

Meeting the Rules Requirements



31 October 2014



Contents

1. Introduction	2
2. Outline of the AER's Decision-Making Framework.....	3
3. How our forecast expenditure meets the objectives.....	13
4 How our forecast expenditure meets the criteria and factors	37
5 How we have addressed the expenditure criteria and factors	42

1. Introduction

The National Electricity Rules (the NER or rules) require the Australian Energy Regulator (AER) to make a constituent decision on whether to accept, or reject and substitute the forecast capital expenditure (capex) and forecast operating expenditure (opex) that Ergon Energy sets out in its building block proposal for standard control services.

To enable the AER to make its constituent decision, Ergon Energy's building block proposal must include the total forecast capex and opex for the relevant regulatory control period which the Distribution Network Service Provider (DNSP) considers is required in order to achieve the capex and opex objectives.

The forecast capex and opex must also comply with the requirements of any relevant regulatory information instrument.

On 25 August 2014, the AER issued a Regulatory Information Notice (RIN) for our regulatory proposal where it sought the following information:

- why the total forecast capex is required for Ergon Energy to achieve each of the objectives in clause 6.5.7(a) of the NER;
- how Ergon Energy's total forecast capex reasonably reflects each of the criteria in clause 6.5.7(c) of the NER; and
- how Ergon Energy's total forecast capex accounts for the factors in clause 6.5.7(e) of the NER.

Similarly, the above-mentioned RIN also requests the provision of justification for Ergon Energy's total forecast opex, including:

- why the total forecast opex is required for Ergon Energy to achieve each of the objectives in clause 6.5.6(a) of the NER;
- how Ergon Energy's total forecast opex reasonably reflects each of the criteria in clause 6.5.6(c) of the NER; and
- how Ergon Energy's total forecast opex amount accounts for the factors in clause 6.5.6(e) of the NER.

This document responds to the above RIN requirement and provides further evidence on why Ergon Energy considers the total forecast capex and opex should be accepted by the AER, with reference to the objectives, criteria and factors in the rules. In doing so, we have also addressed the above-mentioned RIN requirements.

The information we have provided is complemented by other supporting documents submitted with the regulatory proposal. These supporting documents also form part of our justification on why the AER should accept our proposed forecast capex and opex. Further details of our overall compliance with Chapter 6 NER requirements can be found in Attachment 01.02.01 Compliance Checklist.

Ergon Energy also refers to the forecast opex and forecast capex collectively as “forecast expenditure” in this supporting document.

In the remainder of this “Meeting the Rules requirement” attachment, Ergon Energy:

- Provides an outline of the AER’s decision making framework;
- Identifies how it considers the total forecast capex and opex are required in order to achieve each of the capex and opex objectives (together the expenditure objectives) under clause 6.5.6(a) and 6.5.7(a) of the rules;
- Identifies how it considers the total forecast capex and opex reasonably reflects each of the capex and opex criteria (together the expenditure criteria), having regard to the capex and opex factors (together the expenditure factors).

2. Outline of the AER’s Decision-Making Framework

The rules require the AER to make a number of constituent decisions as part of its distribution determination. Clauses 6.12.3 and 6.12.4 relate to the AER’s decisions on the forecast capex and opex proposed by a DNSP in its building block proposal.

The AER either:

- (i) acting in accordance with clauses 6.5.6(c) and 6.5.7(c), accepts the total of the forecast opex and capex for the regulatory control period that is included in the current building block proposal; or
- (ii) acting in accordance with clauses 6.5.6(d) and 6.5.7(d), does not accept the total of the forecast opex and capex for the regulatory control period that is included in the current building block proposal, in which case the AER must set out its reasons for that decision and an estimate of the total of the DNSP’s required opex and capex for the regulatory control period that the AER is satisfied reasonably reflects the expenditure criteria, taking into account the expenditure factors

In making its decision, the AER is guided by the objectives, criteria and factors in the rules. In doing so, it must also consider the overall principles of assessment that have been

described by the rule maker, the Australian Energy Market Commission (AEMC) in recent rule determinations. Each of these areas is discussed below.

2.1 Objectives of the Regulatory Framework

The overarching NEM objective is expressed in section 7 of the National Electricity Law in the following terms:

“... to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to –

- (a) price, quality, safety, reliability, and security of supply of electricity; and*
- (b) the reliability, safety and security of the national electricity system”*

The Australian Competition Tribunal (ACT) has emphasised the importance of this objective, while also noting that the Revenue and Pricing Principles (RPP) in the NEL provide further guidance:

“The national electricity objective provides the overarching economic objective for regulation under the NEL: the promotion of efficient investment and efficient operation and use of, electricity services for the long term interests of consumers. Consumers will benefit in the long run if resources are used efficiently, that is if resources are allocated to the delivery of goods and services in accordance with consumer preferences at least cost. As reflected in the revenue and pricing principles, this in turn requires prices to reflect the long run cost of supply and to support efficient investment, providing investors with a return which covers the opportunity cost of capital required to deliver the services.”

The AEMC has published determinations which provide further guidance on the objective of the assessment of expenditure forecasts:

“In developing the decision criteria for expenditure forecasts the Commission sought to ensure that the assessment of forecasts encourages efficiency through least cost operations and timely and prudent investment in capital.”¹

Based on these views, Ergon Energy believes it is clear that the overarching objective of the rules governing the AER’s decision on expenditure forecasts is to ensure that forecast

¹ AEMC, Rule determination: *National Electricity Amendment (Economic regulation of transmission services) Rule 2006*, number 18, 16 November 2006, p43

expenditure is set at a level that will achieve a reliable and safe supply of standard control services at an efficient cost in the long term.

2.2 Principles of assessment

As part of a 2012 rule change, the AEMC provided further clarification of the process that the AER should follow when making its decision on expenditure forecasts, emphasising the following key principles underlying the assessment process:²

- The assessment process must start with a DNSP's proposal - The DNSP has the most experience in how a network should be run, as well as holding all of the data on past performance of its network, and is therefore in the best position to make judgments about what expenditure will be required in the future. Indeed, the DNSP's proposal will in most cases be the most significant input into the AER's decision.
- The AER must accept a proposal that is 'reasonable' - The AEMC noted that the AER is not "at large" in being able to reject the DNSP's proposal and replace it with its own. The obligation to accept a reasonable proposal reflects the obligation that all public decision makers have to base their decisions on sound reasoning with all relevant information required to be taken into account.
- Consider the probative value of materials - To the extent the AER places probative value on the DNSP's proposal, which is likely given the DNSP's knowledge of its own network, then the AER should justify its conclusions by reference to it, in the same way it should regarding any other submission of probative value.
- The AER's assessment techniques in making its analysis are not limited – The DNSP's proposal will in most cases be the most significant input into the AER's decision. Importantly, though, it should be only one of a number of inputs. Other stakeholders may also be able to provide relevant information, as will any consultants engaged by the AER. In addition, the AER can conduct its own analysis, including using objective evidence drawn from history, and the performance and experience of comparable DNSPs. The techniques the AER may use to conduct this analysis are not limited, and in particular are not confined to the approach taken by the DNSP in its regulatory proposal.
- The test of what is 'reasonable' must equally apply to the substitute amount - While the AER must form a view as to whether a DNSP's proposal is reasonable, this is not a

² See discussion in AEMC, Draft Determination: Economic Regulation of Network Service Providers, Rule 2012, 23 August 2012, p102-104.

separate exercise from determining an appropriate substitute in the event the AER decides the proposal is not reasonable. Both the consideration of "reasonable" and the determination of the substitute must be in respect of the total for each of capex or opex. The AER, whenever it determines a substitute for a DNSP's proposal, is not constrained by the capex and opex criteria to only arrive at the best substitute it can determine – reason must apply to all decisions.

The AEMC's considerations demonstrate that the NER regime requires the AER to reflectively contemplate the material put before it by the DNSP, and assess the probative value of this information relative to other material such as submissions and analysis undertaken by or for the AER. Based on this assessment of materials, the AER must accept the proposal if it is reasonable and of a sound basis. Any value substituted by the AER must also be based on the same principles, once again with reference to the material before it. This has also been emphasised in decisions by the ACT, where it has endorsed the proposition that:

*"... it is not the AER's role to simply make a decision it considers best. It is also correct for it to say that the AER should be very slow to reject a DNSP's proposal backed by detailed, relevant independent expert advice because the AER, on an uninformed basis, takes a different view."*³

In assessing whether forecast expenditure is 'efficient', 'prudent' and 'realistic', it is important to recognise previous statements from the Tribunal, noting the abstract and overlapping nature of this assessment.⁴

The Tribunal has accepted as 'non-controversial' the following analysis of prudence and efficiency:

In principle, a distinction could be drawn between the 'efficient costs' required by the first criteria and 'the costs that a prudent operator [...] would require', as set out in the second criteria, However, the structure of clauses 6.5.6(c) and 6.5.7(c) effectively rules this out for the purposes of the AER's assessment of the expenditure forecasts. If such a distinction were to be drawn (ie, if the AER considered that the forecasts reflected the costs a prudent operator would require, but not the efficient costs) then the forecasts could not simultaneously satisfy the first two expenditure criteria. This conclusion begs the question of

³ Australian Competition Tribunal, *Application by EnergyAustralia and Others [2009] ACompT8*, 12 November 2009, paragraph 186.

⁴ for example, see *Application by Ergon Energy Corporation Limited (Non-system property capital expenditure) (No 4) [2010] ACompT 12* paragraphs 16 and 17.

the relationship between efficiency and prudence. ... the efficient timing of investment is conditional on the view taken as to the probability distribution of asset failure, which is inherently uncertain. A prudent DNSP may take a more pessimistic view of the probability of asset failure, and decide to replace assets earlier. Such replacement is both prudent (since it reflects a degree of risk-aversion) and efficient (based on the DNSP's view of the probability distribution).

... efficiency is a dynamic process. Whether or not a firm is operating on the efficiency frontier is also something that cannot be objectively verified. The reference to a 'prudent operator' in the expenditure criteria provides some guidance as to how efficiency may be identified in practice. We have already identified that a key aspect of prudence is the process followed by the DNSP. An important dimension of the prudence of a process is the degree to which it is motivated by (or reflects) improvements in efficiency. A process that is motivated by efficiency will in turn ensure that the DNSP moves closer to the efficiency frontier, even though that frontier will itself be moving.

... a prudent process is likely to be one that considers alternative options for undertaking an augmentation. The motivation behind that process is to select the least cost option for that augmentation (all other factors being equal), ie, it is an efficient option.

A prudent process can therefore be expected to result in the DNSP moving towards maximum cost efficiency, even as that efficiency benchmark is itself moving. In other words, an assessment of prudence, i.e., satisfaction of criterion (2), can be expected to also lead to satisfaction of criterion (1), over time.⁵

2.3 The Rules framework – Summary of the expenditure objectives, criteria and factors

2.3.1 Expenditure Objectives

Clause 6.5.6(a) and 6.5.7(a) requires Ergon Energy to include in its building block proposal the total forecast opex and capex for the 2015-20 regulatory control period which Ergon Energy considers is required to achieve each of the following expenditure objectives:

- (1) meet or manage the expected demand for standard control services over that period;
(Objective 1)

⁵ Application by Energy Australia and Others [2009] ACompT 8 at paragraph 142

(2) comply with all applicable regulatory obligations or requirements associated with the provision of standard control services; (Objective 2)

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

(i) the quality, reliability or security of supply of *standard control services*; or

(ii) the reliability or security of the *distribution system* through the supply of *standard control services*,

to the relevant extent:

(iii) maintain the quality, reliability and security of supply of *standard control services*; and

(iv) maintain the reliability and security of the *distribution system* through the supply of *standard control services*; and

(4) maintain the safety of the distribution system through the supply of standard control services. (Objective 4)

2.3.2 Expenditure Criteria

The rules provide that the AER must accept the forecast expenditure included in Ergon Energy's building block proposal if the AER is satisfied that the total forecast expenditure reasonably reflects the following expenditure criteria listed in clause 6.5.6 (c) and 6.5.7(c):

(1) the efficient costs of achieving the expenditure objectives; and

(2) the costs that a prudent operator would require to achieve the expenditure objectives; and

(3) a realistic expectation of the demand forecast and cost inputs required to achieve the expenditure objectives.

2.3.3 Expenditure Factors

In deciding whether or not the AER is satisfied that Ergon Energy's proposed total forecast expenditure reasonably reflects each of the expenditure criteria, the AER must have regard to the capex or opex expenditure factors listed in clauses 6.5.6 and 6.5.7, as applicable, which are listed below for ease of reference:

(1) [Deleted]

(2) [Deleted]

(3) [Deleted]

(4) the most recent *annual benchmarking report* that has been *published* under rule 6.27 and the benchmark expenditure that would be incurred by an efficient *Distribution Network Service Provider* over the relevant *regulatory control period*;

(5) the actual and expected expenditure of the *Distribution Network Service Provider* during any preceding *regulatory control periods*;

(5A) the extent to which the expenditure forecast includes expenditure to address the concerns of electricity consumers as identified by the *Distribution Network Service Provider* in the course of its engagement with electricity consumers;

(6) the relative prices of operating and capital inputs;

(7) the substitution possibilities between operating and capital expenditure;

(8) whether the expenditure forecast is consistent with any incentive scheme or schemes that apply to the *Distribution Network Service Provider* under clauses 6.5.8 or 6.6.2 to 6.6.4;

(9) the extent the expenditure forecast is referable to arrangements with a person other than the *Distribution Network Service Provider* that, in the opinion of the *AER*, do not reflect arm's length terms;

(9A) whether the expenditure forecast includes an amount relating to a project that should more appropriately be included as a *contingent project* under clause 6.6A.1(b);

(10) the extent the *Distribution Network Service Provider* has considered, and made provision for, efficient and prudent non-*network* alternatives;

(11) any relevant final project assessment report (as defined in clause 5.10.2) *published* under clause 5.17.4(o), (p) or (s); and

(12) any other factor the *AER* considers relevant and which the *AER* has notified the *Distribution Network Service Provider* in writing, prior to the submission of its revised regulatory proposal under clause 6.10.3, is an expenditure factor.

Ergon Energy notes that no other factor has been notified by the *AER* as being in accordance with paragraph (12).

2.4 Interpreting the expenditure objectives

The capex and opex objectives were amended by the AEMC as part of its 2013 Rule change on NSP expenditure objectives.⁶

In making its decision, the AEMC provided valuable insight into how it considered the amended objectives should be interpreted by DNSPs when developing their regulatory proposal, as outlined below:

- Expenditure objectives should be considered as a whole – The AEMC noted that when applied, the expenditure objectives should be considered as a whole and not in isolation. The AEMC considered this was relevant to the consideration of support costs. The AEMC did not agree that the rule will lead the AER to automatically exclude consideration of support costs that are incurred necessarily in the delivery of specific objectives, such as IT and transport costs.
- Regulatory obligations must be met – The AEMC noted that where there is a regulatory obligation or requirement associated with reliability, security, quality of supply or safety of regulated services, then the expenditure in the NSP's regulatory proposal for the relevant aspect of performance must be based on the regulatory obligation or requirement.
- Must maintain performance, where no specified regulation in place - The AEMC considers that where there are no regulatory obligations or requirements in relation to reliability, security, quality or safety then the issue of how the existing objectives work together does not arise. This is because there is only one relevant objective for a particular aspect of performance which is covered by the existing expenditure objectives 3 and 4 relating to maintaining performance. That is, in the absence of standards being set by the jurisdiction, the objective will be to maintain previous performance.
- Meeting safety is a broad concept - A broader definition of safety could include issues that are not directly related to the operation of transmission or distribution networks, i.e. public safety issues, and may include many such things as substation fencing; power line to ground clearances; environment issues such as the management of transformer oil leaks and audible noise abatement; and occupational health and safety (OHS) issues.

⁶ [AEMC 2013, Network Service Provider Expenditure Objectives, Rule Determination, 19 September 2013, Sydney]

The AEMC has recognised that a DNSP's safety obligations are derived not just from its regulatory obligations, but also from other 'non-regulated' sources, such as voluntary industry codes and internal procedures that reflect custom and practice.⁷ Clause 6.5.7(a) reflects the clear intention of the AEMC that a DNSP's forecast expenditure must seek to maintain the safety of the distribution system, even where the relevant safety obligations exist outside of the DNSP's regulatory obligations.

Ergon Energy's safety obligations are driven by a combination of statutory obligations, industry standards, internal procedures and common law duties. For example:

- it is a condition of Ergon Energy's distribution authority that it operate, maintain (including repair and replace as necessary) and protect its network to ensure the adequate, economic, reliable and safe connection and supply of electricity to its customers.⁸
- Ergon Energy is obliged to ensure that its distribution system is electrically safe, and is operated in an electrically safe way;⁹
- Ergon Energy is subject to a duty to eliminate or minimise risks to health and safety in its workplace;¹⁰
- Ergon Energy, as the operator of an electricity distribution system, has a common law duty of care to ensure that its distribution system is safe and is operated safely.¹¹

These safety obligations were applicable to Ergon Energy at the time the AER made its 2010-2015 distribution determination, and remain applicable now. What is required of Ergon Energy to satisfy these obligations will vary depending on the relevant issue and the surrounding circumstances. However, even where safety obligations remain unchanged, Ergon Energy may need to take additional steps to identify, monitor and address risks if the relevant circumstances change, for example, if Ergon Energy determines that parts of its network are at risk of failing due to age or deteriorating condition.

⁷ AEMC 2013, Network Service Provider Expenditure Objectives, Rule Determination, 19 September 2013, Sydney, page 19.

⁸ *Electricity Act 1994* (Qld), section 42(b).

⁹ *Electrical Safety Act 2002* (Qld), section 29.

¹⁰ *Work Health and Safety Act 2011* (Qld)

¹¹ See, for example, *Thomas v Powercor* [2011] VSC 614 [18]; *Perry v Powercor* [2012] VSC 113 [18].

2.5 AER interpretation of the expenditure objectives from its most recent determination

The AER has interpreted the expenditure objectives in recent determinations. In its recent decision for Aurora, the AER set out an interpretation for each of the objectives (see Table 1 Below - April 2012).

Table 1:

OBJECTIVE	AER INTERPRETATION
Meet or manage the expected demand for standard control services over that period	<p>The network must be able to deliver electricity to its customers, and must build, operate and maintain its network to manage expected changes in the demand for electricity. A DNSP therefore requires demand driven capex and opex so that its network can deliver a reliable supply of electricity when:</p> <ul style="list-style-type: none"> - The demand for electricity is at its peak. In this respect the AER was also clear that demand management expenditure was related to this objective - New customers connect to the network - The overall consumption of electricity increases.
Comply with all applicable regulatory obligations or requirements associated with the provision of standard control services	<p>DNSPs operating in the NEM must comply with a number of statutory obligations at the national and state level including:</p> <ul style="list-style-type: none"> - Jurisdictional licence compliance - The requirements of the NEL and NER - Safety legislation - Electricity supply industry legislation and guidelines - all relevant state and federal environmental, planning and cultural heritage legislation - all statutory workplace health and safety requirements
Maintain the quality, reliability and security of supply of standard control services	<p>A DNSP's network must supply reliable and secure electricity. As the network ages, or demand for electricity increases, a DNSP may not be able to deliver electricity distribution services as required by the NER unless the DNSP appropriately maintains its network. Many of the requirements in this objective overlap with regulatory obligations applying to a DNSP. For example, a DNSP may be subject to power quality and reliability requirements under electricity supply industry legislation. The AER notes that a DNSPs proposal on STPIS is heavily related to this objective.</p>
Maintaining reliability, safety and security of the system	<p>A distribution system must also be reliable, safe and secure. Elements of this objective overlap with the requirement to maintain quality, reliability and security of supply. But in particular, this objective is to ensure a DNSP's network does not pose safety risks to either its personnel or the public. Many of the requirements in this objective therefore overlap with regulatory obligations. For example, Aurora a DNSP must comply with electricity industry safety legislation, and workplace safety legislation. Among other things, network reliability, safety and security may be affected by:</p> <ul style="list-style-type: none"> - older or poorer condition assets - unsafe assets; and - environmental factors.

3. How our forecast expenditure meets the objectives

3.1 Functions Ergon Energy provides as a DNSP to achieve the expenditure objectives

To achieve the expenditure objectives stated in the NER, Ergon Energy needs to have various processes, capabilities and systems and to undertake various activities in order to achieve the expenditure objectives (that is, to produce the required outputs and outcomes) in a way that reflects the lowest long term cost to consumers.

These systems, capabilities and activities are:

- Network systems and assets to meet or manage the expected demand for standard control services, including tools, equipment fleet and mobile generation capability to respond to outages and weather disruption events;
- Capabilities and systems to monitor the quality, reliability and security of supply of standard control services;
- Capabilities, personnel and systems to identify business and system maintenance requirements and to carry out these maintenance requirements;
- Capabilities, personnel and systems to identify and comply with all applicable regulatory obligations, including obligations that fall outside the National Electricity Law's definition of regulatory obligations or requirements;
- Capabilities, systems and personnel to manage customer inquiries, customer connections and customer interface including billing; and
- Capabilities, systems and personnel to effectively carry out its role as a GOC and public company including financial reporting, corporate governance and internal audit.

Further details of the strategies, plans, policies, and procedures and governance frameworks utilised by Ergon Energy in deriving its expenditure forecasts and undertaking its standard control services for the current regulatory control period can be found in Chapters 16, 17 and 20, in particular, of the 2010-2015 Regulatory Proposal. Supporting document 07.09.17 Governance, Plans, Policies and Procedures, a supporting document to this Regulatory Proposal summarises the applicable strategies, plans, policies and procedures of relevance to the 2015-2020 Regulatory Proposal.

Therefore, the expenditure objectives effectively define the activities that Ergon Energy needs to undertake and specify the capabilities, systems and personnel that Ergon Energy needs to have.

In support of our forecast expenditure and to assist the AER and other stakeholders considering our future investment plans, our expenditure category summary documents contain information which is designed to address the NER expenditure objectives, criteria and factors and any other applicable NER requirements.

In particular, each expenditure summary document and the associated supporting documents for each expenditure category follows a broadly similar format and approach and generally contains the following information relevant to the above-mentioned NER requirements is supplied. Expenditure summaries usually include the following quantitative and qualitative details:

- Expenditure forecast by year and total
- Expenditure for past current and future period, including comparators to Ergon Forecast and AER determination
- Appropriate breakdowns by expenditure subcategory and RIN category
- Material that demonstrates that the forecasts enables maintenance of acceptable risk levels in line with the National Electricity Objective (NEO) and other applicable requirements.
- the key Inputs and Assumptions applicable to the expenditure category:
- A description of the key inputs and assumptions that underpin our forecasting methodology
- An explanation of why we consider that these key inputs and assumptions are reasonable
- Material that demonstrates the assumptions that ensure forecasts and proposed expenditure programmes will be based on sound justifications that are efficiency-based, linked to economic conditions, local demand factors and the long term interests of consumers, as applicable to the relevant expenditure category;
- Each expenditure summary document outlines the evidence supporting the forecast for the applicable expenditure category, with appropriate details of the following:
- The nature and geographical region or location of expenditure - explaining in reasonably plain language the conceptual basis for why Ergon Energy incurs this category level of expenditure and how it ultimately relates to our overall forecast, one or more of the expenditure objectives and outcomes for customers
- Current Period Outcomes – explaining variances between our current period expenditure and both our forecasts and the AER’s determination for the 2010-2015 period
- The link between prudent and efficient process for investment and Forecasting Methodology
- Business as usual processes, practices, and decision-making criteria for investing that support efficient, prudent and realistic outcomes are included in the expenditure summaries. Using evidence from our on the ground practices and live business cases, procedures and standards,

engineering reports and expert reviews, where required, we attempt to demonstrate that these actual processes should result in prudent/efficient and realistic outcomes.

- In respect of our forecasts, our expenditure summaries describe:
 - the methodology for how we prepared the forecast
 - why we consider that our forecasting methodology is the most reasonable way of modelling the actual processes and activities required for regulatory purposes, and
 - the maintenance of risk levels and achievement of regulatory compliance
- Where relevant, our expenditure summaries reference:
 - how we have undertaken internal and external reviews to confirm that our forecasting methodology as stated has been applied
- Key analysis spreadsheets and models that have been used to apply our forecasting methodology
- Reviews of the application of our forecasting methodology to ensure that it reflects good practice, where available and as applicable
- Detailed justifications for critical project and programs, showing the analysis of the need and evaluation of the preferred option to address the need
- Engineering reports, site assessments and management plans that set out these projects and programs in the broader context of the network and non-network needs identified
- Work in progress that will span regulatory control periods
- Potential risks of overlap with other programs of work and potential for efficient and prudent capex/opex trade-offs and made adjustments where necessary
- Top-down and bottom-up analysis of various input and output performance measures to assess the implications of the forecasts on network and service performance
- The outcomes that we will deliver to our customers and how our customers' feedback has been considered in our plans
- A comparison of our forecasts to the historical trend to determine whether any deviations from this trend can be explained and justified
- Any relevant benchmarking
- The application of the AER's predictive models to assess our forecasts in light of the outputs of these models and highlighted any limitations or flaws associated with these predictive models
- Any specific forecasting requirements in the AER expenditure assessment guidelines

- How we have incorporated efficient cost estimates for undertaking the forecast work volumes and why our cost estimates should result in efficient expenditure forecasts
- Details of the various investments and method of forecasting the costs, both at a specified and programme of works level, are supplied in each summary document and/or the associated engineering reports, sample business cases and other supporting documents (see for example, Network Capex Summary Model 07.09.01, Line Asset Defect Management Method 07.01.01, EAM Gate 2 Business Case Covering Note 07.07.08, Rockhampton Stage 2 Development Gate 3 Business Case 07.08.10)

3.2 Achieving the expenditure objectives

Our proposed total forecast capex is made up a number of capital expenditure summary plans and other supporting documents for each investment category.

In assessing how Ergon Energy achieves the expenditure objectives, we note the following:

- The investment categories do not have a simple one to one relationship with the expenditure objectives for either capex or opex. For example, asset renewal/replacement is related to meeting our regulatory obligations, maintaining reliability of the network, and maintaining safety.
- Our capex and opex expenditure categories are all underpinned by the need to comply with our regulatory obligations as a DNSP, public company and Government Owned Corporation. For example, our Distribution Authority obligations require us to meet performance standards, and to more generally provide a reliable level of supply. Similarly, we have general regulatory obligations to provide a safe network for our customers and workforce. While other objectives may also be relevant, Ergon Energy's regulatory obligations are a crucial driver of expenditure forecasts in all categories.
- Support investment provides the necessary functions to achieve our network objectives. For example, non-system property capex is required to ensure that the offices, depots and training facilities are fit for purpose in housing our staff. Non-system investments also relate directly to complying with our regulatory obligations (Capex Objective 2). We have a series of obligations in our role as a Government Owned Corporation to meet planning, monitoring and reporting functions such as financial accounts.

3.3 How we meet each NER capex objective by category

Ergon Energy believes that its expenditure estimation and forecasting processes reflect the behaviour of a prudent operator and result in efficient costs.

Below is a general summary of how our proposed expenditure meets the capex objectives, followed by a discussion of some specific examples, related to each expenditure category.

3.3.1 Objective 1 Meet or Manage Expected Demand

Our proposed capex expenditure meets the above objective because:

- The applicable forecasts are based on plans, policies, procedures and strategies, which promote the achievement of the capital expenditure objectives; and
- Ergon Energy has used a combination of robust bottom-up or top-down approaches, techniques and models to translate the plans, policies, procedures and strategies into capital expenditure forecasts for the next regulatory control period.

Investment expenditure is approved in accordance with well-defined gated governance process and mature delegation procedures and financial controls. Further details of Ergon Energy's investment governance framework can be found in *Attachment 7.09.17 Governance, Plans, Policies and Procedures* and Appendix A and B of the Regulatory Proposal.

Template 7.1 of the Submission RIN identifies each of our policies, procedures and strategies that influence the planning approaches and expenditure decisions we make at Ergon Energy, and have been relevant to the manner in which we have developed our capex and opex forecasts for the 2015-20 regulatory control period.

Ergon Energy demonstrates that the unit rates and estimates that it has applied in developing its expenditure program for each capex category are efficient because:

- Ergon Energy has well established technical standards for undertaking the design and construction of works, as well as to maintain its assets;
- Ergon Energy has robust and well tested procurement processes that are applied when labour and materials are purchased from the market. The outcomes are efficient because of this market competition;
- A significant proportion of the key cost components on which the unit rates (and capital and operating expenditure forecasts) are based are market tested;
- The key cost components are consistently applied in Ergon Energy's internal estimating tools to produce both the unit rates used for forecasting capital and operating expenditure and the cost estimates of projects; and
- There is a feedback loop between historic and market costs that is reflected into the unit rates that have been used to develop the capital and operating expenditure forecasts. This means that the unit rates reflect current market conditions.

The cost escalators used are also efficient because Jacobs (SKM), an independent consulting firm, has been engaged to develop them and has derived escalators that are appropriate based on recent publicly available data and forecasts for asset categories appropriate to Ergon Energy's capital and operational expenditure programmes. Please refer to *Attachment 06.02.02* for details.

Demand for capex expenditure is driven by requirements to meet applicable growth drivers or to refurbish, repair and replace distribution network asset components as they near the end of their economic life, assessed on a proactive and reactive basis depending on the nature of the asset.

It should be noted that due to the joint-venture arrangement between Ergon Energy and Energex to utilise SPARQ Solutions as the ICT service provider for both companies, ICT capital expenditure incurred by both companies is relatively limited and the ICT costs both companies incur is treated as opex.

However, Ergon Energy maintains asset ownership of client devices used by its employees and contractors, with SPARQ managing this procurement process. This ICT asset expenditure is considered recurrent capital expenditure, associated with the procurement and replacement of client devices used by Ergon Energy employees and contractors in the day to day delivery of standard control services. This expenditure includes hardware devices that access services made available by a server, such as desktop computers, laptops, tablets, handheld devices, smartphones and printers. The timing for these investments is driven by the age of individual devices and the *ICT Infrastructure Asset Renewal Guidelines 07.07.04*. The volume is determined by the existing fleet of client devices and projected increases or decreases in headcount or other drivers to ensure forecasts are prudent, efficient and realistic. The purpose of the ICT Infrastructure Asset Renewal Guidelines is to **optimise the cost and effectiveness of ICT Infrastructure assets** achieved through a combined age and obsolescence based asset management plan.

Other ICT-related capex incurred by Ergon Energy is covered by its forecasts for a number of other capex summary documents including Non-System Property and Other System and Enabling Technologies, and relates respectively to:

- ICT infrastructure costs related to any new Ergon Energy buildings or office fit outs; these costs are included in the Property submission
- Non System capital expenditure – SCADA and Other Control. This includes Distribution Management System and other operational technology related expenditure

3.3.2 Objective 2 – Comply with all applicable regulatory obligations or requirements

Regulatory obligations influence when we need to incur expenditure and the costs of doing so.

Ergon Energy must comply with a number of statutory obligations at the national and state level including: the requirements of the NEL and NER, applicable Safety legislation and Electricity supply industry legislation, safety codes of practice and guidelines. Additionally, the company must comply with all relevant state and federal environmental, planning and cultural heritage legislation and all statutory workplace health and safety requirements.

State-based legislation applicable to Ergon Energy sets out mandatory obligations to connect customers, meet prescribed levels of reliability performance under licence conditions, carry out electricity works and the protection of works, and meet standards relating to proper customer installations, public electrical safety and bushfire mitigation.

The NEL and NER regulate Ergon Energy's participation in the NEM as a DNSP and cover a range of matters including system and network reliability and security, network planning, connections procedures, and system and network standards.

Ergon Energy is also subject to general obligations which direct the way we design and operate the network. These obligations are mainly concerned with environmental protection, and public and workforce safety. These influence our drivers of investment, for example, we may replace an asset if the safety consequences to our workforce or the general public cannot be appropriately mitigated through maintenance. The standards also influence our constructions and designs, for instance by adhering to environmental, planning and heritage legislation.

Obligations of particular relevance to ensuring the company inspects, tests and maintain its works as safely as is reasonably practicable are outlined in each capex summary document and associated supporting documents. These obligations underpin the company's asset management strategies, risk management framework and associated practices, policies and procedures.

Ergon Energy's approach to maintaining safety is outlined in various management plans and strategies referenced in the relevant summary documentation.

Submission RIN Templates 7.3 and 7.1 provide a consolidated listing of the above plans, strategies, policies procedures and legislative references and requirements.

The capital expenditure that Ergon Energy proposes for each expenditure category is only that which is necessary to comply with all applicable regulatory obligations or requirements associated with the provision of standard control services

3.3.3 Objective 3 – Maintain quality, reliability and security of supply

Proposed works are also reviewed against applicable quality, reliability and security criteria to ensure that the renewal of the asset is necessary to maintain current levels of security of supply and of functional performance.

The works that Ergon Energy proposes to undertake in the 2015-20 regulatory control period are focused at maintaining functional performance of the distribution network, address potential growth requirements and are intended to discharge Ergon Energy's obligations under this objective and the statutory instruments described in relation to Objective 2.

3.3.4 Objective 4 - Maintain Safety

The summary documents indicate that the capital expenditure that Ergon Energy proposes is required to maintain the safety of the distribution system through the supply of standard control services, in accordance with Objective 3.

Ergon Energy has obligations under the *Electrical Safety Act 2002* (Qld) to inspect, test and maintain works, and a duty to ensure that its works are electrically safe and are operated in a way that is electrically safe. Under the *Work Health and Safety Act 2011* (Qld), Ergon Energy must ensure, so far as is reasonably practicable, that the fixtures, fittings and plant are without risks to the health and safety of any person. Additionally, Ergon Energy is subject to enforceable orders issued by the Queensland Electrical Safety Office in response to identified safety risks.

To discharge these obligations, Ergon Energy has implemented a comprehensive Work Health and Safety governance framework that governs the safety, and the safe operation, of the distribution system. Ergon Energy believes that the works conducted via the projects and works programs outlined in each summary document are therefore necessary to maintain the safety of the distribution system in accordance with Ergon Energy's regulatory obligations.

From an asset replacement and refurbishment perspective, where safety risks that are specific to particular assets or classes of assets are identified, Ergon Energy undertakes discrete analyses of the risks and has proposed targeted programs of work to prevent unacceptable deterioration in the safety of its assets. Table 11 in the Asset Renewal Summary document in particular identifies programme expenditure where safety obligations are the key driver, and is extracted below for ease of reference.

Table 11: Renewal Program Expenditure driven by safety obligations

Program/project
Cast Iron Pot Head Replacement
Colour Coded Service Cable Replacement
Connector and Splice Replacement
DC System Upgrade
Distribution Feeder Reconductoring Program
EDO Replacement in High Bushfire Risk Areas
Laminated Cross-arm Replacement
XLPE Service Cable Replacement
Modifications to Distribution Earth Defect Thresholds
Neutral Screen Service Cable Replacement
Protection Relay Replacement
Replacement of Non-ceramic Fuses

3.4 SPECIFIC EXAMPLES BY CATEGORY AND OBJECTIVES

3.4.1 ASSET RENEWAL CAPEX

This expenditure category relates to existing assets, which are most likely to fail in service. Increasing Asset Renewal expenditure will reduce the number of asset failures requiring Corrective and Forced Maintenance and so improve reliability and public safety. This expenditure category comprises defect and condition based expenditure. Defect-based expenditure involves identifying assets that have failed or are imminently about to fail so that they can be replaced before the next inspection. Condition based expenditure seeks to avoid the escalation of Corrective and Forced Maintenance expenditure by providing for equipment to be replaced and refurbished based on condition assessments that are undertaken as part of the Preventive Maintenance program. The activity that is undertaken as part of this expenditure category is therefore critical to ensuring the long term serviceability of the distribution system, especially to meet safety, regulatory and reliability requirements.

3.4.2 Objective 1: Meet Or Manage Expected Demand and Objective 3 – Maintain Quality, reliability and security of supply

Demand for this expenditure is driven by requirements to refurbish, repair and replace distribution network asset components as they near the end of their functional or useful life, assessed on a proactive and reactive basis depending on the nature of the asset.

Section 3 of the Asset Renewal Summary Document outlines this approach, including the linkage to Ergon Energy's overarching Asset Management Strategy which details the company's approach to lifecycle optimisation. This approach is based upon condition monitoring, inspections and the historical performance of the existing population of assets to ensure expenditure levels are kept to minimum efficient levels.

3.4.3 Objective 4: Maintain Safety

From an asset replacement and refurbishment perspective, where safety risks that are specific to particular assets or classes of assets are identified, Ergon Energy undertakes discrete analyses of the risks and has proposed targeted programs of work to prevent unacceptable deterioration in the safety of its assets. Table 11 in the Asset Renewal Summary document identifies programme expenditure driven primarily by safety obligations.

3.4.4 CORPORATION INITIATED AUGMENTATION (CIA) CAPEX

Corporation Initiated Augmentation (CIA) – this expenditure category relates to the capital works that are needed to meet the augmentation requirements of Ergon Energy's sub-transmission and distribution networks based on its normal load forecasts and security criteria requirements. The activity that is undertaken as part of this program is therefore designed to address constraints as they are identified to ensure that Ergon Energy distribution system meets: the Demand/Load Forecast and current Network Security Criteria and Safety Net/VCR requirements under our new Distribution Authority, following the transition away in mid-2014 from the previous deterministic N-1 standards implemented in response to the EDSD review in 2004

3.4.5 Objective 1 Meet or Manage Expected Demand

Ergon Energy distinguishes between Corporation Initiated Augmentation capital expenditure on its: Subtransmission network (where assets are generally 33 kV and above) and its Distribution network (where assets are generally below 33 kV).

The activity that is undertaken as part of this expenditure category is designed to address constraints as they are identified to ensure that Ergon Energy distribution system meets the Demand/Load Forecast and applicable Network Planning Security Criteria.

As discussed in section 3 of the CIA Summary, the key drivers of demand in Ergon Energy's supply area in the next regulatory control period are expected to be population growth, major new industry or commercial developments, localised growth impacting parts of the distribution network, impacts of aspects of Powerlink's transmission network requirements on the distribution network, demand management initiatives, economic growth and climatic effects and air conditioning and solar PV penetration.

The Network Planning Criteria and Security Criteria proposed for the next regulatory control period are based on the security criteria adopted in mid-2014 following a significant move away from the from the N-1 deterministic methodology adopted in the current regulatory control period in response to the ESDS review in 2004 in the wake of various submissions made by the DNSP sector in Queensland to the government and in response to the outcomes from ENCAP and other government initiated reviews.

Based on feedback from customers that the cost of energy was more important to them than further improvements to security of supply Ergon Energy was proactive in further reviewing the security of supply standards with a view to reducing augmentation costs while ensuring an acceptable minimum standard of reliability, and times for restoration of supply outages are maintained. As a result there was a further relaxation in security of supply standards made by the government on 1 July, 2014 with a new non-deterministic standard based on the value of energy at risk as a result of a contingency. This was underpinned by a Safety Net requirement, which ensures there is a reasonable upper limit placed on the time customers can expect to be without supply following a contingency in the distribution network.

Each change to the security standard has resulted in the level of augmentation expenditure being reduced in order to maintain compliance with the standard.

Proposed works are also reviewed against applicable security criteria to ensure that the augmentation of the asset is necessary to maintain current levels of security of supply and applicable safety net/VCR requirements.

Without network investment, or alternative action, customers' increased demand can result in Ergon Energy exceeding its network's existing capacity and failing to comply with: our security of supply requirements, minimum service standards, the requirements of the National Electricity Rules; and the requirements of the *Electricity Act 1994* (Qld).

As a result, Ergon Energy needs to augment or reinforce its network's capacity or alternatively pursue non-network activity. Such works are subject to the application of the thresholds for Regulatory Investment Test – Distribution (RIT-D).

These costs, and how they are developed, are described in the supporting document titled *Capital Expenditure Forecast – Unit Costs Methodologies (Attachment 07.00.09)*. Ergon Energy applies

unit costs to the projects and programs, based on forecast volumes of work to be delivered, to determine an efficient forecast level of CIA capital expenditure.

Ergon Energy considers its capital expenditure to be both prudent and efficient because not only are its unit costs efficient, Ergon Energy applies those efficient costs to the prudent actions it proposes to undertake so that its total CIA expenditure is both prudent and efficient.

3.4.6 Objective 2 Comply with all applicable regulatory obligations or requirements

Our service commitments are in line with legislative obligations. Ergon Energy is obliged under the *Electricity Act 1994* (Qld) to operate, maintain and protect its supply network in a manner that ensures adequate, economic, reliable and safe connection and supply of electricity to its customers. This includes maintenance of voltages and other system parameters within acceptable tolerances. The Act also obliges it to consider both demand and supply side options in order to provide, as far as technically and economically practicable, for the efficient supply of electricity.

As a result of the ENCAP review, Ergon Energy is required to submit 'Safety Net Measures' for regulatory approval under the *Electricity Act 1994* (Qld). These Safety Net Measures are now a requirement of Ergon Energy's Distribution Authority.

The CIA capital expenditure that Ergon Energy proposes is only that which is necessary to comply with all applicable regulatory obligations or requirements associated with the provision of standard control services.

For further details on how Ergon Energy's statutory obligations inform its forecast CIA expenditure refer to Ergon Energy's sub-transmission and distribution network augmentation plans, relevant business cases, Distribution Annual Planning Report and the Network Planning Process Document.

3.4.7 Objective 3 – Maintain Quality, reliability and security of supply

The purpose of Ergon Energy's Network Security Criteria and the Safety Net Measures contained in Ergon Energy's Distribution Authority is to require Ergon Energy to maintain reliability and security of supply for all of its customers at all times. Ergon Energy's methodologies for forecasting expenditure for sub-transmission and distribution augmentation are designed to satisfy these obligations, and the resultant capital expenditure that Ergon Energy proposes is therefore necessary to maintain reliability and security of supply of standard control services and hence the distribution system over the 2015-20 regulatory control period.

Similarly, to maintain the quality of standard control services, Ergon Energy employs risk-based methodologies to ensure that voltage and other power quality indicators remain within operating and statutory limits.

Ergon Energy is also proposing various capacity driven DNAP projects to help maintain the reliability of the distribution network to appropriate standards, especially SAIDI and SAIFI. Voltage regulation projects also ensure the quality of supply meets applicable requirements. These flow-on benefits are very important considering the overall reduced investment for improving reliability and power quality of Ergon Energy's networks

3.4.8 Objective – 4 – Maintain Safety

To discharge these obligations, Ergon Energy must ensure that network assets do not exceed plant ratings, voltage limits or other technical limits that may compromise the safety of the distribution system. The established planning processes and practices in Section 5 and 6 of the CIA Summary that Ergon Energy has employed to develop its capital expenditure forecast assist in the identification and prevention of such unacceptable risks.

3.4.9 CUSTOMER INITIATED CAPITAL WORKS (CICW)

This expenditure category relates to works required to service new or upgraded customer connections that have been requested by customers.

3.4.10 Objective 1 – Meet or manage expected Demand

Ergon Energy's CICW capital expenditure is required to build assets in response to new or upgraded customer connections. Specifically, it is required for:

- designing and constructing shared network assets that are directly relevant to customer connections
- designing and constructing connection assets
- commissioning and energizing connection assets
- installing assets as part of a real estate development
- installing assets to remove a network constraint for an embedded generator
- providing and installing metering assets
- providing and constructing public lighting.

The proposed CICW expenditure relates to connection services, metering services and street lighting services. For regulatory purposes, Ergon Energy's CICW expenditure forecast for connection services is further separated into SCS and ACS in accordance with the AER's *Framework and Approach – Ergon and Energex 2015-2020* paper. How each of Ergon Energy's CICW activities is classified as ACS or SCS is set out in Table 5 in Section 3.7 of this document. However services that are regulated as Alternative Control Services are not subject to the requirements of section 6.5.7.

Ergon Energy's CICW connections are driven entirely by customers' request to connect and not by any decisions of Ergon Energy. CICW expenditure is proposed to satisfy demand for connection services by using underlying macroeconomic variables that have the greatest explanatory power to the volume of customer requests experienced in the current period. Ergon Energy forecasts CICW expenditure by forecasting volumes and unit costs – volumes are predominantly determined using an economic forecasting model that draws on state macroeconomic variables.¹²

Ergon Energy's approach to forecasting CICW expenditure is based on trend analysis, and is described in Section 5.4 and Appendix A of this document. Trend analysis is a prudent basis on which to forecast future volumes of work because CICW connections are driven entirely by customers' preferences, not by any decisions of Ergon Energy. Ergon Energy's forecasted volumes of connections are based on three state macroeconomic variables: employment, housing building approvals, and non-housing (residential) building approvals. Ergon Energy has selected these three variables because they had the strongest explanatory power during the current period and are supported by extensive econometric analysis. This approach represents the actions of a prudent operator.

3.4.11 Objective 2 – Comply with all applicable regulatory obligations or requirements

Ergon Energy has a legislative obligation to operate, maintain and protect its supply network in a manner that ensures adequate, economic, reliable and safe connection and supply of electricity to its customers.¹³ It is also obliged, as far as is technically and economically practicable, to connect customers to its distribution network¹⁴ and has a legislative monopoly to undertake the final connection of new connections.¹⁵

To enable us to meet these requirements, Ergon Energy has adopted a Connections Policy – previously the Capital Contributions Policy, Major Customer Connections Manual (2014) and a Developers Handbook, which is designed to ensure that Ergon Energy satisfies its regulatory obligations. Ergon Energy's CICW expenditure in the 2010-15 regulatory control period has been incurred in accordance with these policies and procedures and, using these incurred costs as a

¹² Except for capital contributions (and gifted assets). How these are treated is described in Appendix A.

¹³ Refer section 42 of the *Queensland Electricity Act*.

¹⁴ Refer clause 5.3 of the National Electricity Rules, section 43(1) of the *Queensland Electricity Act* and clause 5.1 of the Standard Connection Contract under the *Queensland Electricity Industry Code*.

¹⁵ Refer clauses 230 and 232 of the *Queensland Electricity Act* and clause 5.3 of the Standard Connection Contract.

basis for its forecast expenditure, its forecast CICW expenditure is necessary to discharge its regulatory obligations in the 2015-20 regulatory control period.¹⁶

3.4.12 Objective 3 – Maintain Quality, reliability and security of supply

Maintaining the quality, reliability and security of supply of standard control services as required by clause 6.5.7(a)(3), are objectives of Ergon Energy's proposed CICW expenditure. New (or upgraded) customer connections can lead to adverse impacts on quality, reliability and security of supply because they increase the load on the network, which if left unchecked would cause the network to exceed its technical limits. Ergon Energy's customer connection and network planning policies and procedures combine to maintain the quality, reliability and security of supply of the network.

The CICW expenditure Ergon Energy proposes for the 2015-20 regulatory control period is designed to allow customers to connect to the distribution network while maintaining the network's functional performance thus ensuring any new or existing customer does not adversely affect the quality, reliability or security of supply of other customers. It does this by proposing expenditure, based on costs incurred during the current period, which demonstrated no adverse impact on the quality, reliability and/or security of supply requirements of Ergon Energy's network.

3.4.13 Objective 4 – Maintain Safety

The CICW expenditure that Ergon Energy proposes is required to maintain the safety of the distribution system through the supply of standard control services, in accordance with clause 6.5.7(a)(4).

To discharge these obligations, Ergon Energy has established connection standards, policies and procedures that ensure connection works maintain the safety of the distribution system. All connection works plans are signed off by engineers with Registered Professional Engineers Queensland accreditation to ensure that CICW works are designed in accordance with professional and legislative safety requirements. Upon completion of the construction phase of a CICW activity, a rigorous testing and commissioning regime is enforced to provide assurance that the resulting works do maintain the safety of the distribution system. The CICW expenditure that Ergon Energy proposes is in accordance with Ergon Energy's connection standards, policies and procedures and is therefore necessary to maintain the safety of the distribution system.

¹⁶ Subject to potential changes to Ergon Energy's policies for the contestability of works, capital contributions and other changes to applicable regulations.

3.4.14 RELIABILITY, QUALITY OF SUPPLY CAPEX

This expenditure category relates to works that are directly targeted at addressing reliability or quality of supply issues across the distribution system in order to meet externally and internally imposed service standards. The activity that is undertaken as part of this program is particularly designed to meet the increasingly onerous minimum service standard requirements under the Electricity Industry Code and to address worst performing feeders

3.4.15 Objective 1 – Meet or manage expected Demand

This expenditure aims to enable Ergon Energy to maintain recent improvements in power supply reliability overall, in line with customer expectations and mandated reliability obligations, and to improve the experience of customers supplied by a consistently poor performing feeder or feeder section.

Ergon Energy's forecast reliability capital expenditure has regard for customer and shareholder expectations and willingness-to-pay for improvements.

To ensure our Regulatory Proposal is aligned with the long-term interests of our customers and communities, we have undertaken an integrated twelve-month engagement program. As part of this activity, a sophisticated Service/Cost Trade-off Research study was undertaken to explore our customers' willingness to pay for reliability performance. This program has been part of an ongoing conversation with our customers and the communities we serve.

Through this engagement we know that reliability of supply remains an important factor in our customers' value perceptions. However, overall our customers are satisfied with the current levels of reliability, and few see a strong need to pay for further improvement. Furthermore, the research found a customers' reliance on electricity, their current reliability experience and their geographical location can impact willingness to pay for different reliability standards.

This has informed our forecasts in this expenditure category, as well expenditure across the whole Regulatory Proposal. Customer surveys have provided insight into our customer's clear preference to maintain reliability performance at current levels to reduce the upward pressure on price and this is reflected in the lower investment in reliability performance improvement over the next regulatory control period than occurred in the current regulatory control period.

3.4.16 Objective 2 – Comply with all applicable regulatory obligations or requirements

On 1 July 2014 Ergon Energy's legislative obligations were amended in line with customers' expectations. Acting as jurisdictional regulator, the Queensland Department of Energy and Water Supply (DEWS) amended Ergon Energy's Distribution Authority issued under the *Electricity Act*

1994 to incorporate the reliability of supply Minimum Service Standard (MSS) obligations, an Improvement Program obligation associated with the 'Worst Performing' distribution feeders and the revised network security of supply standards.

The Minimum Service Standard (MSS) obligations that had previously been prescribed within the Queensland Electricity Industry Code (EIC) are now considered in the Distribution Authority. In transitioning to the new Distribution Authority, the MSS limits applicable to Ergon Energy were reset to be equivalent to those applied in 2010-11 and have been flat-lined until 30 June 2020.

The capital expenditure that Ergon Energy proposes is only that which is necessary to comply with all applicable regulatory obligations or requirements associated with the provision of standard control services.

Expenditure to continue the Worst Performing Feeder program in the 2015-20 regulatory control period is a requirement of Ergon Energy's Distribution Authority. Ergon Energy is also focused on improving reliability outcomes where it is prudent and efficient to do so and any such opportunities identified in the next period will be self-funded from STPIS revenue.

Expenditure to continue the roll out of power quality monitoring devices in accordance with the Power Quality Monitoring Strategy is needed to identify deviations from statutory power quality limits (particularly voltage limits) and to satisfy the 95% audit compliance requirements of the other reliability of supply indices under the MSS. Expenditure to address deviations identified is proposed in the *Forecast Expenditure Summary – Corporation-Initiated Augmentation* document.

3.4.17 Objective 3 – Maintain Quality, reliability and security of supply

The Quality of Supply expenditure that Ergon Energy proposes is still necessary to maintain the quality of standard control services, and hence the reliability of the distribution system, as required by clause 6.5.7(a)(3). Proposed Quality of Supply expenditure is necessary to maintain quality to guard against excursions from power quality limits, which are largely caused by the uptake of solar photovoltaic systems. The continued roll out of power quality monitoring devices will enable Ergon Energy to proactively identify and propose solutions to power quality excursions to bring voltage and other power quality indicators to within statutory levels and hence maintain the quality of standard control services and the reliability of the distribution system.

3.4.18 OTHER SYSTEM AND ENABLING TECHNOLOGIES CAPEX

Other System capital expenditure encompasses capital expenditure that does not conventionally align to the other capital expenditure categories and their drivers. The forecasts address specific issues observed throughout the network and with operation of the network. It also forecasts expenditure required for data and communications networks. Other System capital expenditure is

broken down into the three sub-categories: Operational Technology Protection and Control, Miscellaneous Works.

3.4.19 Objective 1 – Meet or manage expected Demand

The nature of Other System and Enabling Technology expenditure means that there are several objectives that the expenditure will satisfy, depending on the need that has been identified. The expenditure for the projects and programs set out in Section 4 of the Summary Document is intended to meet or manage expected demand for standard controls services, particularly network services.

The capital expenditure includes the systems and infrastructure required to collect, manage and control data for asset management purposes as well as to provide for remote monitoring and operation of the power network. The Operational Technology capital expenditure includes telecommunications, Distribution Management System (DMS)/SCADA and other real time data collection systems, and support for the Operational Technology environment, such as data centres, data and systems security and other support services.

The predominant benefit of all proposed Operational Technology investments is to constrain the growth of future staffing costs through the proactive, coordinated and centralised management of Operational Technologies solutions at a business level. A secondary but equally important benefit of Operational Technology is to adopt a proactive approach to collecting and managing data from the field and hence deliver useful and timely information to all areas of the business. This information can then be used to make more informed decisions about future expenditure at a corporate level (such as maintenance and augmentation planning) based on information about the state of the network that is objective, complete and reliable. This has a direct impact on the efficiency of future capital expenditure.

The SCADA system is the fundamental hardware and software system that supports the provision of standard control services as it enables Ergon Energy to monitor and control transformers, switchgear and other primary and secondary systems that control the flow of electricity and hence provides standard control services. The ADAS project is necessary so that uncontrolled growth in IEDs does not overburden the SCADA system and compromise Ergon Energy's ability to continue to supply those services. Similarly, the need to invest in Master Station SCADA and associated cyber security protection is necessary, and has been independently assessed as prudent, to mitigate increasing cyber security risks to the SCADA system. Together these projects are necessary for Ergon Energy to continue to meet expected demand for network (standard control) services in the face of exogenous factors.

Another objective of part of Ergon Energy's proposed Other System and Enabling Technology expenditure is to improve the efficiency with which Ergon Energy manages future demand for

standard control services. Projects such as the INOC, DMS and the Regulator Remote Communications Strategy described in Section 4 of the Summary Document will enable Ergon Energy to meet the expected demand for standard control services in a more efficient manner by automating manual processes, operate the network at higher utilisation reliably and improving network planning information accuracy leading to more cost efficient outcomes. Combined this will enable Ergon Energy to meet the expected demand for standard control services across the network in a cost-effective manner.

3.4.20 Objective 2 – Comply with all applicable regulatory obligations or requirements

Some expenditure categorised as Other System and Enabling Technology capital expenditure is necessary to comply with all applicable regulatory obligations or requirements associated with the provision of standard control services, as required by clause 6.5.7(a)(2). Specifically, each program and project described in Section 6 and Section 7 of this Summary has been proposed to satisfy Ergon Energy's technical, safety and environmental obligations under the National Electricity Rules, *Electrical Safety Act 2002* (Qld) and *Environmental Protection Act 1994* (Qld) respectively.

3.4.21 Objective 3 – Maintain Quality, reliability and security of supply

The operational technology investments proposed in Section 4 are directed at the fundamental systems that enable the delivery of standard control services. Exogenous factors such as the growth of IEDs and cyber security threats must be proactively managed to avoid impacting the quality, reliability and security of supply of the distribution system, additionally the this growth if not managed, can adversely affect the communications and control systems that support the delivery of electricity.

3.4.22 Objective 4 – Maintain Safety

Part of the Other System and Enabling Technology expenditure that Ergon Energy proposes is required to maintain the safety of the distribution system through the supply of standard control services, in accordance with clause 6.5.7(a)(4). Ergon Energy has obligations under the *Electrical Safety Act 2002* (Qld) to ensure that its works are electrically safe and are operated in a way that is electrically safe. Under the *Work Health and Safety Act 2011* (Qld), Ergon Energy must ensure, so far as is reasonably practicable, that the fixtures, fittings and plant are without risks to the health and safety of any person. Additionally, Ergon Energy is subject to enforceable orders issued by the Queensland Electrical Safety Office in response to identified safety risks.

The Protection Review Program in Section 5 is needed to manage increases in fault current levels over time that have been caused by increasing demand on the distribution system. Failure to identify and resolve fault current exceedances would impact the safety, quality, reliability and

security of supply because network assets may be operated outside of their technical operating limits, leading to the malfunction or failure of protection relays to operate as intended, which may potentially result in significant damage to equipment, increased restoration time after an outage or exposure to safety injuries to the public and staff.

As a result of the investigations relating to recent conductor failures, Ergon Energy has identified that retrofitting installation of LV fuses at all distribution transformer locations will mitigate public safety concerns and risk, by reducing the opportunity for lines to fail when they clash.

3.4.23 PROPERTY NON-SYSTEM CAPEX (PROPERTY)

Ergon Energy is responsible for building, operating and maintaining the electricity network, a large and diverse asset portfolio. To enable Ergon Energy to meet these responsibilities requires a significant and ongoing investment in Non-Network property. Property assets are required for the accommodation of the Ergon workforce and for the storage of plant and equipment. As Ergon Energy manages a regional and remote network, the property assets are widely dispersed.

3.4.24 Objective 1 - Meet or manage expected Demand

A major determinant of the ongoing investment in Non-Network Property is the Non-Network Property Strategy. This strategy is underpinned by a 'hub and spoke' model that continues to drive the rationalisation of properties around the operating hubs of:

- Cairns,
- Townsville (major),
- Mackay,
- Rockhampton (major),
- Maryborough, and
- Toowoomba (major).

Driven by the strategy, Ergon Energy continues to improve the way in which property assets are managed. The recent contraction in energy sales, peak demand and customer network connections has been reflected within the workforce. Consistent with the operational contraction, Ergon Energy is seeking additional efficiencies through the reduction in small leases and the integration of employees into fewer centres.

In forecasting the expenditure for Non-Network Property, Ergon Energy utilises a bottom-up approach aligned to its hub and spoke model and in doing so, ensures greater efficiency in its program of work. Items of work are combined based on locality and as a result land, easement and building expenditure are reported as a single line of expenditure. This expenditure can be organised into sub-categories based on the hub and spoke model. Ergon Energy reports its Non-Network Property expenditure internally using a split between hubs, where expenditure is

consolidated and delivered as a large body of work, and spokes, where items of work can be combined or delivered individually to ensure assets continue to meet their demand. Principally, this hub-based expenditure forms the Major program of work, while the spoke-based expenditure forms the Minor program of work.

Due to this (optimised) itemisation of work, trend analysis is not necessarily the most effective methodology to ensure the forecast expenditure is prudent and efficient. Each item of work is measured on its own merits to ensure it represents a prudent and efficient investment.

Ergon Energy believes that the unit rates that it has applied in developing its expenditure program for this category are efficient because:

3.4.25 Objective 4 – Maintain Safety

Ergon Energy's Non-Network Property expenditure enables the delivery of compliant, safe, efficient and fit-for-purpose buildings aligned to the businesses 'hub and spoke' model. The 2015-20 expenditure forecast permits Ergon Energy to deliver upon customer expectations in meeting the operational requirements of a very large regional network. The expenditure forecast utilises a rationalised bottom-up methodology which produces a fully quantified program of work that demonstrates efficiency and prudence. Ergon Energy is able to justify its expenditure through its supporting documentation, which details in depth the asset life cycles, forecast methodology, options analysis, cost breakdowns and associated cash-flows.

3.4.26 FLEET NON-SYSTEM CAPEX (FLEET)

Ergon Energy is responsible for the lifecycle management of a considerable asset, the electricity network and provision of the associated Standard Control Services. To enable this, Ergon Energy requires access to a considerable and diverse set of Fleet assets. These include both vehicles and plant and equipment.

The Fleet expenditure category aligns with the following AER expenditure category taken from the Ergon Energy Regulatory Information Notice (RIN):

Non-system assets – *Motor Vehicles*

Non-system assets – Plant and Equipment

3.4.27 Objective 1 – Meet or manage expected Demand

Building, maintaining and operating the Ergon Energy network is a significant undertaking. The logistics capability required of Ergon Energy is significant and vehicles and mobile plant and equipment are a vital contributor toward this capability – particularly to enable an effective and timely disaster management and emergency response capability across the wide regional network footprint that Ergon Energy manages.

As an enabler to business operations, Fleet assets are directly linked to Network Assets Management, the Work Plan, the Resource Plan, Team Composition and Structure, Tasks Undertaken / Work Practices and Head Count. The assets are utilised by the business to undertake construction / maintenance activities and to enable support services to core functions (Customer Service).

The varied composition of the fleet is indicative of the broad range of tasks that are carried out in support of the network. A major challenge in the management of the fleet is ensuring that the capability provided by the fleet assets evolves with the changing demands of the network.

As with most categories of capital expenditure, the outcome is driven by two main factors: the number of units required and the cost per unit.

Ergon Energy has been active in managing the size of the fleet as the drivers of demand changed and this has resulted in a reduction in fleet numbers.

We note that more detailed information on our forecast methods and programs can be found in each capital expenditure summary document and associated capital planning document, provided as part of our supporting documentation for each expenditure category. The document 'Journey to the Best Possible Price' and 'How Ergon Energy Compares' also contain material that outlines the overall efficiency and prudence of Ergon Energy's forecasting approach and the outcomes achieved, and also contains significant detail around the use and limitations of benchmarking as a partial indicator of the efficiency of a DNSP. Our capex expenditure summary documents also discuss the application of models adopted by the AER (that is, augex and repex models).

3.5 Achieving the opex objectives

Ergon Energy has included in the building block proposal a total forecast operating expenditure for the 2015-20 regulatory control period that Ergon Energy considers is required to carry out the necessary activities so as to achieve each of the opex objectives listed in clause 6.5.6(a) of the rules.

This total forecast opex is derived using a Base-Step-Trend Model (with necessary adjustments) and made up from a number of cost categories. These cost categories represent the costs of undertaking a set of interrelated activities and to operate the various systems necessary to achieve each of the opex objectives.

These cost categories are presented in broad cost groups in the opex summary document and its supporting attachments.

Ergon Energy believes that its expenditure estimation and forecasting processes reflect the behaviour of a prudent operator and result in efficient costs. Below is an outline of how our proposed opex expenditure meets the opex objectives.

3.5.1 Objective 1 - Meet or manage expected Demand

Ergon Energy's opex forecasts by total, category and material projects are made on a reasonable basis and have been developed to comply with the operating expenditure objectives and operating expenditure criteria and to address the operating expenditure factors specified in the NER.

Ergon Energy has primarily achieved this by:

- examining its current base year costs incurred in meeting current service level and regulatory obligations
- assessing the sufficiency of its current compliance with regulatory obligations to identify step changes for corrective actions
- assessing foreseeable new or changed obligations that will affect its operating activities and costs to identify step changes
- incorporating escalation for expert determined demand growth and input cost escalation.

Ergon Energy has adjusted its forecast costs to take into account the weighted growth effects of expert determined peak demand, network growth, customer number and consumption forecasts and provided forecasts and allocations of costs that are consistent with its CAM.

Ergon Energy believes its operating expenditure forecast for the next regulatory control period will deliver outcomes that meet the NER objectives because:

- Ergon Energy is currently meeting these objectives and its forecast operating expenditure has been developed using a revealed cost approach by applying justified growth factors and step changes to the 2012-13 operating expenditure base year, as described in the Opex Summary document.

This means that the forecast is based on Ergon Energy's currently efficient operating expenditure, with necessary adjustments being made to the forecasts for growth in, and changes to the scope of, existing work or regulatory obligations;

- the nature of the activities that it will undertake through its operating expenditure program are targeted at specifically delivering the objectives. These activities are based on the practices that are currently being applied in the 2012-13 base year and will only change in the next regulatory control period in order to accommodate forecast growth in, and changes to, the scope of work;
- it has robust plans, policies, procedures and strategies to support the delivery of its operating expenditure program. These are based on those that are currently being applied in the 2012-13

base year and will only change in the next regulatory control period in order to accommodate growth in, and changes to, the scope of work; and

- it is physically able to deliver the work for the operating expenditure program by acquiring and deploying necessary labour and materials. The operating expenditure forecasts will be delivered in a similar manner to that which is currently being applied in the 2012-13 base year, with changes only being made in the next regulatory control period in order to accommodate growth in, and changes to, the scope of work and applicable regulatory requirements.

The operation of the efficiency benefit sharing scheme (EBSS) mechanism provide significant incentives for Ergon Energy to minimise its operating expenditure. In the modelling that it undertook in support of its national efficiency benefits sharing scheme, the AER demonstrated that these kinds of arrangements provide a continuous incentive to improve efficiency. This incentive is balanced against the need for Ergon Energy to ensure that it continues to meet its regulatory obligations and to achieve its service targets.

Where applicable and in line with the AER's methodologies for adopting a base-step trend approach, Ergon Energy has developed certain non-recurrent and other discrete components of its operating expenditure forecasts for the next regulatory control period on a bottom up basis and/or by multiplying input costs and quantities. Any unit costs or bottom up estimates inherent in the operating expenditure forecast are based on costs historically achieved in 2012-13. For these elements the profile of operating expenditure in the current regulatory control period supports the view that the unit costs underlying the forecast operating expenditure are efficient. This is discussed further in the *Opex Summary 06.01.01*.

The cost escalators used are also efficient because Jacobs (SKM), an independent consulting firm, has been engaged to develop them and has derived escalators that are appropriate based on recent publicly available data and forecasts for asset categories appropriate to Ergon Energy's capital and operational expenditure programmes. Please refer to *Attachment 06.02.02* for details.

The total forecast operating expenditure for the next regulatory control period will be endorsed by the Chief Financial Officer and Chief Executive Officer prior to approval by the Ergon Energy Board.

Ergon Energy has engaged independent consultants to assist with econometric and benchmarking reviews and supporting analysis, which have been included in the consideration of efficiency adjustments to the forecasts.

As a consequence of the reviews and analysis, Ergon Energy is confident that the process it has undertaken to develop its operating expenditure forecasts is robust and represents an efficient level of operating expenditure consistent with the rule requirements.

3.5.2 Objective 2 - Comply with all applicable regulatory obligations or requirements

Ergon Energy has assessed its current compliance (and associated base costs) as well as assessing corrective actions and additional new obligations (and associated step changes) as part of its normal business planning processes for this submission.

3.5.3 Objective 3 - Maintain Quality, reliability and security of supply

Ergon Energy has assessed its current compliance against applicable quality, reliability and security of supply criteria set out in legislation and its Distribution Authority (and associated base costs) as well as assessing corrective actions and additional new obligations (and associated step changes) as part of its normal business planning processes for this submission.

3.5.4 Objective 4 - Maintain Safety

Ergon Energy has assessed its current compliance to maintain safety (and associated base costs) as well as assessing corrective actions and additional new obligations (and associated step changes) as part of its normal business planning processes for this submission

We note that more detailed information on our forecast methods and programs can be found in the opex expenditure summary document and associated planning documents, provided as part of our supporting documentation for this expenditure category.

In particular, the document 'Journey to the Best Possible Price' and 'How Ergon Energy Compares' contain material that outlines the overall efficiency and prudence of Ergon Energy's forecasting approach and the outcomes achieved, and also contains significant detail around the use and limitations of benchmarking as an indicator of the efficiency of a DNSP.

4 How our forecast expenditure meets the criteria and factors

4.1 Interpreting the expenditure criteria and factors

As stated above, the AER must accept Ergon Energy's forecast of required expenditure if it is satisfied that the total of the forecast expenditure reasonably reflects each of the expenditure criteria. In making this decision on whether it is satisfied, it must have regard to the expenditure factors.

Whilst the expenditure criteria may have been amended by the recent AEMC's rule change that is, notably in relation to the removal of the reference to the circumstances of the relevant

DNISP, Ergon Energy considers the following matters are still of relevance in assessing Ergon Energy's forecast expenditure:

- The terms of efficiency, prudence and realistic expectations are principles that guide the AER's decision on the proposed expenditure forecast, rather than parameters that be expressed as precise values.
- Efficiency, as an outcome, cannot be directly observed. There is no external measure of where the efficiency frontier lies. Efficiency must take into account the differences in characteristics, circumstances and operating environment of different firms; and
- Prudence refers to the idea of 'carefully considering consequences' and 'carefully managing resources'.

These concepts are closely related, as outline above.

Ergon Energy notes that in material relied upon by the NSW DNISPs, NERA considers that the forecast capex and opex must reasonably reflect all three capex criteria. This analysis appears consistent with views endorsed by the Tribunal (see Section 2 above).

Likewise, in its Explanatory Statement on the draft forecast assessment guidelines, the AER noted that:

"The expenditure factors are not additional criteria for assessing forecasts. Rather, they guide our assessment under the expenditure criteria; much like the revenue and pricing principles guide our decision-making" (at p27).

That is, the AER, having regard to the expenditure factors, must be satisfied that the proposed forecast capex reasonably reflects the efficient costs that a prudent DNISP would expected to incur, based on a realistic expectation of demand forecast and cost inputs to achieve the relevant capex or opex expenditure objectives in the applicable regulatory control period.

4.2 Applying the expenditure criteria and factors when making a decision

One of the expenditure criteria is that the forecast expenditure reasonably reflects the costs that a prudent operator would need to achieve the expenditure objectives.

Whilst efficiency does not have direct observable measures, an important aspect of prudence is the process that is followed and the reasoning that is applied by the DNISP in developing its expenditure forecast.

At a practical level, Ergon Energy submits that a DNISP is able to demonstrate that the forecast expenditure reasonably reflects the expenditure criteria by:

- Demonstrating that the process the DNSP employed in developing its forecast expenditure is efficient and prudent.
- Using indicators to assess the reasonableness of the result and to inform a decision on whether the resulting forecast expenditure (from applying a prudent forecasting approach) reasonably reflects the efficient cost. This can be done by:
 - Using partial benchmark indicators to assess and demonstrate the efficiency of specific items included within the total expenditure forecast, notwithstanding that there are no objective, external factors that can be used to demonstrate the total forecast expenditure is efficient and the limited usefulness of benchmarking. The use of these partial indicators can add further credibility to the process and method used to derive the total forecast expenditure.
 - Comparing and explaining significant variations between historical expenditure and forecast expenditure.

The above approach is analogous to the approach the AER undertook in its recent decisions on forecast opex and is consistent with the approach outlined by the NSW DNSPs based on the work undertaken by NERA.

The AER places emphasis on the methodology employed by the DNSP to develop the proposed forecast opex. In assessing Aurora’s forecast opex, the AER stated that:

“In this circumstance, the AER is concerned Aurora’s forecasting methodology may not produce a total forecast opex that reflects the criteria. Aurora’s forecasting methodology involves a significant number of individual forecasts.... When aggregated, the AER is concerned that these forecast may not account for the economies of scale and scope a DNSP of Aurora’s size would be expected to achieve...Therefore, to assess the extent to which the total forecast opex proposed by Aurora reasonably reflects the opex criteria, the AER has compared Aurora’s total forecast opex to a forecast developed using a base year approach.”¹⁷

Similarly, Nuttall Consulting in its report on Aurora Energy’s forecast expenditure for the above determination process noted that in assessing the rules requirements, the approach it had taken was that:

“Prudence and efficiency has also been assessed within the detailed reviews of specific projects and programs, and associated forecasting methodologies. In these reviews, following the

¹⁷ AER, draft decision for Aurora, p157.

establishment of a need, the range of options considered to address the need (including non-network options) and the rationale to select the preferred option has been assessed. Following this, the efficient cost for the preferred option has been assessed.”

In other words, the AER considers the forecast method that a DNSP employs is an important factor in its assessment of the proposed forecast expenditure. The AER rejected both Aurora and United Energy’s proposed forecasting method and replaced them with the base year method.¹⁸ The AER considers that its own base year forecasting method would produce a forecast opex that reflects the opex criteria and ensures the achievement of the national electricity objective and revenue and pricing principles.

Ergon Energy’s approach to forecasting operating expenditure has been developed having regard firstly, to the requirements of relevant sections of the NER regarding operating expenditure and secondly, with regard to the Australian Energy Regulator’s (AER) guidelines and recent commentary, in particular the AER’s Better Regulation – *Expenditure Forecast Assessment Guideline for Electricity Distribution* (November 2013) and accompanying Explanatory Statement.

The approach incorporates a base step trend (BST) forecast for most operating expenditure categories; however a bottom-up methodology has been used for those cost categories where this approach was considered more appropriate.

4.3 Role of the expenditure factors

Having regard to the practical approach mentioned above in demonstrating that the expenditure criteria has been met is consistent with the expenditure factors that the AER must consider in deciding whether it is satisfied that the forecast expenditure reasonably reflects the expenditure criteria.

1. The methodology employed by the DNSP to derive the forecast expenditure and the factors that the DNSP took into account in developing the forecast expenditure. These factors are:

- Substitution possibilities between operating and capital expenditure (expenditure factor 7) - the NER also requires the DNSP to identify and explain any significant interactions between the forecast capex and opex programs.
- The extent to which Ergon Energy has considered and made provision for efficient non network alternatives (expenditure factor 10).
- Relative prices of capital and operating inputs (expenditure factor 6).

¹⁸ AER, Draft decision, Victorian electricity distribution network service provider, Distribution determination, June 2010, pp227- 235; AER, Draft Distribution Determination, Aurora Energy Pty Ltd, 2012-13 to 2016-17, November 2011, pp31-32.

- The extent to which the expenditure forecast includes expenditure to address the concerns of electricity consumers as identified by the DNSP in the course of its engagement with electricity customers. (expenditure factor 5A)

2. Indicators that aid in the assessment of the efficient level of forecast expenditure include considering:

- The benchmark expenditure that would be incurred by an efficient DNSP (albeit the efficient frontier cannot be observed) (expenditure factor 4)
- The actual and expected expenditure of the DNSP during any preceding regulatory control period (expenditure factor 5)
- The extent to which forecast expenditure is referable to arrangements with other persons that do not reflect arm's length transactions (expenditure factor 9).

Alternatively, from the DNSP's perspective, developing a forecast expenditure that reasonably reflects the expenditure criteria requires the adoption of a forecasting approach and appropriate methods that take into account all the relevant factors that would have an impact on the quantum of costs in the future. Some of these factors could be 'standard' or 'common' factors that would always be incorporated into a forecast, including future movements in cost inputs or substitution possibilities between forecast capex and opex. These factors are always present in any forecast.

In addition, there are also other factors that may or may not be present in a regulatory control period and therefore may or may not have an impact on the forecast of future costs. These factors include potential changes to present regulatory obligations or changes in the current operating environment that would result in a permanent 'step change' to the current costs. Cost reduction programs or initiatives for operational improvements are also factors.

This prudent process would more likely than not result in a forecast expenditure that reasonably reflects the expenditure criteria of efficient and prudent costs that reflect a realistic expectation of forecast demand and cost inputs. However, as an additional reasonableness check of the result from a prudent forecasting process, a comparison is made between the forecast expenditure and historical result in the summary documents supporting the proposal and in applicable RIN responses.

Where applicable, any step change increases are explained and verified in our summary documents (see Attachment 06.01.04) and Submission RIN so as to provide further supporting evidence that the forecast expenditure indeed reflects the efficient and prudent amount and is consistent with the National Electricity Objective (NEO) and Revenue and Pricing Principles (RPP), in particular giving the DNSP a reasonable opportunity to recover at least the efficient costs. This reasonableness check can be stress tested by employing suitably robust and sound benchmarking assessments of the result with other comparable peers. However, benchmarking should be used

with caution given its limited usefulness and challenges in identifying suitable peer businesses with sufficiently common attributes, as outlined in Ergon Energy's 'How Ergon Energy Compares' documents and the supporting external Huegin reports.

In sum, the expenditure factors are not only important for the AER's assessment of the DNSP's proposed forecast expenditure but are also important factors that a prudent forecasting approach would have taken into account in order to demonstrate that the resulting forecast expenditure reasonably reflects the expenditure criteria. Consideration of the expenditure factors (as well as other factors) gives both the DNSP and the AER confidence that the total forecast expenditure indeed reasonably reflects the efficient and prudent costs that a DNSP would need to achieve the expenditure objectives, based on a realistic expectation of demand forecast and cost inputs.

5 How we have addressed the expenditure criteria and factors

5.1 Overview

In section 5 we address the criteria and factors in relation to the efficiency and prudence of our forecast method for forecast capex and opex, and some of the indicators that may aid in the assessment of the efficient levels of these forecasts.

We set out in this section how we demonstrate we have met each expenditure factor relevant to these considerations and also illustrate that our proposed forecast capex and opex reasonably reflects the expenditure criteria and is consistent with the NEO and RPP.

The purpose of this section is to demonstrate that our process to derive our total capex forecast for the 2015-20 regulatory control period was prudent and efficient and provides a realistic expectation of demand and costs.

5.2 Prudence and Efficiency of overall approach to expenditure forecasts

Our expenditure forecasting process is based on meeting our regulatory obligations as a DNSP, and draws on our expert understanding of our network and the functions we have to perform.

As noted in Sections 1 and 2, we consider that this is an extremely relevant consideration in the AER's decision on whether to accept or reject the expenditure proposed by Ergon Energy. We consider that the underlying governance framework and policies and strategies provide key markers of whether a DNSP's expenditure proposals will be accurate and based on meeting our obligations in the least cost manner.

In our submissions to the AER's Forecast Expenditure Assessment Guidelines, we and other DNSPs highlighted concerns with statements that suggested the AER would be overly relying on high level tools to guide its decision making.

For instance, we were concerned with the AER's use of a base-step-trend method to develop an alternative forecast. We also noted concern with over-reliance on high level tools developed by the AER such as category benchmarking, the augex model and the repex model as this might lead to the AER substituting a decision it considers best without having relied sufficiently upon detailed and relevant expert assessment.

As noted in Section 2, this is an important feature of the regulatory framework as evidenced in decisions by the Tribunal when it stated: *".. it is not the AER's role to simply make a decision it considers best. It is also correct for it to say that the AER should be very slow to reject a DNSP's proposal backed by detailed, relevant independent expert advice because the AER, on an uninformed basis, takes a different view."*¹⁹

In the following section, we provide further information on why our approach to expenditure forecasting is credible.

We show that our expenditure forecasts are based on meeting our underlying regulatory obligations as a DNSP. We then demonstrate that we have effective policies and procedures to inform our expenditure decisions and our planning processes. Finally, we show that our governance processes ensure that expenditure decisions are appropriately delegated and have effective financial controls.

5.3 Regulatory obligations

Ergon Energy is subject to general statutory and regulatory obligations which direct the way we design and operate the network. These obligations are mainly concerned with environmental protection, and public and workforce safety. These influence our drivers of investment, for example, we may replace an asset if the safety consequences to our workforce or the general public cannot be appropriately mitigated through maintenance. The standards also influence our constructions and designs, for instance by adhering to environmental, planning and heritage legislation. Details of these obligations are contained in the Submission RIN at Template 7.3 and referenced in other parts of this Regulatory Proposal, including Appendix A and Appendix B and Attachment 01.01.01 (Legislative and Regulatory Obligations).

¹⁹ Australian Competition Tribunal, *Application by EnergyAustralia and Others [2009] ACompT8*, 12 November 2009, paragraph 186.

In addition to our key role of providing electricity services, we are also required to meet our obligations as a GOC and public company corporate in respect of governance and financial accountability. These can drive the need for investment in IT and financial systems, and non-system property to house staff performing these functions. Further, as a GOC, we are subject to specific legislation in respect of performing our functions.

As a prudent DNSP, Ergon Energy also adheres to codes and guidelines that provide direction on how to perform our functions in accordance with good electricity industry practices. For example, under our Network Management Plans and DAPR we adhere to guidelines on safety clearances, working in enclosed spaces, and network configuration on high bushfire risk days. Often these programs will influence our decisions to invest in replacing an asset, or on the construction standard that we apply.

5.4 Plans, Policies, procedures and strategies

Template 7.1 of the RIN templates identify each of the policies, procedures and strategies that we have at Ergon Energy. These strategies influence planning approaches and expenditure decisions we make at Ergon Energy, and have been important to the manner in which we have developed our capex and opex forecasts for the 2015-20 regulatory control period. Further details of these documents are contained in Attachment 07.09.17, referred to earlier and in Appendix A and Appendix B.

In terms of delivery of network capex and opex works programmes, the Network Deliverability Plan 07.00.10 and the associated contract management strategy and major projects delivery plans in place support achievement of the expenditure objectives as these plans have at their core the following three key strategies:

- **Strategy 1:** Cost reduction and improved productivity: We will systematically reduce the cost of service and works delivery by optimising the way in which our services are delivered:
- **Strategy 2:** Technology: We will leverage technology to improve the management, planning and delivery of services and works.
- **Strategy 3:** Efficiency and Effectiveness: We will continually measure and drive efficiency and effectiveness in order to improve our level of service and reduce expenditure.

Ergon Energy utilises a combination of internal (employee) and external (contractor) labour to prudently, effectively and efficiently resource and deliver the work programs. The above-mentioned plan and associated supporting documents demonstrate that:

- Ergon Energy has a capable workforce with the right capacity available to safely, efficiently and effectively deliver the work program and ensure customer satisfaction
- Ergon Energy has the ability to flex our external workforce to accommodate peaks and troughs without compromising return on investment

- Ergon Energy considers the appropriate methods and techniques available to source resources supply over a vast geographical area.
- Ergon Energy has been driving efficiency and cost reduction with measurable effect, and has plans to continue this journey, including the implementation of a new Works Contracting Strategy

5.4.1 Approach to forecasting capex

In Appendix B of our regulatory proposal document, we described the process we used to derive the total forecast capex for each year of the 2015-20 regulatory control period.

The proposed method was based on meeting one or more drivers of capex including growth in peak demand, asset condition and safety, reliability investment and network support drivers. We consider there are a number of reasons why our process results in an efficient and prudent total forecast of capex over the 2015-20 regulatory control period. This includes:

- We have a sound and proven method to forecast capex requirements for the 2015-20 regulatory control period;
- A key element of a prudent forecasting process is a consistent and appropriate method for identifying investment need, and a rigorous approach to selecting the most efficient option to address the need. Further information on our process for identifying needs and selecting efficient options can be found in each of the overviews for our capital plans. The application of this forecast approach is provided in the underlying plans and business cases in the supporting documents for the capital plan.
- Our forecast method for each capital expenditure category is based on a prudent assessment of needs and selection of the efficient option. Importantly, in identifying our needs for the 2015-20 regulatory control period, we have taken into account the circumstances driving investment over the period and the long term interests of our customers and any feedback received from customers as part of our engagement processes over the 2015-2020 Regulatory Proposal.

Our approach recognises that it is not always cost-effective to undertake in-depth engineering assessment (“bottom up”) planning on all assets on our network. We also understand that the level of information on the driver of an individual asset will vary.

For this reason, Ergon Energy uses detailed ‘bottom up’ planning to identify need where the asset is material in nature. For example, on our sub-transmission network we will assess the condition of major assets such as sub-transmission substations and cables, and will also forecast how the network will be able to withstand increases in demand.

For lower value assets, Ergon Energy uses information on the asset population to forecast needs in advance. For example, Ergon Energy records very specific information on the condition of a

technology type, and can use this information to forecast replacement needs and timing for the population of assets. Similarly, it is difficult to identify the particular assets that will be overloaded on the low voltage network. For this reason, Ergon Energy uses high level or 'top down' models to predict the volume of works based on drivers such as historical projections, customer connections, or peak demand growth.

Prudent identification of circumstances, needs and options

In developing the capex forecast, our process for identifying needs has been able to incorporate our strategic environment and circumstances in the 2015-20 regulatory control period as summarised in our Overview Document and customer engagement research mentioned in Attachment 0A.00.01, 0A.01.04 (Engagement Program) and the Prism report (Attachment 0A.02.02).

In summary, our future plans have a focus on each of the following:

- Focus on affordability – Ergon Energy has maintained its focus in the current and future regulatory control periods on achieving affordability for our customers. Accordingly, our planning processes have been refined to consider the ability to avoid or defer investment where risks can be tolerated. Our forecasts have also incorporated prioritisation of the capex program which has identified opportunities to further defer capital programs to meet our goal of affordability and to use non-network alternatives and demand management to reduce costly capital investment.
- Condition of assets on the network – Our proposal recognises the need to replace assets to avoid a decline in safety and reliability. Our analysis shows that we still have a significant proportion of assets that require replacement due to their condition, potential safety issues or risks caused by assets that fail, deteriorate or degrade in performance, and looking at historical and modelled failure rates on our network of particular assets despite investment in the 2010-2015 regulatory control period.
- Pockets of growth on network – While system peak demand is moderate, capacity investment is still required to meet pockets of growth on the network. Customer connections in localised areas of the network is a key reason why we need to invest in the network.
- Queensland Distribution Authority conditions - A key consideration we have taken into account is Qld Government changes to our licence conditions which became effective from 1 July 2014. In recognition of the increased flexibility these licence conditions will permit, Ergon Energy has modelled its capacity driven investment requirements using less stringent decision criteria. However it should be noted that the capacity investment is largely being driven by spot loads from customer connections, and therefore there is less opportunity to defer investment if the load at risk is high.

Identifying needs

Our planning processes allow us to identify the point at which we need to invest. Our decisions to invest are based on our underlying regulatory obligations to provide a safe and reliable network. The basis on which we invest to meet drivers of investment is set out in each expenditure summary document.

Options assessment

Our investment plans are directed at identifying the most efficient option to address the need. A prudent process would consider alternative options, consider efficiency in the long term, and consider the efficiency of the total forecast, including consideration of synergies in delivery.

The investment business cases underlying our investment plans demonstrate how Ergon Energy identified alternative feasible options to address the need. This includes opex substitution possibilities as part of identifying feasible options. For example, we consider whether a safety risk on an asset can be mitigated through a targeted maintenance program. A further example is consideration of non-network alternatives such as demand management to meet the demand of new and existing customers.

In respect of long term efficiency, Ergon Energy identifies the option that is most efficient in the long term by undertaking net present value (NPV) analysis on feasible options. NPV analysis takes into account the time value of money of different options. The option which is least cost is the selected option, where appropriate, and ensures efficiency in the long term. For projects that are driven by efficiency, Ergon Energy conducts a market benefits test to identify the option that maximises the long term benefit to customers.

Finally we note that our capital planning approach is specifically designed to ensure that potential synergies at the time of delivery are taken into account. For example, our demand management plans look at multiple drivers on the sub-transmission and distribution network, which allows us to identify if there are efficiencies that may arise at the time of delivery. Our plans for the distribution network also consider whether there is likely to be any synergies at the time of delivery.

Ergon Energy's Distribution Annual Planning Report (DAPR) details the corporation's intentions for a five year period in relation to load forecasting, demand management, new capacity investments, asset replacements and refurbishments, reliability, and supply quality. Ergon Energy's Distribution Network Augmentation Plans (DNAPs) outline the capital works that are required to meet the augmentation requirements of Ergon Energy's distribution network in order to accommodate the normal load forecasts for the next 10 years. Subtransmission Network Augmentation Plans (SNAPs) forms the initial stage of the annual augmentation capital works program that is developed as part of the Ergon Energy capital budgeting process. This plan states the capital works that are required to meet the augmentation requirements of Ergon Energy's subtransmission

networks in order to accommodate the normal load forecasts for the next 10 years. It forms the initial stage of the annual augmentation capital works program that is developed as part of the Ergon Energy capital budgeting process.

As set out in Sections 5 and 6 of the CIA capex summary document, Ergon Energy has developed objective methodologies to model the number and location of the network constraints, based upon reasonable and robust demand forecasts, to establish prudent volumes of CIA activity to address expected constraints at the sub-transmission and distribution levels. Each methodology that we employ enables us to determine the most prudent action to be taken, at the most appropriate time, having regard for the objectives which its expenditure must satisfy. These actions primarily result in a specified project or a program of works to address a specific need and are set out in the Sub-transmission Network Augmentation Plan and the Distribution Network Augmentation Plan.

CIA expenditure also includes an unspecified component which is discussed in Section 6.9, which Ergon Energy considers to be prudent because it is based upon a projection of similar historical activity that Ergon Energy expects to undertake to fully meet the objectives set out in clause 6.5.7(a) of the Rules.

Similarly, in forecasting the expenditure on property (including the Major Program of Work), Ergon Energy takes account of three major groups of strategic drivers:

- External strategic drivers,
- Internal strategic drivers, and
- Shareholder drivers (Government directives and mandates).

The ongoing implementation of the property hub and spoke model that allows for a concentration of critical personnel and other resources around major regional hubs, is considered as the most operationally efficient and prudent model for Ergon Energy. The strategy also outlines the objective to consolidate the number of sites where possible, ensuring customer expectations are still being met.

The aim of the Minor Program of Work is to ensure that extant buildings remain fit-for-purpose and continue to meet customer needs in an efficient manner. As such, the expected outcome of this expenditure sub-category is the assurance that the portfolio of Non-Network Property remains fit-for-purpose in accordance with the applicable standards and the Ergon Energy accommodation manual. The forecast for the Minor Capital Program of Work has been compiled as a series of specified projects from the Life Cycle analysis and unspecified cost categories from historical trend (for a small volume of expenditure). At the point of delivery, the individual projects closely follow the same methodology as the majors but in a condensed manner.

5.4.2 Approach to forecasting opex

In respect of the forecast opex in Appendix A of our regulatory proposal, we outline our performance in the current regulatory period and the drivers impacting on our forecast opex requirement for the 2015-20 regulatory control period. Taking these matters into account, we described the process we undertook in deriving the total forecast opex for the 2015-20 regulatory control period and adopted the AER's Base-Step-Trend Model, with appropriate adjustments for efficiency, non-recurrent expenditure and forecasting some elements of opex that are more appropriately forecast using a 'bottom-up' method.

As mentioned above, a number of the capex and opex criteria and factors mirror each other and as such, we consider these criteria and factors in the context of forecast capex and opex together in the sections below.

Ergon Energy has also identified three key aspects of our operating and capital expenditure forecasts that present substitution possibilities, being:

- assets nearing the end of their useful life;
- investment in new systems, processes, plant and equipment; and
- purchasing or leasing new equipment or facilities.

As assets are utilised and are subject to wear and tear, their condition deteriorates and maintenance costs increase, as does their risk of failure. Furthermore, the failure of these assets present their own risks to the company's workforce, its contractors and the community at large.

Ergon Energy must evaluate whether it is more prudent and efficient to replace these assets, thereby incurring capital expenditure, or whether additional operating expenditure should be incurred to manage the risk associated with the assets. Typically, the additional operating expenditure involves more frequent and extensive condition assessments, and additional maintenance costs.

Ergon Energy's asset management plans have been prepared following Reliability Centred Maintenance (RCM) analysis, and Condition Based Risk Management (CBRM) analysis. On this basis the operating and capital expenditure forecasts that represent the optimal mix of capital asset replacement, and enhanced condition monitoring, which are required to balance costs and risks of network performance. As its commercial and operational requirements evolve, and newer technologies become available, Ergon Energy also evaluates whether it is prudent and efficient to invest capital expenditure in new systems, processes, plant and equipment, thereby reducing operating expenditure.

In our ICT summary document, we also identify that ICT capabilities are key enablers for Ergon Energy's strategic objectives of 'Efficient and prudent service' and 'Effective market enablement'. In practical terms, the outcomes to be achieved through expenditure in ICT are:

- a stable and efficient ICT environment to support business operations
- sustain and enhance existing capabilities through upgrades that leverage the flexibility and extensibility of incumbent systems
- risk mitigation through replacement of obsolete systems
- increased business productivity using emerging mobile technology enabled by appropriate security capabilities
- delivery of information analytics to provide insights and improve decision making

The forecasting methodology for ICT has been critically reviewed by Ergon Energy and its service provider SPARQ Solutions in light of the delivery of the ICT investment program being less than forecast in this regulatory control period. SPARQ Solutions has also reviewed the capacity to deliver its capital programs (treated as opex expenditure in Ergon Energy) and has not identified systemic delivery issues. Programs were deliberately suspended pending outcomes from government reviews of the energy sector, or as a consequence of internal review and assessment processes prudently deferring investment. Furthermore, SPARQ ensures that the requirements of Ergon Energy are understood and regularly revalidated during the process of preparing the forecast to ensure relevancy.

5.5 Realistic expectation of demand forecasts and cost inputs

5.5.1 Demand forecasts

Ergon Energy's planning process has incorporated accurate and its most up to date and latest peak demand forecasts as part of the key inputs into developing capital plans. Ergon Energy records peak demand at all of its major zone substations, and this provides an indication of trends in demand growth at different points in the network. Importantly, Ergon Energy's forecast process is capable of excluding spot loads from trend growth and considering new connections in the short term. Further information on our demand forecast methodology and outcomes can be found in Appendix B of our regulatory proposal and in supporting documents. The supporting documents in the capital plans provide more information on the application of demand forecasts in deriving the proposed capex for the 2015-20 regulatory control period.

5.5.2 Input costs

The use of realistic cost inputs are a key element of our forecasting methodologies. When developing our estimate of efficient capital and operating costs we have been mindful of understanding the inherent drivers of these costs in our network, one of which is the cost inputs.

In relation to forecast capex, the methodologies used to develop the unit costs vary between capital plans, and in some cases even between projects and programs within them. At all times, we have used methodologies that are fit for purpose with consideration of historical experience, the nature of project or program of work, and data availability.

A key feature of our process to derive capex for the 2015-20 regulatory control period was the focus on incorporating efficiencies of the past, and considering potential efficiencies in delivering projects during the period. This provides further demonstration that the input costs used in the process to develop our capex forecasts are realistic and efficient.

In relation to forecast opex, we have primarily adopted the base year forecasting approach which escalates the base year opex by the relevant real cost escalators to ensure that forecast expenditure reasonably reflects a realistic expectation of cost inputs.

We have commissioned a report from Jacobs (SKM) (contained as Attachment 06.02.02) on the appropriate and likely movement in the cost of these inputs during the 2015-20 regulatory control period.

To ensure that the changes in labour costs appropriately reflect the skills required and the market factors driving the demand and supply of labour, Jacobs (SKM) had provided expected changes in labour costs for the utilities sector. We have used the utilities sector real labour cost increases to forecast the likely labour costs we would need to undertake activities that require engineering and electrical technical skills which are essential in undertaking work on our electrical system and assets. For non-engineering related labour costs, we consider that labour cost changes in the general labour sector will best reflect the efficient labour costs in the 2015-20 regulatory control period. Further, we have added real price changes to other non labour related cost inputs. The above approach of incorporating real cost escalators is applicable to both forecast capex and opex.

Looking at the forecast opex expenditure, Ergon Energy considers this criteria has been met because it has used 2012/13 as the starting point for its base year, which is efficient by virtue of Ergon Energy being subject to the AER's efficiency benefit sharing scheme as well as Ergon Energy's internal commercial requirements. Both of these factors provide strong incentives to pursue operating expenditure savings. At the same time, Ergon Energy has a clear need to ensure its operating expenditure is sufficient to meet its relevant quality, reliability, safety and security of supply obligations and step changes to the efficient 2012/13 base year in order to accommodate the different scope of work that Ergon Energy will need to undertake in the next regulatory control period. This means that the operating expenditure forecasts are based on Ergon Energy's current circumstances but have been adjusted for changes in those circumstances that it, or any prudent operator, would reasonably need to accommodate in the future.

Growth adjustments have been based on a realistic expectation of increased demand for network and connection services in the next regulatory control period. These adjustments reflect a realistic

expectation of the increased costs that Ergon Energy, or any prudent operator, would reasonably need to incur in the future on account of increased growth; and input cost escalations, reflecting real increases in labour, material, contractor and other costs that are necessary to deliver the operating expenditure programs. These cost escalations reflect a realistic expectation of the increased costs that Ergon Energy, or any prudent operator, would reasonably need to incur in the future in acquiring the inputs necessary to provide its services.

5.6 Addressing expenditure factors that are specific to the forecast method

A number of the expenditure factors in the rules provide specific checks on aspects of the forecast method employed by a DNSP to derive total forecast expenditure. In the sections below, we address each expenditure factor that is relevant to the forecast method.

Substitution possibilities between operating and capital expenditure (expenditure factor 7)

We have considered the substitution possibilities between opex and capex in developing our forecast expenditures. This factor is common to both forecast capex and opex and we consider this factor below in the context of these forecasts. As demonstrated in our regulatory proposal, our capital investment framework involves the identification and selection of the most efficient option to address the need identified. In this process we consider the substitution possibilities between operating and capital expenditure. For example, in forecasting replacement capex, our assessment processes identify whether the risks could be mitigated through maintenance programs (opex).

A key step in this process is to consider the full range of alternative options, including areas where there may be opex solutions. In respect of our drivers of investment, our planning processes explicitly considered the following opex substitution

- Growth – The primary opex substitute for customer and demand driven capex is demand management (non-network alternatives). Our processes directly consider whether there is a specific demand management opportunity, or whether historical experience indicates that demand management may cost effectively address the issues. Further, we consider and make provision for broad based demand management which is based on managing demand before it arises, and thereby cost effectively reducing demand driven capex in the long term. Further detail is described in the section below pertaining to non-network alternatives and the opex summary documents.
- Renewal/Replacement capex – The primary opex substitute for replacement capex is network maintenance. Our process for deriving the timing and need for replacement considers whether there is a less costly maintenance option. For example, we consider if a targeted maintenance

option could effectively mitigate the risk. These options are based on our current maintenance activities and condition information.

- Reliability and Quality of Supply capex – A means of remedying reliability may be an opex solution such as corrective maintenance. We have considered these alternative options when developing our reliability plans.
- Network support – Opex substitutions are a key consideration in our process for developing replacement capex and new non-system capex forecasts. For example when deciding whether to replace an ICT asset, we may consider if the issue can be resolved through maintenance or vendor servicing options. Our strategies also consider whether more generally it is better to maintain an existing function through capex or opex. For example, we periodically review decisions to lease rather than own assets (including fleet and real property/buildings).

Our forecasting process also considers the consequential impact of efficient capital investment on our future opex requirements. We considered the interaction between forecast capex and opex and the substitution possibility between the two for the following cost categories:

- Maintenance expenditure – the impact of a reduced capital program on our maintenance expenditure requirement
- Property expenditure – the impact of property capital investment on our property operating expenditure.
- ICT expenditure – the impact of ICT capital investment on IT operating expenditure.

There are three key aspects of Ergon Energy's operating and capital expenditure forecasts that present substitution possibilities, being:

- assets nearing the end of their useful life;
- investment in new systems, processes, plant and equipment; and
- purchasing or leasing new equipment or facilities.

As assets age and are subject to wear and tear, their condition deteriorates and maintenance costs increase, as does their risk of failure. Furthermore, the failure of aged assets presents their own risks.

Ergon Energy must evaluate whether it is more prudent and efficient to replace these assets, thereby incurring capital expenditure, or whether additional operating expenditure should be incurred to manage the risk associated with the assets. Typically, the additional operating expenditure involves more frequent and extensive condition assessments, and additional maintenance costs. Ergon Energy's asset management plans for its system capex have been prepared following Reliability Centred Maintenance (RCM) analysis, and Condition Based Risk

Management (CBRM) analysis, and like methods suitable for non-system capex. On this basis the operating and capital expenditure forecasts that represent the optimal mix of capital asset replacement, and enhanced condition monitoring, which are required to balance costs and risks of network performance. As its commercial and operational requirements evolve, and newer technologies become available, Ergon Energy must evaluate whether it is prudent and efficient to invest capital expenditure in new systems, processes, plant and equipment, thereby reducing operating expenditure.

Ergon Energy has adopted the general principle that capital expenditure proposed for the primary purpose of delivering productivity improvements and reductions in operating expenditure should not be included in its capital expenditure proposal. If such proposals provide sufficient benefits to warrant their implementation, then the capital expenditure required will be recouped through the efficiency benefit sharing scheme. As requirements arise that necessitate the purchase or lease of new equipment, Ergon Energy must evaluate whether it is prudent and efficient to make a capital investment in the purchase of new equipment, or whether the option of leasing the new equipment (and thereby incurring higher operating expenditure) is more prudent and efficient. Ergon Energy's financial management processes require a financial evaluation (based on discounted cash flow analysis) to be performed whenever expenditure is proposed relating to the provision of Standard Control Services, and there are competing options available with respect to financing. As a result of these analyses, Ergon Energy has determined to purchase the vast majority of its vehicles, heavy equipment, property, and ICT assets. The exceptions where Ergon Energy has elected to lease equipment typically relate to short-term requirements, or where suitable purchase options are unavailable. Ergon Energy's plans, policies, procedures and strategies have regard for the interactions, and substitution possibilities, between its operating and capital expenditure programs and they are inherent in the efficient base year costs.

Whether the expenditure forecast is consistent with any incentive or other applicable schemes (Factor 8)

In forecasting its proposed expenditure for the 2015-20 regulatory control period Ergon Energy has had regard to those incentive schemes set out in clauses 6.5.8A or 6.6.2 to 6.6.4 of the Rules as follows:

- A Capital Expenditure Sharing Scheme (CESS) as contemplated by clause 6.5.8A is not in effect at the time of this regulatory submission;
- A Service Target Performance Incentive Scheme (STPIS) supported by clause 6.6.2 of the Rules places a proportion of Ergon Energy's revenue at risk to incentivise Ergon Energy to maintain service standards above predetermined levels. Ergon Energy's CIA expenditure does not include expenditure to maintain these service standards as Ergon Energy's methodologies for forecasting CIA expenditure are driven by the application of network security criteria rather

than by adverse performance against STPIS reliability and quality of supply targets. Ergon Energy notes that the changes to the Security Criteria that took effect on 1 July 2014 are expected to, over time, increase the number of constraints on sub-transmission assets and adversely impact reliability and quality of supply indicators. However, such impacts are not expected to occur until the end of the next period and beyond. Ergon Energy will monitor the emergence of any such impacts and it is expected that remedial works would be self-funded through the STPIS mechanism rather than funded by CIA expenditure. Ergon Energy's CIA expenditure is therefore not inconsistent with the application of the STPIS;

- Ergon Energy is committed to facilitating the emergence of demand management solutions in its distribution system. The way in which cost-efficient demand management solutions form part of Ergon Energy's forecast CIA expenditure is described in Section 7 of this document. Clause 6.6.3 of the Rules however specifically relates to the Demand Management and Embedded Generation Connection Incentive Scheme (DMEGCIS) (previously the Demand Management Incentive Allowance) which the AER has proposed to continue to apply to Ergon Energy in the 2015-20 regulatory control period. The effect of the DMEGCIS is to encourage research and innovation in prospective demand management solutions rather than to lead to the immediate deferral of network augmentation expenditure. Ergon Energy agrees with the AER's assertion in its Framework and Approach – Ergon and Energex 2015-2020 that the DMEGCIS' focus on emerging solutions means that any benefits of the DMEGCIS 'may not be revealed until later periods'. As a result the application of the DMEGCIS does not have an impact on Ergon Energy's proposed CIA expenditure in the next period; and
- A Small-scale Incentive Scheme as contemplated by clause 6.6.4 of the Rules is not in effect at the time of this regulatory submission.

Details of the applicability of the above schemes to other capex or opex expenditure categories are set out in the various expenditure summary documents,

In relation to each of the schemes set out in clauses 6.5.8A or 6.6.2 to 6.6.4 of the Rules, Ergon Energy has considered if the scheme is applicable in the context of its proposed capex or opex expenditure for the 2015-20 regulatory control period.

Ergon Energy notes that the company's focus on its proposed expenditure is on meeting our licence conditions and not exceeding or improving reliability and quality from a STPIS perspective.

Ergon Energy has also included a specific opex step change allowance for demand management to defer certain levels of capex within period rather than include a full supply side capex allowance in the first instance.

Clause 6.5.6(8) of the rules asks whether the operating expenditure forecast is consistent with any incentive scheme or schemes that apply to the DNSP under clauses 6.5.8 or 6.6.2 or 6.6.4,

namely, the efficiency benefit sharing scheme (EBSS), service target performance incentive scheme (STPIS) or small scale incentive scheme.

As outlined in our Regulatory Proposal, Ergon Energy is subject to the efficiency benefit sharing scheme (EBSS) for the current 2010-2015 period. The EBSS provides incentives for business to pursue efficiency improvements in opex and to share efficiency gains with customers. We have responded to the incentive of the EBSS during the period and our expected opex for the current period is within the efficient benchmark set by the AER. We have used the outcome from the operation of the EBSS to derive the forecast opex requirement for the next period (i.e. the actual base year opex of the 2012-13 regulatory year). In that context, our forecast opex is consistent with the EBSS that the AER has applied to Ergon Energy for the current period.

The AER also proposes to apply the EBSS to us for the next period. As explained by the AER, this scheme is to incentivise business to improve efficiency in operating expenditure, with efficiency being measured by comparing the actual opex outcome against the opex allowance determined by the AER. In this context, we consider that it is important that the AER's decision reasonably reflects the efficient costs that a prudent operator would need, based on a realistic expectation of demand forecast and cost inputs, rather than the decision reflecting the application of stretch targets that are unachievable. We note that any 'loss in efficiency' resulting from the setting of an unrealistic stretch target would be shared with customers under the operation of the EBSS.

We note that our forecast opex is to achieve licence conditions and maintain the quality, reliability and security of our network and this is consistent with the STPIS. Further, we note that the AER has not developed a small scale incentive scheme and therefore has not stated a proposed approach to its application. Consequently, there is no impact on Ergon Energy's proposed forecast opex.

The extent the DNSP has considered and made provision for efficient and prudent non-network alternatives (expenditure objective 10)

Similar to expenditure factor 7, this expenditure factor is common to both forecast capex and opex, and we consider this factor below in the context of these forecasts.

The purpose of this expenditure factor is to ensure that DNSP's specifically consider efficient non-network alternatives such as demand management. These provide opportunities to efficiently defer investment, and pass the savings onto customers. In some cases, those benefits also extend to savings in the transmission and generation sectors, which multiply the benefits to customers.

As noted above, Ergon Energy has considered all feasible options to address needs, and has selected the most efficient option. In doing so, we have considered and made provision for efficient and prudent non network alternatives. Ergon Energy has well defined demand management strategies and processes, and a track record in implementing demand management initiatives.

Demand management is an effective way to manage load factors and curtail investment in network capacity by reducing demand at peak times.

Our demand management strategy for the 2015-20 regulatory control period (see Attachment 06.02.01) has focused on:

- Opportunities to defer specific projects – We have investigated ways to defer augmentation at specific sites of our network as an integral part of our capacity planning process.
- Broad Based initiatives – We are also implemented a number of initiatives that reduce system peak demand more generally, focused on building up impacts over time and delivering longer term benefits.
- Market Engagement Processes - To ensure a robust number of solutions can emerge from the RIT-D process initiatives such as publishing a Demand Response Incentive Map (DRIM); implementation of a Trade Ally Network mechanism to encourage market enablement; and ongoing market enablement programs are used to obtain realistic solutions that will deliver the required outcomes at the lowest possible cost.

Ergon Energy's commitment to demand management in the 2015-2020 period is demonstrated by Ergon Energy's existing 2010-2015 demand management program (see our publicly available Demand Management Outcomes Report 2013/14 for a detailed review of the program to date) which, has had significant successes such as:

- Successfully aiding in the forecast deferral of \$243 million of capital investment;
- Delivery of the regulatory control period demand reduction target of 122MVA, 12 months ahead of schedule and under budget;
- Contracting of demand via market engagement methodologies; and
- The first use of Ergon Energy's Demand Response Incentive Map (DRIM) and Trade Ally Network (TAN) market mechanisms to support market enablement.

In addition to these business as usual activities, changes to the network security criteria have provided additional drivers to support the use of demand management. The change from a largely N-1 security criteria to the VCR/Safety Net approach enables higher levels of risk to be tolerated within the network encouraging increased value from existing assets and increasing the need for risk mitigation using demand management. Ergon Energy's forward forecast capital expenditure reflects the use of demand management in supporting higher levels of risk with a reduced network augmentation program.

The relative prices of operating and capital inputs (expenditure factor 6)

The purpose of this factor is to provide an additional check that the forecast method has adequately accounted for the relative price of capex and opex inputs when we undertake analysis to select the least cost option to address the need.

In the section above we described how the capex forecasting method includes a process to derive a realistic expectation of cost inputs. Similarly, the costs of opex options were derived from methodologies that provide a realistic expectation of future costs. Implicit in our cost estimating methods was a common approach for applying real cost escalation. In combination, this allows for a fair comparison of capex and opex options in relation to the underlying input costs.

A practical example is the process for assessing options to address a support need. In this case, our processes would consider whether there is a feasible opex option to replace a degraded asset, such as through leasing or procuring the service externally. In these cases, we would look at the feasible options, costing each with regard to 'best estimates' of underlying inputs. We would then use a process such as NPV analysis to provide a view on the option which is least cost.

The nature of our Other System & Enabling Technologies expenditure presents some opportunity to consider the relative prices and substitution possibilities of operating and capital expenditure. The INOC and DMS described in Section 4 of the applicable Other System & Enabling Technologies summary document are necessary to constrain growth in future staffing costs that would occur if existing operational technology solutions continued to be deployed without intervention. This is because both projects represent a centralised, automated and coordinated approach to managing expected increases in the complexity of operational technology in the distribution system in relation to other projects and programs in Section 4 of the Other System & Enabling Technologies summary document, because of their nature, capital rather than operating expenditure has been determined as the most prudent means of addressing the identified need. In relation to the projects and programs described in Section 5 and Section 6 of that document, Ergon Energy has an obligation to deliver a capital works solution to satisfy its statutory obligations.

Two other areas where factor 6 is also of particular relevance are discussed below:

Asset Renewal capex: The nature of asset renewal presents some opportunity to consider the relative prices and substitution possibilities of operating and capital expenditure. One of the objectives of Asset Renewal capital expenditure is to maintain the functional performance of the distribution network by maximising the economic life of existing assets. This enables Ergon Energy to meet demand for standard control services as prudently and efficiently as possible. Ergon Energy uses several methods to maximise the economic life of its assets, which are set out in Section 5.3 of that summary document.

Reliability and Quality of supply capex: The worst performing feeder program is intended to improve the performance of specific poor performing feeders. This will constrain any growth in forced maintenance expenditure that is needed to address the continuing deterioration of each feeder's performance over time. Similarly, Quality of Supply expenditure is intended to minimise the amount of operating expenditure that Ergon Energy incurs reactively in response to power quality issues. Capital expenditure to implement power quality monitoring devices will provide Ergon Energy with comprehensive and timely information on network power quality. This information will enable Ergon Energy to manage future operating expenditure to address power quality issues in a more proactive and efficient manner. In both cases capital rather than operating expenditure has been determined the most prudent and cost effective means of addressing the identified need and meeting our customers' expectations.

The extent to which the capital/operating expenditure forecast includes expenditure to address the concerns of electricity consumers identified by the DNSP in the course of its engagement with electricity consumers (expenditure factor 5A)

The purpose of this factor is to ensure that the DNSP has effectively engaged with customers in developing its forecasts. The AEMC's final determination on the 2012 rule change noted that:

"The final rules do not attempt to address perceived problems of engagement of consumers generally.... More conceptually though, this issue is fundamentally about how NSPs and the AER interact with consumers. While the final rules in some areas, such as the expenditure forecasting assessment guidelines, require engagement to occur in a certain way, the rules should provide for the outcomes of engagement, not the engagement itself. Forcing parties to interact is unlikely to be successful in most cases. What is needed is a cultural shift towards greater engagement, and this can only come from the parties themselves. What the final rules provide for in terms of engagement should be seen as a minimum. However, importantly the final rules provide the AER with the ability to have regard to the nature of consumer engagement undertaken by NSPs when evaluating their regulatory proposals."

The AEMC's deliberations are important in understanding the purpose of this factor, as it suggests that it requires the AER to examine the nature of the engagement, rather than specifically demonstrating how each concern has been incorporated into our forecasts. This is an important distinction, as ultimately we have regulatory obligations to provide a safe, secure and reliable network, and our decisions to invest draw on our expert knowledge on how to meet these obligations. Engagement can nevertheless provide opportunities to test whether our risk tolerance levels, reliability targets and customer service standards are appropriate.

Our regulatory proposal, and the underlying supporting documents show the activities we undertook in engaging customers on a range of matters. Our research findings can be found

in our Overview Document (0A.00.01) and documents summarising the approach and outcomes of our engagement processes (Attachments 0A.01.04 and 0A.02.02). The findings in some of these areas support the basis of our proposed total capex:

- Reliability – Customers were generally satisfied with the reliability of their service, in fact, there wasn't willingness to pay more for a higher level of reliability. Our proposal has sought to maintain the reliability performance standards of our current MSS requirements. Further information can be found in the capex objectives section.
- Pricing – a significant number of our customers had seen increases in their electricity bills over the past few years. Customers understood the need to spend money to maintain the electricity network. However, there was a clear preference that if prices needed to increase, they should do so in a steady manner over a number of years rather than a one-off "bill shock". Our capex proposal has sought all available opportunities to prudently defer or prioritize expenditure and incorporate efficiencies. Further information on how the program aims to meet our objective of keeping our share of electricity charges to at or below CPI can be found in the Overview Document of our regulatory proposal.
- Safety – Customers expected that electricity was supplied in a safe manner and believed that this should be taken into account when constructing and operating the network. In this respect, our replacement program continues to remove assets that deteriorate the safety of services we currently provide and provide ongoing customer and community education and engagement initiatives to educate our customers and contractors on safety requirements of the electricity network.

Ergon Energy has also summarised the outcomes of the customer engagement that are directly relevant to each category expenditure is contained in each summary document.

Mapping of individual programs to strategic objectives and our customer commitments is performed in the individual engineering reports and business cases for each of the programs Ergon Energy is proposing to undertake in the 2015-2020 period.

Ergon Energy recognises that our customers are concerned about the cost of electricity, and want prices to stabilise so that they can continue to experience existing levels of reliability at the best possible price. In response, we are applying a new network security criterion, moving from the requirement to duplicate investment to ensure security of supply, to a criterion that considers the customer value of the investment from a reliability perspective, and applies a safety net to define the maximum times allowed for restoration of various levels of load following a single contingency event. We will continue to assess this approach as we move forward to best balance our customers' expectations around reliability and price. We are also looking to build on our demand management success, and increasingly use non network alternative solutions – from embedded

generation to more innovative demand management and demand response projects – as a more cost effective way to respond to constraints on the network.

Through listening to our customers, we were able to refresh our service commitments and build on our understanding of the impact of potential future demand on the network. These have in turn helped inform the expenditure forecasts outlined in this Regulatory Proposal for 2015-2020.

Our commitment to delivering the best possible price has provided the framework for the forecast. In every way we have aimed to be as prudent and efficient as possible in our investment plans.

In addition, in formulating our plans we have also considered our commitments around delivering peace of mind, by way of a safe, dependable electricity service, and supporting greater customer choice and control in electricity supply solutions. In both of these areas the augmentation of the network plays a central role.

Our strategic objectives are detailed in Ergon Energy's annual Statement of Corporate Intent, which sets out our strategy and obligations each financial year to our shareholders.

Our demand forecasts have been reviewed against insights on general energy usage trends, market intelligence on regional development and potential block loads. We have detailed these reviews within the supporting document, for our CIA summary documentation suite (for example, *Attachments 07.00.02, 07.02.04, 07.02.05 and 07.02.08-07.02.10*).

Our consumer process highlighted that Ergon Energy's customers wish to maintain reliability performance at current levels to reduce upward pressures on retail electricity prices. Accordingly, we have considered this feedback in formulating our capex and opex forecasts and detail further the impacts of this consideration below:

- **Other System and Enabling Technologies capex:** The majority of Ergon Energy's Other System and Enabling Technologies capital expenditure discussed in Section 4 of that summary document – and specifically the INOC, ADAS, Master SCADA Strategy and cyber security projects – will maintain reliability performance by managing emerging risks such as the growth in IEDs and cyber security threats that, left uncontrolled, would otherwise cause an increased risk of reliability impacts on the distribution system. Also, as expected by its customers, Ergon Energy is committed to the maintenance of a safe distribution system and the works described in Section 5 and Section 6 of our Other System and Enabling Technologies capital expenditure summary document are intended to mitigate known and potential safety risks to Ergon Energy employees and to the general public.
- **Reliability and Quality of Supply capex:** The process also demonstrated the community's desire for Ergon Energy to operate the network in a way that supports greater customer choice and control in electricity supply solutions. A large part of this is to facilitate customers' continued uptake of solar photovoltaic systems. Power quality monitoring devices are necessary to

identify deviations from acceptable power quality limits (typically voltage) that can be caused by the increased penetration solar photovoltaic systems in the network. These deviations in turn prevent other customers from connecting solar photovoltaic systems until the power quality can be brought within acceptable levels. Additionally, poor power quality can damage customer equipment, and in particular sensitive electronic equipment. The continued roll out of power quality monitoring devices will enable Ergon Energy to resolve such issues in a proactive and timely manner, alleviate customer concerns and improve Ergon Energy's ability to plan for and accommodate more solar photovoltaic systems and sensitive electronic equipment in the future.

- **Property capex:** The customer and community engagement program undertaken by Ergon Energy has shown the principal customer expectations for both regional and remote Queensland is reliability of supply and maintaining a localised presence. To ensure that we can service these customer expectations, the intent of the Major Program of Work is to maintain the ageing hub property assets to ensure responsive and operationally efficient depots that meet relevant safety, compliance and environmental requirements as well as supporting Ergon Energy staff in servicing our customers.
- The importance of maintaining a local presence and the ability to respond promptly was highlighted by feedback from our online stakeholder survey, and through other regional stakeholder engagement. This feedback was also supported by the customer research commissioned through independent research specialists, Colmar Brunton, to help us explore our customers' willingness to pay for different areas of our service. In this research our customers indicated that Ergon Energy's investment priorities should be maintaining the reliability of supply, with strong support given to maintaining local depots. Less than half of the research respondents supported decreasing the current number of depots, even when offered a significant 5% decrease in their bill. Maintaining a local presence is seen as being important to our communities from a local employment perspective.
- **Opex:** Recognising concerns expressed by customers about the increasing costs of electricity and the level of reliability that has been achieved to date, Ergon Energy has set its proposed reliability targets in accordance with the AER's proposed STPIS method. Ergon Energy had regard to these targets when setting its opex allowance by assessing the sufficiency of its current performance to identify step changes for corrective actions. Ergon Energy has not forecast any planned maintenance programs that are designed to improve its service reliability. Ergon Energy has focussed its opex on maintaining reliability at the levels required by the STPIS targets. Ergon Energy notes that any additional reliability improvement investments and initiatives will be assessed on a case by case basis and funded through the incentives available under the STPIS.

Additionally, in, recognising the concerns of customers regarding the impact of electricity charges both on cost of living and general commercial activity, Ergon Energy has embedded within forecast opex, efficiency benefits from a range of measures we intend to implement to limit the impact of necessary increases in opex requirements for the 2015-20 regulatory control period.

The extent to which forecast expenditure is referable to arrangements with other persons that do not reflect arms length transactions (expenditure factor (9))

Ergon Energy has robust procurement governance processes in place to ensure that contractual arrangements at all times reflect arm's length terms. These processes are described in detail in the 'Ergon Energy's Network Deliverability Plan's (see Attachments 07.00.10 and 07.09.26) and in the summary of our policies, plans and procedures (Attachment 07.09.17)

It is noted that Ergon Energy's 50%-owned Joint venture ICT company, SPARQ Solutions does not provide network services itself that would constitute 'direct' costs under our capex forecasts and which would thus form part of the expenditure proposed. To help support the robustness and integrity of the forecast costs of the services supplied by SPARQ Solutions, the following matters are of relevance in assessing the methods used:

- Industry benchmarking – Benchmarking was undertaken to determine alignment of the overall ICT expenditure forecast with industry peers, cognisant of any mitigating circumstances to be identified.
- Internal review – The ICT Investment Framework, endorsed by the Ergon Energy and Energex Investment Review Committees, will be used as a basis for assessing the economic justification for high-level Business Cases for significant proposed ICT investments.
- External review – An independent organisation was appointed to provide a review of the overall ICT expenditure forecasts and undertake a critical analysis of major investments. This provides an independent check of expenditure forecasts.

Details of any related party transactions undertaken by the company can be found in the Submission RIN templates, Schedule 1 Response 19.1-19.4.

Contingent projects (expenditure factor 9A)

The purpose of this factor is to identify projects that are highly dependent on a clearly defined trigger event occurring, and which are of a very material nature. These projects are excluded from the total forecast capex allowance for standard control services, and instead are identified as 'contingent' with an appropriate allowance if the defined trigger event occurs. The ostensible purpose of a contingent project is to ensure that large and uncertain events are accounted for separately if and when the event occurs, rather than included in the allowance. Forecast method considered whether any projects or programs of expenditure should be identified as contingent projects, and therefore excluded from the total forecast capex for

standard control services.

We found that the two projects mentioned in *Attachment 07.09.16* met the criteria for contingent projects in clause 6.6A.1 of the rules.

Any relevant final project assessment report (expenditure factor 11)

This factor was inserted into the rules by the AEMC at the time of making its rule change on the distribution network planning and expansion framework. The final project assessment report is the final step in the regulatory investment test for distribution (RIT-D) under Chapter 5 of the rules. The RIT-D replaced the current regulatory test, establishing the processes and criteria to be applied by DNSPs in order to identify investment options which best address the needs of the network. The RIT-D will be applicable in circumstances where a network problem exists and the estimated capital cost of the most expensive potential credible option to address the identified need is more than \$5 million.

The AEMC amended the expenditure factors in chapter 6 of the rules when implementing the rule based on the views of the proponent. The proponent had noted that one of the benefits of the rule change was that economic justification of distribution investments may also assist the AER in its determination of DNSPs' revenues under Chapter 6 of the rules which should result in more efficient network charges.

We note that there have been no final project assessment reports at the time of submitting this regulatory proposal.

5.7 Partial indicators that forecast expenditure is efficient

The process that a DNSP employs and the factors that it takes into account in developing total forecast expenditure is an important indication that the resulting total forecast are indeed prudent and reasonably reflect efficient costs.

Whilst there is no external, observable measure that can be relied upon to demonstrate and/or conclude that the total forecast expenditure is efficient, there are nevertheless partial indicators and other factors that would assist in confirming the efficient level of the forecast expenditure that was derived from a prudent approach.

These factors are stated in the rules and are intended to assist the AER in making a decision on whether the total forecast expenditure reasonably reflects the expenditure criteria.

5.7.1 Previous expenditure - actual and expected capex and opex respectively of the DNSP during any preceding regulatory control periods (Factor 5)

The rules require the AER to have regard to the actual and expected capex and opex respectively of the DNSP during any preceding regulatory control periods. The NER requires Ergon Energy to provide actual and expected capex and opex for the previous and 2010-15 regulatory control period as well as explain any significant variation in forecasts from historical capex and opex.

Further information on our performance in the 2010-15 regulatory control period can be found in each expenditure summary document, the Overview Document, Journey to the best Possible Price and Appendices A & B of the Regulatory Proposal 2015-2020.

Previous expenditure can provide a partial indicator on the efficiency and accuracy of expenditure forecasts for the 2015-20 regulatory control period in a number of ways:

- It can identify whether a DNSP's expenditure is deviating from trends, and whether this can be explained with reference to previous and future circumstances and drivers.
- It can provide insight into the forecasting accuracy of a DNSP in the past, and whether variations to forecast have been identified and taken into account in developing forecasts for the 2015-20 regulatory control period.
- It can provide insight into whether a DNSP has responded to incentives in the last period.

In terms of trend analysis, as can be seen in our Overview Document, our forecast capex is 14 per cent lower than actual capex for the 2010-15 regulatory control period. This reflects Ergon Energy achieving considerable improvements in the security of the network in the 2005-2015 regulatory control period under new licence conditions, and the return to more steady state levels of investment in the 2015-20 regulatory control period. The lower proposed amount also reflects the efficiencies achieved under industry reform, with a primary focus on affordability through striving to contain average increases in our share of customers' electricity bills at or below CPI. Reductions in forecast opex have also been achieved and are based on significant improvements made in efficiency over the 2010-2015, as well as a result on capabilities and technologies due to be implemented from 1 July 2015.

Energy's decision making processes, and the way in which they achieve prudent outcomes in relation to actual and expected expenditure during preceding regulatory control periods, are demonstrated throughout its corporate policies, protocols, standards, Management Plans, Engineering Reports and associated supporting documentation and business-as-usual governance processes. It is Ergon Energy's stated intention to generally align appropriate industry standards

(including with ISO 55000), and to promote and support continuous improvement in its overall asset management processes. These represent the actions of a prudent operator.

As a prudent DNSP, Ergon Energy also adheres to codes and guidelines that provide direction on how to perform our functions in accordance with good electricity industry practices. For example, under our Network Management Plans and Distribution Annual Planning Report we adhere to guidelines on safety clearances, working in enclosed spaces, and network configuration on high bushfire risk days. Often these programs will influence our decisions to invest in replacing an asset, or on the construction standard that we apply.

Chapter 17 of the 2010-2015 Regulatory Proposal outlined the plans, policies, procedures and strategies in place to ensure that capital planning and governance processes adopted by the company. In its Draft Determination for the 2010-2015 period, the AER considered that Ergon Energy's capex planning and governance processes are generally appropriate and provide adequate assurance that investment decisions are likely to be prudent and efficient.

The governance process ensures that projects planned through the network planning process continue to represent an optimal investment solution in light of current circumstances. In this respect we note that our capex forecasts have been through appropriate checks and balances as part of this governance framework, and provide a level of assurance that programs and programs will proceed in the next period in an efficient and prudent manner. In particular, the expenditure programmes during the 2010-2015 period and the forecasts for 2015-2020 in each category have been subjected to portfolio analysis, top down and line-by-line reviews at CEO, Executive, Board and Investment Review Committee and Network Investment Review Committee level. These reviews have examined delivery of programmes against estimates and assessed investment outcomes and proposal against legal compliance, safety, affordability, reliability and achievement of security criteria requirements.

Ergon Energy has also significantly improved its demand forecast methods in response to concerns raised by the AER in the previous regulatory determination. The forecasting approach that Ergon Energy has employed is based on a comprehensive, independently verified methodology which has been applied to obtain a robust and realistic expectation of the demand forecast, because:

- Ergon Energy has developed an independent system maximum demand methodology that can be used to reconcile spatial forecasts at the zone substation level;
- Ergon Energy has developed a methodology that allows for variation in key economic, demographic, appliance and weather factors; and
- Ergon Energy now applies a weather normalisation process to its forecasting process.

These and other factors that demonstrate how Ergon Energy's demand forecast is efficient, prudent and realistic are discussed in Section 3.5 of this document.

Where its current period expenditure has deviated from the AER's allowance, Ergon Energy has explained this by reference to drivers and circumstances that support the prudence and efficiency of the level of capital expenditure that was actually incurred. This demonstrates the robustness of Ergon Energy's system of investment review controls, which ensures that Ergon Energy's capital expenditure is continuously assessed for prudence and efficiency.

Some further more specific examples of how the above applies to our capex and opex expenditure categories are outlined below:

- Each capex and opex summary document: In relation to sub clause (5), Ergon Energy has set out, in each summary document, its actual capital expenditure during the previous regulatory control period (2005-10) and actual and expected capital expenditure in the current regulatory control period (2010-15). To accompany this information, Ergon Energy has explained the actual and expected capital or operational expenditure by reference to the allowance approved by the AER (and, for the 2005-10 regulatory control period, the QCA) and the endogenous and exogenous factors that have contributed to any variance from the AER's allowance.
- Asset Renewal capex: Ergon Energy has demonstrated that its proposed asset renewal capital expenditure is efficient because it is broadly in line with the level of efficient capital expenditure it has incurred in the current and prior regulatory control periods. Where its current or prior period expenditure has deviated from the AER's allowance, Ergon Energy has explained this by reference to drivers and circumstances that support the prudence and efficiency of the level of capital expenditure that was actually incurred. This demonstrates the robustness of Ergon Energy's system of investment review controls, which ensures that Ergon Energy's capital expenditure is continuously assessed for prudence and efficiency.
- Reliability and Quality of Supply Capex: For the worst performing feeder program the costs that are used to forecast the capital expenditure are based on average actual costs of projects recently delivered under this program. As feeder performance will vary year to year as too does the expenditure required for each feeder as it depends on the issue being remedied. Ergon Energy believes using an average to be the most reasonable way of estimating the cost of similar projects in the future. For power quality monitoring devices Ergon Energy has developed unit costs based on the cost of procuring and installing devices that are similar to those recently installed under Stage 1 of the 'Power Quality Monitoring Strategy 2012-2020'. The additional cost for power quality monitoring devices with satellite communications capability is based upon the actual cost of similar satellite equipment being installed under the Automatic Circuit Recloser program. In both programs the estimation approach used results in

an efficient cost base as the forecast unit costs are based upon the most recent and realistic cost of similar projects or devices delivered in the current regulatory control period.

The regulatory proposal for the current regulatory control period (2010-2015) was based on the level of investment considered by Ergon Energy as appropriate to achieve MSS compliance. The key investment items considered in the proposal were the SCADA program, limited volume automatic circuit recloser (ACR) installations, small volume HV Subtransmission switch installations to sectionalise the Subtransmission network, and a large volume feeder improvement program. The proposal was reduced by approximately \$26 million by the AER in its final determination as a result of insufficient justification for the investment in the feeder improvement program.

In the later years of the 2005-10 regulatory control period the MSS limits became significantly more onerous leading to Ergon Energy's failure to achieve regulatory compliance for five of six MSS limits in 2008-09 and 2009-10. The repeated non-compliance with MSS resulted in Ergon Energy being issued a formal warning notice from QCA, which in turn led to the initiation of the revised Reliability Strategy and the Reliability Improvement program in order to achieve shareholder expectations.

In 2011, Ergon Energy established the Reliability Strategy and associated Reliability Improvement Program following detailed modelling of the network reliability performance. This modelling provided baseline trends and statistical variations across the various performance categories that was not previously understood and triggered amendment to the investment strategy applied to reliability improvement. The positive outcomes achieved are summarised in various SAID and SAIFI graphs appearing in the Reliability and Quality of Supply Expenditure Summary Document.

Other examples that demonstrate how Ergon Energy has considered Factor 5 include

- Fleet capex: Ergon Energy has achieved expenditure below that originally forecast, and that allowed by the AER. Fleet expenditure is a network enabler, and the reduction in expenditure is in response to the reduction in the capital works program. This prudent response to the reduction in capital expenditure was achieved through two main initiatives: Reducing the numbers of some fleet assets in response to the reduced demand and Judicious extension of the operating life of certain fleet assets.
- Property capex: Building on the 2010-2015 levels of investment delivered, and to ensure that we can service these customer expectations, the intent of the Major Program of Work is to maintain the ageing hub property assets to ensure responsive and operationally efficient depots that meet relevant safety, compliance and environmental requirements as well as supporting Ergon Energy staff in servicing our customers.

- Opex: For ICT costs, additional benchmarking assessment has been conducted by KPMG and whilst this benchmarking study highlights the different basis upon which SPARQ supplied services to Ergon Energy, this benchmarking tends to provide a high level indicator that there is little to suggest that ICT services supplied by SPARQ are at a level of prudence or efficiency that could not be considered comparable with the costs of ICT services supplied to other DNSPs

Ergon Energy has provided its actual historic expenditure in the Opex Summary, the key supporting documents for Opex and in the relevant RIN templates.

Ergon Energy's Our Journey to the Best Possible Price supporting document notes that the costs incurred in 2012-13 should be used as the starting point to develop the base year for its opex forecasts for the regulatory control period 2015-20 as:

- It is the latest available actual and audited expenditure information for the organisation
- It represents a substantial reduction from the AER determined efficient forecast
- It is consistent with targets identified by the Inter-Departmental Committee on Electricity Sector Reform to the Queensland Government.

The efficiency of Ergon Energy's operational service provision model is borne out in the actual efficient operating and capital expenditure performance of Ergon Energy over the current regulatory control period, and savings achieved against the current allowances as identified in the Journey to the Best Possible Price and in the key supporting documents referenced in the Opex Summary document.

5.7.2 Benchmarking (expenditure factor 4)

Expenditure factor 4 requires that the AER must consider the most recent annual benchmarking report that has been published under clause 6.27 of the NER, and the benchmark capex and opex that would be incurred by an efficient DNSP over the relevant regulatory control period. The purpose of this factor is for the AER to consider whether available benchmarking information can provide a partial indicator of the efficiency of the forecast expenditure, and if so the investigations and weight that should be ascribed to that data.

Context of Benchmarking as a factor for decision-making 2010-15

The AER's last distribution determination for Ergon Energy included a decision on operating expenditure that rejected Ergon Energy's forecast of operating expenditure and substituted an amount it was satisfied reasonably reflected the efficient costs of a prudent DNSP, taking into account Ergon Energy's circumstances. Issues of benchmarking were a focus in stakeholder discussions for Ergon Energy.

The AER's decision included the following statement:

In making its decision under the Rules, the AER must make judgement according to all the operating expenditure factors, and not consider each of the factors (such as benchmarking) in isolation. Individual factors do not stand alone but must be considered together.

More weighting will likely increase to top down benchmarking, but only when more standardised and appropriate data is available and benchmarking models give more consistent results. The AER cannot establish revenue allowances based primarily on the outcome of comparative benchmarking against other firms

Context of Benchmarking as a factor for decision-making 2015-2020

The AER has indicated that it will not be releasing its first benchmarking report until November 2014, and therefore we have not been provided with an opportunity to demonstrate or make representations on this report at the time of submitting our regulatory proposal on that report.

Accordingly, it has not been possible for Ergon Energy to directly inform its capital expenditure forecasts based on this data, noting previous comments made by Ergon Energy regarding the usefulness of benchmarking as a deterministic indicator of DNSP efficiency.

Nevertheless, using the same publicly-available information that was used to develop the AER's benchmarking report²⁰, Ergon Energy commissioned an independent report to enable it to compare its performance and other network service providers, having regard for the unique qualities of Ergon Energy's network. This is prudent because Ergon Energy has quite unique cost drivers which should be considered when benchmarking performance. For further details refer to the document, 'How Ergon Energy Compares'. Some of the key issues raised in this document are summarised below.

5.7.2 (a) Our organisation has evolved with the customer base

As has been explained in 'How Ergon Energy Compares', the Ergon Energy network has been designed, and continues to evolve, to best meet the needs of our customers. This includes the challenges of significant distances and low customer density, and with this comes the need for a specialist approach to the way in which the network is constructed, maintained, operated and supported.

As a result of the network design, operations and environment, there are a number of cost drivers that impact Ergon Energy in the service of customers. Many of these drivers cannot be altered in the short or medium term and the impact of these challenges is described below.

²⁰ Australian Energy Regulator, *Expenditure Forecast Assessment Guideline – Regulatory information notices for category analysis*, <http://www.aer.gov.au/node/21843>, accessed 22 August 2014.

5.7.2 (b) Construction challenges

The Ergon Energy network area represents a challenging environment in which to construct an electricity network. Specific challenges include:

- the significant distances over which assets must be constructed
- the rural nature of the network requires significant additional work ensuring access to construction sites
- only seasonal access to different parts of the network due to very significant levels of rainfall.

There are also transient challenges such as the shortage of skilled personnel caused by the strong resources sector.

5.7.2 (c) Maintenance challenges

Given the asset centric nature of both construction and maintenance activities, many of the challenges are the same. There are, however, specific challenges for maintenance including:

- the lower inherent reliability of radial SWER networks due to the lack of redundancy
- the significant number of extreme weather events that require us to maintain a significant emergency response capability.

5.7.2 (d) Operational challenges

For the purpose of retaining sufficient network control during and following extreme weather events, Ergon Energy has two geographically separated network control centres. Each of these centres is capable of providing management for the entire network. The cost associated with providing this level of redundancy is a necessary part of meeting the expectations of, and commitment to, our customers.

5.7.2 (e) Our network is experiencing the most significant effects from the uptake of rooftop solar

A relatively recent challenge confronting Australian DNSPs is the widespread introduction of solar power through the installation by customers of photovoltaic cells on residential dwellings. This has a direct effect upon DNSPs through introducing an additional source of power for which, in the main, the networks were not designed. Secondly, the pattern of solar generation is such that the peak demand has not significantly dropped (and in fact continues to rise in some areas of the network), whereas overall consumption has dropped significantly. The net effect is that the DNSPs must still build networks to cater for the peak, yet there are less units of electricity being distributed.

5.7.3 Other challenges in undertaking benchmarking comparisons of DNSPs

Ergon Energy also notes that the benchmark capital expenditure that would be incurred by an efficient DNSP over the regulatory control period cannot be observed directly because the expenditure forecast is by its nature concerned with future, rather than historical, events.

Benchmarking is an undefined term in the NER and could encompass many dimensions. The Productivity Commission review in 2013 noted that regulatory benchmarking encompasses any method for comparing a firm to other businesses, to itself over time (or between its various divisions) or to an ideal firm. We note that some of the measures of benchmarking to ourselves have been outlined in our responses to other factors.

We consider one of the most important benchmarks is how we have performed in previous periods compared to the AER allowances. We note that this is part of the expenditure factors relate to previous performance and consistency with incentives, and therefore has been separately addressed throughout the Regulatory Proposal.

Benchmarking may also relate to comparing forecast assumptions on demand forecasts and labour cost escalation to the opinions of experts in that field. These have been addressed as part of our section on realistic estimates of input costs and demand forecasts. For this reason, our response to this factor is narrowly focused on comparative data with industry peers, and trend data of ourselves over time.

As mentioned above Ergon Energy has developed a comprehensive report in a supporting document at Attachment 04.01.01 called 'How Ergon Energy Compares' supported by various external reports. This report is provided as part of the suite of documents comprising our regulatory proposal. The report examines the inherent limitations of benchmarking Australian DNSPs, and the role that benchmarking should play as a partial indicator of efficiency. Our analysis identified that benchmarking has inherent limitations such as inability to conduct 'like for like' analysis across peer firms, data inconsistency and inaccuracy, and failure to meet statistical principles. We think that appropriate benchmarking does have a role in guiding the regulator to areas requiring further granular analysis. It should not be used to reject a DNSP's regulatory proposal, or as a basis to substitute the forecast given the inherent limitations of benchmarking as a tool. The "How Ergon Energy Compares document and supporting reports and atachment then seeks to assess the relative weight that should be applied to each of the benchmarking tools identified by the AER in its Forecast Expenditure Assessment Guidelines including economic analysis, aggregated category analysis, while our capex summary documents highlight issues regarding use of cost category data including the augex and repex models.

When deciding if a benchmark is appropriate, we have also been guided by the Productivity Commission's review in 2013 which set out six criteria for when a benchmarking tool could be used in the process. This includes validity, accuracy and reliability, robustness, simplicity, not subject to manipulation and fitness for purpose. To complement this analysis, we have also sought to understand the available data that can be used for benchmarking, and reported on these outcomes.

In addition to the category analysis benchmarking discussed above, to improve its ability to assess benchmark capital expenditure for asset replacement, the AER has published a replacement expenditure model (the Repex model) for NSPs to use to forecast the replacement needs of assets on a per category basis. Ergon Energy has applied this model to its asset profile and has observed that its proposed Asset Renewal Capital Expenditure (as set out in Section 6.1 of the Asset Renewal Summary document) is consistent with the results of the Repex model forecasts. This result provides a high level partial indicator that Ergon Energy's expenditure in this category is efficient, although the repex model has several limitations in allowing firm conclusions to be drawn from this analysis.

To improve its ability to assess benchmark capital expenditure for augmentation, the AER has published an augmentation expenditure model (the Augex model) for NSPs to use to forecast the replacement needs of assets on a per category basis. Ergon Energy has applied this model to its asset profile and has observed that its proposed CIA Capital Expenditure (as set out in Section 6.1 of the CIA Summary document) is consistent with the results of the Augex model forecasts. This result provides a high level partial indicator that Ergon Energy's expenditure in this category is efficient, , although the augex model has several limitations in allowing firm conclusions to be drawn from this analysis..

In addition to aligning its asset management practices and principles with international and other applicable standards such as ISO 55000, Ergon Energy has also continued development of joint design and maintenance standards with Energex to improve the objectivity and efficiency of defect benchmark pass/fail levels and continues to work with Energex to standardise processes and benchmark levels to achieve a more appropriate level of maintenance performance across the industry (see section 4.3.2, 4.4 and 5.4 of the Asset Renewal Summary). Ergon Energy also participates in the CBRM Users Group industry body with 11 other DNSPs to maintain up to date industry knowledge in this area

It is also important to recognise that Ergon Energy operates a unique electricity network which covers considerable distances in often rural and remote areas and this impacts its non-network capital expenditure requirements. To ensure customer expectations are met in the context of an 'Always Safe' work environment, a wide-ranging property portfolio needs to be maintained. A portfolio of this magnitude has to contend with forecast characteristics such as regional indices

(increased cost from capital city), logistical risks (movement of people and material long distances), environmental hazards (vehicle wash-bay and vegetation assets), and a portfolio of residences to attract and retain employees within these remote communities. This demonstrates that a one-to-one comparison rarely assesses organisations on a consistent basis. Given this context, Ergon Energy has historically shown a high level of expenditure based on customer numbers (when benchmarked against other DNSP's), but a considerably low level when measured on network kilometres. While this likely won't change in future, the Property group has made further clear and specific efficiency gains when measured on a purely investment forecast basis.

From a Fleet expenditure viewpoint, in addition to the above-mentioned high-level benchmarking data, there have also been two significant reviews to test the efficiency of Ergon's fleet management and procurement processes:

- Ergon's internal Strategic Procurement Group undertook a review of sourcing efficiency
- UMS undertook a broad fleet management review including benchmarking based on adapting PAS55 principles.
- Observations that UMS Consulting have made include:
 - Ergon Energy customer density (customers per square kilometre) is 0.4, whereas that of the peer group ranges between 1.1 and 755.
 - Ergon Energy vehicle density (vehicles per square kilometre) is 0.0016, whereas that of the peer group ranges between 0.0041 and 1.63.
 - Of the peer group, two (Eskom and Country Energy) approach the geographic footprint of Ergon Energy in terms of area covered.
 - Analysis using a Composite Variable Unit (CVU) shows that Ergon Energy is overall operating slightly lower than industry average (-0.4% below average) and has reduced its overall number of vehicles between 2007 and 2012 both on an equivalent basis and normalised over CVU.

SG Fleet also undertook additional external benchmarking using data from its customer base consisting of Essential Energy, Energex, Powerlink, SA Power and Ergon Energy. This benchmarking is more operationally focused, comparing fleet category opex between the entities. The SG Fleet benchmarking enables each entity to take insights from similar entities and apply them in their business and indicated no material areas of inefficiency of operations undertaken by Ergon Energy.

Our analysis of benchmarking tools suggests that trends in a DNSP's results over time is of more value than relative efficiencies between DNSPs at a point in time. In this respect the data provided does demonstrate that Ergon Energy's growth rates in expenditure are among the lowest out of the peer group studies. Once again, however we draw caution on such results as they cannot capture

the reasons for observed differences between DNSPs. In addition, there were a number of exogenous, or external, factors and additional unexpected safety issues resulting in variations between Ergon Energy's actual renewal costs when compared to the AER's determination during the current regulatory control period and/or what might be expected of a benchmark firm or from previous Ergon Energy historical or internal performance benchmarks. The material drivers underpinning these variations are described in various sections of each expenditure summary document (e.g. section 4.3.1 of the Asset Renewal Summary Document).

Based on the approach outlined above, we have placed limited weight on benchmarking analysis as a valid test of the efficiency of our forecast and consider and submit that the AER should do likewise in its assessment. In all cases, the AER's techniques do not meet all the criteria specified by the Productivity Commission in 2013. In some cases, such as economic analysis we consider the method may actually provide misleading results and should not be used by a business or the AER to test efficiency. In other cases, the benchmarking models used may provide some insight into the efficiency of a DNSP's forecasts, for instance when the data quality is sound. In these cases, we have considered the underlying data and provided commentary on any observed differences in light of our circumstances and drivers of expenditure.

The conclusions outlined above about the usefulness of benchmarking as an indicator of efficiency are also consistent with other external studies and reports in relation to the appropriateness of benchmarking utility businesses, including the 2013 study undertaken by the Productivity Commission and recent analysis of benchmarking tools undertaken by the three NSW DNSPs in the context for their 2014-2019 regulatory proposals. Rather than simply highlight the differences between the context (and resulting network) our analysis, supported by the Huegin Consulting Group reports, has shown that the differences affect the drivers of cost. As such, this report has shown that significant care must be taken when using standard comparisons, including benchmarking, for the purposes of understanding costs and performance for Ergon Energy.