Annual Benchmarking Report

Electricity distribution network service providers

November 2025

AUSTRALIAN ENERGY REGULATOR

Important notice

The information in this publication is for general guidance only. It does not constitute legal or other professional advice. You should seek legal advice or other professional advice in relation to your particular circumstances.

The AER has made every reasonable effort to provide current and accurate information, but it does not warrant or make any guarantees about the accuracy, currency or completeness of information in this publication.

Parties who wish to re-publish or otherwise use the information in this publication should check the information for currency and accuracy prior to publication.

Inquiries about this publication should be addressed to:

Australian Energy Regulator
GPO Box 3131
Canberra ACT 2601
Email: aerinquiry@aer.gov.au
Tel: 1300 585 165

AER reference: 31011478

Amendment record

Version	Date	Pages
Version 1	27 November 2025	45

Contents

Executive summary

The National Electricity Rules (NER) require the AER to publish benchmarking results for the electricity distribution industry in an annual benchmarking report.[1] The productivity of the electricity distribution industry has an outsized impact on the productivity of the overall economy due to electricity, supplied through distribution networks, being a key input used by households, businesses and industry.

Over 2023–24, we continue to observe declining productivity across the electricity distribution industry (−3.8%), marking the third straight year of declining productivity since 2022.[2] The productivity decline of the industry is reflective of declining productivity across almost all distribution network service providers (DNSPs), with only one DNSP recording a slight productivity increase. The accelerating decline in distribution industry productivity since 2022 (−2.4% average annual) has broken a trend of increasing productivity observed between 2015–21 (1.7% average annual), marked mainly by decreasing operational expenditure (opex) and finding of operational efficiencies across the industry. There is no single driver of increasing opex identified by DNSPs, indicating the various developments in the industry and DNSPs' individual operating environments. Growth in distribution industry productivity has generally been below that of the Australian market economy.

The key update that has occurred in preparing this year's results has been the update of non-reliability output weights.[3] This is the first update of the output weights we have carried out since 2020, in keeping with our approach of balancing accuracy and stability by updating output weights periodically. Given the materiality of the changes in output weights observed in this latest update, and in response to high stakeholder interest, we have worked with our consultant Quantonomics to identify drivers of the change, and to investigate technical issues raised in submissions. Following this work, we consider the updated output weights reliable and accurate. We have also found that the material change in output weights is attributed to the combined effects of methodological updates made to the data since the last output weight update, such as the reallocation of capitalised corporate overheads from capex to opex, and additional years of data being added to the sample.

This year we have made significant progress on our development work program. We, along with Quantonomics, have responded to the recommendations of the 2024 independent review of non-reliability output weights in updating the output weights. We have also progressed our consideration of options to improve our opex econometric cost function models through a two-phase consultation process, with consultation on phase one concluding in early 2025, and the second phase report for consultation being released alongside the publication of this report. We anticipate that this piece of development work will conclude in 2026, and we will be in a position to incorporate the preferred option to improve our econometric opex cost function models in the 2026 Annual Benchmarking Report.

1 NER, cll 6.27(a) and 6.27(c).

2 Noting that the 2025 Annual Benchmarking Report includes data up to and including 2023–24.

3 The weights placed on the four non-reliability outputs in our productivity index-based modelling.

1 Our benchmarking report

We report annually on the productive efficiency of distribution network service providers (DNSPs) individually, and the electricity distribution industry as a whole. This meets the requirement under the National Electricity Rules (NER) that we prepare annual benchmarking reports.[4] These DNSPs operate transformers, poles and wires to deliver electricity from the transmission network to residential and business customers, provide export services for distributed generation and a growing number of new services arising through the energy transition such as electric vehicle charging management. Distribution and transmission network costs together typically account for 35–45% of what consumers pay for their electricity in most jurisdictions (with the remainder covering generation costs, retailing costs, and environmental policies).[5]

This is our 12th benchmarking report for DNSPs. This report is informed by expert advice provided by our consultant, Quantonomics, and is intended to be read as a summary of the accompanying benchmarking report prepared by Quantonomics.[6]

National Electricity reporting requirement

6.27 Annual Benchmarking Report

(a) The AER must prepare and publish a network service provider performance report (an annual benchmarking report) the purpose of which is to describe, in reasonably plain language, the relative efficiency of each Distribution Network Service Provider in providing direct control services over a 12-month period.

Productivity benchmarking is a quantitative or data-driven approach used widely by governments and businesses around the world to measure how efficient firms are at using inputs to produce outputs over time and compared with their peers.

Our benchmarking report considers productivity efficiency. DNSPs are considered productively efficient when they produce their goods and services at least possible cost, given their operating environments and prevailing input prices. We examine trends in productivity over the full period of our benchmarking analysis (2006–24), shorter time periods, and between 2023 and 2024.[7]

We present a summary of key benchmarking results in section 2 of this report, while section 3 includes information on our benchmarking development program and priorities. Our 2025 Annual Benchmarking Report has been streamlined significantly compared to previous

---

4 NER, cll 6.27(a) and 6.27(c).

5 AEMC, *Residential electricity price trends 2021, Final Report*, November 2021; AER analysis.

6 The supplementary Quantonomics report outlines the full set of results for this year's report, the data we use, and our benchmarking techniques. It can be found on the AER's benchmarking website.

7 Throughout this report, we refer to regulatory years. For non-Victorian DNSPs, this is financial years (for example, 2024 refers to the 2023–24 financial year). For Victorian DNSPs, this is calendar years up to and including 2020, and financial years from 2021 (for example, 2020 refers to the 2020 calendar year, but 2021 refers to the 2020–21 financial year).

reports. This serves to remove duplication between our report and the more comprehensive Quantonomics report and provide a more accessible document for stakeholders.

1.1 Why we benchmark electricity networks

Under the National Electricity Law and the NER, the AER regulates electricity network revenues with the goal of ensuring that consumers pay no more than necessary for reliable and safe delivery of electricity services. This is done through periodic (5-year) revenue determinations, in which the AER must assess networks' proposed expenditures and determine whether each proposal reflects prudent and efficient costs. As part of this function, the NER requires the AER to have regard to benchmarking results when assessing network expenditure. The benchmarking results we publish:

- provide network owners and investors with useful information on the relative efficiency of the electricity networks they own and invest in
- provide government policy makers (who set regulatory standards and obligations for networks) with information about the impacts of regulation on network costs, productivity and ultimately electricity prices
- provide consumers with accessible information about the relative productivity or efficiency of the electricity networks they rely on, allowing them to better participate in our regulatory process and broader debates about energy policy and regulation.

We note the importance of maintaining productivity in the electricity distribution industry in the context of the Australian Government's renewed focus on economy-wide productivity growth as a driver of increasing living standards. The productivity of the electricity distribution industry has an outsized impact on the productivity of the overall economy due to electricity, supplied through distribution networks, being a key input used by households, businesses and industry. Productivity improvements in this industry, and broader sector, can therefore flow onto improved competitiveness, efficiency and growth across other sectors of the economy.[8]

1.2 Benchmarking techniques

Our benchmarking report presents results from three types of 'top-down' benchmarking techniques.[9] These essentially compare outputs to inputs as a means of measuring productivity. The key outputs measured in our DNSP benchmarking are customer numbers, circuit length, ratcheted maximum demand, energy delivered and reliability. The inputs broadly cover opex and capital, the latter including overhead and underground powerlines, transformers and other assets that play a role in the provision of network services. Each

---

8 Department of Climate Change, Energy, the Environment and Water, *Electricity and Energy Sector Plan*, 18 September 2025, p.15.

9 Top-down techniques measure a network's productivity or efficiency based on high-level data aggregated to reflect a small number of key outputs and key inputs. They generally take into account any synergies and trade-offs that may exist between input components. Alternative, bottom-up benchmarking techniques are much more resource intensive and typically examine very detailed data on a large number of input components. Bottom-up techniques generally do not take into account potential efficiency trade-offs between input components of a DNSP's operations.

technique uses a different method for relating outputs to inputs to measure and compare DNSP productivity or efficiency:

- **Productivity index numbers (PIN).** These techniques use a mathematical index to measure the relationship between multiple outputs and inputs, enabling comparison of productivity levels and trends over time and between networks. We use these PIN techniques for our:
  - Time-series multilateral total factor productivity (TFP) and capital and opex multilateral partial factor productivity (PFP). TFP and capital and opex PFP results are used to measure and compare changes in the productivity level of a single entity over time (i.e. whether the productivity of the distribution industry as a whole, or an individual DNSP has increased or decreased over time).
  - Panel data MTFP and capital and opex MPFP. MTFP and capital and opex MPFP results are used to measure and compare changes in 'relative productivity' over time (i.e. whether a given DNSP has a higher or lower productivity level relative to other DNSPs at a point in time and over time).
- **Econometric opex cost function models.** These use econometric techniques to estimate opex (as the input) as a function of outputs[10] and the share of underground as an operating environment factor, to measure opex efficiency. Importantly, the results of these models are used directly to inform our assessments of base opex efficiency in DNSP regulatory determinations.
- **Partial performance indicators (PPIs).** These simple ratio methods relate one or several inputs to one output. In this respect they are partial efficiency measures. We use PPIs to shed light on relative performance across DNSPs at the expenditure category level.

The results from the econometric opex cost function models, along with quantification of material OEFs, are central in our assessments of opex efficiency in revenue determinations. We use the other benchmarking approaches to qualitatively cross-check and confirm these results.

Being top-down measures, each benchmarking technique cannot readily incorporate every possible exogenous factor that may affect a DNSP's performance. In addition, there are inherent data and modelling limitations to any benchmarking exercise. Therefore, the performance measures are reflective of, but do not precisely represent, the underlying productivity or efficiency of DNSPs. More detail on the full suite of benchmarking techniques we rely on is included in section 1.4 and Appendix A of Quantonomics' benchmarking report.

1.3 Updates in this benchmarking report

We have not implemented any methodological changes to our benchmarking since the publication of the 2024 Annual Benchmarking Report. We have, however, responded to the recommendations of the 2024 Independent Review of Non-Reliability Output Weights[11] in

---

10 We note that the econometric opex cost function models consider a slightly smaller subset of outputs than the PIN models.

11 CEPA, *Final Report – Review of AER's estimated non-reliability output weights used in the TFP and MTFP benchmarking models*, November 2024.

updating the output weights used in the PIN modelling (which encompasses our TFP, PFP, MTFP, MPFP). In carrying out this update, we have maintained the previously used methodology developed by Economic Insights.[12] This is the first update of the output weights since 2020, and the third update of the output weights since we commenced publishing Annual Benchmarking Reports in 2014.

This year's update has resulted in a material increase in the weight placed on the ratcheted maximum demand and material decrease in the circuit length output weight. These changes are reflective of a changing cost / output relationship on an industry level. That is, maintaining a distribution network to serve a given level of ratcheted maximum demand is driving a greater share of total DNSP costs, with circuit length driving a smaller share of costs, at the industry level. The output weight update has had a material impact on the MTFP / MPFP results of several DNSPs. In particular, the updated output weights have resulted in improved productivity being recorded in denser, largely urban networks and lower productivity in less-dense, predominantly rural networks. We discuss this update and its impact on our measurement of DNSP productivity further in section 2, in the context of DNSP results, and section 3, in the context of our benchmarking development program.

We are also considering the appropriate length of time between updates of non-reliability output weights for future benchmarking reports. Section 3.1 of this report outlines some of the factors which will inform any future decision, together with stakeholder views we will seek through consultation in 2026.

In addition, we have continued adjusting data relating to non-recurrent Software as a Service (SaaS) cost[13] and lease costs. We began adjusting historical SaaS and lease data in the 2023 Annual Benchmarking Report after considering potential inconsistencies resulting from accounting standard changes and updated financial reporting guidance. Our benchmarking relies on the assumption that data is reporting consistently across DNSPs and across time, in accordance with instructions provided with our Regulatory Information Notice (RIN) templates, and subsequent Regulatory Information Order (RIO) templates. For this reason, our position on non-recurrent SaaS and lease costs is that they should be considered under legacy accounting standards and guidance for the purpose of benchmarking until a future date when most or all DNSPs have transitioned onto current accounting standards, and an approach to recasting the historical cost to be on a consistent basis has been determined.

We are aware that Jemena, AusNet and Essential Energy have either fully or partially adopted the new accounting standards / guidance in the years up to and including 2024. Through consultation with these DNSPs in 2025, we have obtained data recast on the basis of the legacy standards / guidance. We are continuing to monitor the basis on which non-recurrent SaaS and lease costs are reported by DNSPs, while consulting with individual DNSPs in circumstances where we required adjusted data to maintain consistency. We anticipate that the reporting of non-recurrent SaaS and leases will vary between businesses until at least 2026–27. At this point or earlier, as noted in section 3.5, we intend to consult networks on the preferred approach to the future reporting of these costs for benchmarking

12 Economic Insights, *Economic Benchmarking Results for the Australian Energy Regulator's 2020 DNSP Annual Benchmarking Report*, 13 October 2020, pp. 124–125.

13 These costs relate to the setup and implementation of SaaS systems.

purposes, with a view to maintaining consistency across businesses and across the full time period we benchmark over.

This report also includes other minor updates to the benchmarking data. These updates reflect revisions to the 2024 year and historical Australian DNSP dataset, consistent with previous years' benchmarking reports, and are set out in the consolidated benchmarking dataset published on our website.[14]

1.4 Benchmarking development program

We operate an ongoing transparent program to review and incrementally refine elements of the benchmarking methodology and data. This includes considering if, and how, the changing environment DNSPs operate in (the broader economy and the energy transition) impact the benchmarking methodology and data. This year we have made progress against the benchmarking development priorities listed in the 2024 Annual Benchmarking Report, specifically:

- responding to submissions on our previous benchmarking reports and on the 2024 independent review of non-reliability output weights in updating the relevant weights ahead of this year's report
- considering possible options to improve the performance of the Translog econometric opex cost function models and engaging with networks through a two-phase consultation process.

Our benchmarking development program takes into account issues arising across both the distribution and transmission reports. There are a variety of factors, and associated costs and benefits, informing the development work we prioritise and progress, including:

- feedback from stakeholders, which often contains a wide range of views on future development
- the materiality and impact of the development work, and potential for errors on the robustness of the benchmarking
- the materiality and impact of the development work in relation to upcoming revenue determinations in which the benchmarking results will be used
- the ability to progress this work, including any sequencing issues and data availability
- the resources available to undertake this work, and anticipated duration of the work
- previous commitments we have made on timing different pieces of development work.

With this development work often being complex and requiring a material investment of time and resources on the part of the AER and stakeholders, we exercise judgement in coming to a realistic view on priorities. We value stakeholder feedback on development issues, which contributes to our thinking about benchmarking development priorities. This includes instances where we do not necessarily agree with points raised, or adopt the specific suggestions.

---

14 Refinements are outlined in the 'Data revisions' sheet of the consolidated benchmarking data file.

More detail on the benchmarking development issues we have progressed this year, benchmarking development work to be progressed in the coming year, and future benchmarking development priorities are included in section 3.

1.5 Consultation

In developing this report, we have consulted with external stakeholders in two main stages. First, in relation to the data submitted to the AER as part of the 2024 RIN. Second, in relation to a draft of Quantonomics' benchmarking report and results.

We made the decision to streamline our benchmarking process, by removing consultation on a draft version of this report (the AER report), noting there was a high degree of duplication in content and consultation across the AER report and the Quantonomics report. Our report provides a summary analysis of the key results, with detailed analysis and results contained in the attached Quantonomics report.

We value stakeholder feedback received as part of this year's benchmarking process. This feedback is important in improving the accuracy and robustness of the benchmarking results, and in guiding the further development of the benchmarking framework. Submissions focused on the key change in this year's report, being the update of the non-reliability output weights carried out following the conclusion of the 2024 independent review. We include a summary of all submissions received on the draft Quantonomics benchmarking report and results in Appendix A, noting that a more detailed response to technical submissions, particularly on the output weight update is included in section 1.6 of the accompanying Quantonomics report, and the memorandum *Nonreliability Output Index Weights ABR25 – Supplementary Analysis*.

In relation to development work, we have engaged with networks in a parallel process relating to the Translog econometric cost function models, which will guide further development of our benchmarking tools, particularly the econometric opex cost function models.

2 Benchmarking results

This section presents a summary of key 2025 benchmarking results, covering the entire benchmarking period from 2006–24. A broader, and more detailed set of benchmarking results can be found in the accompanying Quantonomics report and data files published alongside this report. We include updated results on the productivity of the electricity distribution industry, the relative productivity of individual electricity distribution networks, the results of our econometric opex cost function modelling, which estimates the efficiency of DNSPs' respective opex, and our partial performance indicators (PPIs).

2.1 The productivity of the electricity distribution industry

Key points

- The productivity of the electricity distribution industry has continued to decline in 2024, declining by 3.8% over the latest year. The primary driver of productivity decline in the latest year has been a continuing increase in opex across the industry (contributing −3.9 percentage points to productivity decline in the latest year, with the combined impact of all other inputs and outputs being a positive 0.1 percentage points).
- Distribution industry TFP has been trending downward since its high in 2021, and is now 7.2% below the level observed in 2021.
- Over the full 2006–24 benchmarking period, the productivity of the electricity distribution industry declined; however, at a lower rate than the broader utilities sector. In contrast, the Australian market economy showed a small productivity improvement over this same period.[15]
- We note that the output weight update has mainly affected the relative productivity of individual DNSPs based on their individual output mix. The update itself has not had a visible effect on measured productivity at the distribution industry level.

Since 2006, distribution industry productivity has declined by 0.5% p.a. on average. This general, slight decline can be broken down into three broad sub-periods. Firstly, a 1.2% p.a. decline on average between 2006–15, followed by an increase in productivity of 1.7% p.a. on average in the years between 2015–21. The increase in industry productivity since 2015 can be attributed to a 'catch-up' effect where many of the least productive DNSPs were able to reduce opex and find operational efficiencies, resulting in a lifting of industry productivity. Finally, we have seen a continued, accelerating decrease in productivity over the last three years, beginning in 2022. This decline, averaging 2.4% p.a. has been driven mainly by increasing opex across the entire industry.

15 Australian market economy productivity and utilities sector productivity are measured by the multifactor productivity indexes (in quality adjusted hours worked basis for the labour input). The market sector consists of 16 industries, the full list of the included industries can be found here: https://www.abs.gov.au/statistics/industry/industry-overview/estimates-industry-multifactor-productivity/latest-release

Our benchmarking is backward-looking and does not hold predictive power in terms of forecasting future industry or individual DNSP productivity. However, we note that increasing real opex forecasts may herald continued productivity decline in the near-term, absent a large growth in outputs.

Figure 1 compares the TFP of the electricity distribution industry over time relative to the productivity of the overall Australian market economy, and utilities sector.[16] As observed by the Productivity Commission (PC), the utilities sector has seen a long-term decline in productivity beginning in 1997–98 and pre-dating our collection of benchmarking data for the industry.[17,18]

The decline is a result of capital investment in anticipation of future demand, issues in output measurement, exogenous shifts to higher cost technologies, and unmeasured improvements in output quality such as reliability, safety, visual amenity or lower emissions. Specifically, in the early 2000s, rapid growth in household air-conditioner use led to an increase in the ratio of peak to average electricity demand, lowering average rates of capacity utilisation. The rapid growth of consumer energy resources (CER) over the last 10-years and electricity-self supply from household solar installations has resulted in a decrease in average household electricity demand on the network throughout the day, with a large share of network assets only being utilised efficiently during a small number of hours, on a small number of days in the year. These structural changes in how consumers utilise electricity distribution networks are, to a large extent, outside the control of DNSPs.

We note that the divergence of distribution industry productivity from the broader utilities sector may partly be driven by measurement differences between our TFP index, and the ABS multi-factor productivity (MFP) index. In particular, our functional output specification recognises a range of outputs such energy throughput, customer numbers, reliability, circuit length and ratcheted maximum demand, while the ABS's measure uses value-added output that may primarily consider energy throughput when measuring the productivity of the electricity supply subsector of utilities.

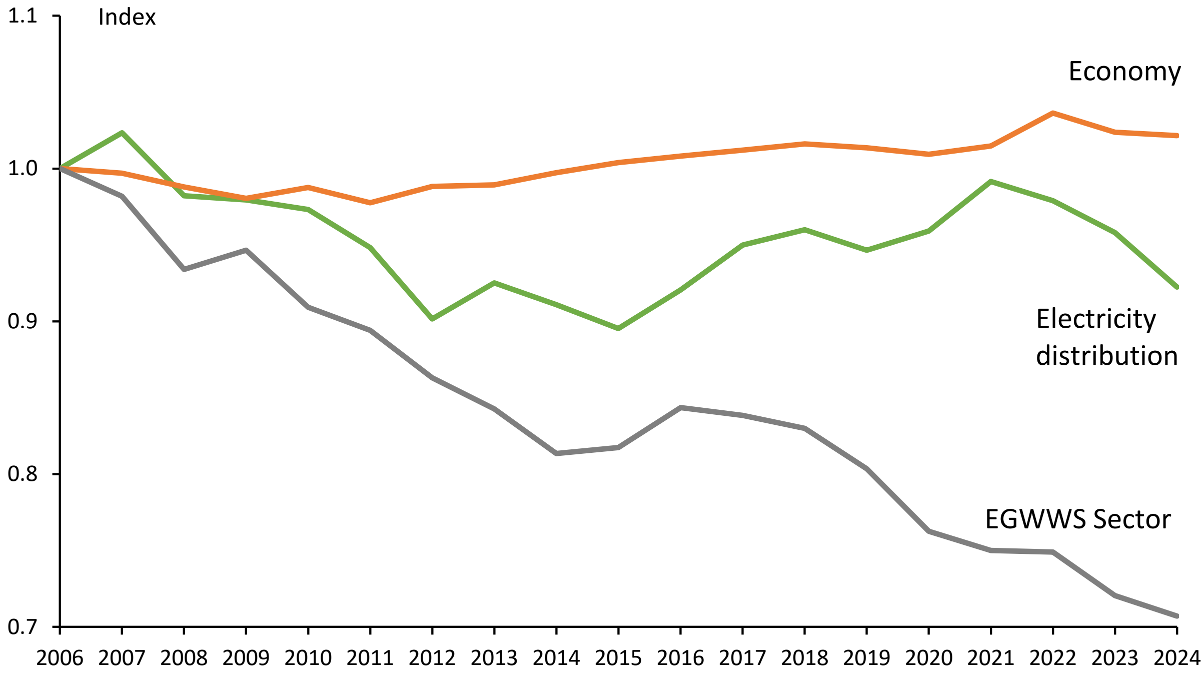
Section 2 of the accompanying 2025 DNSP benchmarking report by Quantonomics provides further analysis, of industry productivity trends, including a breakdown of TFP into its opex PFP and capital PFP components, and detailed analysis of individual input and output growth trends, and their contribution to TFP change.

16 The utilities sector, abbreviated as EGWWS, includes Electricity, Gas, Water and Waste Services.

17 Productivity Commission, *Productivity in Electricity, Gas and Water: Measurement and Interpretation, March 2012.*

18 Productivity Commission, *Productivity Update*, May 2013, pp. 33–34.

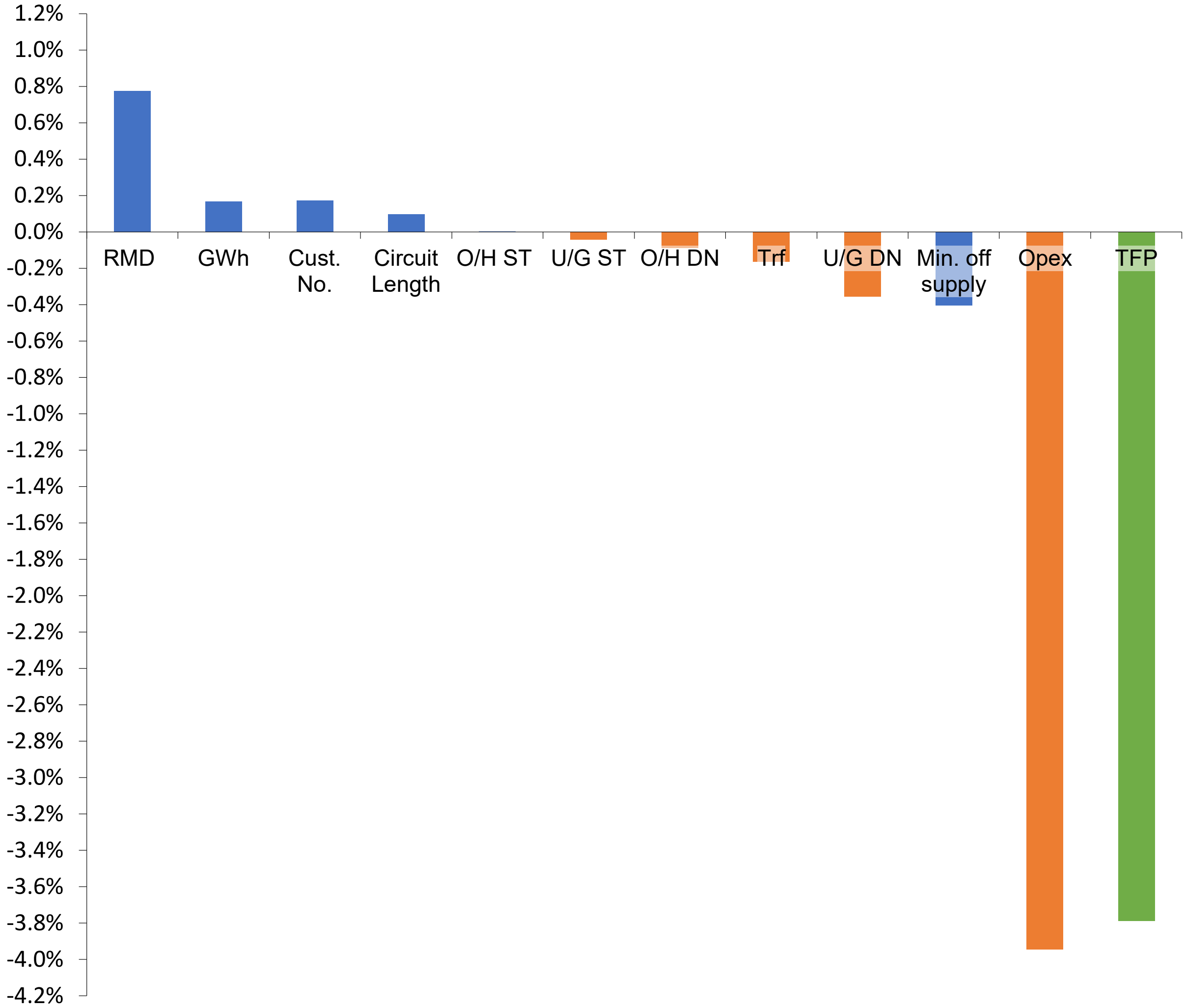
Figure 1 Electricity distribution, utilities sector, and economy productivity, 2006–24



Source: Quantonomics; AER analysis.
Note: Australian market economy and EGWWS Sector multi-factor productivity, and Electricity distribution total factor productivity, are all rebased as 1.000 in 2006, allowing us to see relative changes in productivity over the full benchmarking period.

The productivity of the electricity distribution industry has continued to decline, by 3.8% in 2024. Figure 2 breaks down the TFP change into its input and output change drivers. Increases in opex in 2024 were the primary driver of TFP decline over the last year (contributing −3.9 percentage points), with all other inputs and outputs in the modelling contributing 0.1 percentage points to TFP. The ratcheted maximum demand output made the largest positive contribution to TFP (0.8 percentage points) and is reflective of maximum demand records being set in 2024 by 3 of the 13 distribution networks we benchmark (Jemena, Essential Energy and Energex).

Figure 2 Electricity distribution output[19] and input[20] percentage point contributions to annual TFP change, 2023–24



Source: Quantonomics; AER analysis.
Note: Individual output contributions to TFP change are presented in blue, while individual input contributions are presented in orange. In the context of ‘minutes off supply’ being a negative driver of productivity change in 2023–24, this is reflective of an increase in customer minutes off supply across the industry, and therefore represents a reduction in reliability.

19 Outputs in order of presentation in Figure 2 are ratcheted maximum demand (RMD), energy delivered (GWh), customer numbers, circuit length, and reliability (Min. off supply).

20 Inputs in order of presentation in Figure 2 are overhead sub-transmission (O/H ST), underground sub-transmission (UG S/T), overhead distribution (O/H DN), transformers (Trf), underground distribution (U/G DN), and opex.

2.2 The relative productivity of distribution network service providers

Key points

- The pooled MTFP and MPFP results presented in this section incorporate our new, updated output weights. This output weight update has resulted in a rebasing of individual DNSP MTFP, Opex MPFP and Capital MPFP results and has negatively impacted the relative productivity of rural networks, while positively impacting the relative productivity of denser, urban networks. However, the output weight update has not materially impacted the productivity trends we have observed for each DNSP.
- The decline in industry productivity over the last year is reflective of productivity decline across almost every DNSP.
- Only one DNSP (Endeavour Energy) saw an increase in its MTFP (1.2%) in 2023–24.
- The remaining 12 DNSPs saw declining MTFP, averaging −4.5% in 2024. The worst performing DNSP in 2024, as measured by MTFP was Ergon Energy (−12.7%).

Section 2.2.1 presents individual DNSP MTFP and MPFP results. Section 2.2.2 provides an overview of the impact of the output weight update, performed this year, has had on these results. Section 2.2.3 outlines the relevant limitations of this modelling.

2.2.1 Individual DNSP MTFP / MPFP results

Table 1 presents MTFP rankings for individual DNSPs in 2024 and 2023, the annual growth in productivity in 2024, and the average annual growth over the 2006–24 period. These results over time can be seen in Figure 3, while Figure 4 and Figure 5 show the opex and capital MPFP results over time respectively.

Table 1 Individual DNSP MTFP rankings and annual MTFP growth rates

DNSP	2024 Rank	2023 Rank	Change (2024)	Average annual Change (2006–24)
CitiPower (CIT)	1	1	−4.2%	−0.6%
Endeavour Energy (END)	2 ↑	3	1.2%	−0.4%
United Energy (UED)	3 ↓	2	−4.5%	−0.1%
SA Power Networks (SAP)	4	4	−1.7%	−1.6%
Jemena (JEN)	5 ↑	6	−0.1%	0.1%
Evoenergy (EVO)	6 ↓	5	−2.5%	0.7%
Energex (ENX)	7	7	−4.1%	−0.5%
Ausgrid (AGD)	8	8	−3.5%	0.2%
Powercor (PCR)	9	9	−1.5%	−0.7%
Essential Energy (ESS)	10 ↑	13	−3.7%	0.0%

DNSP	2024 Rank	2023 Rank	Change (2024)	Average annual Change (2006–24)
AusNet (AND)	11 ↑	12	−6.9%	−1.1%
TasNetworks (TND)	12 ↓	11	−8.5%	−1.6%
Ergon Energy (ERG)	13 ↓	10	−12.7%	−0.1%

Source: Quantonomics; AER analysis.
Note: All scores are calibrated relative to the 2006 Evoenergy MTFP, which is set equal to 1.000. These results do not reflect the impact of a range of material operating environment factors. The scores and rankings presented incorporate the new output weights across all years.

We note that the productivity results and rankings presented in this report are on the basis of the updated output weights, applied across the full 2006–24 time period. Consistent with past practice from our previous output weight updates, and stakeholder submissions, we consider it important that the productivity scores reflect a consistent set of output weights over time. Otherwise, it would be impossible to discern whether movements in the scores over time are due to changes in productivity or due to reweighting of the outputs. A consequence of our retroactive application of the updated output weights is that scores and ranks presented in this report for all years up to 2023 will not be reflective of what was published in earlier reports.[21]

A consistent trend observed over the last three benchmarking reports is that there was once again no singular common driver of increasing opex over the last year amongst DNSPs, and that increasing opex was being driven by both structural and cyclical factors, and not any particular one-off factors or methodological changes. As part of our first stage of consultation on network data submitted in the annual RINs, networks cited a number of opex drivers, including but not limited to:

- increasing unit costs for inspection and maintenance programs[22] (structural)
- increasing emergency response and repair costs due to weather events (cyclical)
- intensified vegetation management programs to ensure compliance with Energy Safety Victoria regulations.[23] (structural)

In Figure 3, the equal sized, black-bordered columns placed in 2006, 2012 and 2024 show convergence in DNSPs' MTFP. Across the three years selected, the gap between the productivity of the most productive and least productive DNSPs has shrunk. In general, this has been a result of some of the less productive DNSPs improving their performance over

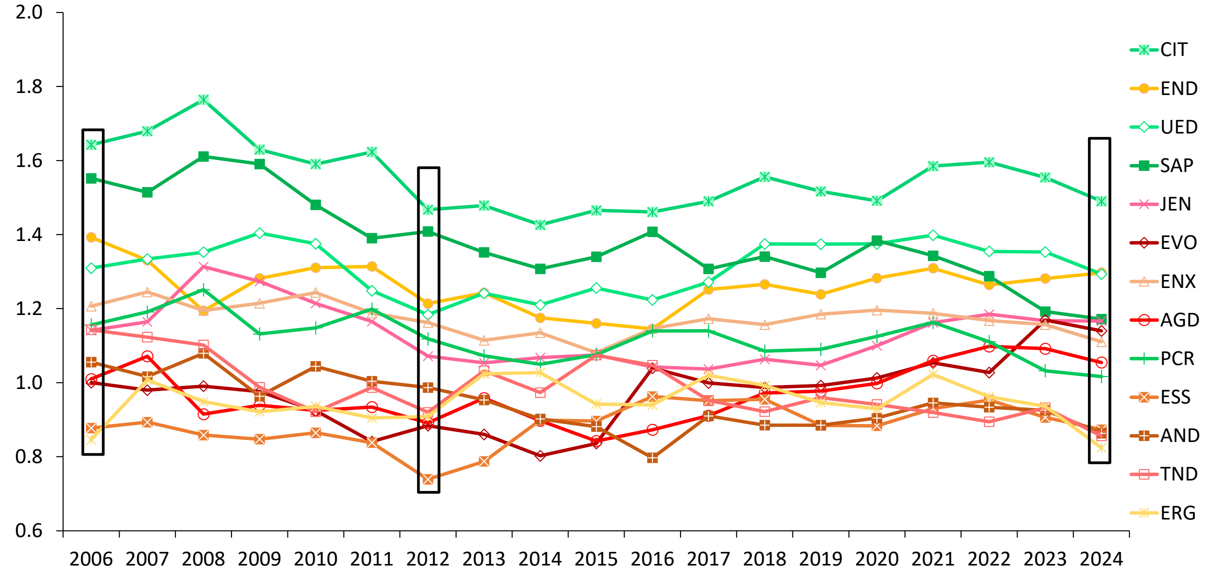
21 Hypothetically, a particular DNSP may have been ranked first in the year 2017, with a score of 1.500, as presented in the 2024 Annual Benchmarking Report. When applying the new output weights for the 2025 Annual Benchmarking Report, the same network may be shown as fifth in 2017 with a score of 1.200, despite no changes to the underlying DNSP data for 2017.

22 The opex input in our benchmarking modelling represents 'real opex'. i.e. this is opex deflated by a combination of WPI and producer price indexes, based on the share of labour/non-labour opex inputs. Nominal increases in opex resulting from unit cost increases will not result in an observed increase in 'opex input', unless those unit cost increases exceed the weighted WPI and PPI increases used to deflate nominal opex.

23 We note that this driver is specific to Victorian DNSPs.

time, particularly since 2012. In addition, some top ranked DNSPs have seen declining MTFP since 2006.

Figure 3 Individual DNSP MTFP indexes, 2006–24



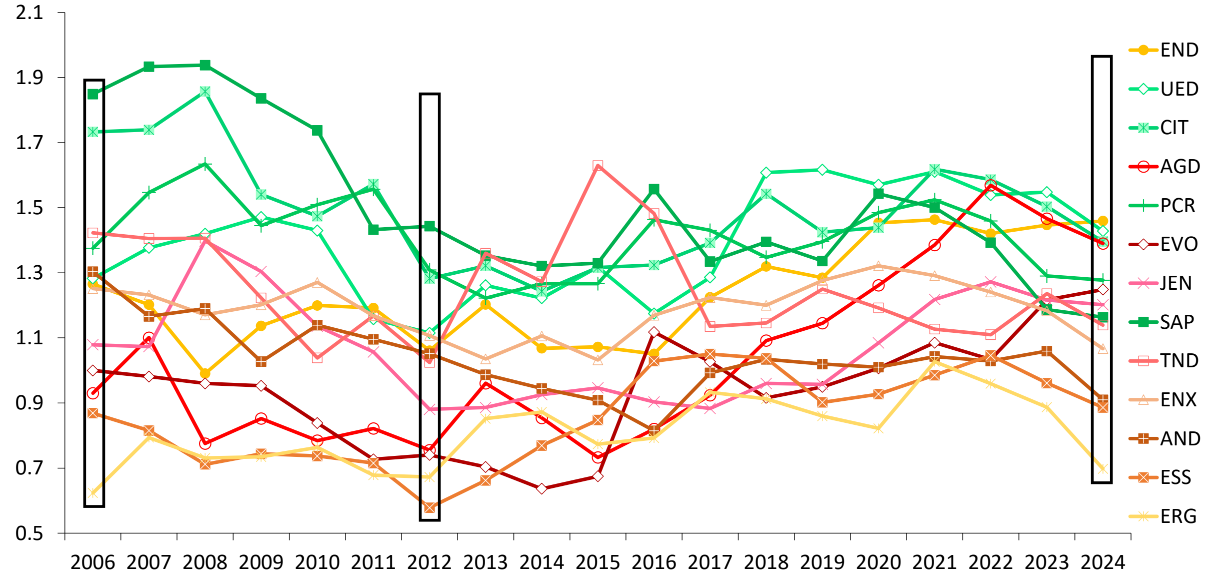
Source: Quantonomics; AER analysis.
Note: Evoenergy's MTFP in 2006 is set to 1.000.

Changes in relative opex productivity as measured by opex MPFP are the main driver of productivity convergence and overall MTFP change across networks. In Figure 4, we see that there has been convergence in opex MPFP across networks, as well as a general upward trend in opex MPFP between 2012 and 2021. Reductions in opex over the 2012–21 period were a key driver resulting in 12 out of the 13 DNSPs (all bar AusNet[24]) increasing their opex MPFP. In contrast, Figure 5 shows that relative capital productivity as measured by capital MPFP has consistently declined since 2006 and there has been very little to no convergence in scores. The consistent decline in capital MPFP for most DNSPs is not dissimilar to the long-run trend of capital productivity decline in some other industries resulting from capital deepening.[25] Evoenergy is the only DNSP which has a higher capital MPFP in 2024 as compared to 2006.

[24] We note that AusNet's opex MPFP over the 2012–21 period declined by only 0.8%, with the majority of the decline taking place before 2017.

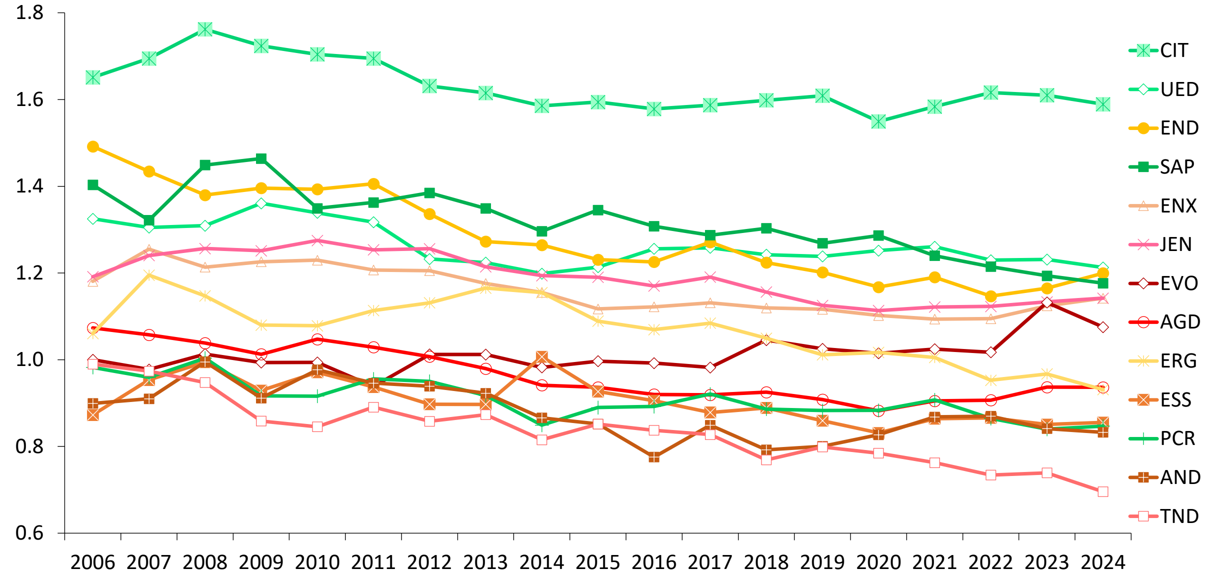
[25] Australian Bureau of Statistics, *Tables 1–19: Estimates of Industry Multifactor Productivity*, December 2023.

Figure 4 Individual DNSP Opex MPFP indexes, 2006–24



Source: Quantonomics; AER analysis.
Note: Evoenergy's Opex MPFP in 2006 is set to 1.000.

Figure 5 Individual DNSP Capital MPFP indexes, 2006–24



Source: Quantonomics; AER analysis.
Note: Evoenergy's Capital MPFP in 2006 is set to 1.000.

2.2.2 Impact of output weight update on MTFP and MPFP results

As noted in section 1.3 of this report, we have responded to the recommendations of the 2024 independent review of non-reliability output weights,[26] and submissions to previous benchmarking reports, in carrying out an update of the non-reliability output weights used in our PIN modelling. The update was carried out on the basis of the previous methodology

---

[26] CEPA, *Final Report – Review of AER's estimated non-reliability output weights used in the TFP and MTFP benchmarking models*, November 2024.

developed by Economic Insights,[27] which the independent review found to be fit-for-purpose. This is the first update of the output weights since 2020, and the third update since we commenced benchmarking DNSPs in 2014.[28]

Table 2 contains a summary of the non-reliability output weights we have used in our modelling over time, and the year in which these output weights were estimated.[29] The accompanying Quantonomics report and *Nonreliability Output Index Weights ABR25 – Supplementary Analysis* memorandum explore the drivers of the large change in output weights since the last update was performed in 2020. This investigation involved recalculating the previous weights (2020) using data under current definitions to isolate the effect of changes to data definitions and measurements. Further, output weights were recalculated by incrementally adding additional years of data, to determine whether some years were more influential in driving changes in output weights. We note briefly here that there was no single driver of the material change in output weights. The change was driven by both the influence of additional years of data (particularly 2020 and 2021), as well as the revisions to historical data including changes in data definitions and measurements.[30] The 2020 and 2021 years in particular saw a large reduction in the price of capital inputs due to a decrease in the weighted average cost of capital. This increased the share of opex in total cost. Opex, relative to the capital inputs, is associated more strongly with the ratcheted maximum demand output than the circuit length output, which contributed to the increase in weight on ratcheted maximum demand.

Table 2 Output weights used in productivity index benchmarking over time

Output	2013*	2018*	2020	2025
Energy throughput	12.8%	12.5%	8.6%	10.8%
Ratcheted maximum demand	17.6%	28.3%	33.8%	47.8%
End-user customer numbers	45.8%	30.3%	18.5%	15.2%
Circuit length	23.8%	29.0%	39.1%	26.2%

Source: Quantonomics; AER analysis.
Note: Non-reliability output weights may not sum to 100% due to rounding. Output weights calculated in 2013 and 2018 were subject to coding errors and cannot be considered accurate.

The most material changes in output weights resulting from this update are the increase in the weight on ratcheted maximum demand (14 percentage points), and the reduction in the weight on circuit length (−12.9 percentage points). Effectively, the changes have benefitted

27 Economic Insights, *Economic Benchmarking Results for the Australian Energy Regulator's 2020 DNSP Annual Benchmarking Report*, 13 October 2020, pp. 124–125.

28 The first output weight update occurred in 2018, after it was determined that sufficient additional data had become available to justify re-calculating output weights. The second output weight update in 2020 followed the discovery of a coding error in the previous 2018 update, requiring re-estimation.

29 While we present output weights prior to those calculated in 2020, we note that these output weights are inaccurate following the identification of a coding error. As such, we present them for illustrative purposes only.

30 Methodological revisions to the data that have occurred since the last output weight update include the addition of capitalised corporate overheads as opex, and changes to the way annual user cost of capital is calculated.

denser, more urban networks (CitiPower, United Energy, Evoenergy) while resulting in an observed drop in productivity index scores for less-dense, rural DNSPs (Essential Energy, Ergon Energy, SA Power Networks).

In Figure 6, we present the impact of the new output weights on individual DNSPs' MTFP over the 2006–24 period. The main observation is that, as expected, the impact of the new output weights appears to be relatively consistent over time for each DNSP,[31] meaning that the new output weights have, in effect, rebased each DNSP's productivity performance. We see a similar effect on Opex MPFP and Capital MPFP as shown in Appendix B.3 of Quantonomics' report. The importance of this is that productivity trends for each DNSP are not materially affected by the updated output weights. This result is expected, as small year-on-year changes in the 'deltas'[32] are largely reflective of compositional changes in networks' outputs (i.e. ratio of the individual outputs). We expect these year-on-year compositional variations to be small, and mostly reflective of a network's operating environment.[33] We also note that Evoenergy's 2006 productivity performance in each index is set to 1.000, with productivity scores for all networks in all years being presented as a multiple of Evoenergy's 2006 productivity.[34] As a result, networks which have seen positive changes in productivity score can be said to have benefitted more from the output weight update than Evoenergy has in 2006, and vice versa. While there is little effect of the updated output weights on an individual DNSP's productivity change over time, the performance of a given DNSP relative to its peers is affected by the updated output weights. This can be seen in Table 3, which shows the number of rankings gained or lost by DNSPs as a result of the new output weights being applied. We note that networks that are close to first or last are inherently limited in the number of ranks they can increase or decrease respectively.

---

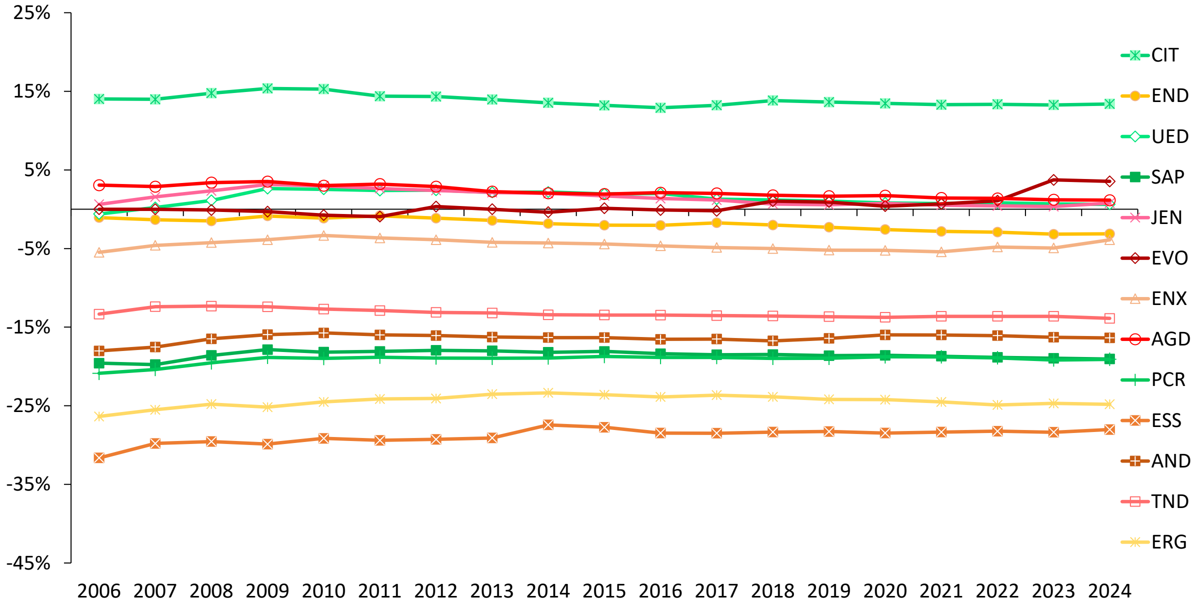
31 Given the relative flatness of the lines.

32 'Delta' here represents the difference between a network's productivity score under the updated weights minus its productivity score under the previous weights.

33 We would not expect the ratio of a DNSP's customer numbers to circuit length to materially change in each year, for example, as that would be reflective of large changes to population density in a DNSP's entire footprint in a short period of time.

34 The same way that a particular 'base year' is set to 100 in the consumer price index, with all other year's price levels therefore being comparisons against the base year.

Figure 6 Percentage change in individual DNSP MTFP indexes due to new output weights, 2006–24



Source: Quantonomics; AER analysis.

Table 3 Change in DNSP MTFP rankings due to new output weights, 2006–24

Year	EVO	AGD	CIT	END	ENX	ERG	ESS	JEN	PCR	SAP	AND	TND	UED
2006	1	3	2	1	4	−3	−4	3	−4	−1	−2	−2	2
2007	1	3	2	1	2	−7	−4	4	−4	−1	0	0	3
2008	2	1	2	4	3	−4	−3	2	−3	−1	−4	0	1
2009	3	2	1	1	0	−4	−4	2	−4	−1	0	3	1
2010	1	3	2	1	1	−2	−4	4	−5	−1	0	−1	1
2011	1	2	2	1	−1	−3	−4	3	−3	−1	−1	2	2
2012	0	2	2	1	0	−4	−2	3	−4	−1	−1	0	4
2013	1	2	3	2	3	−7	−3	4	−3	−1	−2	−1	2
2014	0	0	3	2	2	−6	−6	5	−4	−1	0	0	5
2015	−1	1	2	4	4	−3	−5	3	−4	−1	0	−4	4
2016	1	1	3	4	3	−6	−7	3	−4	−1	−1	−1	5
2017	3	1	4	2	3	−5	−7	4	−4	−1	−3	−1	4
2018	3	3	1	3	3	−2	−6	4	−2	−2	−3	−3	1
2019	4	4	3	1	1	−4	−4	4	−3	−2	−2	−1	0
2020	4	4	4	0	1	−3	−6	2	−4	−1	−1	0	0
2021	3	5	2	2	3	−5	−5	2	−4	−2	−1	−2	2

Year	EVO	AGD	CIT	END	ENX	ERG	ESS	JEN	PCR	SAP	AND	TND	UED
2022	4	3	1	2	2	−3	−6	4	−4	−2	−2	−1	2
2023	5	4	1	1	1	−3	−7	3	−4	−3	−1	1	1
2024	3	3	2	0	1	−3	−4	2	−4	−3	1	1	1

Source: Quantonomics; AER analysis.

We received a number of submissions relating to the updated output weights, expressing mixed views. A summary of submissions and our responses are outlined in Appendix A of this report. We note the extensive stakeholder interest in understanding the drivers of the output weight change, the impact of the output weight change on results, and on the robustness of the updated output weights and broader methodology used to estimate the weights. Quantonomics investigated these issues, as set out in greater detail in the accompanying Quantonomics 2025 benchmarking report, and the memorandum: *Nonreliability Output Index Weights ABR25 – Supplementary Analysis*. Appendix B of Quantonomics' report also contains the full suite of MTFP and MPFP results under the previous output weights, allowing for comparison. In summary, and as was concluded by the 2024 independent review, we consider the methodology used to estimate output weights remains fit-for-purpose. We also consider the updated output weights to be more accurate than the previous weights given the inclusion of an additional 5 years of data, as well as all data revisions that have occurred since 2020. While we recognise the materiality of the change and its impact, we also note that this does not directly impact DNSP revenues, given that, unlike the opex econometric cost function models, the MTFP models are not primarily used to inform base opex efficiency assessments in resets.

2.2.3 Interpreting MTFP and MPFP results

The results from the MTFP and MPFP models account for some, but not all Operating Environment Factors (OEFs) such as all differences in legislative or regulatory obligations, climate and geography. This is important when considering the relative efficiency and rankings between DNSPs, as some DNSPs may have more or less favourable OEFs than their peers, and may appear more or less productive than they otherwise would. With this limitation in mind, these results should be interpreted with a level of caution. We recognise these limitations in the conservative way we interpret and apply benchmarking results to particular DNSPs in the context of revenue determinations. However, we consider that the productivity trends we observe for the electricity distribution industry, and individual DNSPs, to be broadly in line with our expectations. We also note that our MTFP benchmarking results have found both predominantly rural and urban networks to be in the top, middle and bottom ranked groups over time, indicating that the models account for density factors through the output index, as shown in Table 4.

Table 4 DNSPs ranked by average (2006–24) MTFP and by customer density grouping

DNSP	Customer density	Average MTFP ranking (2006–24)
Evoenergy	50.2 (Medium)	9
Ausgrid	44.8 (Medium)	10

DNSP	Customer density	Average MTFP ranking (2006–24)
CitiPower	106.3 (High)	1
Endeavour Energy	36.8 (Medium)	4
Energex	33.7 (Medium)	5
Ergon Energy	5.5 (Low)	11
Essential Energy	5.2 (Low)	13
Jemena	76.5 (High)	6
Powercor	12.9 (Low)	7
SA Power Networks	11.2 (Low)	2
AusNet	20.0 (Medium)	12
TasNetworks	17.4 (Low)	8
United Energy	104.1 (High)	3

Source: AER Analysis.
Note: Customer density is measured in customers per kilometre of route line length. DNSPs have been split into three roughly equally sized customer density groups (3 High, 5 Medium, 5 Low).

2.3 Opex econometric models

Key points

- Powercor, SA Power Networks, United Energy, TasNetworks, CitiPower and AusNet are the top performing DNSPs in terms of average opex efficiency scores over the long 2006–24 time period.
- The same 6 DNSPs are most efficient over the short period (2012–24), although CitiPower and AusNet display lower model average efficiency scores, more in line with midfield DNSPs.
- The Translog models continue to show monotonicity issues, and in this report, the Stochastic Frontier Analysis Translog model results have been excluded for both the long and short periods due to these models not converging, and therefore producing unreliable results.

This section presents the results of the econometric opex cost function models that compare the relative opex efficiency of DNSPs. These reflect an average efficiency score for each DNSP over the 2006–24 (long) period and the 2012–24 (short) period, respectively. Examining the shorter time period provides a more recent picture of relative efficiency of DNSPs and takes into account that it can take some time for more recent improvements in efficiency by previous poorer performing DNSPs to be reflected in period-average efficiency scores. The four econometric opex cost function models we use as part of our econometric opex cost function benchmarking represent the combination of two cost functions (Cobb-Douglas and Translog) and two methods of estimation (Least Squares Econometrics (LSE) and Stochastic Frontier Analysis (SFA)), namely:

- Cobb-Douglas Stochastic Frontier Analysis (SFACD)
- Cobb-Douglas Least Squares Econometrics (LSECD)
- Translog Stochastic Frontier Analysis (SFATLG)[35]
- Translog Least Squares Econometrics (LSETLG).

The results from the econometric opex cost function models are central in our assessment of the efficiency of opex in a DNSP's revenue determination process. In particular, the results in the most recent years prior to a revenue determination process are influential in determining whether base opex efficiency adjustments are appropriate and of what size. That is, if a DNSP's proposed base opex is found to be materially inefficient on the basis of the benchmarking results, the base opex may be reduced to address the inefficiency, and the benchmarking results will determine the extent of the adjustment.

This section also outlines monotonicity results and comments on the impact of different operating environments.

2.3.1 Opex econometric results

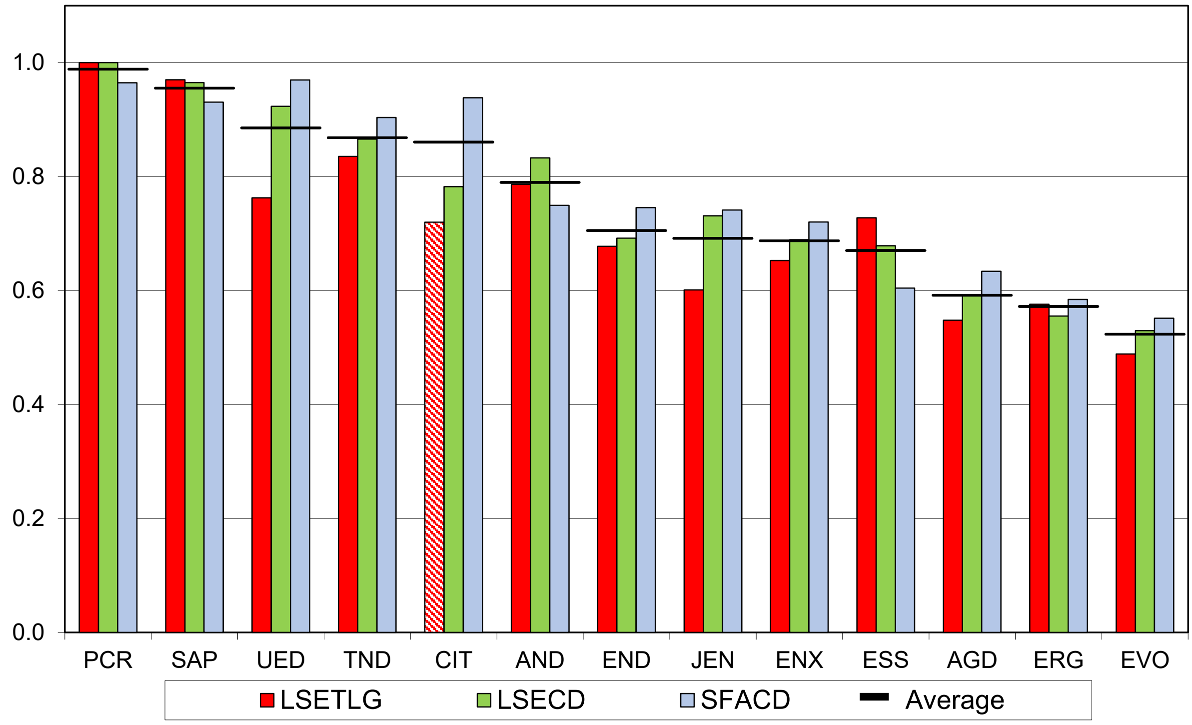
Figure 7 presents opex efficiency scores for the three econometric models (and excludes the SFATLG models which failed to converge), and model average efficiency scores calculated over the long period (2006–24). Similarly, Figure 8 presents opex efficiency scores over the short period (2012–24). Over the long period, Powercor, SA Power Networks, United Energy, TasNetworks, CitiPower and AusNet all have model average efficiency scores above the 0.75 benchmark comparison point, against which we compare DNSPs' efficiency scores in opex efficiency assessments in resets. DNSP efficiency rankings in the long period are also relatively unchanged from results in last year's benchmarking report, and there has been no change to the comparator group of DNSPs with model average efficiency scores above 0.75. Over the short period, the same 6 DNSPs remain most efficient, although AusNet and CitiPower display model average efficiency scores slightly below 0.75, and more in line with midfield DNSPs (Endeavour Energy, Essential Energy and Energex). There has been minimal change in DNSP efficiency scores or rankings compared to last year's benchmarking report.[36] Further detailed analysis and econometric opex cost function results can be found in section 4 of the accompanying Quantonomics report.

---

35 We note that results using the SFATLG model have been excluded for both the long and short period in this year's benchmarking report due to issues relating to non-convergence. More detail on this particular issue can be found in section D3 of the accompanying Quantonomics benchmarking report.

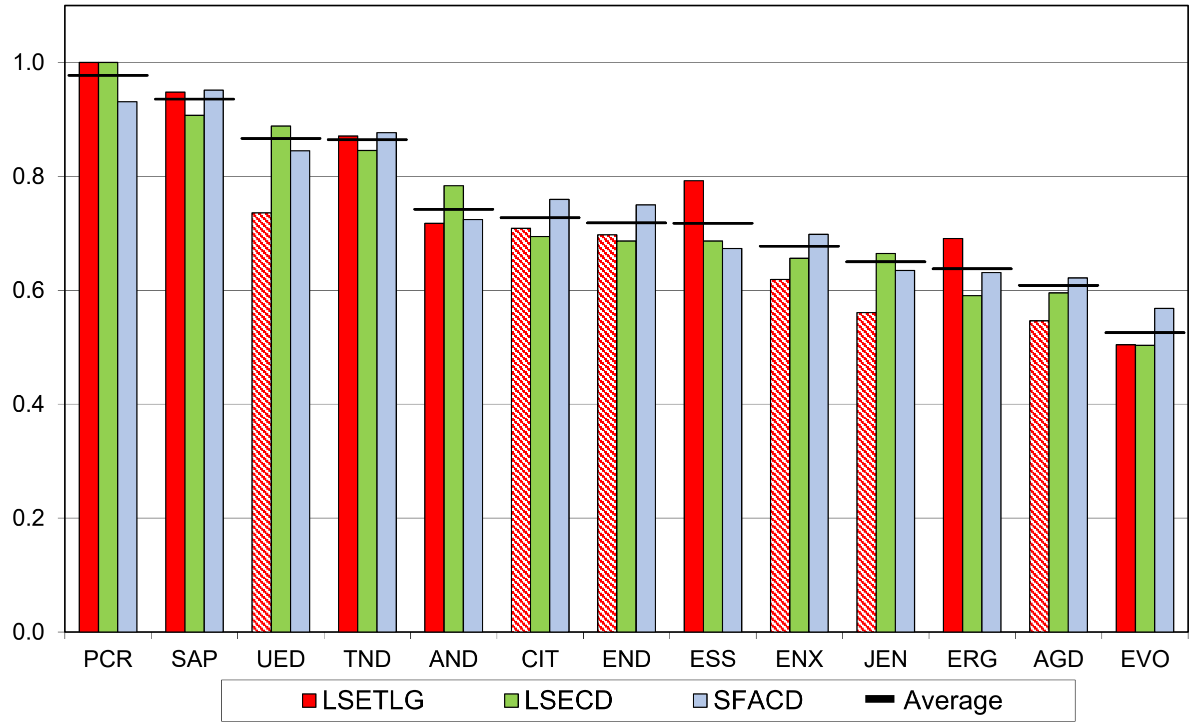
36 The weights on outputs in the econometric opex cost function models are re-calculated within the models each time data is added or changed. The econometric opex cost function modelling does not rely on and is not affected by the non-reliability output weight update discussed in this report.

Figure 7 Econometric opex efficiency scores, 2006–24



Source: Quantonomics; AER analysis.
Note: Columns with a hatched pattern represent results that violate the key property that an increase in output is achieved with an increase in cost. These results also do not reflect the impact of a range of material OEFs.

Figure 8 Econometric opex efficiency scores, 2012–24



Source: Quantonomics; AER analysis.
Note: Columns with a hatched pattern represent results that violate the key property that an increase in output is achieved with an increase in cost. These results also do not reflect the impact of a range of material OEFs.

2.3.2 Monotonicity requirements

A key economic property required for these econometric opex models is monotonicity, which means that an increase in output can only be achieved with an increase in inputs, holding all other things constant. Cobb-Douglas models assume that the response of opex to output changes (output elasticity) is constant across all observations, and so as long as the estimated output coefficients which reflect the sample-average output elasticity, are positive then monotonicity is satisfied. However, monotonicity may not hold across all the data points in the more flexible Translog models that allow for varying output elasticities.

The incidence of monotonicity not being sufficiently met has become more prevalent over both the long and short periods in recent years. In this year's report, the SFATLG model results in both the long and short periods have also been omitted due to a model convergence issue, indicating that modelling results may not be reliable. Section 4.1 of Quantonomics' report details the monotonicity performance of the Translog models in this year's report and compares this performance against previous years.

Our benchmarking development work relating to possible options to improve the performance of the econometric opex cost function models has been prioritised in recent years in response to the increasing monotonicity issues in the Translog models. This is outlined further in section 3.2.

2.3.3 Impact of different operating environments

The econometric opex cost function models take into account some OEFs (e.g. relevant density factors and some service classification differences for opex and the extent of undergrounding), but do not include other OEFs such as differences in legislative or regulatory obligations, climate and geography, which may materially affect our measurement of efficiency. It is desirable to further consider OEFs not included in the benchmarking models that can materially affect the benchmarking results. We use the following criteria to identify relevant OEFs:[37]

- Exogeneity, or whether an OEF is outside of the DNSPs control.
- Materiality, or whether an OEF has a real material impact on results.
- Non-duplication, or whether the OEF is already accounted for elsewhere.

Section 7 of the 2024 Annual Benchmarking Report provides further detail on OEFs identified by Sapere-Merz that materially affect the opex efficiency of each DNSP in the NEM. Additionally, that section provides a primer on how OEF adjustments are applied to econometric opex efficiency scores as part of our assessment of DNSPs' proposed base opex during resets.

---

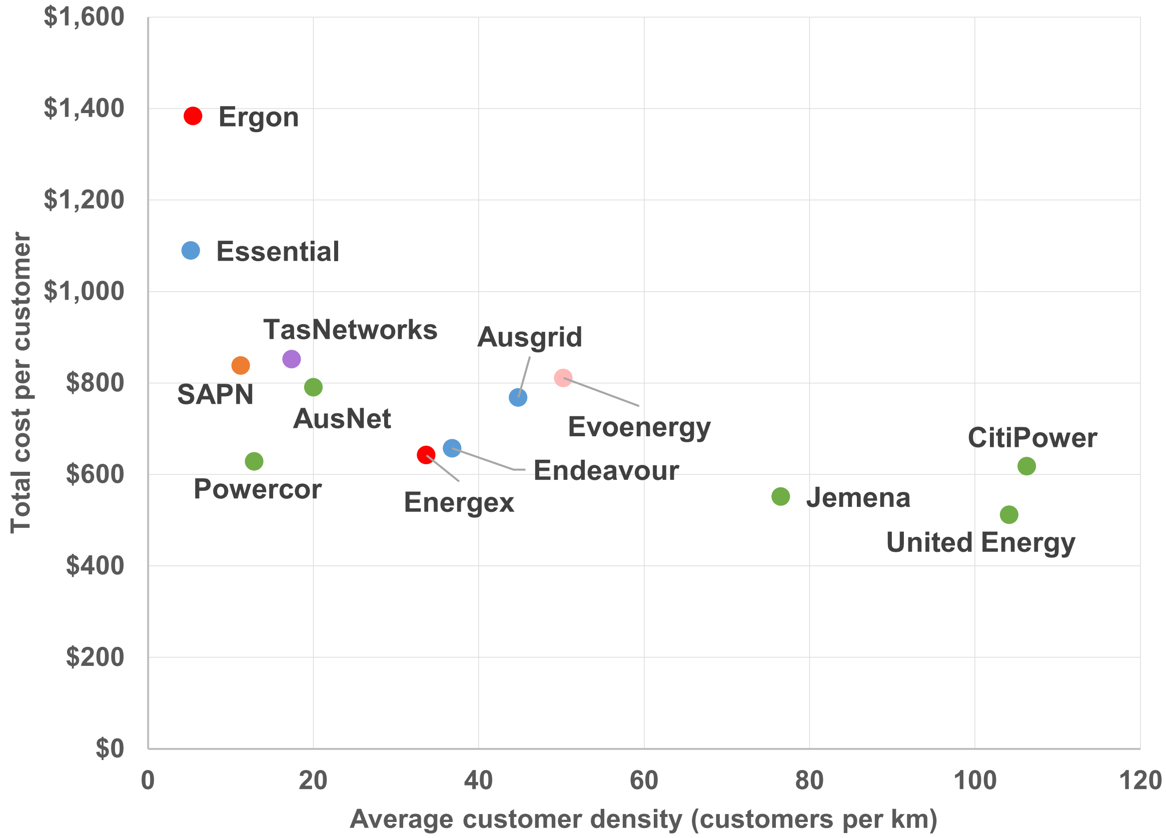
37 We engaged Sapere Research Group and Merz Consulting ('Sapere-Merz') to provide us with advice on material OEFs driving differences in estimated productivity and operating efficiency between DNSPs. See: Sapere Research Group and Merz Consulting, *Independent review of Operating Environment Factors used to adjust efficient operating expenditure for economic benchmarking*, August 2018.

2.4 Partial performance indicators

PPI techniques are a simpler form of benchmarking that compares inputs to one output. This contrasts with the PIN (MTFP / MPFP) and econometric opex cost function techniques that relate inputs to multiple outputs. We produce PPIs to support the other benchmarking techniques because they provide a general indication of comparative performance of the DNSPs in delivering a specific output. While PPIs do not take into account the interrelationships between outputs, they are informative when used in conjunction with other benchmarking techniques.

We produce a variety of PPIs on both total cost, and cost category bases, against a number of outputs in turn. Figure 9 is an example of a PPI featuring total cost per customer. We note from this figure that the total cost per customer tends to decrease as customer density increases. Our full set of PPIs are available in spreadsheet form, published on the 2025 Annual Benchmarking Report page on our website. Our observations on some key PPIs can be found in section 6 of the 2024 Annual Benchmarking Report, noting that the charts have not materially changed since last year.

Figure 9 Total cost per customer against customer density (2020–24 average)



Source: AER Analysis.

3 Benchmarking development

We operate an ongoing program to review and incrementally refine elements of the benchmarking methodology and data. The aim of this work is to maintain and continually improve the reliability and applicability of the benchmarking results we publish and use in our DNSP revenue determinations. Where necessary, this includes whether, and in what way, the changing environment the DNSPs operate in (the broader economy and within the context of the energy transition) impacts the benchmarking methodology and data.

There are a variety of factors and associated costs and benefits which inform the development work we prioritise, as outlined in section 1.4 of this report. With this in mind, and the complexity often associated with benchmarking development work, we exercise judgement in coming to a realistic view on relative priorities. We value stakeholder feedback provided in relation to development issues and re-affirm that this feedback contributes to our thinking even in instances where we do not agree with certain points raised, or adopt particular suggestions.

Table 5 sets out the benchmarking development work and priorities for distribution that we have recently completed, progressed or propose for the future. The key benchmarking development priorities we have, and plan to progress, are discussed in the following sub-sections.

Table 5 Benchmarking development priorities

Development issue	Timing and status
Independent review of non-reliability output weights	2024 – Completed
Our response to, and implementation of recommendations in the independent review of non-reliability output weights	2025 – Completed
Finalising the approach to addressing capitalisation differences	2024 – Completed
Improving the performance of the econometric opex cost function models	2024–26 – in progress
Benchmark comparison point used in applying the econometric opex cost function models	From 2026
Further review of export service (CER) impacts on benchmarking	Commence in 2027 Implement any changes in the 2028 Annual Benchmarking Report.
Incremental issues including: • Improving the quantification of OEFs (existing and new) • Examining the weight allocated to the reliability output • Various data and measurement issues • If and how emissions reduction may impact benchmarking	As resourcing permits

Development issue	Timing and status
• If and how Power and Water can be incorporated into benchmarking	

Over the last year, we have made significant progress against our planned benchmarking development priories. Namely, we responded to the recommendations of the 2024 independent review of non-reliability output weights in relation to the methodology used for carrying out an output weights update. We have also made progress on evaluating options to improve the performance of the econometric opex cost function models, with the conclusion of this benchmarking development work expected in 2026, for inclusion in the 2026 Annual Benchmarking Report.

The remainder of this section provides more detail on progress and plans in relation to current and future development work.

3.1 Response to the Independent review of the non-reliability output weights

Following the conclusion of the 2024 independent review of non-reliability output weights by the University of Queensland's Centre for Efficiency and Productivity Analysis (CEPA), and submissions received, and in line with the commitments we made in our 2024 Annual Benchmarking Report, we, along with Quantonomics, have:

- explored potential concerns CEPA raised with the estimation method we used for econometric modelling of the Leontief cost function (the standard method) and the validity of CEPA's proposed modifications to the prevailing methodology
- updated the output weights in preparing this year's Annual Benchmarking Report using the standard method and included all recent years of data and incorporate data updates and revisions that have occurred since the 2020 output weight update. These updated weights were applied to our PIN modelling.

As part of this update, we incorporated the two main alternative methods suggested in the independent review, as cross-checks against the standard method. A reasonable degree of consistency was found between the methods, providing confidence in the reliability of the results from the standard method. Further information on the output weight update and cross-checks performed can be found in the Quantonomics memorandum *Nonreliability Output Index Weights ABR25*.

In response to stakeholder submissions on the draft 2025 Annual Benchmarking Report and results, further analysis relating to the output weight update is included in the additional Quantonomics memorandum *Nonreliability Output Index Weights ABR25 – Supplementary Analysis,* and summarised in section 2.2.2.

We are also considering the appropriate length of time between updates of non-reliability output weights for future benchmarking reports. The period of 5 years for the output weight updates to date has struck a balance between accuracy (including the largest and most up-to-date set of data in estimating output weights), and inter-report consistency (maintaining fixed output weights to prevent frequent rebasing of DNSP results). During the time of the first output weight update,[38] in the 2018 Annual Benchmarking Report, we noted that:

> "There needs to be an appropriate balance between maintaining consistency in the approach to measuring the productivity of firms, and updating the models with better data when it becomes available. On balance, we and Economic Insights[39] consider it is now an appropriate time to update the output weights. Five years have passed since the original estimation was undertaken, and there are longer-term benefits of providing results that reflect the most recent data […]. Consistent with our current approach, we will only update our output weights periodically (e.g. every five years) going forward to provide consistency in the benchmarking scores over time."

Following comments received on the new output weights as part of submissions on this year's draft benchmarking results and Quantonomics report, we are considering options to update the output weights more frequently than every 5 years. This is reflective of the changing energy environment that DNSPs operate in and the possibility for output weights to change materially with the addition of 5 years of data, reflective of a changing cost / output relationship at the industry level. We will engage further with DNSPs in preparation for the 2026 Annual Benchmarking Report on views regarding future output weight updates. We note that more frequent output weight updates have the potential of introducing more frequent instability into the benchmarking results, and that updating the output weights and applying them to the benchmarking is not a costless exercise from a resourcing perspective and will have to be balanced against other development priorities and resource availability.

3.2 Improving the performance of the Translog models

Investigating and improving, where possible, the performance of the Translog econometric opex cost function models, particularly in relation to satisfying monotonicity, is important and ongoing development work.

As set out in section 2.3, the prevalence of monotonicity violations in the Translog econometric cost function models has increased in recent years. The Translog model is, by design, more flexible than the Cobb-Douglas model through the addition of 'second-order' terms in the output specification.[40] The downside of this flexibility is that monotonicity is not necessarily satisfied for all observations in the data sample. Where there are excessive monotonicity violations, we do not use the given model's results when benchmarking a distribution business. In addition, the issue of non-convergence in the Stochastic Frontier Analysis Translog models has also arisen in recent years.

---

38 'Output weights' is a shortened form referring to the non-reliability outputs (ratcheted maximum demand, energy throughput, customer numbers and circuit length). We note that the relative weight of the collective non-reliability outputs to the reliability output changes yearly based on the ratio of network revenue to outage cost (measured as the value of customer reliability multiplied by customer minutes off supply).

39 Our former benchmarking consultant.

40 In econometric models, first-order terms have a linear relationship to the dependent variable, and second-order terms have a quadratic relationship to the dependent variable. In addition to the Cobb Douglas model's first-order terms, the Translog model also includes quadratic and interaction terms in the log outputs.

The particular focus of the review is on the time trend variable in the econometric models. In theory, the time-trend element of the standard opex cost function specification represents technical change because the model assumes time-invariant inefficiency, and implicitly assumes there are no important omitted operating environment factors (OEFs). With the extension of the time period covered since the introduction of our benchmarking modelling in 2014, the inefficiency of DNSPs has likely changed over time. Further, given the difficulties of including all relevant OEFs (because some are not measured or not consistently measured between jurisdictions or because the effects of OEFs are complex and may not be captured by a single metric) it is likely that changes in OEFs over time have an unmeasured influence on real opex. Hence, the time-trend component will, in practice, reflect the combined effects of technical change, changes in cost inefficiency over time and the effect of changes over time in omitted OEFs. This could be a source of misspecification, which could be contributing to monotonicity violation issues.

We initiated a review into the performance of the Translog models with the release of Quantonomics' 'Phase 1' memorandum, published in November 2024. Given the complexity of the issues and the empirical and iterative nature of the work, we divided the review into two phases of consultation:

- Phase 1 – this explored separate time trend variables for each jurisdiction in the sample (Australia, New Zealand and Ontario). The rationale was to better capture systematic differences between these 3 jurisdictions in factors affecting opex that are time varying.
- Phase 2 – this work is exploring alternative time trend specifications, particularly those incorporating inefficiency varying over time, as well as other potential model refinements.

The Phase 1 memorandum examined jurisdiction-specific time trends and found that while their inclusion improves model performance, it does not fully resolve the issue of excessive monotonicity violations. This indicates that such trends may only partially address the underlying limitations of the models.

We received 7 submissions on the Phase 1 memorandum, all from DNSPs, with broad agreement with our definition of the problem and initial approaches for investigating updates to the models. The DNSPs encouraged the AER to further examine models that explored this issue, and to take time to investigate and consult thoroughly.

In November 2025, we published a Phase 2 report, prepared by Quantonomics. This report conducted more comprehensive analysis of these issues. It considered refinements to model specification and estimation techniques that could improve performance of opex cost function models; and approaches to incorporating time-varying inefficiency, and decomposing time trends into technical change and shifts in DNSP opex cost efficiency.

Submissions on the Phase 2 report are due 13 February 2026. Subject to the consultation, and successful model updates producing robust and stable results, we aim to finalise this review in the first half of 2026, outlining when and how we will implement the Translog model updates in the benchmarking models published in the ABRs and applied in distribution resets.

3.3 Further review of export services (CER) impacts on benchmarking

In March 2023 we released a final report on incentivising and measuring export service performance.[41] We concluded that:

- the benchmarking does not fully account for export services
- there is a need for a further review to consider what, if any changes are required to benchmarking models once data collection and availability improved
- there was insufficient evidence at the time to conclude that the provision of export services was impacting the benchmarking results in a way that materially disadvantaged DNSPs in practice
- we would commence a future review by 2027.

We have been monitoring, collecting and assessing export service data, published as part of the AER's export services network performance reports.[42] However, as noted in previous Annual Benchmarking Reports, given the infancy of the data collection process, the limited nature of the data available, and other competing benchmarking development priorities which we consider to have a more material and wide-reaching impact, we do not believe there is a basis for bringing the 2027 review forward.

In the interim, we note that while our benchmarking does not fully account for CER and export services provided by networks, the existing output specification in our PIN modelling does to some extent already reflect export services. In particular, the energy throughput output already includes electricity exported by one household, and consumed by another, given that energy throughput is metered at the household level. We also note, based on the latest 2024 Export services network performance report, that DNSP expenditure directly related to export services is <1% of total network expenditure. To the extent that our existing output specification does not entirely reflect services provided by networks in relation to CER and operating a two-way grid, we consider this level of expenditure too low to materially impact the benchmarking results.

We recognise the operational challenges that DNSPs are faced with in a rapidly changing energy landscape and consider that these structural factors may become more material in impacting DNSP productivity in the future. It may be the case that there are new services and outputs provided by DNSPs, that are not being recognised in the MTFP models, whilst the costs of providing these services are recognised as inputs. The growing list of challenges include, but are not limited to: minimum demand management, voltage management, meeting customer expectations relating to export limits, demand destruction due to increasing self-consumption, and electric vehicle charging.

3.4 Benchmarking comparison point

We draw on opex efficiency scores from our econometric opex cost function models (section 2.3) to assess the efficiency of individual DNSPs' historical and base year opex. We do this

---

41 AER, *Incentivising and measuring export service performance – Final report*, March 2023.

42 AER, *Insights into Australia's growing two-way energy system*, December 2024.

by comparing the efficiency scores of individual DNSPs against a benchmarking comparison score (adjusted further for some material and well-established OEFs as set out in section 7 of the 2024 Annual Benchmarking Report).

The AER's Consumer Challenge Panel has previously advocated for the raising of our benchmarking comparison point and a tightening of the analysis of whether a DNSP is "not materially inefficient".[43] Further, in the AER's recent *Review of incentive schemes for Networks*, questions were raised by consumers on whether we should use benchmarking more aggressively in setting our expenditure forecasts. Our conclusion in the final decision for that review was that there may be a case to revise the 0.75 comparison score as we refine our benchmarking techniques, so that benchmarking is applied at a point closer to the efficiency frontier.[44]

As we have previously noted, we consider the current benchmarking comparison point to be conservative, and sufficient in providing a margin for the general limitations of the models with respect to the specification of outputs and inputs, data imperfections, other uncertainties when forecasting efficient opex, and quantification of OEFs. We consider it appropriate to be conservative while our benchmarking models and OEF assessments are maturing, and the underlying data and methods are being refined as set out above. We also note that it is important to provide a level of certainty to the industry and other stakeholders, given that benchmarking is a key input in the AER's decision making.

However, in light of the above reviews, we are proposing to commence a review of the benchmark comparison point from 2026, once the Victorian distribution revenue determinations have been settled, and in preparation for the next 'round' of determinations. We note the submissions outlined in Appendix A of this report, as well as submissions to previous Annual Benchmarking Reports, which state that this review should only occur after significant maturation of our benchmarking approach and all outstanding benchmarking development issues are resolved. We will examine these arguments and consider interrelationships between and relative priorities of our development work in the context of reaching a final decision on commencing this review from 2026.

3.5 Other incremental issues

In addition to the above, we consider the following incremental improvements should be made over time, subject to our prioritisation criteria. These will be progressed as a part of preparation of our annual benchmarking reports or revenue determination processes as appropriate:

- Data refinements in response to our annual review of economic benchmarking RIN data and data issues identified by stakeholders. This includes the ongoing treatment of lease and SaaS implementation costs, whether GSL payments should be included in benchmarking, and inconsistencies in data relating to emergency response.
- Improving the way we measure the quantity of lines and cables inputs. We collect DNSP-specific voltage capacity data, measured in megavolt amperes (MVA), for lines

---

43 See CCP, *Submission to the AER Opex Productivity Growth Forecast Review Draft Decision Paper*, 20 December 2018, p. 13.

44 AER, *Review of incentive schemes for networks, Final decision*, April 2023, p. 5.

and cable by broad voltage category, and ask DNSPs to allow for operating constraints. However, DNSPs have adopted a wide range of, and in some cases, frequently changing methods to estimate the constrained MVAs. We plan to explore alternative measures to improve consistency, including 'nameplate' capacity of the installed lines and cables. To reduce the data burden on DNSPs, this information could be collected for a 'snapshot' year for each DNSP and those values applied to other years for the DNSP.

- Examining the weight allocated to the reliability output in the PIN models and whether it should be capped in some way to account for year-to-year fluctuations in exogenous factors, primarily weather, that unduly impact reliability performance and productivity growth results. Currently, the reliability output, customer minutes off-supply, enters the models as a negative output and is weighted by the value of customer reliability. It is already calculated exclusive of major event days and 'excluded' outages.
- Continuing to improve and update the quantification of material OEFs, working with DNSPs. Improving the data and quantification of the vegetation management OEF will be a future focus. We also intend to implement any potential incremental refinements to our approach to other OEFs where appropriate. However, at this stage, it is unlikely that we will undertake a holistic review of all OEFs and will more likely make incremental improvements through the revenue determination processes.
- Following the inclusion of emissions reduction as one of the National Energy Objectives, we will consider the impact, if any, on our benchmarking of DNSPs. This will likely include if / how emissions reductions are / should be captured in the benchmarking models, particularly on the input side, but also on the output side, including any interdependencies with consumer energy resources, hosting capacity and export services.
- If and how the Northern Territory DNSP Power and Water should be included in our benchmarking.

Shortened forms

Term	Definition
AEMC	Australian Energy Markey Commission
AER	Australian Energy Regulator
AGD	Ausgrid
AND	AusNet (distribution)
AUC	Annual User Cost (of capital)
Capex	Capital expenditure
CIT	CitiPower
DNSP	Distribution network service provider
END	Endeavour Energy
ENX	Energex
ERG	Ergon Energy
ESS	Essential Energy
EVO	Evoenergy
JEN	Jemena
MPFP	Multilateral partial factor productivity
MTFP	Multilateral partial factor productivity
MW	Megawatt
NEL	National Electricity Law
NEM	National Electricity Market
NER	National Electricity Rules
Opex	Operating expenditure
PC	Productivity Commission
PCR	Powercor
PFP	Partial factor productivity
PIN	Productivity index number
PPI	Partial performance indicator
RAB	Regulated asset base

Term	Definition
RMD	Ratcheted maximum demand
RIN	Regulatory information notice
RIO	Regulatory information order
SAP	SA Power Networks
SaaS	Software as a Service
TFP	Total factor productivity
TND	TasNetworks (distribution)
UED	United Energy
WACC	Weighted Average Cost of Capital

Glossary

Term	Definition
Capital Deepening	Capital deepening refers to an increase in the capital/labour ratio or an increase in the capital stock per worker. This can occur through an increase in capital stock, or a decrease in the number of workers.
Inputs	Inputs are the resources DNSPs use to provide services.
LSE	Least squares econometrics is an econometric modelling technique that uses 'line of best fit' statistical regression methods to estimate the relationship between inputs and outputs. Because they are statistical models, LSE operating cost function models with dummy variables for individual firms allow for economies and diseconomies of scale and can distinguish between random variations in the data and systemic differences in DNSP efficiency.
MPFP	Multilateral partial factor productivity is a PIN technique that measures the relationship between total output and total input. It allows for partial productivity levels and growth rates to be compared across networks and over time.
MTFP	Multilateral partial factor productivity is a PIN technique that measures the relationship between total output and one input or a particular subset of inputs. It allows for total productivity levels and growth rates to be compared across networks and over time.
Network services opex	Operating expenditure for network services. It excludes expenditure associated with metering, customer connections, street lighting, ancillary services and solar feed-in tariffs.
OEFs	Operating environment factors beyond the control of a DNSP that can affect its costs and relative benchmarking performance.
Opex	Operation and maintenance expenditure.
Outputs	Outputs are qualitative and quantitative measures of the services DNSPs provide.
PIN	Productivity index number techniques determine the relationship between inputs and outputs using a mathematical index.
PPI	Partial performance indicators are simple techniques that measure the relationship between an output and a single input, or group of inputs.
Productive efficiency	Productive efficiency is achieved when DNSPs produce their services (outputs) at least possible cost. To achieve this, DNSPs must be technically efficient (produce a given level of outputs with the least possible inputs) while also selecting the lowest cost combination of inputs given prevailing input prices.
RMD	Ratcheted maximum demand is the highest value of maximum demand for each DNSP, observed across the full benchmarking time period. It

Term	Definition
	recognises the capacity that a DNSP has historically required to meet customer demand, despite this level of demand not necessarily being matched in subsequent years.
SFA	Stochastic frontier analysis is a modelling technique that uses advanced statistical methods to estimate the relationship between outputs and inputs at the productivity frontier. SFA models allow for economies and diseconomies of scale and directly estimate efficiency for each DNSP relative to the best practice frontier.
TFP	Total factor productivity measures the relationship between total output and total input over time. It allows total productivity changes of a single entity (e.g. the distribution industry or an individual DNSP) to be compared over time.
VCR	Value of Customer Reliability. VCR represents a customer's willingness to pay for a reliable supply of electricity.

Appendix A – Submissions

Appendix A of this report summarises key issues raised in submissions on the draft 2025 Annual Benchmarking Report and results, split into sub-categories. We note that more detailed responses to technical issues raised in submissions are included in section 1.6 of the accompanying Quantonomics report, and in the two Quantonomics output weight memorandums published on our website.

Stakeholder	Issue	Our response
	Output weights	
Ergon Energy & Energex	• Voiced support for the update of output weights and further recommended adopting an annual output weight update process to align with econometric practices and to accurately reflect revised historical data.	We are open to considering a more frequent update of output weights going forward, while still giving weight to the competing objectives of maintaining both accuracy and stability in our benchmarking. This consideration has been spurred on by the material changes in the output weights since the last update (2020), methodological refinements proposed by stakeholder submissions which we would be able to incorporate in a future update, the views of our benchmarking consultant, Quantonomics regarding these methodological refinements, and reflecting that the electricity distribution industry is operating in a rapidly changing energy environment. We will consult networks on the potential of more frequent output weight updates ahead of the 2026 Annual Benchmarking Report, noting the trade-offs involved.
Essential Energy	• Argued that the output weight update and associated rebasing of results are not linked to genuine changes in efficiency, and reduce the regard given by industry to DNSP rankings published in the Annual Benchmarking Reports.	We note that the output weight update carried out ahead of this year's Annual Benchmarking Report was based on the prevailing 'Economic Insights' methodology, which was found to be fit-for-purpose in the 2024 independent review. We highlight the need for periodic updating of the output weights to reflect the most recent available data, any data updates or revisions that have occurred since the time of the last output weight update, and to ensure higher accuracy. We aim to strike a balance between maintaining accuracy, and stability, by updating the output

<table>
<tr><th>Stakeholder</th><th>Issue</th><th>Our response</th></tr>
<tr><td></td><td></td><td>weights periodically so as to minimise the instances where results are rebased.

We additionally highlight that while relative DNSP productivity as measured by MTFP and MPFP indexes has changed as a result of the output weight update, the productivity trends of individual DNSPs and the industry have not. We therefore consider that the MTFP and MPFP modelling presented in our Benchmarking Reports remains a useful tool for industry to gauge their productivity performance over time, and to observe the effect of certain business decisions and operations over time.</td></tr>
<tr><td>AusNet</td><td>Raised concerns around the reliability and stability of the underlying econometric modelling and note that the large changes in output weights reflect model instability, reducing the meaningfulness of the benchmarking results.
Noted that regional or complex networks are disadvantaged under the new output weights, and noted that the benchmarking framework should not penalise networks for their underlying network characteristics.
Recommended the application of smoothing techniques, or the use of an output weight calculation method that produces more stable output weights over time. Further recommendation that the AER consider the intuitive soundness of the new output weights before applying them in the MTFP modelling.</td><td>The accompanying Quantonomics report and output weight memorandums provide a more detailed assessment regarding the reliability and stability of the econometric modelling involved in updating the output weights, and suggestions around smoothing techniques or alternative output weight calculation methods. We note that the current estimation method has limitations and are certainly open to exploring alternative methods or refinements to the existing method. However, we once again note the outcome of the 2024 independent review in determining the current method fit-for-purpose, and the costs and trade-offs involved in further work to refine or make changes to the output weight calculation methodology.

We further note that the five-output specification of our MTFP / MPFP models accounts for and allows for differences in customer, energy and demand density across DNSPs (reflecting customer composition) without inherently disadvantaging the less-dense networks. To the extent that more rural or complex networks have been disadvantaged by the increase in the weight placed on ratcheted maximum demand, and the decreasing weight on circuit length, we note that</td></tr>
</table>

Stakeholder	Issue	Our response
		the updated weights more accurately reflect the contemporary output-cost relationship as a result of data additions and updates.
Jemena	• Voiced support for the update of the output weights and the independent review completed in 2024 and noted the merit of revising the output weight estimation approach in five-years' time when a larger data sample becomes available.	We acknowledge Jemena's support for the output weight update and its engagement throughput the 2024 independent review process. We will consider the scope of any future development work regarding the output weight methodology as part of our forward-looking benchmarking development program. In light of competing priorities (Table 5) and the recently completed independent review, we do not intend to revisit the output weights methodology in the near-term.
Evoenergy	• Supported the output weight update, however raising estimation issues in the update process. • Provided a detailed technical submission noting various issues with the current output weight estimation methodology. • Called on a review of the current method's reliability given the material change in output weights.	The accompanying Quantonomics report and output weight memorandums provide a more detailed assessment regarding the reliability and stability of the econometric modelling involved in updating the output weights, and suggestions around smoothing techniques or alternative output weight calculation methods. We note that the current estimation method has limitations and are exploring refinements to the existing method that can be implemented along with the next periodic update. However, we once again note the outcome of the 2024 independent review in determining the current method fit-for-purpose, and the costs and trade-offs involved in further work to refine or make changes to the output weight calculation methodology.
SA Power Networks	• Voiced serious concerns regarding the output weight update, including mis-specification of the underlying Leontief models used to estimate the output weights. • Provided a detailed technical submission noting various issues with the current output weight estimation methodology.	The accompanying Quantonomics report and output weight memorandums provide a more detailed assessment regarding the reliability and stability of the econometric modelling involved in updating the output weights, and suggestions around smoothing techniques or alternative output weight calculation methods. We note that the current estimation method has limitations and are exploring

Stakeholder	Issue	Our response
	• Recommended options involving retaining previous output weights until a fulsome review is completed, or publishing results under both new and old output weights, and committing to a formal review and consultation on the issue.	refinements to the existing method that can be implemented along with the next periodic update. However, we note the outcome of the 2024 independent review in determining the current method fit-for-purpose, and the costs and trade-offs involved in further work to refine or make changes to the output weight calculation methodology. We have concluded, in cooperation with our consultant, Quantonomics that there is no evidence that the large changes observed in output weights were caused by model mis-estimation or instability. We therefore consider it appropriate to continue using the updated output weight in this year's benchmarking report, as well as future benchmarking reports. We have included analysis in this report, and the accompanying Quantonomics report, that sets out the impact of the output weight update on DNSP MTFP / MPFP results as well as the results under the previous output weights, for transparency.
MTFP / MPFP model specification		
Ausgrid	• Considered that the output specification and weights have not evolved alongside industry changes (two-directional networks) and new services provided by networks which may appear as output reductions in MTFP / MPFP modelling. • Recommended a review of the benchmarking framework to ensure it remains fit-for-purpose in a rapidly evolving energy landscape.	Our prevailing thinking regarding benchmarking development work involves performing more targeted, well-scoped and well-defined development work, as opposed to broader and open-ended reviews of the entire framework. For this reason, we have been able to continue making improvements to our existing benchmarking framework in a timely and predictable manner. We consider the future export services review slated to commence by 2027 to be a logical next step in considering whether the current output specification remains fit-for-purpose and what, if any changes should be made to reflect the dynamic operating environment for the electricity distribution industry.

Stakeholder	Issue	Our response
Essential Energy	• Noted that benchmarking does not reflect DER/CER and call on the AER to commence the 2027 export services review sooner.	We note in section 3.3 and the 2023 *Incentivising and measuring export service performance* review the ways in which our benchmarking does, and does-not account for CER, including our current views on the materiality of these issues. As noted in section 3.3, we do not believe there is sufficient basis for commencing this review sooner, particularly when considering trade-offs with other, more material work in our benchmarking development pipeline.
SA Power Networks	• Called on a fulsome review or consultation around issues with MTFP / MPFP modelling, and support bringing forward the export services review slated for 2027.	Our prevailing thinking regarding benchmarking development work involves performing more targeted, well-scoped and well-defined development work, as opposed to broader and open-ended reviews of the entire framework. For this reason, we have been able to continue making improvements to our existing benchmarking framework in a timely and predictable manner. We consider the future export services review slated to commence by 2027 to be a logical next step in considering whether the current output specification remains fit-for-purpose and what, if any changes should be made to reflect the dynamic operating environment for the electricity distribution industry.
Monotonicity issues and Translog model performance		
Ergon Energy & Energex	• Highlighted the ongoing monotonicity issues evident in the Translog econometric models and support the AER's current development work investigating the reliability and potential improvement of the Translog models. • Recommended the continued prioritisation of development issues with direct bearing on DNSPs' revenue resets.	We appreciate Ergon Energy's & Energex's support for our Translog development work, and their engagement with this process.

Stakeholder	Issue	Our response
Ausgrid	• Supported the prioritisation of development work regarding the opex cost function review to address model misspecification that may be driving non-convergence and monotonicity violations. Ausgrid noted its intention to continue participating in consultation on this piece of development work.	We appreciate Ausgrid's support for our Translog development work, and its engagement with this process.
Operating Environment Factors (OEFs)		
Essential Energy	• Raised the critical importance of the vegetation cost OEF which has been called out as needing to be developed since 2018, further noting that the AER has acknowledged Essential Energy's bushfire related obligations outside of benchmarking through the acceptance of a bushfire risk reclassification contingent project in early 2025. • Called on the AER to consult on OEFs as part of the annual benchmarking process, rather than one-on-one with networks as part of bespoke resets.	As noted in section 3, we are prioritising other specific development issues ahead of refining and adding to our existing OEFs, with our approach of addressing OEF issues in bespoke resets as a compromise allowing for material and influential OEFs to be addressed where they are critical to the outcome of a DNSP's regulatory determination. An example of this is our inclusion of a workers compensation insurance OEF, update of the taxes and levies OEF and consideration of a network overheads OEF in the context of Evoenergy's latest regulatory determination.
TasNetworks	• Noted the inherent difficulties associated with benchmarking network with varied operating environments and notes TasNetworks' unique network structure compared to mainland DNSPs.	We acknowledge the unique nature of TasNetworks network, particularly in relation to the relative lack of sub-transmission infrastructure and note the inclusion of text regarding TasNetworks' unique network structure in the Quantonomics benchmarking report.
AusNet	• Reiterated calls for the development or update of a number of OEFs including terrain, storm risk, bushfire and GSL payments while also calling on a holistic review of benchmarking.	As noted in section 3, we are prioritising other specific development issues ahead of refining and adding to our existing OEFs, with our approach of addressing OEF issues in bespoke resets as a compromise allowing for material and influential OEFs to be addressed where they are critical to the outcome of a DNSP's regulatory determination. Our prevailing thinking regarding benchmarking development work involves performing more targeted,

Stakeholder	Issue	Our response
		well-scoped and well-defined development work, as opposed to broader, holistic and open-ended reviews of the entire framework. For this reason, we have been able to continue making improvements to our existing benchmarking framework in a timely and predictable manner.
	Benchmarking consultation process	
Ergon Energy & Energex	• Noted a concern around changes to the benchmarking consultation process and the removal of a DNSP review of the final AER Annual Benchmarking Report, as well as the removal of the AER's benchmarking development plans from the final report.	We understand concerns around changes to the Annual Benchmarking Report consultation process and will continue to refine our approach to consultation whilst still looking to eliminate unnecessary duplication. We note that the AER Annual Benchmarking Report has been streamlined significantly compared to previous years and focuses more on summarising, rather than introducing any new results compared to the more comprehensive Quantonomics report which we consult on. We acknowledge the importance of transparency around our forward benchmarking development program and have continued to include a benchmarking development section in this Annual Benchmarking Report (section 3). We will consider how best to consult on our benchmarking development program in future benchmarking reports, given the exclusion of benchmarking development from the Quantonomics report.
Essential Energy	• Recommended that the AER consult on a draft of its executive summary style report together with the Quantonomics report and results.	We will give consideration to Essential Energy's recommendations, noting that the AER report does not include any 'new' results not consulted on as part of the Quantonomics report and results. To the extent that the AER report includes plans regarding benchmarking development, which are not included in the Quantonomics report, we will consider how best to include consultation on this.

Stakeholder	Issue	Our response
Data issues / write-up errors		
Ergon Energy & Energex	• Noted three issues with the benchmarking dataset, relating to Ergon Energy cells incorrectly linking to SA Power Networks data, and inconsistencies in formulas relating to the inclusion of underground subtransmission lines and underground distribution lines.	We have determined that the first error identified is incorrect, the Ergon Energy cells referenced as linking to SA Power Networks data are in-fact unrelated to Ergon Energy. This is likely a presentational issue in our spreadsheets which we work to clear up. The second and third issue identified have been confirmed, although have been deemed immaterial (in all instances, cells with zero value are being added erroneously, or are being erroneously excluded). We will correct inconsistencies in the formulas ahead of the 2026 Annual Benchmarking Report modelling.
Ausgrid	• Highlighted a typographical error in Quantonomics write-up.	Quantonomics has made the correction in its report.
SA Power Networks	• Noted that SA Power Networks' updated revenue for 2023–24 has not been included in the benchmarking dataset.	We confirm that SA Power Networks latest accepted revenue for 2023–24 has not been included in our dataset. The updated revenue is 0.6% higher than what is included in the dataset currently. We have determined that the effect of this error is immaterial (less than a third decimal place in SAPN's 2024 MTFP) and will update our data for SA Power Networks' latest revenue ahead of the 2026 Annual Benchmarking Report.

Appendix B – References and further reading

Several sources inform this benchmarking report. These include ACCC / AER research and expert advice provided by Quantonomics, and previously by Economic Insights.

Quantonomics publications

The following publication explains in detail how Quantonomics applied the economic benchmarking techniques used by the AER as well as considerations around benchmarking development:

- Quantonomics, Opex Cost Function Development (Phase 2 memorandum), November 2025
- Quantonomics, Nonreliability Output Index Weights ABR25 – Supplementary Analysis, November 2025
- Quantonomics, Nonreliability Output Index Weights ABR25, May 2025
- Quantonomics, Economic Benchmarking Results for the Australian Energy Regulator's 2025 DNSP Benchmarking Report, November 2025
- Quantonomics, Opex Cost Function Development (Phase 1 memorandum), November 2024 (link)
- Quantonomics, Economic Benchmarking Results for the Australian Energy Regulator's 2024 DNSP Benchmarking Report, October 2024 (link)
- Quantonomics, Economic Benchmarking Results for the Australian Energy Regulator's 2023 DNSP Benchmarking Report, November 2023 (link)
- Quantonomics, Economic Benchmarking Results for the Australian Energy Regulator's 2022 DNSP Benchmarking Report, November 2022 (link)

Economic Insights publications

The following publications explain in detail how Economic Insights developed and applied the economic benchmarking techniques used by the AER.

- Economic Insights, Economic Benchmarking Results for the Australian Energy Regulator's 2021 DNSP Benchmarking Report, 12 November 2021 (link)
- Economic Insights, Economic Benchmarking Results for the Australian Energy Regulator's 2020 DNSP Benchmarking Report, 13 October 2020 (link)
- Economic Insights, AER Memo Revised files for 2019 DNSP Economic Benchmarking Report, 24 August 2020
- Economic Insights, Economic Benchmarking Results for the Australian Energy Regulator's 2019 DNSP Benchmarking Report, 16 October 2019 (link)
- Economic Insights, Economic Benchmarking Results for the Australian Energy Regulator's 2018 DNSP Benchmarking Report, 9 November 2018 (link)

- Economic Insights, Economic Benchmarking Results for the Australian Energy Regulator's 2017 DNSP Benchmarking Report, 31 October 2017
- Economic Insights, Memorandum – DNSP Economic Benchmarking Results Report, 4 November 2016 (link)
- Economic Insights, Memorandum – DNSP MTFP and Opex Cost Function Results, 13 November 2015 (link)
- Economic Insights, Response to Consultants' Reports on Economic Benchmarking of Electricity DNSPs, 22 April 2015 (link)
- Economic Insights, Economic Benchmarking Assessment of Operating Expenditure for NSW and ACT Electricity DNSPs, 17 November 2014 (link)
- Economic Insights, Economic Benchmarking of Electricity Network Service Providers, 25 June 2013.

ACCC/AER publications

These publications provide a comprehensive overview of the benchmarking approaches used by overseas regulators.

- ACCC/AER, Benchmarking Opex and Capex in Energy Networks – Working Paper no. 6, May 2012 (link)
- ACCC/AER, Regulatory Practices in Other Countries – Benchmarking opex and capex in energy networks, May 2012 (link)
- WIK Consult, Cost Benchmarking in Energy Regulation in European Countries, 14 December 2011 (link).

AER distribution determinations

The AER applies economic benchmarking to assess the efficiency of total forecast opex as proposed by distribution network service providers. These decisions provide examples of how the AER has applied benchmarking in its decision making:

- AER, Draft Decision, Ergon Energy Electricity Distribution Determination 2025–30 – attachment 6 – Operating expenditure, September 2024 (link)
- AER, Final Decision, Evoenergy distribution determination 2024–29 – Attachment 6 – Operating Expenditure, April 2024 (link)
- AER, Draft Decision, Evoenergy distribution determination 2024–29 - Attachment 6 - Operating Expenditure, September 2021 (link)
- AER, Final Decision, Jemena distribution determination 2021–26 - Attachment 6 - Operating Expenditure, April 2021 (link)
- AER, Draft Decision, Jemena distribution determination 2021–26 - Attachment 6 - Operating Expenditure, September 2020 (link)
- AER, Final Decision, AusNet Services distribution determination 2021–26 - Attachment 6 - Operating Expenditure, April 2021 (link)

- AER, Draft Decision, Ergon Energy distribution determination 2020–21 to 2024–25 - Attachment 6 - Operating Expenditure, October 2019 (link)
- AER, Draft Decision, SA Power Networks distribution determination 2020–21 to 2024–25 - Attachment 6 - Operating Expenditure, October 2019 (link)
- AER, Draft Decision, Ausgrid distribution determination 2019–20 to 2023–24 - Attachment 6 - Operating Expenditure, November 2018 (link)
- AER, Final Decision, Ausgrid distribution determination 2014–15 to 2018–19, January 2019 (link)
- AER, Final Decision, Jemena distribution determination 2016 to 2020 - Attachment 7 - Operating Expenditure, May 2016, p. 7–22 (link)
- AER, Final Decision, Endeavour Energy distribution determination 2015–16 to 2018–19 - Attachment 7 - Operating Expenditure, April 2015 (link)
- AER, Preliminary decision, Ergon Energy determination 2015–16 to 2019–20 - Attachment 7 - Operating Expenditure, April 2015 (link).