Consultation paper

ICT Expenditure Assessment

May 2019

AUSTRALIAN ENERGY REGULATOR

Inquiries about this publication should be addressed to:

Australian Energy Regulator
GPO Box 520
Melbourne Vic 3001

Tel: 1300 585165

Email: AERInquiry@aer.gov.au
AER Reference: D18/154952

Amendment Record

Version	Date	Pages
1	08 May 2019	27

Request for submissions

The Australian Energy Regulator (AER) invites interested parties to make submissions on this consultation paper by 19 June 2019.

We prefer that all submissions are in Microsoft Word or another text readable document format. Submissions on our draft decision paper should be sent to AERinquiry@aer.gov.au.

Alternatively, submissions can be sent to:

Mr Chris Pattas
General Manager, Distribution
Australian Energy Regulator
GPO Box 520
Melbourne, VIC, 3001

We prefer that all submissions be publicly available to facilitate an informed and transparent consultative process. Submissions will be treated as public documents unless otherwise requested. Parties wishing to submit confidential information should:

- clearly identify the information that is the subject of the confidentiality claim
- provide a non-confidential version of the submission in a form suitable for publication.

We will place all non-confidential submissions on our website. For further information regarding our use and disclosure of information provided to us, see the ACCC/AER Information Policy (June 2014), which is available on our website.

Please direct enquires about this paper, or about lodging submissions to AERinquiry@aer.gov.au or to the transmission and gas branch of the AER on (03) 9290 6931.

Contents

Overview

As part of our regulatory determination process, a Distributor Network Service Provider (DNSP) will provide us with a five year forecast of its required revenue. The return on and return of capital expenditure (capex) is one source of a DNSP's revenue. We assess a capex forecast to determine if it reasonably reflects the capex criteria. In doing so, we must have regard to each of the capex factors specified in the National Electricity Rules (NER).[1]

Expenditure for Information and Communications Technology (ICT) is one component of a DNSP's overall expenditure forecast. We assess an ICT expenditure forecast to inform our view of whether an overall expenditure forecast satisfies the criteria. We assess the ICT opex forecast with other types of opex in our base step trend approach. We generally undertake an ICT capex assessment under the non-network category of capex because those ICT assets are not integrated or embedded in the primary network assets such as substations and lines.

ICT is increasingly becoming a more integral component of delivering energy services. ICT expenditure in the NEM has in real terms increased over the past eight years (2009 to 2017), which has come in a period where total expenditure has decreased. In line with this, we are considering whether our current set of ICT expenditure assessment tools are fit for purpose both now and into the future.

Many DNSPs have provided ICT expenditure forecasts over their forthcoming regulatory control periods. These DNSPs have forecast ICT expenditure to continue to increase over the coming seven years. These forecast increases in required ICT expenditure has been found to be driven by significant forecast increases in ICT capex. Given the relatively short-lived nature of these assets (many depreciated over five years), these forecast increases can have significant cost impacts for consumers, even in the short-term.

While we may be observing increased forecast ICT costs, we note that ICT can be used to deliver better outcomes for consumers by providing new services, enhancing existing services, or delivering existing services at lower costs. As such, these emerging costs need to be taken into consideration with the benefits that they are generating to consumers. We therefore consider that the views of stakeholders are important to informing the assessment approach we apply. It is also important that networks understand what services consumers expect from them and know how to demonstrate that a proposal reflects these expectations. DNSP’s need to be able to demonstrate to consumers that these costs are in their long term interests and are the efficient costs of maintaining the service.

In light of these issues, we have started a review of our current ICT expenditure assessment approach. We have developed some preliminary thinking on what we

[1] NER, clauses 6.5.7(c)

consider a revised approach would look like, which we now wish to discuss with stakeholders to assist us in developing our views. While in this paper we outline a suggested revised assessment approach, the views we hear on our outlined approach will be used to further refine our assessment.

The approach we outline in this paper is summarised as follows. We firstly disaggregate ICT expenditure into two categories, recurrent ICT and non-recurrent ICT. Recurrent ICT expenditures are those associated with maintaining existing ICT functions and capacity and would refer to ICT investments that are made on a frequent periodic basis. Recurrent ICT, for example, would refer to the expenditure associated with ongoing refresh of hardware, licencing and support costs, version roll forward costs or other ICT costs that are similarly incurred on a period basis. Non-recurrent ICT expenditures would refer to major (one off, infrequent, or non-periodic) investments related to replacing existing ICT assets or the acquisition of new ICT assets, functions, or capability that is driven by a specific need. For example, installing major new or replacement software that might require significantly expanded or upgraded hardware to operate, or the replacement of hardware to enable the major expansion of data capture needs. Examples of non-recurrent ICT projects would be major upgrades to distribution network management systems, meter data and billing system replacements or any material cost associated with the replacement of existing ICT systems. We would consider that generally, recurrent ICT expenditures would tend to be program related, while non-recurrent ICT expenditures would tend to be project related.

Under our proposed approach, we will assess recurrent ICT and non-recurrent ICT using different methodologies. For recurrent ICT, the assessment of the DNSP's proposal is done by comparing the forecast recurrent ICT expenditure to the DNSP's historical recurrent ICT expenditure. We note the application of the Efficiency Benefit Sharing Scheme (EBSS) and Capital Efficiency Sharing Scheme (CESS)[2] places a strong incentive on distributors to pursue efficiencies in its recurrent expenditure practices. As such, a DNSP's actual expenditure, while subject to this mechanism, is a good indicator of the efficient expenditure the distributor is likely to require in the future. In particular, where past expenditure was sufficient to achieve the capex and opex objectives, this can be used as one of the indicators of whether an amount of forecast totex (opex and capex) would form part of a total forecast that we are satisfied reasonably reflects the capex and opex criteria.[3]

We note that while some businesses may historically operate at a level that would be considered efficient, others may be materially inefficient and may need to improve their efficiency before they can be considered efficient. For that reason, we will also benchmark the DNSP's historical recurrent ICT expenditure to other DNSPs. This will inform our view as to if a DNSP's historical expenditures are likely to be reflective of efficient costs.

---

2 AER, *Capital expenditure incentive guideline*, November 2013

3 AER, *Better regulation: Expenditure forecasting assessment guideline*, November 2013, pp. 7–9.

For our assessment of non-recurrent ICT we will undertake a business case review of each individual project. We expect that DNSPs will provide detailed business cases and NPV analysis in support of each project. In particular, we will review how the benefits were quantified and assess if the relevant assumptions are supported by evidence. We also expect a robust options analysis that considers multiple timings to demonstrate that the proposed investment's timing is optimised.

We note that network services are predominately delivered through the use of network assets, such as lines, substations and operational facilities. ICT assets mainly contribute to improving the use of network assets and reducing the costs for those services, and may also contribute to better access to information about those services for customers and third parties. Given that the nature of these benefits are generally known, we expect that DNSPs will be able to sufficiently quantify the likely benefits of this expenditure.

We also expect that DNSPs will undertake post implementation reviews of their ICT investments. This will assist in ensuring that the intended outcomes and benefits of ICT projects are achieved and more transparently demonstrated to customers and stakeholders. It is our intention to have regard to these reports in forming our view of proposed ICT capex forecasts for subsequent regulatory reset determinations.

DNSPs are rewarded for the efficiency benefits they achieve through the CESS and EBSS. To ensure that revenues are not double recovered through incentive payments and through operational cost savings, we expect that DNSPs will have incorporated these forecast financial benefits into the overall expenditure proposal. This is vital to ensuring that an overall expenditure forecast represents efficient costs.

In cases where a DNSP does not provide evidence that it has quantified all financial benefits or accounted for these benefits in its overall expenditure proposal, we propose two solutions. Either we would:

1. consider that these projects can be self-funded. For any prudent investment, where the benefits outweigh the costs, the distributor will recover sufficient funding through realising efficiencies (savings) and having them returned to the distributor under the incentive frameworks in place (EBSS, CESS and STPIS);[4] or
2. we would apply a productivity adjustment to the DNSPs overall expenditure proposal to account for the likely efficiency gains from the new ICT infrastructure.

We are seeking feedback on which approach stakeholders would prefer we apply.

Throughout this paper we have posed a series of questions. We welcome stakeholders' views on these questions as well as any other feedback stakeholders may have (see page 2 for details on how to make a submission).

[4] See AER, *Better regulation factsheet – expenditure incentives guideline*, November 2013.

This paper marks the start of our review of our approach to assessing ICT expenditure proposals. Table 1 sets out the steps in the process and indicative timing.

Table 1 indicative consultation timeframes

Key steps	Indicative dates
Submissions	19 June 2019
Publish final decision (and apply to open resets)	September 2019

Once we have considered all submissions, we will publish our final position on our approach to assessing ICT expenditure proposals. We expect to publish this in September 2019.

We intend to apply the ICT expenditure assessment approach we arrive at through this consultation process to the electricity distribution final decisions we will publish in April 2020. We will provide the relevant DNSPs an opportunity to submit their views on how we should apply our final decision on ICT capex to their specific circumstances. We will take those submissions into account in our final regulatory determinations for those DNSPs.

We are aware that ECA are also currently undertaking their own work reviewing ICT transformation strategy and expenditure. Recently, ECA have planned a workshop with industry and consumer advocates to discuss issues in the ICT space. We will also be a part of this workshop. We note that the ECA's workshop's focus is for advocates to gain a better understanding of the emerging ICT/Cyber Security cost components of network's regulated revenue proposals, fill in knowledge gaps, and see what has happened in other sectors. Our paper focuses more on building on our own techniques for assessing these expenditure proposals in the future.

1. How have we historically assessed ICT expenditure proposals?

Our role is to form a view about whether a business's forecast of total capex 'reasonably reflects the capex criteria'.[5] In doing so, we must have regard to each of the capex factors specified in the National Electricity Rules (NER).[6]

If we are satisfied the business's forecast reasonably reflects the criteria, we accept the forecast.[7] If we are not satisfied, we substitute an alternative estimate that we are satisfied reasonably reflects the capex criteria for the business's forecast.[8]

The *Expenditure Forecast Assessment Guideline* (the Guideline), together with an explanatory statement, set out our intended approach to assessing capex in accordance with the NER.[9] As outlined in the *Guideline*, ICT capex is one component of a Distributor Network Service Provider's (DNSP) overall capex forecast. We assess an ICT capex forecast to inform our view as to whether an overall capex forecast reasonably reflects the capex criteria.

We apply the assessment approach outlined in the *Guideline* to develop our estimate of a business's total capex requirements (our alternative estimate). Our alternative estimate serves two purposes. First, it provides a basis for testing whether a business's proposal is reasonable. Second, we can use it as a substitute forecast if a business's proposal does not reasonably reflect the capex criteria.

In the *Guideline*, ICT capex is considered in the context of a non-network capex forecast. Assessment of ICT capex is different from assessment of network capex because ICT assets generally do not directly provide network services. We note that currently there is no defined approach to assessing ICT capex, separate to our outlined assessment of the overall non-network capex forecast. We state:[10]

> Non-network capex is primarily for activities not directly associated with the distribution network. We will likely assess non-network capex by disaggregating it into the following subcategories:
>
> - IT and communications
> - vehicles
> - plant and equipment

---

5 NER, 6.5.7(c)

6 NER, 6.5.7(a)

7 NER, 6.5.7(c)(1)

8 NER, 6.5.7(d) and 6.12.1(3).

9 AER, *Expenditure forecast assessment guideline for electricity distribution*, November 2013; AER, *Expenditure forecast assessment guideline*, Explanatory statement, November 2013.

10 AER, *Expenditure forecast assessment guideline - distribution*, November 2013, p. 21

- buildings and property
- other.

Where possible we may assess non-network expenditure that is more recurrent separately to less recurrent expenditure. We may also examine total expenditure (capex and opex combined) when assessing different categories of non-network capex.

We do state that for recurrent expenditure our preference is to use revealed (past actual) costs as a starting point for assessing and determining efficient forecasts.[11]

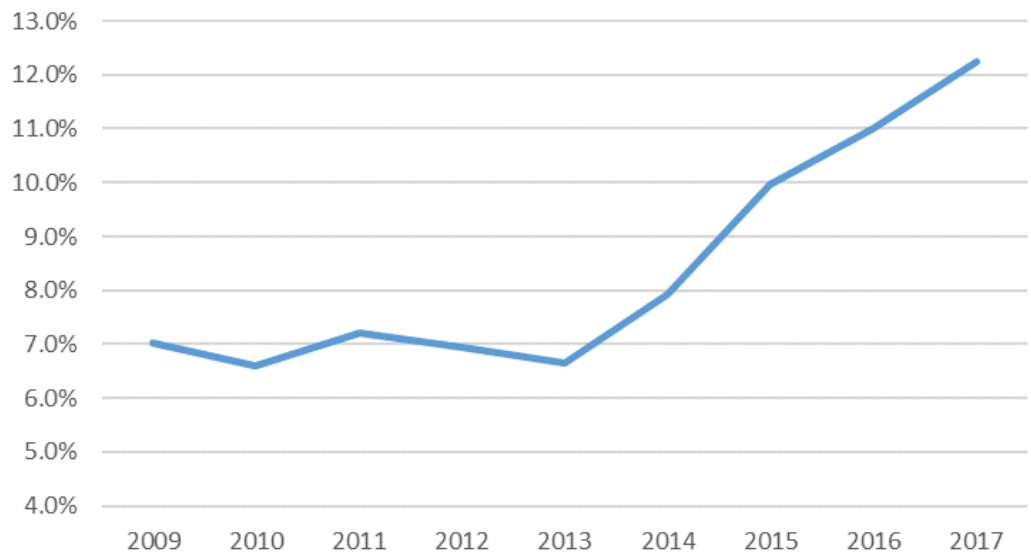
ICT opex is considered in the context of the entire opex forecast. We assess the ICT opex forecast with other types of opex in our base step trend approach. Under this approach, proposed recurrent operating expenditure is reflected in the base and is assessed through comparison to historical revealed costs. Conversely, proposed opex step-changes are assessed based on a needs basis.

[11] AER, *Expenditure forecast assessment guideline for electricity distribution*, November 2013, pp. 7-8

2. Why are we reviewing our approach?

ICT expenditure has been a growing component of a DNSPs' expenditure over recent years. Figure 1 shows actual ICT totex as a portion of total opex, replacement expenditure (repex), augmentation expenditure (augex), connections capex, non-network capex and overheads incurred by DNSPs[12] in the NEM from 2009 to 2017.

Figure 1 NEM DNSP ICT totex as a portion of total expenditure 2009 to 2017



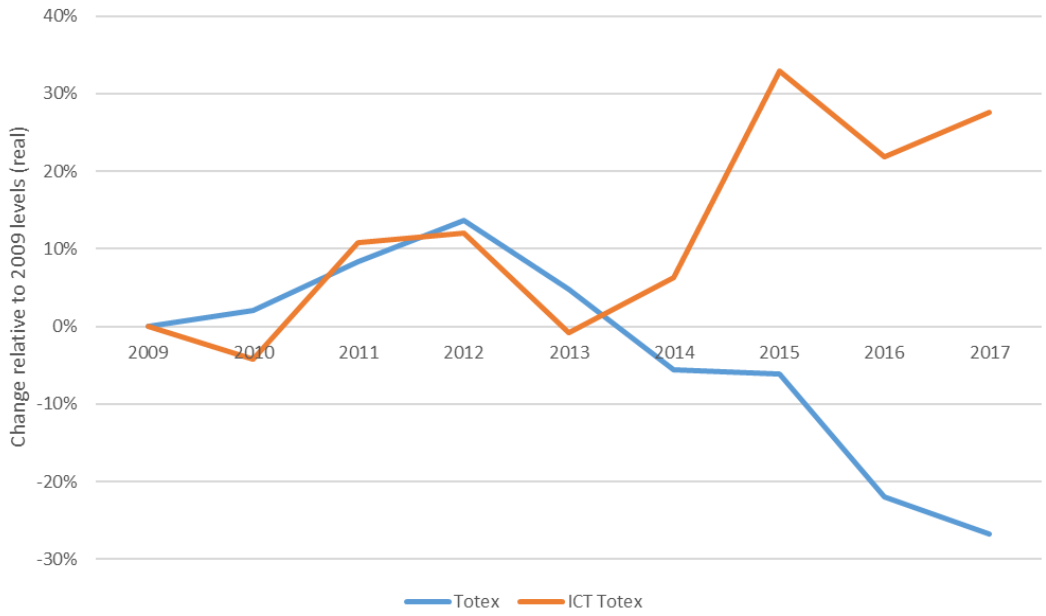
Source: AER Analysis.

As shown, for the period from 2009 to 2013 expenditure for ICT accounted for approximately 7 per cent of total expenditure. In every year since, the portion of expenditure associated with ICT expenditure has increased to now accounting for approximately 12 per cent of total network expenditure.

Figure 2 shows the relative change in total expenditure and ICT expenditure in real terms relative to 2009 levels.

[12] This does not include Power and Water Corporation.

Figure 2 Change in NEM DNSP Totex and ICT Totex



Source: AER Analysis.

As shown, total expenditure in the NEM has decreased in each year since 2012. In contrast to trends in overall expenditure, ICT expenditure has increased. That is, a near 30 per cent decrease in totex has come in contrast to a near 30 per cent increase in ICT totex.

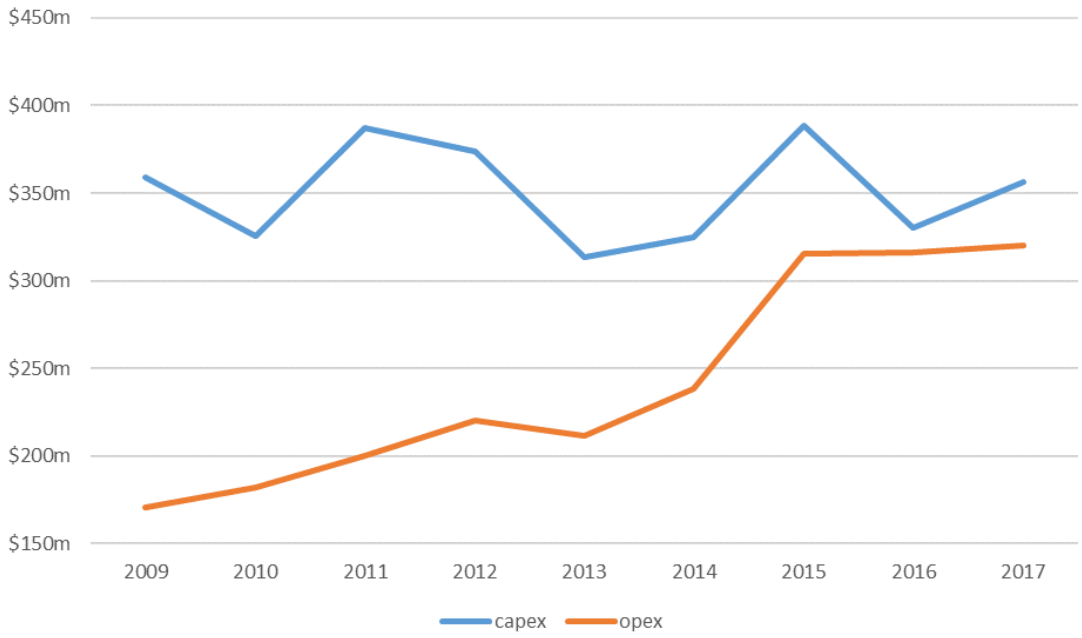
We note that ICT expenditure in the NEM has generally increased for the right reasons. For example, DNSPs have needed to comply with new obligations (i.e. Power of Choice[13]) and DNSPs have invested in ICT to improve service by either delivering new services or delivering existing services at lower cost (which is a likely driver of the observed decreases in totex as shown above). For example, remotely read digital meters combined with on-line metering data access can provide consumers with up-to-date consumption data and inform them of possible improvements in their energy use patterns. We also note that the increased penetration of DER will inevitably drive the increase of ICT expenditure further.

Cyber security is also a growing issue that DNSPs face as networks become more and more reliant on ICT infrastructure to operate and maintain electricity networks. These infrastructures, while improving network efficiency and effectiveness, also provide a means for malicious attacks. Network businesses are beginning to incur more investments in protecting their networks in response these increased security risks. DNSPs are also faced by increasing regulatory requirements and higher standards being required where an NSP's ICT network is exposed to a public network.

[13] https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Power-of-Choice

In examining the reason for the observed increase in ICT expenditure, we have considered the underlying trends in ICT opex and capex. Figure 3 shows trends in reported actual ICT opex and ICT capex from 2009 to 2017.

Figure 3 NEM ICT opex and capex (real June 2018, million)



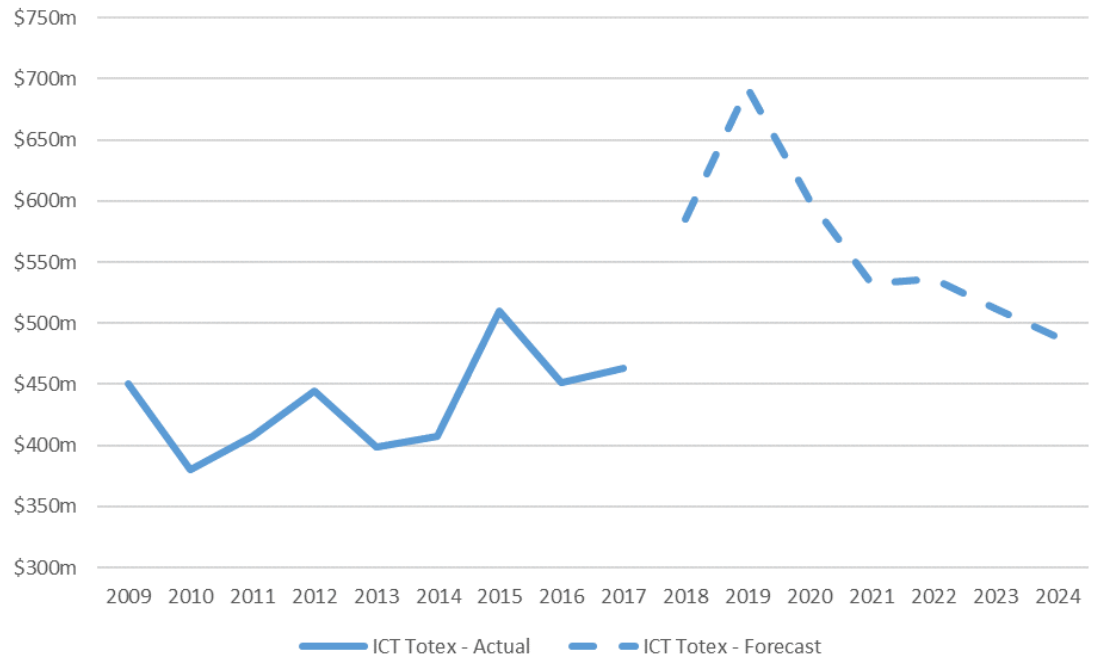
Source: AER Analysis.

As shown, the majority of ICT expenditure has been ICT capex. However, the difference in expenditure levels between ICT capex and opex has been diminishing over time due to increases in ICT opex. We note therefore that the observed increases in ICT totex have been primarily due to these increases in ICT opex. While average ICT opex from 2015 to 2017 is 72 per cent higher than average actual ICT opex from 2009 to 2011, ICT capex has remained relatively constant.

Recently, we have seen that DNSPs are adopting software as a service (SaaS) approach. That is, rather than investing in ICT software and hardware assets themselves, DNSPs receive ICT services from vendors via a subscription. In this example, this results in a substitution of ICT capex with ICT opex for this service. However we note that the historic increase in opex has not been accompanied with a corresponding decrease of capex.

DNSPs have begun submitting regulatory proposals which outline what they forecast to spend in ICT over their respective forthcoming regulatory control periods. Victorian DNSPs will soon submit their corresponding regulatory proposals. Based on the proposals already received (distributors in NSW, ACT, TAS, QLD and SA), we have compared historical ICT totex to the submitted forecasts. Figure 4 shows total actual ICT expenditure from 2009 to 2017 for the DNSPs for which we have received regulatory proposals, and compares this to their corresponding forecasts until June 2024.

Figure 4 Actual and forecast ICT totex (real June 2020, million)

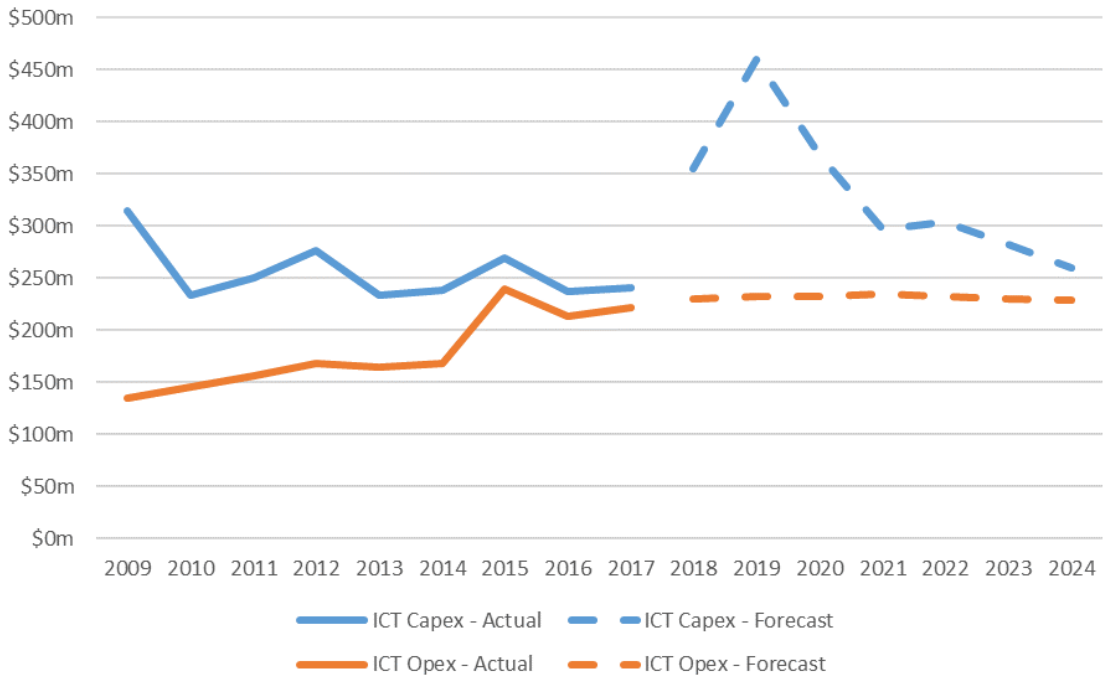


Source: AER Analysis.

As shown, these DNSPs have forecast large increases in ICT expenditure relative to historical levels. Average forecast ICT totex of the forthcoming seven years from 2018 to 2024 is 28 per cent higher than actual ICT totex of the previous seven years (2011 to 2017).

Figure 5 compares these DNSPs' ICT opex and ICT capex forecasts to actual expenditure.

Figure 5 Actual and forecast ICT capex and opex (real June 2020, million)



Source: AER Analysis.

As shown above, in contrast to the observed increases in actual ICT totex, the forecast increases in ICT totex are driven by forecast increases in ICT capex. Forecast ICT capex for the forthcoming seven years is 33 per cent higher than actual ICT capex of the previous seven years (2011 to 2017). Average forecast ICT opex is only 4 per cent higher than 2017 levels.

Stakeholders have recently submitted concerns with the recent ICT capex proposals submitted by DNSPs. These submissions have raised issues with the quantum of expenditure and benefits of this component of the forecast. Many stakeholders, such as PIAC, CCP and EUAA have requested that we revise our ICT assessment approach in light of these issues. For example, EUAA has submitted to us that:[14]

> Finally, we comment on the urgent need for the AER to institute a network wide review of ICT and associated cyber security capex and opex spending. This is an increasing component of networks' revenue that does not have the same rigour applied to it that is applied to other parts of a network's expenditure. Networks claim that such expenditure is required to improve efficiency, meet customer expectations and comply with legislative obligations. Consumers are seeking much more detailed justifications and AER review rigor around this expenditure

We consider consumer input is important to our determination process. Consumer input is specifically significant for informing our assessment of ICT given that it can be

[14] EUAA, *Submission on NSW 2019-24 draft decisions and revised proposals*, February 2019, p. 3

used to deliver better services for consumers, and deliver existing services at lower costs.

Below we outline our current thinking as to how we will assess ICT expenditure proposals in the future. However the views we hear on our outlined approach will be used to further refine our assessment techniques.

3. What is our current thinking for our ICT expenditure assessment approach?

As outlined in the *Guideline*, in making our assessment of an expenditure proposal, we generally make a distinction between expenditure that is recurrent as opposed to non-recurrent. This is largely evident in our opex assessment framework, where we apply a base-step trend top-down approach. We consider that ICT expenditure can similarly be broken down into its recurrent and non-recurrent components.

Recurrent ICT expenditures would, for example, refer to:

- The costs associated towards the ongoing refresh of ICT hardware – where hardware is refreshed on a cyclical or periodic basis. This need not be annually but would be periodic in nature (i.e. a regular frequency of refresh);
- Licencing and support costs – vendor licensing, vendor support, in-house support, etc.;
- Version roll forward costs – all costs associated with the periodic update of existing systems. Again this need not be annual but should be periodic in nature (i.e. a regular frequency of version roll forward); and
- Any other ICT costs that are incurred on a periodic basis. We note that non-network ICT assets have a standard life of five years (generally depreciated over five years in PTRM) and hence will likely be replaced every five years. Given this short asset life, we consider that these replacement projects are suitable to be considered as recurrent expenses.
- These are typically program related investments due to their mainly ongoing recurrent nature.

Non-Recurrent ICT expenditures would, for example, refer to:

- Any material cost associated with the acquisition of new or expanded ICT capability. That is, the acquisition, development and implementation of new or expanded ICT assets to meet a business purpose or capacity requirement; or
- any material cost associated with the replacement of existing ICT capability. This would refer to the infrequent replacement of major ICT assets.
- These are typically project related investments due to their less frequent and non-periodic nature.

We propose to assess recurrent ICT using direct methods to ICT that is non-recurrent.

> **Question 1**: *Does it make more sense to disaggregate ICT into its 'recurrent' and 'non-recurrent' components?*
>
> *Ausgrid presented their ICT capex forecast into the categories 'Comply', 'Protect (cyber)', 'Maintain' and 'Adapt' that are based on purpose. Would stakeholders find these categories more useful than our suggested recurrent and non-recurrent categories?*

Assessment of Recurrent ICT capex

1. Revealed Costs

As outlined in our *Guideline*[15], we prefer to use revealed (past actual) costs as the starting point for assessing and determining efficient forecasts for recurrent costs. Our proposed approach is to compare total proposed recurrent ICT expenditure to actual recurrent ICT expenditure. We will consider both long term and short term historical trends, however we will have a preference for the previous five years of actual data given the standard life of these assets.

We note the application of the EBSS and CESS places a strong incentive on distributors to pursue efficiencies in its recurrent expenditure practices. As such, a distributor's actual expenditure while subject to this mechanism is a good indicator of the efficient expenditure the distributor requires in the future. In particular, where past expenditure was sufficient to achieve the capex and opex objectives, this can be a reasonable indicator of whether an amount of forecast capex and opex would form part of a total capex forecast that we are satisfied reasonably reflects the capex and opex criteria.[16]

2. Benchmarking

While we apply the various incentive mechanisms, we note that the efficiency of individual electricity distributors varies across the NEM. While some businesses may historically operate at a level that would be considered efficient, others may be materially inefficient and may need to improve their efficiency before they can be considered efficient. Economic benchmarking applies economic theory to measure the efficiency of a DNSP's use of inputs to produce outputs, having regard to operating environment factors.

We intend to undertake benchmarking analysis of recurrent ICT expenditure in making our assessment of this category. This analysis will enable us to compare the performance of a DNSP with its own past performance and with the performance of other DNSPs. We can use this information to inform our view as to if historical levels of ICT expenditure are reasonably reflective of prudent and efficient costs.

To account for any opex/capex interrelationships, benchmarking analysis would be undertaken at the total expenditure level (opex + capex). That is, we would benchmark total opex and recurrent ICT capex. Benchmarking over totex would also account for differences between DNSPs on whether devices and infrastructure are leased (opex) as opposed to purchased (capex). It would also account for differences in the delivery of software and hardware upgrades, as well as for differences in procurement of ICT assets from vendors versus procurement of ICT services subscription from vendors.

---

[15] AER, *Expenditure forecast assessment guideline for electricity distribution*, November 2013, pp. 7-8

[16] AER, *Better regulation: Expenditure forecasting assessment guideline*, November 2013, pp. 7–9.

We would consider it a reasonable assumption that larger DNSPs would incur greater non-network ICT costs, although the increase is less than proportionate to the increase in size. To account for variation in the relative size of each DNSP, we will undertake benchmarking of ICT costs by DNSP in terms of customers served delivered and per employee.

We recognise that DNSPs may have difference ICT investment strategies and philosophies, which may lead to difference in ICT functions and scopes. For example, one DNSP may deploy more ICT investment to achieve a higher level of automation of certain business activities than others, which results in differences in ICT costs and other operational costs. However, we consider this difference is relatively minor and does not affect the validity of the benchmarking result.

> **Question 2:** *What other methodologies can we use to benchmark ICT capex? What are the benefits and disadvantages of each approach? What other benchmarking normalising factors do you consider appropriate? For example, Regulatory Asset Base (RAB) could be used as a proxy for asset size.*

3. Step changes

A DNSP may require additional recurrent ICT expenditure as a result of the need to comply with a new mandated regulatory obligation (for example, this might include cyber-security related projects).

The approach we are proposing to assess compliance driven ICT projects is the approach outlined in our *Guideline* to assess step changes.[17] This approach can be summarised as assessing:

- whether there is a binding (that is, uncontrollable) change in regulatory obligations that affects their efficient forecast expenditure;
- when this change event occurs and when it is efficient to incur expenditure to comply with the changed obligation;
- whether the solution is the most efficient and effective among the available options, and the scope of work is prudent;
- the efficient costs associated with making the step-change.

> **Question 3:** *We note the difficulty in assessing the efficiency of implementing a compliance driven step-change ICT projects. What information do you consider is required to assess the efficiency of these projects?*

A justified recurrent ICT proposal

We will accept a recurrent ICT capex proposal if:

---

[17] This is outlined in further detail in AER, *Expenditure forecast assessment guideline - distribution*, November 2013, p. 11

- the forecast is consistent with historical levels of expenditure; where
- historical expenditure is found to be at an efficient level and
- any proposed step-changes were demonstrated to be prudent and efficient.

A non-justified recurrent ICT proposal

In the cases where a proposal does not meet these above conditions we will not accept the proposed recurrent ICT capex. In forming our substitute estimate, we will have regard to:

- the DNSPs historical recurrent ICT expenditure (having regard to our benchmarking analysis); or
- our assessment of individual recurrent ICT programs or step-changes.

Assessment of Non-Recurrent ICT capex

Non-recurrent ICT projects refer to major (one off, infrequent, or non-periodic) investments related to replacing existing ICT assets or the acquisition of new ICT assets, functions, or capability that is driven by a specific need. These projects can deliver benefits such as:

- risk avoidance/reduction (e.g. due to loss of vendor support);
- opex savings (e.g. through efficiency improvements);
- capex savings (e.g. through better asset management practices);
- improvements to reliability;
- improvements to customer service/satisfaction.

As a first principle, we want to ensure that such investments are in the long term interests of consumers. Generally, we make our assessment of whether a project is project is prudent and efficient (i.e. benefits exceed costs). Where the investment does not have a positive business case, we look to see if it maintains the service levels at in the most efficient way (i.e. least cost for the maintenance of the service level). If the investment was driven by obtaining benefits for customers then we look to see if the delivered customer benefits exceeded the cost. If the investment was driven by obtaining benefits for the business, we look to see how those benefits were being passed on to the customer.

DER Based ICT Projects

We consider that ICT projects relating to the future integration of DER would be assessed under this non-recurrent ICT category, given that these represent new initiatives aimed at enabling customer benefit in the future. We note that the benefits of this expenditure could include, for example, the ability for the network to host higher levels or DER or defer augmentation costs. We consider that these investments, like any regular augmentation project, would require a regular business case assessment.

We note however that projects to increase DER hosting capacity of networks can have both ICT and direct network expenditure components. To adequately assess the business case for these projects it is necessary to start with the driver of the project (or need) rather than the specific category of expenditure. The driver describes the benefit that the project is seeking to deliver.

Once the need or benefit is described, we can determine if the proposed expenditures meet that need in a cost effective manner (i.e. NPV positive). If we separate ICT and network expenditures for these projects, it becomes more difficult to assess if the project is in the best interests of consumers. Another related challenge is that many ICT projects have business-wide implications (e.g. SAP or Oracle ERP upgrades). These projects will deliver multiple benefits and DER may therefore by only a small component of these projects. In these cases, it would be necessary to summate all of the benefits when assessing the efficiency of the project.

We are currently undertaking an internal review of what we would consider would be good practice for DER based investments. We plan to publish a paper on our findings for consultation in late 2019.

1. Assessing the prudency and efficiency of the project

We expect DNSPs to provide detailed business cases and cost-benefit analyses in support of non-recurrent ICT projects. We consider that a sufficient business case should provide the following:

- A detailed assessment of business needs and current risks under a 'business as usual' case;
- A detailed options analysis of all credible options. Generally, this would include options of various scopes and timings. Each of these options would be realistically costed;
- Identification and quantification of all relevant benefits and residual risks for each option. We expected that all relevant assumptions are supported by evidence;
- NPV analysis of each option to provide a ranking of each possible solution. The highest NPV option should be chosen.

> **Question 4**: *What do you consider a sufficient business case for an ICT project should include?*

We will review the NPV analysis to ensure that all benefit and cost assumptions are reasonable estimates. For large one-off replacement projects we consider a key component to our assessment is understanding if the proposed timing is prudent. This will involve demonstrating that the chosen timing is optimal compared to deferral options (e.g. 1, 2 or 5 years later). We will look for the extent to which DNSPs are willing manage risk and prudently extend the life of their existing infrastructure. If the driver of the replacement is an excessive risk from maintaining the current system, DNSPs should quantify these risks and incorporate them into the NPV analysis.

Where additional capabilities at an added cost are included in the project's forecast, we expect that these additional costs are clearly identified and assessed against benefits

of the additional capabilities. DNSPs have to show that these added costs are prudent and efficient investments.

Where non-recurrent ICT projects are aimed at improving customer service, we expect that DNSPs will be able to demonstrate clear consumer support for these initiatives. Furthermore, the additional costs associated with that service must have been deemed acceptable.

2. Post implementation reports for ICT projects

We note that the benefits of ICT investments are often not as objective as measuring the benefit of expenditure on network assets. We therefore expect that DNSPs will be able to provide information as to the benefits of previous non-recurrent ICT projects.

It is our expectation that DNSPs will undertake post implementation reviews of their previous non-recurrent ICT investments. These reports will quantify the benefits delivered and compare these with the benefits quantified in the business case. This exercise can be valuable for DNSPs to understand the accuracy of their benefit forecasting techniques and for stakeholders to have confidence that ICT investments are delivering actual benefits for the investments made.

We are proposing that we will request this information through regulatory information notices (RINs). We will undertake a review of the benefits delivered from historical projects to inform our view on proposed ICT investments for subsequent regulatory reset determinations.

Question 5: *What is your opinion on us requesting DNSPs provide post implementation reports from historical ICT investments?*

3. Assessing the efficiency of the overall expenditure forecast

A DNSP may identify the possibility to lower cost of service by implementing an ICT initiative and as such propose the project if these cost saving benefits exceed the added cost. We also note that replaced ICT systems typically provide improved capabilities and performance that will enable the business to operate more efficiently or effectively.

We want to ensure that consumers only fund the efficient costs. Under the CESS and EBSS incentive schemes, NSPs share any efficiencies achieved over the period (i.e. 30 per cent of underspend). That is, if a DNSP invests in ICT capex and reduces opex as a result, the business can benefit under the EBSS. Conversely if a DNSP decides to invest in opex to avoid capex, it will benefit under the CESS.

Given these interrelationships, it is important that an expenditure forecast takes into account these trade-offs. If these trade-offs are not considered, then an expenditure forecast is not efficient. Further, consumers would not be paying the efficient cost for the investment, as they fund the full upfront cost and the additional payments from incentive schemes.

To ensure that consumers only incur efficient costs, we expect that DNSPs will clearly identify how all benefits are incorporated into the overall expenditure forecast. That is,

the DNSP must be able to demonstrate how its regulatory proposal is more efficient on the basis of the proposed ICT investment incorporated into its forecast.

A DNSP could present this by, for example:

- incorporating negative step-change or productivity adjustment applied to the opex forecast;
- applying a capital efficiency adjustment to the capex forecast; or
- applying a reduction to overheads.

> **Question 6:** *What do you consider is required to demonstrate that DNSPs have incorporated benefits into its overall proposal?*

A justified non-recurrent capex proposal

In a justified proposal, a DNSP will demonstrate that each non-recurrent ICT project is prudent and efficient. In particular, the likely benefits of the proposed investment exceed the costs and the chosen option is the optimal amongst the others considered.

A DNSP will also be able to clearly demonstrate how it has incorporated any financial benefits into its overall expenditure forecast. It must be clearly demonstrated how a business's proposed expenditure would have been higher, had this investment not been assumed to be implemented over the forthcoming regulatory period. For example, the distributor will show:

- how forecast overheads have been reduced;
- the productivity factor or step-change applied to the opex forecast;
- the capital efficiency adjustment applied to the capex forecast.

We also note that benefits can be acquired over multiple regulatory control periods. DNSPs also need to show how benefits from previous ICT investments are incorporated into its regulatory proposal.

A non-justified proposal

A non-justified non-recurrent ICT proposal will either/or:

- not demonstrate that the proposed non-recurrent ICT projects are prudent and efficient.
- not demonstrate that the financial benefits identified in the business case have been incorporated into the overall proposal.

If we do not consider that the project has been demonstrated as being prudent and efficient, we will not include the project's forecast cost in our alternative estimate. If we consider the project is prudent and efficient, but the DNSP cannot demonstrate that the financial benefits have been incorporated into the overall forecast, we are proposing two scenarios:

1. We will not include forecast capex for these projects in our alternative estimate; or

2. We will apply a broad productivity adjustment to the overall proposal to account for these intangible benefits.

The first scenario applies the self-funding principle. It assumes that expenditure for acquiring new functionality to improve the business is self-funded from the productivity and efficiency cost savings.

In the second scenario, we will include the forecast costs of the non-recurrent ICT projects in our alternative estimate. However, to account for the likely benefits of the ICT projects, we would apply an overall productivity adjustment to a DNSP's overall proposal.

In determining the amount of the adjustment and the components of the forecast for which we would apply this adjustment, the starting point would be the benefits identified within the business case. However, if we consider that benefits have not been reasonably forecast, we will apply an adjustment to account for what we would consider the likely benefits to be. While we are still considering the practical steps in applying such a productivity adjustment, we envisage that when making our decision on what aspects of a DNSP's proposal we would apply a productivity adjustment to, we intend to have regard to the nature of the ICT investment that is proposed. For example, under this approach if the investment is in asset management systems, then we would adjust the repex forecast to account for the benefits from improved asset data. Similarly, for investment that relates to demand management, we would adjust the augex forecast to account for deferred augmentation expenditure. In determining the quantum of the adjustment we will have likely have regard to the productivity improvements proposed by other DNSPs.

This scenario can be useful in situations where benefits are difficult to quantify. We also understand that there can be scenarios where strong consumer support is received for an initiative, but this is not supported by the business case. We consider that this option could provide a middle ground solution in these scenarios. For example, newer ICT systems will generally have newer features and be more efficient. While the business driver of the investment may be end-of-life replacement, there are likely to be additional benefits due to simply having the newer system. These benefits could include improvements to capex delivery or risk assessment, automation of previous manual processes, or lower maintenance costs. This scenario enables the capturing of these likely benefits.

A potential risk of this option is that the actual benefits delivered do not match our adjustment to the forecast. If our adjustment is too low, consumers will pay more than efficient cost. If our adjustment is too high, DNSPs may be incentivised to not make adequate investment in capex/opex.

This approach would therefore require in-depth crosschecks between interrelated expenditure categories. This may be cumbersome given the incentive framework should be naturally encouraging innovation and efficiency seeking activity.

> **Question 7:** *Which scenario - self funding or productivity improvement - would you prefer and why? Are there other scenarios we should consider?*

Question 8: *We welcome stakeholder comments on the practical application of a productivity adjustment. If we were to include a productivity adjustment on the basis of ICT expenditure, how should it be incorporated? If so, how should we determine how large should this adjustment be? What aspects of a DNSP's forecast should it be applied to?*

Implementation

At this stage, we are proposing to use the ICT assessment approach decided in this review process in our determinations for each electricity distributor, starting with the determinations in April 2020. We have listed the relevant determinations in table 10.

Table 2 Relevant distribution determinations

Distributor	Regulatory control period commencing
Energex	1 July 2020
Ergon Energy	1 July 2020
SA Power Networks	1 July 2020
AusNet Services	1 January 2021
CitiPower	1 January 2021
Jemena	1 January 2021
Powercor	1 January 2021
United Energy	1 January 2021

We intend to apply the outlined ICT assessment framework approach determined in this review process to the electricity distribution regulatory determinations we will publish in April 2020. We will provide the relevant distributors an opportunity to submit their views concerning how we should apply the opex productivity growth forecast we determine to their specific circumstances. We will take those submissions into account in our final regulatory determinations for those distributors.

Other distributors will be able to express their views concerning how productivity growth should be applied in their specific circumstances when they submit their regulatory proposals. We will take these views into account in our regulatory determinations for those distributors.

Questions

Throughout this paper we have posed a series of questions. We welcome stakeholders' answers to these questions as well as any other feedback stakeholders may have (see page 3 for details on how to make a submission). We have listed them here for your convenience.

Question 1: *Do you agree with the RIN categories of ICT expenditure? Are there others we should request DNSPs to report? Does it make more sense to disaggregate ICT into its 'recurrent' and 'non-recurrent' components?*

Ausgrid presented their ICT capex forecast into the categories 'Comply', 'Protect (cyber)', 'Maintain' and 'Adapt' that are based on purpose. Would stakeholders find these categories more useful than our suggested recurrent and non-recurrent categories?

Question 2: *What other methodologies can we use to benchmark ICT capex? What are the benefits and disadvantages of each approach? What other benchmarking normalising factors do you consider appropriate? For example, Regulatory Asset Base (RAB) could be used as a proxy for asset size.*

Question 3: *We note the difficulty in assessing the efficiency of implementing a compliance driven step-change ICT projects. What information do you consider is required to assess the efficiency of these projects?*

Question 4: *What do you consider a sufficient business case for an ICT project should include?*

Question 5: *What is your opinion on us requesting DNSPs provide post implementation reports from historical ICT investments?*

Question 6: *What do you consider is required to demonstrate that DNSPs have incorporated benefits into its overall proposal?*

Question 7: *Which scenario - self funding or productivity improvement - would you prefer and why? Are there other scenarios we should consider?*

Question 8: *We welcome stakeholder comments on the practical application of a productivity adjustment. If we were to include a productivity adjustment on the basis of ICT expenditure, how should it be incorporated? If so, how should we determine how large should this adjustment be? What aspects of a DNSP's forecast should it be applied to?*