

# **ERGON ENERGY**

## **Expenditure Forecast Methodology 2015 to 2020**



## PREFACE

This document relates to Ergon Energy's next regulatory control period, commencing 1 July 2015 and ending 30 June 2020. The Australian Energy Regulator (AER) is required to make a building block determination for Ergon Energy's Standard Control Services for this period.

The development, proposal, assessment and ultimately agreement on the appropriate capital and operating expenditure forecasts is a critical part of this building block determination process.

Late last year, the Australian Energy Market Commission, recognising the importance of this process, changed the National Electricity Rules to bring forward engagement on the methods that underpin the expenditure forecasts. Ergon Energy's Expenditure Forecast Methodology complies with the new rule requirements. We have also consulted with the AER, other Distribution Network Service Providers, and our Customer Council on the structure and content of this document.

Ergon Energy will use this Expenditure Forecasting Methodology, and any feedback from the AER and other stakeholders, as a basis for developing our capital and operating expenditure forecasts in our Regulatory Proposal. If you have any comments in respect of our approach, they should be sent to:

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## 1. INTRODUCTION

### Purpose

The National Electricity Rules (NER) require Ergon Energy to notify the Australian Energy Regulator (AER) of the methodology we propose to use when forecasting capital and operating expenditure for our Regulatory Proposal.<sup>1</sup>

This is the first time Ergon Energy has been required to formally submit the methodology we propose to use when forecasting expenditure (our 'Expenditure Forecasting Methodology') in advance of the Regulatory Proposal. In the absence of precedent, and with limited guidance in the NER, Ergon Energy sought additional assistance from documentation prepared by the Australian Energy Market Commission (AEMC) during the Economic Regulation of Network Service Providers (NSP) Rule change process in understanding the purpose of preparing the Expenditure Forecasting Methodology.

The AEMC's final determination on this Rule change noted the following:

1. because expenditure models are an integral component in the assessment process, the AEMC has mandated (early) engagement on the information requirements for assessment models as well as how the Distribution Network Service Provider (DNSP) approaches expenditure forecasting. The intention of this is to save time and effort on both parties.<sup>2</sup>
2. the intention of this final rule is to facilitate early engagement on an NSP's expenditure forecasting methodology and to expedite the AER's understanding of the NSP's approach to expenditure forecasting.<sup>3</sup>
3. the timing is intended to coincide with the framework and approach stage so engagement on the forecast approach and forecast assessment can occur at the same time.<sup>4</sup>

We also understand that the AEMC's decision to include in the NER a requirement for DNSPs to prepare an Expenditure Forecasting Methodology was influenced by the Energy Networks Association's (ENA) submissions which argued strongly for the DNSP to retain control of its forecasts (rather than have all forecasts prepared using an AER preferred model). The ENA submitted that these forecasts should be referenced to the forecasting methodology that the NSP uses in the day-to-day planning and operation of its network.<sup>5</sup>

Accordingly, this document sets out Ergon Energy's Expenditure Forecasting Methodology for the purpose of:

- expediting the AER's understanding of the approach we intend to use in forecasting operating and capital expenditure as part of our Regulatory Proposal;
- engaging with the AER on the additional information requirements that will be required as part of its assessment of our forecasts; and
- demonstrating that our approach to forecasting expenditure is capable of producing capital and operating expenditure forecasts that will meet the capital and operating expenditure objectives<sup>6</sup>

<sup>1</sup> NER, clause 6.8.1A

<sup>2</sup> Australian Energy Market Commission (AEMC) (2012), *Rule determination: Rule change: Economic regulation of network service providers, and price and revenue regulation of gas services*, 29 November 2012, p110 (AEMC Rule Determination, 29 November 2012)

<sup>3</sup> AEMC Rule Determination, 29 November 2012, p114

<sup>4</sup> AEMC Rule Determination, 29 November 2012, p114

<sup>5</sup> Energy Networks Association, Response to Draft Determination, *Economic Regulation of Network Service Providers*, 4 October 2012, p30

<sup>6</sup> NER, clauses 6.5.6(a) and 6.5.7(a)

## INTRODUCTION

and can satisfy the AER that the forecasts reasonably reflect the capital and operating expenditure criteria,<sup>7</sup> having regard to the expenditure factors outlined in the rules.<sup>8</sup>

We also note that the methodology proposed represents Ergon Energy's best expectation of the approach that will be used. While we do not anticipate any changes to what we propose, there may be circumstances which require modifications to the expenditure forecast methodology used. These include:

- changes in Ergon Energy's operating circumstances or governance;
- feedback from the AER or customers in consultation and engagement; and
- changes to the NER or necessary changes arising from the AER's Framework and Approach Paper.

### Context of forecasting methodology

Ergon Energy is preparing expenditure forecasts in an environment where the price of electricity and the underlying costs of managing distribution networks, have come under intense scrutiny. This scrutiny is expected to continue for the next regulatory control period.

In preparing our Expenditure Forecasting Methodology we have used the issues raised by the AER, and its consultants, in its 2010 Distribution Determination for Ergon Energy's current regulatory control period as a positive opportunity to improve Ergon Energy's processes. Some of these issues included:

- unexplained volatility in the composition of forecasts between years, due to an apparent lack of preliminary business cases or supporting documentation to inform medium term planning decisions;
- a lack of demonstration of causality between the drivers used in forecasting methodologies and the expenditure forecasts; and
- an apparent use of out dated data and internal inconsistencies in asset replacement modelling.

We have made substantial changes to some of our governance and decision making processes to address these issues previously raised by the AER. The governance process is explained in chapter 4 below.

Ergon Energy's overarching goal as part of our strategic direction, which is centred around our vision to be 'a high performance, customer-driven energy business', is to limit average increases in network charges over the medium term to less than the Consumer Price Index (CPI). This goal provides a customer-informed framework for the development of Ergon Energy's expenditure forecasts. To achieve this strategic direction, Ergon Energy's governance and decision making processes includes consideration of a range of factors aimed at minimising expenditure without impacting network efficiency. Our forecasting methods are similarly based on ensuring the most optimal forecast is provided.

### Consultation and customer considerations in development of forecasting methodology

Ergon Energy is increasing efforts to ensure customers are inherent in our forecasting, planning and investment process and we are responsive to their needs when forecasting and providing distribution network services.

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<sup>7</sup> NER, clauses 6.5.6(c) and 6.5.7(c)

<sup>8</sup> NER, clauses 6.5.6(e) and 6.5.7(e)

## INTRODUCTION

Ergon Energy has a significant customer insights program, including direct engagement, customer research and complaints analysis.

Our 'value to customer' research program, which commenced in 2001, provides a metric that allows us to monitor how our customers judge value in terms of what they receive versus the price they pay.

To ensure a customer-informed expenditure forecast for 2015 we are also currently conducting quantitative customer 'reliability cost trade off' research designed to explore the value different customer segments place on reliability of supply and other services.

This is part of a broader program that is seeking to engage stakeholders on different elements of the proposal, including peak bodies, large customers, our Customer Council, the Energy Ombudsman and our local government/community leaders.<sup>9</sup>

Through these collective activities Ergon Energy already has a strong understanding of customer value drivers by segment. Overall, electricity affordability is the core concern, with customer perceptions of affordability falling dramatically over the past five to six years as prices have risen. Reliability and quality of supply, however, remain important factors in our customer's value perceptions and must not be disregarded.

Customer engagement is inherent in our planning and investment processes. Our demand management strategy recognises that our ability to manage demand is dependent on the understanding of customers in each region.<sup>10</sup> In 2012-13, Ergon Energy undertook 15 initiatives which involved working with customers to address factors impacting network limitations and their associated costs. For example, our auto demand trial focused on shutting down or dialling back customer equipment for short periods of time. Ergon Energy was able to reduce peak demand events by around 32 per cent with no impact on the customer.<sup>11</sup> These joint initiatives with customers complement our non-network alternative program which is geared towards providing a more efficient solution to network augmentation.

Our Customer Council is an important vehicle to increase joint understanding of the issues, processes and potential impacts of the decisions that are being made on our future investment priorities. Established in 2011, the consultative forum brings together representatives from Ergon Energy and nine peak organisations from across regional Queensland. These community service, environmental management and business sector organisations are informing and influencing Ergon Energy's business decisions and helping to facilitate wider community consultation. We engaged the Customer Council on the development of this forecast methodology and expect the Customer Council to take an active role in moulding our Regulatory Proposal over the next 12 months.

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<sup>9</sup> An understanding of our customers and their concerns provides a solid basis for developing and refining our operating expenditure forecasts. The AER must take this into account when assessing our proposal (NER, clauses 6.5.6(e)(5A) and 6.5.7(e)(5A)).

<sup>10</sup> [Ergon Energy Demand Management Plan](#), p14

<sup>11</sup> Ergon Energy DMIA outcomes p13

## 2. CAPITAL EXPENDITURE FORECAST METHODOLOGY

### Overview

Ergon Energy's approach to forecasting capital expenditure requirements can be explained across three dimensions:

1. various estimation processes and methodologies employed for developing forecasts at the category level;
2. the process for consolidating lower level forecasts and establishing a five year capital expenditure forecast for the next regulatory control period consistent with NER requirements; and
3. the governance and decision making processes that influence short-term and long-term forecasts.

This chapter outlines how Ergon Energy will approach establishing a total capital expenditure forecast for the next regulatory control period consistent with new NER and AER's Expenditure Forecast Assessment Guidelines.

Firstly, the chapter outlines the various approaches for estimating capital expenditure requirements at a driver level. Following this, the chapter outlines our iterative process of:

- consolidating lower level forecasts;
- assessing total forecasts (and their pricing implications) against corporate, customer and stakeholder expectations;
- scrutinising forecasts using generally accepted assessment techniques; and
- based on the above, making recommendations to business units to revise and/or substantiate lower level forecasts.

This process of refinement will occur at various stages leading up to the final approved Regulatory Proposal.

We explain how our chosen forecasting approach is consistent with our business as usual investment decision making process. In Chapter 4, we provide a more detailed explanation of our capital governance processes for investment decision making.

### Summary of approach to forecasting capital expenditure

Our approach to forecasting capital expenditure requirements for inclusion in the Regulatory Proposal is summarised below.

#### Estimates of forecast volumes and direct costs for each capital expenditure category

The process for forecasting capital expenditure requirements for the Regulatory Proposal begins with lower level forecasts developed by business units within Ergon Energy. The investment driver usually determines the capital expenditure forecast category and, in some cases, the asset type will determine the forecasting approach. Ergon Energy's capital expenditure categories are relatively consistent with those adopted across the Australian electricity distribution sector.

# CAPITAL EXPENDITURE FORECAST METHODOLOGY

## Consolidation of forecasts and conversion to AER required format

In order to develop a total capital expenditure forecast for the next regulatory control period, Ergon Energy consolidates the forecasts for each capital expenditure category for the remaining two years of the current regulatory control period and the five years of the next regulatory control period. Business overheads (costs which are not estimated within the category level forecasts) are allocated at this stage. To meet the AER's requirements regarding inputs into their revenue forecast models, the total capital expenditure forecast (represented in 2012-13 nominal dollars) is converted into 2014-15 real dollars based on assumptions regarding CPI and other cost escalators.

## High level assessment of capital expenditure forecasts

Revenue and pricing outcomes are simulated taking into account the capital expenditure forecast and other key regulatory inputs. Both the capital expenditure forecasts themselves and the revenue and pricing outcomes are assessed against a number of factors, including:

- customer expectations regarding pricing and service outcomes, both within the next regulatory control period and in future periods;
- corporate and stakeholder expectations and commitments in respect of price and service delivery;
- current workforce delivery and capacity to deliver works in the next regulatory control period; and
- changes to the service classification under the AER's Framework and Approach Paper.

Ergon Energy may seek further refinement of the forecast volumes and costs at the category level if the consolidated forecast (or the price/service outcomes flowing from the forecast) is inconsistent with customer, corporate, workforce capability or regulatory expectations. This refinement will be an iterative process, which will take into account scrutiny of other building block inputs and the scrutiny and assurance process outlined below.

## Iteration of forecasts – scrutiny, assurance and governance

Ergon Energy will undertake an iterative process of refining the forecasts provided at the category level, using among other things:

- benchmarking and category based assessment techniques recommended and used by the AER as part of its own assessment processes;<sup>12</sup>
- independent verification of the expenditure forecasting methodology, assumptions and inputs;
- historical and trend analysis;
- detailed project reviews;
- technical assessments; and
- governance and documentation reviews.

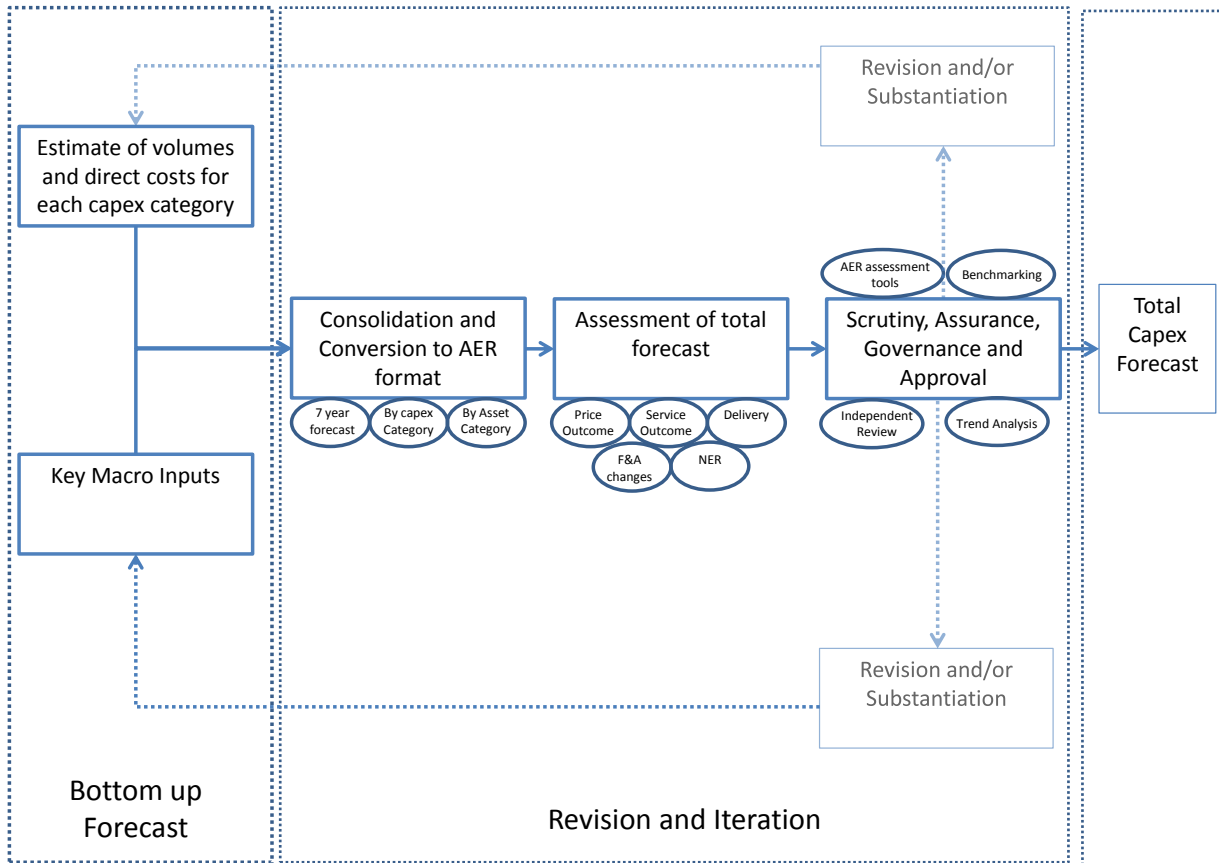
These techniques allow Ergon Energy to internally scrutinise category level forecasts. Based on these assessments, category level forecasts will be revised or substantiated with further evidence. This process will occur in the months leading up to the final internal approval of the total capital expenditure forecast for inclusion in the Regulatory Proposal.

Figure 1 below depicts the process of establishing the forecasts at a high level.

<sup>12</sup> The AER's expenditure forecast assessment guidelines will set out the variety of assessment tools it will use to form a view as to the reasonableness of our forecasts under the NER. Our approach is to try and refine our forecasts using similar techniques and processes.



# CAPITAL EXPENDITURE FORECAST METHODOLOGY



**Figure 1: Process for establishing forecasts**

## Capital expenditure lower level forecasts

A variety of estimating tools are used to forecast expenditure for each of the relevant business units within Ergon Energy based on the nature of the asset, its driver, the homogeneity of costs and the relative certainty of future volumes.

# CAPITAL EXPENDITURE FORECAST METHODOLOGY

Figure 2 below provides an overview of the lower level forecasts separated into two broad business categories – network and non-network management asset forecasts.

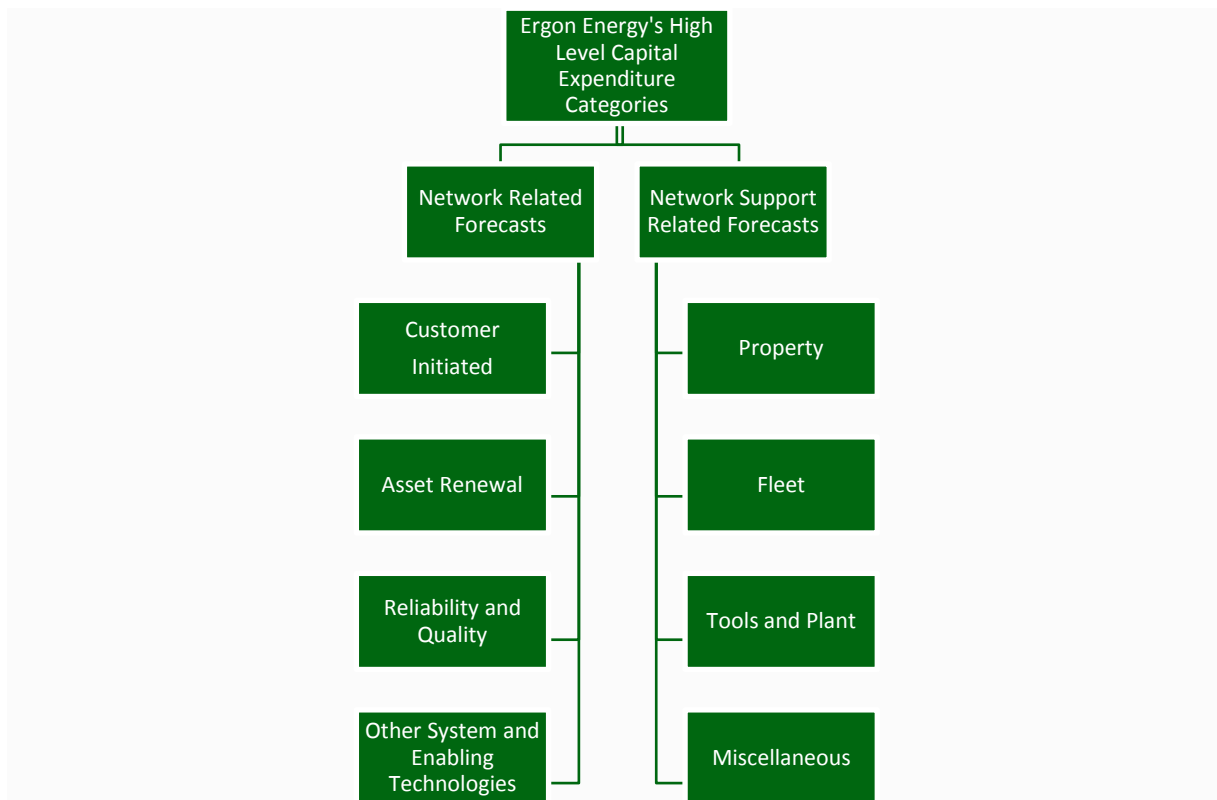


Figure 2: Outline of expenditure approaches

## Estimating customer initiated expenditure requirements

Customer activity within and around the network can constrain the network's capacity to provide a safe, secure and reliable supply. Without network investment, or alternative action, an increased demand for electricity will exceed the existing network's capacity, and/or non-compliance with technical standards or minimum service standards.<sup>13</sup>

The minimum technical and service standards that Ergon Energy is required to meet include:

- technical standards covering system security, network planning requirements, voltage levels, power factor and other quality of supply parameters;<sup>14</sup> and
- Minimum Services Standards that cover reliability of supply and customer service levels set by Guaranteed Service Levels under the Queensland Electricity Industry Code.<sup>15</sup>

<sup>13</sup> The NER requires us to provide forecasts that meet expenditure objectives including meeting and managing demand, complying with regulatory obligations and maintaining Standard Control Services (clauses 6.5.6(a) and 6.5.7(a)).

<sup>14</sup> These standards are set out in a number of instruments including the NER, *Electricity Safety Act 2002*(Qld) and the *Electricity Safety Regulation 2002*(Qld), legislation administered by the Queensland Electrical Safety Office, various codes of practice and standards consistent with good industry practice.

<sup>15</sup> Electricity Industry Code (Version 13) as established under the *Electricity Act 1994* (Qld) and administered by the Queensland Competition Authority.

## CAPITAL EXPENDITURE FORECAST METHODOLOGY

There are four general types of customer activity that can cause constraints and result in the potential need to invest:

- organic growth that occurs when existing customers increase their usage of electricity in a particular part of the network, or globally across the network;
- the number of residential or small commercial customers increases in a particular part of the network due to population expansion in that area;<sup>16</sup> and
- block loads connecting to a particular part of the network, generally large commercial or industrial loads.

We adopt three different forecasting approaches to estimate future works associated with these different types of activity:

1. a forecast of works required to connect new or upgraded connections across Ergon Energy's network area;
2. a forecast of growth and augmentation needs in the sub-transmission network (where the network is generally 33 kV and above); and
3. a forecast of growth and augmentation needs in the distribution and low voltage networks (where assets are generally below 33 kV).<sup>17</sup>

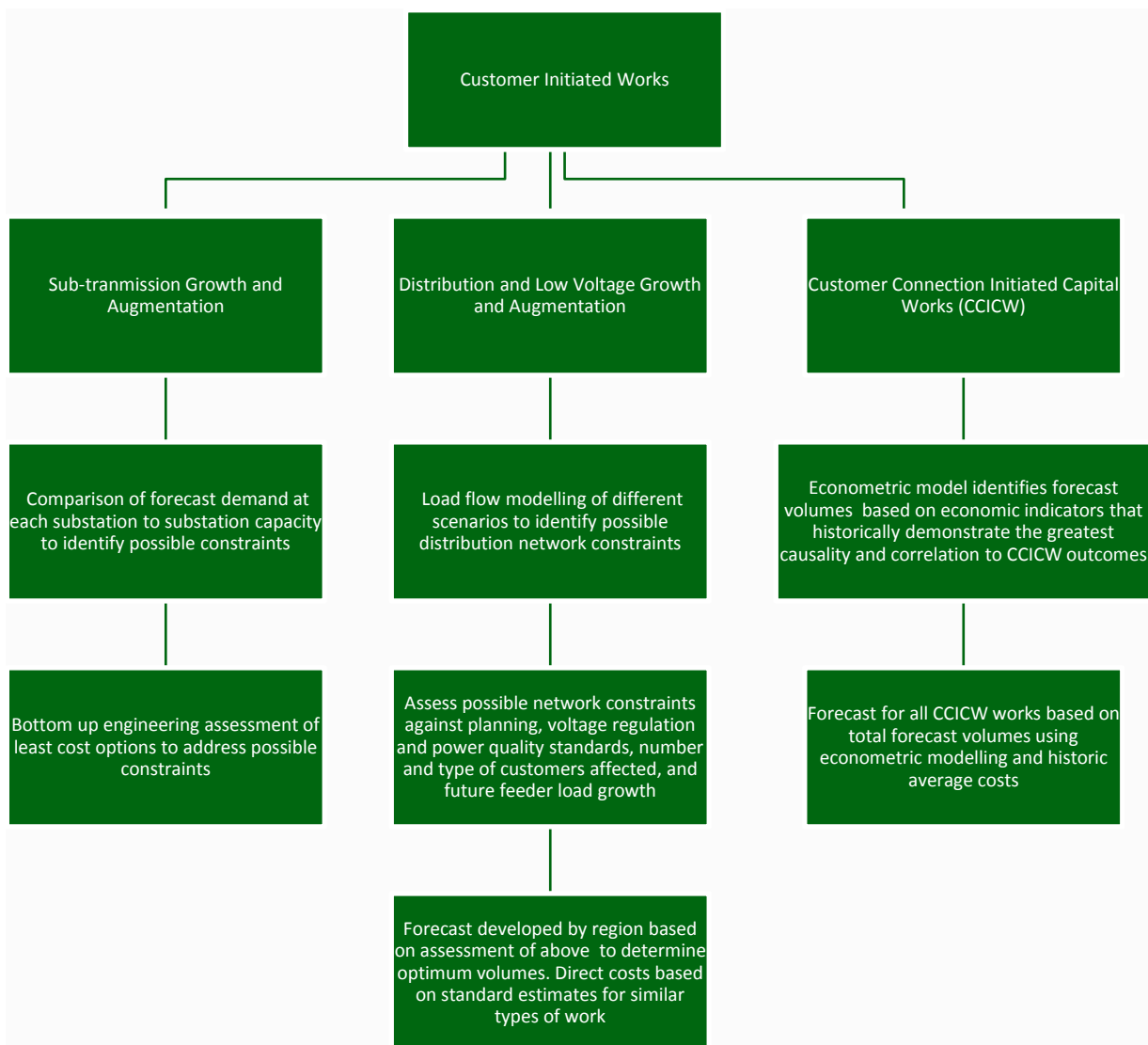
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<sup>16</sup> Recently, we have noticed the increase of solar photovoltaic (PV) penetration in a particular part of the network may also trigger investment.

<sup>17</sup> Note that some 33 kV assets are used for a sub-transmission function, while others are used for a distribution function. They are classed based on their primary function.

# CAPITAL EXPENDITURE FORECAST METHODOLOGY

A summary of the forecasting approaches we apply to different types of customer initiated works is outlined in Figure 3 below.



**Figure 3: Summary of forecasting approaches**

## Estimating asset renewal expenditure requirements

As assets deteriorate, the likelihood of failure or reduced functionality increases. This can affect Ergon Energy’s ability to meet the Minimum Service Standards, pose environmental threats and can compromise the safety of Ergon Energy’s personnel and the public. Ergon Energy’s asset renewal forecast represents required investment to replace or refurbish the deteriorated assets, minimising the consequences of failure or reduced functionality to an acceptable level.

The varying operational and environmental conditions network assets experience throughout their lifetimes directly influence the rate at which they deteriorate and eventually fail. To meet service obligations, Ergon Energy has implemented a risk-driven asset replacement regime based on two main methodologies:

- proactive replacement or refurbishment before failure; and
- run-to-failure.

# CAPITAL EXPENDITURE FORECAST METHODOLOGY

In general, run-to-failure is adopted when this provides the lowest overall cost and has minimal or no impact on service outcomes when assets fail in-service; otherwise, proactive replacement or refurbishment is adopted. Proactive replacement and refurbishment is undertaken for assets that have a high impact on service outcomes.

The replacement and refurbishment methodologies rely on information available in Ergon Energy's management plans for different asset types. These management plans use information captured from Ergon Energy's corporate data systems to determine the optimal replacement time. They apply a methodology based on the asset type, the age, condition, defects, operating environment, function, criticality, and value.

Ergon Energy's forecasting method replicates investment decision processes that Ergon Energy uses internally by applying the same information sources to develop business cases for the longer term forecast. The forecast methodology for asset renewal is summarised in Figure 4 below.

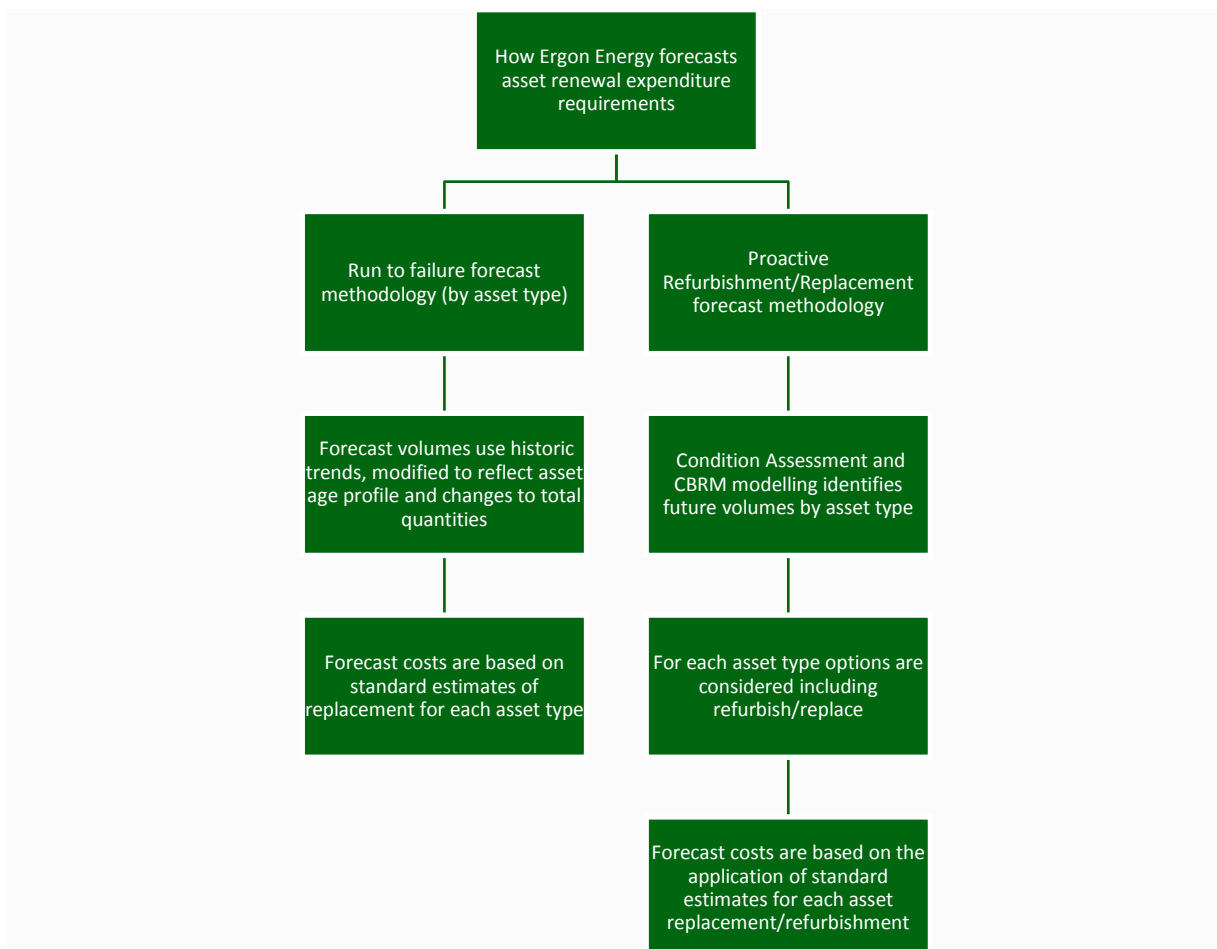


Figure 4: Forecasting asset renewal

# CAPITAL EXPENDITURE FORECAST METHODOLOGY

## Estimating network reliability and quality of supply expenditure requirements

Network reliability and quality of supply capital expenditure relates to works directly targeted at addressing reliability or quality of supply issues across the distribution system, in order to meet mandated service obligations. It also encompasses the capital expenditure required to improve the performance experienced by customers supplied by a consistently poor performing feeder or feeder section.

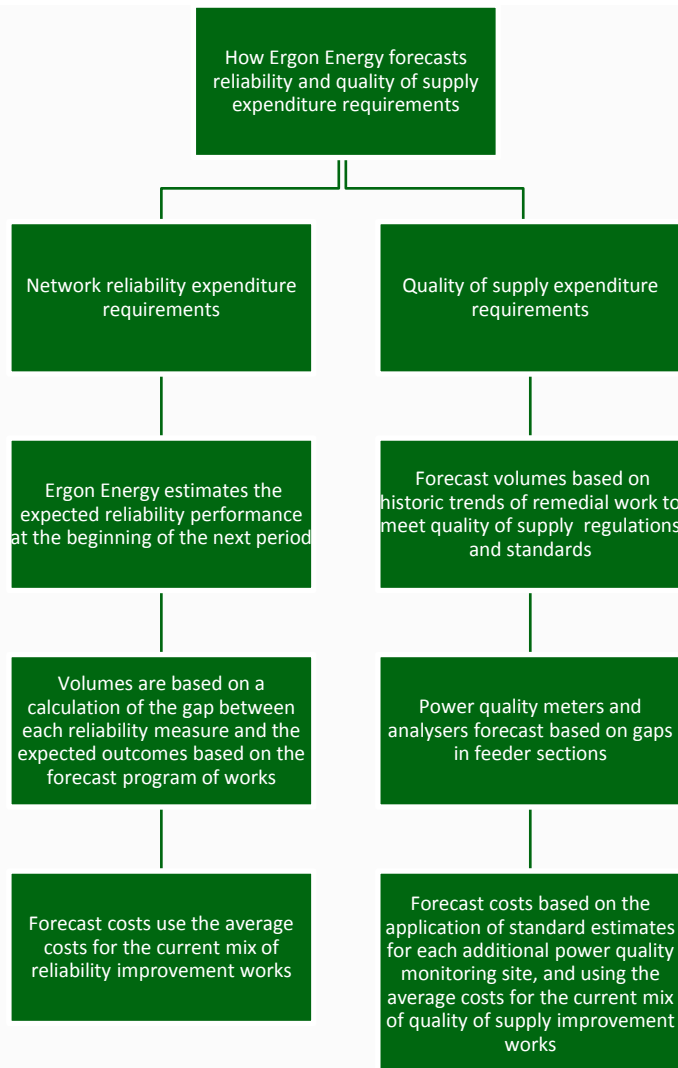


Figure 5: Reliability and quality of supply expenditure

## Estimating other system capital and enabling technologies expenditure requirements

This category of capital expenditure covers data and communications networks and project expenditure to address specific issues in Ergon Energy's network or network operation. We identify four main forecasting processes under this category:

1. operational technologies;
2. protection and control;
3. undergrounding works; and
4. miscellaneous works.

# CAPITAL EXPENDITURE FORECAST METHODOLOGY

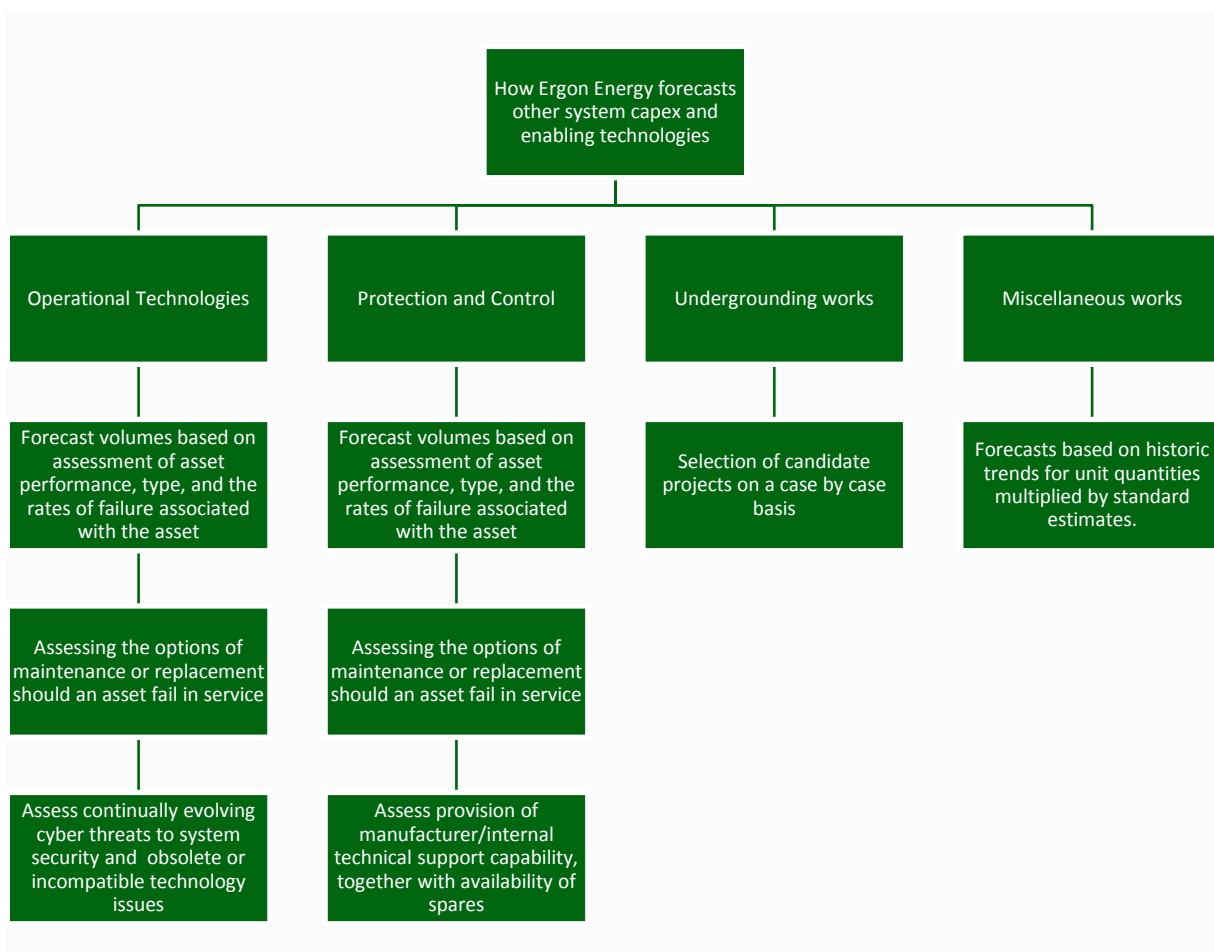
Operational technologies include the systems that collect data for asset management purposes and provide the mainstay for monitoring and remote operation of the power network. Operational technologies include system-related telecommunications, operational systems, operational technology security and cyber security systems specific to the distribution network.

Protection and control assets are critical to safety and network reliability maintenance. These assets monitor and operate plant, detect network faults and operate circuit breakers in substations and downstream distribution feeders. All these asset types have a natural physical life, as well as an economic and technological support life. Electronic microprocessors provide the basis for modern protection and control assets such as remote terminal units, relays, and reclosers, while older protection assets use electro-mechanical technologies.

Ergon Energy invests in undergrounding critical high voltage infrastructure in cyclone prone areas. Forecasting of candidate projects considers feeder load profile, reliability indices, underground / overhead length ratio, and condition assessment and correlated projects.

Other minor programs covered by the other system capital expenditure category include the Single Wire Earth Return (SWER) network's safety program, SWER transformer monitoring device installations, low voltage fuse retrofits, low voltage spreaders, substation security, oil containment bunding, and alternate substation AC supplies.

The forecast methodology for enabling technology expenditure is summarised in Figure 6 below.



**Figure 6: Enabling technology expenditure forecast**

# CAPITAL EXPENDITURE FORECAST METHODOLOGY

## Estimating network support capital expenditure requirements

There are several categories of capital expenditure relevant to supporting the network. These are:

1. property;
2. fleet;
3. tools and plant; and
4. other miscellaneous works.

Ergon Energy owns a number of properties accommodating both white and blue collar employees. Some properties are office accommodation only, while some depots accommodate both technical and office based employees. Ergon Energy has developed forecasting methods for both our major programs of work (capital investment requirements of a substantial size in both scope and cost at major strategic locations) and minor programs of work (all other work projects).

The major program of works area involves specific investments that:

- necessarily cross multiple financial years;
- resolve multifaceted issues; and
- are developed as the result of exhaustive investigation, planning, preparation and deliberation.

Ergon Energy has a fleet of vehicles (and related plant) for utilisation by the workforce. Fleet assets are used to undertake construction / maintenance activities and to enable the delivery of support services and other core functions (operations). Capital expenditure for fleet is largely triggered by aged replacement, which is driven by scheduled replacement cycles.

Tools and plant to support operations are forecast largely based on historic trends with consideration given to forecast changes to the capital works plan and workforce movements. Total costs are based on costs per employee.

Other miscellaneous works includes a proportion of expenditure relating to IT equipment owned by Ergon Energy (mostly personal computers but also some network specific systems) and are not included in the SPARQ Solutions service fee.



# CAPITAL EXPENDITURE FORECAST METHODOLOGY

The forecast methodology for network support expenditure is summarised in Figure 7 below.

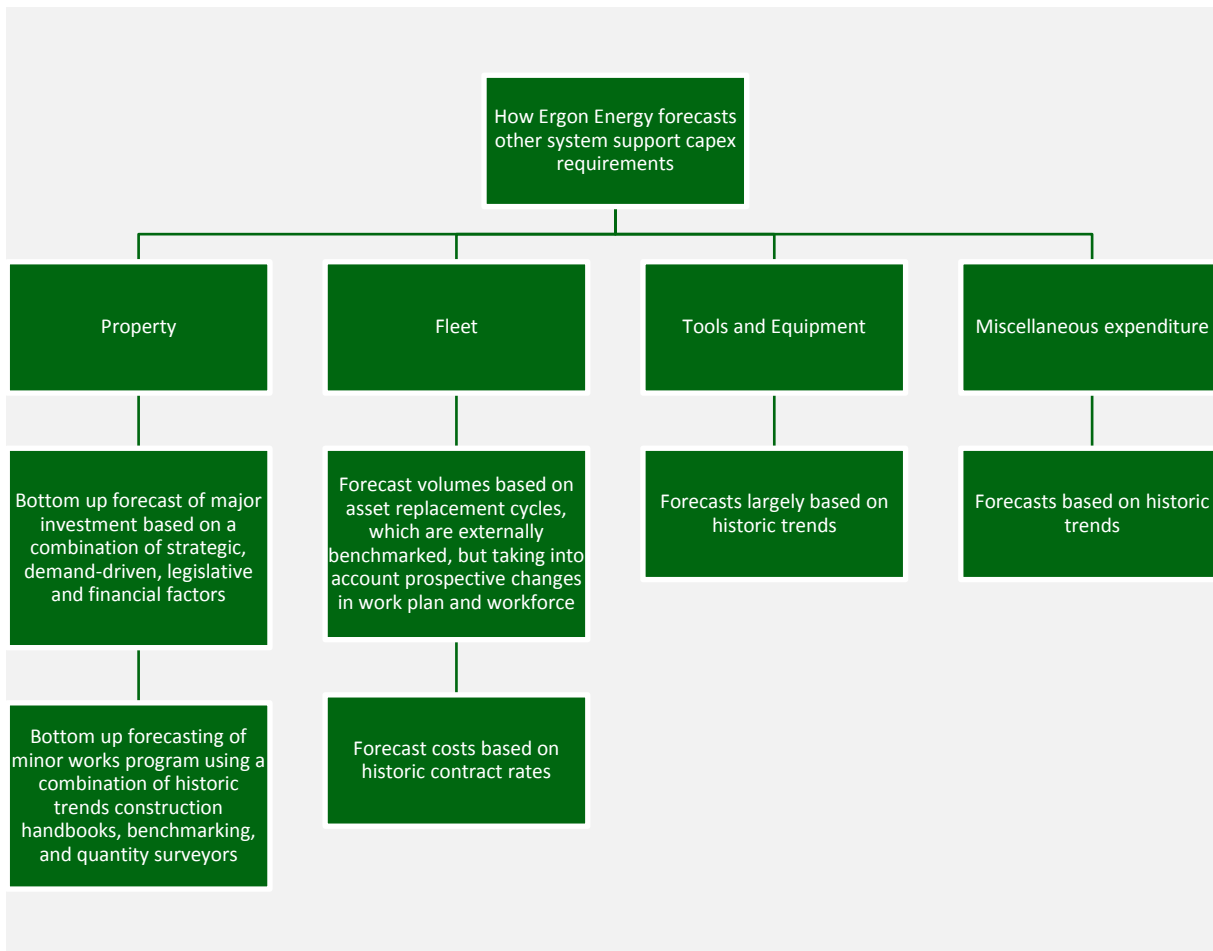


Figure 7: Forecasting network support expenditure

## Consolidation of category based forecasts and conversion into AER format

### Overview

Ergon Energy consolidates forecasts derived at a category based level into a common format. This allows Ergon Energy to apply overhead allocation consistent with Ergon Energy's approved Cost Allocation Method (CAM) and to establish forecast expenditure requirements consistent with the input categories for the AER's models (such as the Roll Forward Model and Post Tax Revenue Model).

### Consolidation

Ergon Energy has developed in-house modelling capability to allow input data from across Ergon Energy's business units to be consolidated and converted into a common reporting framework for the purposes of establishing capital and operating expenditure forecasts.

As part of the consolidation process, overhead costs are apportioned to capital expenditure forecasts in accordance with the CAM.<sup>18</sup>

<sup>18</sup> Chapter 3 provides important information on forecasting of overhead functional areas and their allocation between capital and operating expenditure forecasts.

# CAPITAL EXPENDITURE FORECAST METHODOLOGY

## Application of input price escalations

Ergon Energy's capital expenditure must incorporate input price escalations. Ergon Energy does this by accounting for assumed price increases applied generally to goods and services (CPI) and applying adjustments to some inputs that have price increases higher (or lower) than the change in average price of all goods and services (known as the 'real' change).

Ergon Energy applies input price escalation based on the assumed mix of cost elements for each asset category within the program of work. Ergon Energy will seek independent expert advice on the benchmark rates of real escalation and the benchmark mix of cost elements for each asset category.

This process results in a total capital expenditure forecast for the regulatory control period in a format consistent with AER revenue modelling requirements.

## Assessment of total forecast

### Overview

Ergon Energy's forecasting process is an iterative process. At points in time in the development of the Regulatory Proposal, Ergon Energy intends to take a snap shot of the consolidated expenditure forecast and assess it against internal and external expectations. A range of factors will impact the assessment process and the considerations of the total assessment. These are outlined below.

### Customer expectations around network outcomes and price

Through our customer insights program, and stakeholder engagement activities, we are highly conscious of our communities' concerns around rising electricity prices. We recognise that network capital and operating costs are a contributing factor in the electricity price increases and we are taking action to address this.

Our insights and engagement programs have supported the development of a comprehensive distribution customer strategy that outlines the necessary steps to maximise the value delivered to and derived from our different customer segments. This strategy will be further developed with the support of the sophisticated customer 'reliability cost trade off' research that we are currently completing.

Ergon Energy intends to use our strategies around maximising customer value to inform appropriate expenditure forecast profiles. We will also assess the revenue and pricing impacts of different expenditure profiles as we develop the Regulatory Proposal; our overarching goal is to limit future increases in network charges on average to less than CPI.

### Ergon Energy expectations around risk tolerance at a portfolio level

Our strategic focus on asset management excellence is about finding the right balance between 'investing in' and 'driving value from' the asset base to ensure we deliver a reliable, efficient and sustainable electricity supply for our customers.

This is being supported by a growing understanding of how our assets are performing and using a risk-based approach to assess their requirement for corrective action, replacement or augmentation.

Part of our overall assessment of expenditure requirements will include risk assessment of risk from various expenditure profiles. A consistent comparative assessment of risk in investment decisions will be an important consideration when optimising the portfolio.

# CAPITAL EXPENDITURE FORECAST METHODOLOGY

## Changes to regulatory and statutory framework

Forecasts will be developed based on the current regulatory and statutory environment in which Ergon Energy operates. However, at various points in time, actual or potential changes to the regulatory environment may impact the treatment of the expenditure. For example, the AER's Framework and Approach Paper may result in an adjustment to forecast capital expenditure. Alternatively, changes to jurisdictional obligations (e.g. regarding standards of supply) may change inputs. At these points, Ergon Energy may wish to assess the impact of these changes on the total forecast expenditure requirement and associated prices.

## Workforce delivery and any other constraints

Ergon Energy will also consider the impact of total forecast expenditure against available and future workforce and resourcing constraints.

## Iterations of forecasts leading to final approval

Ergon Energy's forecasting methodology adopts an iterative process which involves a regular cycle of refinement, assessment and scrutiny. We expect to refine our forecast using similar assessment tools to those that the AER itself will use in determining forecast expenditure requirements. This will occur at both the total forecast and bottom up forecast level.

## Scrutiny and review of total forecast expenditure

Ergon Energy is likely to scrutinise the total forecast expenditure requirement, using the following approaches:

- independent assessment of the current forecasting methods outlined in this document;
- historic trend analysis, period on period comparison of forecasts;
- analysis of current period outcomes;
- high level assessments against key parameters;
- assessment of key input assumptions;
- price, service outcome and risk analysis; and
- independent assessment of corporate governance framework, particularly in the context of concerns raised by the AER as part of the last determination.

## Benchmarking current performance against industry peers

Ergon Energy has engaged Huegin Consulting to assist with how we incorporate benchmarking into our scrutiny of expenditure. The focus of this engagement is to first predict the benchmarking outcomes that are likely to occur using the AER's expected benchmarking tools. However, we expect this will be extended to more informative analysis and comparisons against peers.

## Scrutiny and review of category based forecast expenditure

**AER alternative forecasting tools** – Ergon Energy will attempt to replicate the alternative forecasting tools that the AER will likely adopt for its expenditure assessment (repex and augex modelling<sup>19</sup>). Comparison of the outcomes against our own forecast can inform whether further investigation and

<sup>19</sup> Refer to the AER's Better Regulation Expenditure Forecast Assessment Guidelines for details on these assessment tools. <http://www.aer.gov.au/node/18864>

## CAPITAL EXPENDITURE FORECAST METHODOLOGY

justification of our forecasts is required or whether further substantiation is needed to explain variances in outcomes.

**Verification of demand forecasting** – Ergon Energy undertakes demand forecasting based on separate forecasts at both the system and substation levels. The data inputs for forecasting demand at the system and substation level derive from a range of sources. Reconciliation with external forecasts tests the robustness of these forecasts.

**Scrutiny and sensitivity of other key inputs and key assumptions** – Assessment techniques will likely include independent assessment of unit cost and volume assumptions, other input criteria and variables.

**Detailed reviews** – Assessment techniques will include independent assessment of individual projects and programs of work.

**Analysis of overhead and overhead allocation** – We will examine pre-allocated overhead costs and seek to compare them against industry and other peers.

**Consideration of demand management** – Where demand forecasting indicates developing constraints, assessment of the outcomes of technical and economic analysis identifies traditional network solutions, smart grid network solutions, and demand side participation. Where the total capacity solution or solution stack identifies a more economical solution with the inclusion of demand management and demand reduction projects this will be incorporated into the forecasts.

### Revision and/or substantiation of forecasts

It is expected that changes to the proposal will be likely as a result of this process, either through:

- revision of bottom up forecasts to the extent that assessment and scrutiny identified issues with existing forecasts that could not be substantiated; or
- further substantiation of the bottom up forecast where assessment and scrutiny identified issues that could be substantiated, but there was inadequate information to support.

### Development of Iterations leading to final approval

Ergon Energy expects that this iterative process of refinement, assessment, scrutiny and revision will be an ongoing process in the lead up to the Regulatory Proposal.

### 3. OPERATING EXPENDITURE FORECAST METHODOLOGY

#### Overview

Traditionally, Ergon Energy has developed its operating expenditure forecasts in a similar way to the development of its capital expenditure program. This has largely focused on identifying the expenditure requirements for specific operating expenditure categories (for example, operations, maintenance, ICT) using a bottom-up approach. This process involved analysis of historic levels of operating and maintenance activities, and calculation of the associated cost per activity. With each bottom-up build, Ergon Energy maintained prudence at the core of the methodology.

Following consolidation (including the application of overheads) and conversion into a common format using CPI and other escalators, the total operating expenditure forecast was assessed and scrutinised to ensure expenditure was in accordance with the Ergon Energy's network strategy, business policies, practices and processes.

In its draft Expenditure Forecast Assessment Guideline for electricity transmission and distribution networks, the AER set out its intended approach to assessing expenditure forecasts. The Guideline appears to indicate a preference by the AER for the application of a base-step-trend approach to the forecasting of operating expenditure requirements:

*NSPs may find it useful to devote more effort to justifying their proposed operating expenditure allowances through the base-step-trend approach, where the AER has a strong preference to rely on revealed costs, if they have not used it in the past.<sup>20</sup>*

While Ergon Energy raised several concerns with the AER regarding its ability to prefer one particular methodology over another, we expect that the AER is likely to maintain a strong preference through the distribution determination process for a base-step-trend approach to forecasting operating expenditure. Therefore, even if Ergon Energy was to continue to use its current bottom-up forecasting methodology, from a consistency perspective, we believe that the AER would likely issue its various information requests and requirements to Ergon Energy so that it would also need to be able to represent its forecasts using a base-step-trend approach.

With this in mind, for the 2015-20 regulatory control period, Ergon Energy intends to develop a new operating expenditure forecasting model in accordance with the base-step-trend methodology. Generally, this approach involves establishing a base year operating cost estimate, which is adjusted for any costs that are non-recurrent and movements in provisions. These base year costs are then rolled forward into future years, allowing for anticipated changes in underlying cost categories and other change factors including cost input escalation.

<sup>20</sup> AER Draft Expenditure Forecast Assessment Guidelines – Explanatory Statement, p4

# OPERATING EXPENDITURE FORECAST METHODOLOGY

## Ergon Energy’s base-step-trend forecasting approach

Given the substantial change that this represents from its historic practice, Ergon Energy is still designing the approach which will allow forecasts to be presented in a manner consistent with the AER’s anticipated expectations under the base-step-trend approach. An illustration of our conceptual model design is provided below:

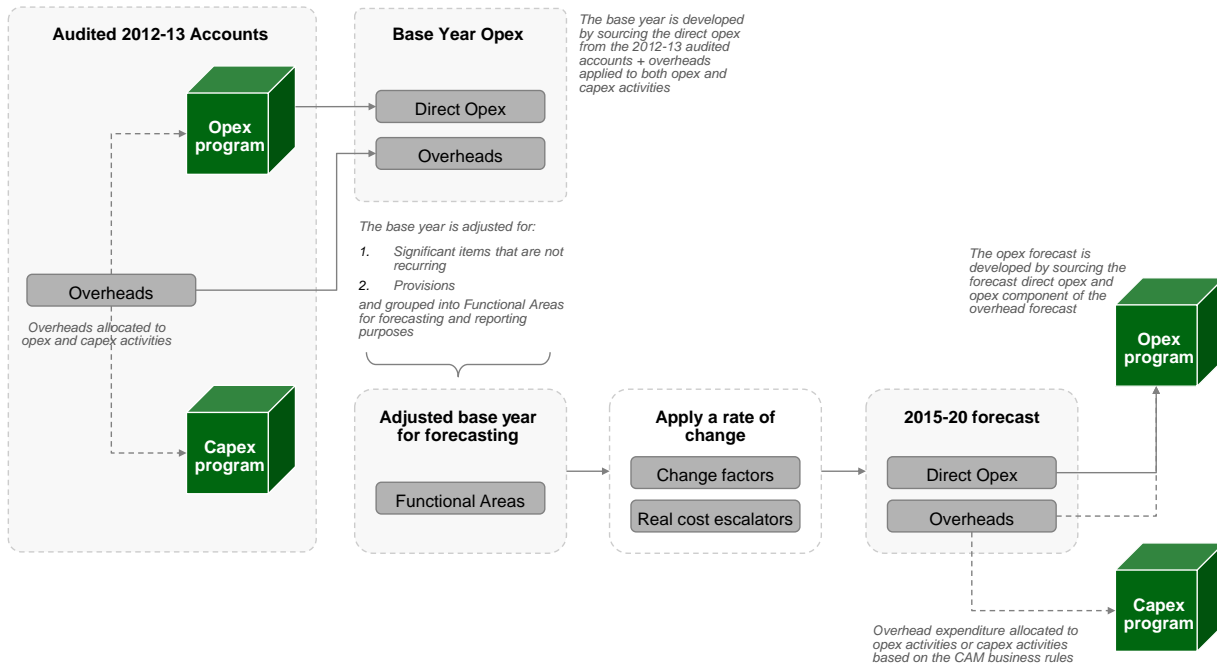


Figure 8: Base-step-trend approach

## Adjusting the base year for forecasting purposes

### Base year assumption and approach to adjustments

The initial step in developing operating expenditure forecasts under the base-step-trend method involves selecting a base year to be used as the basis upon which to build the forecast. The AER has indicated a preference for using the second or third last year in the regulatory control period as the base year, depending on when the most recent year for which audited data is available.<sup>21</sup> Accordingly, Ergon Energy has chosen the 2012-13 financial year as the base year for the purposes of forecasting operating expenditure for the Regulatory Proposal. This is the third last year of Ergon Energy’s current regulatory control period and represents the most recent financial year for which audited regulatory accounts will be available at the time that the operating expenditure forecasts for the Regulatory Proposal are prepared.

Adjustments to the 2012-13 audited operating expenditure numbers will be made to remove expenditure incurred in the base year that is related to specific one-off or unusual events (i.e. costs that are not representative of a typical year of recurrent operating expenditure). In addition, operating expenses not represented appropriately in the base year due to the impact of expected material scope changes over the 2015-20 regulatory control period, will be either removed or adjusted.

<sup>21</sup> AER Draft Expenditure Forecasting Assessment Guideline – Explanatory Statement, p58

## OPERATING EXPENDITURE FORECAST METHODOLOGY

Consistent with recent Determinations, we anticipate the AER will also seek to make adjustments to base year expenditure for the effect of any movements in provisions.<sup>22</sup> As such, our methodology and model will include flexibility to cater for the removal of provisions and the inclusion of cash (operating expenditure) payments only. These cash payments will be forecast annually and included on a year by year basis.

### Establishing Functional Areas for forecasting purposes

To facilitate forecasting under the base-step-trend method, Ergon Energy will map the operating expenditure incurred in the base year into higher level groupings, called 'Functional Areas'. These Functional Areas represent common areas of operating activities across the organisation and are intended to have a single output driver.

Each Functional Area will contain expenditure that relates to direct costs and overhead costs, noting that some of the Functional Areas are, by nature, overhead activities (such as the Finance function). Therefore, this approach will result in the identification of the total cost (both direct standard control services and overhead costs) of the Functional Area of activity. For overhead activities, the model will include flexibility to report the pre-allocated amount (the cost before it is allocated to different lines of business and between capital and operating expenditure components).

### Forecasting Adjustment and Escalation

The adjusted base year operating expenditure calculated above is rolled forward on an annual basis to determine forecast operating expenditure requirements for the next regulatory control period. There are a number of different approaches to rolling forward expenditure from the base year.<sup>23</sup> For example, the AER, in its draft expenditure guidelines expects any roll forward in operating expenditure between years to account for:

- output growth;
- real price growth;
- productivity growth; and
- other efficient expenditure not included in base operating expenditure.

Our methodology will allow the roll-forward of base year expenditure to future forecast years based on a range of change factors, as required. Ergon Energy is currently considering the change factors that will be applied following assessment of the AER's final guidelines for expenditure assessment and incentives against its own drivers of change in operating expenditure between years.

### Forecasting adjustments and escalation

Using the functional areas of activity, Ergon Energy's methodology will allow the roll-forward of base year expenditure to future forecast years based on rates of change applied to a variety of change factors. The change factors to be applied will be finalised following assessment of the AER's final guidelines for expenditure assessment and incentives. Nevertheless, we have already identified a number of change factors that the model will cater for. These are outlined below.

<sup>22</sup> See the AER's Draft Determinations for Victorian DNSPs (2011-15) and Aurora Energy (2012-17)

<sup>23</sup> AER Draft Expenditure Forecasting Assessment Guideline – Explanatory Statement, p34

# OPERATING EXPENDITURE FORECAST METHODOLOGY

## Functional Areas using alternative forecasting methodologies

### Bottom-up forecasting

While the application of a trend from a base year is a reasonable approach to forecasting many Functional Areas within Energy Energy's business, Ergon Energy still intends to apply a bottom-up forecasting method for Functional Areas that are materially affected by scope changes, or considered non-recurrent in nature. Ergon Energy considers that it would be inappropriate to forecast costs of this nature using a trend escalator.

For example, it is anticipated that the following Functional Areas will utilise a bottom-up forecasting methodology:

- some maintenance activities, such as corrective maintenance;
- self-insurance costs;
- debt raising costs; and
- Information Technology (expanded upon below).

Any trend escalation applied to these Functional Areas will be reversed and the bottom-up forecasts added back to the total operating cost forecast for the 2015-20 regulatory control period.

### ICT operating expenditure

The scope of the ICT investments over the next regulatory control period will include all software, data, computer and communications hardware required to provide systems supporting business functions and processes in support of Ergon Energy's services.

Ergon Energy relies on a service level agreement with SPARQ for most of its information and communication technology requirements. Ergon Energy accounts for the costs for SPARQ's service level agreement as operating expenditure. Since this will incorporate both ICT operating and investing activities, operating expenditure forecasts will adopt a different profile to other recurrent expenditure items and therefore will not adopt the common escalators. The SPARQ service charge will also be subject to the corporate overhead allocation process as per the CAM which will be represented within the model.

## Assessment of total forecast

The operating expenditure forecast will include a combination of base-step-trend and bottom-up modelling outcomes. Where bottom-up modelling has been used, this will override the base-step-trend model outcomes. To calculate the final operating expenditure forecast, the CAM will be applied to allocate costs to the respective lines of service. As part of this line of service allocation, overhead Functional Areas will be allocated to both the operating expenditure and capital expenditure activities that they support. This allocation will be applied in accordance with accounting standards and the approved CAM. Overhead costs applied to capital expenditure programs will be represented as overhead recoveries in the operating expenditure forecast.

Ergon Energy's operating expenditure program will be subject to a systematic process of review and refinement to ensure that the proposed levels of expenditure are consistent with the operating expenditure criteria, factors and objectives.

Similar to development of our capital expenditure program, consumer expectations in relation to electricity affordability will be an important consideration for us in our assessment of our operating expenditure forecasts. With the overall objective of placing downward pressure on network tariffs, we



## OPERATING EXPENDITURE FORECAST METHODOLOGY

will continue to use the strategies already in place around price affordability and maximising customer value to inform the appropriate expenditure forecast for the next regulatory control period.

Ergon Energy will also use benchmarking and trend analysis as the primary tool for determining the reasonableness of our operating expenditure forecasts, both at the aggregate level and Functional Area level. This will provide transparency in relation to how its total operating expenditure costs and individual functions sit relative to its network peers. This is discussed further below.

### Scrutiny and review of expenditure forecasts

Once the full operating expenditure program is prepared, Ergon Energy intends to undertake benchmarking of both total forecast operating expenditure and operating expenditure attributable to each of the Functional Areas. In particular, the inclusion of total expenditure (pre allocation) for overhead Functional Areas within the Ergon Energy operating expenditure model facilitates the benchmarking of these functions against other industry peers by excluding the impact of allocation methodologies to both line of service and to operating and capital programs.

Benchmarking is likely to result in further investigation of the costs incurred by Ergon Energy for Functional Areas that demonstrate a discrepancy from benchmarking results. Ergon Energy will undertake a detailed review to explain and justify the underlying causes and drivers of cost differentials. Where the underlying causes reveal a more efficient cost would be appropriate to include in the forecast, this will likely result a revision of the forecast.

For operating expenditure costs that are developed using bottom-up assessments, Ergon Energy will undertake detailed program reviews that utilise trend analysis and benchmarking assessments of the unit costs and workloads that support the operating expenditure forecasts. These reviews will also incorporate review of engineering inputs and the efficiency of the design of the methodology underpinning these activities.

### Development of Iterations leading to final approval

Consistent with the approach to developing the capital expenditure program, we expect that an iterative process of refinement, assessment, scrutiny and revision will apply in the preparation of the operating expenditure forecast for inclusion in the Regulatory Proposal.

### 4. ERGON ENERGY'S INTERNAL GOVERNANCE

#### Overview

As noted in the introduction, our forecasting processes are largely informed by approaches to planning and investing in the network on a day-to-day basis. Correlated to this is the within period capital governance that supports our day-to-day investment decisions.

Therefore, while not directly related to our expenditure forecast method, Ergon Energy has provided a brief outline of our investment governance process. This section has also been included in response to particular direction from the AER. Informal discussions with the AER revealed a preference for us to include an outline of our governance arrangements.

#### Ergon Energy's investment governance

Ergon Energy's forecasts take two general forms:

- Budget forecasts embodied in a Statement of Corporate Intent (next year) and Corporate Plan (additional four years), relying on extrapolation of historical expenditure levels, essentially a top down forecast update applied annually; and
- Plans, including business cases, with increased level of analysis of the likelihood, timing and costs for addressing the triggers (input forecasts) of the investment, essentially a bottom up process covering projects and programs ranging from less than one year to many years.

Ergon Energy utilises a gated investment governance process as a feedback loop between the plans and input forecasts and the annual forecast budgets and to continuously test the rigour of business cases for investments. Uncertainty is reduced over time as proposed investments and business cases pass through governance gates where the need is re-assessed, assumptions are replaced or re-tested, and estimates updated with current unit rates. This process results in an ongoing testing of the prudence and efficiency of any investment and the overall budgets forecasts.

# ERGON ENERGY'S INTERNAL GOVERNANCE

## Ergon Energy's investment governance structure

Table 1 below sets out the investment governance structure within Ergon Energy. This structure ensures appropriate governance of delegated financial authorities.

Governance Body	Investment Thresholds	Indicative Business Case Volumes	Membership
Shareholding Ministers	>\$75M	3-5 p.a.	Treasurer, Energy Minister
EECL Board	>\$20M	8-12 p.a.	Directors
Investment Review Committee <sup>24</sup>	>all non-network >\$5M for network	70-100 p.a.	Members of Executive Leadership team
Network Investment Review Committee <sup>25</sup>	>\$1M	120-200 p.a.	Relevant functional managers

**Table 1: Governance Structure**

## Ergon Energy's investment governance development

Since the beginning of the current regulatory control period, Ergon Energy has set out to improve the efficiency and effectiveness of our overall capital and operational portfolio and project governance. Ergon Energy has progressed a significant governance and decision support improvement initiative to ensure that the current and forecast program of works includes the appropriate projects.

In order to address concerns with the expenditure planning process, Ergon Energy has embarked upon a program of work to implement a number of management systems, the Investment Decision Support (IDS) suite of tools.

The IDS supports a staged process that improves:

- management of strategic and operational risks;
- individual investment management through a gated governance process;
- portfolio level investment optimisation, driving prudence and efficiency of the investments; and
- works resource planning.

These governance tools are intended to be fully operational prior to commencement of the 2014-15 financial year. To date, the gated governance business case model and work simulation components are active with optimisation capability due early 2014.

<sup>24</sup> IRC Charter – Version 3 – Effective 4 October 2011

<sup>25</sup> NIRC Charter – Version 2.1c – Effective 7 November 2011

### 5. ADDITIONAL INFORMATION

#### Glossary

AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
CAM	Cost Allocation Method
Capex	Capital expenditure
CPI	Consumer Price Index
DNSP	Distribution Network Service Provider
ENA	Energy Networks Association
Ergon Energy	Ergon Energy Corporation Limited
ICT	Information and Communication Technologies
IDS	Investment Decision Support
NSP	Network Service Provider
NER	National Electricity Rules
SWER	Single Wire Earth Return

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