Expenditure forecasting methodology
2019-2024 Regulatory Proposal

June 2017

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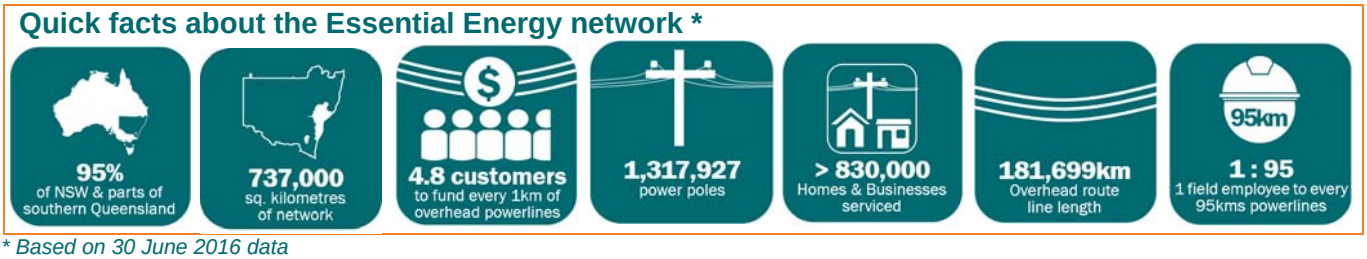
1. Overview

1.1 About Essential Energy

Essential Energy's electricity distribution network spans 95 per cent of New South Wales' land mass and parts of southern Queensland, providing electricity network services:

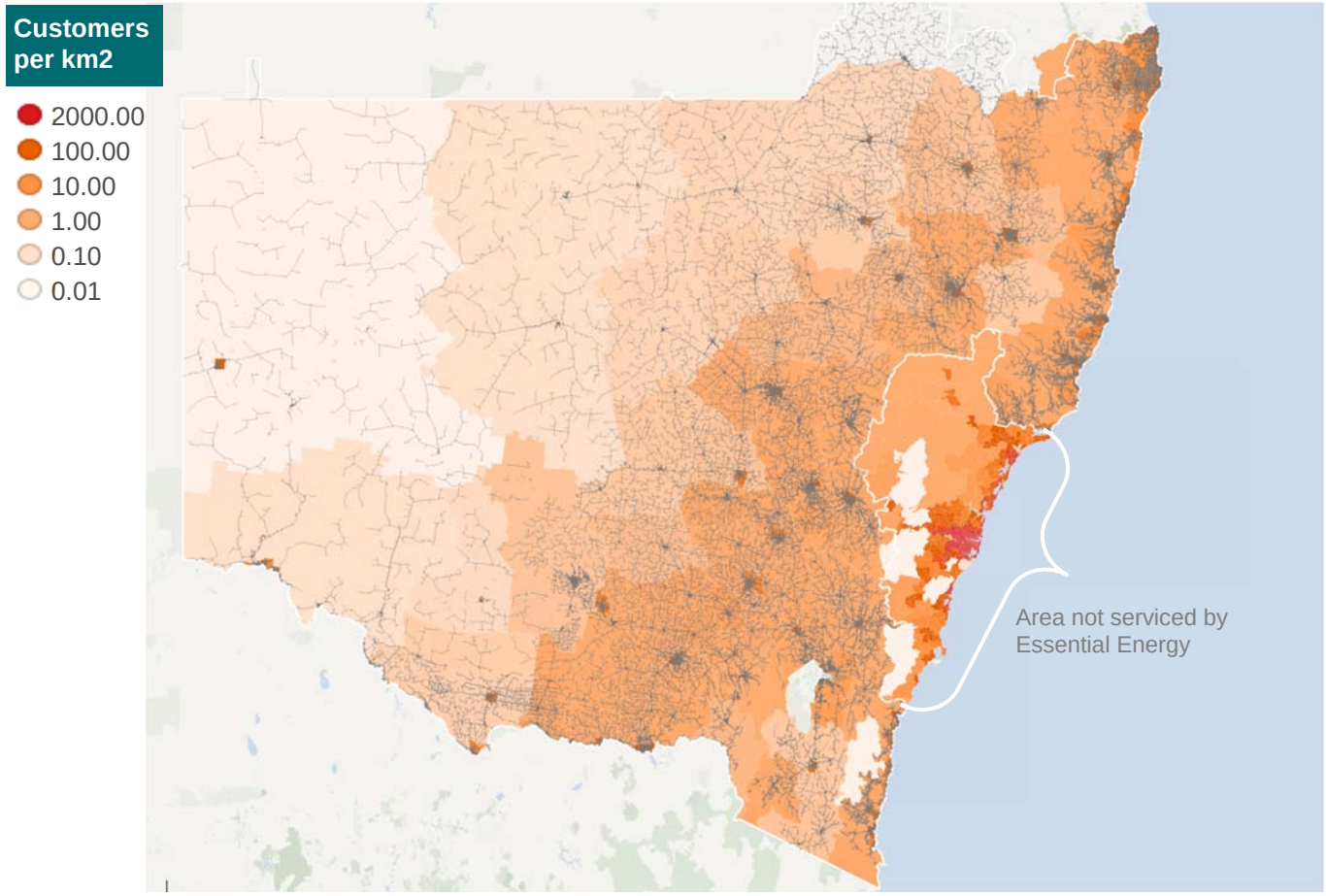
- to more than 830,000 homes and businesses in 1,500 regional, rural and remote communities; and
- that involve the building and maintenance of 737,000 square kilometres of network encompassing over 180,000 kilometres of powerlines, 1.3 million power poles, 136,000 distribution substations and 326 zone substations across extremes of terrain and climate.



** Based on 30 June 2016 data*

Essential Energy's network is characterised by medium to very low customer density. This is demonstrated in Figure 1 showing Essential Energy's electricity network overlayed by NSW customer numbers per square kilometre.

Figure 1 – Customer density



Our network physically reaches customers in the most far reaching corners of NSW and is like no other network in Australia. It is unique in terms of the geographic area it covers, the terrain it traverses, the vegetation that grows within it and the diversity of weather that passes over it.

The majority of costs associated with electricity distribution are driven by the number of assets required to deliver electricity to each customer, not by the number of customers or their demand on the network. Whether there are 50 customers connected to one pole or 50 poles connecting one customer, each asset needs to be inspected, safely maintained, and replaced at the end of its life.

Some of the key challenges faced when operating and maintaining such a diverse network include:

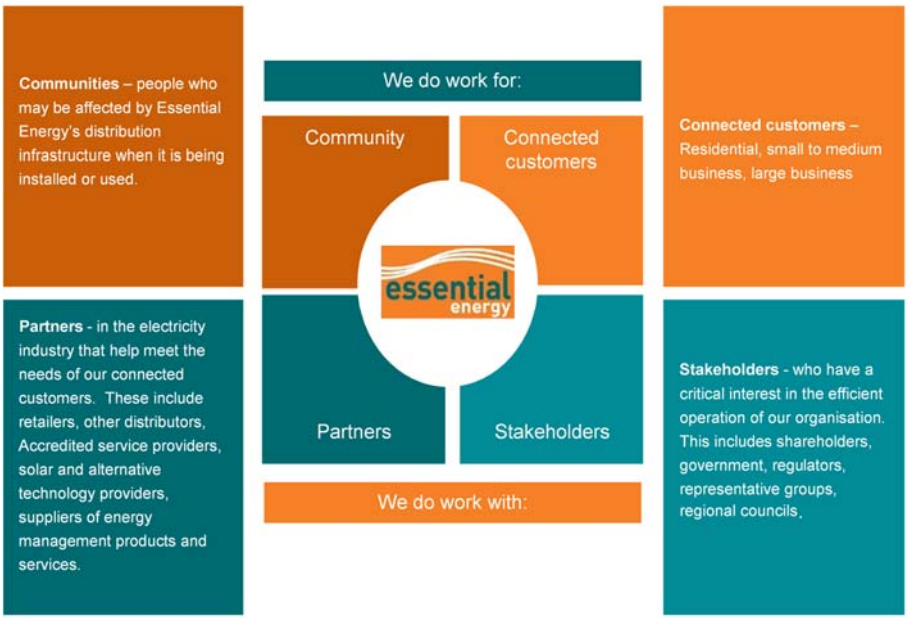
- the scale of the network;
- the number and age of assets;
- vegatation management;
- extreme variations in both weather and terrain;
- low customer density; and
- working with a network that was built over time.

1.2 Our customers

Essential Energy is committed to placing customers and stakeholders at the centre of everything we do. We provide an important service to the community and acknowledge our need to invest efficiently and effectively to increase our value to customers, providing an affordable service. To ensure we can invest wisely, meaningful collaboration with customers and key stakeholders is critical to enable us to deliver electricity services that better reflect customer preferences, and are supported by customers and stakeholders because they have partnered with us to develop our plans. Essential Energy undertakes varied customer and stakeholder engagement activities, which, together with our experience and knowledge, inform and shape our regulatory proposal. As these customer and stakeholder engagement conversations are ongoing, they ensure that customers will continue to play an active role in developing our network investment opportunities.

We are committed to improving our engagement with customers and providing easy ways for them to deal with us. Essential Energy's Stakeholder Engagement Framework, which is available on our website, provides more detail about our commitments.

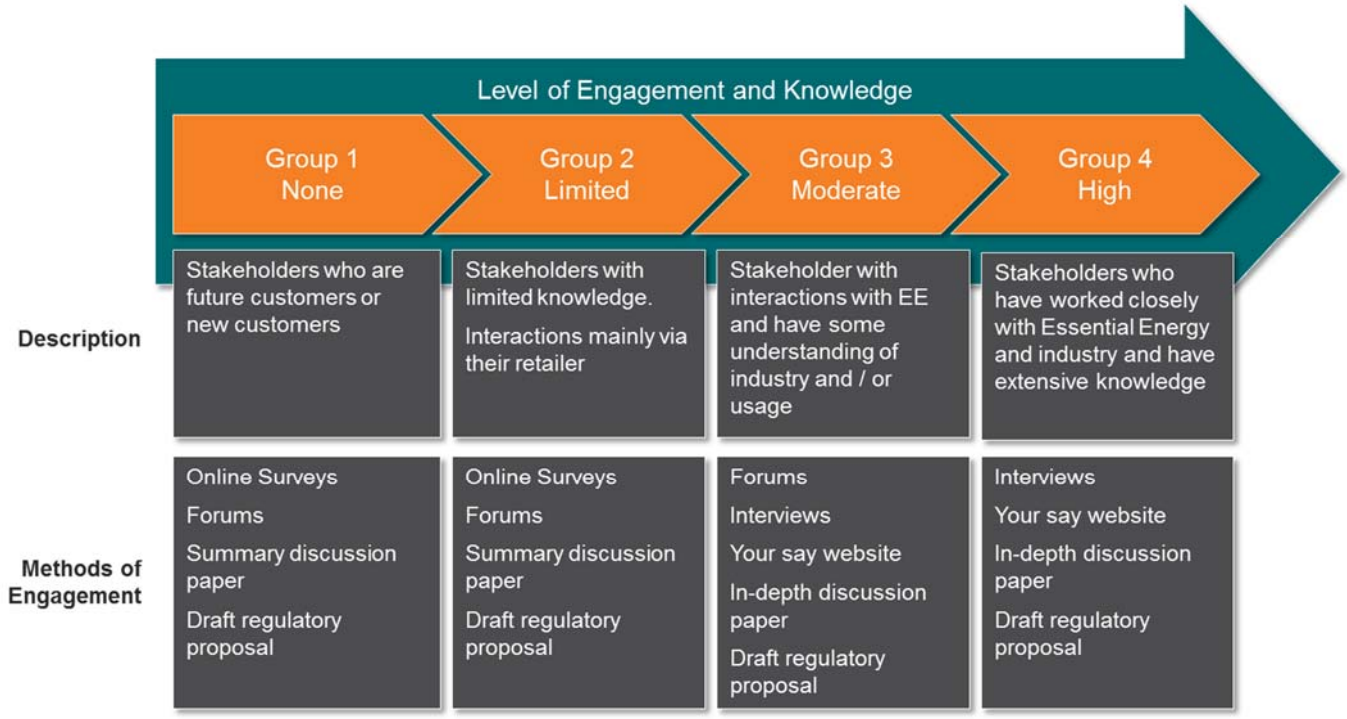
Figure 2 – Summary of our stakeholder engagement framework



As part of our stakeholder engagement strategy, Essential Energy acknowledges that customers and stakeholders have different levels of knowledge and engagement levels with the electricity industry in general and Essential Energy specifically. To support customers a variety of engagement methods and tools are used, to ensure a more tailored approach.

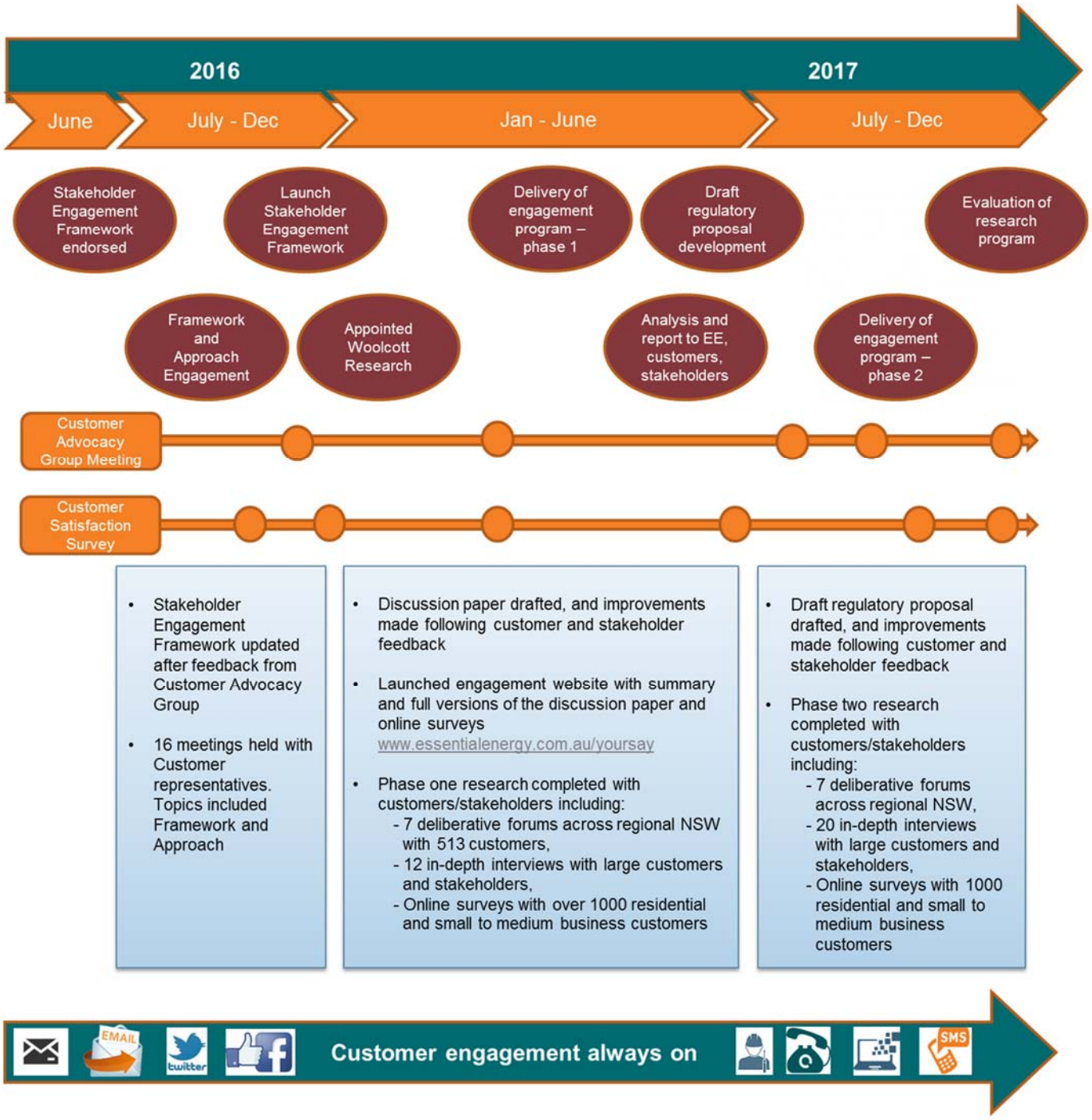
Figure 3 outlines the various engagement methods used as part of our engagement with customers specifically for the 2014-2024 regulatory proposal.

Figure 3 – Stakeholder engagement methods



To ensure that Essential Energy's engagement strategy is conducted with a high level of professionalism, integrity and utilises best practice methodology, Woolcott Research have been engaged to facilitate the program. The regulatory proposal engagement program will be revised and expanded once the initial regulatory proposal is submitted to ensure our revised regulatory proposal continues to be shaped and informed by customers. Figure 4 provides an overview of our customers and stakeholder engagement program.

Figure 4 – Customer and stakeholder engagement program



Customer and stakeholder feedback regarding our engagement interactions have been very positive. Customers felt it has been very informative for them and they had the opportunity to put their views forward. Strong themes were reliability, affordability, safety, good customer service and communication, transparency in bills, environmentally friendly and innovative technologies.

1.3 Asset management

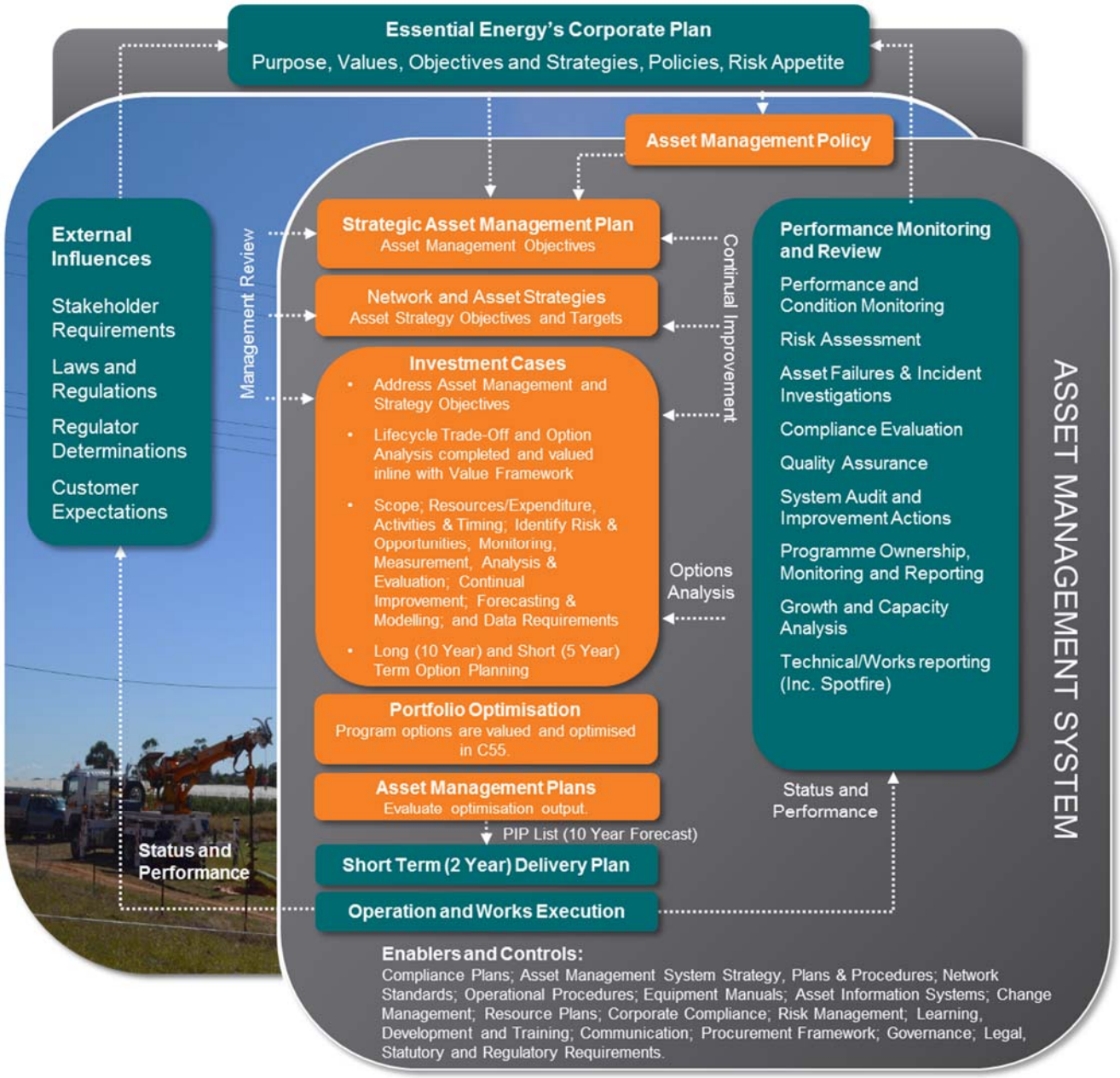
Essential Energy has established asset management systems and processes consistent with the following factors and industry best practice, including:

- a continuous improvement approach to best practice asset management aligned with the principles of the ISO55000 set of standards;
- deployment of appropriate risk management techniques and policies;
- asset investment and decision optimisation driven by the quantification of risk to allow cost benefit analysis;
- implementation of comprehensive asset information and management systems;
- fit for purpose governance and business processes for setting and implementing capital and operating budgets; and
- business reporting and performance management.

Essential Energy's Asset Management System (AMS) has been developed to align with the general structure of ISO55000 standards. A high level overview of Essential Energy's AMS is shown in Figure 5.

Essential Energy utilises Copperleaf's C55 software, a purpose-built, enterprise-wide, Asset Investment Planning and Management (AIPM) solution that supports a risk-informed, evidence-based approach to budgeting and strategic asset planning.

Figure 5 – High level graphic of Essential Energy's Asset Management System



1.4 Background to this statement

Clause 6.8.1A of the National Electricity Rules (NER) requires Essential Energy to inform the Australian Energy Regulator (AER) of the methodology Essential Energy proposes to use to prepare the forecasts of operating expenditure and capital expenditure that form part of Essential Energy's regulatory proposal for the regulatory control period commencing 1 July 2019. Essential Energy is required to provide this 'forecast methodology statement' to the AER 24 months before the expiry of the regulatory control period ending on 30 June 2019.

Essential Energy understands that the purpose of providing this forecast methodology statement is to provide a starting point in the early engagement between Essential Energy and the AER on the forecast methodology, to assist the AER in its assessment of Essential Energy's proposed forecast operating expenditure and capital expenditure[1].

Nevertheless, given that the regulatory proposal for the regulatory control period commencing 1 July 2019 is not required until January 2018, not all elements or details of forecast operating expenditure and capital expenditure can be finalised at the time of lodging this statement. Therefore, by necessity, this statement can only provide an overview of the methodologies Essential Energy proposes to adopt in forecasting operating and capital expenditures in the regulatory proposal to be submitted in January 2018. Full details of these methodologies, including key variables and key assumptions, will be included in the regulatory proposal, as required by clauses S6.1.1 and S6.1.2 of the NER.

It is possible, though unlikely, that Essential Energy may have to amend its proposed approach to forecasting expenditures to cater for changes in circumstances between the time of lodging this method and the submission of the regulatory proposal. However, these changes, if required, are not anticipated to be significant. The forecast methodologies for operating and capital expenditures are outlined in sections 2 and 3 respectively.

[1] AEMC 2012, Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Final Position Paper, 29 November 2012, Sydney, page 110.

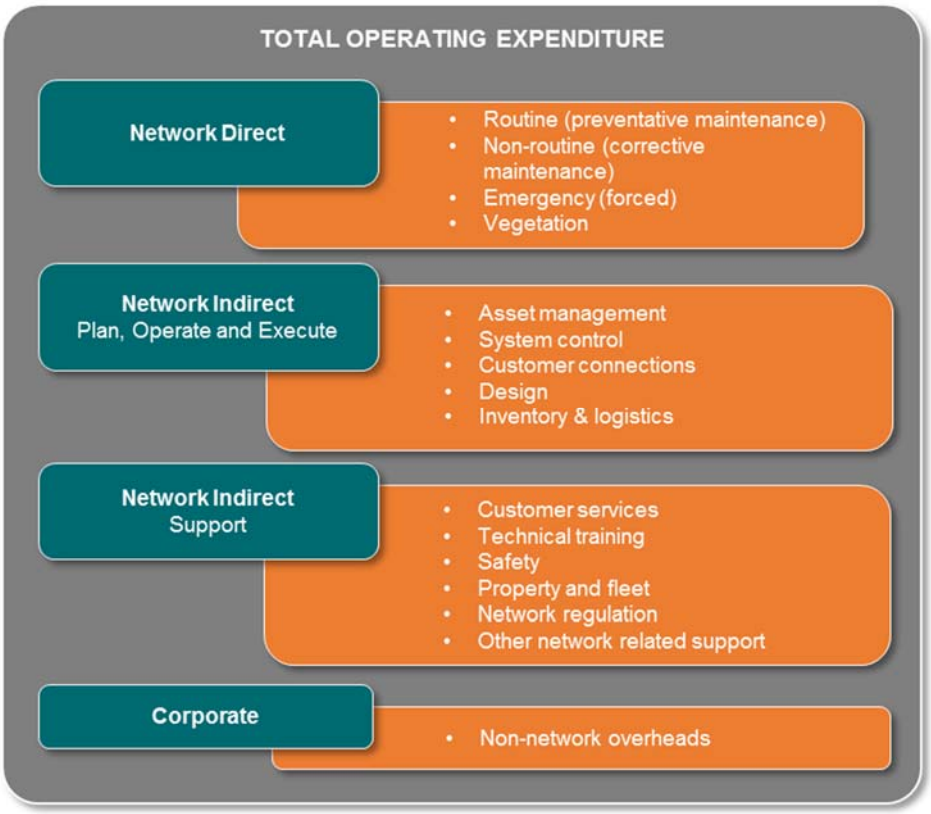
2. Forecasting Methodology – Operating Expenditure

2.1 Approach to forecasting operating expenditure

In line with our key objectives, Essential Energy has delivered significant productivity improvements throughout the current regulatory period to place us in the best position to continue to deliver increased efficiencies throughout the next period.

In broad terms, the operating expenditure forecasting methodology will follow the base-step-trend approach adopted by the AER in its recent distribution determinations. Essential Energy categorises operating expenditure as shown in Figure 6.

Figure 6 – Operating expenditure categories



The base year total standard control services operating expenditure will be used as a starting point for developing the future operating expenditure. The base year will include the productivity improvements realised during the current regulatory period and reflect efficient costs that a prudent operator would require to achieve the operating expenditure objectives. “Other” operating expenditure will be forecast separately and included in the total operating expenditure forecast.

In addition, a zero-based forecast will be developed for the planned maintenance and inspection categories. This forecast is based on a detailed program of work and is reconciled with the outputs of the base-step-trend method.

Both the base year method and the zero-based year method will be reconciled against the top-down approach to determine the efficient operating expenditure forecast.

The forecast for operating expenditure will be developed in the following way:

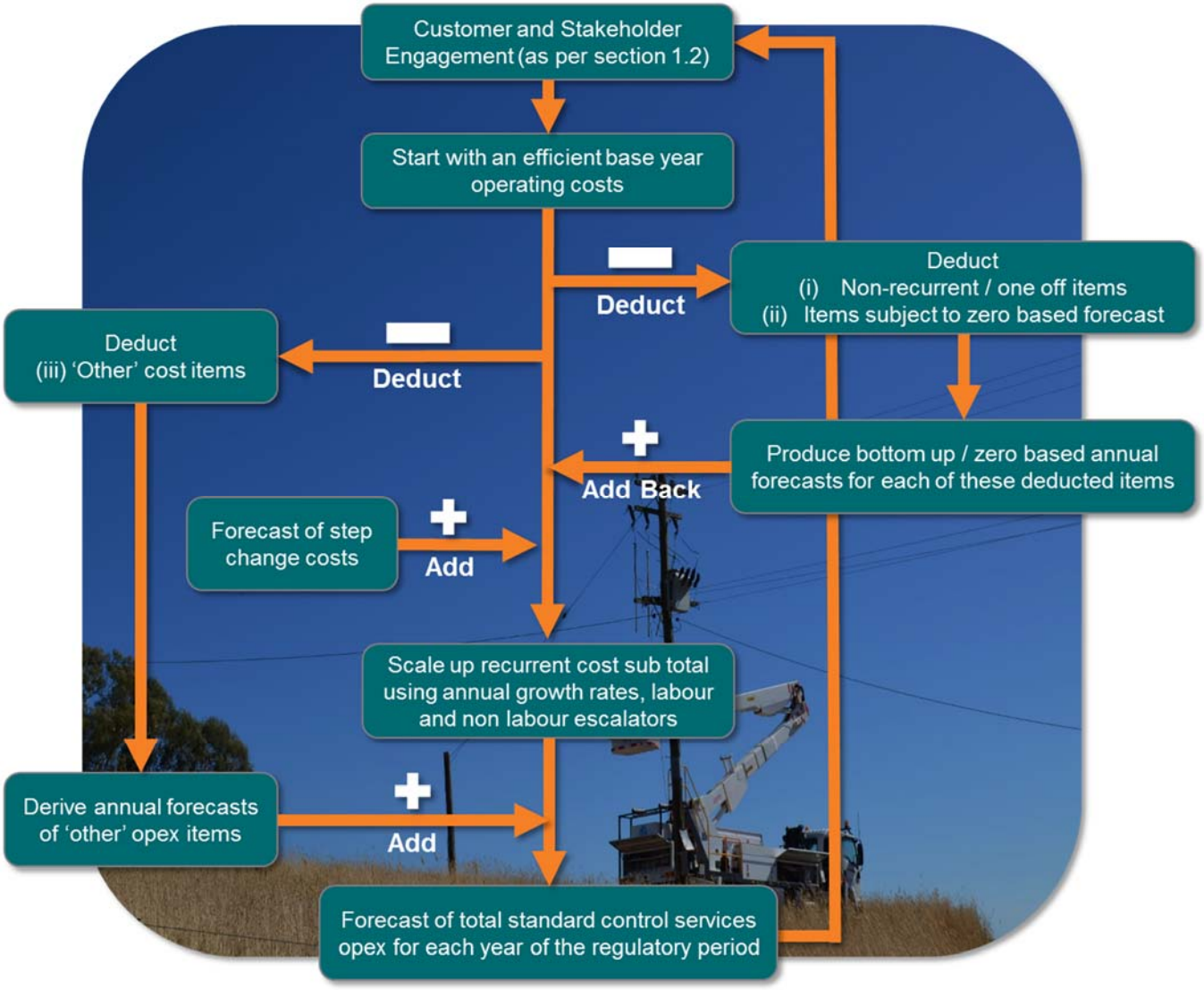
1. Determine efficient actual costs for standard control services for the base year
2. Deduct operating expenditure no longer required, and any one-off costs for the period
3. Add cost of scope changes for the years that the expenditure is expected to occur
4. Scale up the costs for annual growth rates which are expected to occur due to the growth of the business. These costs will reflect the benefit of economies of scale with reduced unit rates where applicable

5. Add applicable labour and non-labour escalation factors to derive the unadjusted forecast of operating expenditure for the forthcoming regulatory period
6. Adjust the forecast operating expenditure for identified step changes.

Essential Energy will engage with customers and stakeholders on key elements of the 2019-2024 regulatory proposal in order to understand the preferences of customer and stakeholders. This engagement will primarily be based upon the development and subsequent consultation of a "draft" regulatory proposal for the 2019-2024 regulatory control period. Customer feedback will inform the further refinement of operating expenditure forecasts.

Figure 7 gives a graphical representation of the operating expenditure forecast methodology.

Figure 7 – Operating expenditure forecasting methodology



2.1.1 Key variables and assumptions

The following key variables and assumptions are expected to underpin Essential Energy's operating expenditure forecast.

- Essential Energy will provide evidence to demonstrate that the base year costs are efficient and therefore provide a basis for projecting future operating expenditure.
- The cost impact of asset growth on operating expenditure will be assessed and a rate of change applied.

- Essential Energy will provide an estimate of labour and non-labour operating expenditure escalation rates for the forthcoming period.
- Essential Energy will apply operating expenditure step changes where necessary to reflect efficient cost levels.
- Essential Energy's forecast operating expenditure will take into account capital expenditure which derives operating expenditure savings.

Efficient base year

The base year will be used for determining the recurrent expenditure component of the operating expenditure forecast.

For the purpose of choosing an efficient base year it is instructive to benchmark operating expenditure against the business' past performance for the period covering financial year 2014-15 to 2018-19. Due to the productivity improvements and efficiency gains realised during the current regulatory period, Essential Energy expect that internal benchmarking will support the view that the base year is an appropriate basis from which to forecast operating expenditure. The objective is to ensure that Essential Energy's proposed base year expenditure is accepted by the AER as efficient.

Asset growth rate of change

It is appropriate for Essential Energy's operating expenditure forecast to take into account the cost impact of a growing distribution system. In broad terms an increase in the size of Essential Energy's network creates a growing demand for operating and maintenance services. Given the requirements of clause 6.5.6(c)(3) of the NER, it is important to take account of the increase in the network when developing Essential Energy's operating expenditure forecast for the regulatory control period commencing 1 July 2019.

It is noted that asset growth does not of itself result in a one-for-one increase in operating expenditure, due to the benefits of economies of scale, where marginal costs are lower than average costs. The extent of scale economies differs across expenditure categories. Essential Energy will use available evidence, along with experience and judgement in developing estimates of the rate of change for each expenditure category.

Labour and non-labour escalation rates

Labour costs have a significant influence on operating expenditure. It is proposed to apply forecast real cost escalation to labour, materials, contracted services and other cost types that make up the total cost of each expenditure category. This is to reflect the future price of cost inputs.

Forecasting step changes

Forecasts of costs associated with step changes will be prepared on a bottom-up basis. Consistent with the AER's preferred approach, Essential Energy will only propose step changes if additional operating expenditure is required in order to:

- comply with a new or changed regulatory obligation, which represents an increase or decrease in scope; or
- deliver an efficient operating/capital expenditure trade-off, which provides a more efficient mix of inputs.

Top-down assessment of total forecast

Essential Energy will apply a top-down assessment of the total operating expenditure forecast obtained using the methodology outlined above. The purpose of the assessment will be to test and verify that the forecast reasonably reflects:

- customer and stakeholder feedback gathered through Essential Energy's customer engagement program as set out in section 1.2
- the efficient costs of achieving the operating expenditure objectives set out in clause 6.5.6(a) of the NER;
- the costs that a prudent operator would require to achieve the operating expenditure objectives; and
- a realistic expectation of the demand forecast and cost inputs required to achieve the operating expenditure objectives.

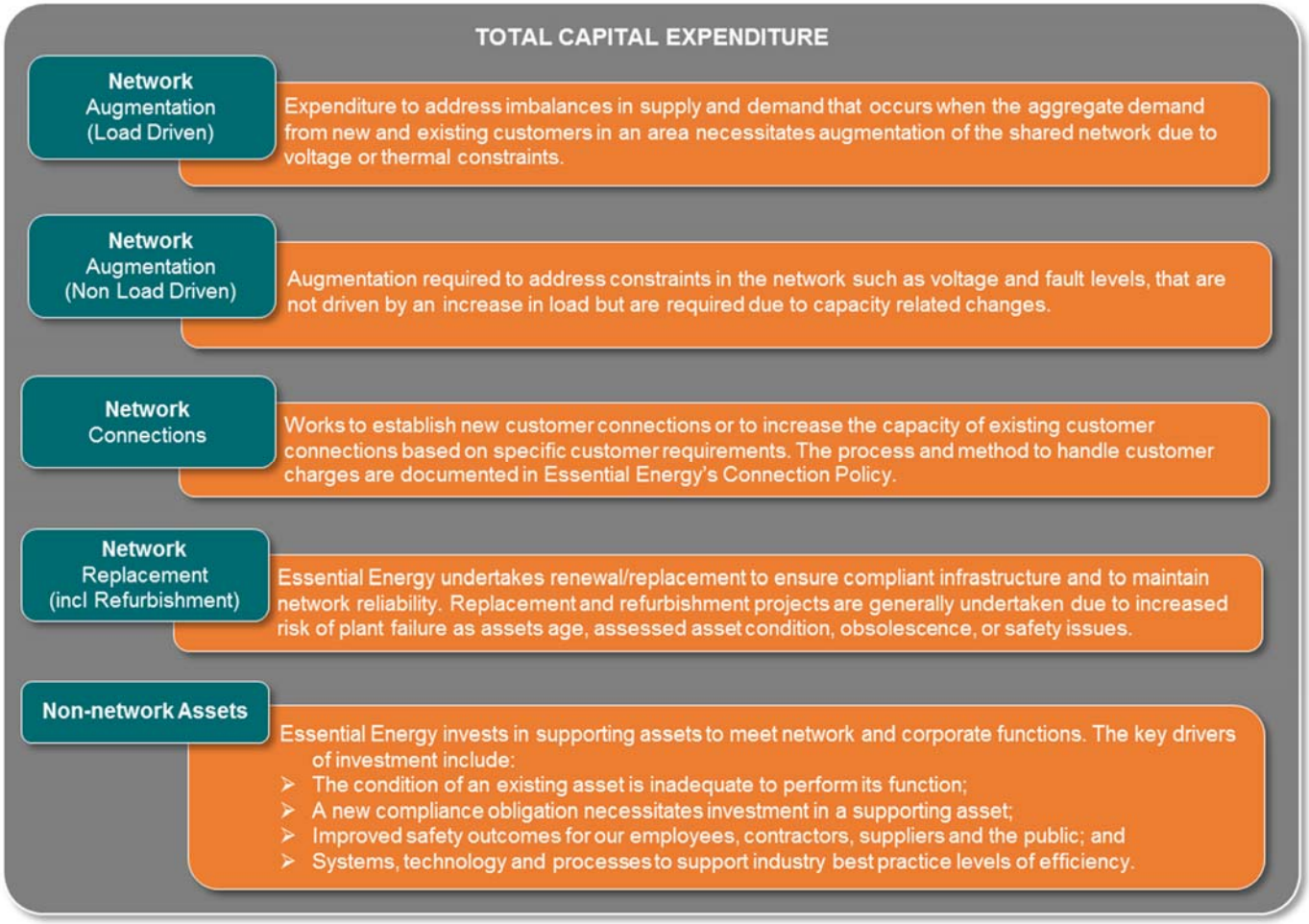
Essential Energy expect to apply benchmarking techniques in the top-down assessment to verify the total operating expenditure forecast.

3. Forecasting Methodology – Capital Expenditure

3.1 Categories underpinning capital plans

Essential Energy invests to meet the regulatory obligation to provide a safe and reliable network. Figure 8 describes the key categories of capital expenditure and the drivers of investment.

Figure 8 – Capital expenditure categories and drivers of investment



3.2 Approach to forecasting capital expenditure

Essential Energy's customers continue to play an active role in informing network investment opportunities. Customer insights are provided in a number of ways, including feedback via general communications as part of day to day business, as well as deliberative forums and surveys specifically aimed at informing longer term strategies for the business. This ensures the network continues to efficiently meet the needs of customers as they evolve into the future.

The capital investment program is identified through Essential Energy's AMS as shown in Figure 5.

This process follows a top-down approach which is supported with clear Asset Management Objectives derived from Essential Energy's Corporate Plan and Asset Management Policy.

The AMS has been guided by a quantified risk versus expenditure approach utilised in both a top-down and bottom-up assessment with a consistent set of consequence values adopted in both the top-down and bottom-up methods.

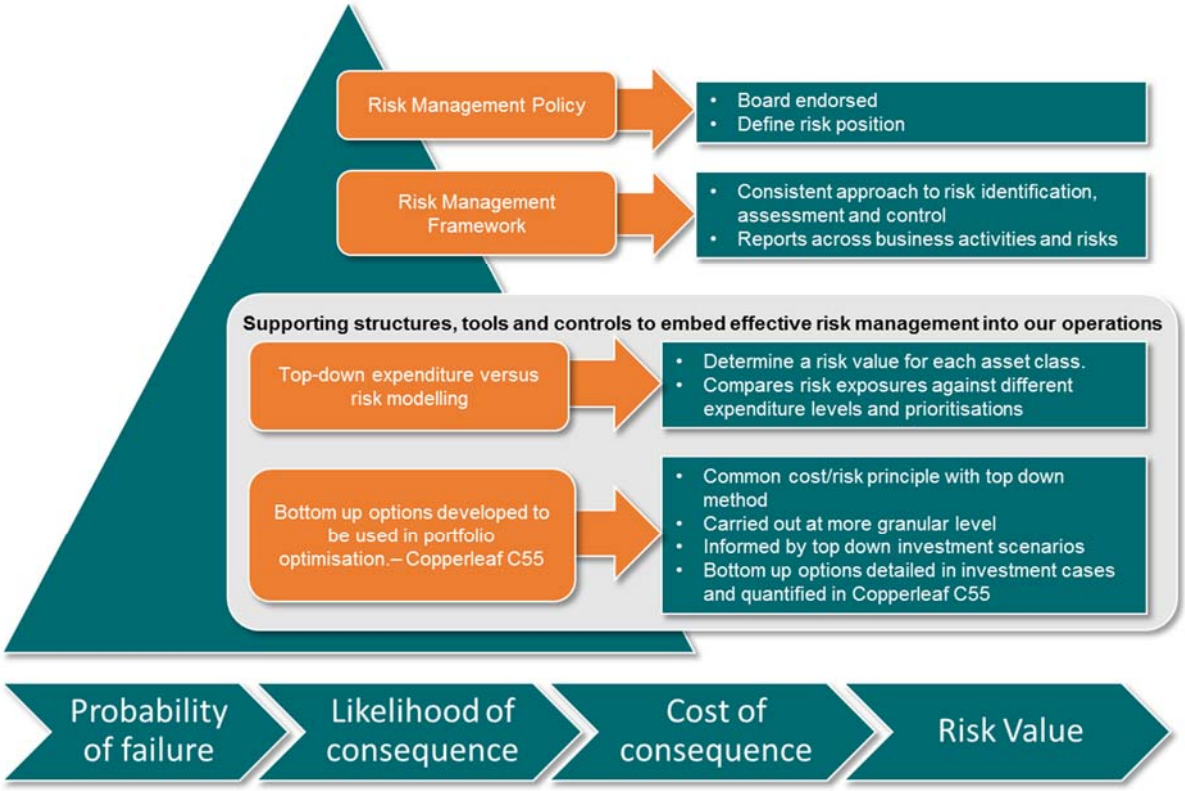
Through Network Strategies and Investment Cases, programs of work and various options consistent with the Asset Management Objectives (including service targets and compliance obligations) are proposed, whilst considering the underlying network characteristics, condition and performance of Essential Energy's assets, and demand forecasts.

A new Investment Governance Process has been instituted within Essential Energy to review and rationalise the forecast program.

Investment options for each program are created through a bottom-up build using established unit rates and asset class modelling. The program options are then valued in a consistent manner and on a common scale using Copperleaf's investment decision optimisation solution, C55. The value for each program has been derived using Essential Energy's value framework, which in turn aligns with the corporate risk framework and risk versus expenditure analysis. The optimised capital portfolio is then reviewed and approved through the investment governance process.

Figure 9 shows how Essential Energy manage risk, including the relationship between top-down and bottom-up assessment methods, linked through a common risk versus expenditure approach to investment evaluation.

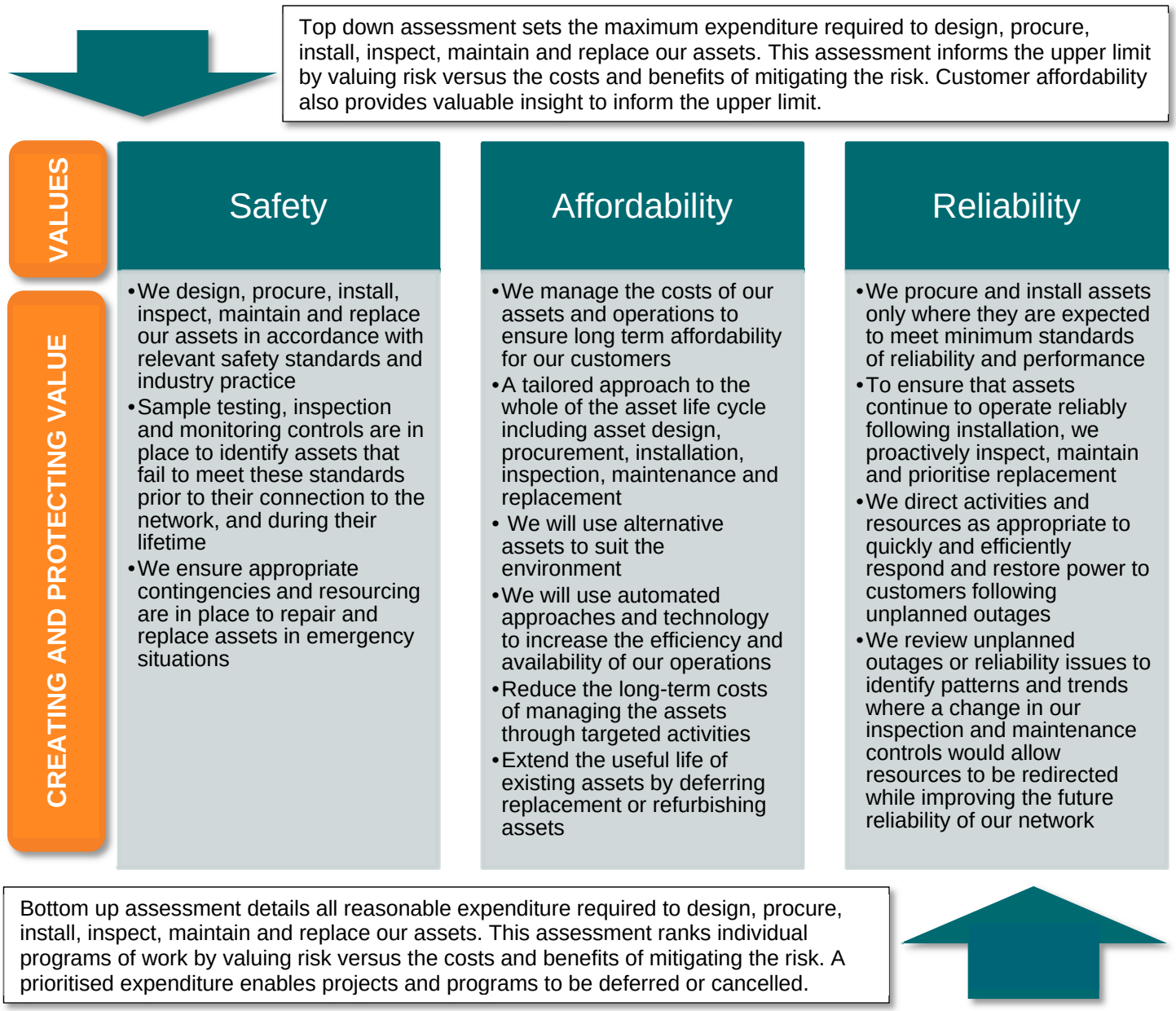
Figure 9 – Top-down and bottom-up assessment of capital plans



Through Essential Energy's customer engagement program, safety, affordability and reliability were identified as the most important values customers want in an ideal energy supply. At times these values can conflict with each other, for example, undergrounding our entire network would deliver exceptional reliability, strong safety performance but the service we offer would be unaffordable to the communities we serve. Risk aversion is avoided through the application of risk tools and controls through "bottom up" and "top down" assessments of the assets we own and operate.

The asset risk management approach is set out in Figure 10.

Figure 10 – Asset risk management



3.2.1 System assets

System related capital investment covers all system assets comprising the network. Capital investment is undertaken where the asset strategy investment case or network strategy indicates a need for asset acquisition, construction, renewal, or capacity augmentation. In line with these requirements, capital expenditure can be broken down into a number of categories. Key components of the strategic planning process for each category are set out in the individual asset management plans, investment cases or network strategy.

Essential Energy's intended capital investment program for the next regulatory control period and key network asset management strategies are contained within Essential Energy's Investment Cases and Network Strategies and the final outcomes are reviewed and summarised in the Asset Management Plans.

Network Strategies, Asset Management Plans (AMPs), and Investment Cases

Essential Energy's capital investment program ensures:

- long term sustainability of network condition, asset utilisation, supply security, and network performance;
- adequate capacity for customer connections and peak demand growth, achieved through either capacity augmentation of existing assets or the construction of new assets;
- timely replacement or refurbishment of ageing and obsolete assets that have become unserviceable, frequently fail in service, have deteriorated to an unsafe condition, or where the present value cost of maintaining the asset exceeds the cost of replacement;
- maintaining reliability and quality of supply to meet customer expectations;
- environmental, safety, infrastructure security and legal responsibilities are met;
- acquisitions of property and easements for future network development are made; and
- there is availability of a number of miscellaneous corporate and non-system items for the continued efficient management and support of the electricity distribution business such as information technology systems, motor vehicles and plant, and other non-system assets.

The capital investment program that will be proposed by Essential Energy is consistent with the delivery of the above outcomes.

The Network Strategies and Investment Cases are strategic business plans, used to manage the network assets and deliver service levels to meet stakeholder requirements. Essential Energy has developed AMPs which cover all Essential Energy network assets. Each AMP summarises the life cycle of a specific group of assets and covers the major drivers of expenditure. The groupings have been chosen to ensure that existing synergies between assets can be maintained and is used as a high level review tool for proposed expenditure.

Each AMP contains the service levels applicable to the asset group (as defined in the Network Strategies), based on Asset Management Objectives, and determines any performance gaps that are expected within the selected program portfolio.

Growth Strategy and Regional Planning Reports

Network augmentation focuses on the provision of electricity network services to meet network growth in the medium to long term by increasing the capacity of the network. Growth further includes augmentation that is required to address emerging voltage and thermal constraints and to address fault levels that do not meet protection requirements, to meet peak demand requirements, and connect new customers. A series of plans has been prepared that identify areas of network constraint. The plans encompass forward projections of peak demand and customer growth, and they identify the items on the network that are projected to exceed their limits and the sub-transmission and distribution network development projects required.

This aspect of planning also incorporates Essential Energy's demand side management activities aimed at constraining or reducing the customer load present on the network and also involves specific developments to maintain security of supply. These processes are described in the Demand Management Strategy.

Demand Management Strategy

The decision to apply demand management or to augment the network always remains an issue of economic efficiency, technical feasibility, timing, service preferences, application of sound industry commercial practice, and determining the optimum means of providing supply capacity to customers. These processes involve significant consultation, through the annual Distribution Annual Planning Report (DAPR) prepared and published for this purpose.

The DAPR provides historical and forecast peak load data and capacity information for all zone substations and discloses where a network constraint is forecast to occur within five years. The information allows customers and energy service providers to consider whether they may be able to assist in addressing the network constraint through the implementation of demand management. This approach seeks to minimise barriers and disincentives to the adoption of particular demand management options.

Reliability Strategy and Power Quality Strategies

The Reliability and Power Quality Strategies address the supply reliability, quality and security aspects of Essential Energy's electricity distribution network business. They detail the specific asset management strategies, commitments, actions, and the level of expenditure aimed at ensuring that supply reliability, quality and security complies with minimum reliability standards, and addresses identified customer requirements.

The planning process produces a detailed annual capital expenditure program and sets priorities for capacity augmentation, and the security, quality and reliability of supply over the investment horizon.

3.2.2 Non-system assets

These assets provide critical business support to meet network and corporate objectives, with plans for supporting assets including the Information Technology, Property and Fleet plans.

Non-system expenditure will ensure the continued efficient management and support of the electricity distribution business through expenditure related to information systems, motor vehicles and heavy plant, land, building and property works, and smaller related expenses.