# Powerlink 2027-32 Revenue Proposal

## Appendix 4.03

## Expenditure Forecasting Methodology

# Contents

# Introduction

Powerlink Queensland is a Government Owned Corporation that owns, develops, operates and maintains the electricity transmission network in Queensland, to ensure a safe, cost-effective and reliable power supply to more than five million Queenslanders.

Powerlink's role in the electricity supply chain is to transport high-voltage electricity, from generators and energy storage systems, through our transmission grid to the distribution networks owned by Energex and Ergon Energy (part of the Energy Queensland Group) and Essential Energy (in northern New South Wales). We also transport electricity to industrial customers such as rail companies, mines and mineral processing facilities, and to New South Wales via the Queensland/New South Wales Interconnector (QNI) transmission line.

Powerlink will lodge its Revenue Proposal for the regulatory period from 1 July 2027 to 30 June 2032 with the Australian Energy Regulator (AER) in January 2026. As part of this process, we are also required to inform the AER of the methodology we propose to use to forecast our operating and capital expenditure.

## Customer Engagement

In developing our proposed operating and capital expenditure methodologies and associated forecasts, we have engaged with our Customer Panel, our Revenue Proposal Reference Group (RPRG) – a sub-set of our Customer Panel formed to enable more regular and deep engagement on the Revenue Proposal – the AER, the AER's Consumer Challenge Panel (CCP34) and Queensland Government. We also provided a draft of this document to the RPRG, the AER and the AER's CCP34 for feedback prior to lodgement.

We have represented key elements of customer feedback in Section 1. We will continue to engage on these and other aspects of our 2027-32 Revenue Proposal prior to lodgement with the AER. More information about our engagement activities is available on Powerlink's 2027-32 Regulatory Period section of our website.

## Operating Expenditure

We propose to adopt the AER's base-step-trend model to forecast our operating expenditure requirements over the next regulatory period. This is consistent with our forecasting approach for the 2023-27 Revenue Proposal.

## Capital Expenditure

We propose to adopt a hybrid approach to forecasting our capital expenditure requirements, combining top-down and bottom-up methods. We used a hybrid approach in our 2023-27 Revenue Proposal, and we will build on the experience, input and feedback gained during our previous revenue determination process in our 2027-32 Revenue Proposal.

## National Electricity Rules Requirements

Under the National Electricity Rules (the Rules), Powerlink is required to propose the methodologies by which we will prepare our forecasts of operating expenditure and capital expenditure for our Revenue Proposal[1]. In doing so, we must also forecast expenditure and provide information within our Revenue Proposal that meets the operating and capital expenditure objectives of the Rules[2] as well as the AER's Expenditure Forecasting Assessment (EFA) Guideline[3].

[1] National Electricity Rules, clause 6A.10.1B
[2] National Electricity Rules, clauses 6A.6.6 and 6A.6.7
[3] Expenditure Forecast Assessment Guideline for Electricity Transmission, Australian Energy Regulator, October 2024

# 1 Customer engagement

Powerlink's engagement approach was developed through a co-design process with our customers and stakeholders. This ensures engagement is focused on aspects our customers are able to influence and have the greatest impact on maximum allowed revenue.

We are committed to meeting our overarching goal, to deliver a Revenue Proposal that is capable of acceptance by our customers, the Australian Energy Regulator and Powerlink.

We have engaged on our proposed operating and capital expenditure forecasting approach with members of our Customer Panel, in particular through our RPRG, as well as representatives of the AER and the AER's CCP34.

We value the input provided by customers to the revenue determination process and appreciate the time and effort put into this process by the members of our Customer Panel. Their input has helped inform our thinking across a range of areas, including elements of our operating expenditure (opex) and capital expenditure (capex) forecasting approach. This input is summarised in Table 1.

We look forward to engaging more widely and in further detail on key areas of our Revenue Proposal prior to lodgement in January 2026. Notes of our RPRG and Customer Panel discussions, as well as a copy of our Engagement Plan, are included in the 2027-32 Regulatory Period section of our website.

*Table 1 Customer Engagement Feedback*

| Topic | Engagement outcome |
|---|---|
| Operating Expenditure | |
| **Insurance costs** | Customers sought clarification on the treatment of insurance costs in the 2027-32 Revenue Proposal compared to the previous Revenue Proposal.<br>We are seeking external advice as to the insurance forecasts and will engage with the RPRG again on our proposed treatment of insurance costs. |
| **Base year** | We advised the RPRG that we had selected FY2026 (year 4) as our base year and sought their feedback.<br>Customers expressed concerns regarding potential unexpected changes late in the process due to realised differences between the initial forecasts used and the final revealed costs. We will update base year costs progressively throughout the Revenue Proposal development to ensure draft figures are as representative of actual costs as possible. We will engage with the RPRG on any material changes in the base year forecast in developing our Revenue Proposal.<br>The RPRG also expressed concerns about the base year efficiency. We will continue to test and challenge within Powerlink to ensure our base year is reasonable and seek an independent report on our efficiency. |
| **Step changes** | We provided details regarding the potential step changes to be included in our Revenue Proposal to the RPRG.<br>The RPRG noted that another Transmission Network Service Provider (TNSP) had previously applied for a network complexity step change, but the AER had not allowed it in its determination. We will review this step change and take into consideration for our proposal. |

| Topic | Engagement outcome |
|---|---|
| **Price growth** | We presented the inputs and assumptions that we propose to use for the development of the Revenue Proposal. The RPRG expressed concern regarding the suitability of zero non-price growth within the current business context.<br>We will review the reasonableness of the inputs and assumptions and engage with the RPRG on growth inputs. |
| Capital expenditure | |
| **Repex Model** | The RPRG sought clarity on why Powerlink was not intending to use the AER's Repex Model to forecast capital replacement expenditure (repex) in this period.<br>While Powerlink considers the model remains appropriate for forecasting specific categories of repex, we are seeking to take a more fit for purpose approach that allows us to balance the cost and resource requirements to develop our replacement capex forecast with a reasonable outcome for customers. |
| **Estimate Accuracy** | The RPRG sought a deep dive into Powerlink's approach to cost estimating.<br>A special meeting was organised where the Powerlink subject matter experts within the business explained our business-as-usual approach to both project initiation and cost estimating **and** further explained how this approach would be adapted for the expenditure forecasting methodology.<br>This presentation was well received by the RPRG in both the business-as-usual approach and proposed adaptation for our 2027-32 Revenue Proposal. |

# 2 Operating Expenditure

Powerlink's operating expenditure (opex) enables the safe and reliable operation and maintenance of our network and other assets, as well as the business activities required to support those areas of work.

This chapter sets out our intended approach to forecasting operating expenditure in a manner that meets the requirements of the National Electricity Rules.

## 2.1 Operating expenditure categories

Consistent with the requirements of the Rules, our forecast operating expenditure will be presented with reference to well accepted categories of operating expenditure, as well as the categories of transmission services to which the forecast operating expenditure relates.

To assist the AER and stakeholders in understanding the nature of the forecast operating expenditure and how it relates to operating expenditure incurred in the current regulatory period (2023-27), Powerlink will retain the same categories of operating expenditure as applied in the current regulatory period with the addition of Australian Energy Market Operator (AEMO) participant fees in the Other operating expenditure category.

Figure 1 shows how our operating expenditure categories fit within the total operating expenditure framework. Definitions of each category are presented in Table 2.

*Figure 1 Powerlink's operating expenditure categories*

<table>
<tr><th colspan="3">Total operating expenditure (opex)</th></tr>
<tr><th colspan="2">Controllable opex</th><th>Non-controllable opex</th></tr>
<tr><th>Direct operating and maintenance expenditure</th><th>Other controllable opex</th><th>Other operating expenditure</th></tr>
<tr><td>Field maintenance<br>Operational refurbishment<br>Maintenance support<br>Network operations</td><td>Asset management support<br>Corporate support</td><td>Insurances<br>AEMC levy<br>Debt raising costs<br>Network support<br>AEMO participant fees</td></tr>
</table>

*Table 2 Operating expenditure category definitions*

| Category | Definition |
|---|---|
| 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, materials and services 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 vegetation. |
| **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. |
| **Maintenance support** | Includes activities where maintenance service providers undertake asset support functions in the field as well as non-field functions supporting maintenance activities for the operate/maintain phase of the asset life cycle. Examples of activities include maintenance procedure development, performance management and maintenance auditing. This category also includes local government rates charges, water charges, electricity charges and charges for permits and licencing for Powerlink. |
| **Network operations** | Includes control centre functions as well as those additional activities required to ensure the safe, reliable and efficient operational management of the Queensland transmission network. |
| Controllable operating expenditure – other controllable expenditure | |
| **Asset management support** | Activities required to support the strategic analysis, development and ongoing asset management of the network. There are four major sub-elements: network planning, business development, regulatory management and operations. |
| **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 revenue reset costs. |
| Non-controllable operating expenditure – other operating expenditure | |
| **Insurances** | This covers both insurance premiums for Powerlink's network and non-network assets and a self-insurance allowance to provide cover for losses that cannot be insured. |
| **Network support** | Network support refers to costs associated with non-network solutions used by Powerlink as a cost-effective alternative to network investment. These costs can be for various services including inertia provision and system strength. From 2025/26, Powerlink will incorporate forecast system strength network support payments in its prescribed transmission service prices for the relevant year, subject to the AER's approval via an annual network support pass-through application. |

| Category | Definition |
|---|---|
| **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 Australian Energy Market Commission (AEMC). |
| **Debt raising** | Debt raising costs relate to costs incurred by an entity over and above the debt margin. |
| **AEMO participant fee** | Since July 2023, Transmission Network Service Providers (TNSPs) have been levied a portion of National Electricity Market (NEM) participant fees from AEMO.<br>A transitional rule[4] has been in place that supported the recovery of these fees by passing them directly through to consumers for a specified period. For Powerlink, this specified period will end on 30 June 2027. Following the transitional period these costs are to be recovered through existing mechanisms under the incentive-based revenue determination framework. |

## 2.2 Operating expenditure forecasting methodology

This section describes the methodology Powerlink will apply to develop a forecast of operating expenditure.

We will follow the approach set out in the AER's Expenditure Forecast Assessment Guideline (the EFA Guideline)[5].

As stated in the EFA Guideline, a base-step-trend approach is the AER's preferred approach and will be applied to the controllable operating expenditure categories defined in Table 2. Powerlink is proposing to develop a category specific forecast for non-controllable other operating expenditure items (excluding AEMC Levy), described further in Section 2.3.4.

We will first identify an efficient base year that reflects the expenditure a prudent operator would require, considering a realistic expectation of the demand forecast and cost inputs to achieve the operating expenditure objectives[6]. Any one-off or non-recurrent expenditure items will be removed so that the base year represents ongoing recurrent expenditure.

Once an efficient base year operating expenditure is established, this is trended forward by the application of the real rate of change in operating expenditure, consistent with the EFA Guideline. We will add or subtract any other costs not captured in the base operating expenditure or rate of change that are required for the forecast. These costs include other operating (category specific) expenditure and any step changes, to meet the operating expenditure objectives.

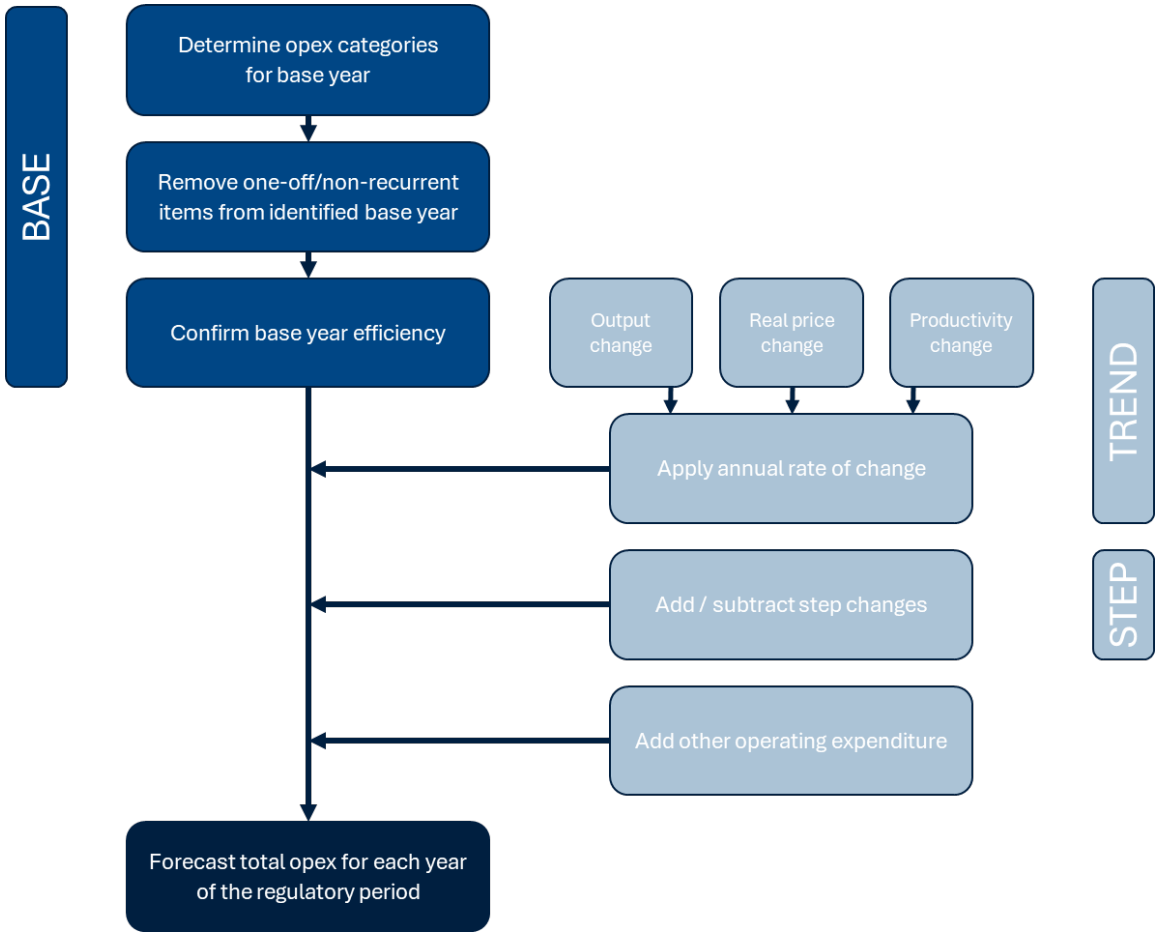
Our operating expenditure forecast will include only operating expenditure for prescribed transmission services and will not include any amounts relating to a project that is included as a contingent project[7] or Priority Transmission Investment (PTI) project[8]. Operating expenditure associated with contingent projects will be sought at the time a contingent project application is lodged. Operating expenditure associated with PTI projects will be sought when directed by the responsible Minister.

[4] National Electricity Rules, rule 11.153
[5] Expenditure Forecast Assessment Guideline for Electricity Transmission, Australian Energy Regulator, October 2024
[6] National Electricity Rules, clause 6A.6.6(c)
[7] National Electricity Rules, clause 6A.8.1(b)
[8] The *Energy (Renewable Transformation and Jobs) Act 2024 (the Act)* was passed in April 2024 and sets out the process to allow the Queensland Government to identify and assess Priority Transmission Investment projects within a new State-based planning and investment framework, and to direct Powerlink to construct these projects and recover its costs following completion of assessment activities.

Where appropriate and consistent with the components of the AER's base-step-trend model, we may seek adjustments to our forecast operating expenditure to reflect, for example, any adjustments to accounting practices. We do not anticipate any such adjustments at this stage.

The overall forecasting methodology is illustrated in Figure 2.

*Figure 2 Powerlink's proposed operating expenditure forecasting methodology*




## 2.3 Operating Expenditure – Key variables and assumptions

The Rules[9] require that Powerlink's Revenue Proposal include the key assumptions and forecasts of the key variables used to derive the operating expenditure forecast. This section describes some of those key inputs and assumptions.

### 2.3.1 Efficient base year

We have elected to use the 2025/26 financial year (year 4 of the regulatory period) as the base year for determining the recurrent expenditure component of total operating expenditure.

The 2025/26 financial year will represent the most recent year completed at the time of lodging our 2027-32 Revenue Proposal with the AER. We also consider the 2025/26 year to reasonably represent our recurrent

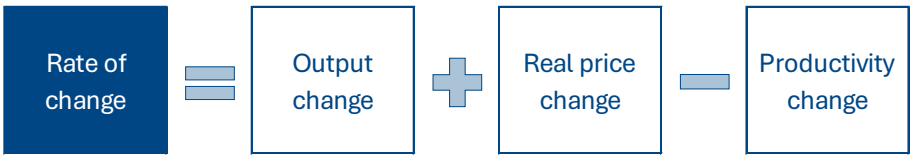
[9] National Electricity Rules, clause S6A.1.2.

operating expenditure, given the complex and dynamic environment we are currently operating in. We will use a forecast of operating expenditure for the 2025/26 financial year in our Revenue Proposal and will apply revealed costs in our Revised Revenue Proposal. We will engage with the AER and our customers prior to the finalisation of the base year and will provide relevant information in support of the efficiency of operating expenditure in the nominated base year.

### 2.3.2 Rate of change forecasts

The overall real rate of change is a function of the forecast change in network output, real input costs (labour and non-labour) and productivity, shown in Figure 3.

*Figure 3 Forecast rate of change*




#### *2.3.2.1 Output change*

Powerlink's proposed approach is to use four factors that contribute to output change, outlined in Table 3. Output measures will be derived as per the approach outlined below, then weighted by their assessed shares of gross revenue. This is calculated and published by the AER in its annual Economic Benchmarking Report for Transmission.

*Table 3 Output change factors*

| Output measure | Proposed approach |
|---|---|
| **Energy throughput** | Forecast growth of delivered energy within Queensland, plus energy delivered through interconnectors to New South Wales measured in GWh, identified in AEMO's 2025 Electricity Statement of Opportunities (ESOO). |
| **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 MW. This information will be sourced from AEMO's 2025 ESOO and Powerlink specific reports. |
| **Number of customers** | Number of customers is the aggregate of customers for the Queensland Distribution Network Service Providers (DNSPs), Ergon Energy and Energex, identified in the latest AER Economic Benchmarking Regulatory Information Notice (RIN) returns and 2025-30 Revenue Proposals for those organisations, and Powerlink's directly connected customers. |
| **Circuit length** | Circuit length is the total prescribed network transmission line circuit length measured in kilometres, sourced from Powerlink's Enterprise Resource Planning database and forecast for the regulatory period. |

Powerlink will continue to review the appropriateness of these output measures and consider whether any alternative measure is more reflective of the drivers of growth for our business. We will engage further with the AER and our customers prior to making a final decision.

#### *2.3.2.2 Price change*

Price change is the forecast real change in input costs, measured by labour and non-labour costs. Our current view is to determine labour costs based on an average of two State-level utility industry Wage Price Index (WPI) forecasts and non-labour costs based on zero real non-labour price growth, and we will engage further with the AER and our customers prior to making a final decision.

#### *2.3.2.3 Productivity change*

Productivity change measures the forecast expected productivity improvements a network business can make in providing their services. The AER currently applies an industry average to calculate productivity, based on operating expenditure partial factor productivity across all TNSPs published within the most recent AER annual Economic Benchmarking Report for Transmission. Our current view is to apply a similar approach, and we will engage further with the AER and our customers prior to making a final decision.

### 2.3.3 Step changes

Step changes account for any material changes in operating expenditure (up or down) compared to the base year. Step changes are either added to, or subtracted from, the base year plus trend. We will assess step changes to ensure that they align with the categories identified in the AER's Better Resets Handbook (July 2024):

- New regulatory obligation step change
- Capex/opex substitution step change
- Step change driven by major external factors(s) outside the control of a business.

Additionally, we will assess the proposed step change to determine:

- if the cost (or saving) had already been realised in the base year
- if the cost was material[10], or could be absorbed
- the likelihood of the cost being realised
- if the cost could be treated under other provisions within the Rules
- if the cost was related to the provision of prescribed services.

We are currently assessing several potential step changes, and will only include in our operating expenditure forecast those that Powerlink considers align with one of the three categories and also satisfy these assessment criteria.

### 2.3.4 Other operating expenditure

We are considering four categories of category specific expenditure, to be forecast outside the base-step-trend model and included as category specific forecasts. These are detailed in Table 4.

[10] For our preliminary forecast, we have applied a materiality threshold of $1 million annual expenditure. Should we propose an alternative materiality threshold, we will engage further with the AER and our customers.

*Table 4 Category specific expenditure categories*

| Category | Proposed approach |
|---|---|
| **Debt raising** | Debt raising costs are transaction costs incurred each time a business raises or refinances debt.<br>The AER's preferred approach is to forecast debt raising costs using a benchmarking approach rather than a business' actual costs in a single year. We will adopt this approach. |
| **Network support** | Network support costs, excluding those associated with system strength services, are considered as a cost pass through[11], therefore included as a category specific forecast to facilitate a pass through occurring. This is the AER's approach, which we will adopt.<br>We will forecast these costs based on known commitments at the time of lodging our 2027-32 Revenue Proposal, but we currently do not anticipate any costs for this category. |
| **Insurance** | We propose to utilise a category specific forecast for insurance in our 2027-32 Revenue Proposal. We take this approach when we do not consider that adopting a trend of base year expenditure will reasonably reflect future operating expenditure requirements.<br>The forecast will be based on information provided by our insurance brokers. |
| **AEMO participant fee** | Since July 2023, TNSPs have been levied a portion of NEM participant fees from AEMO.<br>A transitional rule[12] has been in place that supported the recovery of these fees by passing them directly through to consumers for a specified period. For Powerlink, this specified period will end on 30 June 2027. Following the transitional period these costs are to be recovered through existing mechanisms under the incentive-based revenue determination framework.<br>We will provide a forecast of costs for the regulatory period by extrapolating the annual costs incurred to date. |

[11] National Electricity Rules, clause 6A.7.2
[12] National Electricity Rules, rule 11.153

# 3 Capital expenditure

Powerlink's capital expenditure consists of expenditure for new assets that increase capacity on, or capability of, the network, reinvestment in existing assets that are reaching the end of their service life, and other supporting assets such as business IT and vehicles.

This chapter sets out our intended approach to forecasting capital expenditure.

## 3.1 Capital expenditure categories

To assist the AER and stakeholders to understand the nature of the forecast capital expenditure, and how it relates to capital expenditure undertaken in the current regulatory period, we will retain the same categories of capital expenditure applied in the current regulatory period.

There are three high-level categories of capital investment:

- Load-driven (network) – to comply with mandated reliability obligations as electricity demand grows and/or deliver net market benefits
- Non load-driven (network) – primarily associated with reinvestment in assets to maintain the required capacity or capability of the network or investment to meet the need for system services such as system strength
- Non-network – comprising, in large part, business information technology (IT) and supporting the business assets required in the normal day-to-day course of business.

Figure 4 shows how our capital expenditure categories fit within the total capital expenditure framework. Definitions of each category are presented in Table 5.

*Figure 4 Powerlink's capital expenditure categories*

<table>
<tr><th colspan="3">Total capital expenditure (capex)</th></tr>
<tr><th colspan="2">Network capex</th><th rowspan="2">Non-network capex</th></tr>
<tr><th>Load-driven capex</th><th>Non load-driven capex</th></tr>
<tr><td>Augmentation<br>Connection<br>Easements</td><td>Reinvestments<br>System Services<br>Security/Compliance<br>Other</td><td>Business IT<br>Other support the business</td></tr>
</table>

*Table 5 Capital expenditure category definitions*

| Category | Definition |
|---|---|
| Network – Load-driven | |
| **Augmentations** | Relates to augmentations defined under the Rules. Typically, these include projects such as the construction of new lines, substation establishments and reinforcements or extensions of the existing network. |
| **Connections** | Works to facilitate additional connection point capability between Powerlink and DNSPs or other TNSPs. Associated works are identified through joint planning with the relevant Network Service Provider. |
| **Easements** | The acquisition of transmission line easements to facilitate the projected expansion and reinforcement of the transmission network. This includes land acquisitions associated with the construction of substations or communication sites. |
| Network – Non load-driven | |
| **Reinvestments** | Relates to reinvestment to meet the expected demand for prescribed transmission services. Expenditure is primarily undertaken due to end of asset life, asset obsolescence, asset reliability or safety requirements.<br>A range of options is considered for asset reinvestments, including removing assets without replacement, non-network alternatives, life extension to extend technical life or replacing assets with assets of a different type, configuration or capacity. Each option is considered in the context of the future capacity needs accounting for forecast demand. |
| **System Services** | Investments to meet overall power system performance standards and support the secure operation of the power system. This includes the provision of system strength services and inertia services. |
| **Security/Compliance** | Expenditure undertaken to ensure compliance with amendments to various technical, safety or environmental legislation. Also includes expenditure required to ensure the physical security (as opposed to network security) of Powerlink's assets. |
| **Other** | All other expenditure associated with the network which provides prescribed transmission services, such as communications system enhancements, improvements to network switching functionality and insurance spares. |
| Non-network | |
| **Business IT** | Expenditure to maintain information technology capability and replace or improve business system functionality where appropriate. |
| **Other support the business** | Expenditure to replace or improve business facilities, including the areas of commercial buildings, motor vehicles and moveable plant. |

## 3.2 Capital expenditure forecasting methodology

During the revenue determination process for our 2023-27 regulatory period, the AER stated in its Draft Decision[13] that the Repex Model is not suited to TNSP replacement capex forecasts. While the AER accepted the Repex Model forecast, it indicated a preference that bottom-up forecasts for transmission capex be used rather than a modelled approach such as the Repex Model.

In the 2027-32 Revenue Proposal, we will build on the experience, input and feedback gained during our previous revenue determination process. Powerlink proposes to adopt a hybrid approach to forecasting capital expenditure, combining top-down and bottom-up methods.

This approach provides several benefits:

- reduces the resources associated with preparing our Revenue Proposal compared to a complete bottom-up approach
- balances the desire of stakeholders to understand the technical and economic justification for forecast significant investments, while recognising the uncertainty of forecasting capital expenditure needs many years in advance when the technical demands on the transmission network are rapidly changing
- assists the AER and stakeholders in terms of the time, effort and cost to review and assess our Revenue Proposal
- addresses the AER concerns with the Repex model used in the 2023-27 Revenue Proposal.

For our 2023-27 Revenue Proposal, we provided project specific supporting justification for more than 75% of the total forecast capital expenditure, with a top-down approach used for the remaining assets. This top-down approach combined both trend analysis and use of the AER's Replacement Expenditure (Repex) Model for a subset of non load-driven reinvestments.

For our 2027-32 Revenue Proposal we are targeting to have a bottom-up forecast supported by project-specific documentation for at least 80% of the total forecast capital expenditure. Depending on the type and stage of development of the project, this may include asset condition assessment reports, applicable asset strategies, project scopes, project estimates, network planning assessments and risk-cost quantification. For lower dollar value replacement capex projects our forecasting approach will be based on a bottom-up view of project needs developed using forecast asset-specific health indices and informed assumptions in respect of the option presented.

In addition, some categories of non-network capex will be forecast using a top-down methodology, whereby the future requirements are based upon a trend of historical expenditure. This will include adjustments to historical capex where appropriate to remove specific expenditure that does not represent an ongoing trend.

Regardless of the methodologies used for forecasting capital expenditure for the purposes of the 2027-32 Revenue Proposal, it remains the case that detailed bottom-up analysis is prepared to support final investment approval during the normal course of business.

[13] Draft Decision, Powerlink Queensland Transmission Determination 2022 to 2027, Attachment 5 Capital Expenditure, Australian Energy Regulator, September 2021, page 20

### 3.2.1 Relationship between capital expenditure forecasting and investment development phases

Our forecasting approach has been tailored to the following phases of capital expenditure development:

1. Assets under construction – projects that have already received full financial approval consistent with our corporate governance framework
2. Confirmed investment needs – projects that are not yet approved but the need for investment has been confirmed and options are being assessed in preparation for seeking project approval and, in some cases, a Regulated Investment Test for Transmission (RIT-T) consultation is underway
3. Future investment needs – based on normal business practices there is an expected future investment need, but specific project details are not yet finalised to seek project approval.

The percentage of capital expenditure that is in each phase of development is illustrated in Figure 5. Our next regulatory period starts 1 July 2027.

*Figure 5 Capital expenditure forecasting phases*

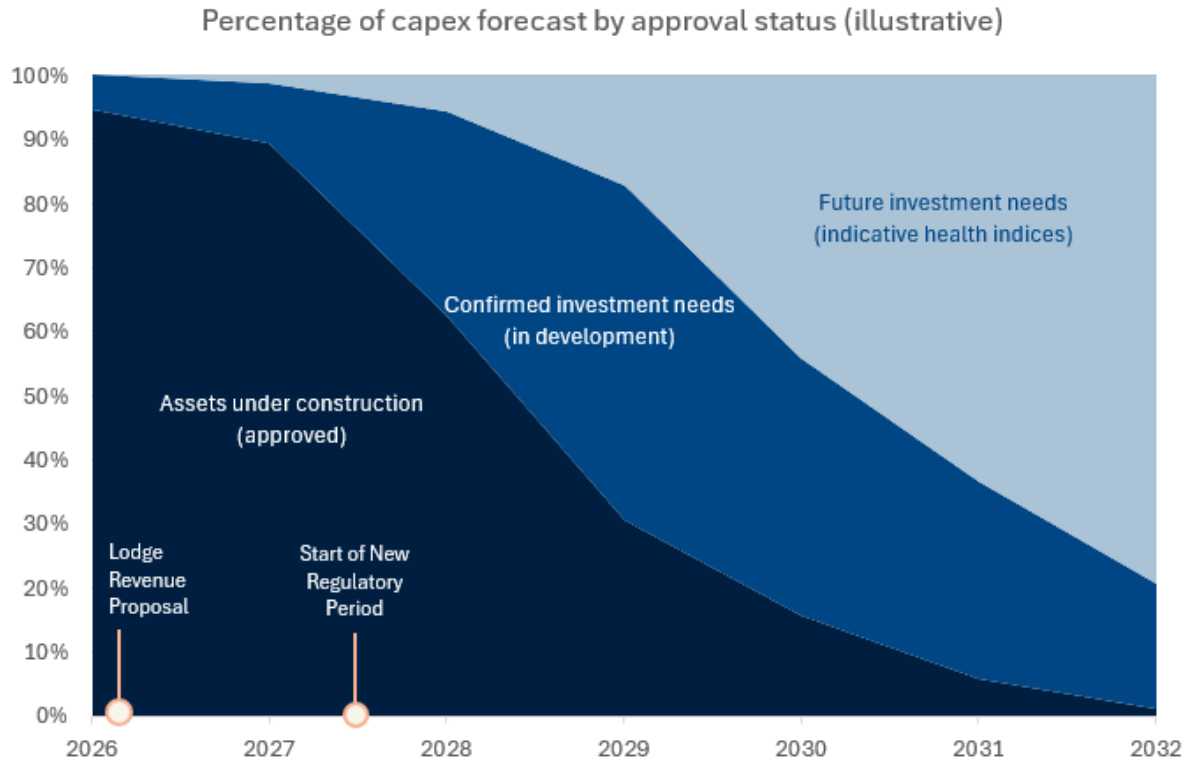



Figure 5 illustrates the progression and timing of investment approvals under normal business practice. It illustrates that some of the forecast capital expenditure for the next regulatory period will already be fully approved or have commenced the approval process when we submit our Revenue Proposal in January 2026. Further approvals will occur throughout the revenue determination process, and the 2027-32 regulatory period, as investment needs are confirmed, and options finalised to support investment decisions.

For those investments that are approved or in development, the capital expenditure forecast will be based on a bottom-up forecast, utilising expected outturn costs for approved projects and specific project estimates for a preferred option, based on risk-cost analysis where appropriate. This will apply for all categories of capital expenditure and is similar to the approach we have adopted in previous Revenue Proposals.

For investments that have not yet commenced the approval process, we will adopt a variety of forecasting methodologies determined by the nature, category and timing of the future investment need, as outlined in sections 3.2.2 to 3.2.4.

### 3.2.2 Load-driven network capital expenditure

Load-driven network projects include augmentations to our transmission network, connections to other prescribed networks, and easement and land acquisitions. As triggers for load-driven capital expenditure are based on specific local demand growth forecasts and existing network capacity in those areas, the forecast expenditure profile across the network tends to be quite lumpy. This is due to the nature and scale of transmission investments where asset capacity increases are made in discrete sizes rather than being incremental as load grows. For an overview of our approach to determining network needs, refer to the description of our planning approach in Appendix A.

We consider that bottom-up analysis remains the most practical means for developing forecasts for load-driven capital expenditure. Forecast capital expenditure for these future investment needs will be developed from cost estimates for individual projects.

To derive the forecast capital expenditure in these categories, we intend to consider only the most likely scenario of forecast demand growth (Central Scenario), taken from Powerlink's 2025 Transmission Annual Planning Report (TAPR). The use of a single scenario of forecast demand growth reflects the same approach that was taken in our previous Revenue Proposals for the 2018-22 and 2023-27 regulatory periods.

### 3.2.3 Non load-driven network capital expenditure

Non load-driven network projects include reinvestment in network assets, meeting regulatory obligations to provide system services, physical security of network assets, compliance with mandated asset standards, and other minor network assets. As overall expenditure in these categories is not directly linked to demand growth it typically exhibits a smoother profile of expenditure over time than load-driven capital expenditure. Notwithstanding this, there can be longer term trends of reinvestment expenditure, up or down, reflecting the end of life of assets associated with periods of significant expansion of the transmission network during the 1970s and 1980s, and later during the 2000s. The ongoing need for assets that have reached end of life is reviewed prior to reinvestment. For an overview of our approach to determining the enduring need for network assets, refer to the description of our planning approach in Appendix A.

Where our normal asset management planning identifies expected significant reinvestment needs for specific substations or transmission lines, we will provide, where project maturity allows, bottom-up supporting information, including relevant plans and strategies, condition assessment reports and risk-cost analysis to demonstrate the prudency and efficiency of this expenditure within the forecast.

For projects where asset management planning identifies a less significant scale of expenditure, we will use asset data to develop the reinvestment forecast which will have less supporting information. Appendix B provides further explanation of our approach for reinvestment capital expenditure and the documentation that will be developed to support the forecast.

Expenditure in the system services category is driven largely by changes in technology being deployed across the power system and is consequently more lumpy in nature. As a result, this category will be forecast using specific cost estimates for individual projects.

The remaining categories of non load-driven capital expenditure, namely security/compliance and other, will be forecast using a combination of bottom-up forecasts, where appropriate, or trend analysis techniques. For the trend analysis, we intend to use a forecasting methodology similar to the base-step-trend approach for forecasting operating expenditure. The key difference will be that, instead of identifying a single efficient base year as for operating expenditure, the capital expenditure forecast will identify an efficient base trend from historical expenditure. However, where we identify specific, major investment needs within these categories, we will apply a bottom-up forecast approach, similar to network reinvestment expenditure.

### 3.2.4 Non-network capital expenditure

Non-network projects include business information technology (IT) and expenditure to support the business (i.e. buildings, motor vehicles, and mobile plant and tools). Similar to non load-driven capital expenditure, expenditure in these categories is not directly linked to demand growth.

We will apply our Benefits Management Framework, which was developed in late 2019/early 2020 with input from our Customer Panel, to relevant IT components of our Revenue Proposal. Forecasts of capital expenditure in IT investments will be developed using a combination of methodologies appropriate to each type of investment:

- IT infrastructure investment costs will be estimated based on a forecast of IT fleet assets due for renewal each financial year
- Significant IT application investments planned for the coming regulatory period will be supported by investment cases
- Other recurrent investments (e.g. minor updates, upgrades, or compliance changes) will be estimated consistent with historical trends.

Forecast capital expenditure for buildings, motor vehicles and other support the business needs will be largely based on historical trends. Where we identify a specific, major investment need, we will apply a bottom-up forecast for the investment.

### 3.2.5 Contingent projects

The contingent projects regime in the Rules[14] helps to mitigate the risk of uncertainty of specific capital project investments for both consumers and network businesses. It does this by providing TNSPs with a mechanism to trigger additional capital expenditure, if necessary, but this expenditure is not included in the ex-ante revenue allowance unless and until the investment trigger is confirmed by the AER.

As noted in Section 3.2.2, our forecast of load-driven capital expenditure will be based on a single scenario of demand growth. To manage the risk that a significant network investment need may be triggered due to material changes in demand or generation mix away from this Central Scenario, we will analyse and may propose relevant contingent projects. Where there is uncertainty surrounding non load-driven or non-network capital investment this may also result in Powerlink proposing contingent projects.

For each contingent project proposed Powerlink will describe the project requirement, project capital expenditure and trigger event.

[14] National Electricity Rules, clause 6A.8.1

### 3.2.6 Summary of Powerlink's hybrid approach

Table 6 summarises how Powerlink will apply its updated hybrid approach to each category of capital expenditure.

*Table 6 Capital expenditure forecasting approach application*

| Approach | Capex Category | Supporting Information |
|---|---|---|
| **Bottom-up** | Approved projects<br>Load-driven capital expenditure<br>Network reinvestment, incl. power transformers and static Var compensators<br>System services such as system strength and inertia<br>Other major one-off expenditure needs<br>Contingent projects[1] | Description of need, preparation of project specific scope, estimate, planning statement and risk-cost assessment.<br>Note: the level of documentation provided will vary depending on the maturity of the project. |
| **Top-down (trend analysis)** | Security / compliance<br>Other network capital expenditure<br>Non-network capital expenditure | Use of a forecasting methodology similar to the base-step-trend approach for forecasting operating expenditure. |

[1] Contingent projects are not included in the ex-ante capital expenditure forecast.

## 3.3 Key variables and assumptions

Table 7 outlines key variables and assumptions that underpin our capital expenditure forecast.

*Table 7 Key variables and assumptions*

| Variable/assumption | Description |
|---|---|
| **Forecast demand and generation** | The electricity demand forecast to be adopted for our Revenue Proposal will be the Central Scenario outlook in Powerlink's 2025 Transmission Annual Planning Report, expected to be published in October 2025. |
| **Transmission reliability of supply standard** | Powerlink holds Transmission Authority Number T01/98 issued by the Queensland Energy Regulator under the Queensland *Electricity Act 1994*. Clause 6.2 of the Transmission Authority contains the obligation to plan and develop the transmission network such that power quality and reliability of supply standards will be met.<br>In particular, we are required to plan and develop the transmission network to be able to supply the forecast maximum demand, with no more than 50MW or 600MWh of customer supply curtailed, even with the most critical network element out of service.<br>Powerlink's mandated quality and reliability of supply obligations within its current Transmission Authority will be the applicable standards during the next regulatory period. |

| Variable/assumption | Description |
|---|---|
| **Cost escalators and risk** | The main input cost components of our capital expenditure forecasts are labour costs (internal and external), various metals commodities (aluminium, copper and steel), and general plant and equipment.<br>Costs will be assumed to escalate at Consumer Price Index (CPI), unless we can demonstrate a material difference between CPI, movements in underlying commodities and materials prices, and the end cost to Powerlink of purchasing the resulting manufactured goods. In the event of proposing escalation above CPI, we will engage further with the AER and our customers prior to making a final decision. |

## 3.4 Conformance to AER Expenditure Forecasting Assessment Guideline

The AER's Expenditure Forecasting Assessment (EFA) Guideline (October 2024) sets out the approaches the AER may adopt to assess our forecast capital expenditure as well as the AER's information requirements to support this assessment.

We have reviewed the likely information requirements contained in the EFA Guideline and consider that our proposed capital expenditure forecasting methodology will facilitate the provision of sufficient supporting information for the AER to apply its preferred assessment approach.

# Appendix A – Planning approach

## Planning to meet the changing needs of the network

Powerlink is responsible for planning the shared transmission network within Queensland. The planning process requires consultation with AEMO, Registered Participants and interested parties, including customers, landholders, generators and Distribution Network Service Providers (DNSPs).

Significant inputs to the network planning process are the:

- forecast of customer electricity demand (including demand side management) and its location
- location, capacity and arrangement of new and existing generation (including embedded generation)
- condition and performance of assets and an assessment of the risks associated in allowing assets to remain in-service
- assessment of future network capacity to meet the required planning criteria.

The 10-year forecasts of electrical demand and energy across Queensland are used, together with forecast generation patterns, to determine potential flows on transmission network elements. The location, type and capacity of existing committed and future generation is taken into account when assessing the adequacy of the transmission system. Information about existing and committed embedded generation and demand management within distribution networks is provided by DNSPs.

Our approach is to examine the capability of the existing network and the future capability following any changes resulting from committed augmentations and changes in the generation patterns. This involves consultation with the relevant DNSP in situations where the performance of the transmission network may be affected by the distribution network, for example where the two networks operate in parallel.

If the capability violation exceeds the required reliability standard, joint planning investigations are carried out with DNSPs (or other TNSPs, if relevant). The objective of this joint planning is to identify the most cost-effective solution, regardless of asset boundaries, including potential non-network solutions.

## Planning for reinvestment

In addition to meeting the forecast demand, we must maintain the current network so that the risks associated with existing assets are appropriately managed. We undertake a program of asset condition assessments to inform asset health models to identify emerging asset condition related risks and issues.

Planning of the network considers asset life to ensure the network is configured to meet current and future capacity needs. Individual asset investment decisions are not determined in isolation since the optimal topography and capacity needs of the network may have significantly changed from when network assets were initially commissioned.

In response to these risks, a range of options are considered for asset reinvestments including removing assets without replacement, non-network alternatives, refurbishment to extend technical life, or replacing assets with assets of a different type, configuration, or capacity. Each of these options is considered in the context of future capacity and other network needs.

An integrated asset planning process using area planning approaches considers changes in generation, demand, asset condition and risk to deliver optimal and cost-effective solutions that manage both reliability of supply obligations and the risks associated in allowing assets to remain in-service. The economics of proposed solutions are examined across extended timeframes and take into account future anticipated works so that least cost investment pathways can be identified.

## Publishing transmission development plans

Information regarding proposed transmission investments within a 10-year outlook period is published in our Transmission Annual Planning Report (TAPR) and related material. This provides information to the NEM, including AEMO, Registered Participants and interested parties (including non-network providers) on our planning processes, anticipated public consultations, and decision making relating to potential future investments.

As the jurisdictional planner for Queensland, we also support and contribute to the development of AEMO's Integrated System Plan (ISP). This includes provision of data on future network plans as well as the timing of future network reinvestment triggers and options for reinvestment. We also consider AEMO's input assumptions relating to the transmission network, including project cost estimates.

# Appendix B – Network reinvestment

In Section 3.2.3 we described that network reinvestment capital expenditure will be forecast using a bottom-up approach. The bottom-up approach and supporting information will differ depending on the approval status, scale and timing of the reinvestment. Table B1 summarises the approach and supporting information for each category of network reinvestment.

*Table B1 Approach and supporting information for reinvestment capital expenditure*

| Category | Approach | Supporting Information |
|---|---|---|
| **Approved** | Bottom-up | Business as usual supporting information. |
| **Group 1**<br>**Spend >$10m in period** | Bottom-up | Description of need (condition assessment and planning statement) project scope, estimate, and risk-cost assessment. |
| **Group 2**<br>**Spend >$10m late in period** | Bottom-up | Project Scope & Estimate<br>Less supporting documentation than Group 1 due to lower level of project maturity. |
| **Group 3**<br>**Spend <$10m in period** | Forecast developed using asset health data from our asset management system and single option high-level estimates. | |

## Glossary

| Abbreviation | Definition |
|---|---|
| AEMC | the Australian Energy Market Commission that reviews and makes the National Electricity Rules |
| AEMO | the Australian Energy Market Operator which operates the National Electricity Market to enable the physical trading of electricity |
| AER | the Australian Energy Regulator which is responsible for the economic regulation of electricity network service providers' revenues and for enforcing compliance with the National Electricity Rules |
| Capex | Capital Expenditure, which is expenditure to construct, acquire or upgrade physical assets such as overhead lines, substations, property, buildings or equipment |
| CCP34 | The AER's Consumer Challenge Panel #34 |
| CPI | Consumer Price Index |
| DNSP | Distribution Network Service Provider (for example Energex and Ergon Energy) |
| EFA | The AER's November 2024 Expenditure Forecasting Assessment Guidelines |
| ESOO | Electricity Statement of Opportunities published by AEMO as required by clause 3.13.3A(a) of the National Electricity Rules |
| GWh | Gigawatt hours |
| ISP | AEMO's Integrated System Plan |
| IT | Information Technology |
| MAR | Maximum Allowed Revenue |
| MW | Megawatt |
| NEM | National Electricity Market |
| NER | The National Electricity Rules that provide, among other things, for the AER's economic regulation of the prescribed revenues of electricity network service providers |
| Opex | Operating expenditure is the expenditure that a business incurs as a result of performing its normal business operations |
| QNI | Queensland/New South Wales Interconnector |
| Repex | Replacement capital expenditure |
| RIN | Regulatory Information Notice is an instrument by which the AER can require network service providers to provide specified information |
| RIT-T | Regulatory Investment Test for Transmission, the AER's cost/benefit analysis test and public consultation process made under clause 5.16 of the National Electricity Rules |
| RPRG | Powerlink's Revenue Proposal Reference Group, a sub-set of our Customer Panel |

| Abbreviation | Definition |
|---|---|
| TAPR | Transmission Annual Planning Report is a report made under clause 5.12.2 of the National Electricity Rules |
| TNSP | Transmission Network Service Provider means a business such as Powerlink which engages in the activity of owning, controlling, developing and/or operating a transmission system |
| WPI | Wage Price Index |

# Contact us


| | |
|---|---|
| Registered office | 33 Harold St Virginia<br>Queensland 4014 |
| | ABN 82 078 849 233 |
| Postal address | PO Box 1193 Virginia<br>Queensland 4014 |
| Telephone | +61 7 3860 2111<br>(during business hours) |
| Email | revenueresetteam@powerlink.com.au |
| Website | powerlink.com.au |
| Social | |