ Similarly, the CCP27 noted the lack of any stakeholder engagement on the step changes generally and stated that it expects PWC to engage fully on the drivers and costs to inform its revised proposal.¹⁰⁴

¹⁰¹ Jacana Energy, *Submission 2024-29 Electricity Determination Power and Water Corporation*, May 2023, p. 7.

¹⁰² Territory Generation, *Submission 2024-29 Electricity Determination Power and Water Corporation*, May 2023, pp. 2–3.

¹⁰³ Jacana Energy, *Submission 2024–29 Electricity Determination Power and Water Corporation*, May 2023, pp. 7–8.

¹⁰⁴ CCP27, *Advice to the AER Power and Water Corporation Electricity Distribution Revenue Proposal (2024-29)*, 10 May 2023, p. 18.

PWC advised the AER that while it undertook some early and high-level stakeholder engagement on a general CER integration strategy (its Future Network Strategy), it did not undertake any specific engagement on this step change.¹⁰⁵ PWC noted it will engage with its customers on this step change to inform its revised proposal. We will consider in our final decision the engagement process PWC undertakes, the stakeholder views expressed and how PWC responds to these views in refining this step change in its revised proposal. This includes how PWC balances views on affordability against the proposed benefits of the step change.

The AER supports prudent and efficient expenditures that improve the integration of small-scale CER and the connection of larger-scale DER. We recognise that the expansion of rooftop solar in the NT, and new large scale renewable sources expected to connect to the network as a result of the NT Government's 50% renewables energy target by 2030, is likely to require some level of additional expenditure over the near term. However, we also agree with submissions noting that this step change proposal does not sufficiently demonstrate the merits of the various components proposed, or why the proposed additional expenditures, which would expand existing business activities (i.e. maintaining a DER register and undertaking stakeholder engagement, network planning and connections), cannot be funded from PWC's current expenditure or the trend escalation applied to PWC's base opex.

On these bases, and consistent with the position in Attachment 5 - Capex, we have included an amount of \$1.1 million (\$2023–24) for improved inverter compliance in our alternative estimate, but have not included the remaining \$13.1 million (\$2023–24) for the other components of the future network step change.

To enable us to determine if some level of additional resourcing is prudent and efficient for the components of this step change not included in our alternative estimate, we seek further information from PWC in its revised proposal that includes:

- a more detailed description of what additional activities / outputs the proposed increase in expenditure would fund for each component
- a description of the why these additional activities / outputs are needed over the next regulatory control period (i.e. why is there a need above the existing capacity PWC already has to maintain a DER register, and undertake stakeholder engagement, network planning and connections types activities)
- a description of what activities PWC has undertaken in each of these areas over the current regulatory control period, including in its base year, with evidence of the level of resourcing (i.e. an organisational structure showing FTEs and descriptions of staff responsibilities) and the associated costs.

6.4.5 Category specific forecast

PWC's proposal included one category specific forecast, which was not forecast using the base-step-trend approach. This was for debt raising costs. We have included a category specific forecast for debt raising costs in our alternative estimate of total opex.

¹⁰⁵ PWC, Response to AER information request, *IR011 Follow up questions from NT On-site*, 10 May 2023, Q.11.14, p. 11.

6.4.5.1 Debt raising costs

We have included debt raising costs of \$3.5 million (\$2023–24) in our alternative estimate. This is \$0.1 million (\$2023–24) higher than the \$3.3 million (\$2023–24) proposed by PWC.

Table 6.18 Debt raising costs (\$million, 2023–24)

	2024–25	2025–26	2026–27	2027–28	2028–29	Total
PWC's proposal	0.6	0.7	0.7	0.7	0.7	3.3
AER alternative estimate	0.7	0.7	0.7	0.7	0.7	3.5
Difference	0.1	–	–	–	–	0.1

Source: PWC, *Attachment 9.03 Opex Model*, 31 January 2023; AER analysis.

Note: Numbers may not add up to totals due to rounding. Values of '0.0' and '-0.0' represent small non-zero amounts and '-' represents zero.

Debt raising costs are transaction costs incurred each time a business raises or refinances debt. Our preferred approach is to forecast debt raising costs using a benchmarking approach rather than a service provider's actual costs in a single year. This provides consistency with the forecast of the cost of debt in the rate of return building block.

We used our standard approach to forecast debt raising costs, which is discussed further in Attachment 3 to the draft decision.

Shortened forms

Term	Definition
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulatory
AESCSF	Australian Energy Sector Cyber Security Framework
capex	capital expenditure
CCP27	Consumer Challenge Panel, sub-panel 27
CER	Consumer energy resources
CSIS	customer service incentive scheme
DMIS	demand management incentive scheme
DNSP	Distribution Network Service Provider
DOE	Dynamic Operating Environment
EBSS	efficiency benefit sharing scheme
FTE	Full time equivalent
F&A	framework and approach
The guideline	Expenditure forecast assessment guideline
IT	Information technologies
NER	National Electricity Rules
NT	Northern Territory
NTC	Network Technical Code
opex	operating expenditure
OT	Operational Technology
PPI	Partial performance indicator
PWC	Power and Water Corporation
RMS	Revenue management system
SCS	standard control service
WPI	Wage price index