6. Forecast Operating Expenditure

6.1 Introduction

This chapter presents Powerlink's forecast operating expenditure for each year of the 2023-27 regulatory period.

Our operating expenditure enables the operation and maintenance of our network, as well as the business activities that support the delivery of prescribed transmission services.

Note that references in this chapter to total operating expenditure reflect underlying operating expenditure, unless otherwise stated. For clarification, our underlying operating expenditure excludes movements in provisions, Network Capability Incentive Parameter Action Plan (NCIPAP) project costs which are part of the Service Target Performance Incentive Scheme (STPIS), debt raising and network support costs. This is explained further in Section 6.4.1.

Key highlights:

- We have targeted no real growth in total operating expenditure over the 2023-27 regulatory period. This target is relative to our underlying actual/forecast operating expenditure over the current 2018-22 regulatory period:
  - Customer feedback on productivity, affordability and the impacts of the current economic climate have been central to this decision.
  - To meet this target, we have proposed a productivity factor of 0.5% per annum, which is higher than the industry benchmark average of 0.3% per annum[1], and no step changes.
- Our total operating expenditure forecast for the 2023-27 regulatory period is $1,029.4m ($1,046.4m with debt raising costs included). This represents:
  - no change from underlying actual/forecast operating expenditure for the 2018-22 regulatory period; and
  - a $7.9m (or 0.8%) increase from actual/forecast operating expenditure for the 2018-22 regulatory period with debt raising costs included.
- As a result of our no real growth approach, which includes no step changes, we forecast potentially up to $26.1m of cost increases (e.g. insurance premiums, cyber security requirements) over the 2023-27 regulatory period that we may need to absorb over and above our operating expenditure forecast.
- We engaged HoustonKemp to undertake an independent assessment of the efficiency of our proposed base year expenditure (2018/19). HoustonKemp's analysis suggests that our 2018/19 revealed operating expenditure is not materially inefficient[2].
- Our forecasts are based on the Australian Energy Regulator's (AER's) base-step-trend methodology. We have also developed a category-specific forecast for the Australian Energy Market Commission (AEMC) Levy.

6.2 Regulatory requirements

The National Electricity Rules (the Rules)[3] require that we submit our forecast operating expenditure for the 2023-27 regulatory period.

Our Expenditure Forecasting Methodology (refer to Appendix 5.03) sets out our approach to forecasting operating expenditure and is designed to produce operating expenditure forecasts that satisfy the requirements of the Rules[4]. It will allow us to maintain and operate the network safely, meet the expected demand for prescribed transmission services and comply with all applicable regulatory obligations and requirements. We have also had regard to the AER's 2013 Expenditure Forecast Assessment Guideline for Electricity Transmission.

6.2.1 Operating expenditure objectives

We consider that our forecast operating expenditure achieves the operating expenditure objectives set out in clause 6A.6.6(a) of the Rules. This is summarised in Table 6.1. We also consider that our forecast reflects the operating expenditure criteria and factors set out in clause 6A.6.6(c) and 6A.6.6(e), as discussed in detail in Appendix 5.01 Operating and Capital Expenditure Criteria and Factors.

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1 Economic Benchmarking Results for the Australian Energy Regulator's 2020 TNSP Annual Benchmarking Report, Economic Insights, October 2020, page 62.

2 This reflects terminology used by the AER in their Expenditure Forecast Assessment Guideline for Electricity Transmission, November 2013, page 22 and recent determinations, as explained by HoustonKemp in Section 2.2 of their report (refer to Appendix 4.01).

3 National Electricity Rules, clause 6A.6.6 and schedule 6A.1, clause 6A.1.2.

4 National Electricity Rules, clause 6A.6.6(b).

Table 6.1: How we meet the operating expenditure objectives

Operating expenditure objective	How our proposal meets this objective
Meet or manage the expected demand for prescribed transmission services over the period.	Demand is forecast to be relatively constant across our network over the 2023-27 regulatory period, in line with minimal growth seen over the 2018-22 regulatory period. Our no real growth approach to operating expenditure reflects a prudent and realistic cost forecast to operate and maintain our transmission network assets and the functions that support the delivery of safe, secure and reliable outcomes.
Comply with all applicable regulatory obligations or requirements associated with the provision of prescribed transmission services.	We are subject to regulatory obligations as the holder of a Transmission Authority under the *Electricity Act 1994* and as a registered Transmission Network Service Provider (TNSP) in the National Electricity Market (NEM). As a company we are also subject to various other environmental, cultural heritage, planning approval, Workplace Health & Safety, financial and other regulations. Our compliance with these regulatory obligations and requirements is encompassed in our Asset Management Framework and associated policies and procedures, which provide the foundation for our operating and maintenance activities. These are provided as supporting documents to our Revenue Proposal. New regulatory obligations or requirements have also been assessed to determine the potential effect on forecast operating expenditure in the 2023-27 regulatory period.
Maintain the quality, reliability and security of supply of prescribed transmission services and maintain the safety, reliability and security of the transmission system through the supply of prescribed transmission services.	Our operating expenditure forecasts include prudent provision to maintain the safety of the transmission system and deliver reliable services to our customers. An appropriate balance of operating and capital expenditure has been proposed in our Revenue Proposal to ensure network assets deliver the required safety, reliability, availability and quality of supply in the most prudent and efficient manner.

6.3 Operating expenditure categories

We have retained the same broad categories of operating expenditure from the current 2018-22 regulatory period, as outlined in Table 6.2.

Table 6.2: Operating expenditure categories

Operating expenditure category	Definition	Prescribed transmission service
Controllable operating expenditure		
Direct operating and maintenance expenditure		
Field maintenance	Includes all field activities to ensure plant can perform its required functions. There are four types of field maintenance; routine, condition-based, emergency and deferred corrective maintenance. Field maintenance costs include all labour and materials needed to perform the required maintenance tasks. Each field maintenance type is further separated into five major asset type categories; substations, transmission lines, secondary systems, communications and land.	Exit, entry, Transmission Use of System (TUOS) and common services
Operational refurbishment	Involves activities that return an asset to its pre-existing condition or function, or activities undertaken on specific parts of an asset to return these parts to their pre-existing condition or function. These refurbishment activities do not involve increasing the capacity or capability of the plant or extending its life beyond its original design.	Exit, entry, TUOS and common services
Maintenance support	Includes activities where maintenance service providers represent asset support functions in the field. It also includes non-field functions supporting maintenance activities for the operate/maintain phase of the asset life cycle such as maintenance strategy development, performance management and maintenance auditing. This category also includes local government rates charges, water charges, electricity charges and charges for permits for Powerlink.	Exit, entry, TUOS and common services
Network operations	Includes control centre functions as well as those additional activities required to ensure the safe, secure, reliable and efficient operational management of the Queensland transmission network. Network operations also includes other control room activity not related to Powerlink assets such as switching to allow access to customer assets, new connections and Australian Energy Market Operator (AEMO) requirements.	Exit, entry, TUOS and common services
Other controllable expenditure		
Asset management support	Activities required to support the strategic development and ongoing asset management of the network. There are four major subelements: network planning, business development, regulatory management and operations.	Exit, entry, TUOS and common services
Corporate support	Corporate support encompasses the support activities required by Powerlink to ensure adequate and effective corporate governance. This includes corporate and direct corporate support charges and also revenue reset costs.	Common services
Non-controllable operating expenditure		
Other operating expenditure		
Insurances	This covers both the cost of premiums to maintain commercial insurance coverage and self-insurance costs to provide cover for minor losses that cannot be insured.	Common services
Network support	Refers to costs associated with non-network solutions used by Powerlink as a cost-effective alternative to network investment.	TUOS services
AEMC Levy	Since 2014/15, the *Electricity Act 1994* has required electricity transmission networks in Queensland to pay a share of the State's cost to fund the AEMC.	Common services
Debt raising costs	Costs incurred by an entity over and above the debt margin.	Common services

6.4 Forecast operating expenditure overview

This section presents our forecast operating expenditure for the 2023-27 regulatory period and explains our target of no real growth.

6.4.1 No real growth target

We have heard customer feedback on business productivity, affordability and the impacts of the current economic climate. Based on this feedback and our goal to have a Revenue Proposal that is capable of acceptance by our customers, the AER and Powerlink at the time we lodge our Revenue Proposal, we have committed to pursue a no real growth in operating expenditure. To be clear, this represents a stretch target for our business and is a floor below which we do not consider it would be prudent or efficient for us to operate in the circumstances.

This target is relative to our underlying actual/forecast operating expenditure of $1,029.4m for the 2018-22 regulatory period. We have made several adjustments to our actual/forecast operating expenditure for the 2018-22 regulatory period to derive our total underlying operating expenditure for the period[5], which are described in Table 6.3. These changes were discussed with the AER and customers prior to lodging our Revenue Proposal.

Table 6.3: No real growth target calculation ($m real, 2021/22)

Adjustment	Description and explanation for adjustment	Total $
Actual/forecast operating expenditure 2018-22 regulatory period		1,038.5
Remove movements in provisions	Movements in provisions are adjustments that occur on an annual basis to reflect an estimate of the amount that would be required to settle a future liability (e.g. employee leave). Movements in provisions are removed from our target consistent with the AER's 2013 Expenditure Forecast Assessment Guideline(1).	(2.6)
Remove network support costs	Network support costs are non-recurrent and are managed through the cost-pass through mechanism for network support in the Rules. Therefore, they do not represent underlying expenditure.	(3.1)
Remove NCIPAP project costs	NCIPAP projects occur under the STPIS and are removed from operating expenditure targets consistent with clause 5.2(r)(1) of version 5 of the STPIS.	(0.4)
Remove debt raising costs	The AER sets debt raising cost allowances by way of a benchmark methodology. As a result, debt raising costs are not included as part of our no real growth target for operating expenditure.	(2.9)
Underlying actual/forecast operating expenditure for the 2018-22 regulatory period		**1,029.4**

(1) Expenditure Forecast Assessment Guideline for Electricity Transmission, Australian Energy Regulator, November 2013, page 22.

To meet our target of no real growth and ensure we continue to operate in a prudent and efficient manner, we propose:

- a productivity improvement target of 0.5% per annum. This is higher than the industry benchmark average of 0.3% per annum[6];
- not to pursue any operating expenditure step changes (refer Section 6.6.3); and
- to absorb potential operating expenditure increases (e.g. due to new regulatory/legislative obligations and reasonable increased insurance premiums), or rely on cost pass through arrangements in the event of material cost increases within period (refer Chapter 12 Pass Through Events).

The adoption of this approach to establish our operating expenditure forecast was a significant shift for our business during the development of our Revenue Proposal and it will be a challenge for us to meet this target. However, on balance, we considered that we should rise to this challenge in the interests of customers and to continue to drive the business hard to find further efficiencies and productivity improvements to become a world-class transmission service provider.

5 We have applied similar adjustments to our 2018/19 base year operating expenditure, where these costs have been incurred in that year (refer Section 6.6.1).

6 Economic Benchmarking Results for the Australian Energy Regulator's 2020 TNSP Annual Benchmarking Report, Economic Insights, October 2020, page 62.

We proposed the no real growth target as part of our draft Revenue Proposal in September 2020 (refer Chapter 3 Customer Engagement). Our Customer Panel, the AER's Consumer Challenge Panel (CCP23) and broader customers and stakeholders expressed support for the ambition and effort behind this target and our decision not to pursue any step changes.

Some customers and stakeholders also acknowledged the risks of pursuing a no real growth target, such as the potential to overspend our allowance in the 2023-27 regulatory period, and requested further detail in particular about how we intend to meet this target. Others expressed caution about whether Powerlink was pushing itself too far in setting such a challenging target. We discuss potential productivity initiatives in Section 6.6.2.

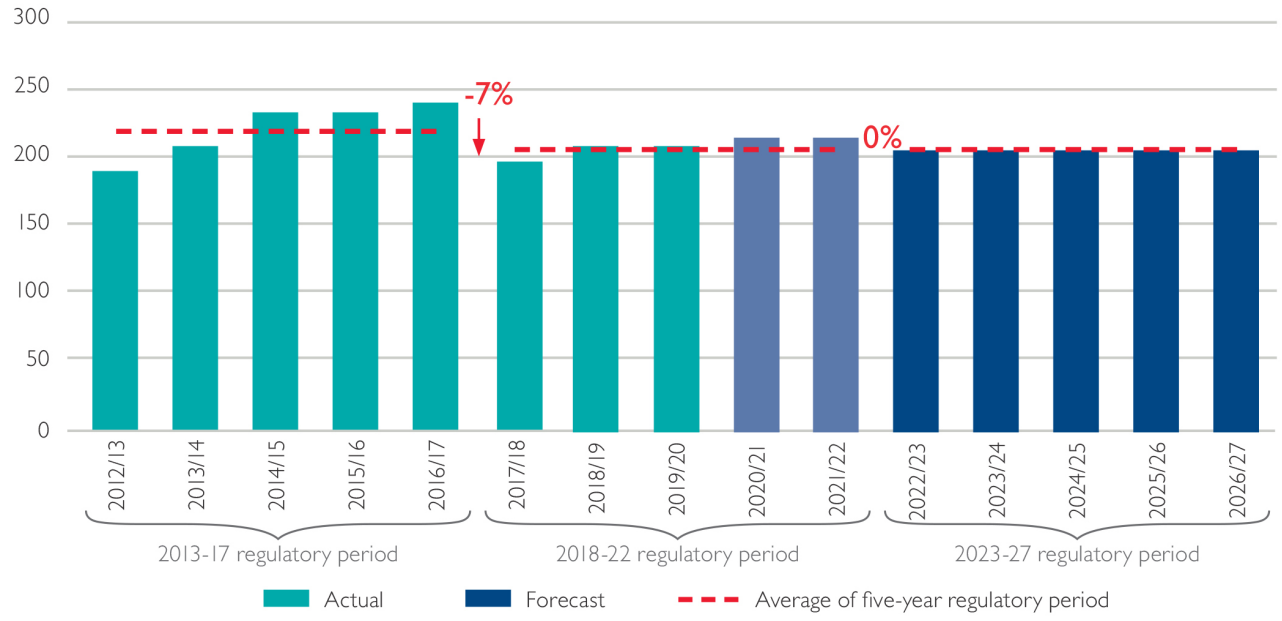
We recognise there are a number of potential externally driven increases in operating expenditure requirements expected over the 2023-27 regulatory period that may impact our ability to meet our target of no real growth. These include potential cost increases in insurance, elevated cyber security requirements and new outage management complexities to maintain system strength as additional Inverter-Based Resources (IBR) are commissioned.

If for any reason we cannot continue to deliver safe, secure and reliable services within our target forecast, we will overspend our allowance. We recognise this is a risk for Powerlink, our customers and shareholders, which is why we will only consider this course of action as a last resort and only to the extent necessary to meet our obligations.

6.4.2 Total forecast operating expenditure

Our total forecast operating expenditure for the 2023-27 regulatory period, along with our actual/forecast expenditure for the previous and current regulatory periods, is shown in Figure 6.1.

Figure 6.1: Total actual/forecast operating expenditure ($m real, 2021/22)(1)



(1) Reflects underlying operating expenditure, excluding movements in provisions, debt raising, network support and NCIPAP costs.

Our total forecast operating expenditure for the 2023-27 regulatory period is $1,029.4m. This represents $0 (no real growth) from underlying actual/forecast operating expenditure in the 2018-22 regulatory period.

With debt raising costs included, our total forecast operating expenditure is $1,046.4m, a $7.9m (0.8%) increase from actual/forecast operating expenditure in the 2018-22 regulatory period.

To derive this forecast, we have applied the AER's base-step-trend approach, as follows:

Determine an efficient base year from which to forecast operating expenditure: we have proposed 2018/19 as our efficient base year. We have reviewed our expenditure in this year on a category basis, have had the efficiency of this base year independently assessed and made relevant adjustments (refer Section 6.6.1). Using our efficient base year, we have estimated our operating expenditure in the final year of the current 2018-22 regulatory period (refer to Appendix 6.01 Forecast Operating Expenditure Methodology and Model).

Establish an annual rate of change to trend forecast operating expenditure: we applied an average annual total rate of change of 0.3% to our estimated final year. Our application of the rate of change elements is discussed further in Section 6.6.2 and broadly reflects:

- minor output growth averaging 0.3% per annum, primarily due to forecast growth in energy throughput early in the 2023-27 regulatory period on the Queensland/New South Wales Interconnector (QNI);
- estimates of real price growth for labour and materials averaging 0.5% per annum based on independent expert opinion and consistent with the AER's approach in recent regulatory decisions; and
- real productivity growth of 0.5% per annum, which is above the latest industry benchmark average of 0.3%[7].

Assess and propose step changes in operating expenditure: we do not propose any step changes (refer Section 6.6.3).

The combination of real productivity growth above the industry average and no proposed step changes reflects our commitment to customers for no real growth in operating expenditure.

We have then added non-controllable other operating expenditure forecasts which have been prepared on a category-specific basis. These forecasts are for the AEMC Levy (refer Section 6.7.2) and debt raising costs (refer Section 6.7.4). We have proposed a $0 network support allowance (refer Section 6.7.3).

Our forecast expenditure by category is shown in Table 6.4.

Table 6.4: Forecast operating expenditure by category ($m real, 2021/22)

Operating expenditure category	2022/23	2023/24	2024/25	2025/26	2026/27	Total
Controllable operating expenditure						
Direct operating and maintenance expenditure						
Field maintenance	67.2	68.0	67.8	68.0	68.2	**339.1**
Operational refurbishment	38.4	38.9	38.8	38.9	39.0	**194.1**
Maintenance support	14.3	14.4	14.4	14.4	14.5	**72.0**
Network operations	16.1	16.3	16.3	16.3	16.4	**81.5**
Other controllable expenditure						
Asset management support	26.2	26.5	26.4	26.5	26.6	**132.2**
Corporate support	27.2	27.5	27.4	27.6	27.6	**137.3**
Total controllable operating expenditure	**189.4**	**191.7**	**191.1**	**191.8**	**192.2**	**956.2**
Non-controllable operating expenditure						
Other operating expenditure						
Insurance premiums	7.0	7.1	7.1	7.1	7.1	**35.6**
Self-insurance	1.6	1.6	1.6	1.6	1.6	**8.0**
AEMC Levy	5.9	5.9	5.9	6.0	6.0	**29.7**
Network support	0.0	0.0	0.0	0.0	0.0	**0.0**
Debt raising costs	3.5	3.5	3.4	3.3	3.2	**17.0**
Total non-controllable operating expenditure	**18.1**	**18.1**	**18.1**	**18.0**	**18.0**	**90.2**
Total operating expenditure	**207.4**	**209.8**	**209.2**	**209.9**	**210.1**	**1,046.4**
Total operating expenditure (excluding debt raising costs)	203.9	206.3	205.8	206.5	206.9	1,029.4

We consider that this reflects a prudent and efficient level of forecast operating expenditure that will enable us to meet the operating expenditure objectives of the Rules[8] and will enable us to continue to drive further efficiencies in the business.

[7] Economic Benchmarking Results for the Australian Energy Regulator's 2020 TNSP Annual Benchmarking Report, Economic Insights, October 2020, page 62.

[8] National Electricity Rules, clause 6A.6.6(a).

6.4.3 Changes from the draft Revenue Proposal

Our draft Revenue Proposal included total forecast operating expenditure of $1,038.9m, which reflected a $0 change from actual/forecast operating expenditure in the 2018-22 regulatory period at that time, consistent with our no real growth target.

Since we published our draft Revenue Proposal in September 2020, we have made several minor changes. These include:

- adjustments to remove movements in provisions and NCIPAP costs from our 2018/19 base year, following advice from AER staff to remove these items. We explain the reasons for this in Section 6.4.1;
- an adjustment to remove forecast network support costs in the 2018-22 regulatory period from our calculation of a no real growth target. This is also explained in Section 6.4.1;
- an adjustment to update forecast figures to reflect the latest inflation data, as published by the Reserve Bank of Australia (RBA) in November 2020;
- an adjustment of our output growth factor from 0.4% to 0.3% as a result of updated energy throughput forecasts; and
- adjustment of our productivity factor from 0.8% to 0.5% per annum, consistent with our no real growth target between the current and next regulatory periods.

Table 6.5 summarises the difference in total forecast operating expenditure between our draft Revenue Proposal and our Revenue Proposal.

Table 6.5: Forecast operating expenditure comparison ($m real, 2021/22)

	2022/23	2023/24	2024/25	2025/26	2026/27	Total
Draft Revenue Proposal(1)	206.5	208.5	208.2	208.0	207.7	**1,038.9**
Revenue Proposal(2)	203.9	206.3	205.8	206.5	206.9	**1,029.4**
Difference ($m)	(2.6)	(2.2)	(2.5)	(1.5)	(0.8)	**(9.5)**
Difference (%)	(1.2)	(1.1)	(1.2)	(0.7)	(0.5)	**(0.9)**

(1) Excludes debt raising costs.

(2) Reflects underlying operating expenditure, excluding movements in provisions, debt raising, network support and NCIPAP costs.

6.5 Operating expenditure forecasting methodology

This section presents our operating expenditure forecasting methodology and provides detail about the base-step-trend approach applied to develop our operating expenditure forecast for the 2023-27 regulatory period. More detail is included in Appendix 6.01 Forecast Operating Expenditure Methodology and Model.

6.5.1 Operating expenditure forecasting methodology

We have based our forecasting approach on the AER's 2013 Expenditure Forecast Assessment Guideline for Electricity Transmission[9]. The AER's base-step-trend methodology was used for the majority of operating expenditure categories, with category-specific (or bottom-up) forecasts developed for the AEMC Levy, network support costs and debt raising costs. The methodology used to prepare our operating expenditure forecast is summarised in Figure 6.2 and explained in the following sections.

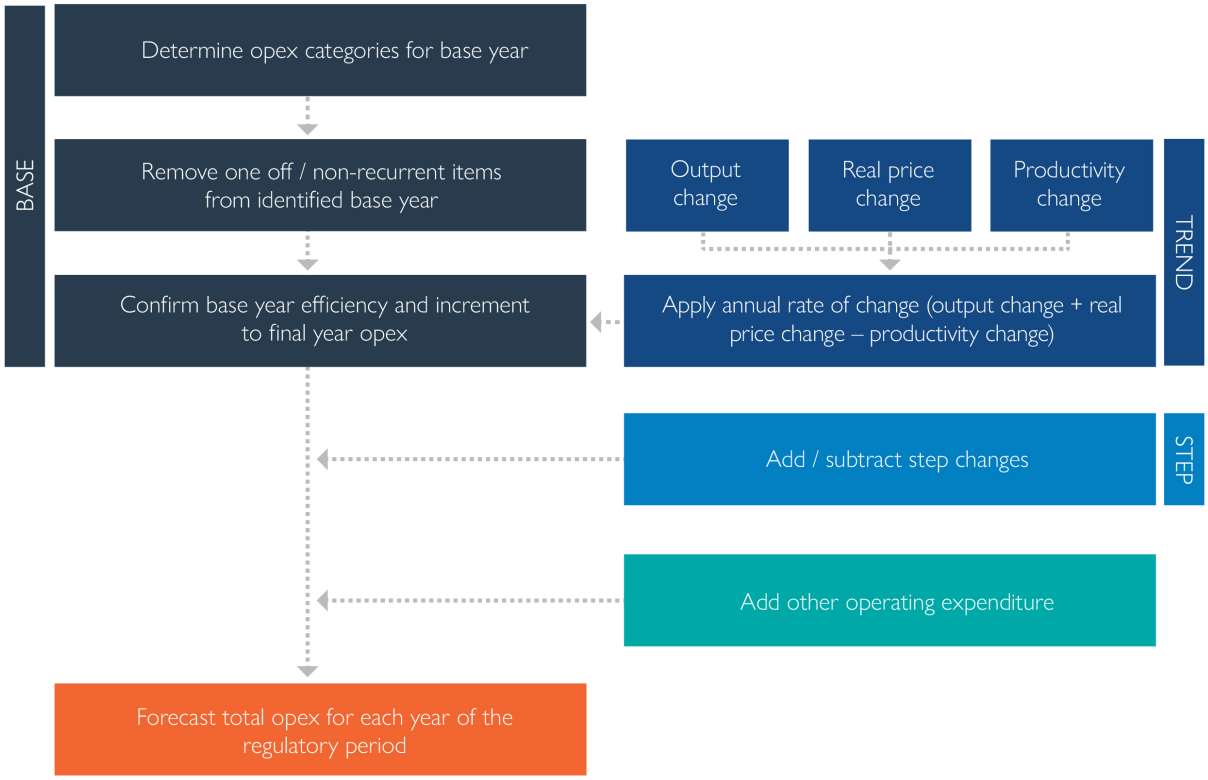
Our forecasting methodology is largely consistent with that used and accepted by the AER in its Final Decision for our 2018-22 regulatory period. It is also largely consistent with our Expenditure Forecasting Methodology submitted to the AER in June 2020, other than a change in approach to forecasting insurance. We have updated our Expenditure Forecasting Methodology to reflect these amendments (refer to Appendix 5.03).

We decided to forecast insurance costs (premiums and self-insurance) from within our base year operating expenditure, rather than through a bottom-up approach. This is due to the significant uncertainty in the insurance market which is in a hard phase of the cycle. Forecasts from our insurance brokers, Marsh, indicate that insurance premiums for our current insurance coverage may increase by $17.0m (41%) in the 2023-27 regulatory period compared to our total actual/forecast insurance premium costs for the 2018-22 regulatory period. Our consideration of insurance is discussed further in Section 6.7.1.

[9] Expenditure Forecast Assessment Guideline for Electricity Transmission, Australian Energy Regulator, November 2013.

Our efficient base year operating expenditure costs includes only those costs for the provision of prescribed transmission services, consistent with our Cost Allocation Methodology (CAM) approved by the AER in 2008. This also applies to the rate of change parameters and other costs included in our forecast operating expenditure. The resulting total operating expenditure forecasts therefore relate only to the provision of prescribed transmission services, consistent with our CAM.

Figure 6.2: Powerlink's operating expenditure forecasting methodology



6.6 Application of the base-step-trend methodology

This section outlines how we have applied the AER's base-step-trend methodology to forecast our operating expenditure and the inputs and assumptions used for each element of the base-step-trend. We have also included a brief guide to our key inputs and assumptions for operating expenditure in Attachment 1.

6.6.1 Efficient base year

Base year selection

We have selected 2018/19 as the base year for our base-step-trend model as it is reflective of a typical year of operations, i.e. without the potential uncertainties and inconsistencies in expenditure associated with COVID-19 in 2019/20 and 2020/21. It also reflects a revealed cost approach as is the AER's preference.

We considered the use of 2019/20 as a potential base year from which to forecast operating expenditure for the next regulatory period as it represents the latest year of audited accounts prior to lodging our Revenue Proposal. It also reflects our standard approach of using Year 3 as the base year for developing our opex forecasts. However, the impact of COVID-19 means this is not a typical year of operation for the following reasons:

- we modified work methodologies for field and office-based staff to respond to physical distancing requirements. This included travel limits for field staff to only faults, emergencies and critical maintenance, and the need to provide additional vehicles to ensure physical distancing requirements were met while travelling to and from work sites;
- works were replanned/rescheduled where COVID-19 distancing requirements could not be met. This included deferral of some routine maintenance activities, and an increase in condition-based and corrective maintenance to prioritise staff safety while maintaining network reliability standards; and
- additional costs were incurred to manage Powerlink's COVID-19 response, for example cleaning, sanitisation and signage.

These adjustments demonstrate variations from typical operation and have resulted in transfers of expenditure between cost categories.

We also considered the use of 2020/21 as the base year to forecast operating expenditure. However, we concluded that there is potential for actual 2020/21 costs to also include atypical expenditure due to COVID-19 impacts.

As a result we determined that 2018/19 is the most appropriate choice for our base year opex, given potential issues around the alternative years considered.

We engaged HoustonKemp to perform an independent review of the efficiency of our 2018/19 operating expenditure and our performance against other TNSPs. This is discussed further in this section and HoustonKemp's report is provided in Appendix 4.01.

Base year adjustments

We reviewed actual expenditure in the base year to identify any non-recurrent items or items that are not considered to reflect an efficient level of recurrent operating expenditure. This review led to the following adjustments:

- minus $0.3m (2018/19 nominal) to remove expenditure associated with a NCIPAP project which occurred under the STPIS[10]; and
- minus $1.0m (2018/19 nominal) to remove movements in provisions from our base year expenditure[11].

We outline these adjustments and the resultant base year expenditure in Table 6.6.

Table 6.6: Adjusted operating expenditure items in 2018/19 base year ($m nominal)

Base year expenditure adjustment	Total
2018/19 unadjusted base year operating expenditure	**193.3**
Adjustment to remove NCIPAP project costs	(0.3)
Adjustment for movements in provisions	(1.0)
2018/19 base year operating expenditure – efficient base year	**192.0**

Operating expenditure associated with the AEMC Levy, network support and debt raising costs is not included in the base year, as we have taken a category specific approach to forecast these items (refer Section 6.7).

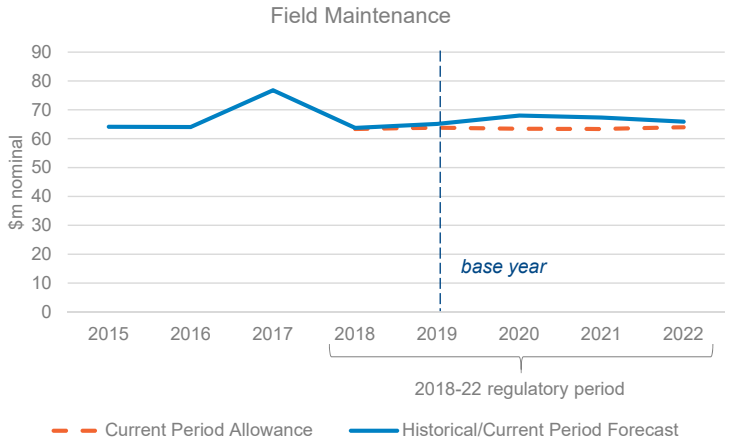
Category analysis of controllable operating expenditure

To confirm the reasonableness of our selected base year, we assessed the relative performance of each major category of controllable operating expenditure against the trend from 2014/15 (the base year for our 2018-22 Revenue Proposal). Our performance in the 2018-22 regulatory period is presented in Chapter 4 Historical Capital and Operating Expenditure. Figure 6.3 demonstrates that at a category level, the proposed 2018/19 base year closely aligns to trend.

[10] Consistent with clause 5.2(r)(1) of Version 5 of the STPIS.

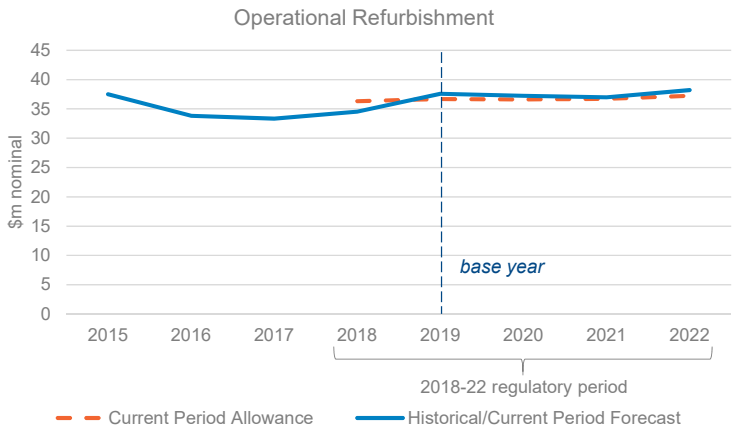
[11] Consistent with the Expenditure Forecast Assessment Guideline for Electricity Transmission, Australian Energy Regulator, November 2013, page 22.

Figure 6.3: Category analysis of controllable operating expenditure ($m nominal)



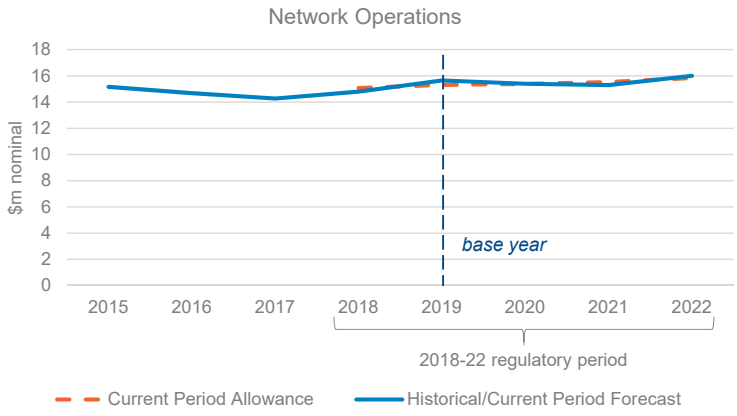
Field maintenance includes routine, condition-based, and corrective maintenance.

A one-off increase in total field maintenance in 2016/17 was driven by condition-based maintenance works to decommission a transmission line. 2019/20 was impacted by maintenance required to address several transmission line and substation failures, as well as COVID-19 travel and work practice restrictions. We adjusted our work practices to a focus on localised condition-based and corrective maintenance.



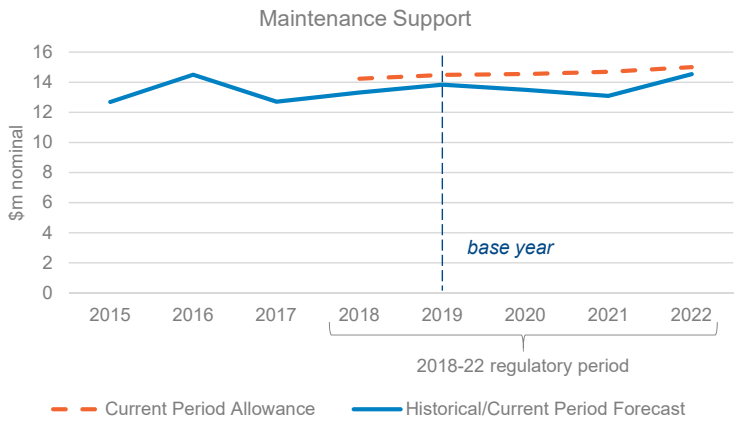
Operational refurbishment involves activities that return an asset to its pre-existing condition or function.

There is limited difference in actual spend compared to the AER's allowance for this category over the 2018-22 regulatory period. The primary driver of this category is insulator replacement works. We undertook works to address an early life failure risk for polymer insulators to address potential safety, reliability and security issues. This contributed to a minor increase in operational refurbishment expenditure above the AER's allowance.



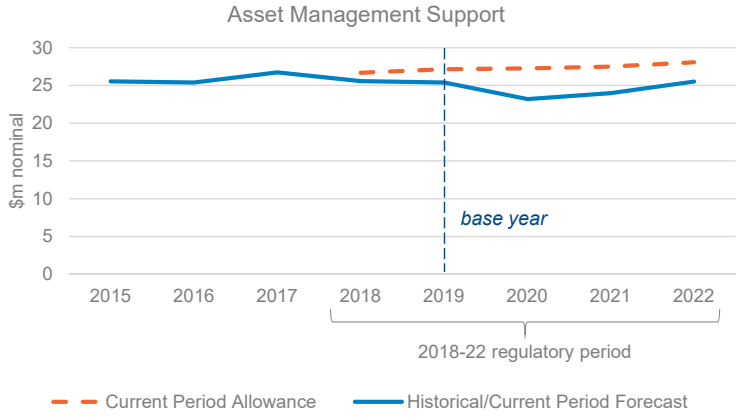
Network operations include control centre functions as well as additional operational support activities.

There is limited difference in our actual spend compared to the AER's allowance for this category over the 2018-22 regulatory period, and gradual growth in this category over the regulatory period. This is due to increased complexity in managing the network, as a result of system strength and the rapid growth in IBR.



Maintenance support includes activities required to develop and maintain the systems to support field maintenance.

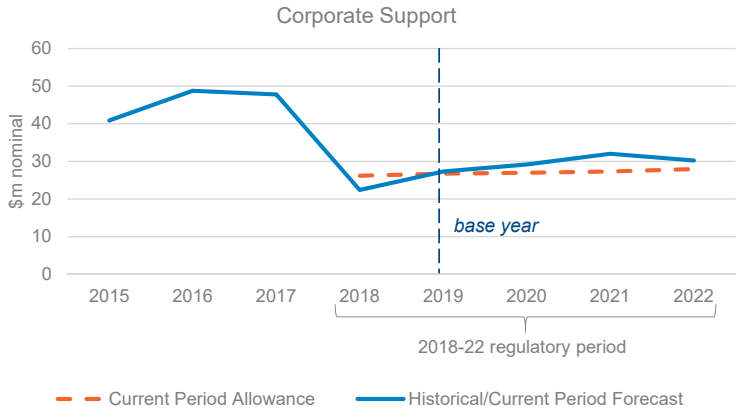
Expenditure in this category is slightly below the AER's allowance, driven in part by our renegotiation of contracts for electricity, land, and rental costs across some field sites. Reductions to field support contract rates have contributed to lower forecasts for this category.



Asset management support includes activities required to support the strategic development and continued asset management of the network.

Expenditure in this category has been below the AER's allowance throughout the period. Workplace reform and a restructure at the end of the 2013-17 regulatory period drove efficiencies and improved practices in this category, with a focus on increased utilisation of internal resources. In 2019/20, we reduced external works due to COVID-19.

We shifted our focus from Asset Management Support activities to support preparatory works for capital projects.



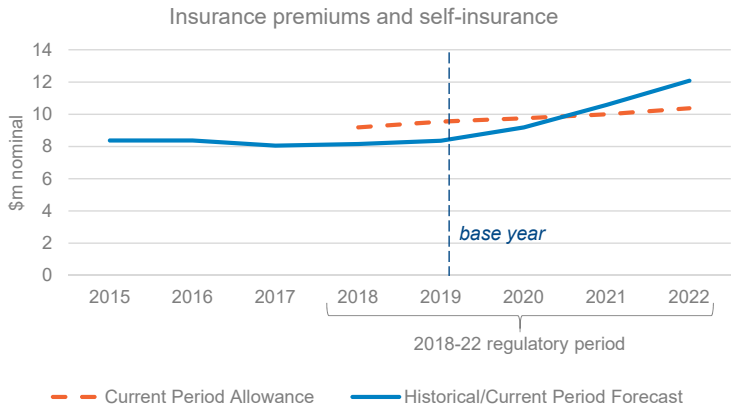
Corporate support includes the activities required to ensure adequate and effective corporate governance.

We achieved a material reduction in corporate support costs during 2017/18 after a corporate restructure and high levels of one-off expenditure in 2015/16 and 2016/17. Our reduced spend has been maintained over the 2018-22 regulatory period. Increases in 2020-22 reflect costs associated with the revenue determination process, which were not incurred in the first two years.

Category analysis of non-controllable operating expenditure

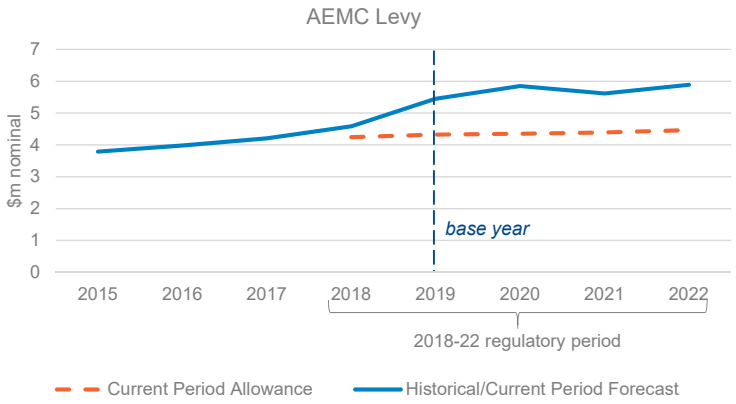
Increases in key non-controllable operating expenditure categories have impacted our ability to live within the AER's allowance for the 2018-22 regulatory period. Figure 6.4 outlines key trends in insurance premiums and self-insurance, and the AEMC Levy over the period 2014/15 to 2021/22.

Figure 6.4: Category analysis of non-controllable operating expenditure ($m nominal)



Insurance costs (including both insurance premiums and self-insurance) have increased since 2018/19 and are forecast to continue to rise over the remainder of this regulatory period into the next.

These increases are due to a material rise (approximately 18% per annum in nominal terms) in insurance premiums as the insurance market enters a hard phase.



Over the 2018-22 regulatory period, the AEMC Levy has increased in nominal terms by $5.6m (25.8%) to date above the AER's allowance. A slight decline is forecast for 2020/21 based on the latest information from the Queensland Government.

This cost is not within Powerlink's control. The drivers for this cost are explained further in Section 6.7.2, as well as Chapter 4 Historical Capital and Operating Expenditure.

Efficiency of base year

This section provides detail about our benchmarking outcomes relative to our proposed 2018/19 base year. Further information about our historical benchmarking performance is included in Chapter 4 Historical Capital and Operating Expenditure.

Benchmarking plays a role in the AER's assessment of TNSP performance and expenditure forecasts, particularly with respect to base year operating expenditure efficiency and trends. Economic benchmarking of electricity transmission businesses is impacted by the small number (five) of TNSPs in Australia. The AER acknowledges this limitation in applying its benchmarks to TNSPs[12].

We understand that to address this in part, the AER has moved towards a line-of-best-fit approach for productivity benchmarking rather than an average annual growth rate method (which measures the productivity growth rate between the first and last observations). We agree that the line-of-best-fit approach is a more appropriate method to examine the productivity of TNSPs over time.

Our Revenue Proposal Reference Group (RPRG) also recognised that changes to certain inputs in the analysis can improve the benchmarking performance of a business without improvements to outcomes for customers[13]. Our customers want us to focus on genuine improvements in capital and operating expenditure, rather than changes that might improve benchmarking performance but deliver no tangible customer benefits. We have had regard to this feedback as we developed our operating expenditure forecasts and our no real growth approach is designed to deliver real benefit to customers.

In our discussions with customers and the AER, we reinforced that our primary focus is to ensure that we undertake works that deliver safe, secure and reliable transmission services in a prudent and efficient manner. While we are very mindful of the AER's benchmarking and the high-level insights it might suggest, we do not and will not undertake works simply to convey the appearance of improvement under the AER's benchmarks.

We engaged HoustonKemp to undertake an independent review of our base year operating expenditure and benchmark it against other TNSPs to examine productivity trends. HoustonKemp's report is provided in Appendix 4.01.

[12] Annual Benchmarking Report – Electricity transmission network service providers, Australian Energy Regulator, November 2020, page 16.
[13] Minutes of the Revenue Proposal Reference Group, Powerlink, December 2019, https://www.powerlink.com.au/2023-27-regulatory-period.

To support our goal to have a Revenue Proposal that is capable of acceptance by our customers, the AER and Powerlink, we provided an early copy of HoustonKemp's report to the AER for consideration. We also provided a copy to our Customer Panel after publication of the AER's 2020 Economic Benchmarking Report in November 2020.

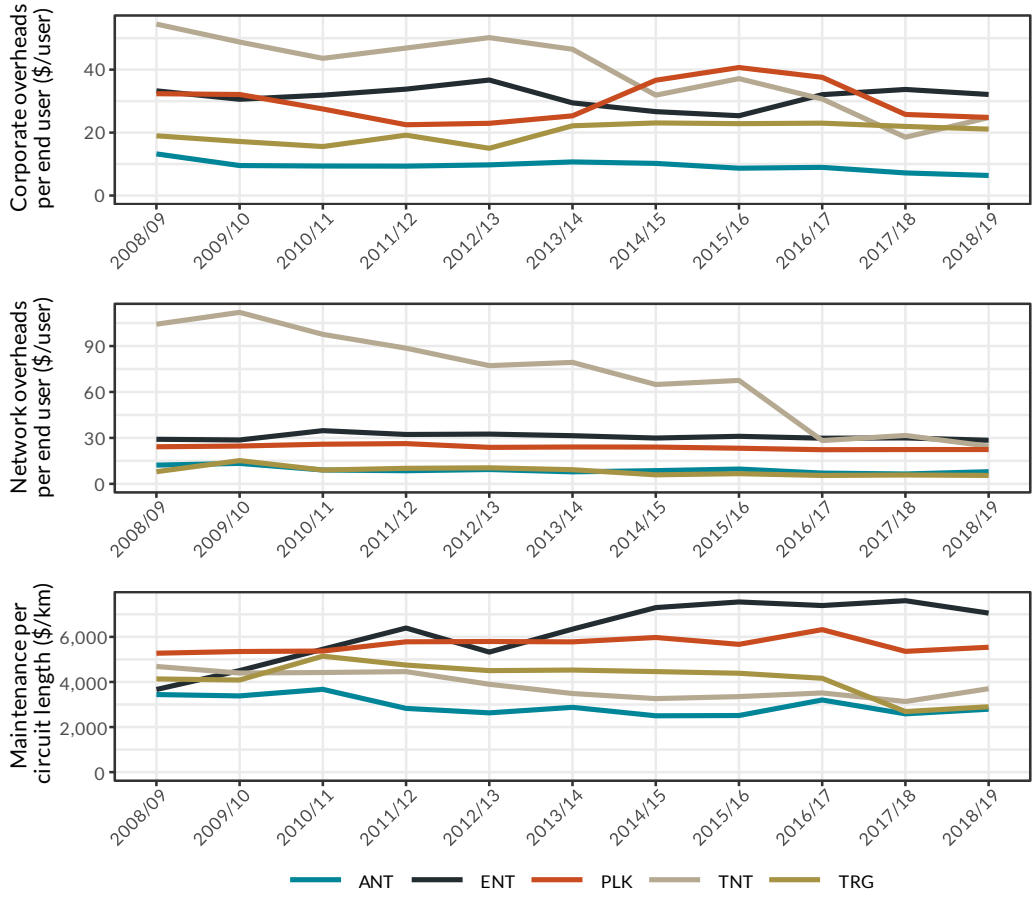
HoustonKemp's key findings on our base year operating expenditure were as follows:

> *The AER's most recent benchmarking results for Powerlink, both in absolute and trend terms, shows that Powerlink has been responding to the incentives in the regulatory framework and is operating relatively efficiently when compared to its peers.*
>
> *In other words, consistent with the AER's application of the benchmarking framework for TNSPs and its recognition of the limitations of that framework, the benchmarking analysis does not provide any basis to conclude that Powerlink's revealed 2018/19 operating expenditure is 'materially inefficient', and to overturn the presumption that the incentive mechanisms in the regulatory framework (in particular the EBSS) should lead to revealed operating expenditure being an accurate reflection of efficient expenditure.*
>
> *Further, Powerlink's relative benchmarking performance in 2018/19 is consistent with its relative performance in 2014/15, where the AER accepted actual operating expenditure as representing an efficient base year for the current regulatory period*[14].

We have made a substantial effort in the current 2018-22 regulatory period to improve our operating performance. HoustonKemp found that we had delivered a significant reduction in operating expenditure in 2017/18 and a correlated improvement in benchmark performance.

As well as analysing the AER's benchmarking results, HoustonKemp also carried out a detailed category analysis of operating expenditure over time and against our TNSP peers. Figure 6.5 presents a category analysis of TNSP operating expenditure for key categories over the period 2008/09 to 2018/19.

Figure 6.5: TNSP operating expenditure (category analysis) by key category, adjusted(1)



Source: Efficiency of Powerlink's base year operating expenditure, HoustonKemp, November 2020

(1) Values have been adjusted and inflation has been applied by HoustonKemp (refer to Appendix 4.01 Efficiency of Powerlink's Base Year Operating Expenditure Report).

[14] Efficiency of Powerlink's base year operating expenditure, HoustonKemp, November 2020, pages 5-6.

HoustonKemp's detailed category analysis showed:

- Our corporate overheads (on a per end user basis) were lower in 2018/19 in real terms than in 2008/09. The increase above trend in corporate support costs in 2015/16 and 2016/17 arose from costs associated with business restructuring, whilst the significant reduction in 2017/18 arose from the write back of provisions not required for the restructure.
- Our network overheads per end user were lower in 2018/19 in real terms than in 2008/09, and approximately equal with TasNetworks and ElectraNet, which is consistent as these three TNSPs have the lowest connection density.
- Our maintenance costs per circuit length were approximately five per cent higher in 2018/19 in real terms than in 2008/09, consistent with the increasing age of our network over time.

From this analysis, HoustonKemp concluded the following:

> *Our detailed category analysis of Powerlink's operating expenditure over time and against its peers further supports [the conclusion that its operating expenditure is not materially inefficient], and indicates that Powerlink's operating expenditure performance across its major operating expenditure categories has been improving over time, and that its relative performance is consistent with the key characteristics of its network relative to other stand-alone TNSPs*[15,16].

Based on HoustonKemp's independent advice on the efficiency of our 2018/19 base year, we consider that our performance is comparable to our TNSP peers. We recognise there is a need to continue to pursue improvements to operating expenditure productivity to drive more prudent and efficient operations and to achieve meaningful customer outcomes. Our overall operating expenditure target of no real growth is consistent with this aim.

Analysis of Powerlink's total operating expenditure

In addition to HoustonKemp's analysis, we have also considered our overall operating expenditure relative to three key parameters – circuit length, customer numbers and energy transported, over the period 2005/06 to 2018/19. We have also forecast our performance for 2019/20 to 2026/27 and provided this information in Figures 6.6 to 6.8. These metrics have been provided in response to feedback from our RPRG to provide further information about our anticipated forecast operating expenditure performance over the 2023-27 regulatory period[17].

Our historical and forecast performance against these metrics indicates:

- We have improved considerably over the 2018-22 regulatory period and our operating expenditure against all three metrics now reflects levels similar to, or better than, 2006.
- Our forecast operating expenditure for the 2023-27 regulatory period, driven by our no real growth target, is anticipated to result in the retention of improvements realised in the current regulatory period and demonstrates that we will maintain a prudent and efficient level of operating expenditure.

We provide further observations on each metric below. Note that, for each metric, a lower/declining amount represents improving performance.

[15] As discussed in Chapter 4 Historical Capital and Operating Expenditure, HoustonKemp concluded that the performance of TasNetworks largely reflects the outcome of the merger of transmission and distribution business and is therefore not representative of the outcomes for a stand-alone TNSP.

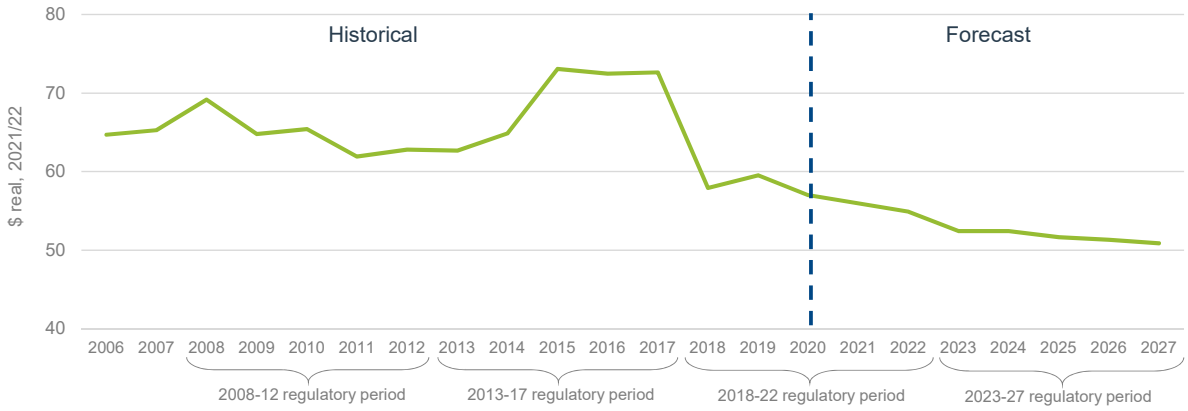
[16] Efficiency of Powerlink's base year operating expenditure, HoustonKemp, December 2020, pages 5-6.

[17] Minutes of the Revenue Proposal Reference Group, Powerlink, December 2020, https://www.powerlink.com.au/2023-27-regulatory-period.

Figure 6.6: Powerlink total operating expenditure per circuit km ($k real, 2021/22)

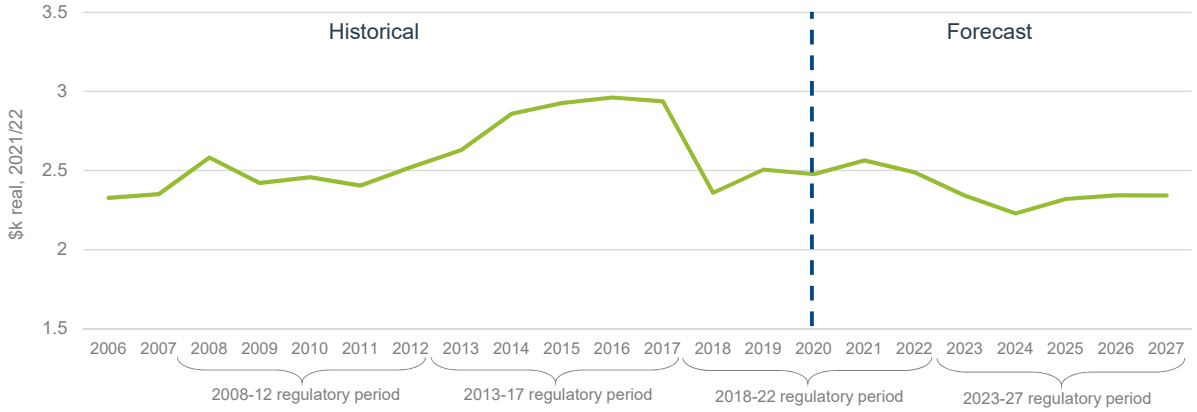
- In 2019/20, operating expenditure per km reduced by 11% compared to the level in 2005/06, and is down 18% compared to a peak observed in 2016/17.
- Over the period 2019/20 to 2026/27, this metric is expected to reduce at a rate of 0.42% per annum, to a level 13% below that seen in 2005/06.
- Over the period 2005/06 to 2026/27, the average annual rate of change is forecast to be minus 0.77%.
- No material change in our circuit kilometres is forecast in the 2023-27 regulatory period, which would also contribute to any change in this metric.

Figure 6.7: Powerlink total operating expenditure per customer ($ real, 2021/22)



- In 2019/20, operating expenditure per customer reduced by 12% compared to the level seen in 2005/06, and is down 22% compared to a peak observed in 2014/15.
- Over the period 2019/20 to 2026/27, this metric is expected to reduce at a rate of 1.67% per annum, to a level 21% below that seen in 2005/06.
- Over the period 2005/06 to 2026/27, the average annual rate of change is forecast to be minus 1.39%.
- The main driver of the decline in this metric over the period 2019/20 to 2026/27 is forecast population growth in Queensland. An increase in customer numbers and forecast no real growth in operating expenditure results in a gradual reduction in operating expenditure costs per customer.

Figure 6.8: Powerlink total operating expenditure per GWh ($k real, 2021/22)



- Forecasts of operating expenditure per GWh are largely influenced by forecast trends in energy transmission sourced from AEMO's 2020 Electricity Statement of Opportunities (ESOO) and the 2020 Integrated System Plan (ISP).
- In 2019/20, operating expenditure per GWh was 6% higher than the level seen in 2005/06, but 16% lower than the peak observed in 2016.
- Over the period 2019/20 to 2026/27, this metric is expected to reduce at a rate of 1.3% per annum, to a level 0.6% above that seen in 2005/06.
- Over the period 2005/06 to 2026/27, the average annual rate of change is forecast to be minus 0.27%.
- The driver of a slight increase in this rate seen in the year 2020/21 is reduced energy throughput in Queensland as a result of COVID-19 induced economic impacts. Over the period 2022 to 2024, an increase in energy flows throughout Powerlink's network and a subsequent decline in operating expenditure per GWh is forecast as a result of economic recovery from COVID-19, the commissioning of the QNI Minor interconnector upgrade, and the closure of Liddell Power Station. Beyond 2023/24, energy transfers in Queensland are forecast to reduce.

Overall, we consider that the forecast outcomes under these metrics lend support to the reasonableness and efficiency of our operating expenditure forecasts for the next regulatory period.

6.6.2 Rate of change

Total rate of change

The overall real rate of change in the base-step-trend model is a function of the forecast change in network output, changes in real input costs (labour and materials) and changes in productivity. The calculation method for the total rate of change is shown in Figure 6.9, and is consistent with the AER's 2013 Expenditure Forecast Assessment Guideline for Electricity Transmission and our Expenditure Forecasting Methodology in Appendix 5.03.

Figure 6.9: Forecast rate of change method

Table 6.7 shows the sum of forecast changes in output, real prices and productivity over the 2023-27 regulatory period. Our forecast average annual rate of change over the 2023-27 regulatory period is 0.3%.

Table 6.7: Forecast real annual rate of change (% per annum)

Rate of change components	2022/23	2023/24	2024/25	2025/26	2026/27	Average
Output change	0.3	1.4	(0.4)	0.1	0.2	**0.3**
Real price change	0.3	0.4	0.6	0.8	0.5	**0.5**
Productivity change	0.5	0.5	0.5	0.5	0.5	**0.5**
Total rate of change	**0.0**	**1.2**	**(0.3)**	**0.4**	**0.2**	**0.3**

Table 6.8 shows the annual increase or decrease in forecast operating expenditure due to the rate of change being applied in each year of the regulatory period.

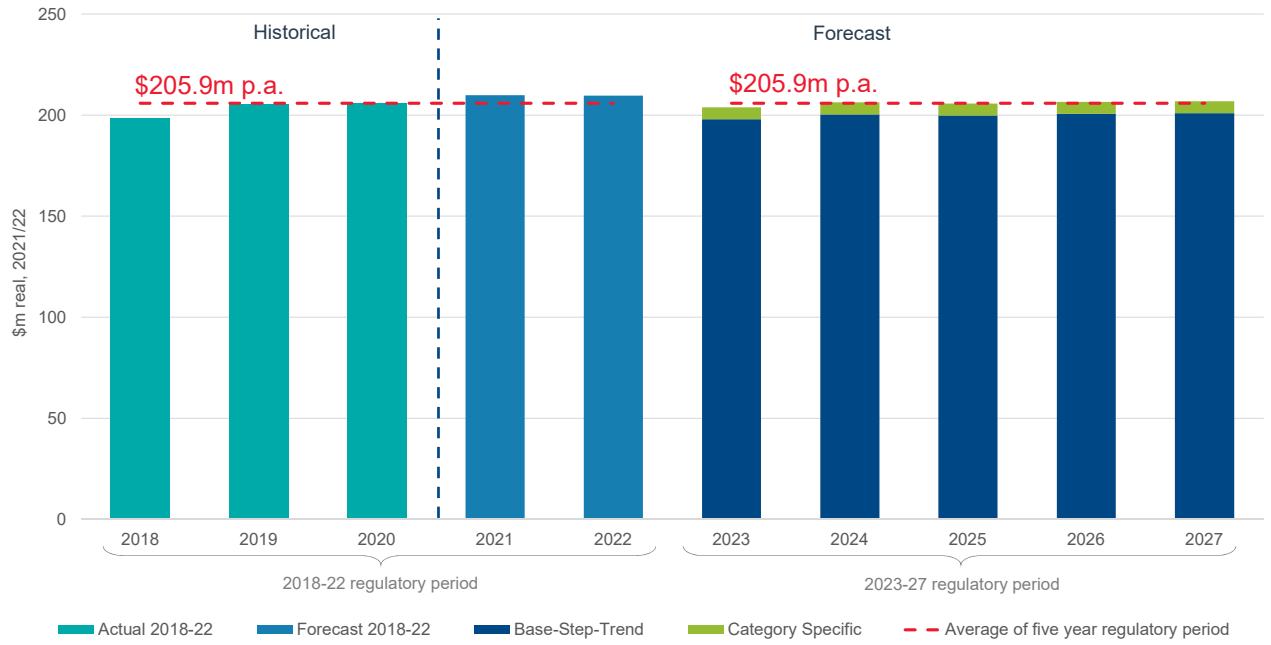
Table 6.8: Forecast real annual rate of change ($m real, 2021/22)

Rate of change components	2022/23	2023/24	2024/25	2025/26	2026/27	Total
Output change	0.5	3.2	2.4	2.6	2.9	**11.6**
Real price change	0.5	1.2	2.4	4.0	5.0	**13.1**
Productivity change	(0.9)	(2.0)	(2.9)	(3.9)	(4.9)	**(14.7)**
Total rate of change	**(0.0)**	**2.5**	**1.9**	**2.6**	**3.0**	**10.0**

It is important to note that while the total rate of change within the base-step-trend operating expenditure forecast is greater than zero, when we take into account the AEMC Levy category-specific forecast, there is no real growth in total operating expenditure between the 2018-22 and 2023-27 regulatory periods.

The annual average operating expenditure is identical at $205.9m per annum between the 2018-22 and 2023-27 regulatory periods, as demonstrated by Figure 6.10.

Figure 6.10 Actual/forecast average annual operating expenditure ($m real, 2021/22)(1)



(1) Reflects underlying operating expenditure, which excludes movements in provisions, debt raising, network support and NCIPAP costs.

Output growth

Output growth is the expected change in network output, measured by the four parameters outlined in Table 6.9, weighted by their assessed share of gross revenue. Weighting factors are defined by the AER as part of its economic benchmarking of TNSPs.

Table 6.9: Output change factors

Output measure	Description	Weighting[1]
Energy throughput	Forecast growth of delivered energy within Queensland, plus energy delivered through interconnectors to / from NSW measured in GWh. This information is sourced from the Central Scenario of AEMO's 2020 ESOO and AEMO's 2020 ISP. Energy throughput within Queensland is forecasted to reduce slightly. There is forecast growth in energy throughput early in the 2023-27 regulatory period on the QNI. This is a result of the commissioning of the 2018 ISP recommended Group 1 QNI minor upgrade. The project entails uprating the QNI by 2022 prior to the closure of Liddell Power Station in NSW.	14.9%
Ratcheted Maximum Demand	Ratcheted Maximum Demand is the ratcheted non-coincident maximum demand. Non-coincident maximum demand is the maximum demand of each individual connection point in a year measured in MVA. This information is sourced from the Central Scenario of AEMO's 2020 ESOO and Powerlink's 2020 Transmission Annual Planning Report (TAPR). The maximum demand within Queensland is forecast to remain relatively stable for the 2023-27 regulatory period. We forecast an increase in maximum demand following the commissioning of the 2018 ISP recommended Group 1 QNI minor upgrade as identified in the energy throughput section above.	24.7%
Number of customers	This is based on an aggregate number of customers for the Distribution Network Service Providers (DNSPs), Ergon Energy and Energex, identified in the AER's 2020-25 Final Decision models and Powerlink's directly-connected customers. For 2026/27, Ergon Energy and Energex's customer numbers were trended based on a simple linear regression. Based on this approach, customer numbers are forecasted to increase by 143,000 over the 2023-27 regulatory period.	7.6%
Circuit length	Circuit length is the total transmission line circuit length measured in kilometres sourced from Powerlink's Enterprise Resource Planning database (SAP) Plant Maintenance Module. Powerlink has forecast no overall increase in circuit length over the 2023-27 regulatory period and has adjusted the forecast of circuit kilometre length down from 14,528km to 14,472km to reflect forecast transmission line decommissioning over the 2023-27 regulatory period. This adjustment reflects our focus on reducing both forecast capital and operating expenditure on assets at the end of technical and economic life, for which there may be no enduring need.	52.8%

(1) Annual Benchmarking Report – Electricity Transmission Network Service Providers, Australian Energy Regulator, November 2020.

Table 6.10 presents the forecast annual output growth factors for the 2023-27 regulatory period, along with total output growth after the AER's updated weightings from its 2020 Economic Benchmarking Report are applied. The last two years of the current regulatory period are shown for completeness.

Table 6.10: Output growth factors (% per annum)

Output components	2020/21[1]	2021/22[1]	2022/23	2023/24	2024/25	2025/26	2026/27	Average[2]
Energy throughput	(4.2)	2.3	2.8	6.1	(4.3)	(0.6)	0.4	**0.9**
Ratcheted Maximum Demand	-	-	-	1.5	0.4	0.3	0.2	**0.5**
Number of Customers	1.2	1.2	1.2	1.2	1.2	1.2	1.2	**1.2**
Circuit length	-	-	(0.5)	-	0.1	-	-	**(0.1)**
Total output growth	**(0.5)**	**0.4**	**0.3**	**1.4**	**(0.4)**	**0.1**	**0.2**	**0.3**

(1) Figures for 2020/21 and 2021/22 are calculated using the updated 2020 weighting factors, and therefore do not represent rates of change presented in the 2018-22 Revenue Proposal.

(2) Average of the 2023-27 regulatory period.

Real price growth

Real price growth is the forecast real change in input costs, measured for labour and materials. We consider our forecast of labour and materials price changes represent a realistic forecast of input increases over the 2023-27 regulatory period.

Our forecast of labour input price changes is based on a simple average of two Wage Price Index (WPI) forecasts:

- an independent forecast of Electricity, Gas, Water and Waste Services (EGWWS) WPI for Queensland developed by BIS Oxford Economics (BISOE); and
- the Deloitte Access Economics (DAE) National Utilities WPI forecast prepared for the AER for the Draft Decisions of the Victorian DNSPs in September 2020[18].

Both forecasts have been adjusted to account for the impact of the Federal Government's Superannuation Guarantee increase, to be implemented over the period 1 July 2021 to 1 July 2025 in line with recent AER Draft Decisions for Victorian DNSPs in September 2020[19]. Our approach to forecasting WPI is set out in Chapter 7 Escalation Rates and Project Cost Estimation.

Table 6.11 presents these forecasts along with the simple average forecast that has been used in the rate of change calculations. The average annual labour price change over the 2023-27 regulatory period is 0.7%. The last two years of the current regulatory period are shown for completeness.

Table 6.11: Forecast real labour price growth, including superannuation guarantee (% per annum)

WPI forecasts	2020/21(1)	2021/22(1)	2022/23	2023/24	2024/25	2025/26	2026/27	Average(2)
BISOE EGWWS	0.6	1.3	1.1	1.0	1.3	1.3	0.9	**1.1**
DAE National Utilities	0.4	-	(0.3)	-	0.4	1.0	0.5	**0.3**
Average	**0.5**	**0.6**	**0.4**	**0.5**	**0.9**	**1.1**	**0.7**	**0.7**

(1) Figures for 2020/21 and 2021/22 are calculated using the updated 2020 weighting factors, and therefore do not represent rates of change presented in the 2018-22 Revenue Proposal.

(2) Average of the 2023-27 regulatory period. Figures for 2020/21 and 2021/22 are included for comparison only.

We propose a real materials price growth of zero in our expenditure forecasts for the 2023-27 regulatory period. This reflects the expectation that materials costs will increase in line with CPI and is consistent with other recent regulatory determinations[20]. Under current economic conditions, which include historically low levels of inflation and the impacts of COVID-19, it may be appropriate to apply materials cost escalators above CPI. We have chosen not to do this due to the uncertainty that exists in any alternative (non-CPI) materials forecast.

To develop our real price growth escalation forecasts for the 2023-27 regulatory period, we have applied weightings of labour to materials at a ratio of 70.4% to 29.6%. These weightings reflect those that have been applied by the AER and their consultant (Economic Insights) in the Annual TNSP Benchmarking Reports since 2017[21]. The AER sought and received data from TNSPs on the composition of their operating expenditure before arriving at the current weighting.

We have investigated the appropriateness of this weighting and found it is consistent with the split of labour and materials costs in our historical operating expenditure. Application of these weightings to the real labour and materials price growth results in an average real price change of 0.5% over the 2023-27 regulatory period.

Productivity growth

Productivity change measures the forecast productivity improvements for a business.

The AER currently applies an industry average to calculate productivity, based on operating expenditure Partial Factor Productivity (PFP) across all TNSPs. The current industry average is 0.3% per annum[22]. We discuss the benchmark techniques used by the AER to calculate productivity, and our historical performance, in Chapter 4 Historical Capital and Operating Expenditure.

18 See Draft Decisions for AusNet Services, Jemena, United Energy, CitiPower and Powercor, Australian Energy Regulator, September 2020.
19 Impact of changes to the superannuation guarantee on forecast labour price growth, Deloitte Access Economics, July 2020.
20 Final Decisions for Energex, Ergon Energy and SA Power Networks, June 2020.
21 Economic Benchmarking Results for the Australian Energy Regulator's 2020 TNSP Annual Benchmarking Report, Economic Insights, October 2020, page 62.
22 *Ibid.*

As part of its independent report on the efficiency of our 2018/19 base year, HoustonKemp also considered what productivity factor should be applied to Powerlink. HoustonKemp analysed the industry operating expenditure trend over the period 2005/06 to 2018/19[23] and concluded:

> *The benchmarking data suggest that the productivity factor applied for Powerlink for the forthcoming regulatory period, as a stand-alone TNSP, should be zero. Notwithstanding the application of a productivity growth rate of zero, Powerlink remains incentivised to continue to make efficiency gains in relation to its operating expenditure during the 2023-27 regulatory period, as a consequence of the EBSS*[24].

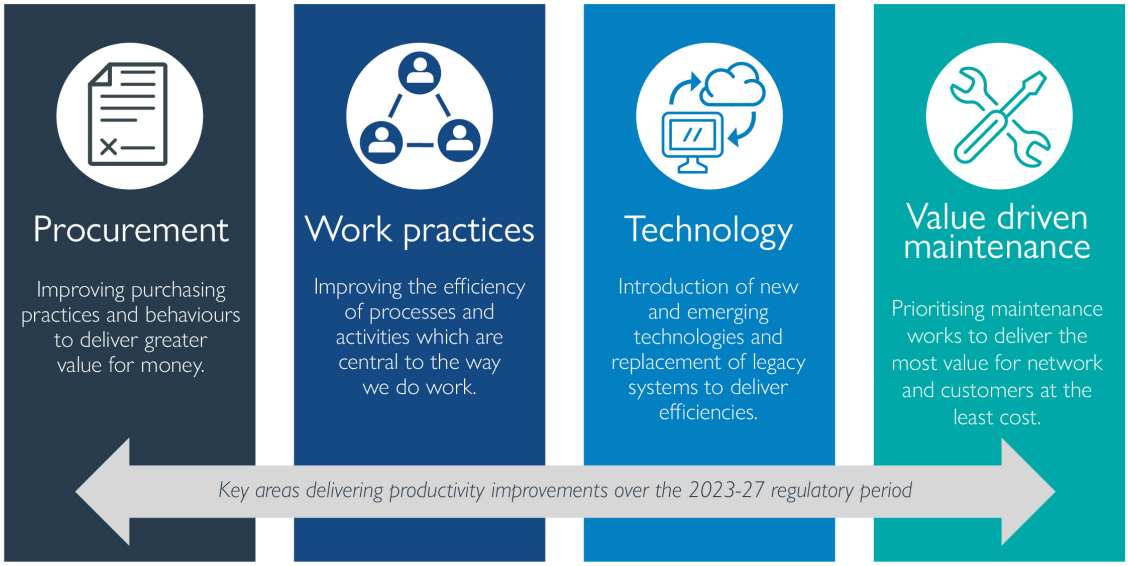
We considered HoustonKemp's independent analysis and findings and the AER's current industry average productivity factor of 0.3% in the development of our Revenue Proposal. Consistent with our target of no real growth in operating expenditure, we propose an annual productivity factor of 0.5%, which is higher than the industry average.

Feedback from our RPRG and the AER's CCP23 supported the high productivity target put forward in our draft Revenue Proposal. However, both groups sought further information on how we intend to meet this target.

Potential initiatives

To help achieve our overall target of no real growth in operating expenditure into the next regulatory period and thereby deliver on our proposed 0.5% productivity improvement each year, we have identified a number of potential productivity improvement categories (refer Figure 6.11). These initiatives are in various stages of development at this time.

Figure 6.11: Productivity categories for the 2023-27 regulatory period



Areas of focus and key initiatives under each of these themes could include:

- rationalisation of our direct purchasing and supply chain practices to reduce the frequency of procurement outside standing agreements with suppliers, to drive down costs;
- to explore options to reduce costs in vegetation management contract arrangements;
- application of emergent technologies to optimise field delivery and staff activities through improved work planning;
- delivery of our proposed office refit project (refer Chapter 5 Forecast Capital Expenditure), which should produce direct savings in utilities costs through reductions in the size of the occupied space and allow us to make more efficient use of available office space;
- core business Information Technology (IT) improvements and software upgrades which transition our core IT services to a more efficient operating platform. This will allow for programs to be modernised which is critical to support innovative technology applications and will help Powerlink avoid increased licence and operating costs associated with the continued use of the old operating environment;

[23] Efficiency of Powerlink's base year operating expenditure, HoustonKemp, December 2020, page 30.
[24] Efficiency of Powerlink's base year operating expenditure, HoustonKemp, December 2020, page 6.

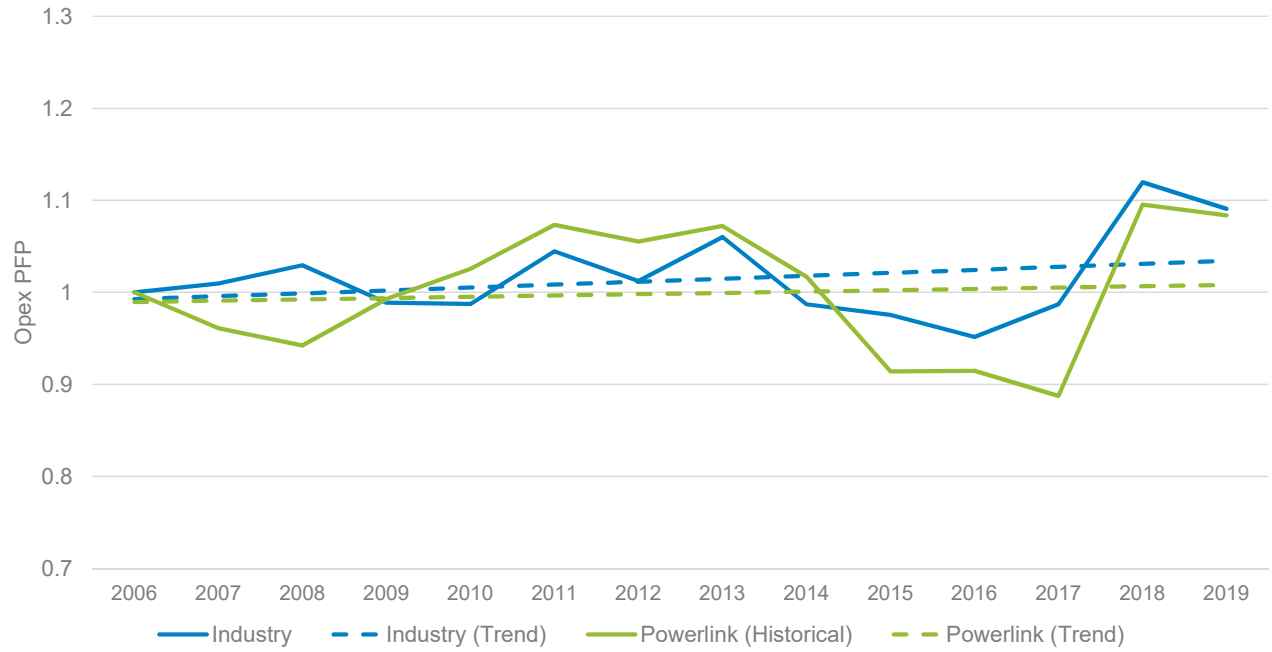
- establishment of an In-Vehicle Asset Management System (IVAMS) program across fleet vehicles to improve safety and driver education, as well as to enhance fleet management and reduce operating costs through savings on fuel, maintenance and vehicle insurance; and
- delivery of value driven maintenance practices. This involves further optimisation of maintenance works to deliver value for networks and customers at least cost. To realise the benefits from these programs, asset management policies and procedures have been prepared and candidate programs identified as of 2020/21, including potential applications across transmission line maintenance, civil inspections and transformer oil testing.

In response to customer feedback, we have also provided more detail in Appendix 6.02 Operating Expenditure Productivity Approach and Potential Initiatives. Further investigation into and the development of these and other initiatives will be undertaken in the normal course of business.

Productivity trend assessment

We have compared our historical operating expenditure productivity performance to the industry performance from 2005/06 to 2018/19, which is the most recent year that industry data is available. This is shown in Figure 6.12 together with the resulting productivity trend.

Figure 6.12: Powerlink and TNSP industry historical operating expenditure productivity



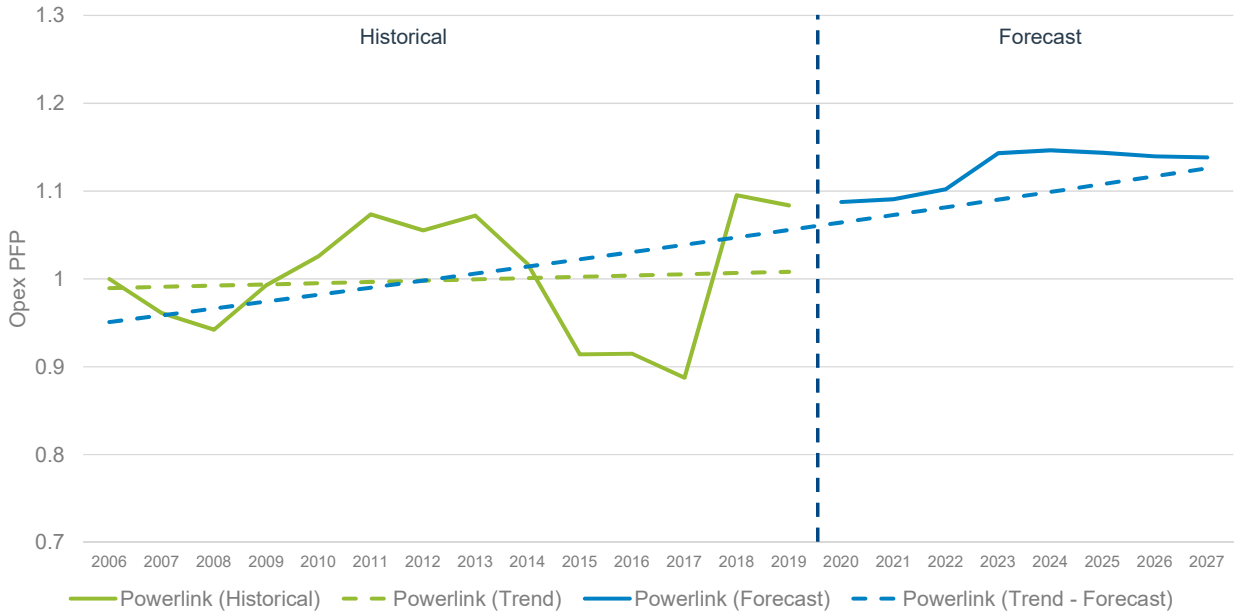
Source: Operating expenditure Partial Factor Productivity (PFP) measure published in the Annual Benchmarking Report – Electricity Transmission Network Service Providers, Australian Energy Regulator, November 2020.

Our operating expenditure productivity trend was 0.1% between 2005/06 and 2018/19, compared to an industry average of 0.3%. We improved our productivity substantially in 2017/18. This was driven by our 7% reduction in operating expenditure in the 2018-22 regulatory period compared to the 2013-17 regulatory period.

In response to feedback from our Customer Panel, we have also forecast our operating expenditure productivity over the period 2019/20 to 2026/27 to provide customers and the AER with a view of our productivity going forward. We have compared this to our historical performance (as shown in Figure 6.12) and restated the productivity trend for the whole period from 2005/06 to 2026/27 based on our forecast operating expenditure. This is shown in Figure 6.13.

To accurately forecast the productivity trend for other TNSPs would require forecast operating expenditure and output growth information from all other TNSPs. We are not in a position to seek such information and make this forecast.

Figure 6.13: Powerlink historical and forecast operating expenditure productivity



Source: Historical data is based on the operating expenditure Partial Factor Productivity (PFP) measure published in the Annual Benchmarking Report – Electricity Transmission Network Service Providers, Australian Energy Regulator, November 2020. Forecast data is based on Powerlink's own modelling.

We anticipate that our proposed 0.5% productivity factor for the 2023-27 regulatory period will drive a further uplift in our productivity in 2022/23, followed by a gradual improvement in our productivity trend over the remainder of the next regulatory period.

Our forecast operating expenditure in the next regulatory period results in a significant improvement in our operating expenditure productivity trend to 0.8% for the period 2005/06 to 2026/27. This would be an improvement on our historical productivity trend and is higher than the current industry productivity trend of 0.3%.

6.6.3 Step changes

We have decided not to pursue any operating expenditure step changes for the 2023-27 regulatory period. This followed detailed investigation of potentially material changes in our regulatory obligations.

As part of the preparation of our Revenue Proposal, we initially identified 27 potential step changes and reviewed them against a set of criteria. The criteria included whether costs were material, had not already been realised in the base year, had a high likelihood of being realised, and/or were associated with a new legislative/regulatory obligation.

We had early discussions about several of these potential step changes with our RPRG in February 2020[25] and narrowed our step changes down to two in our Preliminary Positions and Forecasts Paper in August 2020[26] - cyber security and additional transmission ring-fencing cost impacts following the AER's review of its Transmission Ring-Fencing Guideline. We have reached a position not to pursue these further in our Revenue Proposal.

Our proposal to target no real growth in operating expenditure and not to pursue any operating expenditure step changes, was carefully considered. This included having regard to customer feedback about affordability, the reasonableness of uncertain step changes being funded through regulatory allowances up-front and our overarching requirement to continue to operate the network in a prudent and efficient manner, while meeting all our regulatory obligations.

On balance, we decided to take up the challenge of no step changes and no real growth in operating expenditure in the interests of customers and to drive the business harder to find further efficiencies and productivity improvements to become a world-class transmission service provider.

Feedback from the AER's CCP23 (refer to Appendix 3.02 Submissions on our draft Revenue Proposal) supported our proposal of no operating expenditure step changes, particularly given the cost pressures currently facing residential and commercial customers and in the face of economic uncertainty as a result of COVID-19.

[25] Presentation to the Revenue Proposal Reference Group, Powerlink, February 2020, https://www.powerlink.com.au/2023-27-regulatory-period.
[26] Preliminary Positions and Forecasts Paper, Powerlink, July 2020, https://www.powerlink.com.au/2023-27-regulatory-period.

Table 6.12 outlines those potential step changes that may result in an increase in costs in the 2023-27 regulatory period, which we have chosen not to seek a regulatory expenditure allowance for in our Revenue Proposal. Instead, in response to customer feedback to seek further improvements in our operating expenditure, we will work to manage these costs within our total forecast operating expenditure. Cyber security and potential additional transmission ring-fencing costs are discussed further below.

Further detail on step changes investigated in the preparation of our Revenue Proposal is also provided in Appendix 6.03 Operating Expenditure Step Changes Approach.

Table 6.12: Potential costs uplifts over the 2023-27 period ($ real, 2021/22)

Name	Estimated cost uplift	Description
Cyber security	$1.1m-$2.5m per annum (depending on maturity level uplift required. This uplift represents the potential increase above existing activities)	There is a potentially significant increase in operating expenditure required to maintain different levels of cyber security readiness, pending the *Security Legislation Amendment (Critical Infrastructure) Bill 2020.* **This is discussed further below.**
Transmission Ring-Fencing	Unknown	The AER's Electricity Transmission Ring-Fencing Guideline Review may result in additional obligations and operating expenditure. The quantum of these costs will depend on the nature and extent of changes proposed. **This is discussed further below.**
Nature Conservation Act 1992 fees	$1m (2023/24), $70k per annum thereafter	Potential new fees for co-location of assets within national parks. The timing of this new obligation is uncertain and may not arise before the AER's Final Decision in April 2022.
Generator Technical Performance Standards (GTPS)	$63k per annum	Increased costs (above those already realised in 2018-22) related to the provision of operational advice on system-related matters due to the National Electricity Amendment (Managing Power System Fault Levels) Rule 2017 No. 10. This was originally forecast to have a larger impact (~$250k per annum). However further analysis revealed the majority of this cost has been realised in our base year.
Whistle-blower Protections	$150k per annum	Additional administrative and compliance costs related to new whistle-blower legislation under the *Corporations Act 2001*. We decided not to pursue this potential step change as the cost was not considered material.
Modern Slavery Act 2018	$130k per annum	New administrative compliance costs related to the *Modern Slavery Act 2018*. We decided not to pursue this potential step change as the cost was not considered material.

Cyber security

Over the 2023-27 regulatory period, a significant increase in operating expenditure may be required to maintain Powerlink's cyber security maturity. To manage the risks posed by increasing cyber security threats and to ensure an appropriate level of cyber security readiness while maintaining alignment with the voluntary Australian Energy Sector Cyber Security Framework (AESCSF), we anticipate operating expenditure associated with cyber security will be in the range of $1.5m to $2.4m per annum. We will undertake these works as a prudent operator and to appropriately manage our cyber security risks within our forecast operating expenditure for the 2023-27 regulatory period.

In December 2020, the Federal Government introduced the *Security Legislation Amendment (Critical Infrastructure) Bill 2020* to Parliament. If passed, this legislation would establish a new security and resilience regulatory regime on operators of critical infrastructure and we anticipate there would be elevated security obligations and standards on critical infrastructure owners and operators such as Powerlink.

At this stage, we estimate that our costs may increase to a total of between $3.5m to $4.0m (an increase of between $1.1m to $2.5m per annum) if higher levels of readiness than Powerlink's current target are mandated by the Federal Government. Given the uncertainty around the scope and timing of these future formal obligations, we have decided not to include a step change for these costs in our forecast at this time.

In the event that mandatory higher security requirements eventuate during the 2023-27 regulatory period, we aim to absorb this within our total operating expenditure allowance. If associated costs (which may also include capital expenditure costs) are material, we may also need to investigate other options, such as a cost pass through arrangement (refer Chapter 12 Pass Through Events).

AER review of TNSP Ring-Fencing Guideline

The AER's Electricity Transmission Ring-Fencing Guideline Review may result in additional operating expenditure. The quantum of these costs will depend on the nature and extent of any changes to the existing guideline. Given the AER has recently postponed recommencement of the Guideline Review to mid-2021, we intend to reassess this matter following the publication of the AER's Draft Guideline in September 2021.

At that time, there may be a need to seek additional operating expenditure and/or seek a cost pass through arrangement. In the event that costs are minor, we will aim to absorb these within our operating expenditure allowance.

AEMO fees

Implementation of AEMO's National Transmission Planner (NTP) fees were finalised by the AEMC in October 2020. The Rule addressed mechanisms to apply the actionable ISP framework. These fees are developed and applied outside a revenue determination process. As a result, they have not been considered further in our Revenue Proposal.

AEMO also began consultation on its participant fee structures in August 2020, which will apply from 1 July 2021 under the Rules. AEMO has proposed a reallocation of NEM function fees from just generators and market customers to also include TNSPs and DNSPs. Examples of these functions include AEMO's involvement in power system security, reliability and market operation.

We consider that the activities identified by AEMO as being undertaken for TNSPs are actually to meet AEMO's own obligations with respect to power system security. This issue aside and, based on AEMO's budget estimates for 2020/21, we anticipate that we would be subject to an additional $4.0m per annum in AEMO fees. It is not clear at this time how these fees would be recovered from electricity consumers, which could be by way of the newly implemented NTP fee arrangements.

However, for the purposes of our Revenue Proposal, we have not included any adjustment to our forecast operating expenditure to account for these additional fees. We will engage with the AER and our customers further on this matter following AEMO's Final Determination in March 2021.

6.7 Forecast non-controllable other operating expenditure

We have developed category-specific forecasts for the AEMC Levy, network support costs and debt raising costs.

Our category-specific (zero-based) forecasts use an external or bottom-up cost build to estimate the total cost of a particular activity. For these expenditure items, we do not consider that a trend of base year expenditure will reasonably reflect future operating expenditure requirements.

In the normal course of business, we classify our insurance costs (premiums and self-insurance) as non-controllable, other operating expenditure. However, since we published our Expenditure Forecasting Methodology in June 2020 we have decided, for the purposes of forecasting for our Revenue Proposal, to include insurance costs in our base year, rather than as a category-specific forecast.

6.7.1 Insurance

As a business, we take a holistic approach to the identification and management of our risks. We propose to adopt a combination of insurance policies, self-insurance and pass through arrangements in the 2023-27 regulatory period to efficiently manage exogenous risks associated with operating our network to deliver the most cost-effective outcome for customers and Powerlink.

The insurance industry is in a hard phase of the cycle. Current and anticipated volatility in the insurance market has created uncertainty around future costs. We engaged our insurance brokers, Marsh, to provide independent advice on our insurance and risk management approach for the 2023-27 regulatory period. This is provided in Appendix 6.04 Insurance Projections.

To provide our customers and other stakeholders with the opportunity to hear from and speak directly to experts in the global insurance field, we arranged for Marsh to discuss the insurance market with our RPRG. We also held a deep dive workshop in November 2020 which was open to broader stakeholders to discuss the trade-offs between cost and risk and to help inform our considerations and decision-making on insurance cover over the 2023-27 regulatory period and beyond.

The forecasts from Marsh indicate that insurance premiums for our current insurance coverage may increase by $17.0m (41%) in the 2023-27 regulatory period compared to our total actual/forecast insurance premium costs for the 2018-22 regulatory period.

Due to the current and anticipated uncertainty and volatility in the insurance market, we have used the base-step-trend model to forecast our insurance costs for the 2023-27 regulatory period. We also consider this to be the right approach in the context of customer affordability and the current and mid-term economic climate. It will be a challenge for us to manage any difference between our actual insurance costs and the AER's final allowance, and this may involve trade-offs (e.g. between the extent of our levels of cover and reducing other operating expenditure).

Overall, Marsh's total insurance cost forecasts for the 2023-27 regulatory period are $21.3m (49%) higher than the base-step-trend forecasts.

The elements of our insurance requirements are shown in more detail in the following sections.

External insurance

A key component of our risk management strategy is the establishment and maintenance of a prudent and efficient insurance program that provides financial coverage for the majority of our major risk exposures. We seek advice from our insurance brokers for domestic insurance and international cover, to ensure that our insurance coverage is effective and is delivered at a competitive cost.

Table 6.13 outlines our insurance premium cost forecast, trended from the 2018/19 base year expenditure. We have shown this for comparative purposes against the advice we received from Marsh. The data shows that if actual insurance premiums turn out to be consistent with Marsh's forecasts, we may be required to absorb an additional $23.3m within our total forecast operating expenditure over the 2023-27 regulatory period.

Table 6.13: Insurance premiums ($m real, 2021/22)

Insurance premiums	2022/23	2023/24	2024/25	2025/26	2026/27	Total
Base-step-trend forecast	7.0	7.1	7.1	7.1	7.1	**35.6**
Marsh forecast	10.0	10.8	12.1	12.7	13.3	**58.9**
Variance	**3.0**	**3.7**	**5.0**	**5.5**	**6.1**	**23.3**

Self-insurance

Self-insurance costs relate to losses that are below the insurance deductible amounts contained in our insurance portfolio and other minor losses that cannot be insured. We engaged Marsh to review historical levels of these losses and develop a forecast of prudent self-insurance amounts for the 2023-27 regulatory period.

Table 6.14 outlines self-insurance cost forecasts. Again, the forecast has been trended from the 2018/19 base year and compared to the Marsh forecast. In this case, the base-step-trend forecast is $2.0m higher than the estimate prepared by Marsh for the five year period.

Table 6.14: Self-insurance ($m real, 2021/22)

Self-insurance	2022/23	2023/24	2024/25	2025/26	2026/27	Total
Base-step-trend forecast	1.6	1.6	1.6	1.6	1.6	**8.0**
Marsh forecasts	1.2	1.2	1.2	1.2	1.2	**6.0**
Variance	**(0.4)**	**(0.4)**	**(0.4)**	**(0.4)**	**(0.4)**	**(2.0)**

Pass through events

Residual risk events outside our control that cannot be commercially insured or self-insured can potentially be addressed through the cost pass through mechanism in the Rules. Our nominated pass through events are discussed in Chapter 12 Pass Through Events.

6.7.2 AEMC Levy

In 2014, the Queensland Government enacted changes to the *Electricity Act 1994*[27]. Under these changes, Powerlink, as holder of a Transmission Authority in Queensland, must pay an annual fee that is a portion of the Queensland Government's funding commitments to the AEMC.

The AEMC Levy is applied to all jurisdictions across the NEM to cover the operations of the AEMC. In Queensland, the majority of the AEMC Levy cost is currently passed through to Powerlink and we incur this cost as operating expenditure.

AEMC Levy forecasts over the 2023-27 regulatory period have been developed on the basis of a category-specific approach and is shown in Table 6.15. Consistent with our 2018-22 Revenue Proposal, these figures are based on advice from the Queensland Government and reflect the AEMC's forward estimates of its budget up to 2024/25 and an assumed 2.5% annual increase in costs thereafter.

In the first three years of this regulatory period, actual AEMC Levy costs incurred increased significantly and exceeded the AER's allowance by $5.8m (25.7%). Based on our experience to date, we consider that there is a very real risk that outturn costs will again being higher than our proposed forecast for the 2023-27 regulatory period, particularly given the significant energy market reforms being progressed.

Notwithstanding these concerns and consistent with our no real growth and no step change approach, we propose to manage any increases to these costs beyond the forecasts below within our total operating expenditure allowance for the 2023-27 regulatory period.

Table 6.15: AEMC Levy ($m real, 2021/22)

	2022/23	2023/24	2024/25	2025/26	2026/27	Total
AEMC Levy	5.9	5.9	5.9	6.0	6.0	**29.7**

6.7.3 Network support

Network support refers to costs associated with non-network solutions used as an efficient alternative to network augmentation. Potential non-network solutions may include local generation, cogeneration, demand side response and services from a Market Network Service Provider (MNSP).

In the 2023-27 regulatory period we anticipate that there may be a need to contract with generators and large load operators to provide a contingency tripping service as part of an upgraded scheme to extend Central Queensland to Southern Queensland (CQ-SQ) transfer limits.

Given the uncertainty around potential costs with no contracts in place at present, and the possibility for emerging energy market dynamics to alter the requirements for network support closer to the time, we have included a $0 network support allowance in our operating expenditure forecast. Any actual network support costs incurred during the 2023-27 regulatory period will be recovered through pass through arrangements (refer Chapter 12 Pass Through Events).

We will review whether an allowance for network support costs should be pursued in our Revised Revenue Proposal if contracts are in place at that time.

6.7.4 Debt raising costs

Debt raising costs relate to transaction costs incurred when new debt is raised, or current lines of credit are renegotiated or extended. These costs include arrangement fees, legal fees, company credit rating fees and other transaction costs. Debt raising costs would be incurred by a prudent service provider and are an unavoidable aspect of raising debt.

The AER's standard approach is to provide an annual allowance for debt raising costs as part of Network Service Providers (NSP's) operating expenditure. This is based on an efficient benchmark rather than a business's actual costs. This is consistent with the approach used to set the forecast cost of debt in the rate of return (refer Chapter 9 Rate of Return, Taxation and Inflation).

[27] *Electricity and Other Legislation Amendment Bill 2014*, Queensland Government, Part 2, Amendment of *Electricity Act 1994*.

Our operating expenditure forecast reflects a debt raising cost assumption of 8.5 basis points per annum, as shown in Table 6.16. This is based in external advice from Incenta, which is detailed in Appendix 6.05 Benchmark Debt and Equity Raising Costs Report.

Table 6.16: Debt raising costs ($m real, 2021/22)

	2022/23	2023/24	2024/25	2025/26	2026/27	Total
Debt raising costs	3.5	3.5	3.4	3.3	3.2	**17.0**

6.8 Interaction between forecast capital and operating expenditure

The Rules[28] require that a Revenue Proposal identify and explain any significant interactions between forecast capital and operating expenditure.

We have a legislative responsibility to provide safe and reliable transmission services to customers and other NEM participants. To meet this obligation, we ensure network assets deliver the required reliability, availability and quality of supply through an appropriate balance of operating and capital expenditure. Consistent with our asset management framework, we use life-cycle cost analysis to deliver prudent and efficient outcomes for our customers.

As discussed in Chapter 2 Business and Operating Environment, forecast demand growth is expected to be relatively flat over the 2023-27 regulatory period in line with the limited demand growth seen over the 2018-22 regulatory period. The ratio of operating and capital expenditure is therefore expected to be similar between the two regulatory periods.

There are several key network and market trends that may impact our combined capital and operating expenditure approach over the 2023-27 regulatory period.

A significant contributor to forecast network non load-driven capital expenditure in the 2023-27 regulatory period is our ageing population of steel lattice transmission towers (refer Chapter 5 Forecast Capital Expenditure). As these steel lattice towers age, the level of corrosion and deterioration reaches a point where actions beyond normal maintenance will be required, which trigger the need for reinvestment works[29]. If reinvestment is delayed, this may result in increased operating expenditure to manage deterioration of asset condition.

At the same time, COVID-19 has impacted the scheduled delivery of some of our capital projects. It has also shifted the balance between operating expenditure categories due to travel and work practice restrictions, as well as delays in procurement of specialised equipment. We will continue to monitor this situation as it evolves and ensure that we continue to operate our network in a prudent and efficient manner, consistent with our regulatory and customer obligations.

Several non-network initiatives within the 2023-27 regulatory period are also expected to involve interaction between capital and operating expenditure activities, as set out below:

- We continue to investigate opportunities to extend the capability of transmission network assets through non-network solutions such as network support. Contracts with generators and large loads may mitigate the power system impact from contingency events and improve power system security, and allow us to deliver additional market benefits without network augmentation.
- Our proposed office refit project will allow us to make more efficient use of our available office space and deploy modern building management systems. This is expected to deliver operating expenditure savings in utilities costs.
- Cyber security is increasingly critical for the safe and secure operation of our network. In the 2018-22 regulatory period, we have undertaken both capital and operating expenditure works to improve our cyber security maturity. We anticipate these works will continue through the 2023-27 regulatory period and may increase in cost and complexity (refer Section 6.6.3).
- Business IT capital expenditure is expected to deliver operating efficiencies, focus IT delivery on better customer outcomes, rationalise systems and facilitate upgrades to specific programs. This may help reduce the operating costs of our IT systems and support increased cyber security through a transition away from outdated operating platforms.

[28] National Electricity Rules, schedule S6A.1, clause S6A.1.3(1).

[29] Reinvestment can involve retiring the asset without replacement if it is no longer required to maintain the prescribed levels of transmission services, life extension of the existing asset, like-for-like replacement of the asset, or replacement with a different asset.

6.9 Summary

We have targeted no real growth in operating expenditure over the 2023-27 regulatory period, compared to actual/forecast underlying operating expenditure over the current 2018-22 regulatory period and no step changes.

Customer feedback on productivity, affordability and the impacts of the current economic climate has been central to the development of our Revenue Proposal. This target will be a challenge for our business, particularly given likely increases to various categories of our operating expenditure. Ultimately, we decided to take up this challenge in the interests of customers and to drive the business harder while continuing to meet our customer and regulatory obligations, with a view to becoming a world-class service provider.

Our approach results in total forecast operating expenditure of $1,029.4m (excluding debt raising costs) and $1,046.4m (including debt raising costs). We consider that this forecast:

- meets the requirements of the Rules and the AER's 2013 Expenditure Forecast Assessment Guideline for Electricity Transmission;
- reflects an efficient level of operating expenditure in line with reduced expenditure over the current regulatory period, supported by an independent assessment of the efficiency of our proposed base year;
- represents a realistic forecast of expenditure for the period, based on minimal forecast demand growth and our close alignment of actual/forecast expenditure in the current regulatory period; and
- is a prudent and efficient forecast that responds to our customers' concerns through a productivity target above the industry average, no proposed step changes, and the potential for us to absorb of the order of $26.1m in cost increases over the 2023-27 regulatory period.