POWERLINK QUEENSLAND

2022/23 – 2026/27
REVENUE PROPOSAL

PRELIMINARY POSITIONS AND FORECASTS PAPER

SUPPORTING DOCUMENT

AUGUST 2020

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All figures presented in this document are preliminary and indicative only. They do not represent Powerlink's final Revenue Proposal position.

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About Powerlink

Powerlink Queensland is a Government Owned Corporation that owns, develops, operates and maintains the electricity transmission network in Queensland. Our transmission network runs approximately 1,700km from Cairns down to New South Wales (NSW).

Our role in the electricity supply chain is to transport high voltage electricity, generated at power stations, through the transmission grid to the distribution networks owned by Energex and Ergon Energy (part of the Energy Queensland Group) and Essential Energy (in northern NSW) to ensure a safe, cost effective and reliable power supply to more than four million Queenslanders.

We also transport electricity to industrial customers such as rail companies, mines and mineral processing facilities, and to NSW via the Queensland/NSW Interconnector (QNI) transmission line.

Introduction

Each electricity transmission business in the National Electricity Market (NEM) is required to submit a Revenue Proposal to the Australian Energy Regulator (AER) every five years, as part of its five-year revenue determination process. Our current regulatory period runs from 1 July 2017 to 30 June 2022. The next regulatory period is 1 July 2022 to 30 June 2027.

We must submit our Revenue Proposal to the AER by January 2021. The Revenue Proposal sets out our forecast expenditure and revenue requirements for the upcoming regulatory period to provide regulated transmission services in a prudent, efficient, safe and reliable manner.

The revenue determination process is significant as it sets ~80% of the total revenue Powerlink collects over the five year period. The majority of the remaining revenue comes from non-regulated services.

The primary objective of our 2023-27 Revenue Proposal is to deliver a proposal that is capable of acceptance by our customers, the AER and Powerlink.

To achieve this, we have engaged extensively with customers and stakeholders in the development of our Revenue Proposal since May 2019 – in addition to the 'business-as-usual' engagement activities we undertake.

What is the Preliminary Positions and Forecasts Paper?

The Preliminary Positions and Forecasts Paper (PPFP) is an opportunity for customers and stakeholders to be involved in the Revenue Proposal process and provide us with input.

It is an important step in our ongoing engagement and development of the Revenue Proposal. It reflects our thinking at this point in time on a range of relevant key factors.

The PPFP includes the third update of our Revenue Proposal forecasts. Our December 2019 and April 2020 forecasts are also available on our website, as part of the materials provided to our Customer Panel and Revenue Proposal Reference Group (RPRG)[1].

[1] Our Customer Panel comprises 13 members across a range of sectors. Our RPRG is a sub-set of our Customer Panel and comprises five members, as well as the AER and AER Consumer Challenge Panel as invited stakeholders.

This document is part of a package of documents that make up the PPFP. These documents should be read and considered together and are summarised in the table below.

Document	Description
PPFP Presentation	Outlines our July 2020 forecasts and preliminary positions for Maximum Allowed Revenue (MAR), Regulated Asset Base (RAB), Rate of Return (RoR), operating and capital expenditure (opex and capex). The presentation also provides background on the Revenue Determination process, capex and opex categories, forecasting approach and customer engagement.
PPFP Supporting Document	This document, which provides further detail on the key drivers of our opex and capex, and the inputs and assumptions used to derive our July 2020 forecast.
PPFP Data Pack	An excel spreadsheet with details of historical, current and forecast figures relevant to the Revenue Proposal.
Other background documents	We recommend reading our Expenditure Forecasting Methodology, Engagement Plan, Business Narrative and previous presentation information provided at our RPRG meetings.

Purpose of this document

Our aim is to ensure that our regulated assets are effectively and efficiently managed, and that our opex and capex forecasts reflect prudent and efficient expenditure that meets the future needs of the electricity network and expectations of our customers and stakeholders.

When considering our forecasts, it is important to understand the context and key drivers of our opex and capex within the current 2018-22 regulatory period, as well as the next 2023-27 regulatory period. This document has been prepared to help customers and stakeholders understand that context. It is divided into four sections:

1. drivers common to both opex and capex;
2. opex drivers;
3. capex drivers; and
4. reference table of inputs and assumptions for our July 2020 forecasts.

All figures within this document are in $2021/22, real unless otherwise stated.

How to provide feedback

We welcome customer and stakeholder feedback on the PPFP through the following channels by late August 2020. This timeframe ensures we can consider feedback prior to the release of our draft Revenue Proposal at the end September 2020.

How to provide input to the PPFP


(07) 3860 2111 (Monday-Friday 7:30am – 5:00pm)


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Below is a range of questions to help guide your feedback. Please do not feel constrained by the questions posed – we welcome input on any topic.

Topic	Feedback questions
Overall	• As an overall package, which results in the identified revenue and price outcomes, do you consider our Revenue Proposal to be reasonable? • Does our current forecast balance the need of appropriate expenditure to manage the network with a reasonable price for customers? • What additional / other information should we consider including in our draft Revenue Proposal (September 2020)?
Financial elements	• Is our decision to change depreciation tracking methods reasonable? • Do you have any feedback on our preliminary revenue requirements and indicative pricing outcomes?
Opex	• Have we reasonably explained our key opex drivers? Why / why not? • Do you have any views on our proposed increases for insurance and cyber security? • Overall, what aspects of our opex forecast do you support / not support and why?
Capex	• Have we reasonably explained our key capex drivers? Why / why not? • Do you have any views on our proposed increase in capex to manage our ageing fleet of transmission lines? • Overall, what aspects of our capex forecast do you support / not support and why?
Customer engagement	• Are there any areas you consider we need to engage on in greater detail? • Are there elements of the PPFP that are unclear or hard to understand, which could be explained or approached better?

Common opex and capex drivers

There are some key external drivers which influence both our opex and capex work. This includes changes to our work due to the COVID-19 pandemic, increased levels of inverter based resources being deployed across the power system and cyber security.

COVID-19

COVID-19 has impacted the way we do business. The pandemic required Powerlink to temporarily move to a work from home model for the majority of staff and a large amount of adjustment also took place for field staff to enable Powerlink to continue to safely deliver its maintenance and project activities. Powerlink's network extends 1,700km from north of Cairns to the New South Wales border and during the height of social distance restrictions our staff were unable to travel to conduct our operations and maintenance activities.

We adjusted our maintenance practices in response to COVID-19. Some routine maintenance activities were replaced with condition-based maintenance activities particularly in areas where travelling was possible. In this way, the COVID-19 pandemic has not materially impacted overall maintenance expenditure, but the balance of expenditure between maintenance categories.

COVID-19 has caused some delays to the delivery of network capital expenditure projects in 2019/20 and is expected to also result in delays into 2020/21. There have been disruptions or delays to specialist equipment and resources brought in from overseas, as well as necessary changes to some of our field work practices. At this time we are forecasting to be able to catch-up some of this delay during 2021/22, but this is not certain.

Inverter based resources

The operation and maintenance of the network is becoming more complex due to the rapid increase of inverter based resources (IBR) being deployed across the power system. IBR includes both grid-connected and rooftop solar photovoltaic (PV), wind farms and battery technologies.

These changes drive the phasing out of traditional synchronous generation, which alters the performance characteristics of the power system and makes network operations and planning more complex. Network outages, as well as the location of the remaining synchronous generators, can have wide ranging impacts on particular technology types that we need to adapt to. For example, project works now require additional analysis of network outage impacts, which may result in more complex staging that requires additional management and resources on site. We do this to ensure we continue to minimise our impact on the operations of the energy market, where it is efficient to do so, so that customers can benefit from the lowest available wholesale energy costs.

In opex, this has increased expenditure related to network planning and outage management, which to date we have been able to manage within our existing opex allowance in the 2018-22 regulatory period. We expect this to continue to increase in the 2023-27 regulatory period and this is discussed further in the opex section of this document.

In capex, we have identified the need to invest in additional voltage control equipment to maintain secure voltage levels across the network due to falling levels of minimum customer demand, primarily driven by the uptake of rooftop solar PV. This is a rapidly changing field of power system analysis and additional investment, such as the provision of inertia or system strength, may also be needed in the future. These investments are anticipated to occur toward the end of the 2018-22 regulatory period and into the 2023-27 regulatory period.

Cyber security

Cyber security is an area of growing focus for Powerlink, within the 2018-22 regulatory period and into the 2023-27 regulatory period. Transmission Network Service Providers (TNSPs) are considered the highest criticality segment under the Australian Energy Security Sector Cyber Security Framework (AESCSF).

The Australian Cyber Security Centre (ACSC) noted in their 2019 sector snapshot that "malicious cyber actors are actively targeting the energy sector and it is likely that a significant cyber security incident will occur in the near future"[1]. As prudent operators of critical infrastructure, we must appropriately manage our cyber security risk and maintain appropriate defences against cyber threats.

This is a driver of capital expenditure within the 2018-22 regulatory period and a potential driver of further capex and ongoing opex in the 2023-27 regulatory period to maintain our capability. We intend to host a deep dive session on cyber security with our customers and stakeholders prior to lodgement of our Revenue Proposal, where we will present further details about our proposed approach and expenditure.

[1] As referenced in the Australia Energy Sector Cyber Security Framework Education Workshop, Slide 5, Australian Energy Market Operator (AEMO), September 2019.

Operating expenditure

Powerlink's operating expenditure (opex) consists of spending to operate and maintain our network, as well as the business activities required to support these areas of work. We have derived our forecast for the 2023-27 regulatory period using the AER's preferred 'base-step-trend' methodology. The PPFP Presentation and our Expenditure Forecasting Methodology provide detailed background on our opex categories and forecasting approach.

2018-22 regulatory period opex drivers

We forecast to be $9.8m (0.9%) above the AER's total opex allowance for the 2018-22 regulatory period, excluding debt raising. As debt raising costs are set using a benchmark methodology, the removal of debt raising enables a more appropriate comparison between our allowance and our underlying opex performance. For reference, our performance against the AER allowance would be $9.7m better if debt raising were included.

Table 1 provides a breakdown of our current opex performance. A more detailed breakdown, by category, is provided in the PPFP Data Pack. Actual/forecast figures for the 2018-22 regulatory period are preliminary and indicative only, and will be updated for Powerlink's draft Revenue Proposal to be released in September 2020.

Table 1 2018-22 regulatory period opex

2018-22 regulatory period opex ($m real, 2021/22)	Allowance	Actuals / Forecast	Difference
Direct operating and maintenance (1)	680.2	688.4	+8.1 (+1.2%)
Other controllable expenditure (2)	283.6	280.0	-3.6 (-1.3%)
Controllable opex	**963.8**	**968.3**	**+4.5 (+0.5%)**
Insurance (premiums and self-insurance)	51.0	50.0	-0.9 (-1.8%)
Australian Energy Market Commission (AEMC) Levy	22.7	29.0	+6.2 (+27.5%)
Debt raising	19.0	9.3	-9.7 (-50.9%)
Non-controllable opex	**92.7**	**88.3**	**-4.4 (-4.7%)**
Total operating expenditure	**1,056.5**	**1,056.7**	**+0.1 (+0.0%)**
Total opex excl. debt raising costs	1,037.5	1,047.3	+9.8 (+0.9%)

(1) Direct operating and maintenance includes field maintenance, refurbishment, maintenance support and network operations expenditure categories.
(2) Other controllable expenditure includes asset management support and corporate support expenditure categories.

Controllable opex

Direct operating and maintenance activities comprise the largest component of controllable opex. This includes all field activities, such as maintenance, to ensure plant can perform its required functions and network control activities to ensure the safe, reliable and efficient operational management of the transmission network.

We expect to spend $4.5m (0.5%) more on controllable opex in the 2018-22 regulatory period than provided for in the AER allowance. This is primarily driven by decommissioning works of ~$9m in 2021/22 on a 50 year old inland transmission line between Clare and Townsville[1]. As assets reach the end of their service life, we look at the most efficient reinvestment approach to meet current and future capacity needs. This may include replacement of assets, reconfiguration of the network, network support arrangements or decommissioning of assets, where it is economically viable to do so and we can continue to meet our reliability standards.

[1] This approach is in line with the preferred solution identified in the Maintaining Reliability of Supply Between Clare South and Townsville South Regulatory Investment Test for Transmission (RIT-T).

Additional insulator replacement works within the period have also contributed to the increased spend within our controllable opex. We identified an early life failure risk for polymer insulators and commenced a program of work in 2018-22 to replace these insulators, targeting those most at risk of premature failure. Allowing these to fail before replacement would lead to significant safety risks, as well as reliability and security risks (e.g. on the Queensland-NSW Interconnector).

We have partially offset some of these costs through improved vegetation management contracting arrangements, rationalisation of some support functions, and a targeted program to reduce Information Technology (IT) and Operating Technology (OT) licence costs.

Non-controllable opex

We forecast to spend $5.3m (7.2%) more on non-controllable opex within the 2018-22 regulatory period than provided for in the AER allowance (excluding debt raising).

The driver of this is the Australian Energy Market Commission (AEMC) Levy, the cost of which has exceeded the allowance for the 2018-22 regulatory period by $6.2m (27.5%). The AEMC budget is set by the Council of Australian Governments (COAG) Energy Council and funded through a cost sharing agreement between the States and Territories. In Queensland, this cost is recovered by the Queensland Government through energy utilities including Powerlink. Our understanding is that Queensland is the only State where the TNSP funds the majority of this levy, and we are considering alternative ways to treat this cost.

Insurance costs for the 2018-22 regulatory period, while lower overall than the AER's allowance, increase materially (~15% p.a.) in the final two years of the 2018-22 regulatory period. Increases are anticipated to continue into the 2023-27 regulatory period as discussed further in the next section.

2023-27 regulatory period forecast opex drivers

We have forecast total operating expenditure of $1,125m for the 2023-27 regulatory period. This is $68.5m (6.5%) more than the AER allowance in the 2018-22 regulatory period. Table 2 provides a breakdown of our forecast by category.

Table 2 2023-27 regulatory period forecast opex

2023-27 regulatory period forecast opex ($m real, 2021/22)	Forecast
Direct operating and maintenance	726.5
Other controllable expenditure	284.1
Controllable opex	**1,010.6**
Insurance (premiums and self-insurance)	67.1
AEMC Levy	31.2
Debt raising	16.1
Non-controllable opex	**114.5**
Total operating expenditure	**1,125.0**
Total opex excl. debt raising costs	1,108.9

Controllable opex

Direct operating and maintenance activities will account for approximately 65% of our total opex in the 2023-27 regulatory period.

We expect to increase work associated with condition based maintenance of transmission lines in the 2023-27 regulatory period, due to our ageing transmission assets. These works are in addition and complementary to the capital expenditure program to refit transmission lines.

We have identified opportunities to reduce reinvestment in our network in the 2023-27 regulatory period by decommissioning assets in lieu of replacing assets, which will impact direct operating and maintenance costs. The decommissioning of assets is compared to reinvestment at the end of the service life of the asset, at which time the most economic solution is adopted. At this stage, our estimated spend on potential decommissioning work is ~$15-$20m within the 2023-27 regulatory period.

We anticipate greater complexity associated with management and staging of outages on the network due to ongoing investment in IBR, and this is likely to drive increased network operations and network planning costs in the 2023-27 regulatory period. To date we have managed the increase in costs associated with this work within our current opex.

Some of these increases in expenditure are expected to be offset by a forecast reduction in operational refurbishment work, as we complete our critical polymer insulator replacement program. We will seek to reduce vegetation management costs by driving further contracting efficiencies, and will continue to manage our maintenance support and other support functions to contain overall growth in controllable opex.

We anticipate an increase in opex (currently ~$2.4m p.a.) associated with our cyber security program, and have included a potential opex step change related to this work as part of our Revenue Proposal forecast. Cyber security may also impact our capex program and is discussed further in the "Common opex and capex drivers" section of this document.

Non-controllable opex

The cost of insurance will be a significant driver of non-controllable costs in the 2023-27 regulatory period. The "hard" phase of the insurance market cycle is expected to remain for the next few years. Our insurance brokers, Marsh, have forecast an increase in insurance costs of ~$20m (45%) in the 2023-27 regulatory period compared to the AER's allowance for the 2018-22 regulatory period.

We will continue to explore options to manage insurance costs in this challenging insurance market and intend to discuss insurance in more detail at a deep dive workshop with customers and stakeholders prior to lodgement of our Revenue Proposal.

The AEMC Levy is expected to drive an increase in non-controllable costs of ~$2.3m (8%) during the 2023-27 regulatory period. We forecast the AEMC Levy based on information provided by the Queensland Government on the AEMC's budget forecast. We are continuing to work with stakeholders on an alternative treatment of the AEMC Levy.

Capital expenditure

Powerlink's capital expenditure (capex) 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. Our capex forecast has been developed using our Hybrid+ forecasting approach, which is explained further in our Expenditure Forecasting Methodology.

2018-22 regulatory period capex drivers

We forecast to be $16.8m (1.9%) lower than the AER's total capex allowance for the 2018-22 regulatory period. Our total actual / forecast capital expenditure in the 2018-22 regulatory period, compared to the AER allowance, is summarised in Table 3 below. Actual/forecast figures for the 2018-22 regulatory period are preliminary and indicative only, and will be updated for Powerlink's draft Revenue Proposal to be released in September 2020.

Table 3 2018-22 regulatory period capex

2018-22 regulatory period capex ($m real, 2021/22)	Allowance	Actuals / Forecast	Difference	
Network load-driven [1]	11.7	31.9	+20.2	(+173%)
Network non load-driven [2]	778.6	743.9	-34.7	(-4.5%)
Non-network [3] [4]	111.7	109.4	-2.3	(-2.1%)
Total capital expenditure [4]	**902.0**	**885.2**	**-16.8**	**(-1.9%)**

[1] Network load-driven includes augmentations, connections and easements categories.
[2] Network non load-driven includes reinvestments, system services, security/compliance and other categories.
[3] Non-network includes business IT buildings, motor vehicles and moveable plant categories.
[4] Net of motor vehicle disposals.

Network load-driven

We forecast that we will invest $20.2m (173%) more than the AER allowance for network load-driven capex. The main driver of this additional expenditure is ground clearance rectification works. These works increase the rating of our overhead transmission lines from what they would otherwise be rated, which is why they are classified as Augmentation. Ground clearance rectification addresses a range of vegetation, building or ground encroachments along our 14,500km of transmission circuits and is being undertaken progressively over the 2018-22 and 2023-27 regulatory periods.

In addition, some network augmentation works that were forecast to occur late in the 2013-17 regulatory period were delayed until early in the 2018-22 regulatory period to co-ordinate with planned generator outages.

Network non load-driven

We forecast that we will invest $34.7m (4.5%) less than the AER allowance for network non-load driven capex.

This forecast underspend is primarily due to increased complexity in the delivery of our extensive replacement and refit projects. We are increasingly required to perform replacement activities whilst adjoining assets are maintained in service to limit impacts on the reliability and security of the network. This work in proximity to live electrical equipment has required new contracting, delivery and supervision models, as well as additional and more complex staging of works, to ensure the ongoing safety of contractors and our staff. This extends project delivery timeframes.

This has been a significant change from some earlier network reinvestment projects during periods of demand growth, where replacement of existing assets with new assets at different substation sites, or along new transmission line easements, was the most efficient means to reinvest.

System Services is a new category of capital expenditure that was not identified at the time of our 2018-22 Revenue Proposal. Increasing penetration of rooftop PV on customer premises means the demand for electricity supply from the transmission network during daylight hours is often now lower than the minimum demands that previously occurred overnight. These new low minimum demands are leading to high voltages in certain parts of the network and additional reactive power equipment is needed to maintain voltages within their prescribed limits.

During the current 2018-22 regulatory period, Powerlink has identified the need for additional investment to improve environmental compliance in the management of transformer oil on substation sites, as well as facilities to ensure ongoing safe systems of work for Powerlink staff and contractors within our substation sites.

Non-network

We forecast that we will invest $2.3m (2.1%) less than the AER allowance for non-network capex.

Within Business IT, renewal of our Enterprise Resource Planning (ERP) and Geographical Information System (GIS) platforms has been brought forward to provide more efficient integration with other initiatives within the current regulatory period. This has advanced approximately $7m of capital expenditure from the 2023-27 regulatory period into the current 2018-22 regulatory period.

Offsetting this, our proposed major office building refit project has been deferred to the 2023-27 regulatory period. While the provision of office accommodation that facilitates contemporary work practices remains important for Powerlink, the need to focus on meeting the technical challenges of the energy transition in the short term meant that a deferral was appropriate. In light of this decision, we intend to return the revenue attributable to the capex allowance for this project to customers within the current 2018-22 regulatory period.

2023-27 regulatory period forecast capex drivers

We have forecast total capex of $1,065.2m for the 2023-27 regulatory period. This is $163.2m (18.1%) more than the AER allowance in the 2018-22 regulatory period. Our forecast capex has been developed using our Hybrid+ forecasting methodology, which uses a mix of both top-down and bottom-up methods.

The load-driven categories of capital expenditure are forecast bottom-up while the non load-driven and non-network categories use a mix of forecasting techniques to suit the nature of the assets under consideration. Further details on the specific forecasting techniques applied to the different capex categories is provided in our Expenditure Forecasting Methodology. Table 4 provides a breakdown of our forecast by category.

Table 4 2023-27 regulatory period forecast capex

2023-27 regulatory period forecast capex ($m real, 2021/22)	Forecast
Network load-driven	18.3
Network non load-driven	933.6
Non-network (1)	113.3
Total capital expenditure (1)	**1,065.2**

(1) Net of motor vehicle disposals.

Network load-driven

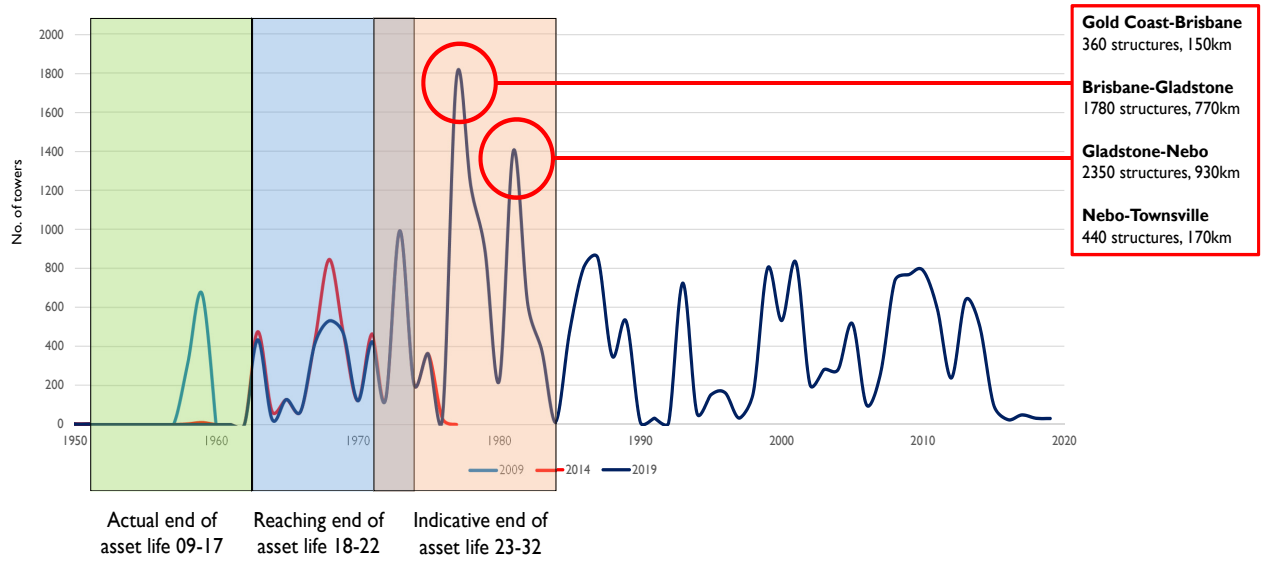
We forecast to spend $13.6m (43%) less network load-driven capex than in the 2018-22 regulatory period. The main augmentation expenditure relates to our ongoing program of ground clearance rectification to remove identified encroachments to our transmission lines. Expenditure on easements is primarily to complete the acquisition of new easements to allow for the rebuild of the aged 132kV transmission line in Far North Queensland.

Network non load-driven

We forecast to spend $189.7m (25.5%) more network non load-driven capex than in the 2018-20 regulatory period.

The main driver of this additional reinvestment expenditure is the increasing numbers of steel lattice transmission towers with levels of corrosion forecast to reach the point where actions beyond normal maintenance activities will be required. This increasing age of the fleet of transmission towers is illustrated in Figure 1 below.

Figure 1 Transmission towers age profile



The rate of deterioration and corrosion of steel structures is not uniform across our network, and decisions to intervene are based on assessments of asset condition, not simply age-based. Nevertheless, this figure illustrates the significant increase in the population of structures that will be approaching the time at which some form of reinvestment will be required over the next decade. The significant growth in the transmission network from the early 1970s to early 1980s reflects the major investments at that time to interconnect the previously separate power systems of Northern, Central and Southern Queensland. Nearly 20% of the current fleet of transmission towers were constructed in a four year period between 1977 and 1981. Even after allowing for the non-uniform nature of the condition of these assets, we expect we will require an extended investment program over several regulatory periods to address the quantity of structures requiring reinvestment.

System Services is also a driver of network non load-driven capex in the 2023-27 regulatory period. System Services is a newly identified category of capital investment driven by the need to meet power system performance standards, including voltage control, inertia and system strength. We are currently forecasting similar levels of expenditure in this category as for the 2018-22 regulatory period. However, this is a rapidly changing field of power system analysis and additional investment needs may be identified as a result of this analysis and included in our Revenue Proposal.

Non-network

We forecast to spend $3.9m (3.6%) more non-network capex than in the 2018-22 regulatory period.

Within Business IT we have already advanced around $7m of capital investment into the current 2018-22 regulatory period from the 2023-27 regulatory period. As a result the forecast capital investment in Business IT is around $14m less than actual investment in the current 2018-22 period.

Offsetting this reduction, our proposed office refit project has been deferred and is now forecast for the last two years of the 2023-27 regulatory period. The forecast expenditure reflects current thinking regarding office facilities to support contemporary work practices.

However, further work is required to incorporate the learnings and experiences from COVID-19 into the forecast expenditure for our office facilities.

Contingent projects

Contingent projects are investments that may be needed during the regulatory period should certain trigger events occur. As the need for investment during the regulatory period is not certain, or the costs associated with addressing the need for investment are not sufficiently certain, contingent projects do not form part of the ex-ante capex allowance. If a contingent project trigger event occurs during the regulatory period, Powerlink can apply to the AER to amend the Revenue Determination to include the revenue required to undertake the contingent project. Before amending the Revenue Determination the AER will assess the prudency and efficiency of the proposed additional expenditure.

Generally, contingent projects are significant network augmentation projects that are reasonably required to be undertaken to achieve the capex objectives set out in the National Electricity Rules. Such projects are often linked to unique investment drivers, such as commitment of new large loads or retirement of generation, rather than general investment drivers such as expectations of load growth in a region.

Our Transmission Annual Planning Report (TAPR) identifies potential load developments and generation retirements that could be expected to trigger significant expenditure to augment the network in order to continue to meet our mandated reliability of supply standards. In addition, the Australian Energy Market Operator's (AEMO) Integrated System Plan (ISP) identifies significant network augmentations that could deliver net market benefits, depending on future scenarios of generation investment across the NEM.

Powerlink is also considering the potential application of the contingent projects framework to network reinvestment projects where the timing of the condition-based reinvestment trigger remains uncertain, or where the expected solution to the condition trigger is not sufficiently certain. The objective is to protect customers from including the forecast cost of some large reinvestment projects within the ex-ante capex allowance where the quantum and timing of those costs is still uncertain.

Our customers are supportive of the proposal for contingent reinvestment projects and we are continuing to engage with the AER regarding this proposal.

Potential contingent projects are listed in the PPFP Presentation that accompanies this document.

Attachment 1 – PPFP key inputs and assumptions

Topic	Element	Inputs and assumptions
Finance	Rate of Return (RoR) / Weighted Average Cost of Capital (WACC)	• 4.49% nominal vanilla WACC. • Cost of debt is based on an estimate of the AER's trailing average approach and assumes Powerlink's 2020/21 interest rate remains unchanged for the 2023-27 regulatory period. • Cost of equity is based on a risk free rate of 0.93%.
	Taxation	• Estimate of immediately deductible capex has been included based on historic data.
	Regulated Asset Base (RAB)	• Forecast asset disposals of $3.5m (motor vehicles).
	Debt raising	• 7.9 basis points, consistent with recent Energex and Ergon Energy Final Decisions (June 2020).
	Inflation	• 2.25%, based on the AER's inflation approach and applies trimmed mean inflation forecasts, similar to recent determinations.
Operating expenditure	Base year	• 2018/19.
	Step changes and capex/opex trade-offs	• 2 potential step changes included Cyber security (~$2.4m p.a.) and Transmission Ring Fencing (no costs estimated at this stage).
	Trend – output growth	• 0.69%, based on existing data (e.g. Regulatory Information Notice (RIN) information) and trended forward.
	Trend – price growth	• 0.50%, based on an average of forecasts for the Wage Price Index from BIS Oxford Economics and Deloitte Access Economics (DAE). • Materials price growth is 2.25%, based on the AER's inflation approach and applies trimmed mean inflation forecasts, similar to recent determinations.
	Trend – productivity	• 0.14%, based on the AER's most recent benchmarking report 2019 for industry productivity.
Capital expenditure	Load-driven	• Primarily ground clearance rectification works and limited easement acquisitions.
	Non load-driven capex	• Repex Model inputs now reflect current Asset Management Plans. • This has been integrated with a number of individual project estimates (~50% by value). • Unit rates reviewed and calibrated. • Forecast now includes provision for some network investment to manage voltage control requirements arising from falling minimum demand, falling system strength and changed voltage standards.
	Non-network capex	• Further refinements of Business IT and Motor Vehicles compared to initial forecast. • Proposed Virginia office refit project has been deferred into the 2023-27 regulatory period.

Contact us

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