ATTACHMENT 5.3
ADRESSING THE CAPEX AND OPEX OBJECTIVES, CRITERIA AND FACTORS

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1. Background

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 Essential Energy sets out in its building block proposal for standard control services. To enable the AER to make its constituent decision, Essential 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 7 March 2014, the AER issued a Regulatory Information Notice (RIN) (as amended on 21 March 2014) for our regulatory proposal where it sought the following information:

(a) why the total forecast capex is required for Essential Energy to achieve each of the objectives in clause 6.5.7(a) of the NER;
(b) how Essential Energy's total forecast capex reasonably reflects each of the criteria in clause 6.5.7(c) of the NER; and
(c) how Essential Energy's total forecast capex accounts for the factors in clause 6.5.7(e) of the NER.[1]

Similarly, the RIN also requests the provision of justification for Essential Energy's total forecast opex, including:

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

This attachment provides further evidence on why we consider the total forecast capex and opex[2] 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 RIN requirements. We note that the information we have provided is complemented by other supporting documents submitted with the regulatory proposal, and that these supporting documents form part of our justification on why the AER should accept our proposed forecast capex and opex.

This attachment is set out in three parts:

- We outline the AER's decision making framework;
- We identify how Essential Energy 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; and
- We identify how Essential Energy 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).

[1] Paragraphs 5.1(a)-(c) of schedule 1 of the RIN
[2] We refer to the forecast opex and forecast capex collectively as forecast expenditure in this attachment

2. 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. The Rules framework

The rules set out a framework such that Essential Energy is required to propose total capex and opex that Essential Energy considers is needed to produce the outputs or outcomes that are encapsulated in the rules. These outcomes are specified in clause 6.5.6(a) and 6.5.7(a) of the rules and are termed the expenditure objectives.[3]

Clause 6.5.6(a) and 6.5.7(a) requires Essential Energy to include in its building block proposal the total forecast opex and capex for the 2014-19 regulatory control period[4] which Essential Energy considers is required to achieve each of the expenditure objectives. These objectives are:[5]

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

(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)

The AER is required to make a decision on the total forecast expenditure proposed by Essential Energy. The rules provide that the AER must accept the forecast expenditure included in Essential Energy's building block proposal if

[3] This is consistent with advice provided by NERA Consulting, "Economic Interpretation of clauses 6.5.6 and 6.5.7 of the National Electricity Rules", 2008, p9.

[4] See clause 11.56.4(b) of the rules.

[5] The opex objectives under clause 6.5.6(a) and the capex objectives under clause 6.5.7(a) are the same. These expenditure objectives have been cited once only in this attachment for brevity.

the AER is satisfied that the total forecast expenditure reasonably reflects the expenditure criteria. These expenditure criteria are:[6]

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

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

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

In deciding whether or not the AER is satisfied that Essential Energy's proposed total forecast expenditure reasonably reflects each of the expenditure criteria, the AER must have regard to the expenditure factors which are:[7]

(1) **[Deleted]**

(2) **[Deleted]**

(3) **[Deleted]**

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

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

(5A) the extent to which the operating 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 operating 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 operating 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 operating 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 operating expenditure factor.

These expenditure factors are effectively the tools assisting the AER in making a decision whether it is satisfied that the proposed forecast expenditure reasonably reflects the expenditure criteria. In sum, the AER is asked to determine if it is satisfied that the proposed forecast expenditure represent the least cost of producing the outputs, and the costs that a prudent operator would need, taking into account the demand forecast and cost of inputs required to produce these outputs. This decision must be informed by the expenditure factors listed in the rules.

[6] The opex criteria under clause 6.5.6(c) and the capex criteria under clause 6.5.7 (c) are the same. These expenditure criteria have been cited once only in this attachment for brevity.

[7] The opex factors under clause 6.5.6(e) and the capex factors under clause 6.5.7 (e) are the same. These expenditure factors have been cited once only in this attachment for brevity.

2.2. Objectives of the regulatory framework

The consultations undertaken by the AEMC in the National Electricity Market (NEM) provide an understanding of the overall objective of the rules governing the AER's assessment of expenditure forecasts. When developing the 2006 rules for transmission, the AEMC noted that its review was guided by the NEM objective in Section 7 of the National Electricity Law (NEL)[8] The AEMC noted that:

> *"The Commission's Review has been guided by the NEM objective of promoting an efficient, reliable and safe electricity system."*

The Australian Competition Tribunal (ACT) emphasised the economic objective underlying the regulatory framework. The ACT considered that the Revenue and Pricing Principles in the NEL provide further guidance on the objective:

> *"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."*

In undertaking consultations, 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."*[9]

Based on these views, the overall objective of the rules governing the AER's decision on expenditure forecasts is to ensure that forecast 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.

2.3. 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. The AEMC emphasised the following key principles underlying the assessment process:[10]

- The assessment process must start with a DNSP proposal - The proposal is necessarily the procedural starting point for the AER to determine a capex or opex allowance. 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 criteria require that the AER must accept a proposal if it 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.

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8 The NEM objective is "… 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"

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

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

- 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 '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 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 from choosing the best substitute it can determine.

The AEMC's considerations demonstrate that the 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. The AER's substitute value, if it is not satisfied, 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 in merits review when it concurred with statements made by DNSP's

> *"EnergyAustralia is correct to submit 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.*"[11]

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

3. The expenditure objectives

3.1. Interpreting the expenditure objectives

The rules require that Essential Energy's building block proposal must include the total forecast expenditure for the relevant regulatory control period which the DNSP considers is required in order to achieve the expenditure objectives. We have been guided by the following sources when seeking to demonstrate how best to satisfy the AER that our total forecast opex and capex meet the expenditure objectives in the rules:

- The AEMC's determinations on a rule change on DNSP Expenditure Objectives that resulted in amendments to the expenditure objectives in 2013[12]; and
- Discussion by the AER on its interpretation of the objectives that were in place prior to the 2013 determination.

AEMC Rule change of 2013

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

- 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.

AER interpretation in 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. These interpretations are detailed in Table 1 below.

[12] AEMC 2013, Network Service Provider Expenditure Objectives, Rule Determination, 19 September 2013, Sydney. A key reason for amending the Rules was lack of clarity on how the expenditure objectives worked together. This is because expenditure objective 2 required an NSP's expenditure in its regulatory proposal to be based on complying with regulatory obligations which may relate to meeting reliability, security, quality and safety. On the other hand expenditure objectives 3 and 4 could be interpreted such that they require this expenditure to be based on maintaining existing levels of reliability, security, quality and safety. In the AEMC's view, this created a lack of clarity for the NSP when putting together its regulatory proposal and for the AER in determining an NSP's expenditure allowance in relation to these measures.

Table 1: AER's interpretation of expenditure objectives.

Expenditure Objective	AER interpretation
Meet or manage the expected demand for standard control services over that period	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: - 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	DNSPs operating in the NEM must comply with a number of statutory obligations at the national and state level including: - 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	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.
Maintaining reliability, safety and security of the system	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: - older or poorer condition assets - unsafe assets; and - environmental factors.

When seeking to demonstrate how our forecast expenditure meets the objectives, we have given weight to the interpretations of the AEMC and the AER. We note however that the AER's determination for Aurora was undertaken prior to the AEMC's amendment, and therefore must be considered in this light.[13]

Drawing it all together, we have been guided by the following interpretations when seeking to show how the forecast expenditure meets the objectives:

[13] AER, *Final Distribution Determination, Aurora Energy Pty Ltd, 2012-13 to 2016-17*, April 2012, pp 10-18.

- Expenditure objectives should be considered as a whole, rather than in isolation. In particular support expenditure in IT, corporate property and fleet are vital for ensuring that we can fulfill our objectives.
- Where there are reliability, quality or security or safety standards in place, we must ensure that our forecast capex is directed at meeting those standards for each year of the regulatory control period.
- Where there are no standards in place for reliability, quality or security or safety we must ensure that the forecast capex is to maintain performance.
- Safety is a broad concept and includes safety of the workforce, general public and the environment.

3.2. Functions we provide as a DNSP

To achieve the expenditure objectives stated in the rules, Essential 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). These systems, capabilities and activities are:

- Network systems and assets to meet or manage the expected demand for standard control services;
- 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 State Own Corporation including financial reporting, corporate governance and internal audit.

Therefore, the expenditure objectives effectively define the activities that Essential Energy needs to undertake and specify the capabilities, systems and personnel that Essential Energy needs to have. Consequentially, achieving the expenditure objectives give rise to expenditure which is either capital or operating in nature.

3.3. Achieving the capex objectives

The purpose of this section is to demonstrate how Essential Energy considers that its proposed forecast capex is required in order to achieve the expenditure objectives. We explain how each of our capital plans exist to achieve one or more of the capex objectives in the rules, based on the interpretation we derived in section 3.1.

Our proposed total forecast capex is made up a number of capital plans. We note the following:

- The investment categories do not have a one to one relationship with the capex objectives. For example, replacement is related to meeting our regulatory obligations, maintaining reliability of the network, and maintaining safety.
- Our capex categories are all related to complying with our regulatory obligations as a DNSP and State Owned Corporation. For example, our Design Reliability and Performance 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.
- 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 learning centres 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 State Owned Corporation to meet planning, monitoring and reporting functions such as financial accounts.

Table 2 below provides a summary of the drivers of investment for each of our capital plans, and how these relate to one or more capex objectives. The section below provides further information on each of these plans. We note

that more detailed information on our forecast methods and programs can be found in each capital plan, provided as part of our supporting documentation.

Table 2: Capital plans and capex objectives.

Capital plan	Capex objectives achieved
Regional Planning Reports	1
Asset management plans	All
Distribution network growth strategy	1 and 3
Reliability and quality of supply strategic plans	2
Network technology strategic plan	All
Demand management strategic plan	All
Non-system asset plans	All

Regional Planning Reports

Essential Energy's regional planning reports identify major sub-transmission projects, which may include the augmentation of existing assets or the construction of new assets. The plans encompass forward projections of peak demand and customer growth, and they identify the assets on the network that are projected to exceed their limits, and the sub-transmission and distribution network development projects required to address this. This aspect of planning also incorporates Essential Energy's demand side management activities aimed at containing or reducing the customer load presented to the network, and also involves specific developments to maintain security of supply. A bottom up approach is adopted, with each constraint separately assessed and an individual project report developed.

The regional planning reports cover the investment in capacity on the sub-transmission network. As such the plans achieve the following capex objective:

- Objective 1 – Decisions to increase capacity of the sub-transmission network are related to peak demand arising from new connections and increased growth from existing customers.

We note that the removal of Schedule 1 of our licence conditions means that we no longer have to meet specific security criteria. In our forecast capex, we have prudently given consideration to opportunities to defer investment as a result of the removal of Schedule 1 of our DRP licence. This means that while we will for the most part maintain our previous performance, there will be instances where our forecast capex will result in a notional decline in security standards.

Asset management plans

These plans are based on the management of an asset group and identify expenditure on all distribution network assets and sub-transmission assets. The Asset Management Plans (AMPs) are strategic business plans used to manage network assets and deliver service levels to meet stakeholder requirements. Essential Energy has developed 14 AMPs which cover all of Essential Energy's network assets. Each AMP defines the life cycle of a specific group of assets and covers the major drivers of expenditure. The groupings have been chosen to ensure that synergies between assets can be maintained, and to allow the best mix between opex and capex.

Each AMP defines the service levels applicable to the asset group based on stakeholder requirements, and then compares asset capability and current performance to determine if there is a gap. Targets are defined based on the asset capability and service gap and strategies are developed to achieve the targets.

These AMPs are supported by a set of strategic plans, planning reports and individual investment cases. The planning process produces an annual capital expenditure program and sets priorities for capacity augmentation, and supply security, quality and reliability over the investment horizon to 2018-19. As such the plans achieve the following capex objectives:

- Objective 1 – Decisions to increase capacity of the sub-transmission network are related to peak demand arising from new connections and increased growth from existing customers.
- Objective 2 – Decisions to replace assets on the distribution and sub-transmission network are related to our underlying regulatory obligations to provide a safe network.
- Objective 3 – Decisions to replace and increase capacity are designed at maintaining the reliability, security and quality of supply and through the network conditions.
- Objective 4 – Decisions to replace assets on the distribution and sub-transmission network are related to maintaining our safety standards based on previous performance.

Distribution Growth Strategy

This plan identifies forecast capex for augmentations on the distribution network. This includes 'customer connection' capex to augment the shared network to enable connection of a customer. It also includes reinforcement of the low voltage network to meet a combined increase in localised demand from existing and new customers. Distribution growth is not a simple extrapolation of global demand forecasting. The sheer scale of Essential Energy's network coverage results in a collection of extremes to be serviced - rural versus urban centres, a multiplicity of communities and industry, population migration to coastal areas, and climatic extremes from inland to coastal, snowfields to sub-tropical forests. This range of extremes turns global averages into statistics that are not always useful at a micro level of decision making.

Historical load growth resulting from factors including uptake in air conditioning and modern appliances, is complicated by the reduction in power quality tolerance, caused by the advent of electronics and integration of microprocessors within appliances. Most of the expansion in demand has imposed added burden on 40 to 50 year old assets that were designed and constructed in a period far removed from the standard of living and customer expectations present today. The underlying driver of investment is growth. As such, we consider the plans achieve the following capex objectives:

- Objective 1 – Decisions to increase capacity of the sub-transmission network are related to peak demand arising from new connections and increased growth from existing customers.
- Objective 3 – Decisions to replace and increase capacity are designed at maintaining the reliability, security and quality of supply and through the network conditions.

Reliability and quality of supply strategic plans

This plan identifies any additional capex specifically required to meet reliability performance standards in the NSW Design, Reliability and Planning (DRP) licence conditions (schedules 2 and 3) and customer expectations. The underlying drivers of investment are reliability compliance and growth, and therefore ostensibly meet objective 2 – Investing in reliability are to meet Schedule 2 and Schedule 3 of our DRP licence conditions. These relate to average performance standards and minimum standards for feeders respectively.

Network technology strategic plan

While Essential Energy has for many years utilised targeted automation schemes to improve network service performance, intelligent network concepts increasingly offer a greater capability to understand, meet and shape the changing needs of our customers and the regional communities we serve. In response to our changing environment, Essential Energy is seeking to capture the benefits of intelligent network concepts through a whole of business/whole of network approach that will promote efficient investment in, and the efficient operation and use of our network services for the long term interests of our customers across regional NSW.

In this respect, our forecast capex is to achieve all the capex objectives as a whole, given that they are essential to performing our network activities.

Demand management strategic plan

This expenditure is required to manage the demand on our network through various non-network alternatives. The decision to apply demand management or to augment the network remains an issue of:

- Economic efficiency;
- Technical feasibility;

- Timing;
- Service preferences;
- Application of sound industry commercial practice; and
- Determination of the optimum means of providing supply capacity to customers.

Performing analysis and consultation around all of these areas to ensure a balanced outcome to the business and our customers in terms of the provision of a safe, efficient and reliable electricity supply is a significant and ongoing process.

A distribution annual planning report (DAPR) is prepared and published by Essential Energy. This document provides historical and forecast peak load data and capacity information for all zone substations, and discloses where a network constraint is forecast to occur within five years. The information allows customers and energy service providers to consider whether they may be able to assist in addressing a network constraint through the implementation of demand management initiatives. This approach actively seeks to minimise barriers and disincentives to the adoption of demand management options.

Non-system asset plans

The corporate property plan includes capex to support the housing of staff. It includes depots and office accommodation. The underlying driver of investment is to support the network. Corporate property provides a necessary supporting activity by housing our staff in office and depot accommodation such that they can perform their network activities in a safe and efficient manner. In this respect, our forecast capex is to achieve all the capex objectives as a whole, given that they are essential to performing our network activities.

The fleet and other support plans identify vehicles and equipment used to provide our network services, and other capex such as plant and equipment. Fleet is used to transport staff to undertake capital works (for example pool cars) or directly used to build assets (such as elevated work platforms). Plant and equipment are used directly by our staff in network activities such as maintenance and construction. In this respect, our forecast capex is to achieve all the capex objectives as a whole, given that they are essential to performing our network activities.

The information technology (IT) plan Identifies infrastructure, platforms, applications and devices required to support our network and corporate functions. Technology provides a necessary supporting activity to enable us to meet our network objectives and to fulfil our corporate obligations. Non-system IT assets provide operational support to our staff to perform building activities required to achieve the capex objectives.

In this respect, our forecast capex is to achieve all the capex objectives as a whole, given that they are essential to performing our network activities

3.4. Achieving the opex objectives

The purpose of this section is to demonstrate how Essential Energy considers that its forecast opex is required in order to achieve the expenditure objectives.

Essential Energy has included in the building block proposal a total forecast operating expenditure for the 2014-19 regulatory control period that Essential 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 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 six broad cost groups. A description of these cost groups and the opex objectives they achieve are in Table 3 below.

Table 3: Opex cost groups and opex objectives

Opex cost group	Activities	Opex objectives achieved
Inspection opex	Inspection opex is required to undertake various inspection activities on Essential Energy's electrical network. These activities and hence the associated cost, are critical in achieving all four opex objectives.	All opex objectives
Maintenance and repair	Maintenance and repair opex is required to undertake various maintenance activities on Essential Energy's electrical network. These activities and hence the associated cost, are critical in achieving all four opex objectives.	All opex objectives
Vegetation Management opex	Essential Energy's vegetation management opex relates to expenditure on maintaining the clearance of vegetation from the network. These activities and hence the associated cost, are critical in achieving all four opex objectives.	All opex objectives
Emergency Response	Emergency response opex is required to carry out response to failure of the network. These activities and hence the associated cost, are critical in achieving all four opex objectives.	All opex objectives
Other network costs	Other network costs cover network operating activities including supply interruptions and network control, maintenance and repair of zone substations, network divisional operating expenditure, and customer service. These activities and hence the associated cost, are critical in achieving all four opex objectives.	All opex objectives
Demand management	Essential Energy's Demand management opex relates to demand management. This expenditure is required to manage the demand on our network through various non-network alternatives and the demand management innovation scheme. This expenditure is to achieve the opex objective 1	Opex objective 1

Further descriptions of the activities within each opex cost group are provided below.

Inspection activities and costs

Routine asset inspection and condition monitoring activities include field and aerial inspection of overhead distribution assets (poles, pole top structures, conductors, substation structures, transformers, high and low voltage switchgear, and other distribution electrical equipment), power line to ground and vegetation clearances, thermography of power line and substation structures, and non-destructive testing of power transformers and switchgear. These activities are critical in assessing the current state of distribution equipment and establishing network safety, risks and liabilities that ultimately determine the maintenance work plan. Chemical preservatives are generally applied to wood poles at the time of inspection. Inspection cycles are based on associated risks and utilise both ground inspections and aerial patrols. Inspection criteria are detailed in asset management policies and procedures. All private overhead power lines are inspected on the same basis. The inspection of customer connection equipment ensures compliance with relevant legislative and safety requirements.

Maintenance and repair activities and costs

This category covers all maintenance and repair activities on network assets. This is a stable, on-going maintenance program. Components include maintenance and repair of distribution power line equipment, damaged or inoperable switchgear fuse replacement, distribution substations, and customer service mains.

Vegetation management opex

Due to the wide expanse and overhead nature of Essential Energy's distribution network, vegetation management is the most significant operating expenditure category in dollar terms. We expect to spend an indicative $744 million on vegetation management during the 2014-19 regulatory control period. Our policy is to clear vegetation from power lines in accordance with ISSC3 [14]. Compliance with this policy is a critical control measure associated with management of bushfire risk. The majority of vegetation management work is generated and undertaken in one of two ways:

- a systematic and regular program of vegetation clearance work carried out on power lines based on a prescribed cutting cycle (referred to as cyclic vegetation clearance); and
- spot cutting of defects arising from annual aerial patrols carried out to remove higher risk, individual incursions of vegetation into the clearance envelope.

Spot trimming removes risk quickly but it is not the most efficient measure in the long term. Our strategy is to keep vegetation to allowable standards by moving to a mainly cyclic vegetation clearing process over a period of time. Recent action has been taken to reduce spot trimming backlogs and shift resources into cyclic trimming. We expect the number of problem areas detected through our annual aerial inspections to be significantly reduced in future.

The total indicative forecast for this regulatory control period has been based on achieving efficiencies through a number of strategic reform initiatives, including the adoption of the approach described above, ensuring appropriate end-to-end management capability and having an adequate vegetation management system as the key enabler. This will deliver the best long-term cost outcome whilst also managing the risks associated with vegetation encroachment on power lines. Forecast work volumes have been determined by statistically significant sampling across the network. Our analysis involves the classification of vegetation density classes and estimating associated unit costs.

Emergency response

This covers fault and emergency repair and restoration of supply for planned and unplanned interruptions caused by events such as storms, equipment failures, acts of vandalism, and vehicle collisions. On notification of a customer supply interruption, Essential Energy dispatches field employees to deal with the fault.

Other network costs

The main areas of expenditure include network operating activities including supply interruptions and network control, maintenance and repair of zone substations, network divisional operating expenditure, work scheduling and programming, network data collection and maintenance, system support, standards development and maintenance, installation inspection, quality of supply investigations and customer service.

Demand Management

The demand management opex cost groups relate to activities for demand management and the demand management innovation scheme (DMIA). These activities, and hence associated costs, are required to meet or manage the expected demand for standard control services over the 2014-19 regulatory control period.
In addition to the forecast opex that Essential Energy proposed, the AER also allows debt raising costs. The AER has accepted this cost as a legitimate operating expenditure that is required to meet the opex objectives.[15]

Summary

We have outlined above the components of our proposed total forecast opex for the 2014-19 regulatory control period and demonstrated how these cost components are required to achieve each of the expenditure objectives listed in clause 6.5.6(a) of the rules. These costs are incurred as the result of having capabilities, personnel and systems and of undertaking the activities necessary to deliver the outcomes specified by each of the expenditure objectives.

14 Industry Safety Steering Committee, *ISSC 3 Guideline for Managing Vegetation near Power Lines*, December 2005.
15 For example, see AER's decision for Aurora for the period 2012-13 to 2016-17.

4. Expenditure criteria and factors

4.1. Interpreting the expenditure criteria and factors

As stated above, the AER must accept Essential 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.

At the time of the 2009-14 regulatory proposal for NSW, EnergyAustralia (now Ausgrid) engaged NERA to provide expert economic advice on the interpretation of the opex criteria and on how to demonstrate that the forecast opex reasonably reflects these criteria.[16]

Whilst the expenditure criteria may have been amended by the recent AEMC's rule change, notably the removal of the reference to the circumstances of the relevant DNSP, Essential Energy considers aspects of NERA's advice is still of relevance for our current regulatory proposal:

- The terms of efficiency, prudency and realistic expectations have no observable measures but rather are principles that guide the AER's decision on the proposed expenditure forecast.
- Efficiency cannot be directly observed. There is no external measure of where the efficiency frontier lies. Efficiency is typically measured relative to other firms and must take into account the differences in characteristics, circumstances and operating environment of each firm.
- Prudency refers to the idea of 'carefully considering consequences' and 'carefully managing resources'.

NERA[17] considered that the forecast capex must reasonably reflect all three capex criteria. That is, the AER, having regard to the capex factors, must be satisfied that the proposed forecast capex reasonably reflects the efficient costs that a prudent DNSP would expected to incur, based on a realistic expectation of demand forecast and cost inputs to achieve the capex objectives in the 2014-2019 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 prudency is the process that is followed and the reasoning that is applied by the DNSP in developing its expenditure forecast. In this context, NERA considered that a practical demonstration that the forecast expenditure reasonably reflects the expenditure criteria can be achieved by:

1. Demonstrating that the process the DNSP employed in developing its forecast expenditure is efficient and prudent.
2. 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.
   - Compare and explain 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. 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*

[16] NERA, Economic Interpretation of clauses 6.5.6 and 6.5.7 of the National Electricity Rules, 7 May 2008
[17] NERA, Economic Interpretation of clauses 6.5.6 and 6.5.7 of the National Electricity Rules, 7 May 2008

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."[18]

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.[19] 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.

Role of the expenditure factors

NERA's practical approach to demonstrating that the expenditure criteria has been met is borne out in 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.[20]
   - The extent to which Essential Energy has considered and made provision for efficient non network alternatives (expenditure factor 10).
   - Relative prices of capital and operating inputs (expenditure factor 6).
   - 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 opex by 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 opex 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

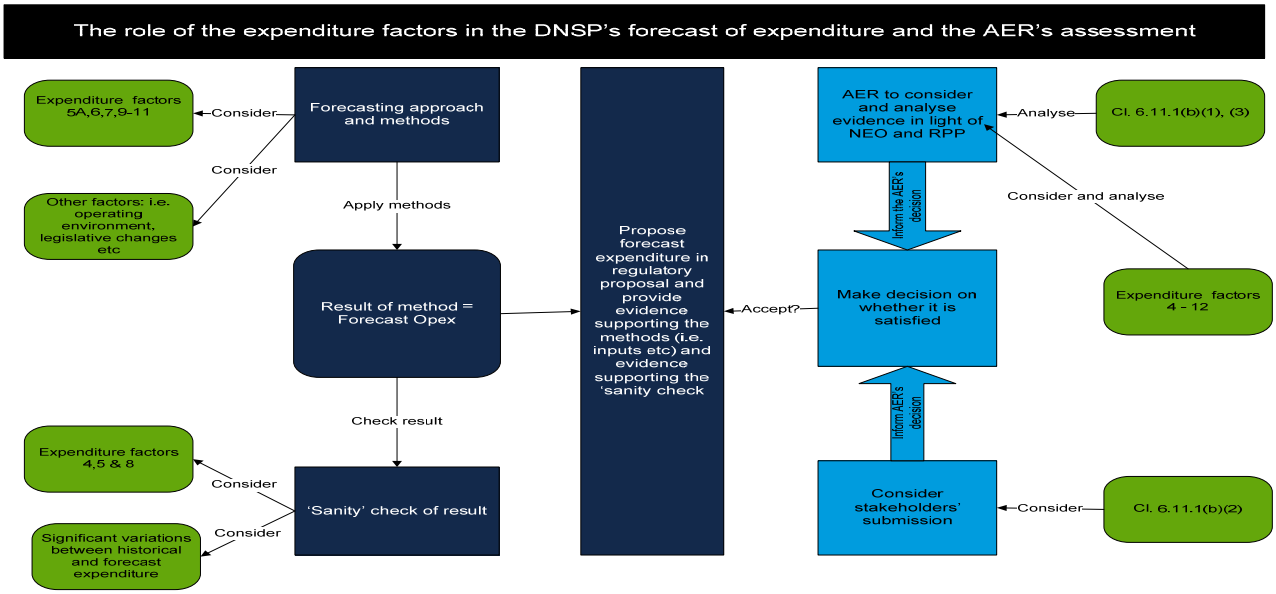
[18] AER, draft decision for Aurora, p157.
[19] AER, Draft decision, Victorian electricity distribution network service provider, Distribution determination, June 2010,pPp227- 235; AER, Draft Distribution Determination, Aurora Energy Pty Ltd, 2012-13 to 2016-17, November 2011, pp31-32.
[20] clause S6.1.3(1) of the NER.

comparison is made between the forecast expenditure and historical result. Any increases are explained and verified 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 corroborated by benchmarking the result with other comparable peers. However, benchmarking should be used with caution given its limited usefulness.

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.

The role of the expenditure factors in the DNSP's establishment of an efficient and prudent forecast opex and the AER's assessment of this forecast is illustrated in the Figure 1 below.

Figure 1Role of expenditure factors in forecast expenditure assessment



4.3. How we have addressed the expenditure criteria and factors

In sections 5 and 6 we address the criteria and factors in relation to the prudency of our forecast method for forecast capex and opex, and the indicators that aid in the assessment of the efficient levels of these forecasts. In doing so, we demonstrate how we have met each expenditure factor relevant to these considerations as identified in table 4. In turn, we use this to illustrate that our proposed forecast capex and opex reasonably reflects the expenditure criteria and is consistent with the NEO and RPP.

We do not set out a mathematical or mechanistic formula to identify the weight that should be placed on each factor. We do note however instances where the weight ascribed to a factor should be minimal.

Table 4 – Relevance of expenditure factors

Expenditure Factor	Addressed
(1), (2) (3)	Deleted from Rules
(4) the most recent *annual benchmarking report* that has been *published* under rule 6.27 and the benchmark capital expenditure that would be incurred by an efficient *Distribution Network Service Provider* over the relevant *regulatory control period*;	Indicator
(5) the actual and expected capital expenditure of the *Distribution Network Service Provider* during any preceding *regulatory control periods*;	Indicator
(5A) the extent to which the capital 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;	Forecast Method
(6) the relative prices of operating and capital inputs;	Forecast Method
(7) the substitution possibilities between operating and capital expenditure;	Forecast Method
(8) whether the capital 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;	Indicator
(9) the extent the capital 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;	Forecast Method
(9A) whether the capital 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);	Forecast Method
(10) the extent the *Distribution Network Service Provider* has considered, and made provision for, efficient and prudent non-*network* alternatives; and	Forecast Method
(11) any relevant final project assessment report (as defined in clause 5.10.2) *published* under clause 5.17.4(o), (p) or (s);	Forecast Method
(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 *operating expenditure factor*.	Will only be relevant to our revised regulatory proposal, if the AER raise an additional factor in its draft determination

5. Prudency of forecasting approach

The purpose of this section is to demonstrate that our process to derive our total capex forecast for the 2014-19 regulatory control period was prudent. In doing so we consider the key elements of a prudent forecasting process, and then address the capex factors that have direct relevance to the forecast process. We have structured this section as follows:

- We set out the reasons why the AER's starting point should be the consideration of our detailed regulatory proposal, taking into account our in depth knowledge of network assets and functions we have to perform. In this respect we provide information to establish that we have sound business processes for developing efficient and prudent expenditure forecasts.
- We describe the key features of our forecasting approach for capex, identifying why this approach is fit for purpose for our network, and results in an efficient and prudent forecast for the 2014-19 regulatory control period.
- Similarly, we demonstrate why our approach for forecasting opex is fit for purpose, and results in an efficient and prudent forecast for the 2014-19 regulatory control period.
- We identify how the forecasting approach for both capex and opex provides a realistic expectation of demand and costs.
- We address each capex and opex factor that relates to an aspect of our forecasting approach.

5.1. Prudency 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 Section 1, we consider that this is an extremely relevant consideration in the AER's decision on whether to accept or reject the expenditure proposed by Essential 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 shared deep 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 benchmarking and the repex model. Our view was that the AER should first examine the basis of our proposal, as such tools and methods could never substitute for the detailed planning and expert judgments that sit behind a DNSP's regulatory proposal. As noted in Section 1, this is a key staple of the regulatory framework as evidenced in decisions by the ACT when it stated:

> *"EnergyAustralia is correct to submit 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."*[21]

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.

Regulatory obligations

Regulatory obligations influence when we need to incur expenditure and the costs of doing so. As an electricity provider, we are subject to a range of industry specific obligations and regulations that set out the manner in which we supply electricity in the NEM. These regulations include the Electricity Supply Act 1995 (NSW), and the NEL and NER. For example:

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

- The Electricity Supply Act 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 Essential 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.

Essential 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.

In addition to our key role of providing electricity services, we are also required to meet our obligations as a body 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 State Owned Corporation, we are subject to specific legislation in respect of performing our functions. An example is the NSW State Records Act (1998) requirement to maintain records, which necessitates IT systems that record and maintain information.

As a prudent DNSP, Essential 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 Asset Management Plan 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.

Policies, procedures and strategies

Template 7.1 of the RIN templates identify each of the policies, procedures and strategies that we have at Essential Energy. These strategies influence planning approaches and expenditure decisions we make at Essential Energy, and has been pivotal to the manner in which we have developed our capex and opex forecasts for the 2014-19 regulatory control period.

Corporate planning documents

Essential Energy has a number of corporate planning documents that provide vision and objectives on how to meet our regulatory obligations in an efficient and prudent manner. Under industry reform, the NSW DNSPs now have a common set of corporate strategy documents to ensure that our capital and operating forecasts meet our primary corporate objectives of safety, affordability and reliability. These strategies are summarised in Attachment 1.1 and include:

- The customer value plan – Sets a vision for future engagement with customers to ensure best value for money for the services we provide. The strategy has impacted the development of our proposal in two fundamental ways. It has focused our programs on identifying efficiencies in our costs so as to meet our goal of affordability, and has re-focused the business on engaging with our customers on issues such as levels of reliability and safety that we should strive for.
- The safety strategic plan – The objective is to protect the safety of the public, our employees, our contractors and those who are influenced by our business undertakings. Our long term business success depends on our ability to continually improve the quality of our services while protecting people and the environment. The safety plan is a key influence on our asset replacement programs where we have sought to find efficient ways to maintain the safety of the network despite deterioration in asset condition on the network.
- Asset Management Strategic Plan – Effective asset management is the key to being able to safely and efficiently deliver a reliable and sustainable electricity network, while continuing to promote customer affordability. The plan has focused on ways to prudently defer replacement of assets, through activities such as the prioritisation process.

- The Risk Management Strategic Plan - Aims to embed a common Risk Management Framework across the three NSW DNSPs, and accordingly provide a common basis for making decisions such as levels of investment to mitigate risk.
- Technology Strategic Plan – The objective is to leverage technology, enable the business' transition to a more efficient business model, and to facilitate delivery of the new business model's objectives. The plan's scope includes information technology and telecommunications, as well as operational and grid technologies. This plan has enabled us to deliver significant reductions in our forecast technology costs over the 2014-19 regulatory control period.
- The Human Resources Strategic Plan – This sets a blue-print on how to transition to efficient workplace change and structural reform introduced under industry reform, and to promote efficient leadership and performance across the business. This plan has been instrumental in shaping our expected expenditure related to implementing efficiency reforms such as the Network Reform Program and the prioritisation process.
- The Finance Strategic Plan – The objective is to manage the financial health of the three NSW DNSPs in a manner that protects financial value and delivers balanced outcomes for both customers and the shareholder. This has influenced our decisions on levels of capex, and on proposing a rate of return that is commensurate with the efficient financing costs of a benchmark efficient entity with a similar degree of risk.

Asset Management

Essential Energy's Network Asset Management Plans have significantly shaped the decisions underlying Essential Energy's proposed replacement and maintenance expenditure for the 2014-19 regulatory control period. The document provides an overall view of the approach Essential Energy takes to manage its asset portfolio to achieve business objectives. It describes the key business objectives, and relates them to the key target outcomes of asset management processes. It describes the nature of the Essential Energy asset base at a high level and the policy level approach to asset management. It describes the key processes in the asset management framework by reference to the appropriate policy, standard and procedural documents.

Network planning and standards

Our network planning documents have been a crucial influence on the development of our capex and opex forecasts for the 2014-19 regulatory control period. They influence our decisions on when to invest, and the most efficient option to address the need, taking into account safe working practices and meeting good electricity industry practice in design and construction.

Essential Energy has a series of AMP's that set out our principles for investing on the network. Our AMP's define the principles and approach by which Essential Energy decides to invest in its electricity system. The document identifies the legislative requirements and investment objectives, decision making processes and criteria, and processes to ensure these decisions are made in a consistent and transparent manner. Essential Energy also has a specific strategy document relating to the principles and objectives of reliability of supply.

We also have a series of detailed standards which set out specific designs and activities that underlie our cost structures. Electrical standards mostly relate to information we provide our stakeholders on topics such as specifications for connecting to our network. Network standards set out specification for designs and construction, for example the design criteria for low voltage kiosks. In effect these provide additional instructions on the high level guidance provided in investment standards. Technical standards relate to work practices including qualifications and experience for working safely on the network. For example, the technical standard for underground cable work details the qualifications required for personnel, together with a set of safe working practices for construction, maintenance or operating work on or associated with underground cables.

Other policies, procedures and strategies

Template 7.1 of the RIN also requests information on specific categories of procedures and strategies that impact our expenditure. In the section below we provide a brief summary of how these strategies have influenced the derivation of the total capex forecast for the 2014-19 regulatory control period.

- Demand management - This strategy provides an overview of Essential Energy's approach to the investigation and implementation of demand management solutions. This includes pilots and trials under the Demand Management Innovation Allowance (DMIA), and broad-based demand management programs

to reduce peak demand in broader network areas. This has been a key framework for developing forecasts of demand management expenditure.

- Asset security and disaster recovery – These policies ensure that Essential Energy keeps its assets safe from sabotage and can continue to provide services in the event of disasters. In the absence of these policies, Essential Energy's capex could be of a far higher magnitude over the 2014-19 regulatory control period.
- Accounting and procurement policies –These provide assurance that we capture and record costs we incur on the network in accordance with accounting standards. These have been instrumental in ensuring that our forecasts have allocated costs properly to standard control services, and that the cost relates to a capex rather than opex activity. For example our capitalisation policy provides clear guidance on what constitutes expenditure of a capital nature.
- Procurement policy and manual – These documents set out minimum standards for the procurement of goods, stores, materials, equipment, works and services as well as the disposal of obsolete or surplus goods, stores, materials and equipment. It ensures that Essential Energy seeks all opportunities to efficiently reduce the capital costs we incur in providing services, through practices such as securing the lowest rates on electrical equipment.
- IT policies – IT policies provide guidance on the systems that are required to ensure that we continue to provide support to meet our network and corporate functions in an efficient manner. For instance, the IT capital approval process defines the process for all projects so as to utilise maximum benefits and ensure budgetary control.

Governance frameworks

Essential Energy has an investment governance framework which sets out the process by which network capital investments are made and implemented within Essential Energy. 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. Key documents which demonstrate our governance frameworks include:

- Board Governance Policy – This provides a robust system of governance addressing, but not limited to: integrity and efficiency of support to the Board in its roles and functioning and in its relationship with relevant Ministers; integrity and efficiency of support to the Board Committees in their roles and functioning; risk management and compliance with statutory requirements; disclosure, transparency and liaison with shareholders and stakeholders; and implementation of the company's strategy and directions through the company and business planning, resourcing processes, business systems, policies, procedures and performance monitoring.
- Board Policy Delegation of Authority - This Delegations Policy sets the framework for managing delegated authority throughout the company by the board of directors to support effective decision making. The delegations framework consists of: the Delegations Policy; the Instrument of Delegation of Authority to the CEO (A Deed which documents the written authority of the CEO granted by the board under this Policy); the Sub-delegations Policy and Schedules (a document under which CEO sub-delegates to employees within the company); and board approved Power of Attorney.
- Executive Leadership Team Charter - The Essential Energy Executive Leadership Team (ELT) Committee provides a forum for the ELT to review and endorse strategic and operational decisions on important matters that affect the Company.

Essential Energy's capex approval processes also demonstrate that we have an effective governance process underlying our investment decisions. The Network Project Approval process record delegated authority for projects and sub-programs. Projects and programs proceed through the planning to delivery stage with appropriate checks and balances on costing scope and delivery. For example, the development brief is an instruction issued from Chief Engineer to commence development of a project that is required as part of an area plan or replacement plan, and are supplemented with information on critical dates, costs and technical details.

5.2. Approach to forecasting capex

In chapter 5 of our regulatory proposal document, we described the process we used to derive the total forecast capex for each year of the 2014-19 regulatory control period. The proposed method was based on the sum of 14 AMP's, with each plan focused on a network or supporting asset. The plans were 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 2014-19 regulatory control period. This includes:

- We have a 'fit for purpose' method to forecast capex requirements for the 2014-19 regulatory control period; and
- Our forecast method for each capital plan is based on a prudent assessment of needs and selection of the efficient option. Importantly, in identifying our needs for the 2014-19 regulatory control period, we have taken into account the circumstances driving investment over the period.

Fit for purpose forecasting approach

Our capital plans are an effective way of developing accurate forecasts of capex requirements for the 2014-19 regulatory control period. Capex is lumpy in nature and therefore previous expenditure levels cannot be used as a precise guide for forecasting, as is more likely the case for opex. For this reason, each of the capital plans relies on a methodology which provides a 'zero base' approach to deriving expenditure, which draws on historical data in addition to other factors driving capex. Essential Energy only invests in capital when an appropriate driver exists, enabling us to meet our regulatory obligations to provide an efficient, safe and reliable network.

The capital plans relate to a specific network element or support asset type, and a specific driver of investment for that asset. This is represented in Table 5 below.

Table 5: Capital plans by driver

Capital plans	Key forecasting methods			Key plan drivers			
	Sub-transmission	Distribution	Support	Growth	Asset condition & safety	Reliability compliance	Network support
Regional Planning Reports	×			×			
Asset management plans	×	×		×	×	×	×
Distribution network growth strategy		×		×			
Reliability and quality of supply strategic plans	×	×		×		×	
Network technology strategic plan	×	×	×	×	×		×[22]
Demand management strategic plan	×	×		×			
Non-system asset plans		×					×[23]

[22] The forecast includes a number of initiatives to support productivity savings in the network business.
[23] Fleet forecast capex includes the benefits from initiatives to reduce fleet costs. These initiatives involve extension of replacement cycles, fleet standardisation and improved buying power to realise maximum value.

Clear demarcation between plans

A key feature of our planning approach is that there is a clear demarcation between the projects and programs of work for each asset group. This type of planning approach ensures there is no overlap or gap in our expenditure requirements.

The AMPs are strategic business plans, used to manage the network assets and deliver service levels to meet stakeholder requirements. Essential Energy has developed 14 AMPs which cover all of Essential Energy's network assets. Each AMP defines the life cycle of a specific group of assets and covers the major drivers of expenditure. The groupings have been chosen to ensure that synergies between assets can be maintained, and to allow the best mix between operating and capital expenditures.

Each AMP defines the service levels applicable to the asset group, based on stakeholder requirements and then compares asset capability and current performance to determine if there is a gap. Targets are defined based on the asset capability and service gap and strategies are developed to achieve the targets.

These AMPs are supported by a set of strategic plans, planning reports and individual investment cases. The planning process produces a detailed annual capital expenditure program and sets priorities for capacity augmentation, and supply security, quality and reliability over the investment horizon to 2018-19.

Our support plans are based on addressing the needs for a particular type of supporting asset such as technology, corporate property, fleet and plant and tools. This allows us to undertake granular planning of assets within a population, and in these cases, there are little expected synergies with other assets.

Individually tailored planning methods

When developing our individual asset management plans, we have considered the most appropriate and cost effective way to estimate our requirements. For the majority of plans, Essential Energy has used a 'bottom up' ('zero based') method to derive the forecast capex in its capital plans. In other cases, Essential Energy has used top down approaches to derive its forecasts. This generally involves a modelling approach to estimate future capex based on 'fit for purpose' considerations such as historical expenditure, and future drivers including, for example, changes in the number of connections. This is represented in Table 6 below.

Table 6: Capital plans forecast method

Capital plans	Key forecasting methods	
	Bottom up	Top down
Regional Planning Reports	×	
Asset management plans	×	×
Distribution network growth strategy		×
Reliability and quality of supply strategic plans		×
Network technology strategic plan	×	
Demand management strategic plan	×	
Non-system asset plans	×	

Our approach recognises that it is not 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, Essential 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, Essential Energy uses information on the asset population to forecast needs in advance. For example, Essential 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, Essential Energy uses high level 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

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.

Identifying our circumstances for the 2014-19 regulatory control period

In developing the capex forecast, our process for identifying needs has been able to incorporate our strategic environment and circumstances in the 2014-19 regulatory control period.

- Focus on affordability - Industry reform has focused Essential Energy 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.
- 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 aged assets on our network despite investment in the 2009-14 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.
- NSW licence conditions - A key consideration we have taken into account is NSW Government changes to licence conditions which will be effective from 1 July 2014. In recognition of the increased flexibility these licence conditions will permit, Essential Energy has modeled 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 Table 7 below.

Table 7: Identifying the need to invest

Capex category	Need
Growth	We will upgrade or invest in new system assets if we forecast that the thermal capacity (rating) of each asset will be insufficient to meet the actual load.[24] We will also invest if we forecast that the network design will not meet specified security standards. A further reason is where we forecast that we will not be able to meet the network and voltage standards under the NER.
Asset condition and safety	We replace assets when the condition does not enable us to comply with our general regulatory obligations with respect to safety and security of network assets, or maintain

24 We also apply this trigger point to distribution mains on our network, where there is no specified licence condition.

	the inherent reliability and security of the network. In most cases, our obligations do not specify a measurable standard to achieve. We therefore undertake a risk analysis to inform our decision on the appropriate risk tolerance.
Reliability performance compliance	We will invest in reliability investments where we forecast that we will not be able to achieve the performance requirements of Schedule 2 or 3 of our DRP licence conditions or where the networks performance is unacceptable.
Network support	We replace supporting assets when the condition no longer enables us to provide a necessary supporting activity. We also invest in new assets to meet new regulatory obligations. We may also invest in efficiency initiatives where the benefits outweigh the costs.

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 cases underlying our investment plans demonstrate how Essential 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, Essential 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, Essential 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 area plans look at multiple drivers on the sub-transmission 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.

5.3. Approach to forecasting opex

In respect of the forecast opex in chapter 6 of our regulatory proposal, we outline our performance in the current regulatory period and the drivers impacting on our forecast opex requirement for the 2014-19 regulatory control period. Taking these into account, we described the process we undertook in deriving the total forecast opex for the 2014-19 regulatory control period.

We have adopted a 'fit for purpose' approach to forecasting our operating expenditure for the 2014-19 regulatory control period. This approach is as follows:

- Disaggregate Essential Energy's total opex into various cost categories.[25] These cost categories represent the costs of undertaking a set of related activities to provide standard control services and to achieve the opex objectives (for example, maintenance opex, emergency response, inspections, vegetation management).
- Assess the nature of each cost category and determine the appropriate forecasting method that would result in a forecast cost that reasonably reflects the efficient cost that a prudent operator would need to achieve the opex objectives, based on a realistic expectation of demand forecast and cost inputs for that particular cost category.

[25] Clause S6.1.2(1) requires Essential Energy to identify the forecast opex by reference to well accepted categories.

We consider that this 'fit for purpose' forecasting approach ensures that the nature of each cost category and its relevant underlying drivers are appropriately accounted for, such that the resulting forecast opex is reflective of the efficient costs that a prudent operator would require to achieve the opex objectives. This process gives us confidence that our total forecast opex would reasonably reflect the opex criteria and ensures that the NEO and the RPP are met, especially that we are afforded a reasonable opportunity to recover at least the efficient costs we expect to incur in the 2014-19 regulatory control period.

This approach to forecasting total opex that selects the most appropriate methods for the relevant cost categories would be expected to be the approach that a DNSP would undertake to ensure that the resulting forecast expenditure reasonably reflects the opex criteria. Throughout this process, as well as considering the nature and drivers of each particular cost category, likely legislative changes, changes to our operating environment as well as scope for efficiency savings, we also have had regard to the opex factors in the rules that the AER must consider in deciding whether it is satisfied that our total forecast opex reasonably reflects the opex criteria. Consideration of the above factors in forecasting future expenditure requirements is a prudent course of action and it would be expected the total forecast opex reasonably reflects the opex criteria.

As mentioned above, 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.

5.4. Realistic expectation of demand forecasts and cost inputs

One of the criteria is a realistic expectation of the demand forecast and cost inputs required to achieve the expenditure objectives.

Demand forecasts

Essential Energy's planning process has incorporated accurate and up to date peak demand forecasts as part of the key inputs into developing capital plans. Essential 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, Essential 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 Chapter 5 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 2014-19 regulatory control period.

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.

In general, two types of costing methodologies were used to estimate the unit costs:

- Bottom-up estimates - The bottom-up approach uses cost components to estimate projects through an aggregation process, based on the scope of work. The estimating systems are in-line with industry best practice, and they rely on data that is constantly validated and updated.
- Historical models - The use of historical estimating models has been justified where past costs were proven to be efficient. The capital plans in this category contain some of the following elements: a higher proportion of fixed costs; high (recurring) volumes; minimal historic cost changes (limited scope variation); and stable cost trends over time.

A key feature of our process to derive capex for the 2014-19 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 jointly with Endeavour Energy and Ausgrid commissioned a report from Independent Economics (contained as Attachment 5.5) and CEG (contained as Attachment 5.6) on the appropriate and likely movement in the cost of these inputs during the 2014-19 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, Independent Economics 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 2014-19 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.

5.5. 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 chapter 5 of the 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.
- 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 performance 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 compliance plan.

- Network support – Opex substitutions are a key consideration in our process for deriving replacement and new non-system capex. For example when deciding whether to replace an IT 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 property

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.
- IT expenditure – the impact of IT capital investment on IT operating expenditure.

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, Essential 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. Essential 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 2014-19 regulatory control period 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.

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 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 Our research findings can be found in Attachment 2.1, however customers demonstrated . 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, many felt it had improved over recent years. This is supported by the decreased SAIDI record over the past 10 years. 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 licence conditions. 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 Chapter 5 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.

In particular, recognising the concerns of customers regarding the impact of electricity charges, Essential 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 2014-19 regulatory control period.

Contingent projects (expenditure factor 9)

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.

Essential Energy's 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 no project 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.

6. 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.

We address these factors for forecast capex and opex separately below. In relation to expenditure factor 4 (benchmarking) and expenditure factor 9 (non arm's length transaction), we address these jointly for forecast capex and opex as our considerations of these factors are applicable equally to both.

6.1. Previous expenditure

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 Essential Energy to provide actual and expected capex and opex for the previous and 2009-14 regulatory control period as well as explain any significant variation in forecasts from historical capex and opex[26].

Further information on our performance in the 2009-14 regulatory control period can be found in sections 5.1 and of our regulatory proposal, and in an external review of our performance by PB associates (contained as Attachment 5.1).

Forecast capex

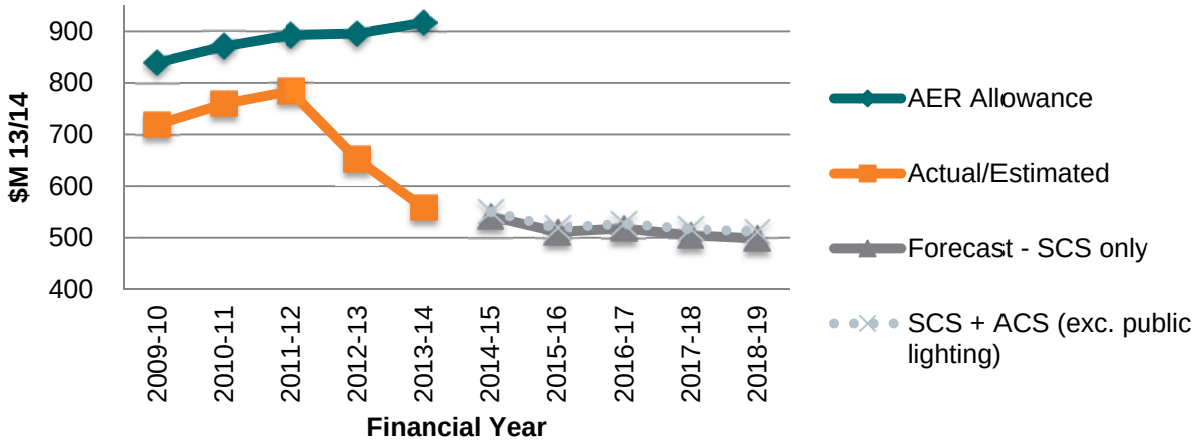
In the sections below, we note that previous expenditure can provide a partial indicator on the efficiency and accuracy of the capex forecast for the 2014-19 regulatory control period in a number of ways:

- 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 2014-19 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 Figure 2 below, our forecast capex is 26 per cent lower than actual capex for the 2009-14 regulatory control period. This reflects Essential Energy achieving considerable improvements in the security of the network in the 2009-14 regulatory control period under new licence conditions, and the return to more steady state levels of investment in the 2014-19 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.

[26] See clauses S6.1.1(6) and S6.1.1(7) of the NER.

Figure 2: Capital expenditure 2009-10 to 2018-19 ($M, 2013-14)



Chapter 5 of our proposal provides a summary of the reasons underlying the trend from past to future. We observed that the large investment program in the early years of the period was in response to significant under-investment in the past. Essential Energy's assets were ageing at a rapid rate as a result of low historical replacement allowances, and many areas had an inadequate level of supply security. In response to this situation, the NSW Government required us to meet new licence conditions relating to security standards and reliability performance. At the same time, we recognised that a significant increase in replacement expenditure was required.

From 2012-13 onwards, Essential Energy's capital program declined significantly. This reflected that we were starting to return to a steady state of investment, after investing considerably in capacity in the early years of the period to meet the new licence conditions.

The decline in expenditure in the latter years of the period reflected strategic re-orientation of the business as a result of industry reform, with a greater emphasis on affordability of charges for customers. We understood that reducing expenditure in the last two years of the period would reduce the regulatory asset base when transitioning to the 2014-19 regulatory control period. As part of this strategy we re-visited our risk acceptance thresholds in an effort to better target our risk mitigation strategies, put in place effective cost controls which included seeking more information before approving a project through our internal governance process.

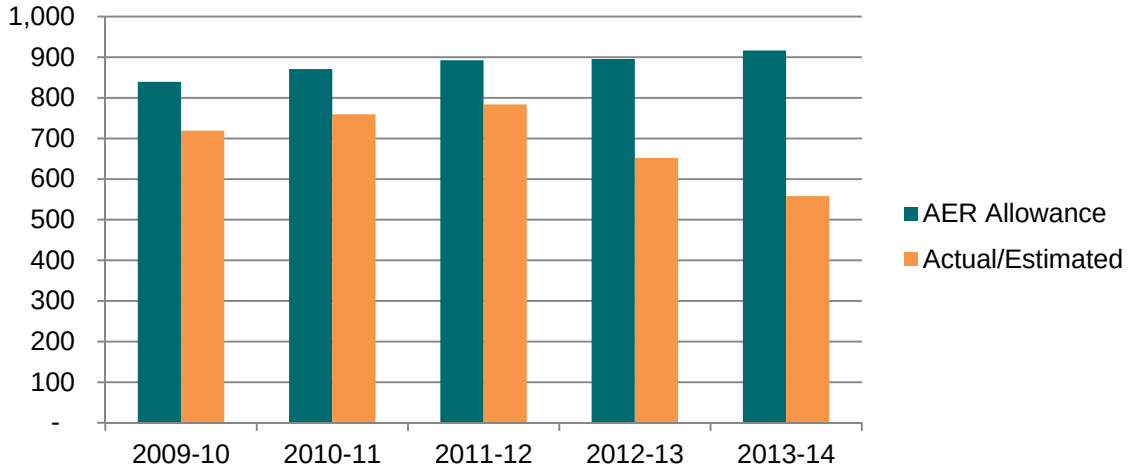
The capex forecast for the 2014-19 regulatory control period seeks to maintain the downward step change in capex as a result of the capital reduction strategy implemented in the latter two years of the 2009-14 regulatory control period. Chapter 5 of our regulatory proposal identifies the drivers of expenditure that are driving the trend of capex in the 2014-19 regulatory control period including:

- We are proactively responding to the hardship faced by our customers by identifying opportunities to defer capex and implement efficiencies. This continues the reforms introduced in the last two years of the 2009-14 regulatory control period where we tried to find efficiencies to reduce the charges to be paid by customers in the 2014-19 regulatory control period.
- We still have a large number of old assets on our network. While we made strong inroads into arresting condition issues on the sub-transmission network, the condition of assets on the distribution network has continued to deteriorate.
- A key feature of our network is that localised growth and customer connections continue to result in the need to invest in capacity on certain parts of our network. The change in the NSW Licence conditions to apply for the 2014-19 regulatory control period has provided opportunities to prudently defer investment. Despite this, opportunities are limited given that we still need to maintain reliability performance standards, and that spot loads rather than organic growth are driving capacity investment.

Comparison of forecast capex for the 2014-19 regulatory control period to actual capex in the 2009-14 regulatory control period can provide insight into whether a DNSP's forecasts have accounted for known drivers of variance in the last period.[27]

Essential Energy spent a total of $3.5 billion ($2013-14) in the 2009-14 regulatory control period, approximately 21 per cent lower than the capex allowed by the AER in its final determination. Figure 3 below shows that we spent less than the capex allowance in all years of the 2009-14 regulatory control period, with significant under-spends in the last two years.

Figure 3 Total capex spend relative to allowance for the 2009-14 regulatory control period ($M, 2013-14)



Chapter 5 and Attachment 5.1 of our regulatory proposal provides key reasons for variations between the 2009-14 and 2014-19 regulatory control periods. These include:

- Demand growth was lower than forecast in the 2009-14 regulatory control period. A consequence of this was that we spent less capex to meet increased demand from new and existing customers. In some part, the reduction in peak demand from forecast related to the impact of economic conditions including the Global Financial Crisis. Our method to forecast demand in the 2014-19 regulatory control period has carefully considered how these factors will impact demand in the 2014-19 regulatory control period. This is to ensure that our demand forecasts are a realistic expectation to base our investment decisions. As part of this, we have considered the most recent trends in peak demand forecasts at the zone substation level, and incorporated this data into our forecasts.
- Delivery issues - The substantial investment program in the 2009-14 regulatory control period placed delivery pressures on Essential Energy in the early years of the period. We responded to these programs through outsourcing, but in some cases our ability to plan and deliver the program fell behind schedule. We consider these delivery issues will not arise in the 2014-19 regulatory control period due to developing better processes, and the reduced workload from a smaller capital program.
- Better methods to prioritise programs - In addition to delivery issues, Essential Energy re-prioritised its program to respond to actual conditions experienced in the period. As explained below, industry reform resulted in a strategic re-orientation of the business towards meeting the goal of customer affordability. This resulted in more emphasis on prioritising needs and more stringent approval processes for authorising works. These new prioritisation frameworks have been a key feature in developing our regulatory proposal for the 2014-19 regulatory control period. This means that the variation related to prioritisation of the program in the 2009-14 regulatory control period has been addressed in our capex forecasts.
- Industry reform - We recognise that the investment program in the 2009-14 regulatory control period resulted in increased charges for our customers. In the last two years of the 2009-14 regulatory control period, we focused on efficiencies and deferrals to reduce the price pressures faced by customers when transitioning to the 2014-19 regulatory control period. A key catalyst was the NSW Government reform of

[27] Clause S6.1.1(7) of the rules requires an explanation of any significant variations in forecast capital expenditure from historical capital expenditure.

the electricity distribution industry which has focused on ways of reducing the burden of our charges on customers.

Forecast opex

Essential Energy expect to spend $2,298 million ($2013/14) for the 2009-14 regulatory control period compared to an allowance of $2,359 million ($2013/14) approved by the AER. Table 8 below shows the comparison for each year.

Table 8: Opex 2009-10 to 2013-14 ($ million, 2013-14)

	2009-10	2010-11	2011-12	2012-13	2013-14	Total
Actual/expected[28]	404	420	508	469	496	2,298
Allowance	455	464	473	481	486	2,359
Difference	50	45	(35)	12	(10)	62

As outlined in Chapter 6 of our regulatory proposal, Essential Energy has responded to the incentives in the regulatory framework to be as efficient as possible. This is demonstrated by the comparison of our actual opex performance against the efficient benchmark set by the AER. This performance was achieved by the implementation of a number of cost saving initiatives. It has set a solid platform for Essential Energy in ensuring that the forecast opex for the 2014-19 regulatory control period reasonably reflects the efficient costs that a prudent operator would need to achieve the opex objectives, taking into account a realistic expectation of demand forecasts and cost inputs.

Explanation of our performance during the period with respect to operating expenditure is provided at Attachment 5.1 to our regulatory proposal.

In chapter 6 of Essential Energy's regulatory proposal we outline the methods used to develop the operating expenditure forecast. The bulk of Essential Energy's forecast opex is derived using the base year approach under which the actual operating expenditure of the 2012-13 regulatory year is used as the starting point upon which 'change factors' are applied to derive the future opex requirements for the 2014-19 regulatory control period.

These change factors are variations to the base year opex and therefore provide explanations of the 'bridge' between historical opex and forecast opex. These change factors or variations are:

- Cost escalation
- Growth escalation
- Implementation costs of saving initiatives

The details of the above change factors are provided in chapter 6 and in attachments and supporting documents to chapter 6.

6.2. Incentive schemes (Capex and opex factor 8)

The rules include a capex factor which requires Essential Energy to consider whether the forecast is consistent with any incentive scheme or schemes that apply to the DNSP under clauses 6.5.8A or 6.6.2 to 6.6.4 of the NER. These provisions relate to the Capital Expenditure Sharing Scheme (CESS), the Service Target Performance Incentive Scheme (STPIS) and the Small Scale Incentive Scheme respectively.

We consider that this factor is to test whether the total forecast capex is reasonable in reference to relevant incentives that applied in the past, and the application of future incentives.

Forecast capex

In the 2009-14 regulatory control period, Essential Energy was under an incentive regime for capex, which provided financial incentives to incur less capex than allowed by the AER. While there was no explicit CESS in

[28] 2013-14 amount of $496 million is the expected opex.

place under clause 6.5.8A, we were subject to the ex-ante incentive inherent in the regulatory framework. Under this framework, a DNSP is limited in its ability to 'clawback' revenue for over-spends, and can retain a proportion of the revenue it receives when it underspends capex.

At the time of its 2009-14 final determination, the AER put in place a high powered ex ante incentive, by requiring that actual capex be rolled into the regulatory asset base at the end of the 2009-14 regulatory control period. In effect, this meant that we could retain the return on and return of income we received through revenues, when our capital expenditure was lower than forecast. Customers share in the benefit of the under-spend as a result of a lower RAB in the next period, resulting in a smaller movement in charges than would have been the case.

The regime is directed at incentivising a DNSP to find efficient ways to reduce its capex program through prudent deferrals and cost efficiencies. In turn, this promotes improved planning decisions and cost effectiveness which is incorporated into forecast capex in the next period. The AER can therefore have greater certainty that the forecast provided by the DNSP has 'revealed' efficient costs.

As noted in the section relating to historical expenditure, Essential Energy spent a total of $3.5 billion ($2013-14) in the 2009-14 regulatory control period, approximately 21 per cent lower than the capex allowed by the AER in its 2009-14 final determination. We consider that the underspend was not directly correlated with a strategy to make a financial benefit under the incentive regime. In this respect we note that the incentive regime does not provide strong incentives for cost reductions towards the latter end of the period.

Our key motivation was to improve customer affordability in the 2014-19 regulatory control period, noting that the ex-ante regime provides customers with ongoing benefits in the form of lower charges if the RAB is reduced. By maintaining the reductions in capex in the 2014-19 regulatory control period, we have continued the provision of these benefits to our customers.

For these reasons, we consider that the incentive regime has been an important element of the speed of our reform process, including re-orientation of strategies and planning processes towards meeting our goal of customer affordability. In this way, the AER can place substantial weight on the efficiency of the forecasts for the 2014-19 regulatory control period.

Consistency with incentives in the future

We will be subject to a CESS and STPIS in the 2014-19 regulatory control period. This capex factor requires the AER to consider the relevance of these incentives in the development of our forecasts, and if so, how these provide checks on the efficiency of our proposed capex. In this respect we note:

- CESS – We consider that this incentive is designed to ensure that a DNSP does not spend above the AER's allowances. In this light, we consider that it is important that the AER's decision reflects the most accurate estimate of capex, rather than applying stretch targets which are unachievable and result in asymmetric high penalties.
- STPIS – We note that our forecast capex is set to achieve our licence conditions, and that our targets are reflective of this.

Forecast opex

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 of the NER, namely, the efficiency benefit sharing scheme (EBSS), STPIS or small scale incentive scheme.

As outlined in chapter 6, Essential Energy is subject to the EBSS for the 2009-14 regulatory control period. The EBSS provides incentives for business to pursue efficiency improvements in opex and to share efficiency gains with customers.[29] We have used the outcome from the operation of the EBSS to derive the forecast opex requirement for the 2014-19 regulatory control 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 Essential Energy for the 2009-14 regulatory control period.

[29] AER, *Better Regulation, Explanatory Statement, Efficiency Benefit Sharing Scheme for Electricity Network Service Providers*, November 2013, p5.

The AER also proposes to apply the EBSS to Essential Energy for the 2014-19 regulatory control period. As explained by the AER, this scheme is to incentivise businesses 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 set to achieve licence conditions and maintain the quality, reliability and security of our network, 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 provision in Essential Energy's proposed forecast opex for such a scheme.

6.3. Benchmarking (expenditure factor 4)

The 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. The AER will be releasing its first benchmarking report in September 2014, and therefore we are not provided with an opportunity to demonstrate or make representations on this report at the time of submitting our regulatory proposal.

Benchmarking is an undefined term in the NER and could encompass many dimensions. The Productivity Commission 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 have been separately addressed. 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 in section 5.4 above. For this reason, our response to this factor is narrowly focused on comparative data with industry peers, and trend data of ourselves over time. Essential Energy has developed a comprehensive report in a supporting document at Attachment 5.4. 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 report 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, and cost category data including the augex and repex models. When deciding if a benchmark is appropriate, we have 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. ,

Based on this approach, we have placed limited weight on benchmarking analysis as a valid test of the efficiency of our forecast and consider 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 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 model 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.

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 Essential 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.

6.4. Non arms' length transactions (Expenditure factor 9)

Our forecast capex and opex for the 2014-19 regulatory control period does not include any arrangement with any other person that do not reflect arm's length terms.