Attachment 5.31

Addressing the capex and opex objectives, criteria and factors

May 2014

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Contents

1 Background

The National Electricity Rules (the rules) require the 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 Ausgrid sets out in its building block proposal for standard control services. To enable the AER to make its constituent decision, Ausgrid's building block proposal must include the total forecast capex and forecast opex for the relevant regulatory control period which the Distribution Network Service Provider considers is required in order to achieve the capital and operating expenditure objectives.

The forecast expenditure must also comply with the requirements of any relevant regulatory information instrument. On 7 March 2014, the AER issued a RIN (as amended on 21 March 2014) for our regulatory proposal requesting the following information:

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

Similarly, the RIN also request the provision of justification for Ausgrid's total forecast opex, including:

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

This document provides further evidence on why we consider the total forecast capex and forecast 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 proposal, and that these supporting documents form part of our justification on why the AER should accept our proposed forecast capex and forecast opex.

The document is set out in three parts:

- We outline the AER's decision making framework.
- We identify how Ausgrid considers the total forecast capex and forecast opex are required in order to achieve each of the capital and operating expenditure objectives (together the expenditure objectives) under clause 6.5.6(a) and 6.5.7(a) of the rules.
- We identify how Ausgrid considers the total forecast capex and forecast opex reasonably reflects each of the capital and operating expenditure criteria (together the expenditure criteria), having regard to the capital and operating expenditure 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 document.

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 forecast 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 Distribution Network Service Provider'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 (i.e. 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 Ausgrid is required to propose total capex and opex that Ausgrid considers is needed to produce the outputs or outcomes that are encapsulated in the rules. These outputs/outcomes are specified in clause 6.5.6(a) and 6.5.7(a) of the rules and are termed the operating and capital expenditure objectives (together expenditure objectives).[3]

Clause 6.5.6(a) and 6.5.7(a) requires Ausgrid to include in its building block proposal the total forecast opex and capex for the 2014-19 period[4] which Ausgrid 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 Ausgrid. The rules provide that the AER must accept the forecast expenditure included in Ausgrid's building block proposal if 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 Ausgrid's proposed total forecast expenditure reasonably reflects each of the expenditure criteria, the AER must have regard to the expenditure factors which are:[7]

[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 operating expenditure objectives under clause 6.5.6(a) and the capital expenditure objectives under 6.5.7(a) are the same. These expenditure objectives have been cited once only in this document for brevity.
[6] Clauses 6.5.6(c) and 6.5.7 (c) of the rules. Note that we have only reproduced the operating expenditure criteria above as the capex criteria mirrors the opex criteria.

(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; and

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

(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 efficient costs of producing the outputs, and the costs that a prudent operator would need, taking into account the demand forecast and costs of inputs required to produce these outputs. This decision must be informed by the expenditure factors listed in the rules. The AER has not notified us in writing of any other relevant factor under expenditure factor 12.

2.2 Objectives of the regulatory framework

The consultations undertaken by the AEMC in the National Electricity Market 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 emphasised the economic objective underlying the regulatory framework. The Tribunal 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*

[7] Clauses 6.5.6(e) and 6.5.7(e) of the rules.

[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"

supply and to support efficient investment, providing investors with a return which covers the opportunity cost of capital required to deliver the services. [9]

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."[10]

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 to 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 the 2012 Rule change on Economic Regulation of Network Service Providers, 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:[11]

- 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 NSP 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 NSP'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 NSP'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 and 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 NSP's proposal, which is likely given the NSP's knowledge of its own network, then the AER should justify its conclusions by reference to it, in the same way it should regarding any other submission of probative value.

- The AER's assessment techniques in making its analysis are not limited – While the NSP'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 NSPs. 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 NSP in its proposal.

- The test of 'reasonable' must equally apply to the substitute amount - While the AER must form a view as to whether a NSP'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 NSP'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 NSP, 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 based on sound reasoning. 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 Australian Competition Tribunal:

> *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.*[12]

[9] Australian Competition Tribunal, Application by EnergyAustralia and Others 2009 (ACompT8), 12 November 2009, paragraph 14.
[10] AEMC, Rule determination: National Electricity Amendment (Economic regulation of transmission services) Rule 2006, number 18, 16 November 2006, p43
11 See discussion in AEMC, Draft Determination: Economic Regulation of Network Service Providers, Rule 2012, 23 August 2012, p102-104.

3 The expenditure objectives

3.1 Intepreting the expenditure objectives

The rules require that Ausgrid's building block proposal must include the total forecast expenditure (i.e. capex and opex) for the relevant regulatory control period which the Distribution Network Service Provider considers is required in order to achieve each of 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 NSP Expenditure Objectives that resulted in amendments to the expenditure objectives in 2013.
- 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.[13] 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 or quality of supply 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 Commission 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 determinations

The AER has also interpreted the expenditure objectives in recent determinations. In its most recent decision for Aurora, the AER set out a definition for each of the objectives. This is seen in Table 1 below.

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

[13] 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 objectives 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.[14]

Drawing it all together, we have adopted the following as key guidance when seeking to show how the forecast expenditure meets the objectives:

- 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 fulfil 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 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.

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

3.2 Functions we provide as a DNSP

To achieve the expenditure objectives stated in the rules, Ausgrid 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 supplies 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 compliance systems to identify, monitor 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.
- 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 Ausgrid needs to undertake and specify the capabilities, systems and personnel that Ausgrid needs to invest in to achieve these objectives. Consequentially, achieving the expenditure objectives give rise to expenditure which is either of a capital or operating nature.

3.3 Achieving the capex objectives

The purpose of this section is to demonstrate how Ausgrid considers that its proposed forecast capex is required in order to achieve each of the expenditure objectives. We explain how each of our capital plans are 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, maintain 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 broad regulatory obligations to provide a safe network for our customers and workforce.
- Support investment provides the necessary supporting infrastructure 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 who performs building activities. Non-system investments such as IT also relate directly to complying with our regulatory obligations in an efficient way (Capex Objective 2). We have a series of obligations as a State Owned Corporation to meet planning, monitoring and reporting functions such as financial accounts. We also have a number of compliance obligations under the NEL and the NER where support investment in people, policy, procedure and systems is critical in ensuring compliance.

The table 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 the Overview for each capital plan, which are provided as part of our supporting documentation.

Table 2: Capital plans and capex objectives.

Capital plan	Capex objectives achieved
Area Plans	All

Replacement and Duty of Care Plans	2,3 and 4
Distribution capacity plans	1 and 3
Reliability Investment Plan	1 and 2
Technology plan	All
Corporate Property Plan	All
Fleet and other support plan	All

Areas plans

These plans identify augmentations and large (strategic) replacements on our sub-transmission network. We review 25 areas of our sub-transmission network and 3 transmission regions. The key drivers of investment are growth and asset condition and safety.

Given that the area plans cover both capacity and asset condition drivers, the investment in these plans achieve multiple 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 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 sub-transmission network are related to maintaining our safety standard based on previous performance.

We note that the removal of Schedule 1 of our licence conditions means that we no longer have to meet specific security criteria. To avoid confusion the reliability standards we must achieve have not changed. In developing our forecast capex we have prudently given consideration to opportunities to defer investment as a result of the removal of Schedule 1 of our DNSP licence. This means that we will maintain our previous reliability performance, there are instances where our forecast capex will result in a decline in security where it may be prudent and efficient to do.

Replacement and duty of care plans

These plans identify all replacements of distribution network assets and smaller piecemeal replacement of sub-transmission assets that are not included in the area plans. The underlying driver of investment is asset condition and security. We consider that the replacement of assets is to meet specific safety standards in our reliability obligations, and also to maintain the level of safety and reliability from the previous period. As such the plans achieve the following capex objectives:

- 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 4 – Decisions to replace assets on the distribution and sub-transmission network are related to maintaining our safety standard based on previous performance.

We note that this is not affected by the change in our license conditions.

Distribution augmentation plans

These plans identify forecast capex for augmentations on the distribution network. This includes ‘customer connection’ capex to augment the shared network to enable connection of customers. It also includes reinforcement of the low voltage network to meet a combined increase in localised demand from existing and new customers. 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 capex plan

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 – Decisions to invest 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.

Technology Plan

This plan identifies infrastructure, platforms, applications and devices required to support our network and corporate functions. This includes the operational technology required to control and manage our network. Given that the technology plan spans network and support investment, the drivers of investment include growth, asset condition and safety and network support.

Technology provides a necessary supporting activity to enable us to meet our network objectives and to fulfil our corporate obligations. Operational IT Technologies such as SCADA are required to directly operate and monitor network equipment and therefore are linked to maintaining the safety and reliability of the network. Non-system IT assets provide operational support to our staff to perform building activities required to achieve the capex objectives and corporate governance objectives obligations including financial reporting, compliance/assurance reporting, performance management and customer service.

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.

Corporate property plan

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.

Fleet and other support capex plan

These plans identify vehicles and equipment used to provide our network services, and other capex such as plant and equipment, furniture etc. 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 and lifter borers). Plant and equipment are used directly by our staff in network activities such as maintenance and construction. In this respect, our forecast capex achieves 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 Ausgrid considers that its proposed forecast opex is required in order to achieve each of the expenditure objectives.

Ausgrid has included in the building block proposal a total forecast operating expenditure for the 2014-19 period that Ausgrid considers is required to carry out 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 of 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 three broad cost groups. Description of these cost groups and the opex objectives they achieve are in table 3.

Table 3: Opex cost groups and opex objectives

Opex cost group	Activities	Opex objectives achieved
Maintenance opex	Maintenance opex is required to undertake various activities on Ausgrid's electrical network. These activities, and associated cost, are critical achieve all four opex objectives.	All opex objectives
Operation and support	Operation expenditure are those costs incurred in undertaking the required activities to directly support the operation of Ausgrid's network system.	All opex objectives

Opex cost group	Activities	Opex objectives achieved
	Support expenditure is those necessary for the normal operation of Ausgrid as a business and includes management/governance costs, financial/operational/ compliance reporting, customer service and human resources management costs. Also included in this group are IT support costs. These costs would be found in any typical business. These costs are essential to the effective running and operation of the network and therefore are required to achieve all of the opex objectives.	
Other	Ausgrid's other opex relates to demand management. This expenditure is required to manage the demand on our network through various non network alternatives. This expenditure is to achieve the opex objective 1	Opex objective 1

Further descrption of the activities within each opex cost groups are provided below.

Maintenance activities and costs

***Inspection*:** Work associated with undertaking planned appraisal and routine preventative maintenance tasks. This category includes the cost of condition monitoring tasks and vegetation management. These tasks are predominantly scheduled and carried out in a repetitive manner with a leveled workload. Inspections identify corrective maintenance needs.

***Corrective*:** All work associated with correcting defects that have not yet resulted in a "breakdown". Corrective maintenance occurs when assets fail to meet the threshold criteria set to ensure it remains in working order until the next inspection maintenance cycle. These tasks are generally driven from the results of the inspection process.

***Breakdown*:** All work associated with equipment that has ceased to perform its intended function (excluding nature induced breakdown). Depending on the asset requiring maintenance, this activity may need to be undertaken in emergency conditions, generally at short notice. Breakdown activities generally result in higher costs as work may need to be carried out in emergency conditions outside normal working hours.

***Nature Induced Breakdown*:** All work associated with equipment that has ceased to perform its intended function due to factors beyond the equipment's design capability (for example, animals causing an equipment malfunction). These failures cannot be managed through normal maintenance activities. Like breakdown maintenance, these activities may be carried out under emergency conditions and may lead to higher costs.

***Non-Direct Maintenance*:** All work associated with the testing of plant, tools and equipment that is used to deliver the different maintenance activities defined above. Also includes any training and development required to deliver maintenance activities.

***Engineering Support*:** Work associated with local project planning, scheduling and coordination of maintenance works.

Operations and support activities and costs

Information, communication and technology: costs relating to the operation and maintenance of various IT technologies and telecommunication system required for the effective operation of Ausgrid's infrastructure and day to day operations.

Property management: costs of various activities inherent in the ownership of properties (land and building) including the costs of complying with various legal obligations pertaining to this ownership such as land registration, land tax payments, council rates, water and electricity usage. Property cleaning and maintenance is also included in this cost category.

Network operations: costs pertaining to activities undertaken for customer operations, network control and engineering, planning and connection.

- Customer operations – costs relating to the management, planning and reliability of the distribution network. This includes facilitating new connections, planning associated with large customer connections, responding to complaints and general enquiries concerning the distribution network, installation inspection and emergency response to installation and network safety issues.

- Network control – cost of 24 hour / 7 days a week monitoring and control of Ausgrid's infrastructure. It also includes emergency and incident management.
- Engineering, planning and project management - costs of centralised engineering and planning activities associated with preparing asset engineering and investment standards, maintenance analysis, engineering investigations, equipment ratings, technical regulatory reports and project management.

Training and development: costs relating to centralised coordination and delivery of the technical, regulatory and professional development needs for Ausgrid's employees and compulsory training related to network access for contractors who work on the network. This also includes the four technical development programs: Apprentices, Engineering Officer Traineeships, Electrical Engineering Cadetships and the Engineering Graduate.

Finance costs: costs relating to:

- Corporate accounting and performance reporting.
- Budgeting, forecasting, commercial advisory services, investment analysis and business support.
- Treasury, taxation and cash management.
- Regulatory reporting and fixed asset management and reporting.

Other operations and business support costs: these relate to:

- Emergency contact centre operations
- Data operations (installation, GIS and NEM activity)
- Metering and corporate finance functions
- Fleet and logistics management
- Insurance
- Human resources management
- Marketing, communications and community partnerships
- Workers compensation, occupational health, well being and safety
- Network regulation and customer investigations, and
- Management including the Board of Directors, Chief Executive Officer, Chief Operating Officer and Networks NSW Group Management.

Other opex

The other 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 period.

In addition to the forecast opex that Ausgrid proposed, the AER also allows a debt raising cost. 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 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.

[15] For example, see AER's decision for Aurora for the period 2012-13 to 2016-17.

4 Expenditure criteria and factors

4.1 Intepreting the expenditure criteria and factors

As stated above, the AER must accept Ausgrid's forecast of required expenditure if it is satisfied that the total of the forecast expenditure reasonably reflects the 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 our 2009-14 regulatory proposal, we 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 (the 2008 report). Recent amendments were made to the expenditure criteria and factors. We have therefore engaged NERA to review their 2008 report in light of these amendments. NERA's report, comprising of a supplementary report, a marked-up to the 2008 report and a new report, is provided as Attachment 5.32, "NERA - Economic Interpretation of clauses 6.5.6 and 6.5.7 of the NER".

The change to the expenditure criteria and factors in the rules does not fundamentally alter NERA's advice, specifically:

- 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.
- Prudent refers to the idea of 'carefully considering consequences' and 'carefully managing resources'.

NERA considered that the forecast expenditure must reasonably reflect all three expenditure 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 to 2019 period. This is consistent with the views of the AER.[16]

4.2 Applying the expenditure criteria and factors when making a decision

One of the expenditure criteria is that the forecast expenditure reasonably reflects the costs that a prudent operator would need to achieve the expenditure objectives. Whilst efficiency does not have direct observable measures, an important aspect of prudence is the process that is followed and the reasoning that is applied by the 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 individual forecasts…. When aggregated, the AER is concerned that these forecast may not account for the economies of scale and scope a DNSP of Aurora's size would be expected to achieve…Therefore, to assess the extent to which the total forecast opex proposed by Aurora reasonably reflects the opex criteria, the AER has compared Aurora's total forecast opex to a forecast developed using a base year approach."*[17]

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

[16] AER, Better Regulation, Expenditure Forecast Assessment Guideline for Electricity Distribution, November 2013, p9.
[17] AER, draft decision for Aurora, p157.

replaced them with the base year method.[18] The AER considers that its own base year forecasting method would produce a forecast opex that reflects the opex criteria and ensures the achievement of the national electricity objective and revenue and pricing principles.

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 forecast opex programs.[19]
    - The extent to which Ausgrid 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 preferable 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 a forecasting approach and appropriate methods that take into account all the relevant factors that would have an impact on the quantum of the costs in the future. Some of these factors could be 'standard' or 'common' factors that would always be incorporated into a forecast, e.g. future price of cost inputs, substitution possibilities between forecast capex and forecast 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 of a particular period. 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 initiative for operational improvements for the forthcoming period is also a factor.

This prudent process would more likely than not result in a forecast expenditure that reasonably reflects the expenditure criteria, i.e. efficient and prudent costs and reflecting a realistic expectation of forecast demand and cost inputs. However, as an additional check or a 'sanity'/reasonable check of the result from a prudent forecasting process, a comparison is made between the forecast expenditure and historical result, explaining and verifying the increase so as to provide further supporting evidence that the forecast expenditure indeed reflects the efficient and prudent amount and also is consistent with the National Electricity Objective and Revenue and Pricing Principles, particularly 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 result should be read with caution given its limited usefulness. For further information refer to Attachment 5.33 "Addressing the benchmarking factor for capex and opex ".

In summary, the expenditure factors is not important only 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.

[18] 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.
[19] NER, cl. S6.1.3(1).

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 X below. The diagram shows that both our proposal and the AER's assessment is focused on the capex criteria and factors.

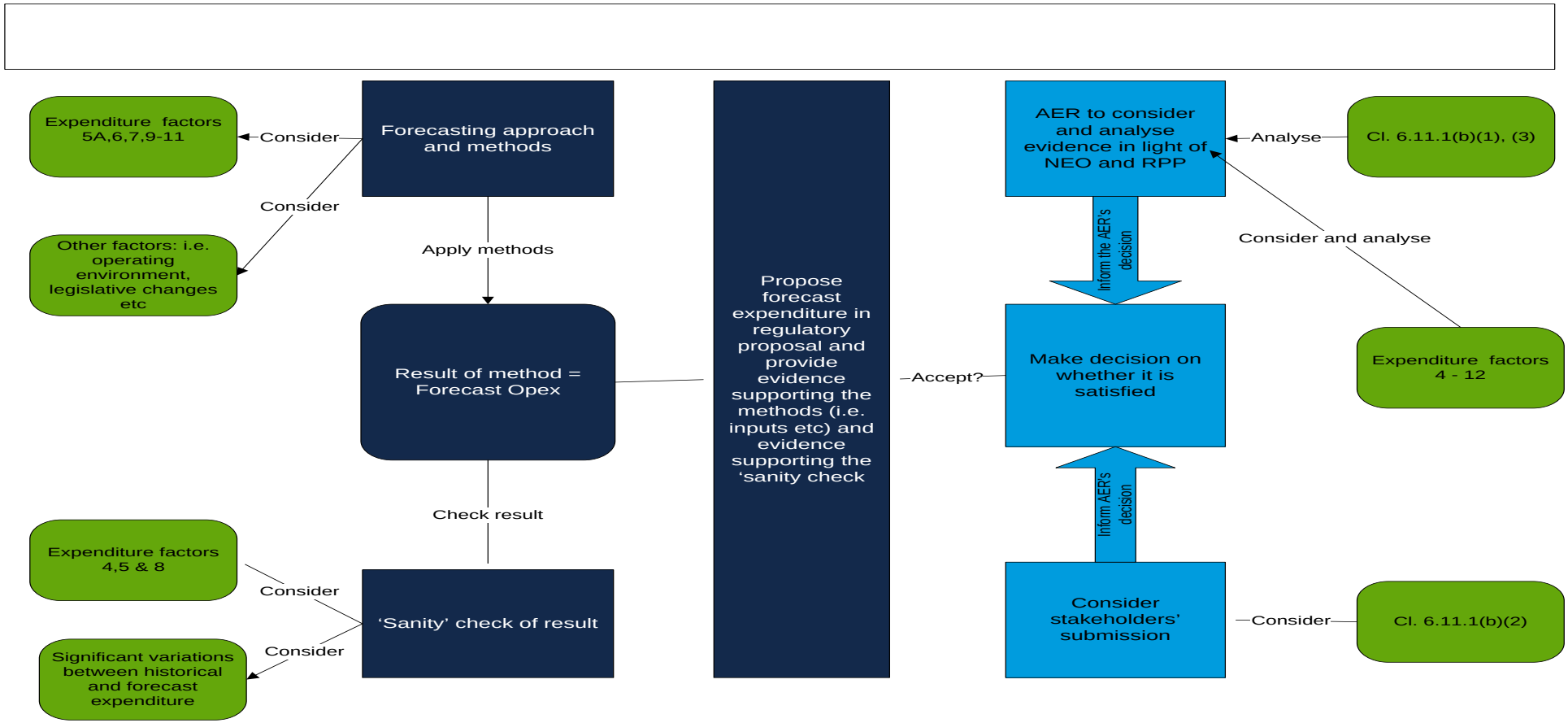
4.3 How we have addressed the expenditure criteria and factors

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 forecast opex reasonably reflects the expenditure criteria and is consistent with the National Electricity Objectives and the Revenue and Pricing Principles.

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;	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); and	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 proposal, if the AER raised an additional factor in it


Expenditure factors 5A,6,7,9-11
Consider
Forecasting approach and methods
Consider
Other factors: i.e. operating environment, legislative changes etc
Apply methods
Result of method = Forecast Opex
Check result
Expenditure factors 4,5 & 8
Consider
'Sanity' check of result
Consider
Significant variations between historical and forecast expenditure
Propose forecast expenditure in regulatory proposal and provide evidence supporting the methods (i.e. inputs etc) and evidence supporting the 'sanity check
Accept?
AER to consider and analyse evidence in light of NEO and RPP
Analyse
Cl. 6.11.1(b)(1), (3)
Inform the AER's decision
Consider and analyse
Make decision on whether it is satisfied
Expenditure factors 4 - 12
Inform AER's decision
Consider stakeholders' submission
Consider
Cl. 6.11.1(b)(2)

5 Prudency of forecasting approach

The purpose of this section is to demonstrate that our process to derive our proposed total capex forecasts for 2014-19 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 proposal, taking into account our detailed 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 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 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 are 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 Ausgrid. 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 noted deep concerns with statements that suggested the AER would be overly relying on high level tools to guide its decision making. For instance, we noted concern 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 proposal. As noted in Section 1, this is a key staple of the regulatory framework as evidenced in decisions by the Australian Competition Tribunal 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."[20]

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. As an electricity provider, we are subject to a range of industry specific obligations regulations that set out the manner in which we supply electricity in the Australian National Electricity Market. These regulations include the Electricity Supply Act 1995 (NSW) and Regulations made under it, the National Electricity Law (NEL) and Rules and the National Energy Retail Law and Rules. For example:

- The Electricity Supply Act imposes requirements to hold DNSP licence which in term imposes conditions with respect to reliability and performance of the network. The Electricity Supply (Safety and Network Management) Regulation imposes requirements in relation to the preparation and implementation of network management

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

plans addressing network safety and reliability, customer installation safety, public electrical safety as well as bushfire risk management.

- The National Energy Retail Law and Rules introduced in NSW from 1 July 2013 imposes requirements in relation to connecting customers, customer connection contracts, guaranteed customer service standards and a range of customer rights and protections including notification of planned interruptions, disconnection processes and managing customer complaints. .

- The NEL and Rules regulate Ausgrid's participation in the National Electricity Market as a Network Service Provider (both and TNSP and DNSP) and cover a range of matters including system and network reliability and security, network planning, connections procedures, and system and network standards.

Ausgrid is also subject to more general obligations and requirements which direct the way we design and operate the network. These obligations are mainly concerned with environmental protection, and public and worker 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 construction 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 corporation in respect of corporate 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, Ausgrid also adheres to codes and guidelines that provide direction on how to meet our overriding obligation[21] to operate our network in accordance with good electricity industry practices. For example, under our Network 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 regulatory RIN templates identifies each of the policies, procedures and strategies that we have at Ausgrid. These strategies influence planning approaches and expenditure decisions we make at Ausgrid, and has been pivotal to the manner in which we have developed our capex and opex forecasts for the 204-19 period.

Corporate planning documents

Ausgrid 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 the document, "Delivering efficiencies for our customers." 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 2 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 in the period, through activities such as the prioritisation process.

[21] See for example clause 5.2.1 of the National Electricity Rules which requires all registered participants to maintain and operate their facilities in accordance with relevant laws, the requirements of the rules and good electricity practice and relevant Australian Standards

- The Risk Management Strategic Plan - Aims to embed a common Risk Management Framework across the Network companies, 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 technology costs over the next 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 Ausgrid 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 expenditure, 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

Ausgrid's Network Asset Management Strategy has significantly shaped the decisions underlying Ausgrid's proposed replacement and maintenance expenditure for the 2014-19 period. The document provides an overall view of the approach Ausgrid 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 the asset management processes. It describes the nature of the Ausgrid 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 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.

Ausgrid has a series of policy documents that set out our principles for investing on the network. For example, our investment network policy defines the principles and approach by which Ausgrid 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. Ausgrid also has a specific policy document relating to the principles and objectives of reliability of supply.

Our investment standards provide more detail on key aspects of our policy documents. This includes:

- The process we use to derive the programs and programs underlying each of our each of our capital plans For example, we have an investment standard for our Area Plans, Replacement planning, low voltage planning, and reliability planning.
- Spatial demand forecast process.
- Ratings and impedance standards for planning the capacity of our assets when making investment decisions.
- Configurations of network designs.

We also have a series of detailed standards which set out specific designs and activities that underlie our costs 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 standards for instance 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

In the section below we provide a brief summary of how procedures and strategies have influenced the derivation of the total capex forecast for the 2014-19 period.

- Demand management - This policy provides an overview Ausgrid's approach to the investigation and implementation of demand management solutions. This includes pilots and trials under the DM Innovation Allowance, targeted DM projects to defer specific network augmentation capital projects, and broad-based DM programs to reduce peak demand in broader network areas. This has been a key framework for developing forecasts of DM expenditure and the consequent reductions in capex as part of our 2014-19 forecasts.

- Asset security and disaster recovery – These policies ensure that Ausgrid keeps its assets safe from sabotage and can continue to provide services in the event of disasters. In the absence of these policies, Ausgrid's capex and opex could be of a far higher magnitude over the 2014-19 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 and operating nature.

- Procurement policy and manual – This document sets 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 Ausgrid seeks all opportunities to efficiently reduce the capital operating costs we incur in providing services, through practices such as securing the lowest rates on electrical equipment and services.

- 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. In recent times we have introduced other polices such as the Benefits Management Framework that set out a clear process for realising the benefits of IT projects that were implemented to achieve efficiencies in the business.

Governance frameworks

Ausgrid has a well documented investment governance framework which sets out the process by which network capital investments are made and implemented within Ausgrid. The governance process ensures that projects 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 balance as part of this governance framework which 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 Policy Governance Policy – This provide 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; a 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 (this document); 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. The policy ensures expenditure commitments are approved by senior managers with appropriate authority.

- Executive Leadership Team Charter - The Ausgrid 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.

Ausgrid'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 period. The proposed method was based on the sum of 8 capital plans, with each plan

focused on a network or supporting asset. The plans were based on meeting one or more driver 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 period. This includes:

- We have a 'fit for purpose' method to forecast capex requirements for the 2014-19 period.
- 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 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 period. Capex is lumpy in nature and therefore previous expenditure levels cannot be used as a precise guide for forecasting, as is 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.

Ausgrid only invests in capital when an appropriate driver exists to enable us to meet our regulatory obligations to provide an efficient, safe and reliable network. The plans relate to a specific network element or support asset type, and a specific driver of investment for that asset. This is represented in the diagram below.

Capital plans	Key forecasting methods these are not methods, they are areas of investment?			Key plan drivers			
	Sub-transmission	Distribution	Support	Growth	Asset condition & safety	Reliability compliance	Network support
Area plans	×			×	×		
Replacement and Duty of Care plans	×	×			×		
Distribution capacity plan		×		×			
Reliability investment plan		×		×		×	
Technology plan			×	×	×		×[22]
Corporate property plan			×				×
Fleet and other support plans		×					×[23]

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 in each capital plan. This type of planning approach ensures there is no overlap or gap in our expenditure requirements.

For instance, Area Plans relate to all new (capacity) investment on the sub-transmission network and the replacement of existing large assets on the sub-transmission network. This enables us to consider strategies that enable us to meet replacement and growth drivers for major projects at least cost. The replacement plan encompasses all distribution assets, and small assets on the sub-transmission network. Major network elements (such as sub transmission cables and 11kV switchboards) are explicitly excluded from the replacement plan, so as to ensure there are no overlaps.[24]

[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 cost. These initiatives involve extension of replacement cycle, fleet standardisation greater utilisation of vehicles (e.g. allocating vehicles to a depot pool as opposed to individuals) and improved buying power to realise maximum value.
[24] To avoid overlap in replacement of minor substation elements with major area plan projects, the replacement plans are developed with an understanding of the most current area plans at the time. Where an area plan project is known to address some replacement needs of substation elements that would ordinarily be covered by the replacement plans, these elements are excluded from the replacement plan volume estimate.

Our distribution plans are based on the underlying driver of investment such as growth, asset safety or reliability performance. We consider this is an appropriate way to forecast requirements as it allows for precise identification of works required in the next period. Unlike the Area Plans, this type of approach cannot account for potential synergies at the time of delivery. In practice however, this is unlikely to arise as the needs will rarely coincide at the same time, for instance there is a very low likelihood that a capacity solution on the 11kV network will relate to an asset that is in need of replacement.

In some cases, however we have recognised that our forecasts require a downward adjustment to acknowledge potential synergies within the Plan itself. In the low voltage plan we considered that there was some potential overlap in the projected volumes of work. Our modeling has adjusted for this overlap to recognise that a single solution can resolve multiple overloaded network elements.

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 is little expected synergies with other assets.

Individually tailored planning methods

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

Capital plans	Key forecasting methods	
	Bottom up	Top down
Area plans	×	
Replacement and Duty of Care plans	×	
Distribution capacity plan		×
Reliability investment plan		×
Technology plan	×	
Corporate property plan	×	
Fleet plan	×	
Other Support plan	×	

Our approach recognises that it is not cost-effective to undertake in-depth engineering assessments ("bottom up") planning of 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, Ausgrid 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, Ausgrid uses information on the asset population to forecast needs in advance. For example, Ausgrid records very specific information on the condition of a technology type, and can use this information to forecast replacement need 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, Ausgrid 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 of 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 period

In developing the capex forecast for 2014-19 we have aligned our expenditure requirements with our strategic plans:

- Focus on affordability - Industry reform has focused Ausgrid 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 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 connection 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 the NSW Government change to licence conditions which will be effective 1 July 2014. In recognition of the increased flexibility these licence conditions will permit, Ausgrid 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 as 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 below.

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.[25] 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 the inherent reliability and security of the network. In most cases, our obligations do not specify a measurable standard to achieve. We undertake therefore undertakes a risk consequence/ cost 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.
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 a new regulatory obligation. 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. NERA considered that 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.

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

The business cases underlying our investment plans demonstrate how Ausgrid 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, Ausgrid 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 and ensures efficiency in the long term. For projects that are driven by efficiency, Ausgrid 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 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 time of delivery. Our plans for the distribution network also consider whether there is likely to be any synergies at time of delivery.

5.3 Approach to forecasting opex

In respect of 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 period. Taken these into account, we described the process we undertook in deriving the total forecast opex for the 2014-19 period.

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

- Disaggregate Ausgrid's total opex into various cost categories.[26] 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, system control, finance, human resources etc).
- 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.

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 National Electricity Objectives and the Revenue and Pricing Principles are met, especially that we are afforded a reasonable opportunity to recover at least the efficient cost we expect to incur in the 2014-19 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 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 would be expected if the total forecast opex is to reasonably reflect 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 capex criteria is a realistic expectation of the demand forecast and cost inputs required to achieve the capital expenditure objectives.

Demand forecasts

Ausgrid's planning process has incorporated accurate and up to date peak demand forecasts as part of the key inputs into developing capital plans. Ausgrid records peak demand at each of its 220 zone areas, and this provides an indication of trends in demand growth at different points in the network. Importantly, Ausgrid's forecast process is capable of excluding spot loads from trend growth, considering new connections in the short term, and weather correcting.

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 period.

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

In relation to forecast opex, our approach also takes into account the demand on our expenditure requirements for the 2014-19. The need for increase in our forecast opex requirement in the 2014-19 (over and above the base year opex which represents the recurrent expenditure needed each year to achieve the opex objectives) stems from a number of factors that we expect to encounter in the next period. These factors have been outlined in chapter 6 of the regulatory proposal.

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 to historical experience, nature of project or program of work and data availability,

In general, three 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 contained 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.
- Cost function models - Cost function models are based on mathematical (mainly statistical) approaches to calculate unit costs. Through a base cost or basic unit of measure identified to correlate with a high-level cost, the required forecast could be calculated and projected forward for the 2014-2019 Regulatory Period. Such cost function models typically arose where an existing model was either non-existent or inferior.

A key feature of our process to derive capex for the 2009-14 period was the focus on incorporating efficiencies of the past, and considering potential efficiencies in delivering projects in the period. This provides further demonstration that the input costs used in the process to develop our capex forecasts are realistic and efficient.

We have provided further information in the Attachment 5.15 “Overview of the unit cost methodology” which includes a summary of the approach used for each capital plan and the efficiencies that have been incorporated into the forecasts. The justification and explanation of the methodologies has been supplied to the AER in supporting documentation within each capital Plan; these documents also provide data and worksheets to enable recalculation of the estimates as required by the AER.

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

We have jointly with Endeavour Energy and Essential Energy commissioned a report from Independent Economics on the appropriate and likely movement in the cost of these inputs in the 2014-19 period. This report is provided as Attachment 5.18.

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 increase 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 and the associated overhead and support functions. For contract services and labour hire related costs, we considered that labour cost changes in the general labour sector best reflect the efficient labour costs in the forthcoming regulatory control period.

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 (i.e. both capex and opex). 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 operating and capital expenditure in developing our forecast opex. This factor is common to both forecast capex and forecast opex and we consider this factor below in the context of these forecasts. As demonstrated in our capex chapters, 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 program (opex).[27]

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 opex is network maintenance[28]. 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 for 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 whether it is better to maintain an existing function through capex or opex.

Our forecasting process also considers the consequential impact of efficient capital investment on our future opex requirements. Clause S6.1.3(1) of the rules requires Ausgrid to identify and explain any significant interactions between forecast capital expenditure and forecast operating expenditure programs. In deriving the forecast opex for the 2014-19 period, we consider the consequential impact on forecast opex from capital investment. These interactions are:

- The impact of system capex on inspection maintenance costs - the cost of routine inspection is dependent on the volume of inspection. The volume of inspection asks for the 2014-19 period is determined with reference to the number of assets which in turn are impacted by the forecast replacement and capacity investment program for the next period.[29]
- Property capital investment and statutory charges - property operating expenditure includes statutory charges such as land tax which is calculated based on forecast values of the property portfolio of the 2014-19 period. The property portfolio incorporates the values of properties expected to be acquired (i.e. capital investment in properties) and the values of properties expected to be disposed during the 2014-19 period.
- Information technology investment and consequential opex – similar to property investment, Ausgrid's forecast investment in information technology system also requires consequential incremental opex to operate and maintain these systems.
- Demand management programs - in developing the opex forecast for demand management programs, the demand forecast and maximum demand were taken into consideration when determining the appropriate broad based demand and demand management program to implement over the next regulatory period to control load and assist in deferring Capex obligations into the future.

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

Similar to expenditure factor 10, this expenditure factor is common to both forecast capex and forecast opex and we consider this factor below in the context of these forecasts.

[27] Refer to capex chapter.
[28] This includes expenditure that may relate to reinforcements that are deemed opex in accordance with our accounting policies. The key point however is that
[29] See further in section 2.3 and 3.4 of Attachment 6.03, System Maintenance Opex Plan.

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, Ausgrid has considered all feasible options to address need, and has selected the most efficient option. In doing so, we have considered and made provision for efficient and prudent non network alternatives. Ausgrid 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 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. $2 million of operating expenditure for demand management programs is required to defer $22.8 million in growth capex investment over the period.
- Broad Based initiatives – We will also implement a number of initiatives that reduce system peak demand more generally across our network area, focused on building up impacts over time and delivering longer term benefits. The resulting reductions in demand have been incorporated into our peak demand forecast, and our capacity planning models for the distribution (11kV) system.

In addition, we have proposed that the AER adopt a Demand Management Embedded Generator Connection Incentive Scheme (DMEGCIS) that provides continuous incentives to use demand management when opportunities arise in the period and to undertake broad based research. Further information can be found in our regulatory proposal and in Attachment 3.03 DMEGIS Proposal (Application of Demand Management Schemes).

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 with 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 areas. 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 issues including reliability, price, construction and design standards, metering technology,

demand management and energy efficiency, support for vulnerable households, and communication and engagement. Our research findings can be found in supporting documents. 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. There was little willingness to pay more for a higher level of reliability. Our proposal has sought to maintain the reliability performance standards of our licence conditions, and has not sought funding for additional reliability. Further information can be found in the capex objectives in 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 expenditure and incorporate efficiencies. Our opex program ensures that as we end the 2014-19 period, our underlying operating costs will be lower than the base year of 2012/13 in real terms, assisting to ensure we have price stability as we transition to the 2019-24 period. Further information on how the program has taken into account price pressures of the proposal can be found in Section 5.2 of our regulatory proposal.
- Construction and design standards – Customers ranked price as the major factor that should be taken into account by Ausgrid when making decisions around new construction/design standards. While price was seen as the most important, customers thought that safety standards should not be compromised. Around one quarter of customers were willing to pay more for underground cabling. These views confirmed that our current standards are appropriate given that they ensure we meet safety standards.
- 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.

In particular, recognising the concerns of customers regarding the impact of electricity prices, Ausgrid has embedded within the forecast opex efficiency benefits from a range of measures we intend to implement to limit as much as possible the impact of necessary increases in opex requirement for the next 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.

Ausgrid'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 in contingent projects in 6.6A.1 of the Rules. In this respect, the only projects that may meet some of the criteria of a contingent project are large uncertain connections that we have considered as part of our total capex for Area Plans. However, the total capex of these projects does not meet the materiality threshold of a contingent project. We note that for these uncertain projects, we have derived a probabilistic estimate of expenditure which reflects the likelihood of the event occurring.

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 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 proposal.

6 Partial indicators that forecast expenditure is efficient

The process that a DNSP employed and the factors that it takes into account in developing a total forecast expenditure is an important indication that the resulting total forecast are indeed prudent and reasonably reflects 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 the 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 capital and operating expenditure respectively of the Distribution Network Service Provider during any preceding regulatory control periods. The NER requires Ausgrid to provide actual and expected capex and opex for the previous and current regulatory period as well as explain any significant variation in forecast capex from historical capex and opex[30]

Further information on our performance in the 2009-14 period can be found in section 5.1 of our regulatory proposal, and in Attachment 5.01 "Arup review of outcomes for the 2009-14 regulatory period).

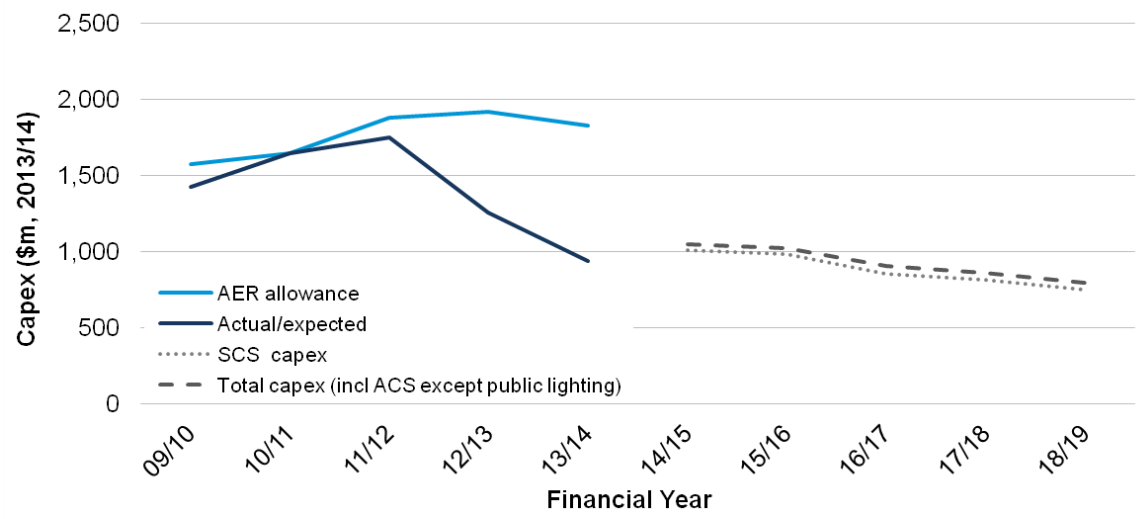
Forecast capex

In the sections below, we note that previous expenditure can provide a partial indicator on the efficiency and accuracy of the capex forecast for 2014-19 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. As this relates to a separate capex factor

In terms of trend analysis, as can be seen in the figure below, our forecast capex is 37 per cent lower than actual capex for 2009-14. This reflects that we achieved considerably improvements in the security of the network in the 2009-14 period under new licence conditions, and that we can return to more steady state levels of investment in this 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.

Figure 1 – Comparative capex profile ($ million, 2013/14)



[30] See clauses S6.1.1(6) and S6.1.1(7).

Section 5.1 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. Ausgrid's assets were aging at a rapid rate as a result of low replacement allowances, and utilisation levels on our assets were too high to maintain an adequate and secure level of supply. In response to these conditions, 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 was required to meet the degraded condition of the network.

From 2012-13 onwards, Ausgrid's capital program declined significantly. This reflected that we were starting to return to a steady state of investment, after investing considerably in the early years of period in capacity 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 prices for customers. We understood that reducing expenditure in the last 2 years of the period would reduce the regulatory asset base when transitioning to the next regulatory period without creating a risk to reliability and/or safety. This was also in part due to lower peak demand. As part of this strategy we also re-visited our risk acceptance thresholds in an effort to better target our risk mitigation strategies, put in place effective cost controls including seeking more information before approving a project through our internal governance process.

The capex forecast for 2014-19 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 period. Section 5.2 of our proposal identifies the drivers of expenditure that are behind the trend of capex in the 2014-19 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 2 years of the current regulatory period where we tried to find efficiencies to reduce the price paid by customers in the next period.

- We still have a large number of old assets on our network. While we made strong inroads into arresting condition issues on the transmission network, the condition of assets on the distribution network has continued to deteriorate.

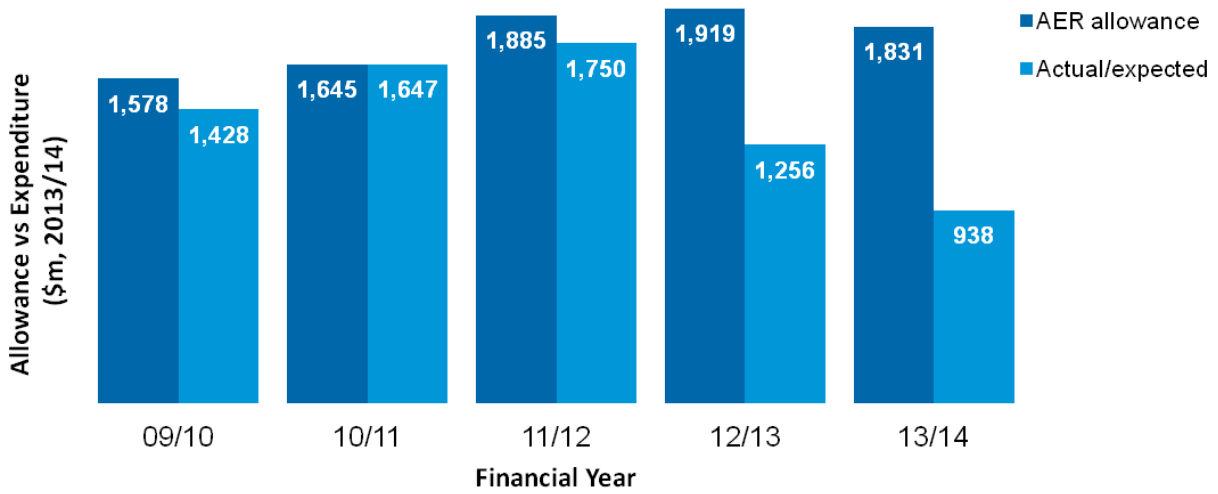
- A key feature of our network is that localized growth and customer connections resulting in the need to invest in capacity on certain parts of our network. The change in the NSW Licence conditions to apply for the 2014-19 period which has provided opportunities to prudently defer investment. Despite 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 actual to forecast expenditure in the previous period can provide insight into whether a DNSP's forecasts in the next period have accounted for known drivers of variance in the last period.[31]

Ausgrid spent a total of $7.0 billion ($2013-14) in the 2009-14 period, approximately 21 per cent lower than the capex allowed by the AER for the 2009-14 determination. The diagram below shows that we spent less than the capex allowance for most years of the regulatory period, with significant under-spends in the last 2 years of the period.

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

Figure 2 – Total capex spend relative to allowance for FY 2010-14 ($ million, 2013/14)



A relevant consideration for the AER is whether variations to forecast in the previous period have been explained and addressed in developing the forecast capex for the 2014-19 period. This is to provide assurance to the AER and our customers that there are no systematic forecasting errors underlying our proposed capex. In the sections below we identify the key reasons for variation and how these have been addressed in our forecast methodology for 2014-19.

While reductions in demand growth compared to forecasts can explain some of the reductions, we note that there have been a number of relevant factors that explain the reductions. In particular, we note that the reductions in capex are substantial in the last 2 years of the period, and this has been fundamentally driven by changes to our capital program as a result of industry reform. We also note that delivery issues also played a part in a lower capex profile to forecast, and that this was related to the significant increase in resourcing required to deliver the program. See further in section 5.1 of the proposal.

Forecast opex

The total actual opex for the 2009-14 period is expected to be $2,941.2 million ($2013/14). This is $32.7 million (or 1%) below the efficient level set by the AER.

Table 1 - Comparison of opex ($ million, 2013/14)

	2009/10	2010/11	2011/12	2012/13	2013/14	Total
Actual/expected[32]	598.6	584.5	645.2	520.9	592.0	2,941.2
Allowance	573.1	585.0	597.4	608.4	610.0	2,973.9
Difference	25.5	-0.5	47.8	-87.5	-18.0	-32.7

As outlined in section 6.1 of the regulatory proposal, Ausgrid 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 Ausgrid in ensuring that the forecast opex for the 2014-19 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 as Attachment 5.01 “Arup review of outcomes for the 2009-14 regulatory period”.

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

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

[32] 2013/14 amount of $592.0 million is the expected opex. It must also be noted that the approved and actual/expected opex relate to standard control services of the 2009-14 period (i.e. inclusive of Type 5-6 metering services and ancillary network services).

- Cost escalation
- Impact of cessation of the transitional service agreement between Ausgrid and TRUenergy.
- Inspection of private installations.
- A comprehensive audit and inspection program of assets potentially exposed to asbestos containing materials
- Sale and leaseback of Ausgrid's head office building.
- Impact of complying with the cost allocation method approved by the AER.
- Demand management initiatives.
- Implementation costs of saving initiatives, including the cost of managing stranded labour cost out of the business over time.

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 Ausgrid to consider whether the forecast is consistent with any incentive scheme or schemes that apply to the Distribution Network Service Provider under clauses 6.5.8A or 6.6.2 to 6.6.4. 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 and opex is reasonable in reference to relevant incentives that applied in the past, and the application of future incentives.

Forecast capex

In the previous period, Ausgrid 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 Capital Expenditure Sharing Scheme in 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 the 2009-14 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 regulatory 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 price change than would have been the case.

The regime is directed at incentivising a DNSP to find efficient ways to reduce its capex program either 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 have 'revealed' efficient costs.

As noted in the section relating to previous expenditure, Ausgrid spent a total of $7.0 billion ($2013-14) in the 2009-14 period, approximately 21 per cent lower than the capex allowed by the AER for the 2009-14 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 future periods, noting that the ex ante regime provides customers with ongoing price benefits if the RAB is reduced. Our analysis shows that a typical residential customer (5MWh p.a.) would have faced an average increase in the network component of their bill of around $51 had we incurred the allowed capex. Further, by maintaining the reductions in capex in the 2014-19 period, we have continued the 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 weight on the efficiency of the forecasts for the 2014-19 period.

Consistency with incentives in the future

We will be subject to a new capital expenditure sharing scheme (CESS), and Service Target Performance Incentive Scheme in the next regulatory period. This capex factor requires the AER to consider the relevance of these incentives to 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 allowance. 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 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, namely, the efficiency benefit sharing scheme (EBSS), service target performance incentive scheme (STPIS) or small scale incentive scheme.

As outlined in chapter 6, Ausgrid is subject to the efficiency benefit sharing scheme (EBSS) for the current 2009-14 period. The EBSS provides incentives for business to pursue efficiency improvements in opex and to share efficiency gains with customers.[33] We have responded to the incentive of the EBSS during the period and our expected opex for the current period is within the efficient benchmark set by the AER. We have used the outcome from the operation of the EBSS to derive the forecast opex requirement for the next period (i.e. the actual base year opex of the 2012-13 regulatory year). In that context, our forecast opex is consistent with the EBSS that the AER has applied to Ausgrid for the current period.

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

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

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 rule 6.27 and the benchmark capital / operating expenditure that would be incurred by an efficient Distribution Network Service Provider 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.

For example, we consider one of the most important benchmarks is how we have performed in previous periods compared to the efficient benchmark expenditure determined by the AER. We note that this is part of the expenditure factors relating 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. For this reason, our response to this factor is narrowly focused on comparative data with industry peers, and trend data of ourselves over time. Ausgrid has developed a comprehensive report addressing the benchmarking factor for capex and opex. This report is provided as Attachment 5.33 "Addressing the benchmarking factor for capex and opex".

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 statistic 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 proposal, or as a basis to substitute the forecast given the inherent limitations as a tool.

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

We have then sought 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 6 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. This was based on a Huegin Consulting study of 7 DNSPs in Australia.

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, that relative efficiencies between DNSPs at a point in time. In this respect the data provided does demonstrate that Ausgrid'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 2014-19 does not include any arrangement with any other person that do not reflect arm's length terms other than the arrangement for the lease of office property by a party Ausgrid explained in our response to Question 19 of the accompanying relevant RIN.