Expenditure Forecast Methodology

Regulatory Control Period 2018-19 to 2022-23

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1. Introduction

ElectraNet owns and manages South Australia's electricity transmission network, which forms an essential part of the State's power supply.

The network extends over approximately 5,600 kilometres, and transports high voltage electricity from generators and interconnectors to major industrial customers and the distribution network owned by SA Power Networks, which then supplies customers across metropolitan, regional and rural areas.

ElectraNet will lodge its formal Revenue Proposal for the forthcoming 2018-19 to 2022-23 regulatory period to the Australian Energy Regulator (AER) in January 2017.

Building on initial consultation undertaken to date, ElectraNet will shortly be issuing a Preliminary Revenue Proposal to provide the AER, consumer representatives and other stakeholders an opportunity to engage more deeply on its proposals before these are finalised in its formal Revenue Proposal.

The purpose of this document is to describe the methods and processes by which ElectraNet will develop the forecasts for its operating and capital expenditure programs for the coming regulatory period, in accordance with clause 6A.10.1B of the National Electricity Rules (the Rules).

In summary, ElectraNet proposes to:

- adopt a 'bottom-up' method to forecast its capital expenditure requirements over the next regulatory period; and
- adopt the AER's base-step-trend model to forecast its operating expenditure requirements over the next regulatory period.

These methods are described in further detail in the following sections.

2. Capital Expenditure

ElectraNet's capital expenditure program consists of investment in new assets that increase capacity on the network, reinvestment in existing assets that are reaching the end of their serviceable life, and other supporting assets such as business and operational Information Technology (IT).

This section sets out ElectraNet's intended approach to forecasting its capital expenditure in a manner that meets the requirements of the National Electricity Rules.

2.1 National Electricity Rules

The Rules require ElectraNet's Revenue Proposal to include a forecast of capital expenditure that is necessary to achieve the capital expenditure objectives.

The capital expenditure objectives[1] are to:

(1) meet or manage the expected demand for prescribed transmission services over that period;

(2) comply with all applicable regulatory obligations or requirements associated with the provision of prescribed transmission services;

(3) to the extent that there is no applicable regulatory obligation or requirement in relation to:

(i) the quality, reliability or security of supply of prescribed transmission services; or

(ii) the reliability or security of the transmission system through the supply of prescribed transmission services,

to the relevant extent:

(iii) maintain the quality, reliability and security of supply of prescribed transmission services; and

(iv) maintain the reliability and security of the transmission system through the supply of prescribed transmission services; and

(4) maintain the safety of the transmission system through the supply of prescribed transmission services

The Rules also set out the minimum informational requirements for the Revenue Proposal relating to capital expenditure[2]. These minimum requirements include:

(1) a forecast of the required capital expenditure complying with the requirements of clause 6A.6.7 and identifying the forecast capital expenditure by reference to well accepted categories such as:

(i) asset class (e.g. transmission lines, substations etc.); or

(ii) category driver (e.g. regulatory obligations or requirements, replacement, reliability, net market benefit, business support etc.),

and identifies, in respect of proposed material assets:

(iii) the location of the proposed asset;

(iv) the anticipated or known cost of the proposed asset; and

(v) the categories of transmission services which are to be provided by the proposed asset;

(2) the methodology used for developing the capital expenditure forecast;

(3) the forecasts of load growth relied upon to derive the capital expenditure forecasts and the methodology used for developing those forecasts of load growth;

(4) the key assumptions that underlie the capital expenditure forecast;

(5) a certification of the reasonableness of the key assumptions by the directors of the Transmission Network Service Provider;

(6) capital expenditure for each of the past regulatory years of the previous and current regulatory control period, and the expected capital expenditure for each of the last

[1] *National Electricity Rules,* Clause 6A.6.7(a)
[2] *National Electricity Rules,* Schedule S6A.1.1

two regulatory years of the current regulatory control period, categorised in the same way as for the capital expenditure forecast and separately identifying for each such regulatory year:

(i) margins paid or expected to be paid by the Transmission Network Service Provider in circumstances where those margins are referable to arrangements that do not reflect arm's length terms; and

(ii) expenditure that should have been treated as operating expenditure in accordance with the policy submitted under paragraph (9) for that regulatory year;

(7) an explanation of any significant variations in the forecast capital expenditure from historical capital expenditure;

(8) any non-network alternatives considered by the Transmission Network Service Provider; and

(9) the policy that the Transmission Network Service Provider applies in capitalising operating expenditure.

2.2 Capital Expenditure Categories

Consistent with the requirements of the Rules, ElectraNet's forecast capital expenditure will be presented with reference to well accepted categories of drivers of capital expenditure as well as the categories of transmission services to which the forecast capital expenditure relates.

ElectraNet will retain the same categories of capital expenditure as adopted by the AER for ElectraNet for the current regulatory period. The composition of these major categories is illustrated in Figure 1 below:

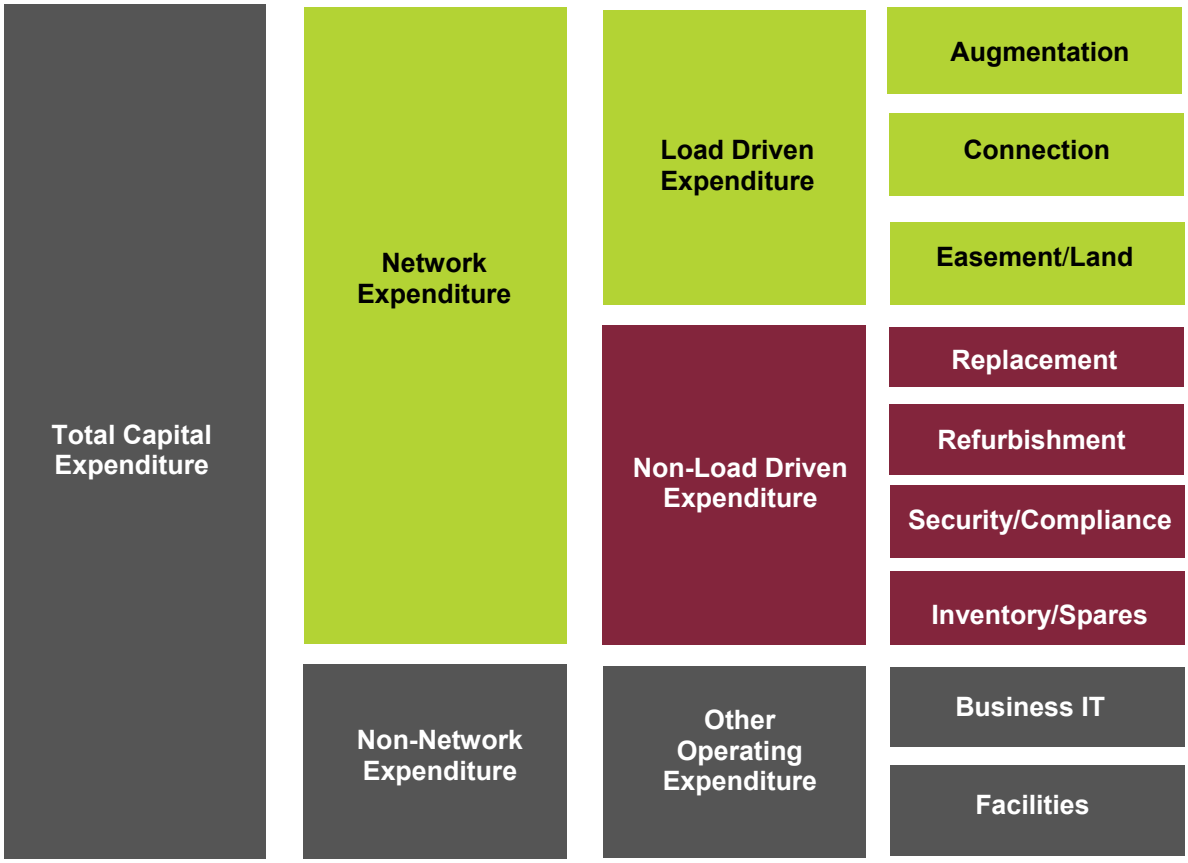

Figure 1: ElectraNet's capital expenditure categories

ElectraNet's categories of capital expenditure are described in detail in Table 1 below.

Table 1: Description of Capital expenditure categories

Expenditure Category	Definition	Service Category
Network – Load Driven		
Augmentation	As defined in the Rules, works to enlarge the system or to increase its capacity to transmit electricity. These works include projects to which the Regulatory Investment Test for Transmission (RIT-T) applies and involve the construction of new transmission lines or substations, reinforcement or extension of the existing shared network. The projects may be driven by reliability or market benefits requirements, and are inclusive of associated supporting communications infrastructure, land requirements and IT systems.	TUOS Services
Connection	Works to either establish new customer connections or to increase the capacity of existing customer connections based on specific customer requirements. Includes projects driven by the Electricity Transmission Code (ETC) reliability standards. Under the Rules only new connection works between regulated networks are treated as prescribed services.	Exit Services
Strategic Land/ Easements	Strategic land and easement acquisitions for projected augmentation, connection and replacement requirements. Typically these are long term requirements guided by Government strategic plans or to address risks over the future availability of land.	Common Services
Network Non-Load Driven		
Replacement	Works to replace transmission lines, substation primary plant, secondary systems, communications equipment and other transmission system assets in order to maintain reliability of supply. Replacement projects are generally undertaken due to the increased risk of plant failure as assets age, assessed asset condition, obsolescence or safety issues.	Exit Services and TUOS Services
Refurbishment	Works to replace relevant components of transmission lines to mitigate the risk of failure to the whole asset. Refurbishment works are generally undertaken based on the assessed condition, performance and asset risk, and if deferral of whole asset replacement is more efficient.	TUOS Services
Security/ Compliance	Projects that address compliance requirements associated with Government Acts and Regulations, and industry standards. Projects required to ensure the physical and system security of critical infrastructure assets.	Entry Services, Exit Services, TUOS Services, Common Services
Inventory/Spares	Spares holdings required to respond to asset failures in accordance with restoration times specified in the ETC and good electricity industry practice.	Common Services
Non Network		
Business IT	Projects to develop and maintain IT capacity and to improve the functionality of business systems to support business operation.	Common Services
Building/Facilities	Projects to replace and upgrade office accommodation and services to meet business needs.	Common Services

2.3 Forecasting Methodology

ElectraNet intends to apply a 'bottom-up' method to forecast its capital expenditure requirements for the 2018-19 to 2022-23 regulatory period. The methodology is illustrated in Figure 2 below.

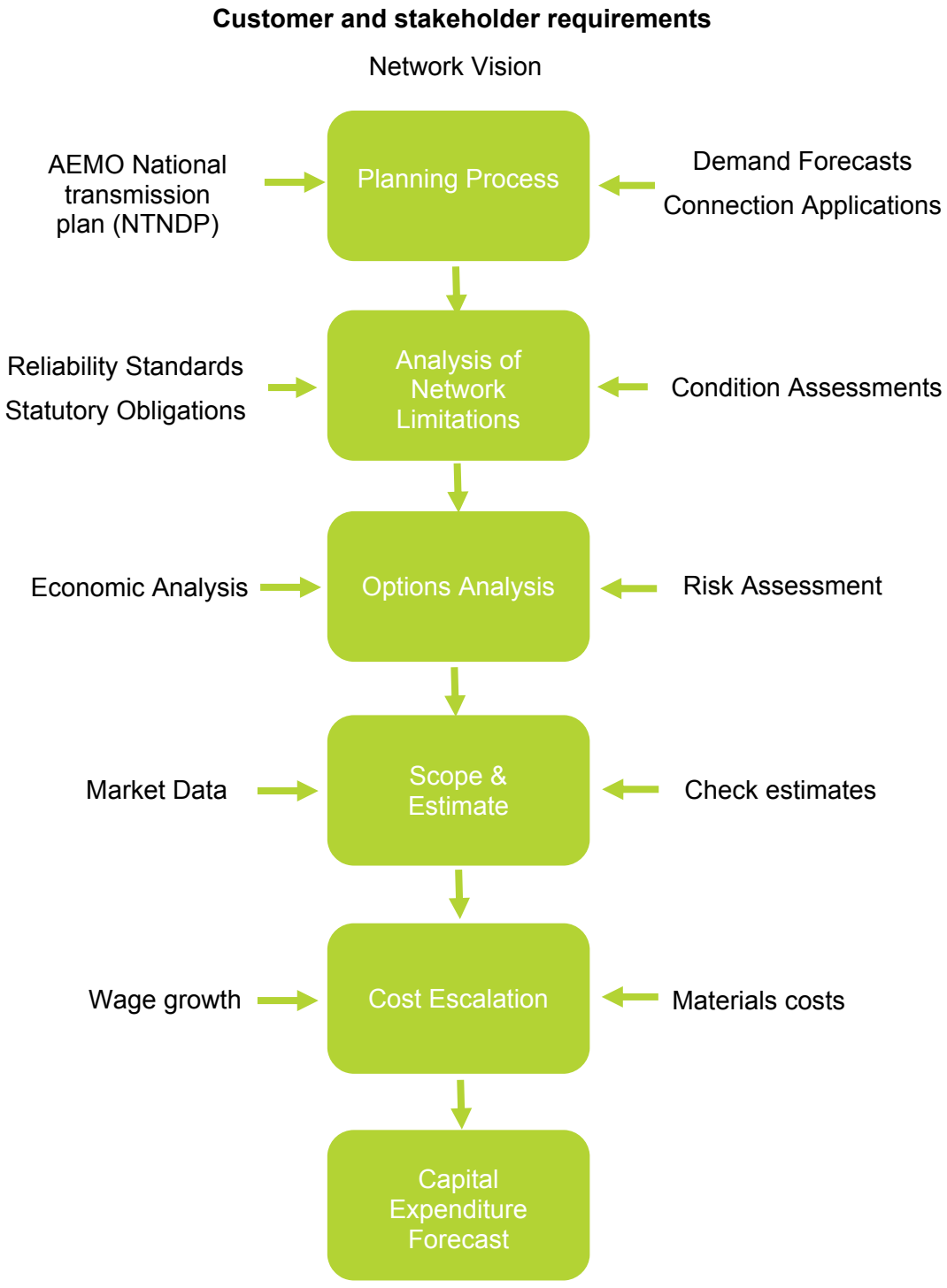

Figure 2: Capital expenditure forecasting methodology

2.3.1 Planning process

ElectraNet follows a systematic planning process to develop plans and initiate projects to deliver a safe, reliable and sustainable transmission network that continues to meet customer demand in the most cost effective manner and maximises net market benefit.

The planning process operates within a strategic framework informed by ElectraNet's Network Vision, industry planning documents prepared by the Australian Energy Market Operator (AEMO) such as the National Transmission Network Development Plan (NTNDP) and relies on inputs such as demand forecasts and connection applications.

2.3.2 Assessment of network limitations

The capital expenditure forecast takes into account the projected limitations of the network, the condition and performance of the existing assets and the associated supporting facilities and business systems required to efficiently operate the network over the forecast period, as follows:

- Load-driven network investment requirements – are identified through modelling of future power system capability and analysis of network constraints.
- Non-load driven network investment requirements – are primarily determined in accordance with ElectraNet's asset management framework, based on replacing assets based on assessed risk, condition and performance.
- Non-network investment requirements – are largely determined in accordance with the strategic priorities for information technology, which provides the framework for the efficient development and operation of the business systems and supporting facilities required to manage the network.

2.3.3 Options analysis

A hierarchy of solutions is considered in order to address identified network limitations, and to efficiently defer the need for major capital investments for as long as possible, while maintaining required reliability levels, following a risk-based approach.

The option selected must be technically and economically feasible, be deliverable in the timeframe required and minimise long-run costs. Economic analysis and risk assessment techniques are applied in investigating potential options and identifying optimal solutions to address identified network limitations and maximise net benefits for consumers over the long-term.

2.3.4 Scope and estimate

All network solutions are designed to comply with legislated safety, environmental and technical obligations. These solutions are based on scopes of work which identify the inputs required to deliver each project. Project cost estimates are developed for each solution based on a detailed database of materials and transmission construction costs.

ElectraNet will also exclude from the capital expenditure forecast significant network projects that are not considered sufficiently certain in terms of timing, scope or cost. Where the requirement for such a project is considered probable during the regulatory period, that project will be included in the Revenue Proposal as a Contingent Project.

2.3.5 Cost escalation

Cost escalation involves escalating or de-escalating cost estimates for expected changes in input costs, including wages and materials costs. Forecasts of cost escalation rates are derived from independent expert sources.

2.4 Load-driven Network Capex

Load-driven network investments include augmentations, connections to the distribution network, and strategic land and easement acquisitions. These are discussed in turn.

Connection point and network limitations are identified by static load-flow analysis, typically concentrating on the thermal capacity of lines and transformers as well as connection point delivery voltages under normal and contingent operating conditions.

Consideration is also given to the outputs of dynamic analysis and other asset performance information such as:

- Voltage stability – concerned with ensuring sufficient reactive power support to maintain voltage levels under normal and contingent operating conditions;
- Transient stability – concerned with large disturbances due to faults causing generation and power system instability;
- Small signal stability – concerned with small switching disturbances causing oscillations across the interconnected power system; and
- Fault capacity – concerned with the fault rupturing capability of circuit breakers, mechanical strength of substation infrastructure and earth potential rise

While maximum demand levels have typically driven network limitations and investment requirements in the past, declining minimum loading levels and the increasing challenges of network operation brought about by the changing generation mix are increasingly driving investment requirements due to new emerging network limitations.

Regular joint planning with other TNSPs and the local Distribution Network Service Provider SA Power Networks is undertaken to ensure that both transmission and distribution performance issues are taken into account. As the transmission and distribution systems are electrically connected, either may be in a position to provide a means of addressing system performance issues, enabling overall lowest long-run cost solutions for consumers to be identified.

Prudent planning for future network development requirements in some cases requires early acquisition of strategic land and line easements that will be required in subsequent regulatory periods. Strategic acquisition has been shown to be a prudent strategy avoid the risk that a lack of action now will lead to:

- the most efficient sites for land and easements not being available at all in the future due to the development of alternative land uses; or

- significant additional expense being incurred due to the need to re-zone land or select less efficient sites.

The detailed methodology for determining load-driven network investment requirements and the plans for the efficient development of the network are set out in ElectraNet's Transmission Annual Planning Report.

2.5 Non Load-driven Network Capex

Non load-driven network investments include replacements, refurbishments, security and compliance projects, and purchases of inventory and spares. These are discussed in turn.

ElectraNet's asset replacement strategy is based on condition assessment and risk management. Wherever prudent and cost effective, replacement expenditure is deferred by installing asset condition monitoring systems and related maintenance and inspection regimes.

Factors contributing to asset replacement decisions include lack of functionality to meet operational requirements, deterioration of asset condition resulting in an unacceptable risk of failure and consequential impacts, lack of availability of spares and expertise to service equipment, and/or uneconomic ongoing maintenance costs.

ElectraNet's capital refurbishment program is based on asset condition assessment and risk management, and enables deferral of wholesale replacement through targeted life extension works. Factors contributing to capital refurbishment decisions include safety hazard issues and deterioration of asset condition resulting in an unacceptable risk of failure and consequential impacts.

Decisions to undertake network asset replacement projects and refurbishment projects are based on detailed condition assessment, analysis of risks and costs, and economic evaluation of alternative options.

ElectraNet also identifies requirements to improve the physical and system security of critical network infrastructure and compliance with applicable standards and obligations. This includes the need for additional electronic and physical barrier security as well as improvements to the layout of nodal substations and radial supply points. Other expenditure of this nature is required to meet various technical, safety and environmental compliance requirements.

The Electricity Transmission Code specifies unplanned outage restoration times that drive the requirement for spare holdings of transformers and other equipment, in addition to the need for efficient levels of inventory.

The detailed methodology for determining non-load driven network investment requirements is set out in ElectraNet's asset management plans.

2.5.1 Non-Network Capex

Non-network projects include investments in business information technology (IT) and buildings and facilities.

Forecast expenditure requirements in Business IT equipment such as hardware renewal and system upgrades is largely recurrent in nature, driven by the useful life of these assets and the need to retain the functionality of these business systems.

Forecast expenditure requirements for buildings and facilities are driven by the need to retain the use of business premises and equipment, and are generally consistent with historic trends.

2.6 Key Inputs and Assumptions

2.6.1 Demand Forecasts

Growth in customer peak demand has historically been the principal driver of transmission system augmentation and connection point reinforcement. Increasingly, falling minimum demand levels on the network are also revealing network limitations that need to be addressed.

In determining its capital expenditure forecast, ElectraNet will rely upon the demand forecasts independently provided by AEMO, SA Power Networks and the large industrial customers directly connected to ElectraNet's network.

2.6.2 Asset Condition Assessments

ElectraNet has over recent years implemented a systematic process for collecting, recording and analysing detailed information on the condition of its network assets. This has resulted in the development of a sophisticated System Condition and Asset Risk (SCAR) system.

Through this process, ElectraNet has systematically undertaken asset condition assessments for all substations, and is progressively undertaking condition assessments across all of its transmission line assets.

ElectraNet has further developed its asset condition assessment program into a Transmission Asset Life Cycle (TALC) assessment framework. This assessment considers a range of factors affecting the overall performance of an asset, and provides a framework for systematically identifying where an asset is in its life cycle in order to make the most effective asset management decisions. This assessment considers both the technical health of the asset and its strategic importance in the network (related to the value of load at risk).

These condition assessments and the ongoing improvement in understanding of asset condition are key inputs to the asset management planning process and the development of asset replacement and refurbishment programs.

2.6.3 Reliability Standards

In addition to the requirements of the National Electricity Rules, the South Australian Electricity Transmission Code establishes the specific reliability standards that apply to each exit point on the transmission network. The Essential Services Commission of South Australia is currently concluding a review of these reliability standards as they will apply during the next regulatory period. Once the outcomes of this review are finalised, ElectraNet will be required to maintain the applicable standards moving forward.

2.6.4 Project cost estimation

ElectraNet has an established capability to develop robust capital project cost estimates based on a documented scope of works. This allows the business to produce forecasts of the expenditure required to efficiently deliver transmission investments in a South Australian context, and to continuously improve the accuracy of these forecasts over time.

ElectraNet regularly obtains independent check estimates from external experts to verify the accuracy of its network project cost estimates.

2.6.5 Cost Escalation

The primary cost components of the capital expenditure forecasts are labour costs (internal and external), materials (i.e. plant and equipment) generally comprised of various commodity inputs such as copper, aluminium and steel, and additional land assets where required.

External estimates of the primary cost drivers such as wages growth and commodity price projections will be obtained from independent expert sources where relevant to determining the expected movement in input costs over the forecast period.

3. Operating Expenditure

ElectraNet's operating expenditure enables the planning, operation and maintenance of the transmission network, as well as the business functions required to support these activities.

This section sets out ElectraNet's intended approach to forecasting its operating expenditure in a manner that meets the requirements of the National Electricity Rules.

3.1 National Electricity Rules

The Rules require ElectraNet's Revenue Proposal to include a forecast of operating expenditure which ElectraNet considers is required to achieve the operating expenditure objectives.

The operating expenditure objectives[3] are to:

(1) meet or manage the expected demand for prescribed transmission services over that period;

(2) comply with all applicable regulatory obligations or requirements associated with the provision of prescribed transmission services;

(3) to the extent that there is no applicable regulatory obligation or requirement in relation to:

(i) the quality, reliability or security of supply of prescribed transmission services; or

[3] National Electricity Rules, Clause 6A.6.6(a)

(ii) the reliability or security of the transmission system through the supply of prescribed transmission services,

to the relevant extent:

(iii) maintain the quality, reliability and security of supply of prescribed transmission services; and

(iv) maintain the reliability and security of the transmission system through the supply of prescribed transmission services; and

(4) maintain the safety of the transmission system through the supply of prescribed transmission services.

The Rules also prescribe the minimum informational requirements for the Revenue Proposal relating to operating expenditure[4]:

(1) a forecast of the required operating expenditure that complies with the requirements of clause 6A.6.6 and identifies the forecast operating expenditure by reference to well accepted categories such as:

(i) particular programs; or

(ii) types of operating expenditure (for example, maintenance, payroll and materials),

and identifies in respect of each such category:

(iii) to what extent that forecast expenditure is on costs that are fixed and to what extent it is on costs that are variable; and

(iv) the categories of transmission services to which that forecast expenditure relates;

(2) the methodology used for developing the operating expenditure forecast;

(3) the forecasts of key variables relied upon to derive the operating expenditure forecast and the methodology used for developing those forecasts of key variables;

(4) the methodology used for determining the cost associated with planned maintenance programs designed to improve the performance of the relevant transmission system for the purposes of any service target performance incentive scheme that is to apply to the Transmission Network Service Provider in respect of the relevant regulatory control period;

(5) the key assumptions that underlie the operating expenditure forecast;

(6) a certification of the reasonableness of the key assumptions by the directors of the Transmission Network Service Provider;

(7) operating expenditure for each of the first three regulatory years of the current regulatory control period, and the expected operating expenditure for each of the last

[4] *National Electricity Rules,* Schedule S6A.1.2

two regulatory years of that regulatory control period, categorised in the same way as for the operating expenditure forecast;

(8) an explanation of any significant variations in the forecast operating expenditure from historical operating expenditure; and

(9) any non-network alternatives considered by the Transmission Network Service Provider.

3.2 Operating Expenditure Categories

ElectraNet's operating expenditure forecast methodology separates operating expenditure into three clearly defined and well established cost categories:

- direct operating and maintenance expenditure;
- other controllable expenditure; and
- other operating expenditure.

The composition of these major categories is illustrated in Figure 3 below.

Figure 3: ElectraNet's operating expenditure categories

ElectraNet's operating expenditure categories are described in detail in Table 2 below.

Table 2: Description of ElectraNet's of operating expenditure categories

Expenditure Category	Description	Service Category
Controllable Operating Expenditure - Direct Operating & Maintenance		
Field Maintenance	Includes all field-based maintenance activities undertaken by ElectraNet. This includes the following functions: • **Routine maintenance** - field inspections and maintenance activities that are completed to a predetermined schedule and scope; • **Corrective maintenance** - field activities to mitigate short term risks and restore the condition or function of a transmission system asset, or component, to a satisfactory operational state; and • **Operational refurbishment** - planned maintenance project activities to mitigate medium term risks identified through asset condition assessments and to provide asset information required to manage compliance with legal obligations and good electricity industry practice.	Prescribed Exit Services, Prescribed Entry Services, TUOS Services & Common Services
Maintenance Support	Includes all of ElectraNet's internal functions associated with managing field operating and maintenance contracts, environmental and safety management, asset condition monitoring and analysis, works planning and coordination. Maintenance support also includes functions associated with business processes and systems that directly support the field maintenance activities such as geospatial information systems, maintenance management systems and maintenance field tools, and the activities associated with the management and support of external maintenance service contracts and direct charges such as land taxes, water and council rates.	Prescribed Exit Services, Prescribed Entry Services, TUOS Services & Common Services
Network Operations	These are activities associated with the control centre function and other network operations activities. The functions included in this category include: • Real-time control room function – this is a 24-hour continuous requirement. Network operators provide the functions of network operation, coordination and switching sheet preparation for all plant outages; • Off-line system security support – this function involves network security analysis, including an ongoing need to perform contingency planning; • Technical support for the Energy Management System (EMS) and SCADA systems – support functions such as EMS configuration, upgrade, hardware installation, software upgrade and maintenance; and • Asset Monitoring – Monitoring asset performance and condition, which includes auditing network configurations and performing fault diagnosis and response management.	Prescribed Exit Services, Prescribed Entry Services, TUOS Services & Common Services
Other Controllable Expenditure		
Asset Manager Support	Includes the functional activities that support the strategic development and ongoing management of the network, including network planning, asset strategy, network support, customer and regulatory support and IT support.	Prescribed Exit Services, Prescribed Entry Services, TUOS Services & Common Services

Expenditure Category	Description	Service Category
Corporate Support	Includes the activities required to ensure adequate and effective corporate governance and business administration, including finance, accounting, administration, legal counsel, employee relations, occupational health and safety and internal audit. Corporate Support also includes insurance premiums and the associated costs of commercially available insurance cover obtained from external sources by ElectraNet for its assets and other key risk exposures (excluding self-insurance).	Prescribed Exit Services, Prescribed Entry Services, TUOS Services & Common Services
Non-controllable Operating Expenditure		
Self-Insurance	Where external insurance cover is not available or not cost effective for certain risk events, ElectraNet manages the risk exposure and cost impact of these events internally through a self-insurance allowance based on identification and quantification of the asymmetric risks faced by the business.	Prescribed Exit Services, Prescribed Entry Services, TUOS Services & Common Services
Network Support	Network support payments fund non-network solutions contracted by ElectraNet as cost effective alternatives to network augmentation, such as local generation or demand management arrangements. The Rules require the pass through of network support costs subject to the relevant factors set out in clause 6A.7.2 of the Rules.	TUOS Services
Debt Raising	Includes debt financing and transaction costs incurred over and above the debt margin allowed in the cost of capital when new debt is raised or current lines of credit are refinanced or extended.	Prescribed Exit Services, Prescribed Entry Services, TUOS Services & Common Services

3.3 Forecasting Methodology

ElectraNet proposes to follow the base year trend method for developing its operating expenditure forecast for the 2018-19 to 2022-23 regulatory period, as set out in the AER's Expenditure Forecast Assessment Guideline[5]

As stated in the Guideline, a 'base-step-trend' approach will be applied to the majority of the controllable operating expenditure categories defined in Table 1 above and a zero based approach will be applied to other operating expenditure items. A zero based approach uses a 'bottom-up' cost build to estimate the total cost of a particular activity. This method is applied to items that are one-off or non-recurrent in nature.

ElectraNet will firstly identify an efficient base year that reflects the expenditure a prudent network operator would require taking into account a realistic expectation of the demand forecast and cost inputs to achieve the operating expenditure objectives. Any one-off or non-recurrent expenditure items will be removed so that the base year is representative of ongoing expenditure.

5 *Better Regulation: Expenditure Forecast Assessment Guideline for Electricity Transmission*, Australian Energy Regulator, November 2013

ElectraNet will then apply an annual rate of change to controllable operational expenditure, consistent with the Guideline, across the forecast period. The annual rate of change comprises three parameters (output change, real price change and productivity change).

The Guideline requires that the output change parameters and the real price change parameter be the same measures used to determine the productivity change parameter. ElectraNet will adopt the measure of operating expenditure productivity change published by the AER in its latest annual benchmarking report.

ElectraNet will rely on external forecasts for the input price change parameter. The output change parameter will be forecast using ElectraNet's forecast of the components of the output change parameter used for benchmarking. The productivity change parameter will be informed by the Transmission Network Service Provider (TNSP) operating expenditure partial factor productivity index published in the AER's latest annual benchmarking report.

ElectraNet will add 'bottom up' cost estimates for any other one-off requirements or step change cost items that are not captured in the base year operating expenditure or rate of change that are required for the forecast in order to meet the operating expenditure objectives.

Where required for consistency with the AER's base-step-trend model, ElectraNet may also apply any necessary adjustments to its forecast to reflect, for example, movements in provisions.

The overall forecasting methodology is illustrated in Figure 4 below:

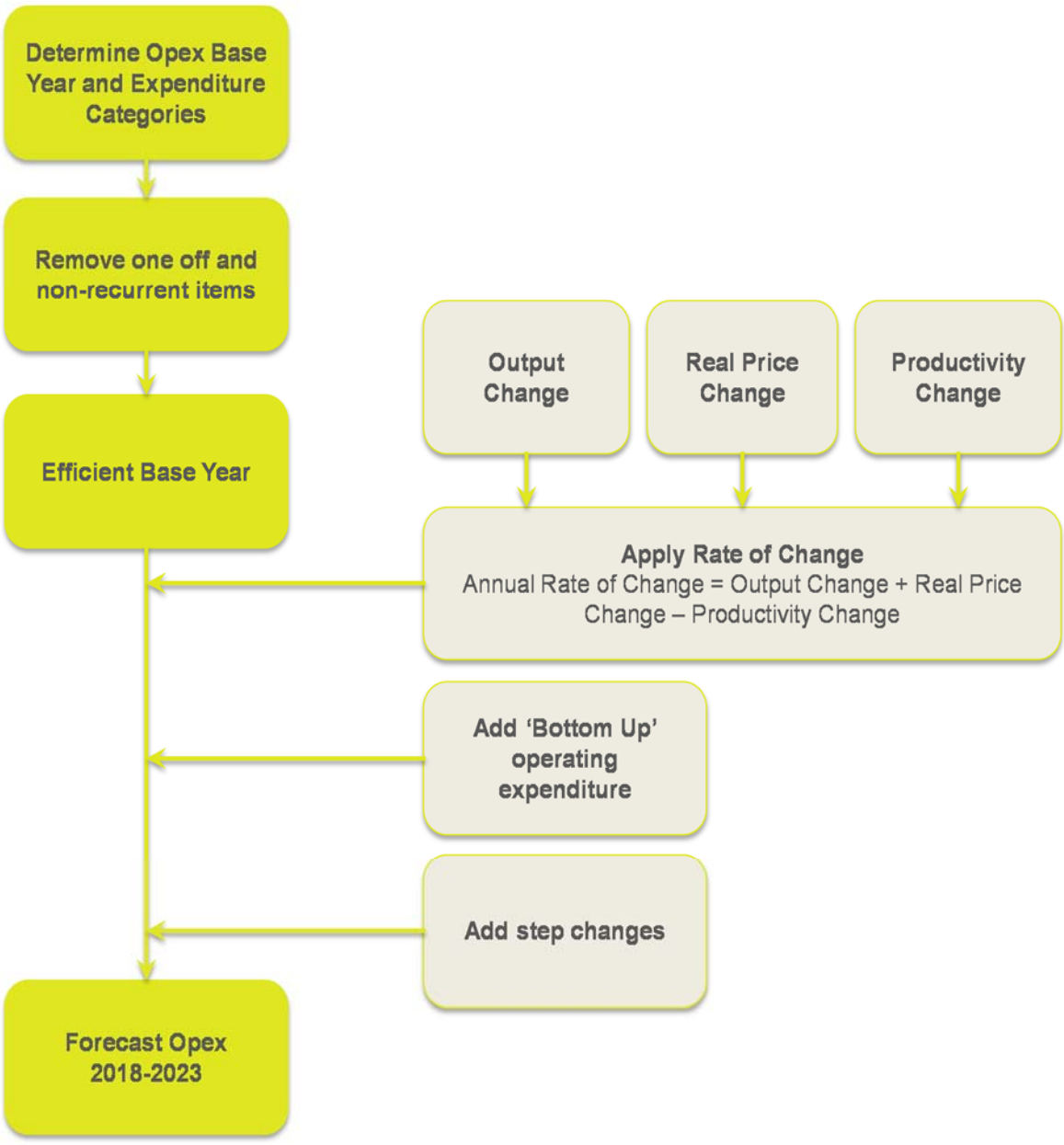

Figure 4: Operating expenditure forecasting methodology

Table 3 sets out the forecast approach to be adopted for each operating expenditure category in ElectraNet's forecasting methodology.

Table 3: Operating expenditure category forecasting approach

Opex Cost Category	'Top Down' Base Year Trend	'Bottom up' Zero Base Items	Apply Rate of Change
Controllable Opex*			
Routine Maintenance	✔		✔
Corrective Maintenance	✔		✔
Operational Refurbishment	✔		✔
Network Operations	✔		✔
Maintenance Support	✔		✔
Asset Manager Support	✔		✔
Corporate Support • Insurance • Other Corporate Support	 ✔	 ✔	 ✔
Non-controllable Opex			
Self-insurance		✔	
Network Support		✔	
Debt Raising		✔	

* Other individual cost items of a non-recurrent nature will also be removed from the base year trend and be forecast through a 'bottom up' approach, such as revenue reset costs.

The following sections of this report provide a more detailed description of ElectraNet's forecasting approach based on the application of the steps outlined above.

3.4 Key Inputs and Assumptions

The following section outlines some of the key inputs and assumptions that will be used to derive the operating expenditure forecast to be included in ElectraNet's Revenue Proposal.

3.4.1 Efficient base year

The most recently completed financial year of the current regulatory period, being 2015-16, will be adopted as the base year for estimating future operating costs, as it contains the latest actual cost information available to the business.

The operating expenditure outcomes for 2015-16 are representative of current costs, and provide an efficient base level from which to forecast future expenditure requirements, with the exception of one-off and non-recurrent cost items.

These one-off and non-recurrent cost items are therefore removed from the base year and the relevant cost categories are subject to a 'bottom up' forecast approach as indicated above.

3.4.2 Rate of change

Once an efficient base year is established, operating cost categories are trended by applying a real rate of change. The real rate of change is a function of the forecast change in: network output, real input costs (labour and materials) and forecast productivity, as follows.

$$\boldsymbol{Rate\ of\ change = Output\ change + Real\ Price\ Change - Productivity\ Change}$$

The assumed rate of change components are:

Output Change

The expected change in network output weighted for:

- **Energy throughput.** The forecast growth in energy delivered for the South Australian network plus net imports.
- **Ratcheted maximum demand.** Non-coincident historic maximum demand for each individual connection point in a year measured in MW.
- **Weighted entry and exit connections.** The summation of the number of connection points weighted by the voltage of each connection point measured in kVs.
- **Circuit length.** Total transmission line circuit length measured in kilometres.

Real Price Change

The forecast real change in input costs (labour and materials) based on external estimates.

Productivity Change

The expected productivity change over the forecast period. This will be informed by the Transmission Network Service Provider (TNSP) operating expenditure partial factor productivity index published in the AER's latest annual benchmarking report.