Expenditure Forecasting Methodology

Regulatory Control Period beginning 1 January 2021

ISSUE/AMENDMENT STATUS

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1 Introduction

This Expenditure Forecasting Methodology sets out the methods that AusNet Services intends to use to forecast capital and operating expenditure in the 2021-25 Electricity Distribution Regulatory Proposal. This document has been prepared for the Australian Energy Regulator (AER) in accordance with the requirement of Clause 6.8.1A of the National Electricity Rules (NER).

This submission is intended to facilitate continued engagement with the AER and other stakeholders on AusNet Services' forecasting methodologies.

Given the period between the lodgement of this document and the Regulatory Proposal, coupled with the ongoing negotiation with a Customer Forum, new or refined forecasting techniques may be applied in addition to those outlined. These would be documented in detail in the Regulatory Proposal.

2 Overall approach and inputs

AusNet Services manages its electricity distribution network to achieve the National Electricity Objective and the capital and operating expenditure objectives. These objectives guide efficient and prudent investment in the network consistent with the long-term interests of consumers.

Expenditure is separated into capital expenditure (investing in new assets or extending the lives of existing assets) and operating expenditure (ongoing costs covering the maintenance and operation of the network).

This section describes the common aspects of the approach, including the input forecasts used in the development of both operating and capital expenditure forecasts.

The remainder of the document sets out the methodologies for developing these forecasts.

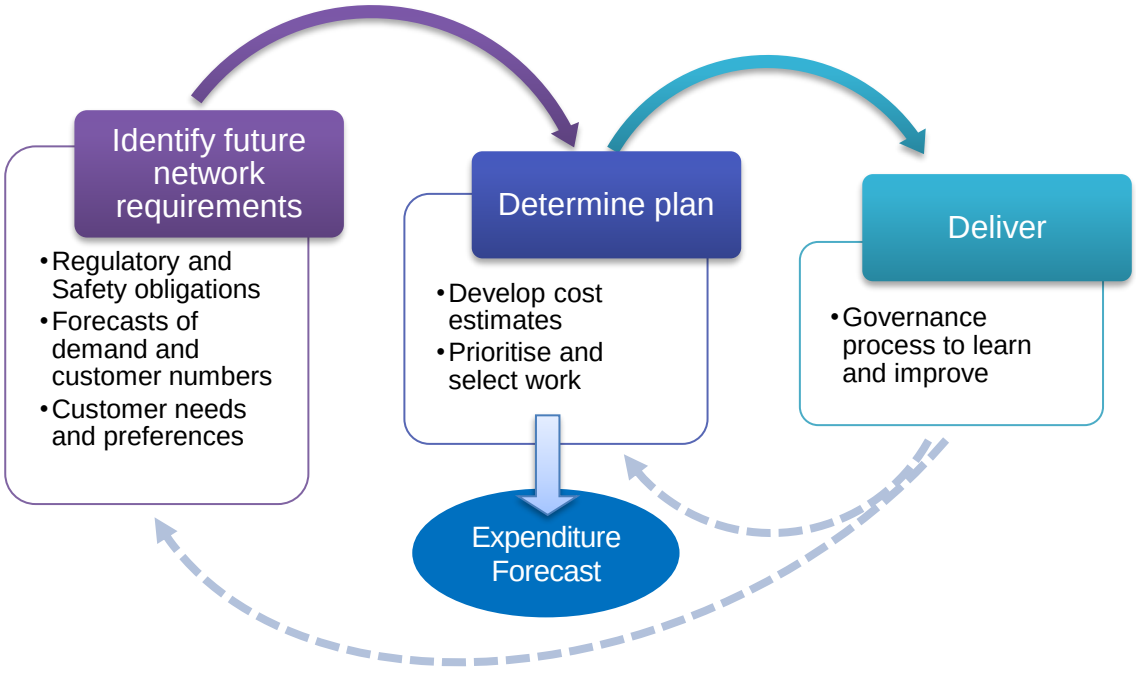
2.1 Asset management approach

Asset management decisions underpin investment programs and expenditure forecasts. A sound framework for asset management and investment decision making is fundamental to ensuring robust forecast expenditures. A mature asset management program can contribute to the following outcomes:

- Improved efficiency and effectiveness;
- Effective risk management; and
- Improved organisational responsibility and trust and respect with customers and partners.

The elements of AusNet Services' asset management approach are shown in Figure 1 below.

Figure 1 – Elements of Asset Management Approach



2.1.1 Asset Management standards

AusNet Services distribution network has been accredited to British Standards Institution's Publically Available Specification 55 1:2008 (PAS 55) for several years and was one of the first companies in Australia accredited to the ISO 55001 standard. The accreditation process, recertified in 2017, assesses policies, processes, procedures and practices relevant to all stages of the asset lifecycle, including project delivery. Accreditation demonstrates to customers, shareholders and regulatory bodies that AusNet Services is following asset management best practices and realising the benefits of asset management.

The asset management approach and long term planning of the distribution network by AusNet Services makes use of several key inputs.

2.2 New Reg Trial

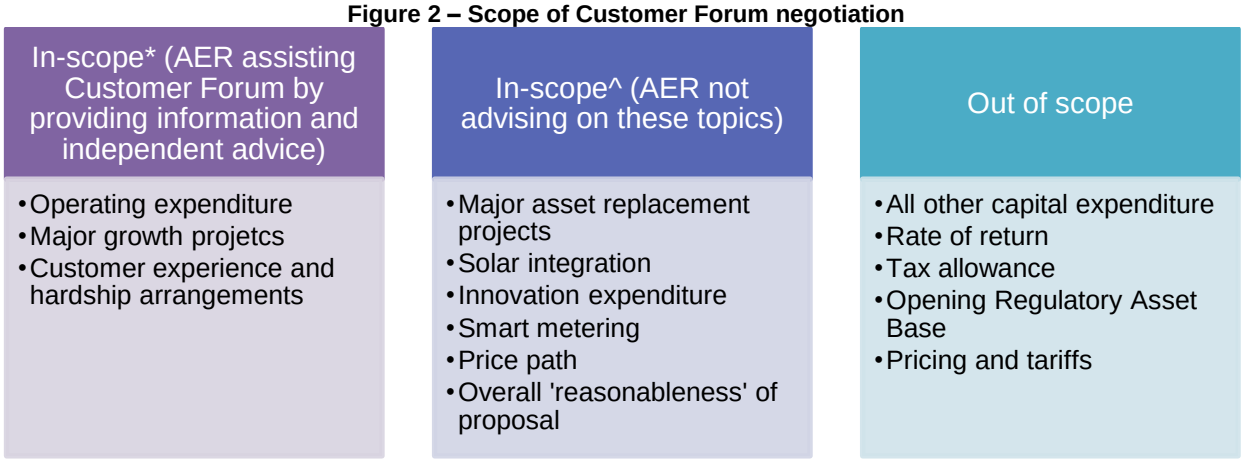
AusNet Services is the first Australian utility business to participate in a new trial that places customers at the centre of developing regulatory proposals. In accordance with the AER's New Reg process, a Customer Forum that is genuinely capable of representing customer perspectives has been established. This reflects the commitment to becoming a customer focused organisation and is an innovative approach to understanding customer needs and preferences and reflecting these in the Revenue Proposal through a negotiation process.

The Customer Forum process is described in AusNet Services' Early Engagement Plan (which was approved by the AER in March 2018). It contains the following criteria that determine the scope of the negotiation with the Customer Forum:

- Degree of AusNet Services' discretion to determine the level of expenditure – where there is little to no discretion this would be an area of expenditure that is not amenable to negotiation;
- Criticality of crucial customer views – customer support for and willingness to pay for new services or network capabilities or where a reduced service is acceptable for a reduction in charges;
- Materiality of expenditure – major expenditure items should fall within the scope of the negotiation process (subject to the two criteria above);
- Genuine expenditure trade-offs – the Customer Forum should have strong input where there are genuine expenditure trade-offs; and
- Degree of technical information/complexity required – expenditure proposals that may require either specific, expert knowledge or significant information/effort to credibly assess the proposed expenditure may not be amenable to negotiation.

AusNet Services, the Customer Forum and the AER have agreed on which sections of the Regulatory Proposal will be subject to negotiation, set out in Figure 2.

Figure 2 – Scope of Customer Forum negotiation



For in-scope areas, the expenditure forecasts will reflect the outcomes of negotiation with the Customer Forum. The negotiations may affect different elements of the expenditure forecasts in different ways. Where negotiations have impacted the expenditure forecasts, this will be explained in detail in AusNet Services' Regulatory Proposal, and in the Customer Forum's Final Engagement Report, which will be submitted to the AER. This will also detail the evidence base relied upon by the Customer Forum to reach its position, which may include the customer research carried out by AusNet Services, described below.

2.3 Key inputs

2.3.1 Views of our customers

The previous regulatory period has seen a series of developments lead to a fundamental change in the way distribution businesses engage with their customers. Changing customer behaviour in recent years combined with the emergence of new customer-facing technologies (such as batteries and electric vehicles) has changed the role of the network. It is the responsibility of distribution network service providers to understand, and effectively respond to, changing customer needs and preferences. Productive consumer engagement strategies are a first step to enable this.

Since the majority of electricity distribution assets have a long life cycle, network investment must be consistent with customer preferences for a significant period of time. Subsequently, the development of expenditure forecasts relies on key inputs such as customer preferences and behaviours. AusNet Services has made improvements to its expenditure forecasting techniques to incorporate greater customer research in the estimations.

2.3.2 Customer Research Program

AusNet Services has undertaken an extensive customer research program as part of BAU and to inform its 2021-25 regulatory proposal. Figure 3 describes the various customer research processes conducted by AusNet Services.

Figure 3 – Customer research and engagement conducted by AusNet Services

The results of this research have been used to inform the Customer Forum to establish its negotiating positions, and have shaped other aspects of expenditure forecasts. Customer research and engagement is ongoing in the lead up to submission in July 2019.

2.3.3 Forecasts of customer numbers and peak demand

The expenditure forecast for the 2021-25 regulatory period will be informed by forecasts of new customer connection volumes and peak demand. These are important determinants to both capital (augmentation and customer connections) and operating (demand management and growth trend) expenditure. Figure 4 explains how AusNet Services forecasts customer numbers and peak demand.

Figure 4 – Customer number and peak demand forecasting methodology

Customer growth forecasting methodology

- Customer forecasts are developed at the feeder and zone substation level. These forecasts are rolled up to municipalities and reconciled against the latest Victorian Government projection information contained in the "Victoria in Future Small Areas" data set.
- The forecasts are adjusted for known step changes or modifications to the network and extrapolated as required, for example, major load changes as a result of a new large customer, load transfers to other stations.
- Finally, a reconciliation is performed to ensure that forecasts are consistent with those published by the Australian Energy Market Operator (AEMO).

Demand forecasting methodology

- AusNet Services' demand forecasts are based on the key premise that higher demand is driven by higher cumulative temperatures. Historic customer loads and forecast customer growth also drive demand forecasts. These figures are developed at the HV feeder, zone substation and terminal station levels.
- Demand forecasts are prepared by analysing actual network demand and Advanced Metering Infrastructure (AMI) energy interval data. Customer growth forecasts are mapped to zone substations and apportioned at feeder level. These operational data sets are then subjected to detailed analytical modelling techniques and trended forward for predicting future maximum loading. The applied analytical modelling considers: customer classes, energy profiles and efficiency factors, and weather regions. Segmentation by build year or dwelling age is used when predicting demand for future residential dwellings. A bottom-up approach to maximum demand is then derived using the cumulative thermal effect (Cooling Degree Days (CDD) calculation which depicts a positive relationship between demand and temperature). Finally, this output is then adjusted by a delta factor that represents unmetered loads to account for the difference between historical, actual network and AMI interval data.

Recent improvements in demand forecasting approach

- AusNet Services' approach to demand forecasting has improved in recent years.
- There is a greater level of importance placed on being more adaptive and flexible to customer behaviours. This is because the operating environment has become increasingly dynamic following the large-scale integration of distributed energy resources such as solar and batteries. As a result, this requires a more detailed approach to modelling.
- The following has now been implemented:
  - A bottom-up granular approach utilising AMI data and analytics, as opposed to a top-down approach;
  - Customer loads are now categorised by customer class which allows temperature impacts to be applied to residential customers only, previously customer classes were combined and hence were treated in a non discriminant manner; and
  - Maximum demand data is based on cumulative temperatures which is a stronger relationship and more informative than peak temperature on a maximum demand day.

2.3.4 Regulatory and safety obligations

AusNet Services' capital and operating expenditure forecasts incorporate the costs associated with meeting required standards, regulations and processes, contained in AusNet Services' licence, regulatory, reliability, security and safety obligations. Electricity is an essential service, delivered through networks that are regulated monopolies. Delivery of electricity also involves significant safety risks. Hence, expenditure forecasts must include sufficient funds to comply with these obligations. For example, key obligations for AusNet Services' distribution network include:

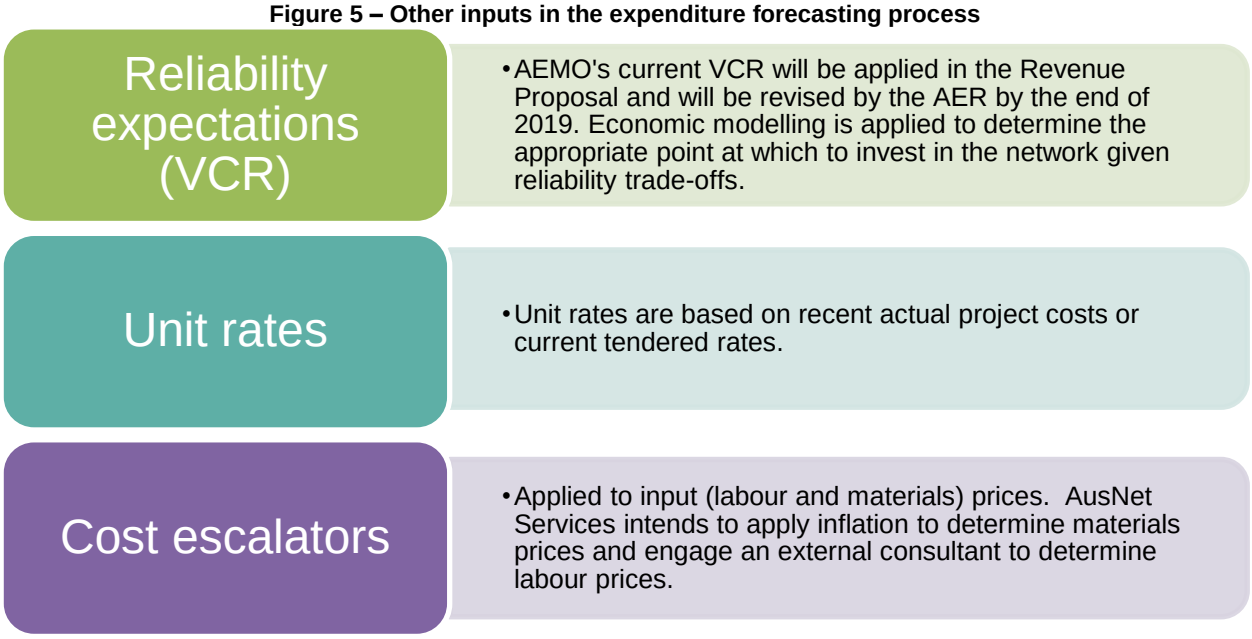
- Electricity Safety Act (section 83B or Part 10) requires AusNet Services to "design, construct, operate, maintain and decommission its supply network to minimise the hazards and risks to the safety of any person arising from the supply network; and
- Victorian Safety Legislation and Safety obligations set out in AusNet Services' Electricity Safety Management Scheme (ESMS) as approved by Energy Safe Victoria (ESV).

It is possible that there may be changes to the obligations between now and submission in July 2019. For example, the Essential Services Commission is currently reviewing the Victorian Electricity Distribution Code, which may impact how the distribution network is required to operate. If such changes do occur, AusNet Services will engage with the AER and other stakeholders on any changes to its expenditure forecasting methodology and/or forecasts themselves.

2.4 Other inputs

The following figure illustrates other key inputs that influence the expenditure forecasts.

Figure 5 – Other inputs in the expenditure forecasting process



3 Operating expenditure

3.1 Overview

Operating expenditure (opex) is expenditure on the maintenance and operation of the network. The opex program is generally recurrent in nature and the composition of costs does not change significantly year on year. This area of expenditure is in scope for negotiation with the Customer Forum.

Network maintenance activities comprise the following cost categories that reflect the ongoing maintenance of AusNet Services' electricity distribution network:

- Routine maintenance
- SCADA/Network control maintenance
- AMI cost
- Condition based maintenance
- Other standard control services
- Emergency maintenance

Network operations include the following cost categories that that are required to support the typical operation of the business:

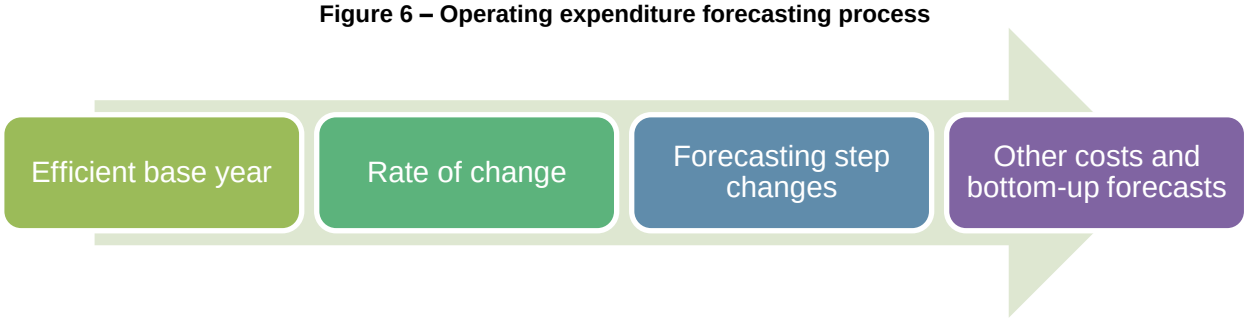
- Network operating costs
- Customer service
- IT
- Non-network alternatives costs
- Billing & revenue collection
- Regulatory
- Licence fee
- GSL payments.

3.2 Forecasting method

AusNet Services will forecast opex using the base-step-trend methodology, which is consistent with the AER's Expenditure Forecast Assessment guidelines. The guidelines set out the forecasting approach and AusNet Services is forecasting the inputs into this model. As depicted in Figure 6 below:

- A base year of opex is first selected that is considered representative of efficient costs. Adjustments to remove non-recurrent costs or to account for changes in accounting treatments may be necessary.
- A rate of change is then applied to the base year to account for input prices, network growth and productivity, which are drivers of opex trends.
- Proposed step changes or costs forecast using a bottom-up methodology are then added. Step changes reflect changes in regulatory obligations or an opex/capex trade-off.

Figure 6 – Operating expenditure forecasting process



3.3 Base year

As a full year of actual data for 2018 will be available when the Regulatory Proposal is lodged in July 2019, AusNet Services expects that 2018 will be used to determine base year efficient costs. The 2018 base year reflects an efficient starting point for forecasting opex because:

- The opex incentive scheme (EBSS) implemented by the AER is designed to ensure that AusNet Services and its customers are rewarded for minimising opex.
- Actual expenditure in 2018 is expected to be less than allowed expenditure, demonstrating opex efficiencies gained by AusNet Services.
- The AER's 2018 Benchmarking report shows that AusNet Services improved productivity between 2016 and 2017. Similarly, it is anticipated the 2019 benchmarking report will also find that AusNet Services is an efficient DNSP using the AER's assessment framework.

3.4 Rate of change

The rate of change refers to the incremental operating costs that are expected to change over the regulatory period. This is a result of input changes, such as productivity, prices, and outputs in the form of network size. Consequently, base year opex will be adjusted annually for this rate of change to determine expenditure requirements for each year of the regulatory period.

Examining historical trends to identify drivers of opex growth forms a key element of the opex forecast. The AER's rate of change formula in its Expenditure Assessment Guideline includes the following drivers: output, real price, and productivity changes. AusNet Services expects to adopt these drivers to forecast the rate of change.

- Output growth (network size) – expected changes in customer numbers, maximum demand, circuit length and network capacity. This driver is calculated using internal forecasts built up from public data and historical experience.
- Real price change – includes movements in both labour escalation and material costs. AusNet Services will source labour escalation forecasts from an independent expert.
- Productivity factor – improvements in productivity are expected over time due to efficiency and transformation initiatives. The productivity factor is currently under review by the AER.

3.5 Step changes

Step changes are other costs not captured in base opex or the rate of change that are required for forecast opex to meet the opex criteria. The AER outlines that step changes are only required for

additional opex if it is for compliance with regulatory obligations representing a change in scope, or to provide an efficient capex/opex trade-off that delivers greater input efficiency.[1]

3.6 Bottom-up forecasts

There are some exceptions where alternative methodologies other than simple trending are used to forecast opex. Likely cost categories to be included are:

- Metering – based on a refined bottom-up forecast of system costs. AusNet Services will assess which metering systems are used by the distribution business when determining the allocation of metering opex between standard and alternative control services.
- Debt raising costs – AusNet Services expects to adopt the method the AER uses which is derived by applying a benchmark debt raising unit rate to the debt portion of the RAB.
- Innovation – some costs may be included for innovation projects. This will be forecast based on a bottom up build and will be subject to negotiation with the Customer Forum.
- GSL Payments – this forecast is based on an average of five years of expenditure. The data will be back cast to account for the changes in the scheme in 2016 and any changes that may result in 2018 from the review of the Electricity Distribution Code.

[1] AER (2013) Final Decision, *AER expenditure forecast assessment guideline - distribution - November 2013*, pg. 24, 29 November,https://www.aer.gov.au/system/files/Expenditure%20Forecast%20Assessment%20Guideline%20-%20Distribution%20-%20FINAL.pdf

4 Capital expenditure

4.1 Overview

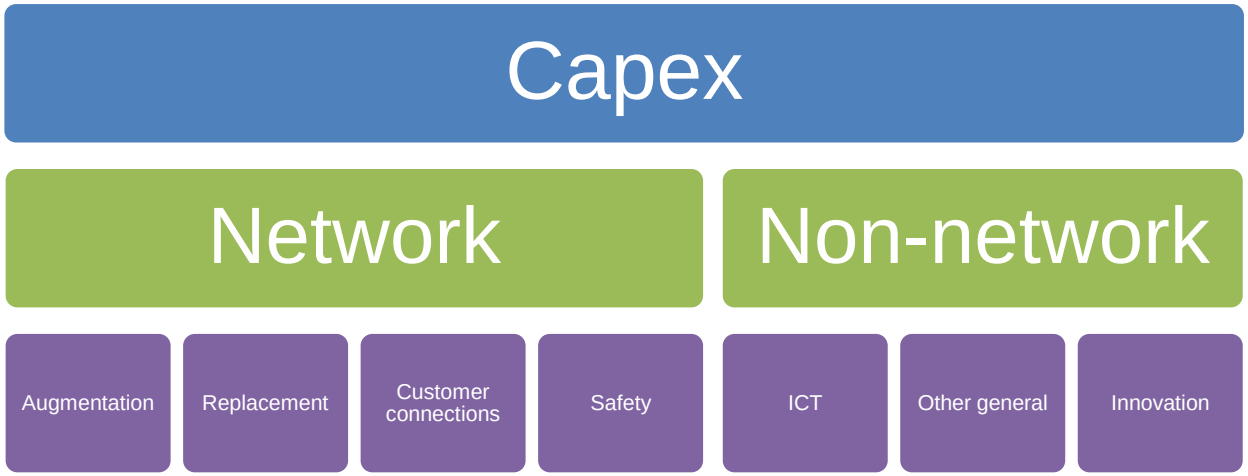
Capital expenditure (capex) is expenditure used to acquire, install, upgrade and/ or refurbish physical assets. Assets include network assets (poles, wires, and transformers) and non-network assets (such as ICT systems, vehicles, property, industrial buildings, or equipment.). The approach used to develop AusNet Services' capex forecast for regulatory purposes is consistent with the approach for budgetary, planning and governance processes used in the running of the business.

For the 2021-25 regulatory period, capex will be largely focused on condition-based asset replacement and installation of equipment to reduce the risk of bushfire. This section outlines the general process AusNet Services uses to forecast capex and the individual categories that comprise the total bottom-up capex program.

4.2 Capex categories

In the Regulatory Proposal, capex will be reported using a number of different categories. For the purposes of forecasting, AusNet Services classifies its capex into different groupings as shown in Figure 7. Additional classifications are also made within each of these broad categories for a more granular analysis.

Figure 7 – Components of capital expenditure

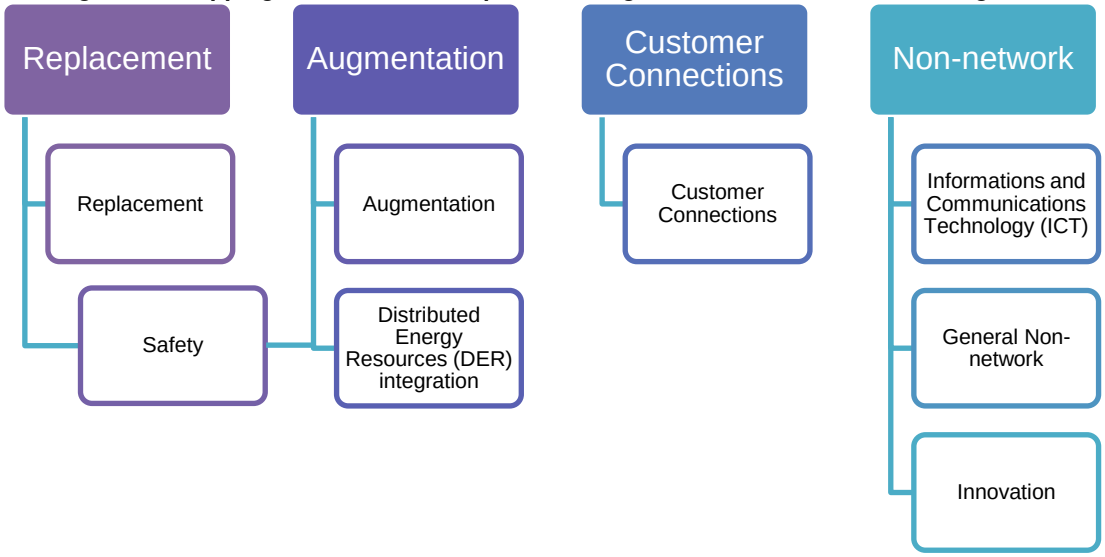


4.2.1 Guidelines comparison

The AER's Expenditure Forecasting Assessment Guideline identifies four main subcategories of capital expenditure. For the most part, these categories align closely to AusNet Services' existing forecasting categories, with the exception of the Safety category. This is demonstrated in Figure 8.

The EFA Guideline does not explicitly address the intended treatment of safety related expenditure. Previously the AER has agreed that safety expenditure could be appropriately allocated under either augmentation or replacement, depending on the nature of the program.

Figure 8 – Mapping EFA Guideline Capex subcategories to AusNet Services categories



4.3 Network capex forecasting overview

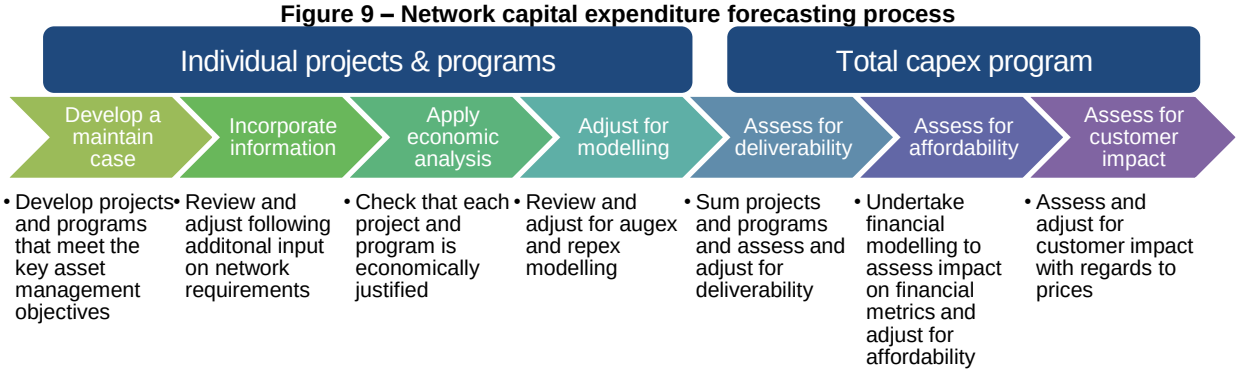
The objectives of the AusNet Services capital expenditure program for the 2021-25 regulatory period are generally aligned with the key asset management objectives to:

- meet customer and demand growth;
- comply with regulatory obligations;
- maintain reliability; and
- maintain or, in the case of the highest bushfire risk areas, improve safety.

In addition, price-reliability trade-offs associated with augmentation and major replacement projects will be negotiated with the Customer Forum, with the outcome of this reflected in the expenditure forecasts.

For each capex category, bottom-up forecasts are produced to calculate expenditure. Each methodology is pertinent to the nature of the relevant capex determinant. The methodology involves forecasting expenditure for each project and then applying a top-down assessment to arrive at the overall estimated amount.

Figure 9 – Network capital expenditure forecasting process



This process in Figure 9 ensures that AusNet Services determines a capex forecast that is both prudent and efficient.

4.4 Augmentation

Augmentation via the construction of network assets to enlarge the network, or increase its capacity, is required to manage the following:

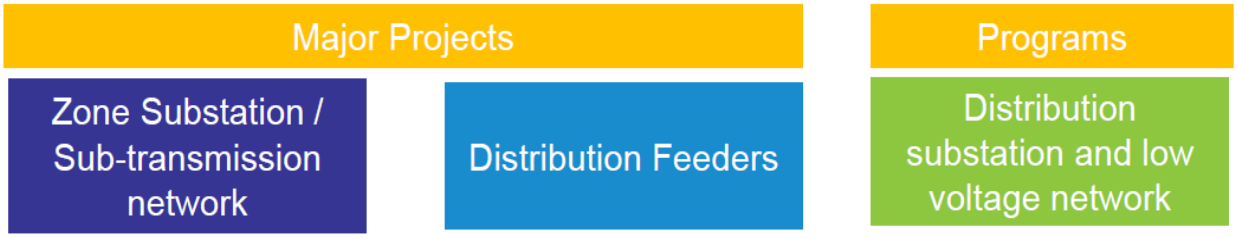
- capacity constraints in the distribution network due to growth in maximum demand;
- power quality and voltage compliance; and
- where it is economic, enabling additional distributed energy resources exports.

The augmentation expenditure forecast will provide for the following outcomes:

- ensures that the network can meet customer demand
- maintaining asset utilisation rates at efficient levels and lowest whole of life cost; and
- meeting safety, reliability and security of supply regulatory obligations.

Figure 10 outlines the three major components of augmentation expenditure forecast:

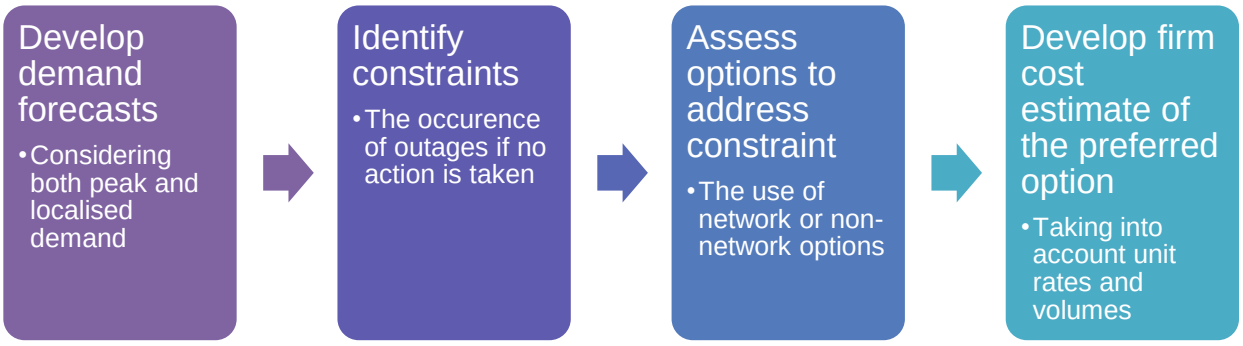
Figure 10 – Components of augmentation forecast



The expenditure forecasting for major growth projects (zone substations and the sub-transmission network) to meet population growth is in scope for Customer Forum negotiations. The Customer Forum, with the assistance of the AER, who is providing information and independent advice, will assess whether the proposed price-reliability trade-offs meet customer expectations. The outcome of these negotiations may impact the final augmentation expenditure forecast.

AusNet Services' forecasting method for augmentation expenditure is set out in Figure 11. It shares similar characteristics with the replacement expenditure forecasting process for major projects.

Figure 11 – Augmentation expenditure forecasting methodology



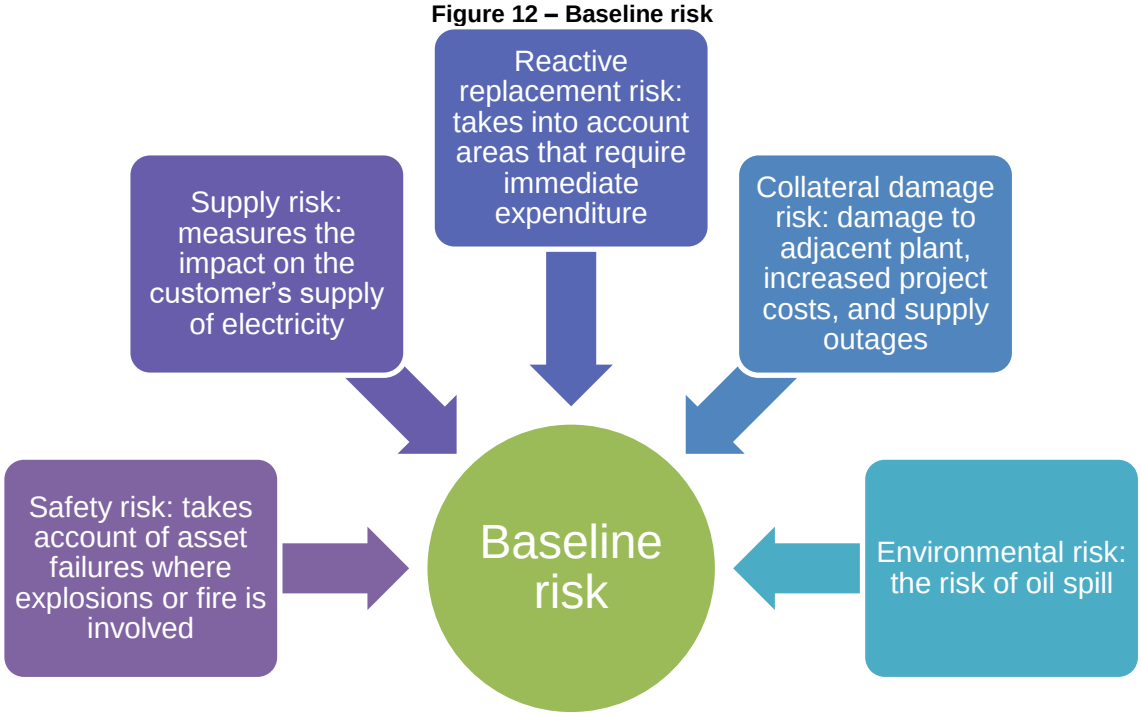
AusNet Services adopts a probabilistic planning approach to zone substation and sub-transmission network project forecasts. Probabilistic planning involves assessing all feasible options to manage the identified limitations. This includes evaluating non-network options to alleviate constraints as opposed to undergoing additional investment. Conversely, deterministic planning, which is based on feeder load capacity under peak demand conditions, is used for distribution feeder project forecasts.

Customers face an increased risk of outages if there is asset failure or insufficient network capacity at peak times. Where it is economic to reduce or eliminate these constraints (determined using the Value of Customer Reliability), augmentation project forecasts are developed to determine the economic

timing of when augmentation work should be undertaken to prevent these scenarios and address the risks of doing nothing.

Establishing a baseline risk is an important aspect of probabilistic planning. This baseline risk, otherwise known as the monetised risk of asset failure, is comprised of the following components: safety risk; supply risk; collateral damage risk, environmental risk, and reactive replacement risk. Figure 12 shows these different constituents of baseline risk.

Figure 12 – Baseline risk



Both project types (zone substation and distribution feeder) incorporate the use of an economic analysis process for the evaluation of different options. This involves conducting sensitivity analysis and test assumptions such as VCR, asset failure rate, and demand growth. The preferred option is one that minimises life cycle cost (present value) for a multitude of scenarios. This is then considered in the context of other factors such as localised customer impact, outage requirements and the deliverability of the solution to ensure the best overall solution is selected.

When selecting the most optimal solution, consideration is given to the economical timing. That is, the project is justified when the cost of 'do nothing' exceeds the annualised cost of preferred investment. The profile of expenditure is determined to ensure the project is in service by its economic timing.

The methodology for distribution substation and LV network augmentation programs are based on the purpose that they address both capacity and quality of supply compliance issues. The roll-out of AMI has provided data which, using analytics, has enabled AusNet Services to transition from reactive to proactive expenditure in this area. Costs are estimated for each viable solution by analysing historical project volumes and rates.

4.4.1 Integration of distributed energy resources

Growing solar capacity in the network means that two-ways flows are increasing, as customer's export surplus solar generation onto the distribution network. The announcement of the Victorian Government Solar Homes program will contribute to this increase over 2021-25. AusNet Services is currently working through the details of the approach to forecasting costs associated with integrating solar, which needs to balance customers' expectations regarding integrating their solar and their expectations about cost and network resilience.

While the details of this forecasting methodology are still being finalised, it is likely to have the following features:

- Use of AMI data to identify existing and future constraints;
- Assess a range of options for addressing these constraints;
- Select the lowest cost option and assess whether it is economic to deliver this option. Augmentation would be considered economically efficient where the value of the constrained solar exports (valued in accordance with prevailing feed-in tariffs) exceeds the cost of augmentation.

AusNet Services will conduct detailed stakeholder engagement on the approach to DER integration (including forecasting methodology) in 2019, and intend to negotiate this with the Customer Forum prior to submission in July 2019.

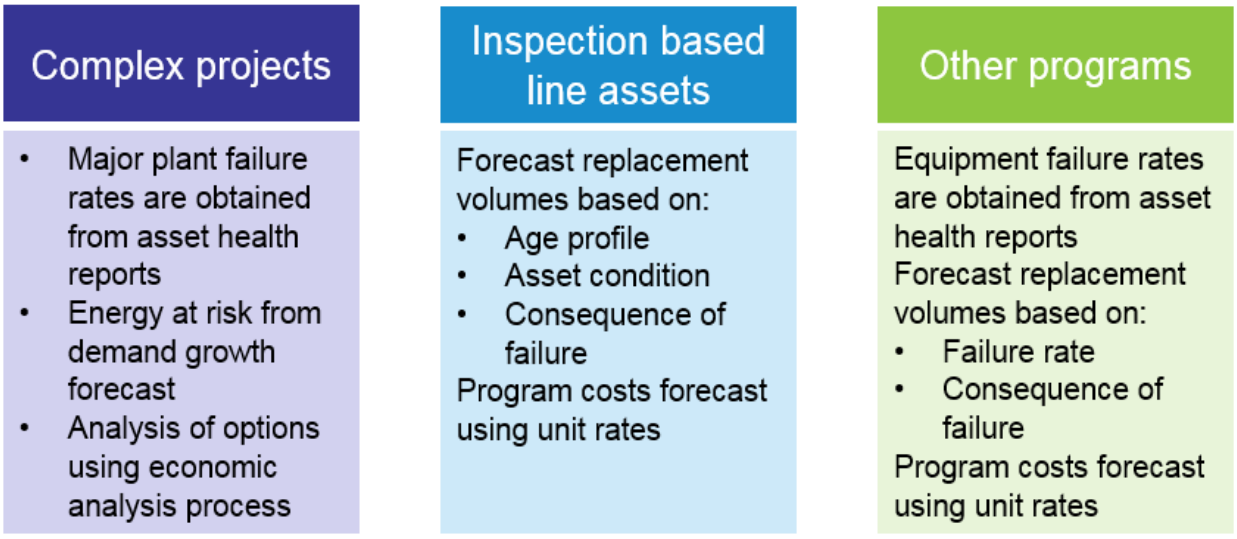
4.5 Replacement

To maintain network reliability, safety and risk, replacing poor condition assets is necessary. Managing the deterioration of assets over time is vital to maintaining reliability, safety and risk at the current levels. Replacement projects are generally initiated to address increased likelihood of plant failure resulting in an increased risk, taking into account a number of factors:

- aging profile of assets;
- assessed asset conditions;
- obsolescence,
- consequence of failure; or
- safety risks and issues.

AusNet Services has three major types of replacement expenditure programs which are illustrated in Figure 13.

Figure 13 – Components of replacement forecast

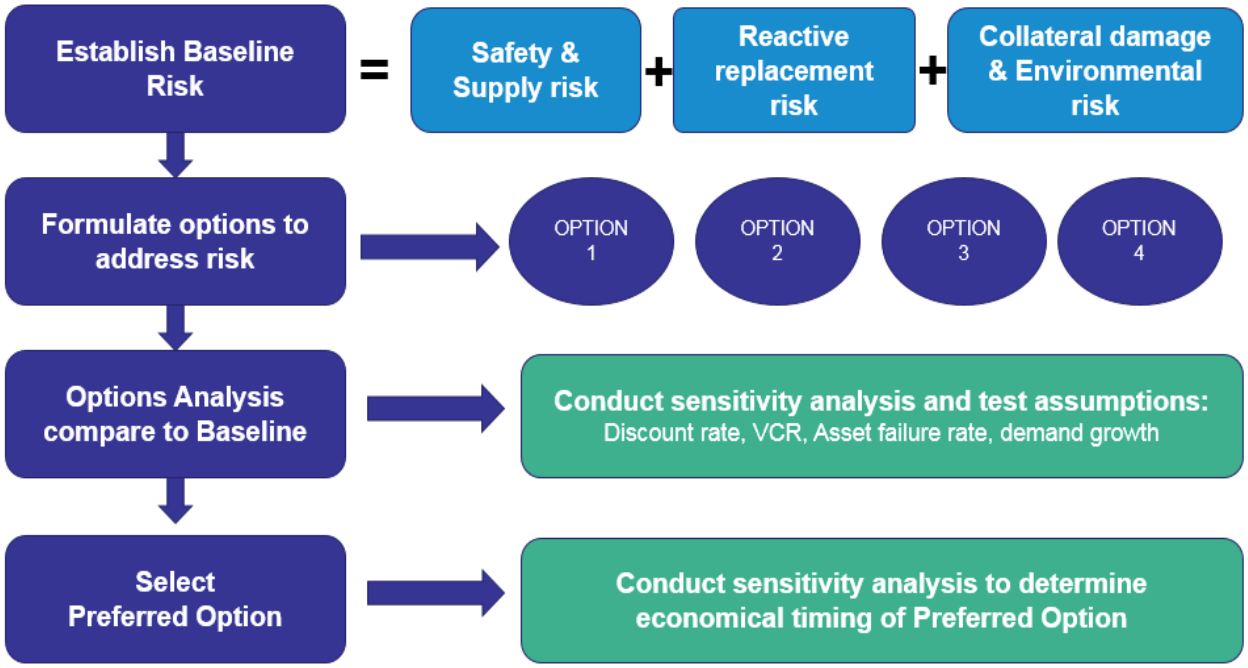


AusNet Services assesses the condition of assets and applies a condition score. The condition scoring framework is based on: test results, inspection and maintenance observations, and defect and working order information. The condition score is then used as an input into an assessment process to determine network risks.

Where there are a number of assets at a single site assessed as being in poor condition, these are assessed as a complex project, to leverage efficiencies of a combined project rather than individual asset replacements. The supply risk from Figure 12, which measures the impact on the customers supply of electricity, takes into account energy at risk. This is the total energy in a year that cannot be supplied following an asset failure. Energy at risk plays a role in the forecasting of complex project expenditure. Combined with the demand forecast, this information is used to undertake economic assessment of asset replacement decisions for complex projects. This process is identical to the economic assessment process for augmentation projects.

Figure 14 shows the overview of AusNet Services' economic analysis process of selecting preferred replacement options. The options available typically range from a full rebuild to selective asset replacement. Combining the replacement of several assets at the same site leverages efficiencies, hence reducing replacement expenditure.

Figure 14 – Economic analysis process



The Customer Forum will negotiate with AusNet Services on major asset replacement projects that are focused on replacing old equipment. Along with being value for money, the forecast expenditure will need to demonstrate the following:

- testing of alternative replacement expenditure proposals;
- certainty of project timings; and
- articulated and tangible benefits, beyond general reliability improvements, afforded to specific customer groups serviced by the zone substations.

Those assets which are not considered complex projects but still classified as being in poor condition, undergo individual assessment for inclusion in replacement programs. For distribution line assets, the majority of replacement forecasts are based on historical replacement rates combined with asset age and condition information to forecast future volumes. For zone substation assets, a risk-based assessment, similar to the approach used in the economic assessment process for augmentation and complex replacement projects, is undertaken. The safety, supply, environmental, collateral damage and reactive replacement risks are calculated in line with the deterioration of the asset condition over time to determine the economic timing for replacement to address the risks.

4.6 Customer connections

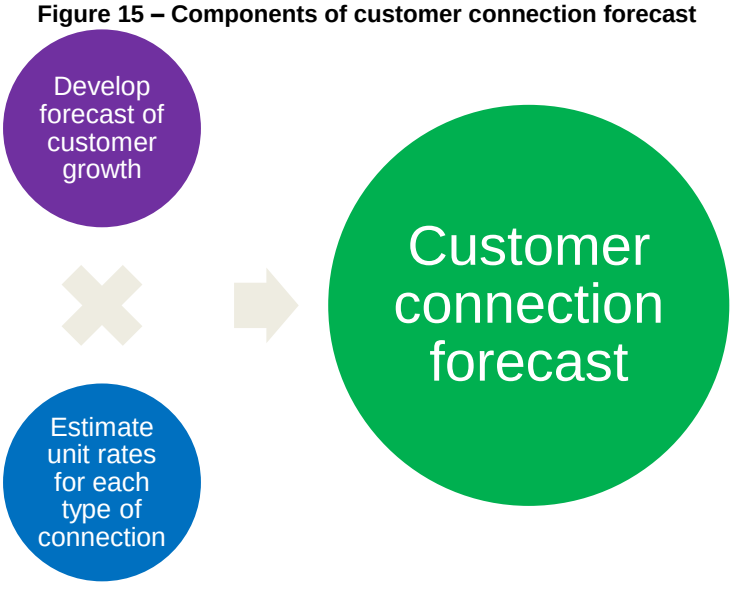
Customer connection expenditure is the costs associated with connecting new customers to the shared electricity network at the customer's request. This has a cumulative effect in that these works increase the capacity of the existing customer connections. In some circumstances, a significant proportion of capital contributions are funded by connecting customers whilst the remaining costs are then recovered from the remaining customers.

The total forecast expenditure is the product of customer volumes and connection unit rates. As outlined in Figure 15, customer growth is forecast for each of the residential, small business, commercial and industrial categories. For most categories, current unit rates and project costs based on similar connection types are then identified and applied in the forecast. For categories where the average cost per connection fluctuates due to complexity and relative size of projects undertaken in a given year, AusNet Services uses a longer term average unit rate in the forecast. In the past, this approach has been taken for complex residential connections (particularly in rural areas) and larger commercial and industrial connections.

The forecast includes a revised approach to forecasting medium density housing. Following the introduction of the national charging framework (NER, Chapter 5A) in 2016, AusNet Services amended its policy which governs funding practices with residential land developers under turnkey arrangements. Under the new policy, land developers no longer received rebates for the construction of LV assets. Other measures were introduced that aimed to ensure quality standards were maintained for new housing developments moving forward under this policy. This has culminated in the need to recognise the market value of constructed assets upon completion, i.e., the value of assets gifted to AusNet Services from developers on a per lot basis. The forecast therefore reflects expected volume of residential subdivisions under turnkey arrangements multiplied by an agreed unit rate per lot for gifted assets. This in turn led to a step change within the 2016-20 regulatory period in the forecast of gifted asset contributions which forms part of total forecast customer contributions, which will continue during the 2021-25 period.

Capital contributions for new connections are calculated in accordance with AusNet Services' Connection Policy which incorporates the requirements of both the National Electricity Charging Framework and AER's connection charge guideline. Customers may contribute toward the cost of a network extension, other network augmentation or direct connection assets required to enable the new connection or connection alteration to be made.

Figure 15 – Components of customer connection forecast



4.7 Safety

The safety capital expenditure forecast is for programs required to manage and mitigate safety risks from the distribution network, and to meet compliance and regulatory obligations. The location of AusNet Services' electricity distribution network means that there is a high bushfire risk due to the heavily vegetated areas it traverses. As a result, the majority of safety expenditure occurs in these areas. Safety programs either can be a result of company initiatives or mandated by the government.

AusNet Services is including the following safety expenditures:

- REFCL program
- Codified areas
- Expulsion Drop Out (EDO) fuse replacements
- Other minor programs

The Rapid Earth Fault Current Limiter (REFCLs) program is being installed across hazardous network areas to reduce the risk of power line related bushfires. The methodology for expenditure forecasting used for Tranche 3 of the REFCL program is identical to that used for Tranches 1 and 2.

A bottom-up approach is used for the estimates of the fire risk program (codified areas and EDO fuse replacements) expenditure forecasts. Forecast expenditures are derived by multiplying volumes by the unit rates. Volumes are based on the functional scope of works and historical asset audits. Unit rates are based on recent actual costs or tendered rates of projects.

4.8 Non-network capex forecasting

Non-network expenditure includes both information and communication technology (ICT) capabilities and other categories. ICT expenditure ensures: lifecycle management of various software and hardware systems, cyber security and future analytics and automation opportunities. This will enable potential outcomes of improved reliability and response times for emergency maintenance and also greater security of systems and data.

4.8.1 Information and communications technology

Robust ICT expenditure is forecast using the following steps:

- Assess the current performance of information and communication technology systems and infrastructure to inform to what extent the existing systems and infrastructure can be utilised to support the asset management approach;
- Bottom up discussion with business and technology architects and delivery leads to develop scope, key objectives, and drivers influencing the requirement for the programs;
- Consideration of different options to achieve the objectives of the program and analysis of their relative costs, benefits and risks (this can include emerging technologies and trends that can be both effectively and efficiently applied); and
- Top down view to ensure that the technology strategy investment portfolio represents prudent expenditure for the upcoming period, relative to AusNet Services' previous expenditure and also benchmarked against other comparable distribution businesses. This includes the application of AusNet Services' ICT cost allocation methodology, in recognition that AusNet Services is a multi-utility regulated business.

AusNet Services has also ensured that costings across different programs of work have been consistently developed, for example, through using industry standard labour rates and applying consistent costing methodologies.

4.8.2 General non-network

General non-network expenditure includes other categories such as: vehicles, non-operational buildings, and tools and test equipment.

Vehicles expenditure includes the costs associated with the purchase and replacement of new and existing vehicles. The forecast will be based on a bottom-up approach with trend analysis applying a top-down examination of estimates of the number of field staff, age and condition of the vehicle.

Expenditure in the buildings category is made up primarily of property and corporate buildings that facilitate efficient delivery of network services. The forecast will be based on a bottom-up approach of the use and condition of the buildings.

Other non-network expenditure relates to the associated equipment required to support the network construction and maintenance programs, along with the furniture and fittings component of the non-operational buildings program. The forecast for the components will be based on historical expenditure levels.

4.8.3 Innovation

Innovation expenditure is a non-network capex category. This is consistent with how this expenditure is allocated within the capex model. All distribution networks are provided with incentives for demand management-related innovation expenditure. In order to integrate transformational technology to improve network operation and to better prepare for future energy requirements, AusNet Services is forecasting additional innovation expenditure beyond demand management.

The methodology for forecasting innovation expenditure begins with setting out the future state of the network and requirements to best serve customers. This is followed by assessing current capabilities and identifying any gaps for opportunities and risks. Once this is complete, AusNet Services then prioritises and orders projects according to business needs. For identified projects, a development roadmap is established which is represented in Figure 16. The forecast process matches and incorporates both top-down and bottom-up requirements.

Figure 16 – Overview of innovation expenditure forecast process