January 2026

Powerlink 2027-32 Revenue Proposal

Appendix 5.03

HoustonKemp - Efficiency of Powerlink's Base Year Operating Expenditure

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Economists

Efficiency of Powerlink's proposed base year operating expenditure (2027-32)

A report for Powerlink

13 January 2026

HoustonKemp.com

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1. Introduction and key findings

Powerlink is developing its forecast operating expenditure (opex) for its 2027-32 revenue proposal, and is proposing to adopt its outturn opex for 2025/26 (the penultimate year of its current regulatory period) as its base year from which the opex forecast will be derived.

Powerlink has asked HoustonKemp to provide advice on:

- the efficiency of Powerlink's opex for 2025/26, drawing on the Australian Energy Regulator's (AER's) most recent benchmarking analysis, an understanding of the benchmarking techniques used, the conclusions that are able to be drawn from such an analysis and its role within the regulatory framework;
- an assessment of Powerlink's historical opex over time and compared to the other Transmission Network Service Providers (TNSPs) in the National Electricity Market (NEM), including performance across different opex categories and an assessment of the relevant operating environment factors applying to Powerlink's network;
- based on the above analysis, our view of whether forecast 2025/26 base year opex is efficient or whether the analysis suggests that an adjustment to revealed outturn opex for 2025/26 (once available) would be appropriate; and
- an appropriate productivity growth factor to apply over the upcoming regulatory period, considering the AER's previous approach and interactions with the Efficiency Benefit Sharing Scheme (EBSS).

The analysis and conclusions in this report are based on Powerlink's current forecast opex for 2025/26, and will be updated in our final report (in August 2026) to reflect Powerlink's actual revealed 2025/26 opex once available.

1.1 Key findings

The AER's assessment of both the efficiency of proposed base year opex for a TNSP and the appropriate productivity trend change in opex includes consideration of the results of its benchmarking analysis. Specifically, benchmarking provides the AER with insights into:

- the relative efficiency of a TNSP's opex, capex and total expenditure against its peers; and
- changes in a TNSP's expenditure efficiency through time.

The data used by the AER in its most recent benchmarking analysis, released on 27 November 2025, is currently available for the period to 2023/24. Our analysis of this data, using the same benchmarking model as the AER, shows that Powerlink's opex multilateral partial factor productivity (MPFP) performance declined slightly in 2023/24, although this was generally consistent with most other TNSPs. Analysis of Powerlink's 'input' and 'output' measures shows that the decline in opex MPFP performance is largely driven by an increase in Powerlink's opex without a corresponding increase in output.

The principal drivers of the recent increases in Powerlink's opex in 2022/23 and 2023/24 are in the corporate support, maintenance support and network operations categories. Powerlink attributes much of the recent increases in opex in the current regulatory period to changes in its operating environment, including customer and community expectations, increased demand for skilled labour (with corresponding effects on its recent enterprise agreements (EAs)) and the increased complexity of the power system (such as large-scale renewables) which is driving activities including in network operations.

The AER recognised in its most recent benchmarking report that the substantial investments in transmission infrastructure at present are captured in the benchmarking inputs (opex and capital) but may not be well-captured by the current choice of output variables. These changes may be making it harder to draw conclusions about efficiency from the benchmarking analysis, as the relationship between the measured inputs and outputs changes.

The AER's benchmarking analysis also shows that while Powerlink's opex MPFP performance declined to 2023/24, the changes prior to that date appear to broadly mirror industry trends, experienced across the majority of TNSPs.

Powerlink's opex is forecast to increase materially to 2025/26. To the extent that its peers also experience material increases in opex (without corresponding increases in output), it may be the case that Powerlink's opex continues to reflect the broader industry trend – as appears to have been the case for most TNSPs in 2023/24. The 2024/25 data for other TNSPs is expected to be available by the time of our final report in August 2026 and should provide a good indication of whether this is the case, although we note that some cost increases (such as EA effects) may take some time to flow through for other TNSPs whose new EAs have commenced more recently. If other TNSPs experience similar cost increases, this would lend weight to increased opex being caused by factors that are materially out of the control of TNSPs without being reflected in the AER's benchmarking output measures.

In the absence of further evidence regarding broader industry trends, Powerlink's current benchmarking results are not yet sufficient to support a conclusion that its (forecast) 2025/26 opex is not materially inefficient. In order to better support such a conclusion, Powerlink needs to explain in detail the reasons that its opex is forecast to increase materially in 2025/26. The analysis of the key price and activity drivers set out in this report provides a good basis for identifying the key drivers of changes in its opex over time.

In order for the AER to be satisfied that Powerlink's 2025/26 opex is not materially inefficient, we expect that Powerlink will need to explain that:

- increases in the *price* of opex items (such as higher labour rates) are efficient or otherwise out of Powerlink's control, eg, that increased labour costs reflect the broader (global) demand for a limited pool of skilled labour; and
- increases in the *quantity* of opex items (such as more hours spent or new activities) are efficient, especially to the extent that those increases are not represented in the AER's output measures (which the AER has indicated may be the case), eg, additional cyber security expenditure or increased opex arising from increased connection activities over time.

The opex productivity factor reflects an expectation of the further improvement in efficiency a TNSP may be reasonably expected to achieve over the forthcoming regulatory period, from the efficient level in the base year. The benchmarking data provide only limited evidence to apply any positive opex productivity factor for Powerlink for the forthcoming regulatory period, due to the level of statistical significance of the estimate derived from the benchmarking analysis and variability in the results when TasNetworks is excluded. Put simply, the benchmarking data suggest zero may be an appropriate productivity factor for Powerlink for the 2027-32 period. Notwithstanding, we understand that Powerlink has incorporated a productivity factor of 0.4 per cent in its revenue proposal, consistent with the value presented in the consulting report supporting the AER's most recent benchmarking report.

Notwithstanding whether or not a positive productivity factor is applied, the regulatory framework (in particular the EBSS) will continue to provide a continuous incentive for Powerlink to make efficiency gains over time and should be expected to drive opex efficiencies in the next regulatory period.

2. Operation of the regulatory framework

The efficiency of Powerlink's opex for the 2025/26 base year, and the factors used to assess that efficiency, need to be considered within the context of the regulatory framework applying to Powerlink.

In this section we set out:

- key features of the regulatory framework for TNSPs;
- how the AER uses its benchmarking model within that framework to inform an assessment of base year opex efficiency; and
- the appropriate productivity growth factor to apply to a regulatory period.

2.1 Regulatory framework for TNSPs

Opex refers to the maintenance and non-capital costs incurred in the provision of prescribed services, and comprises a separate 'building block' in a TNSP's revenue allowance.

TNSPs are required by the National Electricity Rules (the Rules) to submit a revenue proposal for each regulatory control period. As part of that proposal, the TNSP must forecast the total opex for each year during the regulatory period that it considers necessary to achieve each of the opex objectives set out in the Rules, which are:[1]

1. to meet or manage the expected demand for prescribed transmission services over that period;
2. to comply with all applicable regulatory obligations or requirements associated with the provision of prescribed transmission services;
3. to the extent that there is no applicable regulatory obligation or requirement, maintain to the relevant extent:
    a. the quality, reliability and security of supply of prescribed transmission services; and
    b. the reliability and security of the transmission system through the supply of prescribed transmission services;
4. to maintain the safety of the transmission system through the supply of prescribed transmission services; and
5. to contribute to achieving emissions reduction targets through the supply of prescribed transmission services.

The AER is required by the Rules to form a view on total forecast opex for the forthcoming regulatory control period (rather than on subcomponents such as individual projects or programs). It must accept a TNSP's total forecast opex if it is satisfied that the forecast reasonably reflects each of the opex criteria in the Rules, which are:[2]

1. the efficient costs of achieving the opex objectives;
2. the costs that a prudent operator would require to achieve the opex objectives; and
3. a realistic expectation of the demand forecast, cost inputs and other relevant inputs required to achieve the opex objectives.

[1] National Electricity Rules (hereafter NER), clause 6A.6.6(a).

[2] NER, clause 6A.6.6(c).

The Rules provide a list of opex factors that the AER must take into account in its assessment, which include (but are not limited to) the most recent annual benchmarking report published by the AER, and the benchmark opex that would be incurred by an efficient TNSP over the relevant regulatory control period.[3]

The annual benchmarking report is a report that the AER is required to prepare and publish, and which is intended to describe, in reasonably plain language, the relative efficiency of each TNSP in providing prescribed network services over a 12 month period.[4]

We describe the role of benchmarking in relation to informing the AER's decision on efficient base year opex, in the context of the AER's 'base-step-trend' approach to determining a TNSP's opex allowance in section 2.2. We further describe the role of benchmarking in estimating the productivity adjustment applied to opex over the regulatory period in section 2.3. However, it is important to recognise that the AER's consideration of both the efficiency of base year opex, and its derivation of an appropriate productivity adjustment takes place within the context of the incentive mechanisms included in the regulatory framework. We therefore first elaborate on the EBSS incentive scheme that applies to TNSP's opex.

2.1.1 Efficiency benefit sharing scheme

The Rules require the AER to develop and publish a scheme (the EBSS) that provides for a 'fair sharing' between the TNSP and network users of gains (losses) derived from the TNSP's operating expenditure if it is less (more) than the forecast opex accepted or substituted by the AER for a regulatory control period.[5]

The EBSS was designed to counteract the incentives that would otherwise exist for a TNSP operating under a revenue cap to make inefficient expenditure decisions towards the end of a regulatory control period directed at maximising its future revenue allowances. Absent the EBSS, reliance on outturn opex to guide the determination of a TNSP's future opex allowance could create incentives for a TNSP to undertake strategic behaviour such as inflating its opex allowance in the base year or delaying the implementation of efficiency enhancing measures until the next regulatory period, in order to increase the gains that it retains from improving efficiency.

The current form of the EBSS applies in conjunction with the:

- ex-ante nature of the regulatory framework;
- 'no claw-back' principle, allowing TNSPs to retain any difference between their regulatory expenditure allowance and their actual expenditure; and
- revealed cost approach to forecasting opex for the following regulatory period.

Taken together, this framework removes the inconsistent incentives described above. The EBSS was designed such that:

- both temporary and permanent gains (losses) arising from underspending (overspending) relative to forecast opex are shared between TNSPs and customers; and
- the rate of retention of any gains (losses) is invariant as to the timing within a regulatory period at which those gains (losses) occurred.

These arrangements provide TNSPs with an increased share of the benefits of any gains – by delaying the sharing of these gains with customers – thereby increasing the incentive to make cost savings.

[3] NER, clause 6A.6.6(e).

[4] NER, clause 6A.31(a).

[5] NER, clause 6A.6.5(a).

The timing component of the EBSS means that TNSPs are incentivised to make opex cost savings in all years throughout the regulatory period, including any proposed base year for the following regulatory period. This in turn allows for a presumption that the TNSP's revealed outturn costs are efficient.

This presumption is reflected in the AER's expenditure forecast assessment guidelines, which state that:[6]

> For recurrent expenditure [such as opex], we prefer to use revealed (past actual) costs as the starting point for assessing and determining efficient forecasts. If a TNSP operated under an effective incentive framework, actual past expenditure should be a good indicator of the efficient expenditure the NSP requires in the future. The ex-ante incentive regime provides an incentive to improve efficiency (that is, by spending less than the AER's allowance) because TNSPs can retain a portion of cost savings made during the regulatory control period.

Similarly, the AER stated in its transmission determination for Powerlink's current regulatory period (2022-27):[7]

> Where a transmission business is responsive to the financial incentives under the regulatory framework, the actual level of opex it incurs should provide a good estimate of the efficient costs required for it to operate a safe and reliable network and meet its relevant regulatory obligations.

2.2 Role of benchmarking in setting base year opex

The AER generally assesses a TNSP's opex forecast on the basis of the 'base-step-trend' approach.[8] This involves the following three steps:

- determining an efficient base year opex;
- trending base year opex forward by applying a rate of change that accounts for growth in input prices, outputs and productivity over the regulatory period; and
- accounting for any step changes, which involve opex costs not captured in base year opex or the rate of change (ie, new regulatory obligations).

The AER's assessment of both the efficiency of proposed base year opex and the appropriate productivity trend change in opex includes consideration of the results of its most recent benchmarking analysis, consistent with this being one of the expenditure factors set out in the Rules. The AER will generally use base year opex as a starting point unless it is identified as being 'materially inefficient' based on the results of its benchmarking analysis.[9]

The benchmarking model adopted by the AER calculates the following types of TNSP benchmarks:[10]

- partial performance indicators (PPIs), which connect the quantity of a single input with each unit of output produced by a TNSP;
- multilateral partial factor productivity (MPFP), including both:
  - capital MPFP, which examines the productivity of the TNSP's use of overhead lines, underground cables and transformers; and
  - opex MPFP, which examines the productivity of the TNSP's use of opex; and

[6] AER, *Expenditure forecast assessment guideline for electricity transmission*, October 2024, p 5.

[7] AER, *Draft decision Powerlink Queensland transmission determination 2022 to 2027, Attachment 6: operating expenditure*, September 2021, p 613.

[8] AER, *Expenditure forecast assessment guideline for electricity transmission*, October 2024, p 21.

[9] See: AER, *Better resets handbook*, July 2024, pp 23-24; and AER, *Expenditure forecast assessment guideline for electricity transmission*, October 2024, p 21.

[10] AER, *Annual benchmarking report electricity transmission network service providers*, November 2025, pp 2-3..

- multilateral total factor productivity (MTFP), which compares the relative performance of each TNSP in totality by taking the ratio of TNSP outputs and inputs.

The AER uses economic benchmarking as part of its consideration when assessing and amending TNSPs' expenditure proposals.[11] Benchmarking provides the AER with insights into:[12]

- the relative efficiency of a TNSP's opex, capex and total expenditure against its peers; and
- changes in a TNSP's expenditure efficiency through time.

The AER has regard to each of these indicators when assessing whether the TNSP's audited base year opex costs are efficient.

It is relevant to note that the AER's approach to considering benchmarking in determining efficient base year opex for TNSPs differs from its assessment for DNSPs. Specifically, the AER does not calculate an efficiency stochastic frontier for TNSPs, nor does it calculate explicit adjustments for exogenous Operating Environment Factors (OEFs). As a result, the link between the outcomes of the AER's benchmarking model and its assessment of the efficiency of base year opex is much less mechanistic for TNSPs.

Rather, the AER describes the use of benchmarking for TNSPs as important for a 'first pass' assessment to identify areas that may warrant further review (although noting that it may also use the benchmarking beyond this first assessment).[13] This is consistent with the AER's recognition of the limitations of its benchmarking analysis for TNSPs (discussed further below).

The use of benchmarking in this capacity is consistent with the AER's expectation that TNSPs are provided sufficient incentives to operate efficiently, and therefore that revealed opex is a suitable basis upon which to determine forthcoming opex allowances (see section 2.1.1). As such, the AER will use base year opex as a starting point unless it is identified as being 'materially inefficient' based on the results of its benchmarking analysis.[14] In other words, there is no need for a further detailed assessment of opex if the benchmarking results do not highlight any material inefficiencies in the proposed base year opex.

2.3 Role of benchmarking in determining the change in opex over time

The AER also uses the benchmarking analysis to calculate the rate of change of opex for a given year as:[15]

$$\Delta\, Opex = \Delta\, Price + \Delta\, Output - \Delta\, Productivity$$

where:

- $\Delta\, Opex$ is the proportional change in opex in that year;
- $\Delta\, Price$ is the proportional change in input prices in that year;
- $\Delta\, Output$ is the proportional change in measured outputs in that year; and
- $\Delta\, Productivity$ is the proportional change in productivity in that year.

The AER has estimated the proportional change in outputs and the proportional change in productivity using results from its benchmarking analysis.

[11] AER, *Annual benchmarking report electricity transmission network service providers*, November 2025, p 2.

[12] AER, *Annual benchmarking report electricity transmission network service providers*, November 2025, p 2.

[13] AER, *Expenditure forecast assessment guideline for electricity transmission*, October 2024, p 10.

[14] See: AER, *Better resets handbook*, July 2024, pp 23-24; and AER, *Expenditure forecast assessment guideline for electricity transmission*, October 2024, p 21.

[15] AER, *Expenditure forecast assessment guideline for electricity transmission*, October 2024, p 22.

To estimate the output rate of change, the AER has previously taken a weighted average of the forecast change in each of the TNSP's outputs, ie, delivered energy, maximum demand, end-user customer numbers, and circuit length. The output weights have been derived from the benchmarking analysis and essentially determine the relative contribution of specific outputs to a TNSP's costs.

To estimate the proportional change in productivity, the AER has previously estimated the trend in productivity across all five TNSPs in the NEM (as an industry) over the period for which data is available. The AER has derived the change in productivity using one of the results of the benchmarking analysis, ie, the opex partial factor productivity (PFP) index.

2.4 Limitations of the AER's benchmarking for TNSPs

The AER recognises that there are limitations to the use of its benchmarking for TNSPs, for example, it has stated:[16]

> …we consider that transmission benchmarking is still less developed than distribution benchmarking. The small number of electricity transmission networks in Australia (five) also makes efficiency comparisons at the aggregate level difficult. Given this, as noted above, we take the results into account but do not solely rely on them in forming a view on opex inefficiency in revenue determinations.

Given this limitation, the AER has had regard to other factors in addition to benchmarking in assessing the efficiency of base year opex, such as the extent of relative efficiency improvements over time, to determine whether the TNSP is responding to the financial incentives in the regulatory framework, such as the EBSS.[17]

2.4.1 Operating environment factors

The AER's benchmarking provides useful information relating to the absolute and relative efficiencies of each TNSP. However, when comparing TNSPs, it is important to take into account OEFs that may be specific to one or a subset of TNSPs.

For example:

- TNSPs may apply different capitalisation policies, eg, there are instances where one TNSP may incorporate a particular expenditure into opex where another would capitalise the expenditure;
- differences in network terrain may influence the expenditure necessary to maintain the network; and
- differences in the geographic nature of transmission networks may mean that some TNSPs need to invest in particular infrastructure that is not required by others.

2.4.2 Recent developments

The specification of the model underpinning the AER's benchmarking approach was last updated in 2017.[18] In the eight years since the specification for TNSPs was last reviewed in detail, the nature of the transmission network has changed significantly.

[16] AER, *Annual benchmarking report electricity transmission network service providers*, November 2024, p 14.

[17] See, for example: AER, *TasNetworks electricity transmission determination 2014 to 2029, Attachment 6 operating expenditure*, September 2023, pp 9-10.

[18] See: Economic Insights, *Economic benchmarking results for the Australian Energy Regulator's 2017 TNSP benchmarking report*, 6 November 2017.

Renewable energy sources contributed 36 per cent of total electricity generation in 2024, compared to 15 per cent in 2017.[19] In 2024 alone, 7.6 gigawatts (GW) of renewable energy capacity were added over the year, compared to approximately 700 MW in 2017.[20] Large-scale battery storage has experienced remarkable growth across the NEM. In 2017, the first utility-scale battery – a 100 MW system – was connected to the grid. By 2024, total large-scale battery capacity had grown to approximately 2.2 GW.[21]

Further, maximum operational demand in Queensland (and, indeed, across the NEM) has been increasing – from approximately 9,000 MW in 2016/17 to just above 10,000 MW in 2024/25, and is 'projected to grow steadily through to 2030'.[22] Similarly, 'minimum operational demand forecasts continue to show a declining trend'.[23] Taken together, this means that TNSPs must operate a network with a wider operating demand envelope.

These factors, among others, contribute to the rapidly changing nature of the NEM, which is now a 'power system [that] is more complex and more dynamic than it has been in the past.'[24] In our view, it is reasonable to conclude that increased network complexity could impose additional opex on TNSPs to maintain equivalent service standards, without necessarily delivering corresponding increases in the output measures considered by the AER in its benchmarking. To the extent that this is the case, TNSPs would be likely to show declining performance in the benchmarking analysis, even if equivalent output levels are maintained.

The AER recognised in its most recent benchmarking report that:[25]

> …substantial investments in transmission networks will change the landscape (through increasing connection of large-scale renewable generation) and potentially affect the potency of the benchmarking report. We recognise that while this new transmission network investment is likely to be largely captured through the current economic benchmarking model inputs (opex and capital), it is less clear that this is the case for all relevant outputs.

The implication of additional costs being included in economic benchmarking model inputs but not reflected in outputs is that TNSPs would be expected to show a decline in benchmarking performance over time even if productivity remained unchanged.

As a consequence of the limitations of benchmarking for TNSPs, and as noted above, the AER does not use benchmarking as a mechanistic tool for assessing efficient opex, but rather considers benchmarking to be one among a range of relevant factors when making its assessment. The AER's most recent benchmarking report also indicates that the changes evident in the transition of the power system may also be making it harder to draw conclusions about efficiency from the benchmarking analysis, as the relationship between the measured inputs and outputs changes.

[19] Department of Climate Change, Energy, the Environment and Water (DCCEEW), *Australian Energy Statistics - Table O Electricity generation by fuel type 2023-24 and 2024,* June 2025, available at: https://www.energy.gov.au/publications/australian-energy-statistics-table-o-electricity-generation-fuel-type-2023-24-and-2024, accessed 13 January 2026; and DCCEEW, *Australian Energy Statistics - Table O Electricity generation by fuel type 2016-17 and 2017*, April 2018, available at: https://www.energy.gov.au/publications/australian-energy-statistics-table-o-electricity-generation-fuel-type-2016-17-and-2017, accessed 13 January 2026.

[20] Clean Energy Council, *Clean Energy Australia Report 2018*, January 2018, p 8; and Clean Energy Regulator, *Quarterly Carbon Market Report*, p 4.

[21] Clean Energy Council, *Quarterly investment report: Large-scale renewable generation and storage* | Q1 2025, May 2025, p 19.

[22] AEMO, *2021 Electricity Statement of Opportunities*, August 2021, p 80; and AEMO, *2025 Electricity Statement of Opportunities*, August 2025, p 34.

[23] AEMO, *2025 Electricity Statement of Opportunities*, August 2025, p 36.

[24] Energy Networks Australia, *Transitioning through Transmission,* 28 September 2023, available at: https://www.energynetworks.com.au/news/energy-insider/2023-energy-insider/transitioning-through-transmission/, accessed 13 January 2026.

[25] AER, *Annual benchmarking report electricity transmission network service providers*, November 2025, p 7.

3. Opex efficiency

Powerlink is proposing to use 2025/26 as its base year for the purpose of its revenue proposal. Assessing the efficiency of Powerlink's revealed (ie, actual) 2025/26 opex gives rise to timing issues, as information for each TNSP is available at different point. At the time of writing:

- the most recent AER annual benchmarking report, released in November 2025, relates to the 2023/24 financial year;
- the TNSPs have submitted their first annual information order (AIO) responses to the AER for the 2024/25 financial year – although these have not yet been provided publicly;[26] and
- Powerlink has provided us:
  - its outturn 2024/25 data and financial performance, as relevant for the benchmarking analysis; and
  - its most recent budget for the 2025/26 financial year.

As a result of these timing issues, this section focuses on the efficiency of Powerlink's revealed opex:

- to 2023/24, when comparing Powerlink's performance relative to other TNSPs; and
- to 2024/25 and 2025/26, when comparing Powerlink's (revealed and expected) performance over time.

3.1 Implications from AER's benchmarking analysis for the efficiency of Powerlink's opex

Given the difference in capitalisation policies between the TNSPs, as well as the inherent trade-offs between opex and capex, in assessing the efficiency of Powerlink's opex it is relevant to consider the benchmarking outcomes for total costs (ie, MTFP), as well as the relativities and movements in both opex and capex MPFPs over time.

In this section, we present Powerlink's benchmarking outcomes across each measure together with our assessment of the implications for the efficiency of Powerlink's projected 2025/26 opex, before presenting our overall assessment of the conclusions that can be drawn from the AER's benchmarking analysis in relation to the efficiency of Powerlink's 2025/26 opex.

3.1.1 MTFP

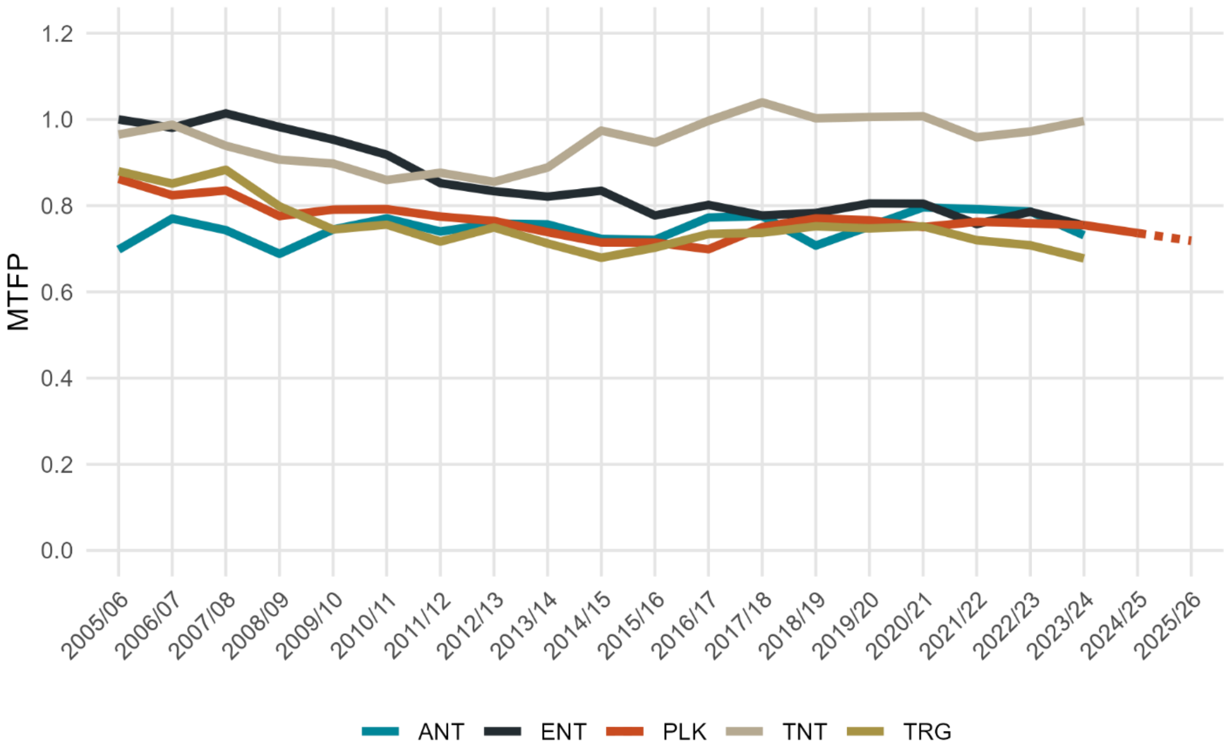
Figure 3.1 below shows that Powerlink's MTFP remained essentially unchanged in 2023/24 (0.75) compared with 2022/23 (0.76).[27] It also shows that, with the exception of TasNetworks, the TNSPs are all closely grouped in 2023/24 in terms of MTFP outcomes, with AusNet, ElectraNet and Transgrid also recording lower MTFP outcomes in 2023/24 than in 2022/23. Powerlink's 2023/24 MTFP outcome represents a marginal reduction on its 2018/19 outcome (0.77), when its base year opex was deemed not materially inefficient by the AER, ie, the AER concluded it was appropriate to use revealed 2018/19 opex as the starting point for forecasting opex for the 2022-27 regulatory control period.[28]

[26] Historically, the regulatory information notice (RIN) responses form the basis for most of the relevant inputs for the benchmarking analysis, and we understand the AIOs will similarly underpin the benchmarking going forward. AusNet Services' AIO was released on 2 October 2025, but the AIOs for the other TNSPs are not yet available.

[27] Powerlink's MTFP performance was 0.759 in 2022/23 and 0.755 in 2023/24.

[28] AER, *Draft decision Powerlink Queensland transmission determination 2022 to 2027*, Attachment 6 operating expenditure, September 2021, p 62.

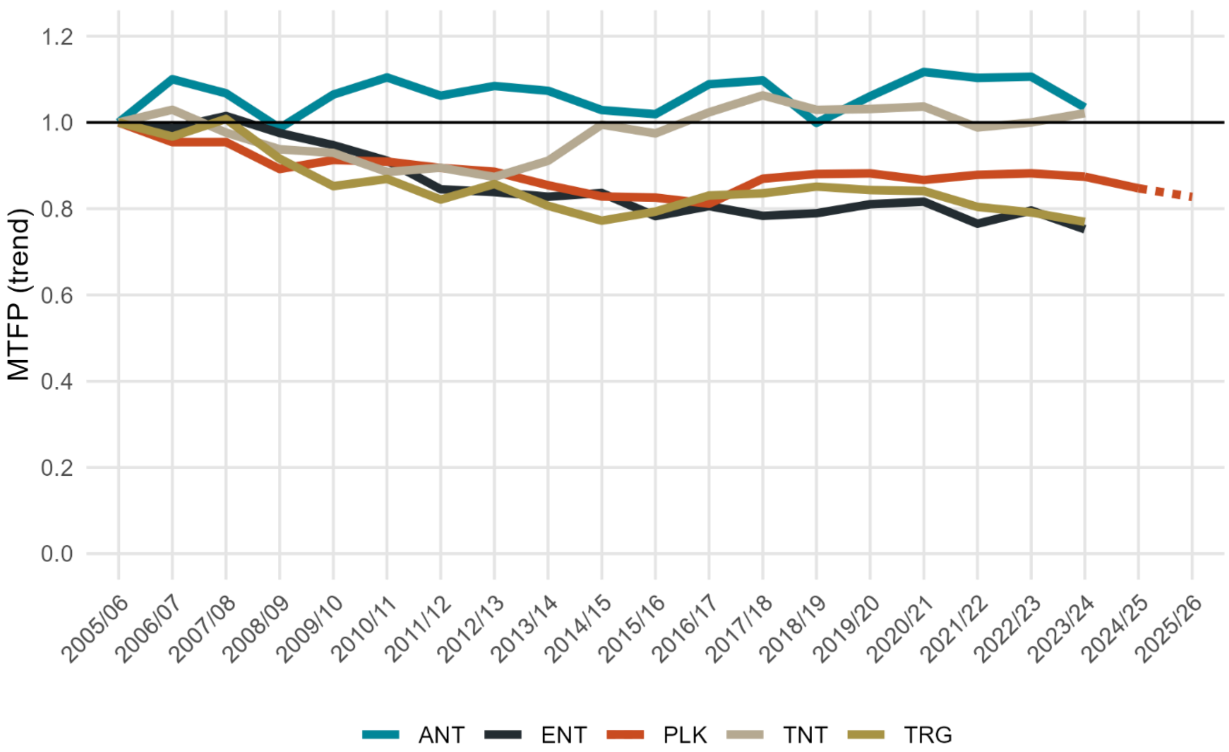
Figure 3.1: TNSP MTFP, 2005/06 to 2023/24 (other TNSPs) and 2025/26 (Powerlink)



Source: HoustonKemp analysis of Quantonomics TNSP benchmarking data files, data provided by Powerlink.
Note: We have projected the 'price of opex' index for 2024/25 and 2025/26 using the annualised growth rate of the index over the sample period of 2005/06 to 2023/24.

Consistent with the absolute MTFP, Powerlink's MTFP also declined marginally in trend terms in 2023/24, although to a smaller extent than the decline that was also experienced by AusNet, ElectraNet and Transgrid – see figure 3.2 below.

Figure 3.2: MTFP performance relative to 2005/06 by TNSP



Source: See figure 3.1.
Note: See figure 3.1.

Powerlink is therefore among the majority of TNSPs who have experienced worsened MTFP performance in 2023/24 (ie, other than TasNetworks), and is placed within relatively close proximity to the outcomes for Transgrid. TasNetworks' performance includes effects arising from the merger of its previously separate transmission and distribution business in 2014/15, and so in our view it is more informative to consider TasNetworks' performance on a relative basis over the more recent period since that integration. For example, the data shows that TasNetworks' MTFP performance has been largely flat since 2017/18.

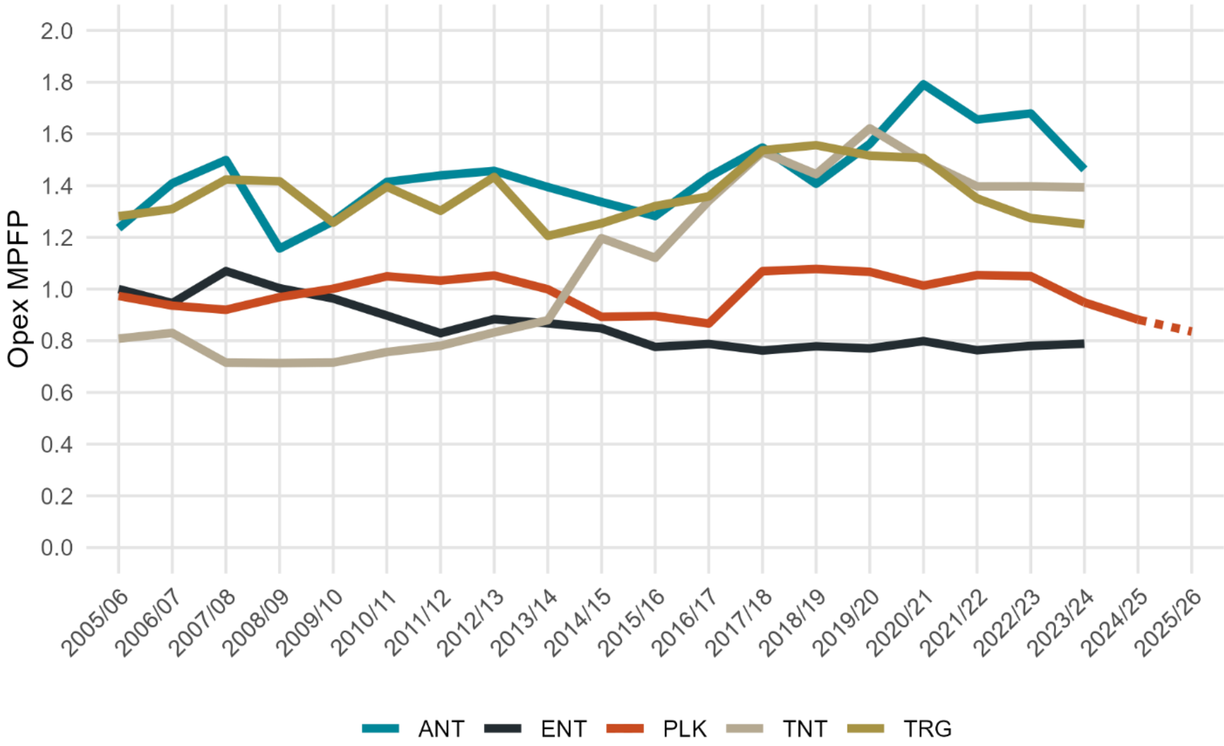
Powerlink's MTFP is expected to further decline in 2024/25 and then again in 2025/26. Our analysis in the following sections explains the key drivers for this expected decline. On the information available, it is not yet possible to assess the extent to which this decline is indicative of market-wide impacts, which may be reflected in future benchmarking results, and how Powerlink's performance will compare to that of the other TNSPs.

3.1.2 Opex MPFP

Figure 3.3 shows that Powerlink's opex MPFP experienced a decline in 2023/24 (0.95) after a five-year period of relative stability. Despite this decline, Powerlink's performance remains above the historical low point reached in 2016/17 (0.87),[29] and there is no change to its ranking among other TNSPs. Notably, the figure reveals that no TNSP achieved material opex MPFP improvements in 2023/24, although, with the exception of AusNet, the change was lower for other TNSPs.

[29] However, it is projected to move below this point in 2025/26 (0.836).

Figure 3.3: Historical and projected absolute opex MPFP by TNSP



Source: See figure 3.1.
Note: See figure 3.1.

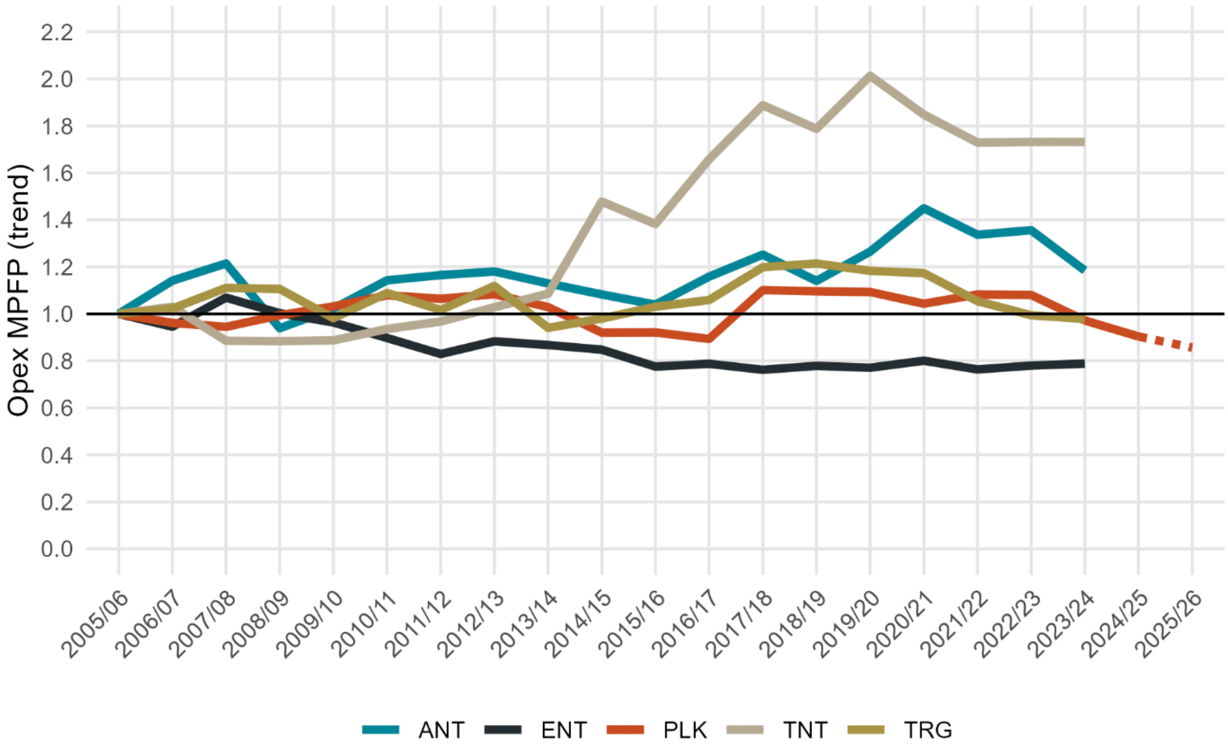
We note that TasNetworks improved its opex MPFP performance the most over the period since 2005/6 considered in the AER's benchmarking analysis. In particular, TasNetworks' opex MPFP performance has improved significantly since 2014/15, coinciding with the merger of Tasmania's DNSP (Aurora Energy) and TNSP (Transend) to form TasNetworks, before declining in more recent years.

We explain in an earlier report for Powerlink[30] that the efficiency gains made by TasNetworks resulting from the merger, reflected in its TNSP benchmarking results, do not represent gains that are also available to a stand-alone TNSP such as Powerlink. As a consequence, it is most relevant to compare Powerlink's benchmarking outcomes to the other TNSPs excluding TasNetworks, particularly over the period immediately following 2014/15. It is informative to consider TasNetworks' performance on a relative basis over the more recent period since that integration.

Consistent with the absolute opex MPFP, Powerlink's opex MPFP also declined slightly in trend terms in 2023/24, approximately in line with AusNet. Figure 3.4 shows that none of the TNSPs recorded material improvements in opex MPFP in trend terms in 2023/24. Indeed, most TNSPs have exhibited a general downward trend in opex MPFP over the last few years (although the period of decline differs for each TNSP). The exception is the lowest-ranked TNSP (ElectraNet), which has a fairly stable opex MPFP in trend terms over that period.

[30] HoustonKemp, *Efficiency of Powerlink's base year operating expenditure*, December 2020, pp 14-15.

Figure 3.4: Opex MPFP performance relative to 2005/06 by TNSP



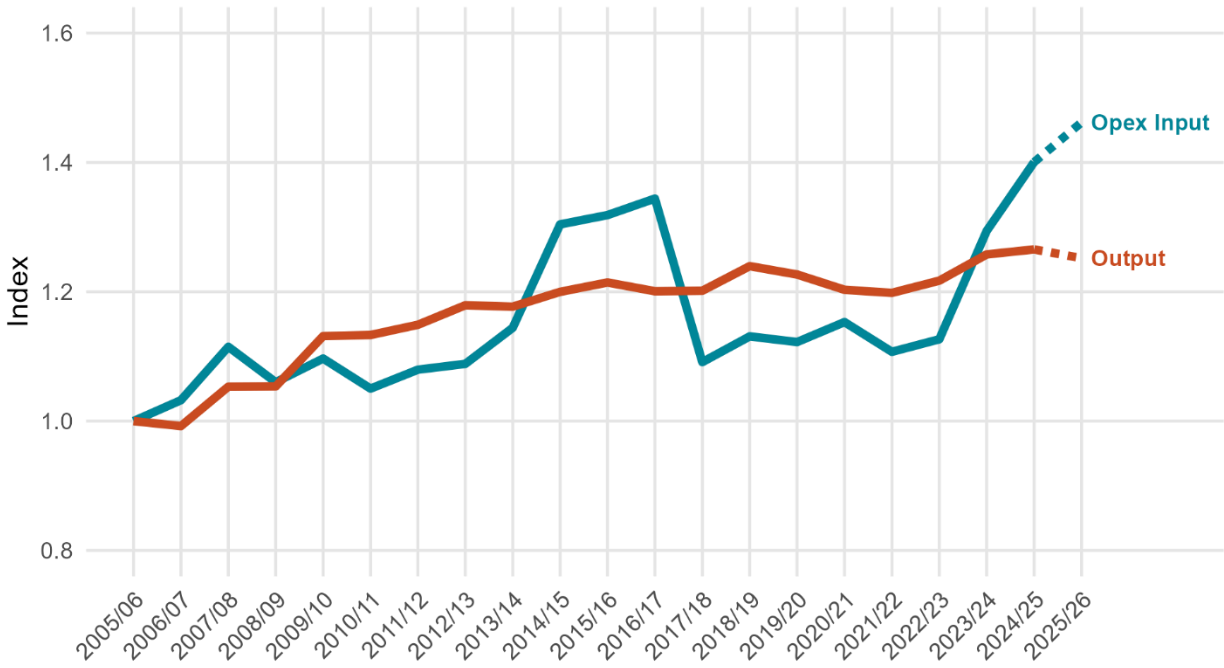
Source: See figure 3.1.
Note: See figure 3.1.

Consistent with its relative MTFP performance, Powerlink's relative opex MPFP performance to 2023/24 places it within relatively close proximity to the outcomes for other TNSPs (with the exception of TasNetworks, whose performance includes merger-specific effects that are not representative of the outcomes for a stand-alone TNSP). Therefore, while Powerlink has not demonstrated improvements over time, its opex MPFP performance to 2023/24 appears generally to be reflective of prevailing industry-wide trends.

Powerlink's opex MPFP is expected to decline further in 2024/25 and again in 2025/26. This expected reduction in opex MPFP performance explains essentially all the expected reduction in MTFP over that period that we described in the previous section. On the information available, it is not yet possible to assess the extent to which this further decline is indicative of market-wide impacts which may be reflected in future benchmarking results, and how Powerlink's opex MTFP performance will compare to that of the other TNSPs. TNSP performance in 2024/25 is likely to provide a good indication of whether or not this is the case.

Put simply, a decline in benchmarking performance occurs when inputs (opex expenditure, in the case of opex MPFP) grows faster than outputs. Figure 3.5 below shows that Powerlink's 'output index', as measured by the parameters included in the AER's benchmarking model, is not projected to change substantially between 2023/24 and 2025/26. On the other hand, its opex input is expected to increase in both 2024/25 and 2025/26. We assess the underlying drivers of the increase in Powerlink's opex in section 3.2.

Figure 3.5: Powerlink opex input and output indices

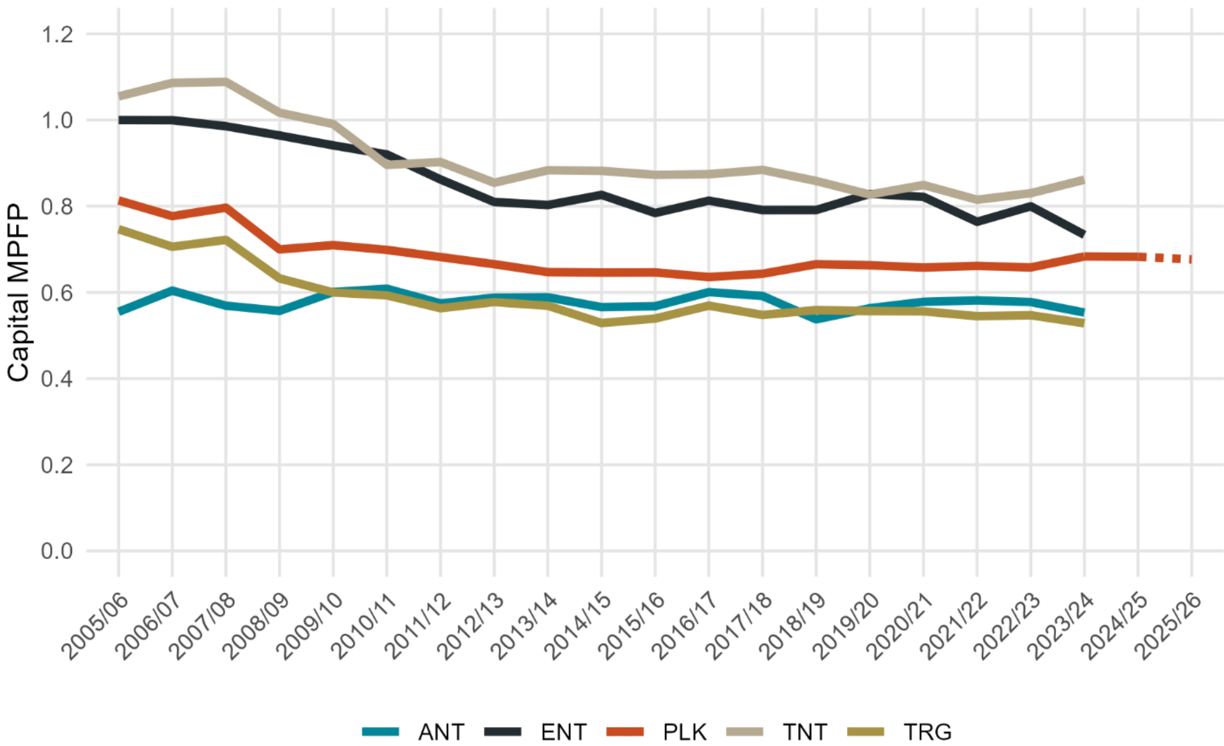


Source: See figure 3.1.

3.1.3 Capital MPFP

Figure 3.6 shows that Powerlink's capital MPFP improved marginally in 2023/24. However, its overall level of outturn capital MPFP performance has remained relatively flat over the last four years. ElectraNet experienced the largest decline in its capital MPFP in 2023/24, while the other TNSPs experienced smaller increases or declines.

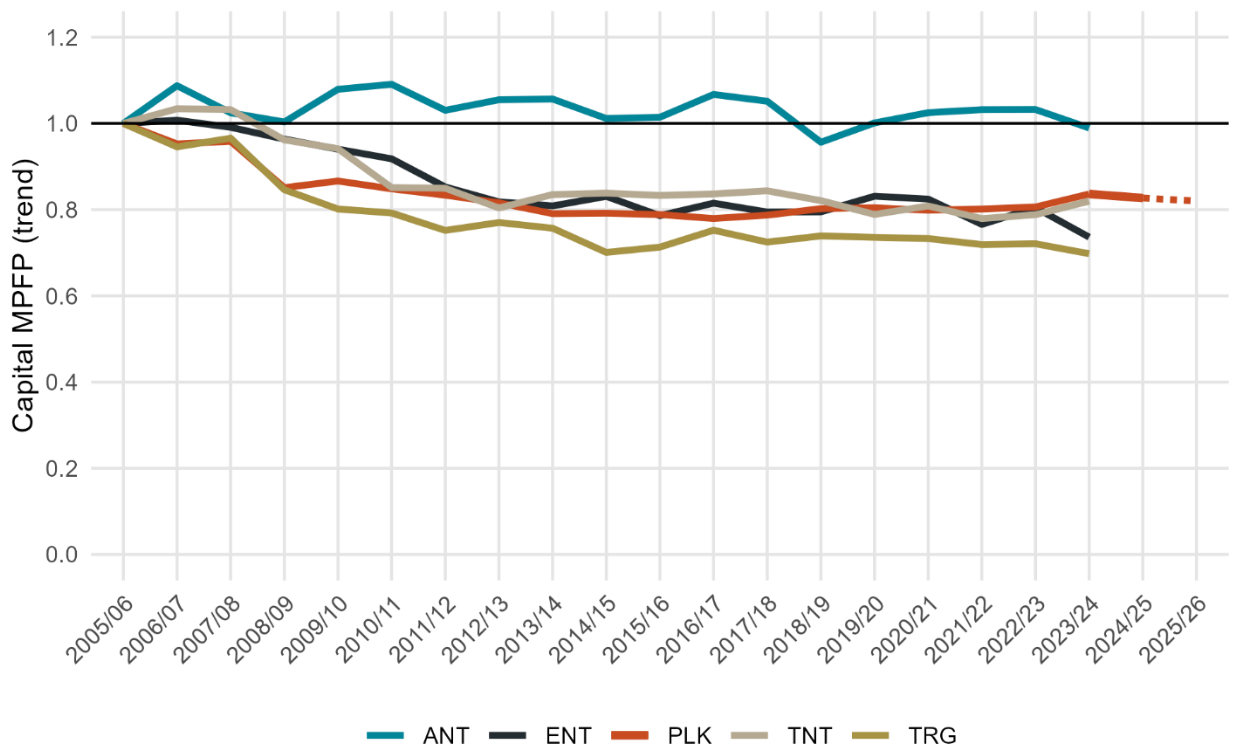
Figure 3.6: Historical and projected absolute capital MPFP by TNSP



Source: See figure 3.1.
Note: See figure 3.1.

In trend terms, the capital MPFP performance of the TNSPs are closely grouped, with the exception of AusNet. AusNet operates under a different network planning model in Victoria compared to that applying to other TNSPs, whereby it does not undertake material augmentation expenditure as part of its regulated activities, and its capital MPFP performance is therefore different to other TNSPs.

Figure 3.7: Capital MPFP performance relative to 2005/06 by TNSP



Source: See figure 3.1.
Note: See figure 3.1.

Powerlink's benchmark performance for capital MPFP is relevant to the assessment of the efficiency of 2025/26 opex only to the extent that it may provide indications of the efficiency of the capex/opex trade-off made by Powerlink relative to other TNSPs. The generally consistent capital MPFP outcomes between Powerlink and the other TNSPs, and Powerlink's relative performance overall under the AER's MTFP analysis (discussed earlier) suggests that the trade-off between opex and capex balance does not appear to have changed materially over the last few years. As such, it is not likely to explain the forecast decline in Powerlink's opex MPFP performance.

3.1.4 PPIs

The AER's annual benchmarking report also presents a number of partial performance indicators.[31]

For its 2025 annual benchmarking report for TNSPs (which draws on data up to 2023/24), the AER examined the following PPIs:[32]

- total cost per end user;
- total cost per km of transmission circuit length;
- total cost per mega volt amp (MVA) of non-coincident maximum demand; and
- total cost per MWh of energy transported.

[31] AER, *Annual benchmarking report electricity transmission network service providers*, November 2025, p 15.

[32] AER, *AER TNSP partial performance indicator analysis*, October 2025.

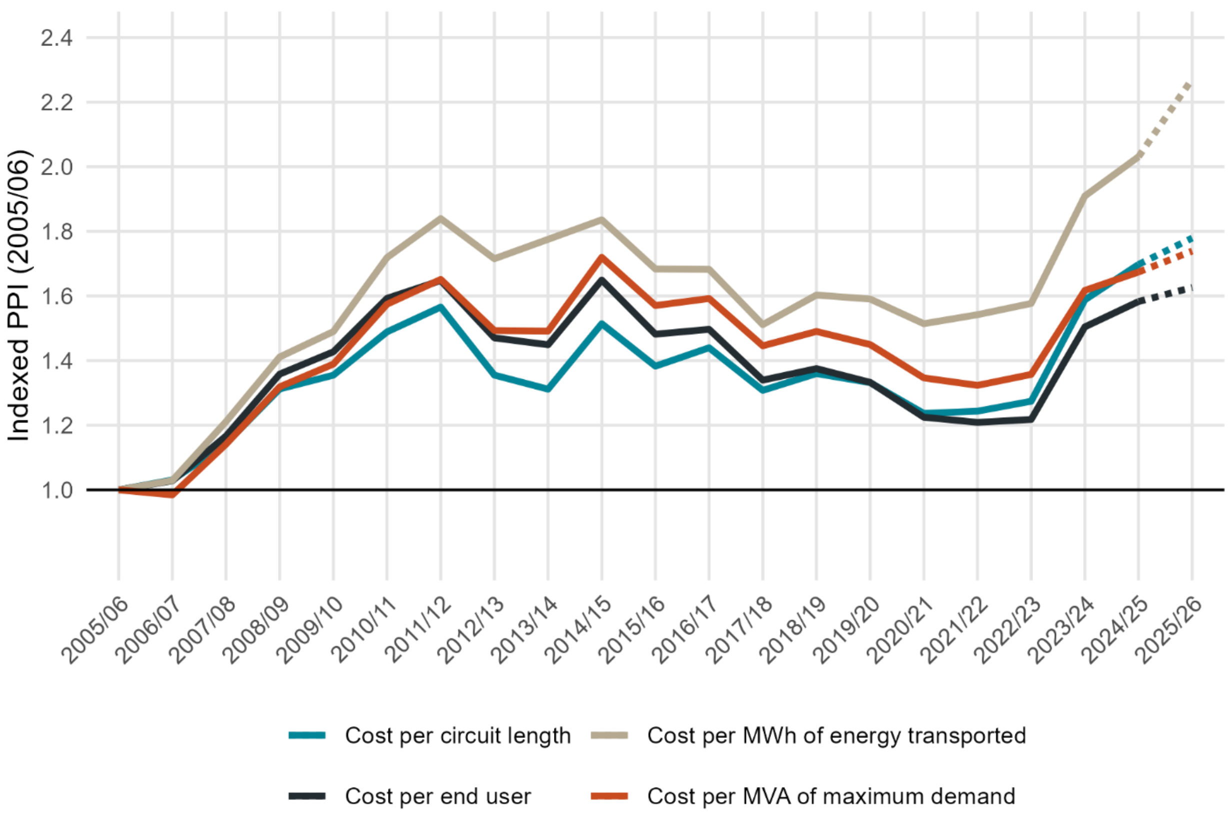
PPIs do not take interrelationships between outputs into account and the AER acknowledges that they should therefore be assessed alongside the other benchmarking results.[33]

The AER's PPI spreadsheet that supports its benchmarking report analyses Powerlink's PPI performance relative to its peers and we do not reproduce its analysis here.[34]

Figure 3.8 shows Powerlink's relative PPI performance over time. It shows that Powerlink's 2023/24 cost per end user and cost per MVA of maximum demand have improved marginally relative to its 2018/19 performance, when its base year opex was deemed not materially inefficient by the AER. Conversely, Powerlink's cost per circuit length and cost per MWh of energy transported outcomes have deteriorated slightly over the same period.

However, Powerlink's PPIs are expected to decline from 2023/24 to 2025/26. This is consistent with figure 3.5, which showed that Powerlink's output index is expected to remain relatively stable while its opex costs are forecast to increase.

Figure 3.8: Powerlink PPI performance, 2005/06 to 2025/26



Source: See figure 3.1.

3.2 Opex category analysis

The analysis that we set out above shows that Powerlink (along with most other TNSPs) has experienced a decline in its opex benchmarking performance in 2023/24, and is expected to experience a further decline

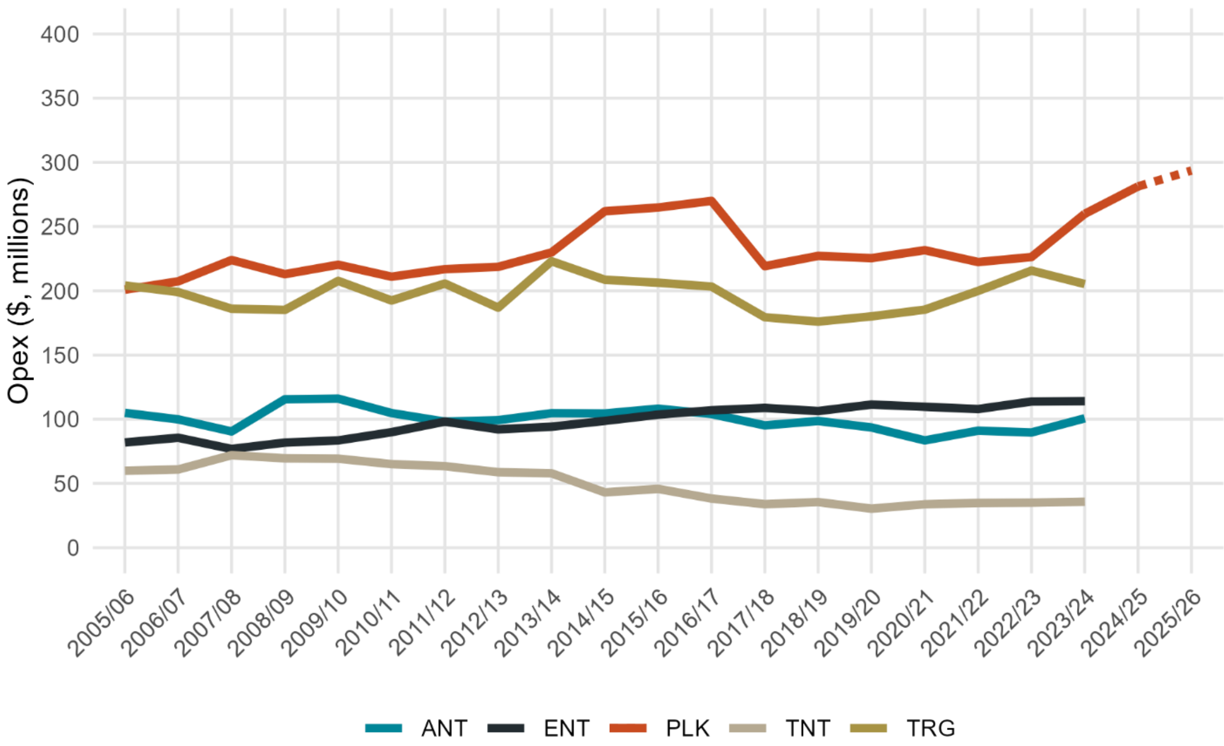
[33] AER, *Annual benchmarking report electricity transmission network service providers*, November 2025, p 15.

[34] AER, *AER TNSP partial performance indicator analysis*, October 2025.

over the period to 2025/26. In this section, we assess the underlying changes to Powerlink's opex by category using the available data to 2023/24.

Figure 3.9 below shows that Powerlink's opex (in total real dollar terms) began to increase in 2023/24, while most TNSPs only experienced modest or no increase to their opex in that year (and Transgrid's opex declined). Powerlink's opex increased at a slightly slower rate in 2024/25, compared to the increase in 2023/24, and is expected to continue to increase in 2025/26. On the information available, it is not yet possible to assess the extent to which this increase in opex will also be experienced by other TNSPs and so how much may be indicative of market-wide impacts on TNSPs' opex. For example, we understand from Powerlink that it renegotiated EAs in 2023/24, which resulted in material increases to wage and salary costs, before other TNSPs renegotiated their respective agreements, such that similar cost increases may be observed by the other TNSPs in the period after 2023/24.

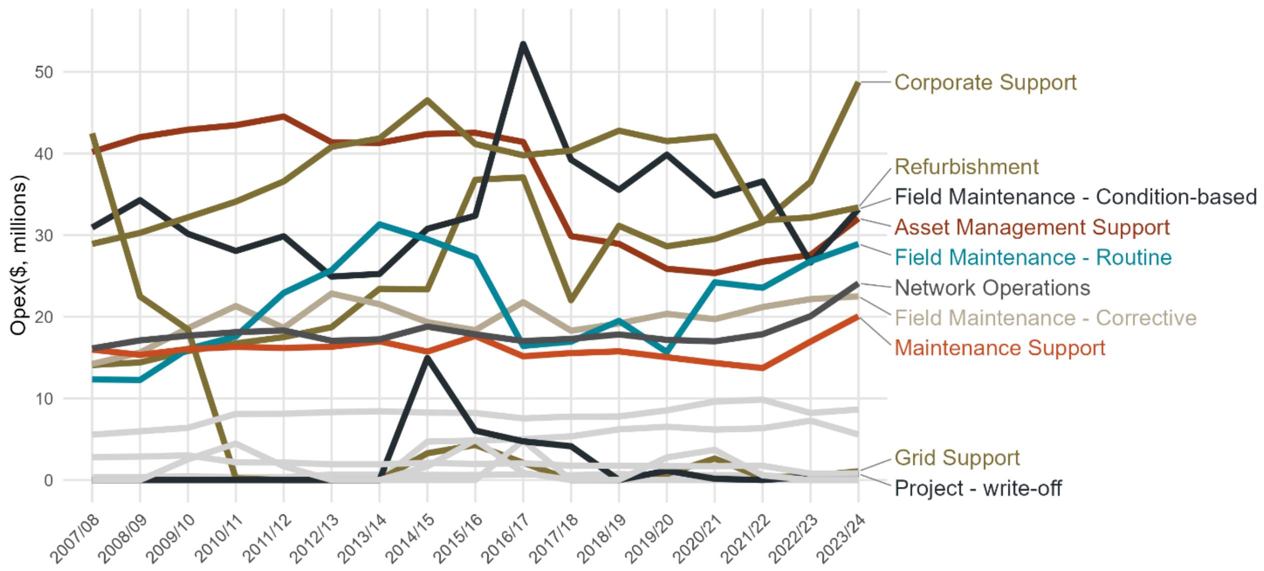
Figure 3.9: TNSP opex (economic benchmarking), 2005/06 to 2023/24 (other TNSPs) and 2025/26 (Powerlink) ($2024)



Source: HoustonKemp analysis of Quantonomics TNSP benchmarking data files, data provided by Powerlink.
Note: Values have been inflated to 2024 dollars using the composite labour, materials and service price index constructed by Quantonomics. We have projected the index forward by two years using the annualised growth rate of the index over the sample period of 2005/06 to 2023/24.

In figure 3.10 below we set out Powerlink's opex by category (using the economic benchmarking dataset) to 2023/24.

Figure 3.10: Powerlink opex by category (economic benchmarking), 2007/08 to 2023/24 ($2024)



Source: HoustonKemp analysis of Quantonomics TNSP benchmarking data files, Powerlink economic benchmarking RIN returns to the AER, 2007/08 to 2023/24.
Note: Categories in colour are those which had a value of at least $10 million in at least one year. Values have been inflated to 2024 dollars using the composite labour, materials and service price index constructed by Quantonomics.

In respect of Powerlink's opex, we note that between 2021/22 (ie, the last year of the previous regulatory period) and 2023/24:[35]

- corporate support costs increased by approximately $17 million ($2024) or 54 per cent;
- maintenance support and networks operations costs each increased by approximately $6 million, representing increases of 46 and 35 per cent, respectively;
- field maintenance costs increased by 4 per cent in aggregate, but:
  - routine field maintenance costs increased by 23 per cent ($5 million);
  - condition-based field maintenance costs decreased by 9 per cent ($3 million); and
  - corrective field maintenance increased by 6 per cent ($1 million); and
- asset management support costs increased by approximately $5 million or 20 per cent.

We also note that refurbishment costs were approximately 16 per cent lower in 2023/24 (at $33 million) than the average in the 2017/18 to 2021/22 regulatory period of $40 million ($2024).

In considering recent changes in Powerlink's opex (including changes across cost categories), it is relevant to examine:

- changes in the *price* of opex items, especially to the extent that such changes exceed the relevant inflation index;[36]
- changes in the *quantity* of opex items, especially to the extent that such changes are not represented in the AER's benchmarking output measures; and

[35] Comparisons presented in 2023/24 dollar terms,

[36] For example, the AER uses a composite labour, material and service price index constructed by Quantonomics to adjust opex for price changes.

- reallocation of expenditure between opex categories.

Powerlink provided us with material on the context for the recent category-level changes in its opex, which we have considered through the lens of these three drivers, as discussed below.

3.2.1 Key drivers of increased opex prices

Powerlink entered into new EAs with staff in February 2024, which include increased benefits and wage and salary increases. We understand from Powerlink that these new EAs reflect the need to attract and retain skilled industry personnel to support its activities in delivering the energy transition, in the context of strong demand for and constrained supply of the relevant labour due to similar coincident and then-ongoing negotiations within the industry. Powerlink describes the new EAs as resulting in a material change in its labour-related opex.

We understand from Powerlink that the EA outcomes are likely to be only partially offset by productivity gains, limiting the extent that there can be expected to be an increase in outputs associated with the increase in input costs.

We understand from Powerlink that its EAs expired before most other TNSPs and that it expects other TNSPs to also face similar increases in salary and wage costs following new EAs in years that are not yet represented in the benchmarking data. This would similarly give rise to reductions in opex MPFP and MTFP for those other TNSPs reflecting the impact of the EAs in raising labour costs, albeit occurring after Powerlink.

This suggests that at least some of Powerlink's recent increase in opex represents external constraints and increases in labour costs, that are likely substantially outside of Powerlink's control.

Figure 3.11 presents opex by category for each TNSP over time, allowing comparison of Powerlink's category-level performance against its peers.[37]

Powerlink has told us that increasing labour costs was a key driver of increases in its corporate support costs from 2022/23 to 2023/24 (continuing into 2024/25 and 2025/26), and that its corporate support category was also impacted by a one-off adjustment for employee benefits provisions in 2023/24. The figure shows that Transgrid and AusNet also experienced increases in corporate support costs over recent years, notwithstanding that they had not yet renegotiated their respective enterprise agreements, while ElectraNet and TasNetworks' corporate support costs remained relatively flat.

Powerlink has also told us that vegetation management activities drove increases in its routine field maintenance costs in both 2022/23 and 2023/24, with the cost increase also partially attributed to labour and contracting cost increases. Powerlink told us that much of the work in this category is performed by contractors whose rates are influenced by broader industry agreements, suggesting these cost pressures extend beyond Powerlink's direct workforce.

Powerlink also identified labour-related wage increases from 2023/24 onwards as a key driver of maintenance support cost increases. Powerlink has also forecast an increase in corrective field maintenance costs in 2025/26, which it explains is driven by increased materials and labour costs.

Figure 3.11 shows that total maintenance costs for other TNSPs were generally relatively stable in 2022/23 and 2023/24 and have not yet exhibited the same increasing trend as Powerlink. We note, however, that the category-level data in Figure 3.11 does not allow for direct comparison of the specific sub-categories (such as routine field maintenance and maintenance support) that Powerlink identifies as being particularly affected by labour costs.

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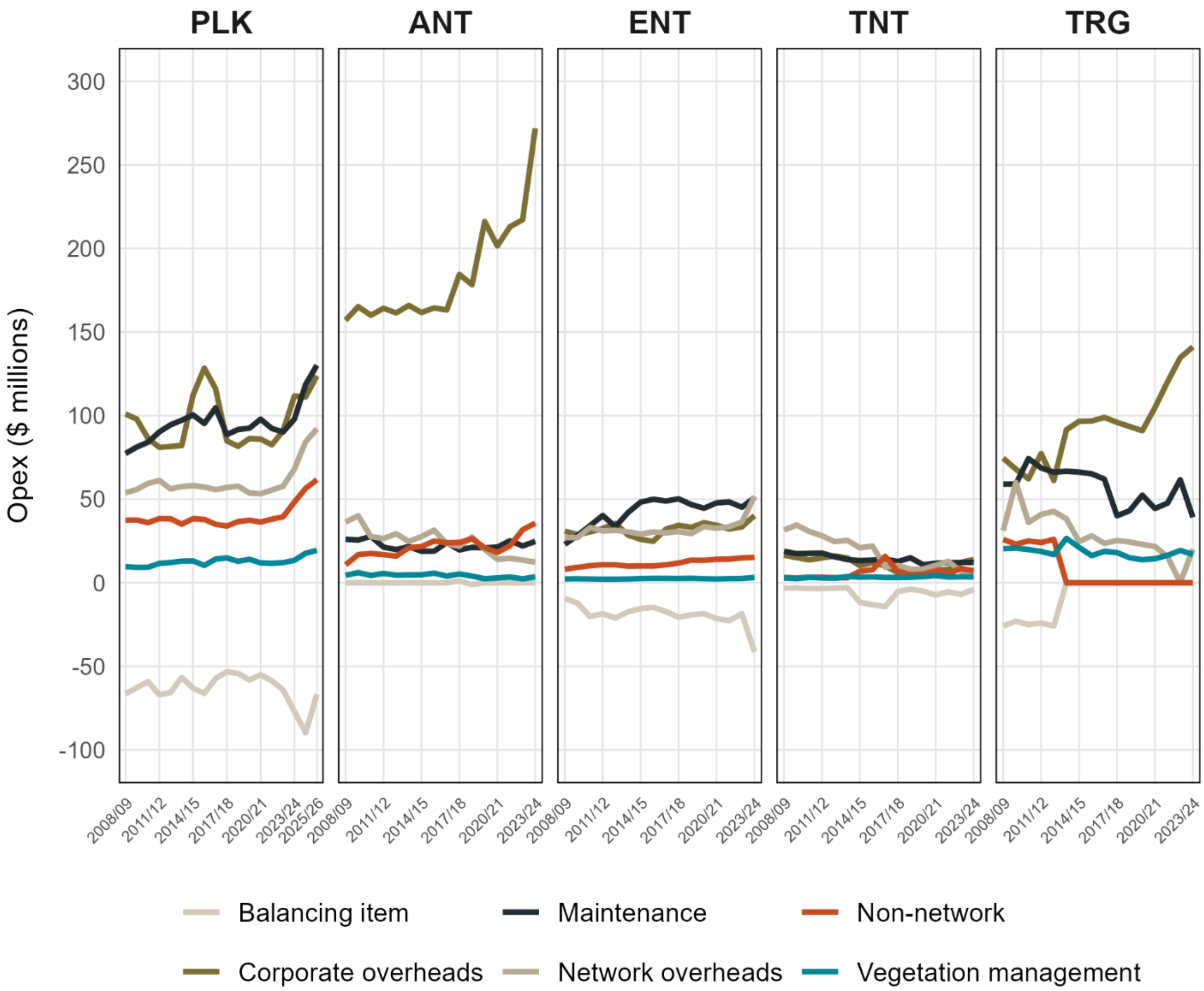
[37] The category analysis opex dataset allows for comparison of TNSPs, but the categories are more limited than those in the economic benchmarking opex dataset. On the other hand, the categories in the economic benchmarking opex dataset (that we set out for Powerlink in Figure 3.10) are not comparable across TNSPs.

Figure 3.11: TNSP opex (category analysis) by category, 2008/09 to 2023/24 (other TNSPs) and 2025/26 (Powerlink) ($2024)



Source: HoustonKemp analysis of Quantonomics TNSP benchmarking data files, TNSP category analysis RINs, 2008/09 to 2023/24, data provided by Powerlink.
Note: Values have been inflated to 2024 dollars using the composite labour, materials and service price index constructed by Quantonomics. We have projected the index forward by two years using the annualised growth rate of the index over the sample period of 2005/06 to 2023/24.

Across a number of opex cost categories including corporate support and network operations, Powerlink has identified IT expenditure as contributing to higher costs through increased licence renewal costs. For example, Powerlink identified a 48 per cent increase in its VMware licencing costs in 2024/25.[38]

Powerlink has also identified incrementally higher land management costs reflecting higher environmental and building compliance costs and management costs for electrical authorisations.

To the extent that Powerlink can demonstrate these (and any other) drivers of increased opex prices are caused by factors materially outside of its control, this could support a conclusion that the higher base year

[38] We note that this increase may include both price and activity increases.

opex is not materially inefficient, even if it is not accompanied by a corresponding increase in the AER's benchmarking output measures.

3.2.2 Key drivers of increased activities

Powerlink has indicated that increasing compliance and regulatory obligations and an ongoing increase in the number of connections to Powerlink's network contributed to the increase in its corporate support costs. Consistent with this, we understand from Powerlink that it allocated approximately 10 per cent more hours to regulatory, policy, strategy and compliance-related activities in 2023/24 compared to 2022/23.

Powerlink has also identified drivers of additional corporate support activity as including increased IT project activity and a general shift from capex to opex for IT expenditure, including increases in its cyber-related activities. For example, reaching and maintaining Powerlink's cyber Security Profile 2 (SP-2) level under the Australian Energy Sector Cyber Security Framework (AESCSF).

Powerlink has indicated that increased vegetation management activities were a driver of the increases in routine maintenance costs in both 2022/23 and 2023/24, with additional hectares requiring treatment in each period relative to previous years. Powerlink has also told us that vegetation management activity in 2025/26 is forecast to be approximately ten per cent greater than in 2024/25. It is not yet clear to us from the material provided to date whether this represents persistent increases in vegetation management activities or is reflective of a cyclical nature of vegetation management (which may imply that activity could reduce in future years).

In respect of condition-based field maintenance, Powerlink identified increased activities from a significant vegetation restoration project in 2024/25 (continuing into 2025/26) and further decommissioning activities in 2025/26. Powerlink has also identified increased maintenance activities arising as a consequence of its generally ageing network in the corrective field maintenance category.

Powerlink has attributed maintenance support activity increases to several factors, including increased time allocation to field support activities arising from plant failure investigations and the introduction of the LiveEO satellite data capture capabilities in 2023/24, which are expected to persist into the future. Powerlink also explained that the increases in 2024/25 and 2025/26 reflect an increase in emergency standby response activities and asset engineering support costs, reflecting increased network complexity.

In the network operations category, Powerlink attributes the growth in network operations activities to increasing cyber security requirements and increased network complexity.

Drivers of increased activities that Powerlink has identified in other, less material categories include:

- **asset management support**: increased resource allocation across multiple areas including business resilience activities driven by Security of Critical Infrastructure compliance requirements, as well as planning, system analysis, innovation, and land management functions. We understand from Powerlink that these increases reflect the growing compliance and complexity factors affecting the transmission sector more broadly;
- **refurbishment costs**: although costs in 2023/24 were lower than historical levels, Powerlink anticipates that expenditure will increase in future periods as a result of deferred capital projects.

To the extent that Powerlink can demonstrate these (and any other) drivers of increased activities (and so increased opex) are a consequences of changes due to the energy transition, managing increased network complexity or are cyclical in nature, this could again support a conclusion that the higher base year opex is not materially inefficient, even if it is not accompanied by a corresponding increase in the AER's benchmarking output measures.

3.2.3 Reallocation of expenditure between opex categories

Reallocation of expenditure between opex categories is relevant to the extent that an increase in one category should be considered together with the corresponding decrease in another category.

Regarding the movements between routine and non-routine maintenance categories, Powerlink identified a reclassification whereby vegetation chemical treatments, previously categorised as condition-based maintenance until 2019/20, are now captured under routine maintenance. This reclassification partially explains the observed increase in routine maintenance alongside the decrease in condition-based maintenance relative to historical levels during that period.

Powerlink also noted a reclassification of certain operational technology projects from condition-based maintenance to maintenance support in 2022/23, which contributed to the observed increase in this category while correspondingly reducing non-routine maintenance costs.

3.3 Conclusion regarding efficiency

The application of the AER benchmarking analysis shows that while Powerlink's opex MPFP performance declined to 2023/24, the changes prior to that date appear to broadly mirror industry trends, experienced across the majority of TNSPs. This is likely to include the observed increase in complexity across the transmission network.

Powerlink's opex is forecast to increase materially to 2025/26. To the extent that its peers also experience material increases in opex (without corresponding increases in output), it may be the case that Powerlink's opex continues to reflect the broader industry trend – as appears to have been the case for most TNSPs in 2023/24. The 2024/25 data for other TNSPs is expected to be available by the time of our final report in August 2026 and should provide a good indication of whether this is the case, although we note that some cost increases (such as EA effects) may take some time to flow through for other TNSPs whose new EAs have commenced more recently. If other TNSPs experience similar cost increases, this would lend weight to increased opex being caused by factors that are materially out of the control of TNSPs without being reflected in the AER's benchmarking output measures.

In the absence of further evidence regarding broader industry trends, Powerlink's current benchmarking results are not yet sufficient to support a conclusion that its (forecast) 2025/26 opex is not materially inefficient.[39] In order to better support such a conclusion, Powerlink needs to explain in detail the reasons that its opex is forecast to increase materially in 2025/26. The analysis of the key price and activity drivers set out in section 3.2 provides a good basis for identifying the key drivers of changes in its opex over time.

In order for the AER to be satisfied that Powerlink's 2025/26 opex is not materially inefficient, we expect that Powerlink will need to explain that:

- increases in the *price* of opex items (such as higher labour rates) are efficient or otherwise out of Powerlink's control, eg, that increased labour costs reflect the broader (global) demand for a limited pool of skilled labour; and
- increases in the *quantity* of opex items (such as more hours spent or new activities) are efficient, especially to the extent that those increases are not represented in the AER's output measures (which the AER has indicated may be the case), eg, additional cyber security expenditure or increased opex arising from increased connection activities over time.

[39] This statement should not be interpreted to imply that the evidence suggests that Powerlink's forecast opex is materially inefficient.

4. Appropriate productivity growth factor

We explain in section 2.3 that the AER estimates a TNSP's efficient opex by way of a 'base-step-trend' forecasting approach, which includes applying a productivity growth factor over the regulatory period.

The AER explains that the productivity growth factor it applies:[40]

> …reflects our expectation of the opex productivity growth an efficient service provider in the transmission industry can achieve.

In assessing the forecast productivity factor, the AER explains that it generally considers (among other things):[41]

> …how close the TNSP under consideration is to the efficient frontier in our benchmarking analysis…

> …any difference between industry average productivity change and the rate of productivity change at the efficient frontier…

As a consequence, it is the industry productivity that most relevant for calculating the productivity growth factor, especially in the case where the AER considers that the TNSP may not already be at the efficient frontier. Individual TNSPs are incentivised to make further efficiency gains (beyond those implied by the productivity factor) by the EBSS.

Table 4.1 summarises the productivity factors that have been adopted by the AER in recent TNSP determinations.

Table 4.1: TNSP productivity growth factors

TNSP	Regulatory period	Productivity growth factor
Powerlink	2022/23 to 2026/27	0.6%[1]
AusNet	2022/23 to 2026/27	0.3%[2]
ElectraNet	2023/24 to 2027/28	0.6%
Transgrid	2023/24 to 2027/28	0.6%
TasNetworks	2024/25 to 2028/29	0.5%[3]

Source: AER, Final decision Powerlink Queensland transmission determination 2022 to 2027, April 2022, pp 52-53; AER, Final decision AusNet Services transmission determination 2022 to 2027, attachment 6 operating expenditure, January 2022, p 6-19; AER, Final decision ElectraNet transmission determination 1 July 2023 to 30 June 2028, attachment 6 operating expenditure, April 2023, p 14; AER, Final decision Transgrid transmission determination 1 July 2023 to 30 June 2028, attachment 6 operating expenditure, April 2023, p 13; AER, Draft decision TasNetworks electricity transmission determination 2024 to 2029, attachment 6 operating expenditure, p 14.

Notes: (1) Powerlink submitted a productivity factor that was consistent with its 'no real growth' target for opex. In its decision that accepted Powerlink's revised revenue proposal, the AER's alternative estimate applied a 0.5 per cent productivity growth factor.

(2) AusNet submitted a productivity factor of 0.3 per cent in its revised revenue proposal. In its decision that accepted AusNet's opex from its revenue proposal, the AER's alternative estimate applied a 0.5 per cent productivity growth factor.

(3) TasNetworks submitted a productivity factor of 3.0 per cent in the first year of its regulatory period, followed by 0.5 per cent per annum. In its decision that accepted TasNetworks' opex from its revenue proposal, the AER's alternative estimate applied a 0.6 per cent productivity growth factor.

We note that changes in observed industry opex productivity do not just capture improvements in the productivity frontier of efficient networks (ie, the improvement in productivity of efficient networks due to

[40] AER, *Draft decision Powerlink Queensland transmission determination 2022 to 2027*, Attachment 6 operating expenditure, September 2021, p 20.

[41] AER, *Expenditure forecast assessment guideline for electricity transmission*, October 2024, p 23.

improvements in technology and processes). Potentially, past changes in opex MPFP may reflect a network moving towards the efficient frontier (ie, a previously inefficient network catching up to the productivity of efficient networks), rather than a movement in the frontier itself.[42]

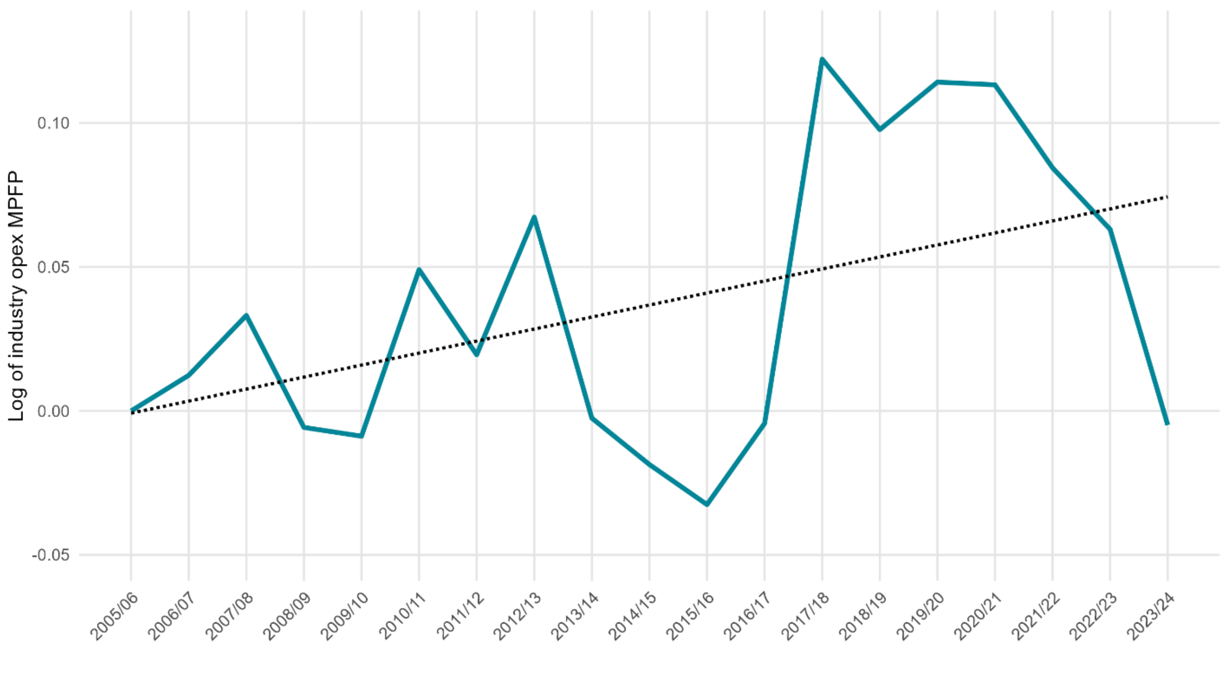
This distinction between a TNSP 'catching up' and increasing the frontier is that:

- if a firm that is currently less efficient than other networks improves its productivity, this does not represent an increase in the efficiency frontier, but rather a 'catch up' towards an efficient level; whereas
- if a firm that represents an efficient firm improves its productivity, then this represents an increase in the efficiency frontier

In calculating its estimate of the opex productivity factor for TNSPs, the AER has previously applied a productivity factor calculated from the trend change in industry opex MPFP over time.[43]

Put simply, the AER's current approach calculates the opex productivity factor as the slope of the 'line of best fit' to the industry opex MPFP over time. Figure 4.1 below shows that over the period from 2005/06 to 2023/24, the opex productivity factor calculated by this method was 0.4 per cent.

Figure 4.1: Industry opex MPFP trend 2005/06 to 2023/24



Source: HoustonKemp analysis of Quantonomics TNSP benchmarking data files, TNSP RIN responses.

However, the estimated opex productivity factor – essentially a time trend – generally has low predictive power over industry opex MPFP performance, which can be observed by the rapid increases and decreases in industry opex MPFP performance as against the trend, including that industry opex MPFP performance in 2023/24 was below 2005/06.

We have also considered to what extent this trend analysis may be impacted by movements for individual TNSPs which do not reflect a movement of the efficiency frontier. In particular, as discussed in section 3.1,

[42] See, for example, HoustonKemp, *Pre-emptive productivity adjustments*, 8 May 2018, pp 8-9, which explains the difference between 'catch-up' and a shift in the frontier for distribution network service providers (DNSPs).

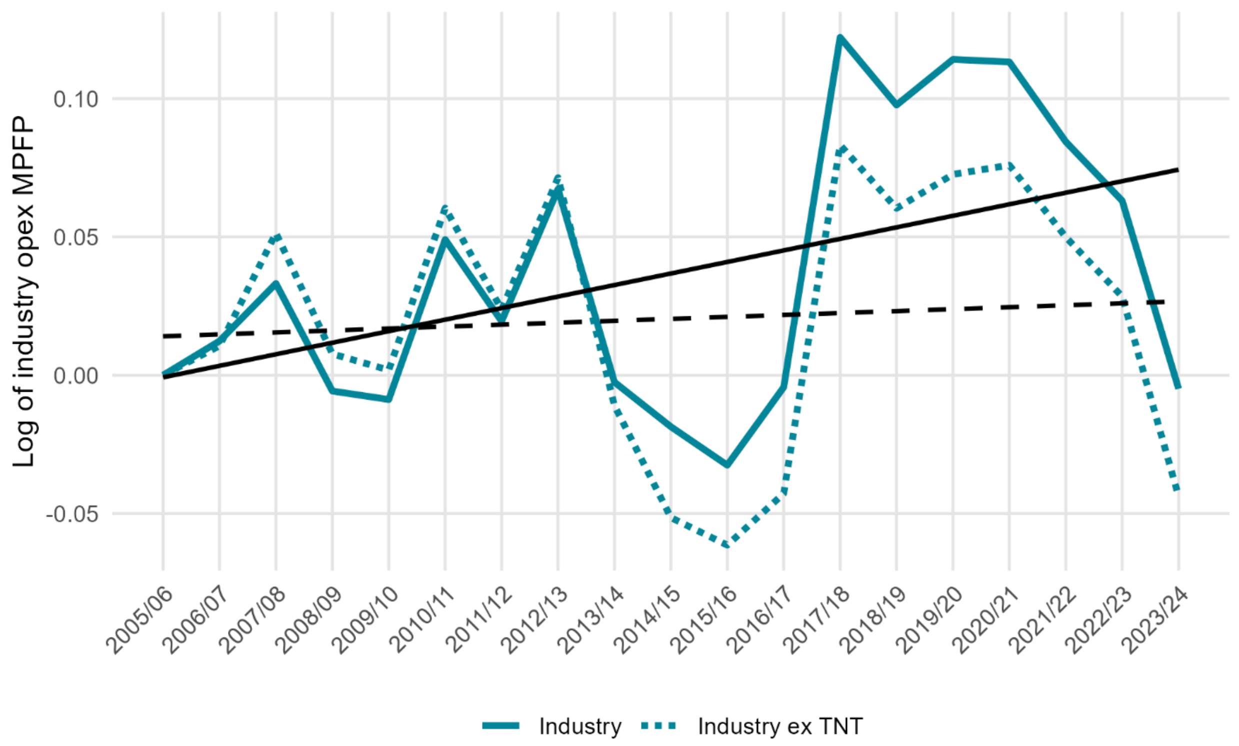
[43] In instances where the AER has accepted a TNSPs opex forecast and that TNSP has applied a different productivity growth factor, the AER has typically used the methodology set out in the section in calculating its alternative estimate.

TasNetworks' improvements in opex performance for its transmission business are likely not to be reflective of an increase in the productivity frontier for an efficient stand-alone TNSP, since they include synergies achieved as a consequence of the formation of the merged business as well as a reallocation of costs in line with the changed nature of the business.

In other words, at least part of TasNetworks' opex MPFP improvements are likely to represent gains that are not available to Powerlink or other stand-alone TNSPs. This is consistent with our observation in section 3.1.1 that it is more informative to consider TasNetworks' performance on a relative basis over the more recent period since that integration. We have therefore also calculated the implied industry opex productivity growth factor excluding TasNetworks' contribution to industry opex and output.

Figure 4.2 shows that the calculated industry productivity growth factor is significantly flatter if TasNetworks is excluded (0.07 per cent).

Figure 4.2: Industry opex MPFP trend 2005/06 to 2023/24, with and without TasNetworks



Source: HoustonKemp analysis of Quantonomics TNSP benchmarking data files, TNSP RIN responses.

Table 4.2 presents the opex growth factors in detail, and highlights that in most cases the coefficients are not statistically significant at the usual one or five per cent levels. This suggests that there is only weak statistical evidence that the slope is different from zero.

Table 4.2: Opex productivity factors

Model	Estimate and *p*-value	Statistical significance
2005/06 to 2019/20 (2021 Economic Insights model, applied by AER in Powerlink final decision for 2022-27 regulatory period)	0.5% (0.095)	At 10 per cent level, but not 1 or 5.
2005/06 to 2023/24	0.4% (0.04)	At 5 per cent level, but not 1.
2005/06 to 2023/24 (excluding TasNetworks)	0.07% (0.73)	Not statistically significant.

Source: HoustonKemp analysis of Quantonomics TNSP benchmarking data files, TNSP RIN responses.
Note: p-values are shown in parentheses next to the relevant coefficient. None of the industry results are statistically significant at the one or five per cent levels.

The level of statistical significance of the estimate derived from the benchmarking analysis, as well as variability in the results when TasNetworks is excluded, suggests that the benchmarking data provide only limited evidence to apply a positive opex productivity factor for Powerlink for the forthcoming 2027-32 regulatory period. Put simply, the benchmarking data suggest zero may be an appropriate productivity factor for Powerlink for the 2027-32 period. Notwithstanding, we understand that Powerlink has incorporated a productivity factor of 0.4 per cent in its revenue proposal, consistent with the value presented in the consulting report supporting the AER's most recent benchmarking report

Notwithstanding whether or not a positive productivity factor is applied, the regulatory framework (in particular the EBSS) will continue to provide a continuous incentive for Powerlink to make efficiency gains over time and should be expected to drive opex efficiencies in the next regulatory period.

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