SA Power Networks

Expenditure Forecasting Methodology

2020-25 Price Reset

8/1/2019 – Version 1.0

Company information

SA Power Networks is the registered Distribution Network Service Provider (**DNSP**) for South Australia
For information about SA Power Networks visit www.sapowernetworks.com.au

Contact

For enquiries about this document please contact:
Trevor Gusling
Regulatory Strategy Manager
SA Power Networks
1 Anzac Highway
Keswick SA 5035
SAPN2020proposal@sapowernetworks.com.au

Document Control

Approved by:

Name	Role	Date
Doug Schmidt	General Manager Regulation	29/06/2018

Reviewed by:

Name	Role	Date
Richard Sibly	Head of Regulation	25/06/2018
Bruno Coelho	Regulatory Economist	25/06/2018
Dannielle Kurbatfinski	Capital Expenditure Lead	25/06/2018
Kelly Bernhardt	Operating Expenditure Lead	25/06/2018
Jessica Vonthethoff	Manager Stakeholder Engagement	25/06/2018

Distribution List:

Name	Role	Version	Date
Adam Petersen	Director AER	1.0	29/06/2018
Doug Schmidt	General Manager Corporate Strategy	1.0	29/06/2018
Richard Sibly	Head of Regulation	1.0	29/06/2018
Craig Parsons	Project Manager Price Reset Project	1.0	29/06/2018

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Reference Documents:

Title of Document	Document Reference
National Electricity Rules	Version 109
Expenditure Assessment Guideline for Electricity Distribution	Issued November 2013
Demand Management Incentive Scheme	Issued December 2017

Contents

1 Introduction

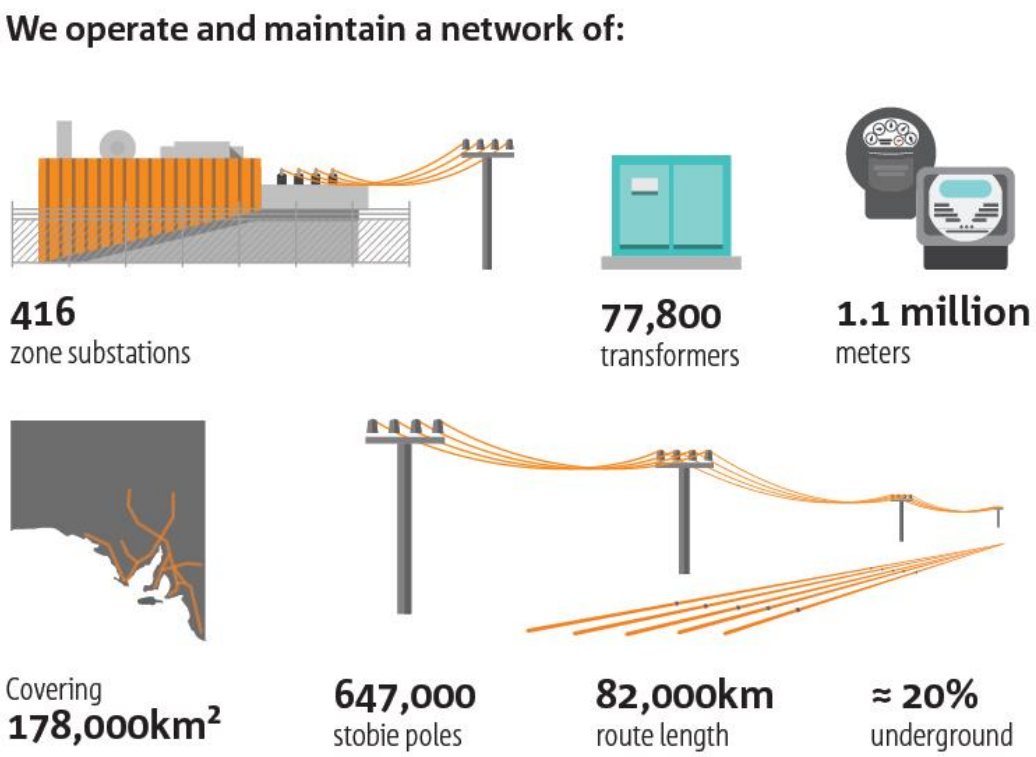
This document describes the methodology which SA Power Networks intends to use when developing its operating expenditure (**opex**) and capital expenditure (**capex**) forecasts for the 2020-25 regulatory control period.

The methodologies outlined in this document will:

- be used to prepare a forecast of expenditure which reflects the efficient and prudent costs required to achieve the operating expenditure objectives and capital expenditure objectives; and
- include (amongst other things) the methodologies that will be employed by SA Power Networks to forecast demand and the cost of inputs.

2 Overview

SA Power Networks is the sole electricity distributor in South Australia. We manage the poles and wires that transport electricity to South Australian homes and businesses. Our network services more than 860,000 customers spread throughout the state, and comprises the following:



SA Power Networks' responsibilities include:

- maintaining the safety, security and reliability of the electricity network;
- connecting customers; and
- extending and upgrading the electricity network to meet changing needs.

We operate across the state out of 42 depots and offices, located both in the metropolitan area and strategic country locations.

3 Background

The Australian Energy Regulator (**AER**) will determine the revenue allowance for SA Power Networks for the 2020-25 regulatory control period in accordance with the National Electricity Rules (**NER** or **Rules**). As a part of this process the AER will assess SA Power Networks' forecast capex and opex proposals. Clause 6.8.1A of the Rules provides that a DNSP:

"…must inform the AER of the methodology it proposes to use to prepare the forecasts of operating expenditure and capital expenditure that form part of its regulatory proposal."

The Rules require that the DNSP must submit this information at least 24 months before the expiry of the current regulatory control period. For SA Power Networks, this is by 30 June 2018. The purpose of this is to enable the AER to consider our forecasting approach before it publishes our final Framework and Approach Paper in July.

This document sets out the methodology which SA Power Networks intends to use to develop its opex and capex forecasts for the 2020-25 regulatory control period. Notwithstanding this, circumstances may require aspects of the methodology to be amended or further refined in the lead up to the submission of our regulatory proposal in January 2019. Any deviations from the methodologies described in this document will be identified and explained in our regulatory proposal.

4 Rule Requirements

The Rules require SA Power Networks to include a forecast of the opex[1] and capex[2] required in order to achieve each of the following expenditure objectives:

1. meet or manage the expected demand for standard control services over that period;
2. comply with all applicable regulatory obligations or requirements associated with the provision of standard control services;
3. to the extent that there is no such applicable regulatory obligation or requirement, maintain the quality, reliability or security of supply of standard control services or the reliability or security of the distribution system through the supply of standard control services; and
4. maintain the safety of the distribution system through the supply of standard control services.

The AER must accept SA Power Networks' forecast opex[3] and capex[4] expenditure if it is satisfied that the forecast reasonably reflects the following expenditure criteria:

1. the efficient costs of achieving the above expenditure objectives;
2. the costs a prudent operator would require to achieve the expenditure objectives; and
3. a realistic expectation of the demand forecast and cost inputs required to achieve the expenditure objectives.

[1] NER, Cl 6.5.6(a).
[2] NER, Cl 6.5.7(a).
[3] NER, Cl 6.5.6(c).
[4] NER, Cl 6.5.7(c).

In deciding whether or not the AER is satisfied as referred to above, the AER must consider the expenditure factors[5] which include:

1. the most recent annual benchmarking report published by the AER and the benchmark expenditure that would be incurred by an efficient DNSP over the 2020-25 regulatory control period;
2. SA Power Networks' actual and expected expenditure during the 2015-20 regulatory control period and other preceding regulatory control periods;
3. the extent to which opex and capex forecasts include expenditure to address the concerns of electricity consumers identified during the course of consumer engagement;
4. the relative prices of operating and capital inputs;
5. the substitution possibilities between opex and capex;
6. whether the opex and capex forecasts are consistent with any applicable incentive schemes;
7. the extent opex and capex forecasts are referable to arrangements with third parties that in the AER's opinion, do not reflect arm's length terms;
8. whether opex and capex forecasts include an amount relating to a project that should more appropriately be included as a contingent project;
9. the extent SA Power Networks' has considered, and made provision for, efficient and prudent non-network alternatives; and
10. any other factor the AER considers relevant and notifies to SA Power Networks prior to submission of our revised regulatory proposal.

If it is not satisfied that the forecasts reasonably reflect the expenditure criteria, the AER must not accept the forecasts[6], and must set out the reasons for that decision and an estimate of the required expenditure that it is satisfied reasonably reflects the expenditure criteria, taking into account the expenditure factors.

5 Demonstrating how the forecast reflects the expenditure criteria

In its 2020-25 regulatory proposal, SA Power Networks will demonstrate that its forecast of required opex and capex reasonably reflects the expenditure criteria, in that:

- the scope of each expenditure forecast is consistent with SA Power Networks' applicable regulatory obligations or requirements and good electricity industry practice;
- the quality of services, and the reliability, safety and security of the distribution system will be maintained;
- consumer and stakeholder concerns, issues and needs have been considered in developing our expenditure plans;
- strong governance processes have been employed to manage the life cycle of assets prudently and efficiently, and to ensure long term sustainable performance and condition of the assets, in line with our Asset Management Policy;
- our scoping processes are robust, fit for purpose and utilise realistic demand inputs, resulting in prudent expenditure forecasts;

[5] NER, Cl 6.5.6(e), 6.5.7(e).
[6] NER, Cl 6.5.6(d), 6.5.7(d).

- our costing processes are robust, fit for purpose and incorporate realistic cost inputs, resulting in an efficient expenditure forecast; and
- the identified scope of work can be delivered efficiently and effectively by SA Power Networks.

Further, where forecast expenditure for the 2020-25 regulatory control period differs significantly from the actual and forecast expenditure for the 2015-20 regulatory control period, such differences will be explained in our 2020-25 regulatory proposal.

SA Power Networks' forecast opex and capex plans for the 2020-25 regulatory control period intend to achieve the targets specified in our Service Standard Framework and obligations defined in the clause 1 of the South Australian Electricity Distribution Code (**EDC**).

Finally, key assumptions underpinning the development of SA Power Networks' expenditure forecasts will be reviewed and endorsed by SA Power Networks' Board through a formal sign-off to be attached to the 2020-25 regulatory proposal.

6 Key inputs to the Expenditure Development Process

6.1 Overview

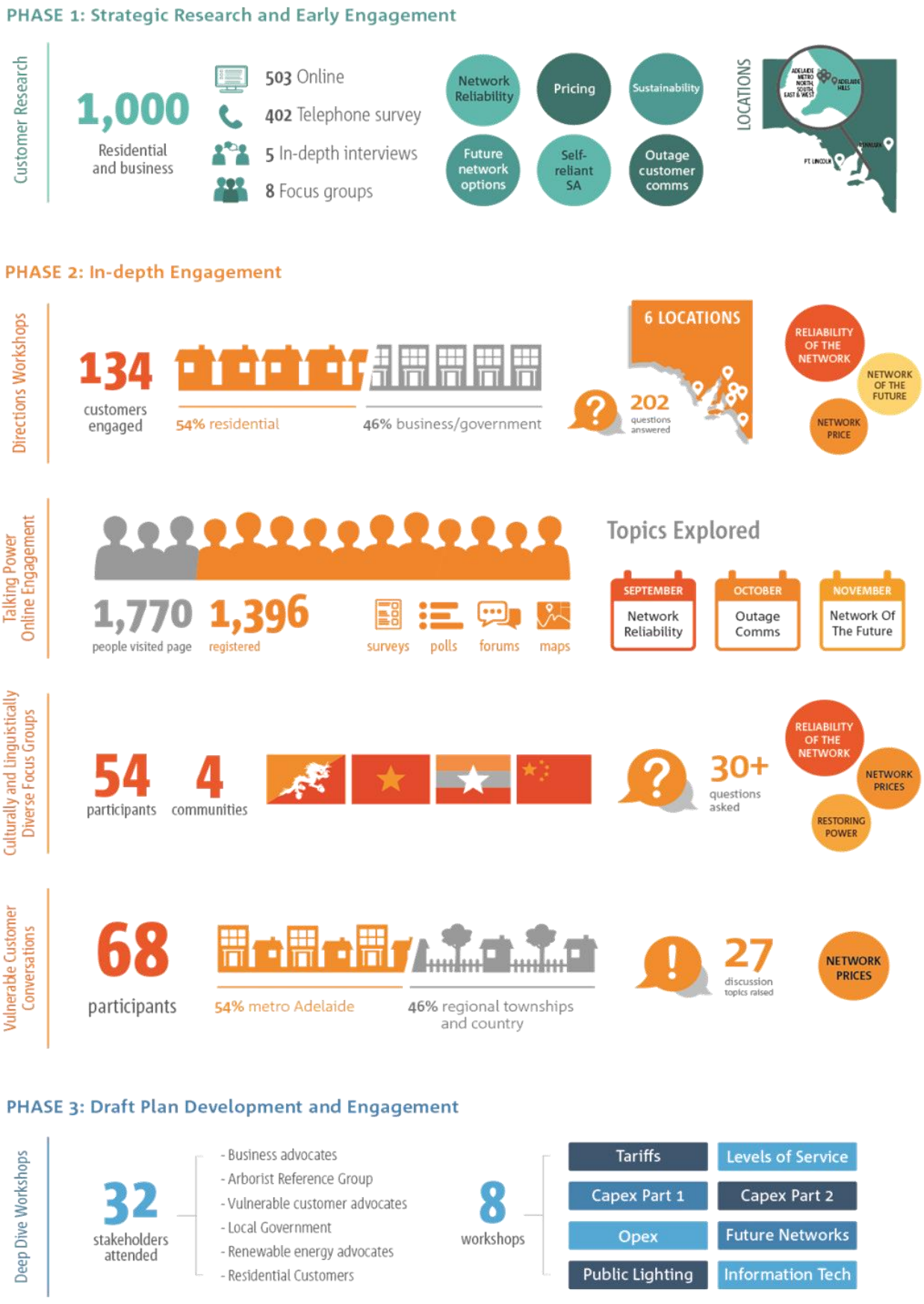
There are a number of key inputs that underpin SA Power Networks' expenditure forecasts, including:

- consumer and stakeholder insights gained from the consumer and stakeholder engagement program;
- applicable regulatory obligations or requirements, including jurisdictional service standards;
- demand forecasts;
- unit costs;
- escalation in the cost of labour, materials and services; and
- corporate governance processes.

These key inputs are described in detail in the following sections.

6.2 Our customer and stakeholder engagement

Figure 6-1: Stakeholder Engagement Process



Designing our customer engagement

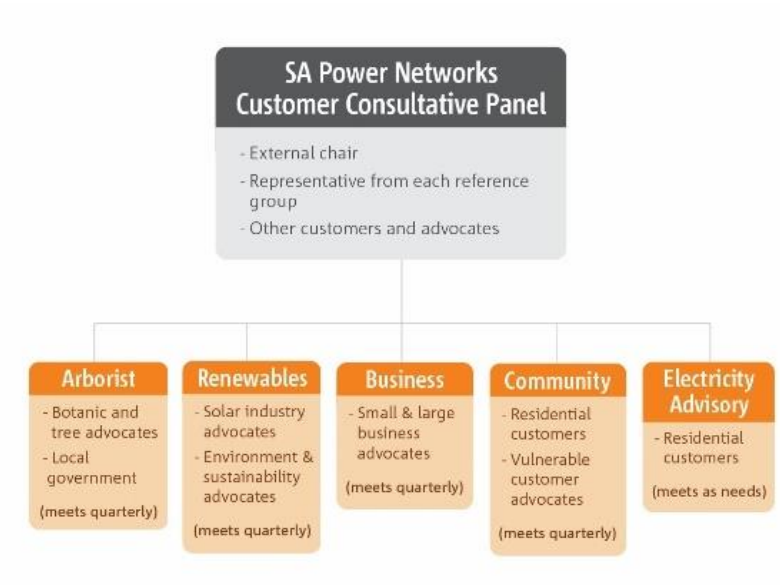
Our comprehensive customer engagement commenced in February 2017 (23 months out from lodging our 2020-25 regulatory proposal) and was designed as a progressive, phased program to provide multiple and diverse opportunities for dialogue and engagement.

Our program aims:

- to understand the expectations, views and priorities of our customers and stakeholders;
- to ensure our plans for the 2020-2025 regulatory control period are in the long-term interests of consumers.

The program has been underpinned by regular interactions via our reference group framework, which was established in late 2016 and comprises more than 60 customers and consumer advocates across the realms of business, renewables, community, and arborist, as well as our overarching Customer Consultative Panel (See Figure 6-2).

Figure 6-2: Customer Consultative Panel

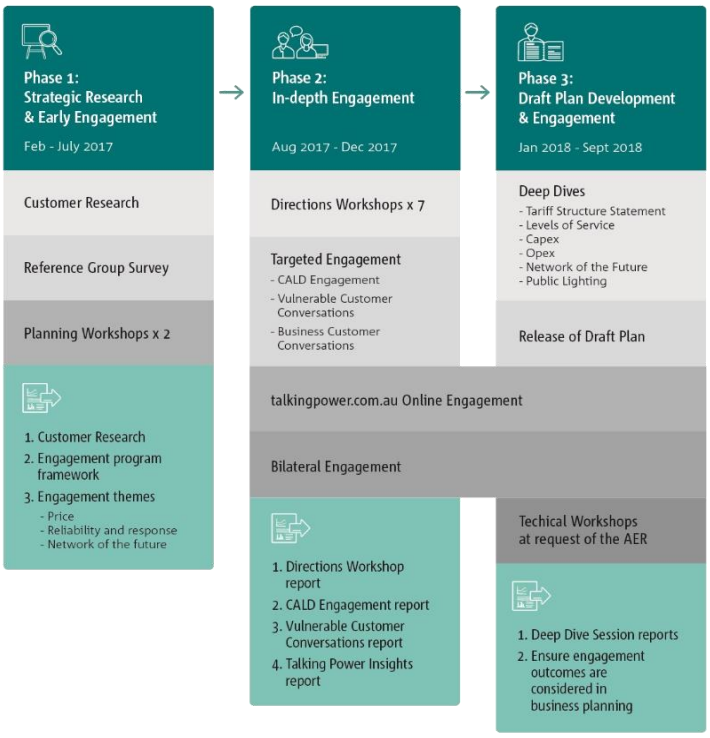


While largely a continuation of our business as usual engagement, our 2020-25 regulatory proposal customer engagement program also:

- considered past engagement learnings and feedback from stakeholders including the AER;
- was informed by our reference group members;
- reflects our desire for continuous improvement;
- was aligned to both AER and SA Power Networks' consumer engagement principles; and
- importantly, was guided by a 'no surprises' approach'.

We have continued to evolve our program and adopt new engagement activities. For example, we developed a dedicated website that utilises online engagement tools to reach a broad customer base (eg surveys, polls, forums on talkingpower.com.au).

Figure 6-3: 2020-25 Regulatory Reset Proposal Customer



Other targeted activities such as our Culturally and Linguistically Diverse (**CALD**) and vulnerable customer focus groups were developed and delivered in response to stakeholder feedback, and in partnership with some of our stakeholder organisations (thanks to Multicultural Communities Council SA, Australian Refugee Association, Uniting Care Wesley Bowden, and Uniting Communities).

A summarised version of our engagement program can be found at Figure 6-3.

Delivering our engagement

In 2017 our engagement was broad and sought customer insights around three key themes that were identified through preliminary customer research:

- network price;
- network reliability and resilience, and
- the network of the future.

The priorities emerging from this early engagement were considered in our preliminary expenditure forecasting, developed in late 2017. These preliminary forecasts were then used in early 2018 to engage with stakeholders through a series of 'deep dive' workshops, which explored all the capex and opex forecasts that will be presented in our draft plan, and eventually, in our regulatory proposal.

Tariff Structure Statement

Specific engagement on our 2020-25 Tariff Structure Statement (**TSS**) has been run in parallel to our broader regulatory proposal engagement.

ESCoSA's Service Standard Framework review

We have also worked closely with the Essential Services Commission of South Australia (**ESCoSA**) in relation to developing its Service Standard Framework review, considering ESCoSA's requirements in the design of our engagement activities and sharing engagement outcomes. We consider that the willingness of customers to pay for reliability levels has been comprehensively assessed through the ESCoSA's research, and is reflected in its draft reliability standards for the 2020-25 regulatory control period.

Engagement outcomes

Our comprehensive engagement program has provided rich, and at times diverse, feedback which we have sought to balance in our planning. Broadly however, customers have told us they value:

- **Keeping prices down**

  Broader electricity industry price increases are hurting customers, particularly those who are vulnerable or running a business. SA Power Networks must do its part to keep a lid on electricity prices.

- **A safe and reliable network**

  Reliable power remains a high priority for customers, particularly business. In some regional areas, customers asked for improvements to be made to local reliability, recognising that those improvements may come at a cost.

- **Transitioning to a new energy future**

  Customers asked SA Power Networks to begin the transition to a new energy future, and invest responsibly in the network to realise the potential benefits of distributed energy resources.

6.3 Regulatory obligations or requirements

To a significant extent, SA Power Networks' expenditure is driven by the requirement to comply with applicable regulatory obligations or requirements associated with the provision of standard control services, and in particular, service standards defined by ESCoSA.

ESCoSA prescribes the levels of reliability and customer service performance that SA Power Networks is required to meet. ESCOSA's Service Standard Framework is currently under review, with the final decision on any changes due in December 2018. SA Power Networks will develop its 2020-25 regulatory proposal based on compliance with these service standards. These service standards are detailed in the following:

- The South Australian Electricity Distribution Code; and
- The South Australian Electricity Transmission Code (**ETC**).

Other key regulatory obligations or requirements applicable to SA Power Networks include requirements to comply with:

- The National Electricity Law and associated Regulations;
- The National Energy Retail Law and associated Regulations;
- The National Electricity Rules;
- The National Energy Retail Rules;
- The National Energy Customer Framework;
- ESCoSA's Guidelines, and in particular, Guideline 1;
- The Electricity Act and associated Regulations;
- Electricity Distribution Licence;
- Distribution Network Lease;
- Distribution Network Land Lease;
- Retailer Credit Support Obligations under the NER;
- Privacy Law;
- Work, Health and Safety Legislation;
- Environment Protection Agency (**EPA**) requirements;
- Development approval processes;
- Australian Communications & Media Authority (**ACMA**); and
- The Australian Competition and Consumer Law.

6.4 Demand forecasts

When determining South Australia's spatial demand forecast we use a 10% and 50% probability of exceedance (**PoE**) forecasting methodology.

Our spatial demand forecast is reconciled with the Australian Energy Market Operator's (**AEMO**'s) State-wide Forecast. The forecasting model then performs regression analysis to weather correct recorded load readings with respect to historic temperatures dating back to 1978. In order to account for econometric factors, the temperature corrected PoE spatial forecasts are reconciled to the next level of the network (ie zone substations, which are reconciled to transmission network connection points, which are reconciled to the total State demand eg global demand). The model also considers the impact of past and future embedded generation (including Solar photo-voltaic (**PV**) systems), spot loads, load transfers and the behaviour of major customers, in arriving at the final forecast values for the nominated PoE levels.

When reconciling the aggregated Transmission Network Connection Points, the forecast aligns to AEMO's South Australian forecast trend. Major customer variations are eliminated by removing the four Transmission Network Connection Points dominated by a single major customer (Whyalla, Port Pirie, Snuggery, North West Bend), and the SA Water Desalination Plant, prior to the reconciliation. The reconciliation process then modifies the Transmission Network Connection Point forecast thereby including the global impact of energy efficiency, PV and economic factors as forecast by AEMO for South Australia. The major customers are separately forecast based on recent measured values and their advice concerning their future plans.

Each Transmission Network Connection Point forecast is then reconciled with the forecast trend for the zone substations that are supplied from the Transmission Network Connection Point, similarly the zone substation forecast is modified to include global factors forecast by AEMO.

6.5 Unit costs

Whilst SA Power Networks' forecast opex will be based on a base-step-trend approach (see chapter 7), a 'unit cost' based build-up will be utilised for the majority of SA Power Networks' forecast capex. Under this 'unit cost' based build-up approach, repetitive capex tasks or 'building blocks' (i.e. aggregate sections of newly installed plant or equipment) are multiplied by the anticipated number of tasks in a particular project or program to determine the capex forecast.

The unit costs utilised in SA Power Networks' unit cost build-up will be based on the costs historically achieved on similar projects and estimates of these 'building block' values assembled using a standard estimating tool that consolidates the major project items required to construct the relevant type of asset.

SA Power Networks must deliver appropriate financial returns to its owners whilst meeting its service standards, which in conjunction with incentive-based regulation, provides an environment to drive unit cost efficiency.

6.6 Input costs – labour, contracts, materials

SA Power Networks will develop individual forecasts of real growth of its key cost inputs. The same methodology and rates will be applied for both opex and capex forecasts.

To undertake these forecasts, SA Power Networks will consider the following broad categories of cost used to develop the forecasts:

- **Labour**: the costs associated with SA Power Networks' employees and supplementary labour contractors in delivering standard control services;
- **Contracted construction and labour services**: services acquired by SA Power Networks to deliver standard control services, eg electrical construction, civil works, traffic management and vegetation management;
- **Materials**: the costs of distribution equipment such as conductors, cables, insulators, circuit breakers, transformers, SCADA equipment, communications equipment and so on, as well as materials to produce poles, and other items of equipment such as vehicles and plant and tools; and
- **Other**: miscellaneous cost such as repairs, vehicle and equipment hire, telephone charges, advertising, travel and accommodation, insurance, training services and rates and taxes.

These categorisations are explained in more detail in SA Power Networks' AER approved Cost Allocation Method (**CAM**).

SA Power Networks will use weightings of labour related services, which will include contracted construction and labour services, and non-labour services, comprising materials and other, to forecast real price growth. We will also utilise economic forecasting consultants to develop independent forecasts of price movements.

For labour related services, SA Power Networks will consider wage movement forecasts for the Electricity, Gas, Water and Waste Services industry sector for South Australia. For non-labour services, we will consider forecast movements in the price of key commodity inputs such as copper, aluminium and steel, and the impact of foreign exchange movements for imported goods. For items not impacted by commodity price or foreign exchange movements, we will assume forecast CPI growth.

6.7 Corporate governance and asset management framework

6.7.1 Corporate governance

SA Power Networks is committed to the highest standards of Corporate Governance. To demonstrate this commitment, the Board has previously approved a Board Governance Policy and, in particular, a Corporate Governance Model.

The underlying theme of the Corporate Governance Model is that, on behalf of the SA Power Networks Partnership, the Board has been delegated responsibility for the overall corporate governance of the business including critical responsibilities of strategy setting, policy definition and compliance, and monitoring business performance.

The Board also leads the cultural tone of SA Power Networks by demonstrating the appropriate 'tone at the top'. The Board Governance Policy and Corporate Governance Model outline the manner in which the Board is pursuing the highest standards of corporate governance across SA Power Networks.

The key elements of corporate governance that will apply to SA Power Networks as defined by the Corporate Governance Model are:

- SA Power Networks Partnership – SA Power Networks is a business owned and operated by a partnership of the Partner companies. All decisions that are made in the business are made on behalf of the Partners. SA Power Networks' corporate governance model is about ensuring the right outcomes are achieved in the right way for the Partnership.

- Partnership Agreement – Through the Partnership Agreement, the Partners have delegated powers to a Board to operate the business of SA Power Networks – including decision making – on their behalf. Aside from defining the role of and establishing the Board, the Agreement also prescribes other key requirements of corporate governance at SA Power Networks.

- SA Power Networks' Board – the body representing the Partners which is responsible for the conduct of the SA Power Networks business and strategic direction.

- Board Sub-Committees – To assist in its functioning, the Board has established a number of Committees to allow detailed consideration of more complex issues. The current Committees of the Board are the Audit Committee, the Risk Management and Compliance Committee, and the Remuneration Committee. The roles of these Committees are defined in individual Committee Charters.

- Strategic Plan – The Strategic Plan sets the strategic direction of SA Power Networks. It details the Statement of Strategic Intent, the Business Values and the Key Performance Indicators. Under the Partnership Agreement, an annual Strategic Plan for SA Power Networks must be submitted to the Board for approval.

- Policies – The manner in which the Strategic Plan is to be achieved is effected by the Board through the approval of corporate policies. These determine the broad conduct of the business of SA Power Networks. The policies cover the key areas of Corporate Governance, Finance, People, Assets, and Customers and Community;

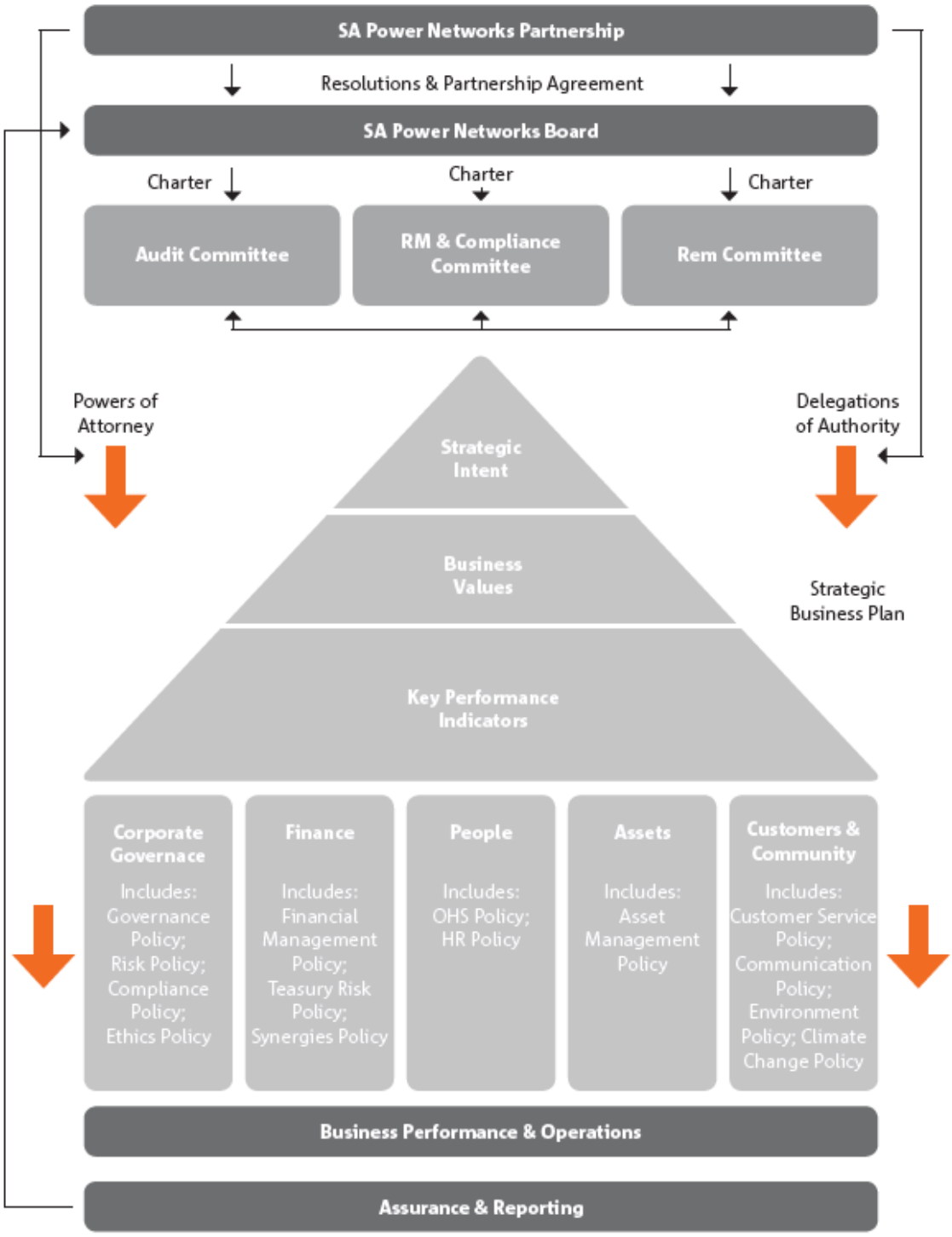
- Delegations of Authority – Day to day management of the business and the implementation of the Strategic Plan strategy and Policy requirements are formally delegated by the Board to the Chief Executive Officer and senior executives as set out in the various delegations.

- Performance Management – Periodically, management reports to the Board on its progress in achieving the Business Plan. Variations from the Plan are identified and acted upon.

- Assurance – To provide independent assurance to the Board that business operations and controls are in line with the corporate governance model, SA Power Networks utilises an internal audit function, Audit Services, reporting to the Audit Committee. In addition, financial aspects of SA Power Networks' external reporting to stakeholders are subject to external audit.

SA Power Networks Corporate Governance Model is shown in Figure 6-4 over.

Figure 6-4: SA Power Networks' Corporate Governance Model



SA Power Networks has a hierarchy of expenditure and asset management governance being:

- Board approved policies;
- Management directives;
- Asset Management Plans; and
- Processes (as described in operating procedures).

6.7.2 Asset management framework

The SA Power Networks Board-approved Asset Management Policy states that:

"SA Power Networks will employ good asset management practice to deliver value from assets and to manage the life cycle of assets prudently and efficiently .

SA Power Networks will operate existing assets within the full range of their engineering specification through adopting a risk based approach and will establish Asset Management Strategies, Objectives and Plans to deliver levels of service in the most cost-effective way."

SA Power Networks' overall Asset Management framework is well progressed in aligning its asset management practices with International Infrastructure Management practices and with ISO 5500. This framework facilitates prudent, consistent and repeatable decision making across the SA Power Networks' business with regard to asset management, in line with international good practice and a risk based approach to asset replacement and upgrade.

The current Asset Management Plan governs the development and annual review of the asset class based asset management plans in compliance with the Asset Management Policy. These asset management plans will form the primary basis for the development of SA Power Networks' capex forecast.

The governance framework also incorporates directives and procedures for the following key activities:

- identification of the need for investment;
- consideration of options and project justification;
- development and approval of projects;
- project execution; and
- operation and evaluation of outcomes.

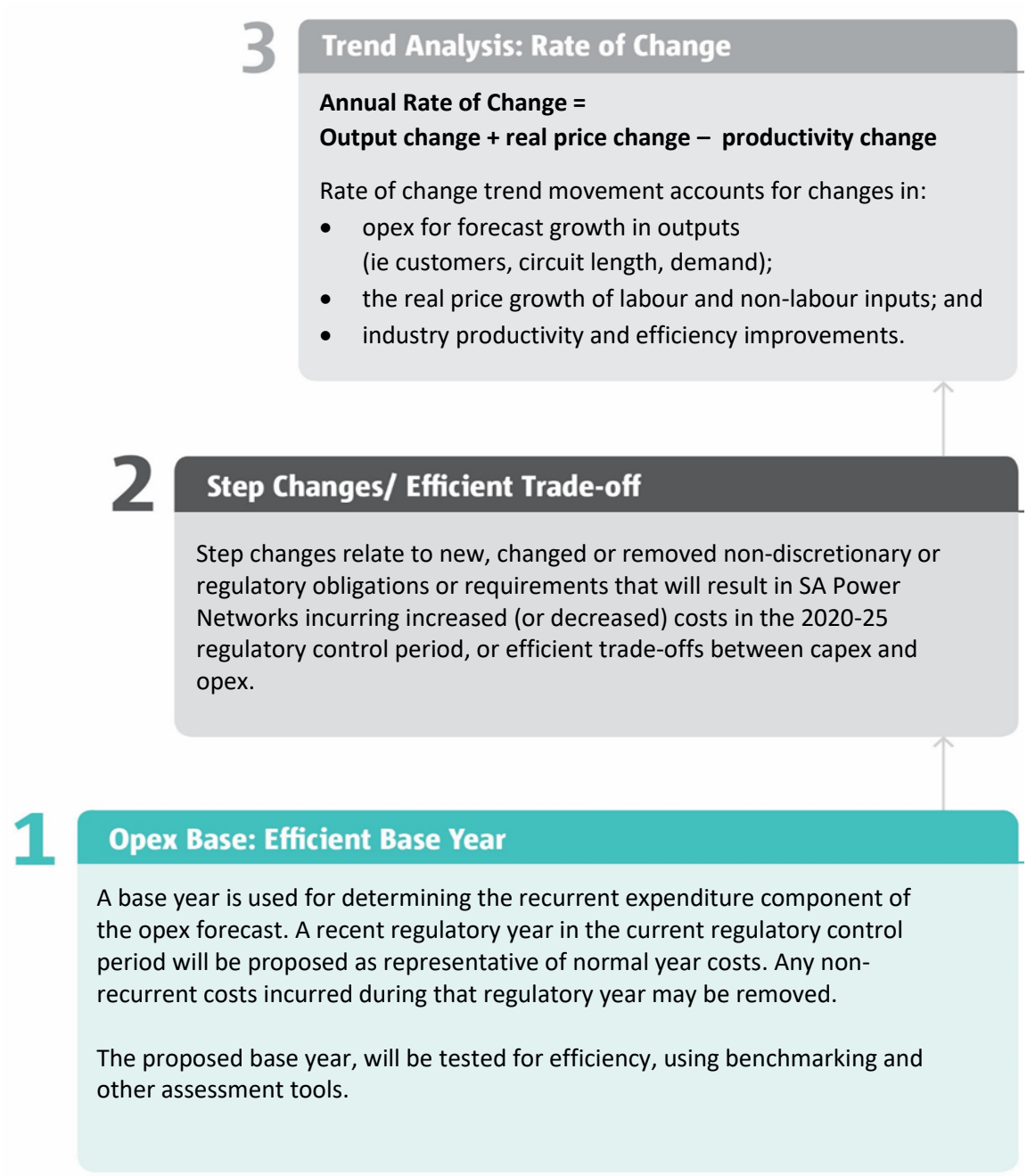
7 Operating Expenditure Development Process

7.1 Overview

SA Power Networks will develop its opex forecast for the 2020-25 regulatory control period employing a 'base-step-trend' approach. This method aligns with the preferred approach outlined in the AER's Expenditure Forecast Assessment Guideline[7].

The individual components of the base-step-trend Methodology is summarised in Figure 7-1 below.

Figure 7-1: Components of the base-step-trend methodology



[7] AER, Better Regulation Expenditure Assessment Guideline for Electricity Distribution, November 2013, page 22.

7.2 Efficient base year

SA Power Networks operates under an ex ante incentive regime. Under this regime, the incentive schemes have and are providing effective incentives for SA Power Networks to continuously seek and achieve efficiencies in its operations. Consequently, SA Power Networks' expenditures in the 'base year' will reflect efficient expenditures.

SA Power Networks will nominate the fourth year of the current 2015-20 regulatory control period, being 2018/19, as its efficient (revealed) base year. SA Power Networks considers that 2018/19 is best suited as the base year, as it will:

- be the most recent full regulatory year of actual reported performance, with audited regulatory accounts to be available before the AER is required to make its final distribution determination; and
- be representative of a normal year in terms of operating and economic conditions, that can reasonably be expected to prevail during the 2020-25 regulatory control period.

SA Power Networks considers that its opex in the 2018/19 regulatory year will provide an efficient base from which to forecast the opex required to fulfil its obligations with respect to standard control services during the 2020-25 regulatory control period. The AER will use its own assessment techniques to assess the efficiency of the proposed base year.

Base year adjustments

Adjustments will be applied to the base year to account for where base year costs are not representative of future costs. Where required, these costs will be removed from the base year expenditure. Additionally, an adjustment will be made to account for the efficient incremental final regulatory year expenditure in the current regulatory control period.

These adjustments will provide an appropriate base level of costs for the commencement of the 2020-25 regulatory control period.

7.3 Step Changes and Trade-Offs

Having defined an efficient base year for its forecast opex, the next step in SA Power Networks' forecasting process will involve identification of any step changes or trade-offs that may apply in the 2020-25 regulatory control period.

Step changes will be considered where there are new, changed or removed non-discretionary or regulatory obligations that will result in SA Power Networks incurring increased (or decreased) costs in the 2020-25 regulatory control period.

Efficient trade-offs represent:

- costs that are currently incurred through services provided internally, but would be more efficiently procured externally; and
- trade-offs that require additional opex, which is offset by lower capex to achieve overall business efficiencies.

Any step changes or trade-offs identified will be refined and substantiated through analysis, investigation and rigorous review to ensure alignment with the Rules, and consistency with key assumptions and cost drivers.

7.4 Rate of change

Under the 'base-step-trend' assessment approach, the rate of change forecasts the trend movements in output growth, real prices and productivity. Outlined below is SA Power Networks' approach for each component of the rate of change, for the 2020-25 regulatory control period.

Output Growth

The expenditure levels of Network Service Providers are highly influenced by the scale of their operations. For example, it is reasonable to expect, all other things being equal, that a DNSP with a network twice as large would incur almost twice the maintenance costs. It is also reasonable to expect that over time, increases in the scale of networks creates a growing demand for operating and maintenance services.

In forecasting the output growth escalation that will apply to SA Power Networks' operating expenditure during the 2020-25 regulatory control period, SA Power Networks will apply output measures, aligned with the Reset RIN, eg;

1. Customer growth: growth in customer numbers;
2. Network growth: growth in the size of the distribution network; and
3. Demand growth: growth in energy demand on the network over the 2020-25 regulatory control period.

Real Price Growth

Price growth impacts the expected future input costs to maintain and operate a distribution network. Real price growth reflects movements in prices that are expected to be different to inflation.

The factors for labour and non-labour expenditure applied in SA Power Networks' opex forecast will be consistent with those used to calculate capex. Section 6.6 above, describes the application of input cost escalation rates that will be used to escalate SA Power Networks' opex.

Productivity change

Opex should reflect the efficient costs of a prudent Network Service Provider. To remain efficient, improvements in productivity are expected to occur over time. Forecast productivity change reflects improvements that it is reasonable to expect a prudent Network Service Provider to achieve. Ultimately, productivity change forecasts the estimated shift in the efficient frontier of the industry.

In preparing its opex forecast, SA Power Networks will consider the most appropriate rate of adjustment to account for changes in productivity.

7.5 Non-reveal year expenditure

Debt raising costs

Debt raising expenditure relates to costs associated with raising debt to fund SA Power Networks' expenditure programs. The forecast of debt raising costs will reflect the profile of raising additional debt and the refinancing of existing debt.

Debt raising costs do not form part of the 'base-step-trend' methodology. Instead, they are calculated using the AER method of applying a benchmark debt raising unit rate to the debt portion of the regulatory asset base.

Guaranteed Service Level (GSL) payments

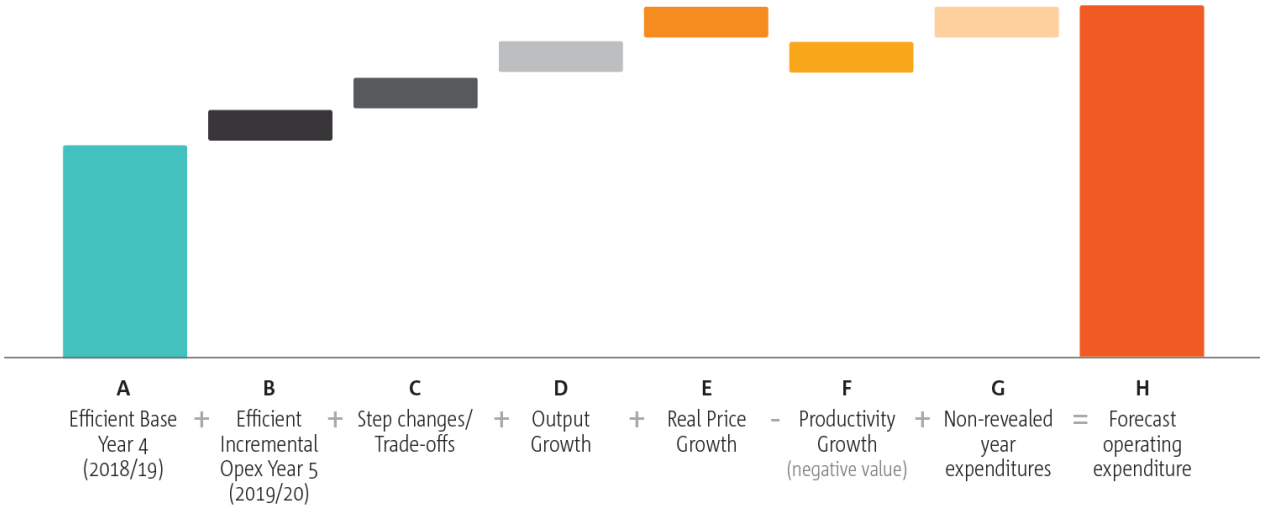
GSL payments to customers for interruption to supply are prescribed in ESCoSA's Service Standard Framework. They are currently uncapped in South Australia and apply even on major event days. SA Power Networks is concerned that the base-step-trend process does not adequately capture the volatility of GSL reliability payments (which is exacerbated by major event days).

ESCoSA is currently reviewing its Service Standard Framework for the 2020-25 regulatory control period. If no changes to the current structure of GSL payments are proposed, prior to submitting our regulatory proposal, we will discuss with the AER the most appropriate method for forecasting and recovering such costs.

7.6 Summary of cost build-up

A summary of SA Power Networks opex forecast build-up for the 2020-25 regulatory control period employing the base-step-trend approach to forecasting is shown diagrammatically in Figure 7-2.

Figure 7-2: SA Power Networks' cost build-up under Base-Step-Trend



7.7 Application of Efficiency Benefit Sharing Scheme (EBSS)

The EBSS incentivises distributors to find operating efficiencies and therefore incur less opex. Distributors that can maintain and operate the electricity network at a lower cost than allowances (and still meet applicable service standards), may retain the benefit of lower costs over the regulatory control period, after which customers will gain the benefit through lower opex allowances in the next regulatory control period.

SA Power Networks will seek to continue to apply the EBSS for all costs determined through the base-step-trend process for the 2020-25 regulatory control period.

8 Capital Expenditure Development Process

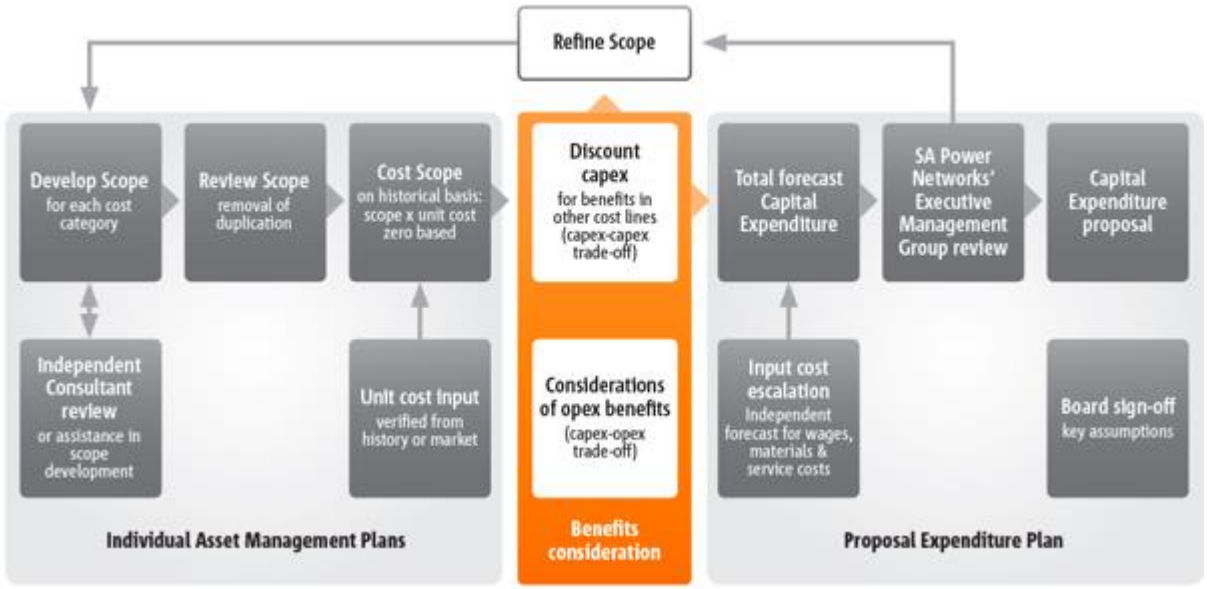
8.1 Overview

SA Power Networks' capex plan will be developed by aggregating a number of generally bottom-up asset management and/or expenditure plans across a range of expenditure categories. Where prudent, SA Power Networks will engage independent, expert advice to review and support its plans, processes and expenditure forecasts.

In addition to our bottom up forecast, we will apply a top-down assessment at a portfolio level to ensure a holistic and strategic consideration of our forecast capex program. When reviewing our capex program, we will take into consideration network performance and risk.

The process that will be utilised to undertake the capex forecast is illustrated in Figure 8-1 below. The specific processes associated with each individual capex category are described in more detail in sections 8.2 through 8.6 below.

Figure 8-1: SA Power Networks' capex development and forecast process



In general, the scope of each capex plan, and in many cases the corresponding asset management plan, will be determined using a risk based approach that aligns with SA Power Networks' capital governance procedures. Such an approach ensures that SA Power Networks can:

- meet forecast demand over the 2020-25 regulatory control period;
- comply with all applicable regulatory obligations or requirements associated with the provision of standard control services;
- maintain levels of customer service, thus meeting its jurisdictional service standard obligations;
- maintain acceptable levels of business risk; and
- maintain acceptable levels of safety risk to the public and employees.

The capex plans, strategies and practices for the 2015-20 regulatory control period are considered as a key input into the development of the forecast scope. In addition, SA Power Networks' consumer and stakeholder engagement program (refer section 6.2) has led to the identification and understanding of various stakeholder and customer issues and concerns. This information and standard practice in relation to identified issues and concerns will be given appropriate weight in developing capex plans.

Once the scope of a capex plan has been determined, it will be costed, generally utilising unit costs based on historical 'building block' estimates for similar projects and assembled in SA Power Networks' standard estimating system (refer section 6.5 above).

In developing its capex forecasts, SA Power Networks will also consider the substitution possibilities between opex and capex. The interaction between individual capex categories will also be considered by performing a 'trade-off' or benefits review. This review will be conducted prior to aggregation of the capex categories, whereby each proposed expenditure scope will be examined for potential benefits in other expenditure lines. For example, where it is more efficient we will procure services or solutions from the market rather than invest in our own assets, whether that be through IT cloud solutions, non-network alternatives procured from third parties, or data procured from third parties.

Finally, after the aggregation of individual capex forecasts, escalation for forecast changes in the real costs of materials, labour, contract services and other inputs anticipated over the 2020-25 regulatory control period will be applied (refer section 6.6 above).

The expenditure build-up will be undertaken in compliance with SA Power Networks' CAM, as approved by the AER.

8.2 Demand Driven Capital Expenditure

Demand driven capex relates to expenditure required to achieve the capex objective to meet or manage the expected demand for standard control services over the 2020-25 regulatory control period.

Key inputs that underpin SA Power Networks' demand driven capex forecasts will include:

- Spatial peak demand growth; and
- Network planning criteria: defining the level of redundancy required (at SA Power Networks' connection points, zone substations and sub-transmission lines) to meet EDC and ETC standards, and reliability standards and standards related to the maintenance of security of supply.

8.2.1 Spatial demand forecast

Demand refers to the maximum power that must be delivered by the distribution network, and grows in response to both the increased demand of existing customers as they add or upgrade appliances and equipment, and the connection of new customers to the distribution network.

For the purpose of developing capex forecasts, spatial demand growth forecasts are utilised. This approach is required because demand in a particular region, and therefore the capacity requirements of the electricity infrastructure in that region, does not necessarily correlate to overall system demand growth.

SA Power Networks has developed a statistically based spatial demand forecasting methodology to produce spatial demand forecasts at 10% and 50% PoE forecast levels of demand. For each PoE forecast demand level, the rate of demand growth is calculated from temperature corrected historic demands for a particular asset over a period of time. Essentially, the trend between recently measured demands for each specific network element is extrapolated to forecast future demand, taking into account specific local customer driven changes, spot loads and embedded generation (including PV systems). The aggregated impact of customer PV is considered in the forecasts based on measured performance of typical PV installations, installed PV capacity, time of peak demand, and forecast PV growth rate.

SA Power Networks develops three independent types of demand forecasts, being:

- ElectraNet (transmission network) connection points—comprising 48 points, some of which are aggregated (due to the meshed nature of the underlying sub-transmission network);
- Zone substations—comprising 416 points; and
- High voltage feeders—comprising 1200 zone substation exit points.

These spatial demand forecasts are reconciled (using diversity and coincidence factors) to each other and the overall state-wide demand forecast to ensure their consistency and integrity. Once the spatial demand forecasts have been verified, these are then used to develop the 66kV and 33kV sub-transmission line forecasts using load flow applications.

8.2.2 Network planning criteria

SA Power Networks' Network Planning Criteria are a key driver of future demand related capex because they define when a network 'constraint' exists that must be addressed by means of a suitable network or non-network solution. Generally, such constraints occur when forecast load demand exceeds the capacity of a particular distribution system element (e.g. substation transformers or sub-transmission lines).

The Planning Criteria also define the level of redundancy required in particular parts of the distribution network. For example, substations in the Adelaide CBD have 'N-1' redundancy on major plant items, meaning that if a transformer in the zone substation or a sub-transmission line were to fail, supply to customers would not have to be interrupted, even under peak loads. Zone substations outside the Adelaide CBD have a lower level of redundancy and in some cases no redundancy.

SA Power Networks' Network Planning Criteria have been developed to ensure compliance with its service obligations under the EDC and the conditions of its Distribution Licence. The criteria must also ensure that the requirements relating to power quality, short circuit capability, system stability clearing times, reliability and system security contained in Schedule 5.1 of the Rules are met. SA Power Networks is also obliged to comply with the ETC, even though this code is mainly of relevance to ElectraNet in South Australia. The ETC requirements are codified and therefore mandatory.

Key steps in the network planning process include:

- forecast load at key points in the distribution network;
- compare the forecast demand to the relevant capacity of the distribution network to identify any forecast network constraints;
- identify the optimal method of resolving these identified needs taking into consideration cost, timing and the technical viability of the credible options explored—this includes having regard to and testing the market for any potential non-network alternatives; and

- for major projects over $5 million, formally consulting with third parties seeking alternative proposals to resolve the 'identified need' through the Regulatory Investment Test for- Distribution (**RIT-D**) process.

A summary of SA Power Networks' Network Planning Criteria are published in the Distribution Annual Planning Report (**DAPR**).

Demand driven capex comprises:

- Capacity expenditure: to upgrade the capacity of the existing distribution network, in response to spatial peak demand growth; and

- Customer connections expenditure: required to connect or upgrade specific customers' connections to the distribution network.

8.2.3 Capacity expenditure

As described above, capacity related expenditure relates to requirements to upgrade the capacity of the distribution network in response to spatial demand growth. Capacity related expenditure is a significant component of SA Power Networks' capex program. It comprises two key components:

- low voltage capacity related works: relating to work to upgrade distribution transformers and low voltage mains; and

- feeder, sub-transmission, and substation related works: at high voltage.

8.2.3.1 *Low voltage capacity program*

Distribution transformers and low voltage network constraints are forecast based on measured demand from short term load and voltage recorders. These short-term recorders are deployed to the sections of the distribution network where customer quality of supply enquiries have been received and where it is forecast that there may be overloaded assets (transformers, cables etc) based on the number of connected customers and their 'After Diversity Maximum Demand' (**ADMD**).

8.2.3.2 *Feeder, sub-transmission, and substation capacity program*

SA Power Networks' feeder, sub-transmission, and substation capacity program of works will be generated from:

- requirements to upgrade SA Power Networks' infrastructure resulting from changes to the ETC;

- works associated with changes caused by or required by ElectraNet at our connection points with the transmission system;

- the identification of a network constraint according to the Network Planning Criteria (refer section 8.2.2); or

- a network extension required to supply a new customer region (eg greenfield development areas).

The process considers when network and/or specific customer load growth breaches the Network Planning Criteria, triggering a network constraint that must be addressed by either network or non-network solutions, or a combination thereof. It should also be noted that within SA Power Networks' annual planning process, as described in SA Power Networks' Asset Management Plan, capital projects greater than $5 million in value (as varied in accordance with a cost threshold determination) are evaluated according to the RIT-D.

8.2.3.3 *Consideration of non-network alternatives*

SA Power Networks recognises that alternatives to network solutions may exist which deliver either a lower cost solution or provide greater benefits to the national electricity market (including electricity consumers) as a whole. Non-network solutions may include (but are not limited to):

- using or procuring response from Distributed Energy Resources (**DER**) to manage constraints on the network—this includes either by investing in our own network-side devices (eg grid scale storage or generation), or procuring DER response from a third party as the most efficient and prudent option in the relevant circumstances;
- shifting consumption to a period outside the peak period;
- increasing customer's energy efficiency; or
- curtailing demand or generation export into the network to avoid a network constraint, with the agreement of the relevant customer(s) or their appointed agents.

As standard practice, SA Power Networks actively scans for potential non-network alternatives to potential network needs, irrespective of the financial materiality of the need and whether the need is likely to involve a network augmentation or replacement. In considering the potential for non-network alternatives, we consider various factors including, but not limited to, whether such alternatives:

- might resolve all of the identified network constraints;
- are technically viable (eg sufficient load reduction can be achieved to remove or delay the identified need);
- are economically viable (ie the combination of costs and benefits exceed those of alternative solutions); and
- are achievable within the required timeframe to resolve the identified need.

Further, all SA Power Networks' capital augmentation and replacement projects estimated to cost in excess of $5 million (as varied in accordance with a cost threshold determination) are subject to the RIT-D. This test is aimed at determining instances where there might be efficient alternatives including via non-network solutions to address a network constraint. Where a project meets certain assessment criteria, and it is deemed that non-network options may be viable, a Non-Network Options Report is created and issued seeking alternative solutions to remedy the identified network constraint.

Under the AER's new Demand Management Incentive Scheme (**DMIS**), expenditure on efficient non-network options relating to demand management may be eligible for project incentive payments. To obtain the benefit of these project incentive payments, DNPSs will need to follow the project assessment, market testing, and compliance reporting processes (which include the 'minimum project evaluation requirements') set out in the DMIS.[8]

SA Power Networks will seek to apply the DMIS for the 2020-25 regulatory control period.

[8] AER, Demand Management Incentive Scheme (DMIS)—Electricity distribution network service providers, December 2017.

8.2.4 Customer connection expenditure

Customer connection expenditure is associated with additions, upgrades or alterations resulting from the requirements and requests of specific customers. This expenditure will be divided into a number of categories, being:

- **Basic Connection Services and Minor Negotiated Connections (less than $30,000)** — connections generally associated with new houses or additions and alterations to existing houses;
- **Real Estate Developments** — connections to the existing distribution network of new housing developments;
- **Rebates** — payments to customers for assets which have been gifted to SA Power Networks; and
- **Major Negotiated Connections (more than $30,000)** — connections generally associated with business investment (eg mining, manufacturing, non-residential buildings, retail centres, agriculture), and government and private infrastructure investment (eg schools, railways and water supply).

SA Power Networks receives funding directly from some customers towards their connection, in accordance with the SA Power Networks Connection Policy and relevant AER guidelines. The Customer Contributions total is net of Rebates, which recognise the future income that will be generated through the construction of the customer asset.

8.2.4.1 *Customer contribution forecast basis*

SA Power Networks complies with the AER's connection charge guidelines published under clause 5A.E.3 of the Rules. These guidelines set out the method that must be followed by SA Power Networks in determining the capital contribution for customer's addition or alteration to the distribution network.

In order to forecast Customer Contributions, SA Power Networks will utilise both historical ratios and forecasts reflective of the connection charge guidelines for contributions to expenditure within each specific category of customer connection expenditure.

8.3 Network expenditure associated with quality, reliability and security of supply

This category of expenditure relates to the requirement to achieve the capex objectives set out in clauses 6.5.7(a)(2) and (3) of the Rules to comply with all applicable regulatory obligations or requirements associated with the provision of standard control services and to generally maintain the quality, reliability and security of supply of standard control services and the reliability and security of the distribution system through the supply of standard control services, and includes expenditure related to:

- **Asset replacement**: expenditure required to maintain an appropriate level of risk, taking into account the age and condition of network assets;
- **Security of supply**: to manage the risk of widespread power outages resulting from failures in individual network elements or network instability; and
- **Reliability expenditure**: being specific projects required to ensure compliance with defined reliability service standards.

8.3.1 Asset replacement

Asset replacement expenditure is associated with the replacement of assets either from failure (unplanned asset replacement) or on the basis of value which takes into consideration many factors including:

- Customer experience;
- Environmental impact;
- Financial impact;
- Regulatory compliance;
- Reliability of the network;
- Reputation; and
- Safety.

SA Power Networks' forecast capex will be determined by:

- for unplanned asset replacement, applying a forecast based on historical failure rates; and
- for planned asset replacement, assessing a probability of failure and the consequence of failure.

8.3.2 Security of supply expenditure

The security of supply expenditure category includes a number of one-off strategic projects, aimed at ensuring the future security of supply of the distribution network. Although these projects may reasonably be assigned to other cost categories, they will be separately identified for the purpose of SA Power Networks' expenditure forecasts to provide additional transparency and clarity.

Security of supply expenditure will include capex forecasts in relation to SCADA and network control and visibility, aimed at improving the security of the distribution system.

8.3.3 Reliability expenditure

Reliability capex is required to maintain SA Power Networks' compliance with reliability standards and maintain quality customer service as per the current jurisdictional service standards under the EDC.

In the absence of specifically targeted reliability expenditure, SA Power Networks' customers would experience deterioration in reliability performance, as the network is subject to being adversely impacted by the increasing age profile of assets, changing network configurations, changes to network standards and operational procedures and a changing and more uncertain climate.

Reliability expenditure is generally targeted to prevent the causes of interruptions, reducing customers impacted or reducing supply restoration times. Whereas Asset Replacement expenditure is associated with 'one for one' replacement of assets, reliability expenditure is generally associated with the installation of new equipment at new locations, in order to maintain reliability performance. This expenditure is managed within an annual Reliability Plan.

In addition, SA Power Networks maintains a suite of emergency response plant including generators and equipment that assist with restoring supply to customers during planned and unplanned outages. Capex for this equipment is included within the reliability expenditure category.

Reliability capex is required to maintain, not improve, the reliability of the distribution network.

8.4 Expenditure associated with addressing safety and environmental risks

Expenditure within this category is required substantively to achieve the capex objective in clause 6.5.7(a)(4) of the Rules to maintain the safety of the distribution system through the supply of standard control services. This capex is associated with:

- **Safety expenditure**: to maintain appropriate safety levels in relation to the distribution system for SA Power Networks' workforce and the general public;
- **Environmental expenditure**: to address environmental risks within the distribution system and comply with applicable EPA requirements; and
- **Other expenditure**: Power Line Environment Committee (**PLEC**) undergrounding and a number of other minor expenditure categories.

Similar to the remainder of the capex program, unit costs will be utilised to develop capex forecasts for safety and environmental projects, using historical building blocks assembled in the standard estimating tool.

8.4.1 Safety expenditure

Safety expenditure is the capex associated with maintaining appropriate levels of safety in relation to the distribution system for SA Power Networks' workforce and the general public. Safety related asset management plans are driven primarily by risk and legislative requirements, but will also consider expectations identified during SA Power Networks' customer and stakeholder engagement process.

Safety projects will consider factors such as substation security, replacement of safety risk assets and bushfire risk management.

8.4.2 Environmental expenditure

Environmental expenditure is undertaken to ensure appropriate management of environmental risks, community and social responsibilities, and compliance with EPA and legislative requirements. It will also consider expectations identified from SA Power Networks' consumer and stakeholder engagement process. SA Power Networks' environmental expenditure will contain ongoing programs related to:

- substation transformer oil containment; and
- testing for and phased removal of Polychlorinated Biphenyl contaminated substation assets in accordance with the Australian National Polychlorinated Biphenyl Management Plan.

SA Power Networks has developed asset management plans for each of these programs.

The environmental program is typically based on historic levels of expenditure.

8.4.3 PLEC expenditure

PLEC expenditure: regulated expenditure associated with the undergrounding of selected sections of the distribution network throughout South Australia. This expenditure is governed by a legislated formula.

8.5 Non-Network expenditure

Non-Network expenditure is not directly referenced in any of the capex objectives, but supports delivery of all four capex objectives. SA Power Networks' categories of non-network capex are:

- Information & Communication Technology;
- Property;
- Fleet; and
- Plant and Tools.

8.5.1 Information & Communication Technology (ICT)

ICT expenditure is associated with the provision of ICT systems and services to support SA Power Networks' business operations.

The ICT capex comprises expenditure required to support and maintain the existing ICT applications and infrastructure, and any additional expenditure that may be required to support business operations (eg to support customer communications).

Historical costs and cost drivers will be utilised to forecast base ICT expenditure, with business cases, that include option assessments prepared for specific programs or projects.

8.5.2 Property

Property capex is associated with the provision of office and depot accommodation, buildings and property in line with operational and WHS requirements, noting that substation property and powerline easement expenditure forecasts are incorporated within the cost categories referred to in sections 8.2 to 8.4 above.

Property costs will be categorised as relating to:

- depots and facilities based on:
    - capacity, maintenance requirements, and modification requirements to existing buildings on a location by location basis; and
    - new building generic depot designs costed by independent experts;
- asbestos removal progressively assessed on the basis of risk; and
- depot security fencing based on the 'public' or 'at risk' aspects of existing fence lines.

Historical costs and cost drivers will be utilised to forecast recurrent projects, with business cases prepared for any major new works.

8.5.3 Fleet

Fleet expenditure relates to the purchase, replacement or rebuild costs associated with SA Power Networks' significant commercial and passenger fleet.

The SA Power Networks fleet comprises heavy or commercial fleet, eg cranes, elevated working platforms, trailers, wire winding equipment etc; and light or passenger fleet, eg cars and utility vehicles.

SA Power Networks' fleet capex forecast is mainly a zero-based aggregate of the individual fleet plans, and incorporates the following:

- heavy and light fleet replacement or rebuild capex according to either legislative requirements or manufacturers recommendations;
- new fleet associated with forecast employee growth and operating crew structures; and
- compliance to legislation and standards as they apply to the varying categories of Fleet, eg Workplace Harmonisation Act, Compliance and Enforcement Legislation, AS 1418.10, AS2550.10.

Fleet management plans will be provided and expenditure forecasts will be either age, condition or kilometre based.

8.5.4 Plant and Tools

This expenditure is associated with the purchase of plant and tools, generally for SA Power Networks' field based personnel.

The main drivers for Plant and Tools expenditure are:

- workforce growth;
- new and replacement specialist tools in support of SA Power Networks' condition monitoring strategies; and
- standardisation of plant and tools for the existing workforce.

8.6 Other expenditure

This expenditure is related to abnormal impacts not directly attributable to the achievement of the capex objectives, and incorporates:

- Equity raising costs; and
- Superannuation costs.

8.6.1 Equity raising costs

Equity raising expenditure relates to costs associated with raising capital to enable SA Power Networks' proposed capital expenditure program to be undertaken.

Equity raising costs will been included in SA Power Networks' capex forecast rather than its opex forecast because the nature of equity raising is such that it exists in perpetuity until the assets being funded are realised.

Equity raising costs will be forecast consistent with the AER's specified methodology.

8.6.2 Superannuation costs

Superannuation expenditure relates to the capital allocation of the superannuation contributions that SA Power Networks is required to make to the EISS and other superannuation schemes in the next regulatory control period.

8.7 Application of Capital Expenditure Sharing Scheme (CESS)

The CESS incentivises DNSPs to improve efficiency and therefore incur less capex. DNSPs that are able to deliver standard control services at a lower cost than their capex allowances approved by the AER prior to the start of a regulatory control period, may retain 30% of the cost savings. Customers benefit as a lower capex will lead to a lower Regulated Asset Base (**RAB**) which, in turn, will lower the maximum related charges DNSPs charge customers in the next regulatory control period.

SA Power Networks will seek to continue to apply the CESS for the 2020-25 regulatory control period.

9 Alternative Control Services

Alternative control services relate to customer specific or customer related services. In our 2020-25 regulatory proposal, SA Power Networks will submit a forecast for fee for service, as well as quoted services, for services classified as alternative control services under our Framework and Approach Paper.

Volumes will be forecast based on historical activity plus any known changes. Any variation from historical levels will be explained.

We will submit a price list for fee for service for services classified as alternative control services, as well as inputs to quoted services, such as labour, materials, services and overheads allocated in accordance with the CAM.

Shortened Forms

Acronym/Abbreviation	Definition
ACMA	Australian Communications & Media Authority
ADMD	After Diversity Maximum Demand
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
CALD	Culturally and Linguistically Diverse
CAM	Cost Allocation Method
capex	Capital Expenditure
CESS	Capital Expenditure Sharing Scheme
DAPR	Distribution Annual Planning Report
DER	Distribution Energy Resources
DMIS	Demand Management Incentive Scheme
DNSP	Distribution Network Service Provider
CPI	Consumer Price Index
EBSS	Efficiency Benefit Sharing Scheme
EDC	Electricity Distribution Code
Electricity Act	Electricity Act 1996 (SA)
EPA	Environment Protection Agency
ESCoSA	Essential Services Commission of South Australia
ETC	Electricity Transmission Code
GSL	Guaranteed Service Level
ICT	Information & Communication Technology
opex	Operating Expenditure
NECF	National Energy Consumer Framework
NER or Rules	National Electricity Rules
PLEC	Power Line Environment Committee
PoE	Probability of Exceedance (demand)
PV	Photo-Voltaic
RAB	Regulated Asset Base
RIT-D	Regulatory Investment Test – Distribution
TSS	Tariff Structure Statement